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**2016 September/October LD Brief**



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### Introduction

Hi all,

Welcome to a new debate season! This is Premier’s first brief of the 2016-2017 season, and the topic is “Resolved: Countries ought to prohibit the production of nuclear power.” We’ve gotten a lot of great feedback over the past year on our free briefs, and while we can’t make them any freer, we can make them better. Please, let us know what you think! And send them around. Not everyone has the resources to pay for briefs and this is one important way to level the playing field. If you use these briefs please help us and direct other debaters to PremierDebate.com/Briefs. The more people that are aware of the service, the more likely it gets to those who need it most.

This is a **special edition** of the Premier Debate brief in that it was primarily compiled within 24 hours of the topic’s release from the original work of the extremely talented debaters at the Premier Debate Invite Week. We’d like to thank **Jonas Le Barillec, Varun Paranjpe, Jong Hak Won, and Derek Zhang** for their efforts toward this communal resource. They worked really hard to provide some of the best evidence you’ll see. Do send these debaters a thank you for their hard work!

Lastly, we want to remind the readers about standard brief practice to get the most out of this file. Best practice for brief use is to use it as a guide for further research. Find the articles and citations and cut them for your own personal knowledge. You’ll find even better cards that way. If you want to use the evidence in here in a pinch, you should at least re-tag and highlight the evidence yourself so you know exactly what it says and how you’re going to use it. Remember, briefs can be a tremendous resource but you need to familiarize yourself with the underlying material first.

Good luck everyone. See you ‘round!

Bob Overing & John Scoggin

Directors | Premier Debate

### Table of Contents

Table of Contents

[Introduction 1](#_Toc459558742)

[Table of Contents 3](#_Toc459558743)

[AFF—A2 Advantage CPs 9](#_Toc459558744)

[A2 All Nuclear 10](#_Toc459558745)

[AT All Nuclear Energy CP 11](#_Toc459558746)

[A2 Regs CP 12](#_Toc459558747)

[A2 Renewables CP 13](#_Toc459558748)

[AFF—A2 PICs 14](#_Toc459558749)

[A2 Thorium Reactors PIC 15](#_Toc459558750)

[A2 Gen IV Reactor PIC 16](#_Toc459558751)

[AFF—A2 Protectionism DA 18](#_Toc459558752)

[AFF—A2 Shift DA 19](#_Toc459558753)

[AT Link 20](#_Toc459558754)

[Nat Gas 23](#_Toc459558755)

[Wind Shift 24](#_Toc459558756)

[Wind Cheaper Than Nuclear 25](#_Toc459558757)

[Solar Cheaper Than Nuclear 26](#_Toc459558758)

[AFF—A2 Spec 27](#_Toc459558759)

[Decommissioning 28](#_Toc459558760)

[AFF—A2 Subs DA 29](#_Toc459558761)

[AFF – A2 Warming DA 32](#_Toc459558762)

[AFF—Accidents 34](#_Toc459558763)

[Fish 36](#_Toc459558764)

[AFF—Cap 37](#_Toc459558765)

[Harms 38](#_Toc459558766)

[AFF—Colonialism 39](#_Toc459558767)

[AFF—Econ 40](#_Toc459558768)

[Bad Investments 41](#_Toc459558769)

[AFF—Generic 42](#_Toc459558770)

[Unpopular 46](#_Toc459558771)

[AFF—Grid 47](#_Toc459558772)

[AFF-India 48](#_Toc459558773)

[India-Solvency 49](#_Toc459558774)

[India-Prolif Advantage 53](#_Toc459558775)

[India-Colonialism Advantage 61](#_Toc459558776)

[AFF – Iran 66](#_Toc459558777)

[A2 Breakout Capacity Solves 67](#_Toc459558778)

[A2 Sanctions/Diplomacy CP 68](#_Toc459558779)

[Deal Bad 70](#_Toc459558780)

[Internal: Cheating on the deal 73](#_Toc459558781)

[Impact: Terror, nukes, prolif 75](#_Toc459558782)

[AFF—Japan 76](#_Toc459558783)

[Structural Violence 77](#_Toc459558784)

[Econ Security 81](#_Toc459558785)

[Reactor Restart 82](#_Toc459558786)

[Nuclear Denial 84](#_Toc459558787)

[Impact Tools-SCS UQ 86](#_Toc459558788)

[AFF—Natives Affirmative 89](#_Toc459558789)

[K version 101](#_Toc459558790)

[A2 T 102](#_Toc459558791)

[AFF—Nuclear War 107](#_Toc459558792)

[AFF—Phil 110](#_Toc459558793)

[Rights 111](#_Toc459558794)

[Framework 112](#_Toc459558795)

[Future Generations 113](#_Toc459558796)

[A2 State not moral 116](#_Toc459558797)

[Coercion Advantage 117](#_Toc459558798)

[AFF – Prolif 118](#_Toc459558799)

[AT Ban CP 122](#_Toc459558800)

[AT Deterrence 123](#_Toc459558801)

[Discourse Key 125](#_Toc459558802)

[AFF—Psychoanalysis Aff 126](#_Toc459558803)

[AFF—Radiation 127](#_Toc459558804)

[Food Poisoning 128](#_Toc459558805)

[Cancer 129](#_Toc459558806)

[AFF—Terror 130](#_Toc459558807)

[A2 NPT Checks Terror 132](#_Toc459558808)

[AFF—US 133](#_Toc459558809)

[Decomissioning Module 134](#_Toc459558810)

[A2 States CP 135](#_Toc459558811)

[A2 Reactors Old 136](#_Toc459558812)

[Gen IV UQ 137](#_Toc459558813)

[Tax Credits UQ 138](#_Toc459558814)

[AFF—Waste 139](#_Toc459558815)

[NEG—A2 Accidents Advantage 140](#_Toc459558816)

[Fish 141](#_Toc459558817)

[Waste Disposal 142](#_Toc459558818)

[NEG—A2 Mining Aff 143](#_Toc459558819)

[NEG—A2 Phil 144](#_Toc459558820)

[A2 Intent 145](#_Toc459558821)

[NEG—A2 Polls Aff 146](#_Toc459558822)

[(Whole Res) UK PIC 147](#_Toc459558823)

[UK Politics DA 148](#_Toc459558824)

[US Specific 149](#_Toc459558825)

[NEG—A2 Prolif 150](#_Toc459558826)

[Impact 151](#_Toc459558827)

[NEG—A2 Solvency 152](#_Toc459558828)

[Generic 153](#_Toc459558829)

[Imports 154](#_Toc459558830)

[Circumvention 155](#_Toc459558831)

[Inherency 156](#_Toc459558832)

[Status Quo Solves 160](#_Toc459558833)

[AT Nuclear Renaissance 161](#_Toc459558834)

[NEG—A2 US Aff 162](#_Toc459558835)

[A2 US Modeling 163](#_Toc459558836)

[Inherency 164](#_Toc459558837)

[Elections—Rollback 169](#_Toc459558838)

[Solvency—Peak Uranium 170](#_Toc459558839)

[States CP 171](#_Toc459558840)

[NEG—Advantage CPs 172](#_Toc459558841)

[EIA CP 173](#_Toc459558842)

[IFNEC CP 174](#_Toc459558843)

[Education CP 177](#_Toc459558844)

[Prolif CP 178](#_Toc459558845)

[Safeguards CP 180](#_Toc459558846)

[Free Market CP 181](#_Toc459558847)

[Fusion CP 182](#_Toc459558848)

[Phase Out 183](#_Toc459558849)

[NEG—Cap K 184](#_Toc459558850)

[NEG—Colonialism 185](#_Toc459558851)

[Statism Link 187](#_Toc459558852)

[Enlightenment 189](#_Toc459558853)

[NEG—Desalinization DA 191](#_Toc459558854)

[A2 Unpractical 193](#_Toc459558855)

[NEG—Generic 194](#_Toc459558856)

[Laundry 195](#_Toc459558857)

[Uranium Seawater 196](#_Toc459558858)

[Abundant 197](#_Toc459558859)

[NEG—Heidegger K 199](#_Toc459558860)

[NEG—Heg DA 200](#_Toc459558861)

[Prolif 201](#_Toc459558862)

[NEG—Imperialism K 203](#_Toc459558863)

[Link 204](#_Toc459558864)

[NEG—Nuclearity K 205](#_Toc459558865)

[Nuclear Discourse 206](#_Toc459558866)

[NEG—Shift DA 209](#_Toc459558867)

[Link 210](#_Toc459558868)

[Enviro-Laundry List 217](#_Toc459558869)

[AT Uranium Shocks / Prices 218](#_Toc459558870)

[NEG—Subs DA 219](#_Toc459558871)

[Link – Nuclear subs key 222](#_Toc459558872)

[Impact – SCS 227](#_Toc459558873)

[Internal link – Hegemony 228](#_Toc459558874)

[A2 Conventional subs solve 229](#_Toc459558875)

[A2 Nuclear accidents 231](#_Toc459558876)

[A2 No link—no nuclear submarines 232](#_Toc459558877)

[A2 Tech not key 233](#_Toc459558878)

[NEG—Phil 234](#_Toc459558879)

[Future Generations NC 235](#_Toc459558880)

[NEG—PICs 238](#_Toc459558881)

[SMR PIC 239](#_Toc459558882)

[Gen IV PIC 241](#_Toc459558883)

[Nuclear Co-Generation PIC 243](#_Toc459558884)

[Nuclear Desalination PIC 244](#_Toc459558885)

[Immediate Dismantling Only 245](#_Toc459558886)

[NEG—Resource Wars DA 246](#_Toc459558887)

[NEG—Spec 249](#_Toc459558888)

[Decommissioning Spec 250](#_Toc459558889)

[Country Spec 252](#_Toc459558890)

[NEG—T 253](#_Toc459558891)

[T-Plural 254](#_Toc459558892)

[T-Nuke Power=energy 255](#_Toc459558893)

[T- No Weapons 256](#_Toc459558894)

[T-Power=fission 257](#_Toc459558895)

[T-Implementation 258](#_Toc459558896)

[T-Prohibit Allows Research/Mining 259](#_Toc459558897)

[T-Plans Good ☺ 260](#_Toc459558898)

[NEG—Warming DA 261](#_Toc459558899)

[UQ 262](#_Toc459558900)

[Link 264](#_Toc459558901)

[AFF/NEG Countries UQ 268](#_Toc459558902)

[Asia General 269](#_Toc459558903)

[China 270](#_Toc459558904)

[France 279](#_Toc459558905)

[Germany 282](#_Toc459558906)

[India 283](#_Toc459558907)

[Indonesia 284](#_Toc459558908)

[Japan 285](#_Toc459558909)

[ME General 286](#_Toc459558910)

[Russia 287](#_Toc459558911)

[South Korea 288](#_Toc459558912)

[Switzerland 289](#_Toc459558913)

[Thailand 290](#_Toc459558914)

[UAE 291](#_Toc459558915)

[United States 292](#_Toc459558916)

[Vietnam 293](#_Toc459558917)

[AFF/NEG FWK 294](#_Toc459558918)

[Future Generations 295](#_Toc459558919)

[Intent-Foresight TJF 299](#_Toc459558920)

## AFF—A2 Advantage CPs



### A2 All Nuclear

### AT All Nuclear Energy CP

#### Kills cars and airplanes

UCSB Science Line n.d.

UCSB Science Line, “Search Our Archives,” <http://scienceline.ucsb.edu/getkey.php?key=1525> [Premier]

**Another reason we can't just switch to nuclear power is that we need a PORTABLE FUEL, like gasoline for cars and airplanes. If we use nuclear energy to generate electrical energy (in power lines) we cannot directly use that in our cars, for example, like we do with gasoline.** We COULD use the electrical energy from a nuclear power plant to charge batteries, but currently batteries are not very efficient and not long lasting enough to replace something like gasoline. There are other options to electrically charging automobiles, but they are still under development.

### A2 Regs CP

#### Accidents are inevitable. Fukushima proves that even the best safeguards aren’t enough.

Hiroaki 11 [Koide Hiroaki, Assistant Professor at the Kyoto University Research Reactor Institute, “The Truth About Nuclear Power: Japanese Nuclear Engineer Calls for Abolition,” The Asia-Pacific Journal Vol 9 Issue 31, August 8, 2011, <http://apjjf.org/2011/9/31/Satoko-Norimatsu/3582/article.html>] [Premier]

Though I think most of you are already familiar with this matter, nuclear power generation is a technology that deals with huge amounts of radioactivity. Please look at the small square at the lower left corner here. This is the amount of uranium that burned when the Hiroshima atomic bomb exploded: 800 grams. That amount, which you can easily lift by hand, burned and annihilated the city of Hiroshima. Now, how much uranium is necessary for nuclear power generation? It requires one ton of uranium to run one nuclear power plant for one year. This gives you an idea of the enormity of the highly radioactive fission byproducts generated as a nuclear power plant operates. A nuclear plant is a machine. It is expected that machines go wrong and cause accidents. It is we humans who operate the machine. Humans are not God. It is only natural that humans make mistakes. No matter how we wish that no accidents occur, there is always the possibility of a catastrophe. So what measures did the nuclear policymakers take to deal with the possibility of accidents? They just assumed catastrophic accidents would seldom occur. So they decided to ignore the possibility by labelling it as an “inappropriate assumption.” Here’s how they denied the possibility of catastrophic accidents. I took this illustration from the website of Chubu Electric Power. They claim that there are multiple barriers to keep radioactivity from leaking out. The most important barrier of them all is the fourth one, the reactor containment vessel. This is a huge vessel made of steel, and they adopted the idea that this vessel can always contain radioactivity, regardless of what happens. They claim that, according to the Guidelines in Reactor Site Evaluation, they have serious accidents, or “virtual accidents of a fairly serious kind” in mind. According to their claim, even if such an accident occurs, there is absolutely no possibility of the containment vessel, the final barrier to contain radioactivity, being breached. A radioactive leak would be impossible. Therefore, nuclear power plants are safe under any circumstance whatsoever, and any other assumption is an “inappropriate assumption.” But a catastrophic accident has actually occurred, and is still going on. Tragic events are underway in Fukushima, as you all know. And the government’s responses to the ongoing accident have, in my view, been highly inappropriate.

### A2 Renewables CP

#### Links to net benefit—Can’t have both nuclear power and renewables – 3 warrants

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

From a systemic perspective, the key question is whether nuclear energy is in fact compatible with a power system that is dominated by energy efficiency and, in particular, by renewable energy. **Experience in places where renewables account for a rapidly growing share of electricity generation, such as Germany and Spain, suggests that efficient “co-dominant” systems are not possible.** The main reasons are as follows:

**[1] Overcapacity kills efficiency incentives. Large, centralized power-generation units tend to lead to structural overcapacities.** Overcapacities usually lead to **lower prices**, which **discourages energy efficiency. Lower prices also stimulate consumption or inefficient uses,** often **leading to higher electricity bills**.

**[2] Renewables need flexible complementary capacity. Increasing levels of renewable electricity will require flexible, medium-load complementary facilities rather than inflexible, large, baseload power plants.** Johannes Lambertz, CEO of RWE Power, one of Germany’s largest electricity utilities, observed in 2010 that, “what is most important for the energy industry is the wise integration of renewable energies into the power generation market.”29 **In Germany, the injection of renewable electricity has legal priority over nuclear and fossil power. But in October 2008, wind energy generation was so high that some non-renewable electricity had to be offered for “negative” prices** on the power market because utilities could not reduce the output from nuclear and coal plants quickly enough—even though some 8 GW of nuclear capacity was off line for maintenance.30 Since then, negative electricity prices, legal in Germany since September 2008, have become a more frequent phenomenon: in the six months between September 2009 and February 2010, power prices in Germany dropped into the red on 29 days. **Negative prices, a sort of financial penalty for inflexibility, reached stunning levels**: on October 4, 2009, one power producer had to pay up to €1,500 per megawatt-hour (15 cents per kilowatt-hour) to get rid of its electricity.

**[3] Future grids go both ways. Smart metering, smart appliances, and smart grids are on their way,** and received considerable emphasis in the economic stimulus packages of many countries in 2008. **Under this entirely redesigned grid system, which is radically different from the top-down centralized approach, the user also generates and stores power. The consumer becomes producer and vice-versa, giving rise to the “prosumer.”**

In many developing countries, where key decisions about grid infrastructure have yet to be made, it is critical to assess the implications of these basic system choices. Industrial countries illustrate the outcome of past strategic choices. Unfortunately, although there are numerous successful local and regional cases, there is no “good” example of a successful national energy policy that provides affordable, sustainable energy services. **All countries have implemented policies that have serious drawbacks, and major “repair jobs” are necessary to address the defaults**.

## AFF—A2 PICs



### A2 Thorium Reactors PIC

#### Efficient renewables solve better than thorium reactors, without cost, prolif and waste risks

Lovins 09

“New” nuclear reactors, same old story AMORY B. LOVINS 21 MARCH 2009 Rocky Mountain Institute [Premier]

Some enthusiasts prefer fueling reactors with thorium—an element 3 as abundant as uranium but even more uneconomic to use. India has for decades failed to commercialize breeder reactors to exploit its thorium deposits. But **thorium can’t fuel a reactor by itself**: rather, a uranium- or plutonium-fueled reactor can convert thorium-232 into fissionable (and **plutonium-like, highly bomb-usable**) uranium-233. Thorium’s proliferation, waste, safety, and cost problems differ only in detail from uranium’s: e.g., thorium ore makes less mill waste, but highly radioactive U-232 makes fabricating or reprocessing U-233 fuel hard and costly. And with uranium-based nuclear power continuing its decades-long economic collapse, it’s awfully late to be thinking of developing a whole new fuel cycle whose problems differ only in detail from current versions. Spent LWR fuel “burned” in IFRs, it’s claimed, could meet all humanity’s energy needs for centuries. But renewables and efficiency can do that forever at far lower cost, with no proliferation, nuclear wastes, or major risks. Moreover, any new type of reactor would probably cost even more than today’s models: even if the nuclear part of a new plant were free, the rest—two-thirds of its capital cost—would still be grossly uncompetitive with any efficiency and most renewables, sending out a kilowatt-hour for ~9–13¢/kWh instead of new LWRs’ ~12–18+¢. In contrast, the average U.S. windfarm completed in 2007 sold its power (net of a 1¢/kWh subsidy that’s a small fraction of nuclear subsidies) for 4.5¢/kWh. Add ~0.4¢ to make it dispatchable whether the wind is blowing or not and you get under a nickel delivered to the grid. Most other renewables also beat new thermal power plants too, cogeneration is often comparable or cheaper, and efficiency is cheaper than just running any nuclear- or fossil-fueled plant. Obviously these options would also easily beat proposed fusion reactors that are sometimes claimed to be comparable to today’s fission reactors in size and cost. And unlike any kind of hypothetical fusion or new fission reactor—or LWRs, which have a market share below 2%—efficiency and micropower now provide at least half the world’s new electrical services, adding tens of times more capacity each year than nuclear power does. It’s a far bigger gamble to assume that the nuclear market loser will become a winner than that these winners will turn to losers.

### A2 Gen IV Reactor PIC

#### Gen IV fast reactors still suck

Lovins 09

“New” nuclear reactors, same old story AMORY B. LOVINS 21 MARCH 2009 Rocky Mountain Institute [Premier]

The dominant type of new nuclear power plant, light-water reactors (LWRs), proved unfinanceable in the robust 2005–08 capital market, despite new U.S. subsidies approaching or exceeding their total construction cost. New LWRs are now so costly and slow that they save 2–20 less carbon, 20–40 slower, than micropower and efficient end-use. As this becomes evident, other kinds of reactors are being proposed instead—novel designs claimed o solve LWRs’ problems of economics, proliferation, and waste. Even climate-protection pioneer Jim Hansen says these “Gen IV” reactors merit rapid R&D. But on closer examination, the two kinds most often promoted—Integral Fast Reactors (IFRs) and thorium reactors—reveal **no economic, environmental, or security rationale**, and the thesis is unsound for **any nuclear reactor.** Integrated Fast Reactors (IFRs) The IFR—a pool-type, liquid-sodium-cooled fast-neutron reactor plus an ambitious new nuclear fuel cycle—was abandoned in 1994, and General Electric’s S-PRISM design in ~2003, due to both proliferation concerns and dismal economics. Federal funding for fast breeder reactors halted in 1983, but in the past few years, enthusiasts got renewed Bush Administration support by portraying IFRs as a solution to proliferation and nuclear waste. It’s neither. Fast reactors were first offered as a way to make more plutonium to augment and ultimately replace scarce uranium. Now that uranium and enrichment are known to get cheaper while reprocessing, cleanup, and nonproliferation get costlier—destroying the economic rationale— IFRs have been rebranded as a way to destroy the plutonium (and similar transuranic elements) in long-lived radioactive waste. Two or three redesigned IFRs could in principle fission the plutonium produced by each four LWRs without making more net plutonium. However, most LWRs will have retired before even one commercial-size IFR could be built; LWRs won’t be replaced with more LWRs because they’re grossly uncompetitive; and IFRs with their fuel cycle would cost even more and probably be less reliable. It’s feasible today to “burn” plutonium in LWRs, but this isn’t done much because it’s very costly, makes each kg of spent fuel 7 hotter, enhances risks, and makes certain transuranic isotopes that complicate operation. IFRs could do the same thing with similar or greater problems, offering no advantage over LWRs in proliferation resistance, cost, or environment. IFRs’ reprocessing plant, lately rebranded a “recycling center,” would be built at or near the reactors, coupling them so neither works without the other. Its novel technology, replacing solvents and aqueous chemistry with high-temperature pyrometallurgy and electrorefining, would incur different but major challenges, greater technical risks and repair problems, and speculative but probably worse economics. (Argonne National Laboratory, the world’s experts on it, contracted to pyroprocess spent fuel from EBR-II—a small IFR-like test reactor shut down in 1994—by 2035, at a cost DOE estimated in 2006 at ~50 today’s cost of fresh LWR fuel.) Reprocessing of any kind makes waste management more difficult and complex, increases the volume and diversity of waste streams, increases by several- to manyfold the cost of nuclear fueling, and separates bomb-usable material that can’t be adequately measured or protected. Mainly for this last reason, all Presidents since Gerald Ford in 1976 (except G.W. Bush in 2006– 08) discouraged it. An IFR/pyroprocessing system would give any country immediate access to over a thousand bombs’ worth of plutonium to fuel it, facilities to recover that plutonium, and experts to separate and fabricate it into bomb cores—hardly a path to a safer world. IFRs might in principle offer some safety advantages over today’s light-water reactors, but create different safety concerns, including the sodium coolant’s chemical reactivity and radioactivity. Over the past half-century, the world’s leading nuclear technologists have built about three dozen sodium-cooled fast reactors, 11 of them Naval. Of the 22 whose histories are mostly reported, **over half had sodium leaks**, four suffered fuel damage (including two partial meltdowns), several others had serious accidents, most were prematurely closed, and only six succeeded. Admiral Rickover canceled sodium-cooled propulsion for USS Seawolf in 1956 as “expensive to build, complex to operate, susceptible to prolonged shutdown as a result of even minor malfunctions, and difficult and time-consuming to repair.” Little has changed. As Dr. Tom Cochran of NRDC notes, fast reactor programs were tried in the US, UK, France, Germany, Italy, Japan, the USSR, and the US and Soviet Navies. All failed. After a half-century and tens of billions of dollars, the world has one operational commercial-sized fast reactor (Russia’s BN600) out of 438 commercial power reactors, and it’s not fueled with plutonium. IFRs are often claimed to “burn up nuclear waste” and make its “time of concern…less than 500 years” rather than 10,000–100,000 years or more. That’s wrong: most of the radioactivity comes from fission products, including very-long-lived isotopes like iodine-129 and technicium-99, and their mix is broadly similar in any nuclear fuel cycle. IFRs’ wastes may contain less transuranics, but at prohibitive cost and with worse occupational exposures, routine releases, accident and terrorism risks, proliferation, and disposal needs for intermediate- and low-level wastes. It’s simply a dishonest fantasy to claim, as a Wall Street Journal op-ed just did, that such hypothe-tical and uneconomic ways to recover energy or other value from spent LWR fuel mean “There is no such thing as nuclear waste.” Of course, the nuclear industry wishes this were true. No new kind of reactor is likely to be much, if at all, cheaper than today’s LWRs, which remain grossly uncompetitive and are getting more so despite five decades of maturation. “New reactors” are precisely the “paper reactors” Admiral Rickover described in 1953: An academic reactor or reactor plant almost always has the following basic characteristics: (1) It is simple. (2) It is small. (3) It is cheap. (4) It is light. (5) It can be built very quickly. (6) It is very flexible in purpose. (7) Very little development will be required. It will use off-the-shelf components. (8) The reactor is in the study phase. It is not being built now. On the other hand a practical reactor can be distinguished by the following characteristics: (1) It is being built now. (2) It is behind schedule. (3) It requires an immense amount of development on apparently trivial items. (4) It is very expensive. (5) It takes a long time to build because of its engineering development problems. (6) It is large. (7) It is heavy. (8) It is complicated. Every new type of reactor in history has been costlier, slower, and harder than projected. IFRs’ low pres¬sure, different safety profile, high temperature, and potentially higher thermal efficiency (if its helium turbines didn’t misbehave as they have in all previous reactor projects) come with countervailing disadvantages and costs that advocates assume away, contrary to all experience.

## AFF—A2 Protectionism DA

#### **Nuclear power relies on foreign imports-props up trade**

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

Energy security and nonproliferation are two reasons often cited for bolstering both the domestic nuclear electricity industry and the capacity of US firms to export nuclear technology. Nuclear energy is depicted frequently as a ÒhomegrownÓ alternative to dependence on foreign resources, particularly oil, but this characterization is misleading. First, most nuclear programs are quite dependent on foreign entitiesÑfor uranium ore, conversion services, uranium enrichment, and fuel fabricationÑand the United States is no exception to this general rule. Although the United States has uranium deposits (about 11 percent of the global recoverable resources), US utilities import most of the uranium they use for fuel from 12 countries, and send about half of that to foreign conversion facilities before it is shipped to foreign enrichment providers that, together, provide US utilities with six times more enrichment services than do domestic providers (Energy Information Administration, 2012).

## AFF—A2 Shift DA



### AT Link

#### Germany’s nuclear ban will accelerate tech breakthroughs in renewables; it will be a global leader

Korosec 11

KIRSTEN KOROSEC, Fortune journalism, “Germany's Nuclear Ban: The Global Effect” Money Watch, May 31, 2011, 4:28 PM <http://www.cbsnews.com/news/germanys-nuclear-ban-the-global-effect/> [Premier]

Renewable markets Germany is already a world leader in renewable energy. Today, renewable energy provides about 13 percent of Germany's power. **By 2020, it wants renewable sources to provide 35 percent of its electricity.** To be clear, it will take a massive effort to reach that goal. And **the global stakes are high. If Germany is successful, other countries have follow its lead.** If it fails, governments that have been slow to embrace renewable energy will use Germany's problems as a reason to backpedal from the source altogether. **To reach that goal, there will have to be breakthroughs in solar as well as storage technology.** **The nuclear ban could very well accelerate these kinds of breakthroughs**. **More companies, recognizing the opportunity, will enter the market and existing renewable energy businesses will expand**.

#### Turn – a nuclear ban causes a shift to renewables, France proves

Agnihotri 15

Gaurav Agnihotri, a Mechanical engineer and an MBA -Marketing from ICFAI (Institute of Chartered Financial Accountants), Jul 30, 2015, 12:43 PM CDT “Is France Ready To Move Away From Nuclear Energy?” <http://oilprice.com/Alternative-Energy/Nuclear-Power/Is-France-Ready-To-Move-Away-From-Nuclear-Energy.html> [Premier]

France is the world’s most nuclear dependent country. With 58 nuclear reactors in 19 power stations having a total capacity of 63.2 gigawatts, France is the second largest producer of nuclear energy in the world, second only to the United States. But unlike the U.S., nuclear energy represents France’s largest source of electricity generation, accounting for around 77 percent of the country’s energy generation in 2014. However, in the last few years, **France has witnessed growing public support in favor of developing newer technologies that can reduce carbon emissions and replace nuclear power**. In the year 2012, France’s newly elected President Francois Hollande **pledge**d **to reduce** his country’s **dependence on nuclear power** to 50 percent by 2025. This **triggered a ‘national debate for energy transition’ in France which lasted for eight months.** **The National Assembly of France then passed an Energy Transition for Green Growth bill in 2014 which would put a cap on the country’s nuclear power** capacity at the current level of 63.2 gigawatts. Related: Top 6 Most Powerful Women In Oil And Gas How will France meet this tough new target? Last week saw French Lawmakers finally pass this bill which seeks to cut the country’s growing dependence on nuclear power. With the move, France is following Germany, which decided to significantly reduce its dependence on nuclear energy after the infamous 2011- Fukushima nuclear disaster in Japan. In order to meet this tough new target, Electricite De France or EDF (which is 85 percent government-owned) would have no other option but to close some of its nuclear power capacity in order to accommodate its new European Pressurized Reactor (EPR), which is currently under construction in Normandy. **The new law further requires France to increase the contribution of renewables in its total energy consumption to 32 percent by 2030**. This is in addition to reducing the C02 emissions by 40 percent by 2030 when compared to 1990 levels and also reduce conventional fossil fuel consumption by 30 percent by 2030 from 2012 levels. Although the law has made it quite clear that France now has to reduce its dependence on nuclear power, there are still several loopholes, as it hasn’t provided a clear manner in which the set target is supposed to be met and there is no specific implementation strategy put in place yet. “This law sets goals, which is interesting, but it doesn't explain how to reach them, postponement of the detailed implementation plans is not a good sign," said Yannick Rousselet of Greenpeace. Can we expect massive investments in renewables and natural gas? “I want France to become a nation of environmental excellence,” said French environmental minister Segolene Royal. She further said that **recent steps** taken by the French government **could create close to 100,000 jobs in the renewable sector**. **As the new law has also set a goal of increasing overall renewable energy consumption while also curtailing nuclear power, we can expect some major foreign investments in the French clean energy sector in the coming few years. French energy giant Total has in fact been investing a substantial amount in the solar sector. With its partnership with U.S. based Sunpower, Total might just ramp up its investments in the French solar sector**. It is interesting to note that **wind energy also enjoys local public support** in France as a 2014-CSA survey revealed that around 64 percent of local people see wind energy **as a worthy replacement for nuclear power.** According to the European Wind Energy Association, France increased its target for energy generation from wind to 19 gigawatts by 2020 from 8.2 gigawatts in 2014. France is also the second largest producer of biofuels in Europe after Germany, mostly producing biodiesel. France has already set a goal of blending 10 percent of biofuels with its conventional fuels by 2020. So, with the current push towards renewables one can reasonably expect a surge in biofuel investments as well. However, the same cannot be said for natural gas, as France is one of the four countries that have banned hydraulic fracturing or fracking. **Experts predict that the French natural gas demand might even fall by the year 2020**. What does this mean for the suppliers of nuclear fuel and companies like AREVA? France‘s decision to reduce dependence on nuclear power will not go down well with the already struggling nuclear industry, which includes French players like Areva, EDF and GDF Suez. Areva, the world’s largest nuclear company, reported a loss of $4.8 billion in 2014 after it started facing a dip in demand following the 2011 Fukushima disaster. Areva is one of the most prominent companies in France, so the French government has been trying hard to save the company through a proposed deal with EDF, which involves selling off its reactor and fuel treatment business. According to recent reports, the French government could end up shelling out $5.5 billion to rescue Areva, far more than anticipated. **With its desire to shift away from nuclear energy, France is slowly and steadily preparing itself to adapt newer technologies and eventually move towards renewables. However, this transition requires a clear road map with a clear plan on the systematic closure of its nuclear capacity.** Without these, it might take several years (beyond the target dates) for the Energy Transition law to get implemented.

#### Renewables are expanding far faster than nuclear

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

China in particular has become the global leader for new capacity in both nuclear and wind power. Forty percent of all reactors under construction are **in China**. The extent to which both technologies are expected to grow is unparalleled, although **the installed capacity for wind power**, at roughly 45 GW, **is currently more than four times that for nuclear** (roughly 10 GW).23 (See Figure 14.) Even with a 3–4 times lower load factor, **wind is likely to produce more electricity in China in 2011 than nuclear. China’s wind power growth is so dramatic that the country must continually raise its production targets, as they are repeatedly being met prematurely**.24 China is not only a major implementer of wind technologies, but a global player in related manufacturing. **In India**, meanwhile, **wind generation outpaced nuclear power already in 2009**, according to data from the U.S. Department of Energy.25 **In the United States**, no new nuclear capacity has been added since the Watts Bar-2 reactor in Tennessee was commissioned in 1996, after 23 years of construction. Meanwhile, **the share of renewables in newly added U.S. electricity capacity jumped from 2 percent in 2004 to 55 percent in 2009**.26 And although Germany provisionally shut down seven of its reactors after the Fukushima disaster, if the remaining 10 units generate a similar amount of electricity as they did in 2010, then in 2011 **for the first time ever renewable energy will produce more of the country’s power than nuclear.** **Four German states generated more than 40 percent of their electricity from wind turbines alone already** in 2010.27 An analysis by the European Wind Energy Association (EWEA) shows that **while** **more than 100 GW of wind and solar were added to the EU power grid between 2000 and 2010, nuclear generation declined by 7.6 GW**, **joining the rapidly declining trend of coal- and oil-fired power plants**. (See Figure 15.)

### Nat Gas

#### Natural gas is the most competitive energy in the U.S.

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

U.S. Republican lawmakers who back nuclear power do not appear to be about to give up the struggle because of events in Japan. Even though his state is a known earthquake-prone region, Congressman Devin Nunes of California has proposed a comprehensive energy bill that calls for 200 new nuclear power plants nationwide by 2040 and thinks the events at Fukushima will “make the case for nuclear power in the long run.”62 **Christine Tezak, an energy analyst with Robert W. Baird and Co. is skeptical, noting** that there will be a “further re-examination of future nuclear construction plans in the United States” and **that “inexpensive natural gas in the United States has made it difficult to move forward with nuclear projects**.”63 **John Rowe, CEO of Exelon, the largest U.S. nuclear plant operator, agrees that “new nuclear plants are not economic investments with today’s natural gas forecasts.”**64

### Wind Shift

#### Investment in wind spikes post-plan, empirics

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Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

There could hardly be a more symbolic picture for the tête-a-tête of renewables and nuclear power than **the March 2011 earthquake and tsunami in Japan.** The disaster **shut down 11 of the country’s nuclear reactors,** at least six of which are now condemned, **but the Japanese Wind Power Association stated, “there has been no wind facility damage** reported by any association member, from either the earthquake or the tsunami.”1 **Within three weeks of the disaster, Fukushima operator TEPCO, one of the five largest electricity utilities in the world, lost more than three-quarters of its share value, while the Japan Wind Development Company nearly doubled its stock price**.

### Wind Cheaper Than Nuclear

#### Wind produces the same amount of energy for 40 times less money than nuclear

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

When evaluating the role of nuclear power in the global energy mix, **it is important to consider the types of support that nuclear receives compared with other technologies.** Proponents of new energy technologies argue that direct government support is needed to enable these to compete with established technologies. **Nuclear power has been in commercial operation for more than 50 years, yet it continues to receive large direct and indirect subsidies**, in part **because electricity prices fail to reflect the full environmental costs, and because of government guarantees for the final storage or disposal of radioactive waste.**8 In the United States, **even though nuclear and wind technologies produced a comparable amount of energy during their first 15 years** (2.6 billion kWh for nuclear M. Schneider, A. Froggatt, S. Thomas World Nuclear Industry Status Report 2010-2011 36 versus 1.9 billion kWh for wind), **the subsidy to nuclear outweighed that to wind by a factor of over 40** ($39.4 billion versus $900 million).9

### Solar Cheaper Than Nuclear

#### PV is cheaper than nuclear now

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Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

Despite the disproportionately lower support historically, some **analysts consider solar photovoltaic (PV) energy to be competitive with nuclear** new-build projects under current real-term prices. The late **John O. Blackburn of Duke University calculated a “historic crossover” of solar and nuclear costs in 2010 in the U.S. state of North Carolina. Whereas “commercial-scale solar developers are already offering utilities electricity at 14 cents or less per kWh,” Blackburn estimated that a new nuclear plant** (none of which is even under construction) **would deliver power for 14–18 cents per kWh**.11 (See Figure 12 above.) **Solar electricity is currently supported through tax benefits but is “fully expected to be cost-competitive without subsidies within a decade**,” he noted.12

## AFF—A2 Spec



### Decommissioning

#### There’s no unique or preferable approach to decommissioning

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

Decommissioning and dismantling of nuclear facilities are the responsibility of the operator and must be conducted under license. A separate license is often required for decommissioning. The key points in decommissioning and dismantling of nuclear facilities are: **the purpose of decommissioning and dismantling is to allow the removal of some or all of the regulatory controls that apply to a nuclear site; there is no unique or preferable approach to decommissioning and dismantling of nuclear facilities;** techniques for decommissioning and dismantling are available and experience is being fed back to plant design and decommissioning plans; many nuclear facilities have been successfully decommissioned and dismantled in Germany, Belgium, France and the UK; current institutional arrangements for decommissioning and dismantling (policy, legislation and standards) a re sufficient for today‘s needs; current systems for the protection of the safety of workers, the public and the environment are satisfactory for implementation and regulation of decommissioning and dismantling; arrangements are in place for the funding of decommissioning and dismantling, but evaluation of costs requires further attention; local communities are increasingly demanding involvement in the planning for decommissioning and dismantling.

## AFF—A2 Subs DA

#### Nuclear subs create a gap in the US military—kills hegemony

Heinrich 4/14

[--Torsten, military historian from Germany, currently living in Switzerland. “Why the US Needs Conventional Submarines,” Apr 14 2016, The Diplomat] [Premier]

The U.S. Armed Forces operate a wide array of sophisticated weaponry, in many cases superior to anything else in the world. But while the new destroyers, carriers, or the F-22 might have no equal, the U.S. Armed Forces face a significant gap in their capabilities: the total lack of any conventional submarines. The United States hasn’t produced any conventional submarines since the Barbel-class in the late 1950s; every submarine class since then has been nuclear powered. This might have made sense in the context of the Cold War, where Soviet nuclear-powered ballistic missile submarines had to be shadowed, but times have changed. While previously conventional submarines had to snorkel roughly at least every two days of time under water to recharge their batteries, air-independent propulsion (AIP) has changed the game. German Type 212 submarines can stay under water without snorkeling for up to three weeks, traveling 1,500 miles (2,400 kilometers) or more. Without emitting heat and with no need for constant cooling due to the lack of a nuclear reactor, these German submarines and comparable designs are more than a match for nuclear-powered submarines in terms of stealthiness. Enjoying this article? Click here to subscribe for full access. Just $5 a month. Whereas the Soviet Union had submarines cruising the globe’s waters, the next big naval challenge for the United States isn’t a revitalized Russian navy, but the People’s Liberation Army Navy’s subs and ships lurking in the South China Sea and East China Sea. These submarines could play a key role in trying to enforce China’s A2/AD (anti-access/area denial) strategy against a superior USN, with the goal of preventing the United States from intervening in any conflict involving the Spratly Islands, the Paracel Islands, the Senkaku Islands, and Taiwan. With the PLAN’s mostly conventional submarine force, the USN’s superior anti-submarine warfare capabilities will continue to severely hinder any Chinese submarine operations outside the first island chain and outside of China’s land-based air cover. This limits the theater of operations to a high degree and puts it well into range for conventional submarines using only their AIP based in Okinawa, Singapore, Subic Bay, Guam, or possibly Zuoying Naval Base on Taiwan. Whereas China can and will create a bigger subsurface fleet than the USN by mixing conventional submarines with nuclear powered ones, the financial burden of matching hull with hull is practically impossible for the United States, at least as long as it limits the USN to SSNs. Conventional submarines might change this. While one Virginia-class submarine costs roughly $2.7 billion per unit, the same money could buy six to seven conventional submarines of the German Type 212 class. While U.S. nuclear-attack submarines are superb, many examples have shown that sophisticated conventional submarines aren’t just a match for surface fleets but also for older SSNs under the right circumstances. In case of a conflict with China, the majority of naval combat will happen well within the first island chain, where a purely nuclear-powered fleet seems like a waste of assets. Neither their range nor their speed will be needed in most cases. As conventional submarines will be able to handle most tasks, the dramatically more expensive SSNs could stay out of the first island chain concentration on shadowing the PLAN’s SSBNs and SSNs outside this area, while keeping enough in reserve and out of harm’s way to maintain a credible deterrence against Russia at the same time. Additional conventional subs would also prevent the projected sub shortfall starting in 2021. But going back into the business of building conventional submarines for the USN wouldn’t just make sense from an fiscal point of view for a navy that has limited resources. It would also offer various economic and political options for the United States. President George W. Bush promised Taiwan eight conventional subs in 2001, which were never delivered. If the United States were to start building conventional submarines again, the pledge to Taiwan could finally be fulfilled. Moreover, the market for conventional submarines is gigantic. Most Asian nations are looking to establish, increase, or modernize their submarine fleets; Germany and France have both enjoyed particular success marketing their submarines to countries like South Korea, Indonesia, India, and Malaysia. Many of these nations are close U.S. allies or friends. The market for modern conventional submarines built in the United States would probably amount to several dozen hulls within the next two decades. Built in the U.S., employing U.S. workers, and spreading the development costs over ever more hulls, Washington could seriously consider subsidizing some of those submarines for navies which are direly in need for a naval deterrence against an ever more aggressive China. If the United States doesn’t want to hand Asia over to China on China’s terms, a price might have to be paid in the end. It’ll be either money or blood. Subsidized submarines for the Philippines and Taiwan might just be what it takes to show the steadfast commitment for the status quo and the support for those two nations, which are under heavy pressure from the Middle Kingdom. Conventional submarines with AIP wouldn’t just bolster the USN’s capabilities in this crucial theater for a comparative bargain, they would also allow the U.S. to enter a sizable weapons market while giving it the power to supply precious allies with exactly those tools they need for deterrence. The technology transfer necessary for building subs like the Type 212 could very easily be attained by a joint venture or even licensing the German subs from a company desperately looking for sales like Howaldwerke-Deutsche Werft (HDW).

#### Turn—US presence in the SCS causes accidents

Broder 6/22

[--writes about defense and foreign policy for Newsweek from Washington. He's been covering national security issues for more than two decades, including 12 years as a writer and senior editor at Congressional Quarterly. Before moving to Washington, Broder spent 20 years as an award-winning foreign correspondent in the Middle East, South Asia, China and East Asia for the Chicago Tribune and the Associated Press. Broder’s writing also has appeared in The New York Times Magazine, The Washington; “The ‘Inevitable’ War Between US and China,” June 22 2016, Newsweek] [Premier]

But once that gathering is over, the dispute could become much more volatile. U.S. officials are particularly worried about a Chinese plan to send submarines armed with nuclear missiles into the South China Sea for the first time. Chinese military officials argue the submarine patrols are needed to respond to two major U.S. military moves: plans to station a defense system in South Korea that can intercept missiles fired from both North Korea and China, and the Pentagon’s development of ballistic missiles with new hypersonic warheads that can strike targets anywhere in the world in less than an hour. Taken together, Chinese military officials say, these American weapons threaten to neutralize China’s land-based nuclear arsenal, leaving Beijing no choice but to turn to its submarines to retaliate for any nuclear attack. The implications would be enormous. Until now, China’s nuclear deterrent has centered on its land-based missiles, which are kept without fuel and remain separate from their nuclear warheads. That means the country’s political leadership must give several orders before the missiles are fueled, armed and ready to launch, giving everyone time to reconsider. Nuclear missiles on a submarine are always armed and ready. U.S. and Chinese warships operate in uncomfortably close proximity in the South China Sea. Add submarine operations to the mix, and the chances of an accident multiply despite protocols meant to minimize the risk of collisions. Submarines are stealthy vessels, and China is unlikely to provide their locations to the Americans. That means the U.S. Navy will send more spy ships into the South China Sea in an effort to track the subs. “With the U.S. Navy sailing more and more in the area, there’s a high possibility there will be an accident,” says a high-ranking Chinese officer, who spoke anonymously to address sensitive security issues. War between a rising China and a ruling U.S. isn’t inevitable—provided each side is prepared to make painful adjustments. Xi said as much during his visit to the United States last fall. But in a warning to Americans (which could apply to China’s fighter pilots as well), he added: “Should major countries time and again make the mistakes of strategic miscalculation, they could create such traps for themselves."

#### Can’t threaten US supremacy

Mizokami 15

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At the same time, potential adversaries China and Russia have pushed on with a new generation of conventional weapons suitable for so-called "big wars," with almost monthly announcements of new fighters, surface ships, bombers, and tanks. After 14 years of guerrilla warfare, the question is: Is the United States in danger of losing its commanding "big war" technological edge? While the U.S. government, Pentagon, and industry have been fixated on Iraq and Afghanistan, Russia and the People's Republic of China have not stood still. A growing economy in both countries and a desire to provide an alternative to American hegemony prompted both to invest in a generation of new weapons. Progress has been rapid, and over the past five years the People's Republic of China and Russia have announced one new weapon system after another. China has acquired its first aircraft carrier and is developing a new heavy airlifter, two fifth generation stealth fighters, new destroyers, frigates, corvettes, and submarines. Russia is developing the PAK-FA fifth generation fighter and the "Armata" family of heavy combat vehicles, including a brand-new tank. A new Russian nuclear submarine, armed with strategic nuclear weapons, has taken up residence with the Russian Pacific Fleet. Despite this new foreign arsenal, all is not as it seems. In July 2013, as fighter planes took off and landed from a Chinese aircraft carrier for the first time. At the same time, half a world away the United States Navy was doing the exact same thing…except the plane wasn't manned. The experimental X-47B Unmanned Combat Air Vehicle performed flawless takeoff and landing tests on the carrier USS Theodore Roosevelt. China has built up a fleet of unmanned planes, but is nowhere close to the sophistication necessary to operating a drone from an aircraft carrier. Russia is even farther behind, with its drone program lagging considerably. The United States has also made great strides in directed energy weapons. The U.S. Navy's first laser weapon, LaWS, deployed in 2014 to the Persian Gulf. The Pentagon is now looking into adding lasers to the F-35 Joint Strike Fighter, AC-130 gunship, and Army ground vehicles. Next year, the Navy will take its new railgun to sea. Powered by electricity, the railgun can reportedly hurl a 23-pound projectile at speeds exceeding Mach 7 to ranges of up to 100 miles. Meanwhile, there is little to no news of comparable progress on directed energy weapons from China and Russia. In the skies, the United States has a decisive lead in fifth generation aircraft. The F-22 Raptor air superiority fighter has been in service since 2005. A second design, the F-35 Joint Strike Fighter has had a troubled history but appears to have solved most technical problems, with all three versions set to be operational by 2020. Meanwhile in China, the Chengdu J-20 "Soaring Dragon" and J-31 "Gyrfalcon" are still in development, thanks to the Chinese aviation industry's uneven technological progress. In Russia, the PAK-FA fifth generation fighter has been beset by technical problems. None of the three planes have firm delivery dates. Finally, Russia recently moved the Yuri Dolgorukiy, a brand-new ballistic missile submarine, to its new home with the Russian Pacific Fleet. Displacing 14,500 tons and armed with 20 Bulava ballistic missiles, Yuri Dolgorukiy could singlehandedly devastate the U.S. West Coast with nuclear weapons. At the same time, China has deployed four submarines of the Jin class. As important as both of these programs are — providing a key retaliatory capability for both countries — both classes of submarine have had serious shortcomings. The Bulava missile failed in nine out of 23 test launches, a seemingly inconceivable problem for a country like Russia with so much experience with rockets. The Jin class is noisy, a very undesirable trait for a submarine, and the U.S. Department of Naval Intelligence recently rated the Jin subs as noisier than Soviet submarines produced 40 years ago.

## AFF – A2 Warming DA

#### Nuclear power can’t solve warming – it would require one reactor a week for 52 years

Caldicott 6 [Helen; Founder and President of the Nuclear Policy Research Institute; “Nuclear Power is not the answer”; [Premier]

Setting aside the energetic costs of the whole fuel cycle, and look­ing just at the Nuclear Industry's claim that what transpires in the nuclear plants is "clean and green," the following conditions would have to be met for nuclear power actually to make the substantial contribution to reducing greenhouse gas emissions that the indus­try claims is possible (this analysis assumes 2% or more growth in global electricity demand): •All present-day nuclear power plants-441-would have to be replaced by new ones. •Half the electricity growth would have to be provided by nuclear power. •Half of all the world's coal fired plants would have to be re­placed by nuclear power plants.28 This would mean the construction over the next fifty years of some 2,000 to 3,000 nuclear reactors of 1,000 megawatt size-one per week for fifty years! Considering the eight to ten years it takes to construct a new reactor and the finite supply of uranium fuel, such an enterprise is simply not viable.

#### Nuclear power plant construction and uranium mining emits as much carbon as a natural gas plant.

Sovacool, 07[Benjamin; Senior Research Fellow for the Virginia Center for Coal and Energy Research and professor of Government and International Affairs at Virginia Tech; “What's Really Wrong With Nuclear Power?”; 11/30; <http://scitizen.com/stories/Future-Energies/2007/11/What-s-Really-Wrong-With-Nuclear-Power/>; [Premier]

Third and finally, nuclear power plants are not carbon neutral. The Oxford Research Group concludes that the nuclear fuel cycle is responsible for emitting 84 to 122 grams of carbon dioxide per every kWh, mostly from uranium mining, plant construction, and plant decommissioning. The report also notes that these emissions are around half of that as natural gas plants (so we are talking about some serious carbon). In addition, the International Atomic Energy Agency notes that uranium is getting harder to mine, meaning that the carbon emissions related to nuclear will get worse as more uranium gets depleted, not better. This is because mining uranium ores of relatively low grades and greater depth is much more energy intensive. If world nuclear generating share remains what it is today, the Oxford Research Group concludes that by 2050 nuclear power would generate as much carbion dioxide per kWh as a comparable gas-fired power station.

#### Nuclear power produces no net energy—the difficulty of uranium extraction means CO2 emissions are the same

Caldicott 6 [Helen; Founder and President of the Nuclear Policy Research Institute; “Nuclear Power is not the answer”; [Premier]

While currently the creation of nuclear electricity emits only one-third the amount of CO2 emitted from a similar-sized, conventional gas generator, this is a transitory statistic. Over several decades, as the concentration of available uranium ore declines, more fossil fuels will be required to extract the ore from less­ concentrated ore veins. Within ten to twenty years, nuclear reac­tors will produce no net energy because of the massive amounts of fossil fuel that will be necessary to mine and to enrich the remain­ing poor grades of uranium. (The nuclear power industry contends that large quantities of uranium can be obtained by .reprocessing radioactive spent fuel. However, this process is extremely expen­sive; medically dangerous for nuclear workers, and releases large amounts of radioactive material into the air and water; it is there­fore not a pragmatic consideration.) By extension, the operation of nuclear power plants will then produce exactly the same amounts of greenhouse gases and air pollution as standard power plants. Contrary to the nuclear industry claims, smoothly running nuclear power plants are also not emission free. Government regula­tions allow nuclear plants "routinely" to emit hundreds of thousands of curies of radioactive gases and other radioactive elements into the environment every year.

#### **Carbon pricing solves warming anyway-no impact**

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. [Premier]

Carbon pricing remains the central pillar of any low-carbon policy. Whether as a carbon trading scheme, carbon tax or as a mandate on utilities to use low-carbon sources, incentives for investing in low-carbon energy are needed to help accelerate the deployment of nuclear energy. In the absence of a sufficiently high carbon price that reflects the externalities of fossil-fuelled generation, governments will have to continue providing policy solutions that improve the net present value of low-carbon investments and mitigate the market risks for project developers and financial investors.

#### The use of nuclear plants for energy have offset some carbon emissions

Turkenberg 03 [William C. Turkenberg, professor STS, Copernicus Institute, Utrecht University, “Nuclear Energy and Sustainable Development,” International Conference held in Vienna, organized by the International Atomic Energy Agency, June 23, 2003] [Premier]

One of the major issues to be solved to achieve a sustainable development of economic, social and ecological systems is the threat of a severe climate change within a short period caused by human behavior. The emission of greenhouse gases, especially CO2, due to the manner in which we fulfill our demand for energy services, is the major cause. Nuclear energy provides about 16% of the amount of electricity produced globally. It contributes about 7% of the global primary energy demand (29 EJ of 418 EJ in total in 2001). In the year 2001 about 440 nuclear power plants, operating in thirty-one different countries, had a total installed capacity of nearly 360 GWe and generated about 2500 TWh electricity [1]. Almost four-fifths of these power plants are of the Light-Water type. The short-term prospect for nuclear power is opaque. There is no strong increase in installed nuclear capacity at present. Although the annual additions in installed capacity arrived at peak values of about 30,000 MWe in the mid eighties, this figure decreased to some thousand MWe in the nineties. In fact, new nuclear power plants are not built fast enough to maintain nuclear power’s 16% share of global electricity generation [1], as the annual increase of the nuclear output with about two and a half percent a year is less than the three to four percent growth rate of the world’s electricity consumption. Most analysts project that nuclear energy’s contribution to the global energy budget will not grow and may even decline during the initial decades of the 21st century. Without nuclear energy, the present global emissions of CO2 due to our energy consumption would have been about 7% higher, depending on the fossil fuel use that is replaced. For nuclear energy to make a significant contribution to coping with climate change, nuclear capacity must be increased by at least an order of magnitude. Technically, this is feasible, as nuclear energy could contribute 200 EJ or more per year to the world energy consumption in the second half of the 21st century [3, 7, 8]. Further application of nuclear energy could contribute not only to the reduction of greenhouse gas emissions, but also to a decreased emission of other pollutants like sulfur dioxide, nitrous oxide, small particulates and volatile organic compounds. It would also help to limit the dependence on fossil fuels, to meet security of supply concerns, and to guard against potentially escalating fossil fuel prices.

## AFF—Accidents

#### **Uranium mining disproportionately effects indigenous communities.**

PSR 16 ["Dirty, Dangerous And Expensive: The Truth About Nuclear Power". 2016.Psr.Org. Accessed August 8 2016. http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html?referrer=https://www.google.com/][Premier]

Uranium, which must be removed from the ground, is used to fuel nuclear reactors.  Uranium mining, which creates serious health and environmental problems, has disproportionately impacted indigenous people because much of the world’s uranium is located under indigenous land.  Uranium miners experience higher rates of lung cancer, tuberculosis and other respiratory diseases. The production of 1,000 tons of uranium fuel generates approximately 100,000 tons of radioactive tailings and nearly one million gallons of liquid waste containing heavy metals and arsenic in addition to radioactivity.([3](http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html#3))  These uranium tailings have contaminated rivers and lakes. A new method of uranium mining, known as in-situ leaching, does not produce tailings but it does threaten contamination of groundwater water supplies.

#### Probability of high impact accident now unacceptable

Verbruggen 08 [Aviel Verbruggen, Full professor at the University of Antwerp, Energy & Environmental Economist, "Renewable and nuclear power: A common future?" Energy Policy 36, 2008, 4036–4047] [Premier]

As in the case of climate change, there is evidence about the convex growth of the externality costs even when uncertainty about numbers cannot be resolved. Fig. 4 shows two curves that grow steeply with the expansion of nuclear installations and the number of sites. The bottom curve expresses the likelihood of major nuclear accidents when more and more countries would engage in nuclear activities and the number of installations grows. The probability that somewhere a major accident occurs is increasing faster than linearly, also because less-acquainted countries will enter the nuclear area. The damage costs follow a steeper pattern because of the collateral damage triggered by a single accident on the other nuclear activities. Combining the two factors (probability and consequences) into a single risk measure (Covello and Merkhofer, 1993), and applying the standards of risk acceptability, the combination of a nonnegligible and growing likelihood with the immeasurable high damages of a major nuclear accident or nuclear warfare, will conclude that nuclear power falls into the non-acceptable domain of human enterprising. While the impacts of nuclear technologies, their failures and abuses, can have devastating consequences of similar size and irreversibility as climate change impacts, there are important differences between both challenges that make public understanding and policy reactions different. Carbon emission sources are continuous and numerous, globally spread and controlled by billions of decision-makers. Also the various effects are building up continuously, globally spread and fall—although unevenly—yet on all people on earth. Nuclear technologies and sources are concentrated and controlled by a few (and for security and safety reasons the few should become fewer and preferably zero), and the most harmful effects are punctual in time with effects spreading unpredictably from the point of impact (accidents, nuclear bombs). Risk assessment of the nuclear option is more extreme than risk assessment of climate change damages. The probabilities of particular events are smaller but the consequences of one single event are more catastrophic. One can learn from accidents, nearaccidents and incidents that happened and continue to happen. Although the learning processes are not well structured and characterized by opposite interpretations (nuclear advocates versus nuclear critics), a majority of the public evaluates nuclear risks higher than the benefits delivered by the power output of nuclear plants (Turkenburg, 2004; Eurobarometer, 2007). Nuclear advocates call this attitude ‘barriers’ of public acceptance (IEA, 2006a, p. 134) and the nuclear sector invested and invests lots of money to convince the public and politicians to change their mind and balloting

#### Nuclear power is dangerous despite low probability and current regs are not enough

Lucas 12 [Caroline Lucas, MP for Brighton Pavilion and a member of the cross-party parliamentary environment audit committee, “Why we must phase out nuclear power,” The Guardian, February 17, 2012, <https://www.theguardian.com/environment/2012/feb/17/phase-out-nuclear-power>] [Premier]

Fukushima, like Chernobyl 25 years before it, has shown us that while the likelihood of a nuclear disaster occurring may be low, the potential impact is enormous. The inherent risk in the use of nuclear energy, as well as the related proliferation of nuclear technologies, can and does have disastrous consequences. The only certain way to eliminate this potentially devastating risk is to phase out nuclear power altogether. Some countries appear to have learnt this lesson. In Germany, the government changed course in the aftermath of Fukushima and decided to go ahead with a previously agreed phase out of nuclear power. Many scenarios now foresee Germany sourcing 100% of its power needs from renewables by 2030. Meanwhile Italian citizens voted against plans to go nuclear with a 90% majority. The same is not yet true in Japan. Although only three out of its 54 nuclear reactors are online and generating power, while the Japanese authorities conduct "stress tests", the government hopes to reopen almost all of these and prolong the working life of a number of its ageing reactors by to up to 60 years. The Japanese public have made their opposition clear however. Opinion polls consistently show a strong majority of the population is now against nuclear power. Local grassroots movements opposing nuclear power have been springing up across Japan. Mayors and governors in fear of losing their power tend to follow the majority of their citizens. The European level response has been to undertake stress tests on nuclear reactors across the union. However, these stress tests appear to be little more than a PR exercise to encourage public acceptance in order to allow the nuclear industry to continue with business as usual. The tests fail to assess the full risks of nuclear power, ignoring crucial factors such as fires, human failures, degradation of essential infrastructure or the impact of an airplane crash.

### Fish

#### Fisheries are coming back, but nuclear spillage from Fukushima contaminates the whole food chain

Buesseler 12

Ken O. Buesseler, Senior Scientist @ Woods Hole Oceanographic Institution w/ PhD in Marine Chemistry from MIT, “Fishing for Answers” <https://darchive.mblwhoilibrary.org/bitstream/handle/1912/5816/Buesseler%20Perspecitves%20Fukushima%20Fish%20final%20revised.pdf?sequence=1&isAllowed=y> [Premier]

However, **the fact that many fish are just as contaminated today with cesium-134 and -137 as more than one year ago remains troubling and provides the best evidence that cesium is still being released to the food chain. The Japanese government is using these** MAFF **results to keep fisheries closed off Fukushima** and to closely monitor neighboring areas where levels are approaching the regulatory limits. These patterns of contamination and trends over time for different species need to be communicated to the media and the public in order to put these risks in context. But, studies of cesium in fish are not enough. An understanding of sources and sinks of cesium and other radionuclides is also needed to predict long-term trends in fish and other seafood. Such knowledge would support smarter, **more targeted decision making,** lessen public concern about seafood, and potenti**ally help revive these important fisheries safely**, with confidence, and in a timely manner.

## AFF—Cap



### Harms

#### Nuclear power will continue the problem of energy over consumption and will not come cheap

Verbruggen 08 [Aviel Verbruggen, Full professor at the University of Antwerp, Energy & Environmental Economist, "Renewable and nuclear power: A common future?" Energy Policy 36, 2008, 4036–4047] [Premier]

The myths of nuclear power as cheap and abundant (first wave), as solution for the oil crisis (second wave), as salvation against climate change (third wave, brought in position today), do not stand the test of reality and of the sustainability criteria (Table 2). On the diagnosis of the life-support system crisis, occasioned mainly by the over-use of commercial energy sources, nuclear and efficiency/renewable power diverge in opinion. As a corollary, their basic prescriptions/remedies for the obese energy patient diverge: nuclear power expansion is the continuation/extension of supplying overdoses, while efficiency/renewable power is the remedy for past and present obesity by a healthy diet with an adapted programme of exercising. I miss the imagination to see what the goal and meaning can be of combining fat and sugar bulk food with a cure of healthy dieting. When such combining takes place, the effects are mostly clear: obesity overcrowds health, because the former is bulky and uncontrolled and the latter requires understanding, self-control and permanent monitoring. The bulky approach of the past is not fitted to develop the slim and lean solutions of the future, efficiency and renewable energy need. Although nuclear power is advertised as cheap, IEA identifies as the second barrier nuclear plans face, following public acceptance, that ‘investment costs based on current technology (including working capital during the construction period, waste treatment and decommissioning) are high’ (IEA, 2006a, p. 134). ‘Capital cost reduction can be achieved through improved construction methods, reduced construction time, design improvement, standardization, building multiple units on the same site and improving project management’ (IEA, 2006a, p. 242). ‘Serial production (red.: of the Gen III+1700 MW plants) may enable further cost reductions’ (IEA, 2006a, p. 134). ‘‘Large scale, serial production, multiple units on the same site’’ were the success factors of the French nuclear programme of the 1970–1980s that finally jammed in the overcapacity of the 1990s. Every success factor also implies its own risk: the loss of a single large-scale unit is a high loss, serial production often is beset by serial faults and multiple units on the same site can cause domino effects (see the loss of the four units at Chernobyl). But it is not our task to think in nuclear logic. Our point is that this expansive approach is contradictory to the essential attributes the new energy policy must adopt: lean, efficient, flexible and adaptive. The over-supply of commercial energy during the last decades has turned our economies and societies in energy-addicted, obese patients. It has put our development on a non-sustainable track with looming climate change and nuclear risks at the horizon. Continuing this ‘‘business-as-usual’’ is a one-way ticket to catastrophe.

#### Nuclear power results in higher energy prices-screws the poor

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. [Premier]

The United States has the largest nuclear fleet of any country in the world. The first new build projects in more than 30 years are currently underway at the VC Summer and Vogtle sites in Georgia and South Carolina (each with two Gen III AP1000 units), with the first unit expected to be operating by the end of 2017. All new build projects in the country have been limited to regulated electricity markets, which are more favourable in terms of providing a stable long-term policy framework for capital-intensive projects such as nuclear, for they **allow utilities to pass construction costs on to customers through rate adjustments.**

## AFF—Colonialism

#### The global move to nuclear power puts developing countries at risk – there’s a double standard where only developed nations have the best safety standards

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**The UAE project also raises serious safety issues.** In 2010, AREVA’s Lauvergeon told a French National Assembly Committee **that “the outcome of the UAE bid poses fundamental questions about the nature of the world nuclear market and the level of safety requirements for reactors that will still be operating in 2050 or 2070.”** She raised **the specter of “a nuclear [market] at two speeds”: a high-tech, high-safety mode for developed countries and a lower-safety mode for emerging countries. “The most stringent safety standards are in the U.S. and Europe,”** Lauvergeon said**. “In Europe we couldn’t construct the Korean reactor. Are American and European safety standards going to become international standards, or not?”**4 **The negotiating of nuclear orders at a political level is also troubling.** The UAE order was placed before the country had a functioning safety regulator, meaning that **politicians effectively have decided that the Korean design will be licensable.** Meanwhile, if South Africa decides to buy a Chinese or Korean reactor, what will the South African regulatory body do if it is not comfortable with licensing reactors that fall well below the standards required in Europe? If the Fukushima accident does reveal significant inadequacies in earlier designs, however, the renewed interest in older designs may well prove short-lived.

## AFF—Econ

#### Nuclear power will continue the problem of energy over consumption and will not come cheap

Verbruggen 08 [Aviel Verbruggen, Full professor at the University of Antwerp, Energy & Environmental Economist, "Renewable and nuclear power: A common future?" Energy Policy 36, 2008, 4036–4047] [Premier]

The myths of nuclear power as cheap and abundant (first wave), as solution for the oil crisis (second wave), as salvation against climate change (third wave, brought in position today), do not stand the test of reality and of the sustainability criteria (Table 2). On the diagnosis of the life-support system crisis, occasioned mainly by the over-use of commercial energy sources, nuclear and efficiency/renewable power diverge in opinion. As a corollary, their basic prescriptions/remedies for the obese energy patient diverge: nuclear power expansion is the continuation/extension of supplying overdoses, while efficiency/renewable power is the remedy for past and present obesity by a healthy diet with an adapted programme of exercising. I miss the imagination to see what the goal and meaning can be of combining fat and sugar bulk food with a cure of healthy dieting. When such combining takes place, the effects are mostly clear: obesity overcrowds health, because the former is bulky and uncontrolled and the latter requires understanding, self-control and permanent monitoring. The bulky approach of the past is not fitted to develop the slim and lean solutions of the future, efficiency and renewable energy need. Although nuclear power is advertised as cheap, IEA identifies as the second barrier nuclear plans face, following public acceptance, that ‘investment costs based on current technology (including working capital during the construction period, waste treatment and decommissioning) are high’ (IEA, 2006a, p. 134). ‘Capital cost reduction can be achieved through improved construction methods, reduced construction time, design improvement, standardization, building multiple units on the same site and improving project management’ (IEA, 2006a, p. 242). ‘Serial production (red.: of the Gen III+1700 MW plants) may enable further cost reductions’ (IEA, 2006a, p. 134). ‘‘Large scale, serial production, multiple units on the same site’’ were the success factors of the French nuclear programme of the 1970–1980s that finally jammed in the overcapacity of the 1990s. Every success factor also implies its own risk: the loss of a single large-scale unit is a high loss, serial production often is beset by serial faults and multiple units on the same site can cause domino effects (see the loss of the four units at Chernobyl). But it is not our task to think in nuclear logic. Our point is that this expansive approach is contradictory to the essential attributes the new energy policy must adopt: lean, efficient, flexible and adaptive. The over-supply of commercial energy during the last decades has turned our economies and societies in energy-addicted, obese patients. It has put our development on a non-sustainable track with looming climate change and nuclear risks at the horizon. Continuing this ‘‘business-as-usual’’ is a one-way ticket to catastrophe.

#### Also economically costly

Lucas 12 [Caroline Lucas, MP for Brighton Pavilion and a member of the cross-party parliamentary environment audit committee, “Why we must phase out nuclear power,” The Guardian, February 17, 2012, <https://www.theguardian.com/environment/2012/feb/17/phase-out-nuclear-power>] [Premier]

Fukushima showed us that nuclear remains a high risk technology. But what is also clear is that nuclear fails to make the grade even in economic terms. As we have seen with the two new nuclear reactors under construction in Europe, the already prohibitive upfront constructions costs have been grossly underestimated. The EPR reactors under construction in Finland and France are both around 100% over budget, with the end date for construction being constantly postponed. The hidden costs of nuclear - such as waste disposal, insurance and decommissioning - are also huge, and it is the public that ends up footing the bill. Surely it makes more sense to invest billions of pounds in genuinely sustainable and low risk technologies? One year on from Fukushima, we should not wait for another disaster to finally convince us to give up on nuclear power.

### Bad Investments

#### Nuke power investments are a disaster

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

The main problems faced by the US nuclear industry related with the construction of new nuclear power reactors could be summarized in the following manner: **Economic, problems in construction and opposition to them, which led to increased construction times and subsequently increased construction costs. Many utilities went bankrupt over nuclear power projects. The estimated cost of building a nuclear power plant rose from less than US$400 million in the 1970s to around US$4,000 million by the 1990s, while construction times doubled** from 1970s to 1980s. **These facts led the US business magazine Forbes in 1985 to describe the indust ry as ―the largest managerial disaster in US business history, involving US$100 billion in wasted investments and cost overruns**, exceeded in magnitude only by the Vietnam War and the then Savings and Loan crisis‖. ( Schneider and Froggatt, 2007)

## AFF—Generic

#### **Laundry list of harms from nuclear power**

Martin 7 [Brian; Honorary professorial fellow at the University of Wollongong, Australia; "Opposing Nuclear Power: Past And Present"; 2016. Bmartin.Cc. Accessed August 8 2016. http://www.bmartin.cc/pubs/07sa.html] [Premier]

Nuclear accidents: the core of a nuclear power plant could overheat and melt down, releasing massive amounts of radioactivity. Waste disposal: nuclear power results in large amounts of radioactive waste, some of which remains dangerous for hundreds of thousands of years. Nuclear proliferation: the facilities and expertise to produce nuclear power can be readily adapted to produce nuclear weapons. Cost: nuclear power is very expensive. Nuclear terrorism: nuclear facilities could be targeted by terrorists or criminals. Civil liberties: the risk of nuclear accidents, proliferation and terrorism may be used to justify restraints on citizen rights. Uranium mining: much uranium is found on indigenous land. Alternatives: energy efficiency and renewable energy sources provide a viable alternative to nuclear power.

#### **Most countries are not ready to develop nuclear power.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

The final reason for the lack of success may lie in the fundamental limitations to conceive and implement an energy security strategy by a single nation-state acting alone. It is quite obvious that small economies are rarely, if ever, able to implement energy system transformations on their own, since they simply do not possess the necessary financial, technological, and human resources. For example, a study shows that launching a national nuclear power program relying on their own resources may be out of reach for at least 28 of the 52 countries that expressed an interest in nuclear energy based on their energy security imperatives (Jewell, 2011).

#### Laundry List of disadvantages to nuclear power

CND [Campaign for Nuclear Disarmament; “No to Nuclear Power”; <http://www.cnduk.org/campaigns/nuclear-power>; [Premier]

Nuclear power is not carbon emission free. The whole nuclear cycle from uranium mining onwards produces more greenhouse gases than most renewable energy sources with up to 50% more emissions than wind power. Even if we doubled nuclear power in the UK it would only reduce greenhouse gas emissions by 8%. This is because nuclear power only contributes to electricity generation which only accounts for up to a third of all carbon emissions (transport and industry account for most of the rest).

Climate change is happening now. A new nuclear power station will take at least 10 years to build and longer to generate electricity. Wind farms can be up and running in less than a year.

It’s expensive. The nuclear industry is massively subsidised by the British public. Sizewell B, the UK’s most recent power station cost the taxpayer around £3.7billion just to install Decommissioning and cleaning up all of our current nuclear sites is costing more than £70 billion.

It’s not sustainable. The reserves of uranium ores used to generate nuclear power are going to run out. There is only 50 years worth of high uranium ores left in the world. There may be only 200 years left of all uranium ores including poor uranium ores which take more energy to mine and process and thus release more carbon emissions.

Nuclear power threatens the environment and people’s health. It produces enormous amounts of carcinogenic toxic radioactive waste, some of which is dangerous for thousands of years. No safe solution has yet been devised to store it. In particular, there is evidence of cancer clusters linked to nuclear power production. Building new nuclear power stations would increase the most toxic high level waste five-fold. Read CND's summary of the German government-commissioned research that shows increases in cancer in children under five living near nuclear power stations.

Uranium mining kills. Uranium mining is the first step in the nuclear power cycle; it has taken the lives of many miners all over the world causing environmental contamination, cancers and nuclear waste.

Nuclear accidents. The risk of terrible nuclear accidents like Chernobyl, Three Mile Island and Windscale (Sellafield) will plague a new generation of power stations as it did the first. Read more about these accidents.

A terrorist target. Nuclear power carries with it the risk of nuclear terrorism. In this age of uncertainty, dirty bombs and attacks on power stations are a terrifying threat.

The proliferation of nuclear weapons is inextricably linked to nuclear power by a shared need for enriched uranium, and through the generation of plutonium as a by-product of spent nuclear fuel. The two industries have been linked since the very beginning and a nuclear weapons free world requires a non-nuclear energy policy.

#### 5 internal warrants to reject nuclear power as an alternative to fossil fuels

Verbruggen 08 [Aviel Verbruggen, Full professor at the University of Antwerp, Energy & Environmental Economist, "Renewable and nuclear power: A common future?" Energy Policy 36, 2008, 4036–4047] [Premier]

For realizing a low carbon electricity supply, there are not a thousand options. Only two antagonists are now in the ring: nuclear power and the twin efficiency/renewable power. What could be the ultimate backstop power generation technology? First the ‘unlimited source’ aspect of the backstop supply technology has to be extended with the criteria of sustainability (WCED, 1987). On the sustainability balance, the performance of nuclear power weighs very light (Table 2), contrary to efficiency/ renewable power technologies (Table 3). Therefore it is quite rational that a large majority of the population prefers the latter above the former (Eurobarometer, 2007). For getting a third chance for nuclear power, its advocates want to arrange a marriage with the renewable energy sector. There are five arguments as to why the efficiency/renewable power option should reject the nuclear advances. First, nuclear power is architect of the business-as-usual that has to be changed urgently and drastically. Second, nuclear and renewable power need a very different add-on by fossil-fuelled power plants; for nuclear the add-on is bulky and expansive, and for renewable power it is distributed, flexible and contracting over time. Third, the power grids for spreading bulky nuclear outputs are of another kind than the interconnection between millions of distributed power sources requires. Fourth, the risks and externalities of nuclear power make this technology non-sustainable and therefore without a future, while efficiency/renewable power are still in their infancy. Fifth, the antagonist options also fight for RD&D resources and for production capacities. Now that the skewed distribution in favour of nuclear starts to be adjusted somewhat, it is time to stop wasting money on the expensive and dangerous water cookers that nuclear reactors are. Better to turn to the real future-oriented technologies that drive efficiency and renewable power. Summarizing, nuclear and efficiency/renewable power have no common future in safeguarding ‘‘Our Common Future’’. The nuclear technology has had two chances of unseen means in human history to prove its validity, and failed. Giving nuclear a third chance will waste the scarce RD&D resources and solidify barriers against its sustainable antagonist: electricity efficiency and renewable power technologies.

#### Nuclear resources are scarce while current energy sources are abundant and can provide energy for decades to come

Hiroaki 11 [Koide Hiroaki, Assistant Professor at the Kyoto University Research Reactor Institute, “The Truth About Nuclear Power: Japanese Nuclear Engineer Calls for Abolition,” The Asia-Pacific Journal Vol 9 Issue 31, August 8, 2011, <http://apjjf.org/2011/9/31/Satoko-Norimatsu/3582/article.html>] [Premier]

I came here today to offer my candid advice to the Japanese government and its administrators who have managed the country’s nuclear power policy to today. I entered the field of nuclear engineering with high hopes and dreams, because I believed that nuclear power was the energy source for the future. Oil and coal would be exhausted some day, but nuclear power was inexhaustible, so I thought nuclear power was the way forward. However, once I entered the field, I realized that nuclear power was actually a very poor energy source. Let me explain why. Shown in the figure above are the remaining non-renewable energy resources on this earth. The largest deposits are of coal. It is known to exist on our planet in enormous quantities. The white square indicates the total reserves. What is known to be commercially exploitable is called proven reserves, the blue part of the square. Now look at the tiny square on the top right corner of the slide. This is the world’s total annual energy consumption. The proven reserves of coal alone can provide 60 to 70 years worth of global energy demand. If we could use the total reserve of coal, it would provide 800 years’ worth of world demand. Next to that, we have reserves of natural gas, oil, and other sources that we are not really using right now, like oil shale and tar sands. I had thought that these fossil fuels would someday be exhausted and nuclear energy was the future, but in fact, the world’s reserve of uranium is only a fraction of that of oil, and a small percentage of that of coal. Uranium is actually a very scarce resource. But when I say this, people in the pro-nuclear camp say that I’m wrong. They argue that what I am talking about is only the amount of fissile uranium resource, which is limited, but by converting non-fissile uranium to plutonium, we can make nuclear energy that is recyclable.

#### Plenty of fissile material present in the world to continue energy production

Turkenberg 03 [William C. Turkenberg, professor STS, Copernicus Institute, Utrecht University, “Nuclear Energy and Sustainable Development,” International Conference held in Vienna, organized by the International Atomic Energy Agency, June 23, 2003] [Premier]

An efficient use of scarce resources is one of the characteristics of sustainable development. In addition, the need to reduce the production of waste implies that also materials should be used very efficiently. However, this should not compromise requirements formulated with respect to safety, nuclear waste management and proliferation. Within this context, it should be demonstrated that we have enough resources to apply nuclear energy in a meaningful way. Assuming a globally installed nuclear capacity of 3,500 GWe, it should be possible to use this capacity for at least a number of generations (consequently, well beyond the year 2100). From a study we did in 1989 on “Nuclear Energy and the CO2 Problem” it was concluded that the ultimately recoverable resources of uranium might be estimated at about 30 million ton, whereas the known recoverable resources were about a factor 10 less [22]. In essence, these figures still apply. The known recoverable resources of uranium are estimated at present at about 3.3 million ton, the ultimately recoverable resources at 30 – 100 million ton, depending on the acceptance of a steep increase of the uranium price [3, 15, 23]. If the generation of 1 MWhe requires 24 gram of uranium – which is the case in a LWR assuming a once through approach - 30 million ton would allow the generation of 125 x 104 TWhe, about 100 times the present annual world electricity production. If, as a result of reprocessing, the fuel cycle would require 12 gram of uranium per MWhe, this figure would be 200 times the present annual electricity production. It should be noted that in modern power plants the efficiency of fissile material use will probably be better than assumed here. It certainly increases strongly if breeder concepts are applied. Also it should be noted that the nuclear fuel cycle consumes fossil fuels, from cradle to grave, causing indirect emissions of greenhouse gases. However, these emissions are far less than the greenhouse gas emissions of conventional natural gas or coal plants. From scenario studies it is concluded that the greenhouse gas mitigation potential of nuclear energy could be reductions in CO2 emissions of 100 - 300 GtC during the next hundred year – reductions that may be equivalent to about 10 – 20% of the emissions under a business-as-usual future [3, 8, 22]. Finally, it should be noted that beside uranium also thorium could be used to generate electricity. The recoverability of thorium is at least as good as uranium, probably even better [3, 15]. Consequently, it is concluded that scarcity of resources it not an argument to disregard the nuclear option as a potential source of energy to be applied to achieve sustainable development.

#### Nuclear Power is unsustainable.

Ahmed 13

[Nafeez--bestselling author, investigative journalist and international security scholar. He is executive director of the Institute for Policy Research & Development, and author of A User's Guide to the Crisis of Civilization among other books. He writes for the Guardian on the geopolitics of environmental, energy and economic crises on his blog. “The coming nuclear crunch,” Jul 02 2013, The Guardian] [Premier]

The new study acknowledges the dawn of a new production period in the last five years, during which a total of 250 ktons or uranium has been produced, but points out that increasingly producers must extract lower grade uranium which generates less energy than higher grades. On average, it finds, only 50-70% of initial uranium resource estimates can be extracted. Developing a model based on precise data about extraction rates and deposits for individual mines in Canada and Australia, the study concludes that planned new mines can only "partially compensate" a production decline from all mines currently in operation: "After 2015 uranium mining will decline by about 0.5 ktons/year up to 2025 and much faster thereafter... Assuming that the demand side will be increased by 1% annually, we predict both shortages of uranium and (inflation-adjusted) price hikes within the next five years." The study suggests that one way to delay the uranium supply crunch until 2025 would be a carefully coordinated "voluntary nuclear energy phase-out." Another alternative would be to open up access to "the still sizable quantities of the military uranium reserves from the USA and Russia especially after 2013." If countries do not voluntarily adopt a "slow phase-out scenario": "... we predict that the end of the cheap uranium supply will result in a chaotic phase-out scenario with price explosions, supply shortages and possible electricity shortages in many countries." Study author Dr. Michael Dittmar, a nuclear physicist at the European Organisation for Nuclear Research (CERN) and the Swiss Federal Institute of Technology, described the nuclear component of the UK's energy strategy to keep the national electric grid going even during the next 10 years as "effectively non-existent." The US, China, and India all plan to dramatically ramp up nuclear power production in coming decades, but like the UK, their energy strategies completely overlook potential uranium supply challenges.

#### Unsustainable—Resource shortages inevitable

Zyga 11

[--Lisa, “Why nuclear power will never supply the world's energy needs,” May 11, 2011, Phys.org] [Premier]

Exotic metals: The nuclear containment vessel is made of a variety of exotic rare metals that control and contain the nuclear reaction: hafnium as a neutron absorber, beryllium as a neutron reflector, zirconium for cladding, and niobium to alloy steel and make it last 40-60 years against neutron embrittlement. Extracting these metals raises issues involving cost, sustainability, and environmental impact. In addition, these metals have many competing industrial uses; for example, hafnium is used in microchips and beryllium by the semiconductor industry. If a nuclear reactor is built every day, the global supply of these exotic metals needed to build nuclear containment vessels would quickly run down and create a mineral resource crisis. This is a new argument that Abbott puts on the table, which places resource limits on all future-generation nuclear reactors, whether they are fueled by thorium or uranium. As Abbott notes, many of these same problems would plague fusion reactors in addition to fission reactors, even though commercial fusion is still likely a long way off. Of course, not many nuclear advocates are calling for a complete nuclear utopia, in which nuclear power supplies the entire world’s energy needs. But many nuclear advocates suggest that we should produce 1 TW of power from nuclear energy, which may be feasible, at least in the short term. However, if one divides Abbott’s figures by 15, one still finds that 1 TW is barely feasible. Therefore, Abbott argues that, if this technology cannot be fundamentally scaled further than 1 TW, perhaps the same investment would be better spent on a fully scalable technology.

### Unpopular

#### **Public debate shifts attitudes against nuclear power.**

Martin 7 [Brian; Honorary professorial fellow at the University of Wollongong, Australia; "Opposing Nuclear Power: Past And Present"; 2016. Bmartin.Cc. Accessed August 8 2016. http://www.bmartin.cc/pubs/07sa.html] [Premier]

A crucial part of opposing nuclear power is publicising its disadvantages. These are trivialised or left unmentioned by promoters: reactor accidents, disposal of high-level waste, cancers from radon released by uranium tailings over tens of thousands of years, increased risk of terrorism, promotion of a regional nuclear arms race, economic subsidies for nuclear power, lack of insurance coverage for nuclear hazards and increased police powers impacting on civil liberties.

When, in earlier decades, the pros and cons of the nuclear option were fully canvassed in public debate, opinion shifted against nuclear power. The same is likely to occur today.

## AFF—Grid

#### Nuke power can collapse the grid in many ways

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

Finally, it is important to single out the following. In addition to assuring that the electric grid will provide reliable off-site power to nuclear power plants, there are other important factors to consider when a nuclear power plant will be the first plant on the electric grid and, most likely, the largest one. **If a nuclear power plant is too large for the size of an electric grid, then the operators of the plant may face several problems**. These problems are the following: **a) off-peak electricity demand might be too low for a large nuclear power plant to be operated in base load mode, i.e. at constant full power; b) there must be enough reserve generating capacity in the electric grid to ensure grid stability during the nuclear power plant planned outages for refueling and maintenance; and c) any unexpected sudden disconnect of the nuclear power plant from an otherwise stable electric grid could trigger a severe imbalance between power generation and consumption causing a sudden reduction in grid frequency and voltage. This** could even cascade into the collapse of the electric grid**, if additional power sources are not connected to the grid in time.** According with the IAEA, ―grid interconnectivity and redundancies in transmission paths and generating sources are key elements in maintaining reliability and stability in high performance electric grids. However, **operational disturbances can still occur even in well maintained electric grids.** Similarly, even a nuclear power plant running in base load steadystate conditions can encounter unexpected operating conditions that may cause transients or a complete shutdown in the p lant‘s electrical generation. **When relatively large nuclear power plants are connected to the electric grid, abnormalities occurring in either can lead to the shutdown or collapse of the other. The technical issues associated with the interface between nuclear power plants and the electric grid includes: a) the magnitude and frequency of load rejections and the loss of load to nuclear power plants; b) grid transients causing degraded voltage and frequency in the power supply of key safety and operational systems of nuclear power plants; c) a complete loss of off-site power to a nuclear power plant due to electric grid disturbances; and d) a nuclear power plant unit trip causing an electric grid disturbance resulting in severe degradation of the grid voltage and frequency, or even to the collapse of the power electric grid**.

## AFF-India



### India-Solvency

#### In both India and Pakistan, nuclear weapons programs rely on civil nuclear power facilities.

Green 15

“The myth of the peaceful atom - debunking the misinformation peddled by the nuclear industry and its supporters” Jim Green, Nuclear Monitor #804, 28 May 2015 [Premier]

Ostensibly civil nuclear materials and facilities can be used in support of nuclear weapons programs in many ways: \* Production of plutonium in reactors followed by separation of plutonium from irradiated material in reprocessing facilities (or smaller facilities, sometimes called hot cells). \* Production of radionuclides other than plutonium for use in weapons, e.g. tritium, used to initiate or boost nuclear weapons. \* Diversion of fresh highly enriched uranium (HEU) research reactor fuel or extraction of HEU from spent fuel. \* Nuclear weapons-related research. \* Development of expertise for parallel or later use in a weapons program. \* Justifying the acquisition of other facilities capable of being used in support of a nuclear weapons program, such as enrichment or reprocessing facilities. \* Establishment or strengthening of a political constituency for nuclear weapons production (a 'bomb lobby'). These are not just hypothetical risks. On the contrary, the use of civil facilities and materials in nuclear weapons research or systematic weapons programs **has been commonplace** (Nuclear Weapon Archive, n.d.; Institute for Science and International Security, n.d.). It has occurred in the following countries: Algeria, Argentina, Australia, Brazil, Egypt, India, Iran, Iraq, Israel, Libya, North Korea, Norway, {and} Pakistan, Romania, South Africa, South Korea, Sweden, Syria, Taiwan, and Yugoslavia. A few other countries could arguably be added to the list e.g. Burma's suspected nuclear program, or Canada (because of its use of research reactors to produce plutonium for US and British nuclear weapons). Overall, civil nuclear facilities and materials have been used for weapons R&D in about one third of all the countries with a nuclear industry of any significance, i.e. with power and/or research reactors. The Institute for Science and International Security (n.d.) collates information on nuclear programs and concludes that about 30 countries have sought nuclear weapons and ten succeeded – a similar strike rate of about one in three. In a number of the countries in which civil materials and facilities have been used in support of military objectives, the weapons-related work was short-lived and fell short of the determined pursuit of nuclear weapons. However, civil programs provided the basis for the full-scale production of nuclear weapons in Israel, India, Pakistan, South Africa, and North Korea. In other cases – with Iraq from the 1970s until 1991 being the most striking example – substantial progress had been made towards a weapons capability under cover of a civil program before the weapons program was terminated. Civil and military nuclear programs also overlap to a greater or lesser degree in the five 'declared' weapons states – the US, the UK, Russia, China and France. ENRICHMENT There are three methods of using the cover of a civil nuclear program for the acquisition of HEU for weapons production: \* Diversion of imported HEU. An example was the (abandoned) 'crash program' in Iraq in 1991 to build a nuclear weapon using imported HEU. The US alone has exported over 25 tonnes of HEU. \* Extraction of HEU from spent research reactor fuel. HEU has been used in many research reactors but power reactors use low enriched uranium or in some cases natural uranium. \* A nuclear power program or a uranium mining and export industry can be used to justify the development of enrichment facilities. The acquisition of enrichment technology and expertise – ostensibly for civil programs – **enabled** South Africa and **Pakistan to produce HEU which has been used for their HEU weapons arsenals.** The nuclear black market centred around the 'father' of the Pakistani bomb Abdul Qadeer Khan involved the transfer of enrichment know-how and/or facilities to North Korea, Iran and Libya. An expansion of nuclear power would most likely result in the spread (horizontal proliferation) of enrichment technologies, justified by requirements and markets for low-enriched uranium for power reactors but also capable of being used to produce HEU for weapons. Technical developments in the field of enrichment technology – such as the development of laser enrichment technology by the Silex company at Lucas Heights in Australia – could worsen the situation. Silex will potentially provide proliferators with an ideal enrichment capability as it is expected to have relatively low capital cost and low power consumption, and it is based on relatively simple and practical separation modules. (Greenpeace, 2004; Boureston and Ferguson, 2005.) An Australian Strategic Policy Institute report released in August 2006 notes that an enrichment industry would give Australia "a potential 'break-out' capability whether that was our intention or not" and that this point is "unlikely to be missed by other countries, especially those in Australia's region." (Davies, 2006.) Former Australian Prime Minister John Howard drew a parallel between exporting unprocessed uranium and unprocessed wool and argued for value-adding processing in both cases. But there is a differerence between uranium and wool. The Lucas Heights nuclear agency once embarked on a secret uranium enrichment program; there was never a secret knitting program. NUCLEAR POWER AND NUCLEAR WEAPONS John Carlson (2000) from the Australian Safeguards and Non-Proliferation Office states that "... in some of the countries having nuclear weapons, nuclear power remains insignificant or non-existent." Carlson's attempt{s} to absolve civil nuclear programs from the proliferation problem ignores the well-documented use of civil nuclear facilities and materials in weapons programs as well as the important political 'cover' civil programs provide{s} for military programs. It also ignores the more specific links between nuclear power and weapons proliferation. Of the ten states known to have produced nuclear weapons: \* eight have nuclear power reactors. \* North Korea has no operating power reactors but an 'Experimental Power Reactor' is believed to have been the source of the fissile material (plutonium) used in the October 2006 nuclear bomb test, and North Korea has power reactors partly constructed under the Joint Framework Agreement. \* Israel has no power reactors, though the pretence of an interest in the development of nuclear power helped to justify nuclear transfers to Israel. **Power reactors are certainly used in support of India's nuclear weapons program.** This has long been suspected (Albright and Hibbs, 1992) and is no longer in doubt since India is refusing to subject numerous power reactors to safeguards under the US/India nuclear agreement. The US has used a power reactor to produce tritium for use in nuclear weapons (in the 1990s) The 1962 test of sub-weapon-grade plutonium by the US may have used plutonium from a power reactor. Pakistan may be using power reactor/s in support of its nuclear weapons program. North Korea's October 2006 weapon test used plutonium from an 'Experimental Power Reactor'. Former Australian Prime Minister John Gorton certainly had military ambitions for the power reactor he pushed to have constructed at Jervis bay in NSW in the late 1960s – he later admitted that the agenda was to produce both electricity as well as plutonium for potential use in weapons. According to Matthew Bunn, in France, "material for the weapons program [was] sometimes produced in power reactors". So there are a handful of cases of nuclear power reactors being used directly in support of weapons production. But the indirect links between nuclear power and weapons - discussed below - are by far the larger part of the problem. The nuclear industry and its supporters claim that reprocessing is a 'sensitive' nuclear technology but power reactors are not. But of course they are part of the same problem. The existence of a reprocessing plant poses no proliferation risk in the absence of reactor-irradiated nuclear materials. Reactors pose no proliferation risk in the absence a reprocessing facility to separate fissile material from irradiated materials. **Put reactors and reprocessing together** and you have the capacity to produce and separate plutonium. In short, the attempt to distance nuclear power programs from weapons proliferation is disingenuous. While currently-serving politicians and bureaucrats (and others) are prone to obfuscation on this point, several retired politicians have noted the link between power and weapons: \* Former US Vice President Al Gore said in 2006: "For eight years in the White House, every weapons-proliferation problem we dealt with was connected to a civilian reactor program. And if we ever got to the point where we wanted to use nuclear reactors to back out a lot of coal ... then we'd have to put them in so many places we'd run that proliferation risk right off the reasonability scale." (<www.grist.org/news/maindish/2006/05/09/roberts>) \* Former US President Bill Clinton said in 2006: "The push to bring back nuclear power as an antidote to global warming is a big problem. If you build more nuclear power plants we have toxic waste at least, bomb-making at worse." (Clinton Global Initiative, September 2006.) \* Former Australian Prime Minister Paul Keating said in 2006: "Any country with a nuclear power program "ipso facto ends up with a nuclear weapons capability". (AAP, October 16, 2006.)

#### There’s a direct causal link-empirics, processes, and politics prove

Green 15

“The myth of the peaceful atom - debunking the misinformation peddled by the nuclear industry and its supporters” Jim Green, Nuclear Monitor #804, 28 May 2015 [Premier]

Firstly, **power reactors have been used directly in weapons programs**: India refuses to place numerous power reactors under safeguards[25] and presumably uses (or plans to use) them for weapons production. The US has long used a power reactor to produce tritium for use in nuclear weapons.[26] And proponents of a 'Safe Modular Underground Reactor' proposed for South Carolina were kindly offering the reactor to produce tritium for weapons.[27] The 1962 test of sub-weapon-grade plutonium by the US may have used plutonium from a power reactor. The US operated at least one dual-use reactor (the Hanford 'N' reactor) to generate power and to produce plutonium for weapons.[28] Russia operated dual-use reactors to generate power and to produce plutonium for weapons.[29] Magnox reactors in the UK were used to generate power and to produce plutonium for weapons.[30] In France, the military and civilian uses of nuclear energy are "intimately linked".[31] France used the Phénix fast neutron power reactor to produce plutonium for weapons[32] and possibly other power reactors for the same purpose. North Korea has tested weapons using plutonium produced in its 'Experimental Power Reactor'. Pakistan may be using power reactor/s in support of its nuclear weapons program. Secondly, separating enrichment and reprocessing on the one hand, and reactors on the other, misses the point that the purpose of enrichment is to produce fuel for reactors, and reactors are the only source of materials for reprocessing plants. **Nuclear power programs provide cover and legitimacy for the acquisition of enrichment and reprocessing technology.** Similarly, one of the main justifications for the development of research and training reactors is, as the name suggests, research and training towards the development of nuclear power. **Research reactors have been the plutonium source for weapons in India** and Israel. Small amounts of plutonium have been produced in research reactors then separated from irradiated materials in a number of countries suspected of or known to be interested in the development of a nuclear weapons capability − including Iraq, Iran, South Korea, North Korea, Taiwan, Yugoslavia, and possibly Romania.[33] There is little pretence that Pakistan's unsafeguarded Khushab reactors **are anything other than military reactors,** but the 50 MWt Khushab reactor has been described as a 'multipurpose' reactor.[34] Nuclear power programs can facilitate weapons programs even if power reactors are not actually built. Iraq provides a clear illustration of this point. While Iraq's nuclear research program provided much cover for the weapons program from the 1970s until 1991, stated interest in developing nuclear power was also significant. Iraq pursued a 'shop till you drop' program of acquiring dual-use technology, with much of the shopping done openly and justified by nuclear power ambitions.[35] According to Khidhir Hamza, a senior nuclear scientist involved in Iraq's weapons program: "Acquiring nuclear technology within the IAEA safeguards system was the first step in establishing the infrastructure necessary to develop nuclear weapons. In 1973, we decided to acquire a 40-megawatt research reactor, a fuel manufacturing plant, and nuclear fuel reprocessing facilities, all under cover of acquiring the expertise needed to eventually build and operate nuclear power plants and produce and recycle nuclear fuel. Our hidden agenda was to clandestinely develop the expertise and infrastructure needed to produce weapon-grade plutonium."[36] In addition to material contributions for weapons programs, civil nuclear programs can provide the necessary expertise. Ian Jackson discusses the overlap: "The physics of nuclear weapons is really a specialized sub-set of general nuclear physics, and **there are many theoretical overlaps between reactor and weapon design**. ... Indeed, when I myself changed career from working at Britain's civilian Atomic Energy Research Establishment (Harwell) to inspecting the military AWE Aldermaston nearly a decade later, I was surprised at the technical similarity of energy and bomb research. The career transition was relatively straightforward, perhaps signalling the intellectual difficulty of separating nuclear energy technology from that of nuclear weapons."[37] Civil nuclear programs can provide **political impetus** for weapons programs. In Australia, for example, the most influential proponent of the push for nuclear weapons in the 1960s was Philip Baxter, head of the Australian Atomic Energy Commission.[38] Alternatively, **the military can co-opt civil nuclear programs.** Academic Saleem Ali discusses the case of Pakistan: "Nuclear capability seems to have a **seductive appeal towards weaponization** in countries that exist in conflict zones.

Aspiring nuclear power states should consider this danger of the military co-opting any nuclear agenda, as happened in Pakistan despite the pioneering work of well-intentioned scientists and nuclear energy advocates like Salam."[39] India had three power reactors operating before its 1974 weapons test.[44] Pakistan had one power reactor operating before it developed weapons.

#### Pakistan’s constructing reprocessing plants now-their civilian program has undeniable military capacity

Kerr 16

Pakistan’s Nuclear Weapons Paul K. Kerr Analyst in Nonproliferation Mary Beth Nikitin Specialist in Nonproliferation August 1, 2016 Congressional Research Service 7-5700 www.crs.gov RL34248 [Premier]

A 1985 CIA report described a possible Pakistani plan to “build a plutonium production reactor” 23 and Pakistan has operated the 40-50 megawatt heavy-water Khushab plutonium production reactor since 1998.24 Islamabad has been constructing at least three additional heavy-water reactors, which would expand considerably Pakistan’s plutonium production capacity, at the same site; whether all four reactors at the site are operational is unclear, according to nongovernmental expert reports. 25 Additionally, Pakistan has a reprocessing plant26 at the New Laboratories facility of the Pakistan Institute of Science and Technology (PINSTECH) and is apparently constructing other such plants. 27 Sources identify 2000 and 2002 as the dates when the PINSTECH plant (...continued) enrichment technology to Libya in 1984—a data point apparently corroborating the 1983 date. (Implementation of the NPT Safeguards Agreement in the Socialist People’s Libyan Arab Jamahiriya, Report by the Director General, International Atomic Energy Agency, GOV/2008/39, September 12, 2008). 18 Khan stated in a 2009 television interview that Pakistan stopped producing its first-generation centrifuge in 1983 and started using a more advanced centrifuge. (“Pakistan: Dr. Abdul Qadeer Khan Discusses Nuclear Program in TV Talk Show,” 2009). 19 Arms Control and Disarmament Agency, “Pakistan’s Nuclear Weapons Program and U.S. Security Assistance,” Memorandum for the Assistant to the President for National Security Affairs, June 16, 1986. 20 Arms Control and Disarmament Agency, “Solarz Amendment Applicability to the Pakistani Procurement Case,” July 16, 1987. 21 This plant was completed “[b]y the end of 1980,” according to Dr. Samar Mubarakmand, a scientist closely involved with Pakistan’s nuclear weapons program. (“A Science Odyssey: Pakistan’s Nuclear Emergence Speech,” delivered by Dr. Samar Mubarakmand, November 30, 1998.) 22 Zia Mian, A.H. Nayyar, R. Rajaraman and M.V. Ramana, “Fissile Materials in South Asia: The Implications of the U.S.-India Nuclear Deal,” International Panel on Fissile Materials, September 2006 and David Albright, “Securing Pakistan’s Nuclear Infrastructure,” in A New Equation: U.S. Policy toward India and Pakistan after September 11 (Washington: Carnegie Endowment for International Peace) May 2002. For a list of Pakistani nuclear facilities, see Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks, (London: The International Institute for Strategic Studies), 2007, p. 19. 23 Pakistan’s Nuclear Weapons Program: Personnel and Organizations: A Research Paper, Central Intelligence Agency, November 1985. 24 A Pakistani newspaper reported in April 1998 that, according to a “top government source,” the reactor had begun operating (“Pakistan’s Indigenous Nuclear Reactor Starts Up,” The Nation, April 13, 1998). A June 15, 2000, article cited “U.S. officials” who indicated that the reactor had begun operating two years earlier (Mark Hibbs, “After 30 Years, PAEC Fulfills Munir Khan’s Plutonium Ambition,” Nucleonics Week, June 15, 2000). A 2001 Department of Defense report states that the reactor “will produce plutonium,” but does not say whether it was operating (U.S. Department of Defense, Proliferation: Threat and Response, January 2001, p. 27). 25 David Albright, “Pakistan’s Inventory of Weapon-Grade Uranium and Weapon-Grade Plutonium Dedicated to Nuclear Weapons,” Institute for Science and International Security, October 19, 2015; David Albright and Serena Kelleher-Vergantini, “Khushab Reactors Operational While New Construction Progresses,” Institute for Science and International Security, February 29, 2016. 26 “Reprocessing” refers to the process of separating plutonium from spent nuclear fuel. 27 According to a 1983 State Department document, the New Laboratories facility was capable of extracting small (continued...) Pakistan’s Nuclear Weapons Congressional Research Service 5 began operating.28 Pakistan also appears to be constructing a second reprocessing plant at PINSTECH29 and may be completing a reprocessing plant located at Chasma.30

### India-Prolif Advantage

#### There’s currently a nuclear arms race between India and Pakistan

Krepon, cofounder of the Stimson Center, 13

Krepon, Michael. "Pakistan's Red-Carpet Treatment." Arms Control Wonk. The Stimson Center, 27 Oct. 2013. Web. 9 Aug. 2016. Michael Krepon is the co-founder of the Stimson Center. He worked previously at the Carnegie Endowment, the State Department, and on Capitol Hill. His areas of expertise are reducing nuclear dangers -- with a regional specialization in South Asia -- and improving national and international security in outer space. [Premier]

**Pakistan is competing far above its weight in this competition.** Trend lines on the subcontinent are very negative. Warhead stockpiles and fissile material production capabilities are increasing significantly. Pakistan and India now each possess more types of nuclear weapon delivery vehicles than the United States, and platforms will diversify even further with families of cruise missiles and launch capabilities at sea. Conventional military doctrines have evolved to fine-tune limited-war scenarios. Pakistan’s nuclear doctrine stresses **first use**, while New Delhi stresses **massive retaliation.** Rawalpindi has declared a military requirement for very short-range, nuclear-capable ballistic missiles; other types of battlefield nuclear weapons might well follow. Every other state that has embraced tactical nuclear weapons has not been able to figure out how to make sense of their use in operational terms. New Delhi faces the choice of whether to go over the top of short-range systems with air sorties and precision strike, stand-off weapons – hard to do in an Army-centric military culture — or to respond in kind. The dynamism of nuclear weapon-related developments on the subcontinent contrasts markedly with somnambulant diplomacy to reduce nuclear dangers. New Delhi and Islamabad **have not conducted regular, substantive, high-level, purpose-driven talks** to normalize ties for five long years – ever since the 2008 Mumbai attacks. One measure of responsible nuclear stewardship is negotiating agreements seeking to stabilize deterrence and reinforce escalation control. The last such accord between Pakistan and India – the Agreement On Reducing The Risk From Accidents Relating To Nuclear Weapons – was signed in February 2007.

#### Pakistan currently escalating its tactical nuke program-Kashmir conflict escalates-it’s the central military issue in South Asia-Kargil proves

Micallef 2/7

Joseph V. Micallef, 2-7-2016, "," Huffington Post, <http://www.huffingtonpost.com/joseph-v-micallef/the-other-bomb-pakistans_b_9180504.html> Best Selling Military History and World Affairs Author and Keynote Speaker [Premier]

In recent years the concern over nuclear proliferation has centered on Iran’s ongoing effort to develop a nuclear weapons capability. Pakistan’s nuclear weapons program, however, may prove to be just as dangerous and just as destabilizing as that of Tehran’s. That country is well on its way, within another decade, to amassing the third largest stockpile of nuclear weapons.Moreover, its current focus on deploying theater nuclear weapons, so called (5 to 10 kiloton) low-yield battlefield weapons, **represents a dangerous new strategy** that has wide-ranging impact on both the stability of the Indian subcontinent and the threat that a militant organization will obtain a nuclear device. For the last seventy-five years, the international politics of the Indian subcontinent, and, to a lesser extent, the broader south and central Asian region that surrounds it, have revolved around the continuing Indian-Pakistani conflict. The two countries have fought four wars since their birth, following the partition of British India in 1947. These wars, fought in 1947, 1965, 1971 (which resulted in the loss of East Pakistan and the birth of the new state of Bangladesh), and in 1999, all resulted in significant Indian victories. The 1999 war, called the Kargil War, was fought in the Kargil district of Kashmir. This was the first Indo-Pakistani conflict following the deployment of nuclear weapons by both countries. At one point during the fighting, Pakistan’s government ordered the arming of its nuclear missiles, potentially bringing the two countries to the brink of a nuclear conflict. Although a truce was later negotiated, the fate of the original princely kingdom of Jammu and Kashmir, a legacy of the 1947 war, has to this day still not been resolved and continues to be a major source of conflict between the two countries.

#### India’s outsized nuclear capacity freaks out Pakistan-it’s caused a mass expansion of its nuclear production complex

Dalton and Krepon, cofounder of the Stimson center, 15

Dalton, Toby, and Michael Krepon. "A Normal Nuclear Pakistan." (2015): 3. Carnegieendowment.org. Stimson Center, Carnegie Endowment for International Peace. Web. 9 Aug. 2016. [Premier] Michael Krepon is the co-founder of the Stimson Center. He worked previously at the Carnegie Endowment, the State Department, and on Capitol Hill. His areas of expertise are reducing nuclear dangers -- with a regional specialization in South Asia -- and improving national and international security in outer space.

Pakistan has worked hard and successfully to build diverse nuclear capabilities. It will retain these {nuclear} capabilities for the foreseeable future as a necessary deterrent against **perceived existential threats from India.** At this juncture, Pakistan’s military leadership in Rawalpindi can choose to accept success in achieving a “strategic” deterrent against India — a nuclear force posture sufficient to prevent limited nuclear exchanges and a major conventional war. Alternatively, it can choose to continue to compete with India in the pursuit of “full spectrum” deterrence, which would entail open-ended nuclear requirements against targets both near and far from Pakistan. These choices would lead Pakistan to two starkly di#erent nuclear futures and places in the global nuclear order. Pakistan is now competing successfully with — and in some respects is outcompeting — India. Pakistan operates four plutonium production reactors; India operates one. Pakistan has the capability to produce perhaps 20 nuclear warheads annually; India appears to be producing about $ve warheads annually. But given its larger economy and **sizable nuclear infrastructure**, **India is able to outcompete Pakistan in fissile material and warhead production** if it chooses to do so. **Pakistan has prepared for this eventuality by investing in a large nuclear weapons production complex.** Whether New Delhi chooses to compete more intensely or not, it is a losing proposition for Pakistan to sustain, let alone expand, its current infrastructure to produce greater numbers of nuclear weapons and their means of delivery. Just as the Soviet Union’s large nuclear arsenal was of no help whatsoever for its manifold economic and societal weaknesses, Pakistan’s nuclear weapons do not address its internal challenges.

#### Pakistan’s nuclear program stems from India’s nuclear capability-Pakistan routinely cooperates with terrorists-high risk of militants getting dirty bombs-Pakistan is currently massively expanding its nuclear capability-making tactical nukes for use in border conflicts with India

Micallef 2/7

Joseph V. Micallef, 2-7-2016, "The Other Bomb," Huffington Post, <http://www.huffingtonpost.com/joseph-v-micallef/the-other-bomb-pakistans_b_9180504.html> Best Selling Military History and World Affairs Author and Keynote Speaker [Premier]

The genesis of Pakistan’s nuclear weapons program had a number of sources. In part it was a response to the defeat in the 1971 Indo-Pakistani war. **It was also driven by Pakistan’s realization that India was going ahead with the development of its own nuclear arsenal**. Neither country is a signatory to the U.N. sponsored Nuclear Non-Proliferation Treaty. Pakistan opted to try to develop both plutonium and enriched uranium-based weapons. In 1985 the CIA warned of a Pakistani plan to build a “plutonium production reactor.” Pakistan subsequently built, with Chinese help, the 40-50 megawatt heavy-water Khushab plutonium production reactor. The reactor went on line in 1998. Three additional heavy-water reactors were also built and are currently operational at the same site. Pakistan also built a plutonium reprocessing plant at the New Laboratories facility at the Pakistani Institute of Science and Technology. An additional reprocessing facility is being built at the same location and a third is under construction in Chasma. Pakistan also began a program to produce highly enriched uranium (HEU) using gas centrifuge enriched uranium. The specially designed centrifuges spin uranium hexafluoride gas at high speeds to increase the concentration of the uranium 235 isotope. This is the **same technology that Iran has been using** in its nuclear weapons program. The program got a significant boost when A.Q. Kahn, a metallurgist working in the Dutch subsidiary of the British-based Uranium Enrichment Company (URENCO Group) returned to Pakistan in 1975. Khan brought with him blueprints for various centrifuge designs and a broad array of business contacts. By buying individual components rather than complete gas centrifuges, he was able to evade existing export controls and acquire the necessary equipment. Khan would go on to establish an illicit nuclear weapons technology procurement and consulting operation, the “Khan Network,” that would play a major role in the transmission of nuclear weapons technology to Iran, Libya and to a lesser extent, North Korea. The Pakistani government has denied that it had any knowledge of Khan’s illicit side business but under American pressure arrested A.Q. Khan, sentencing him to house arrest, and dismantled his network. There continue to be reports, however, that **rogue elements of that network continue to operate clandestinely.** In 1998 and then in 2001, for example, according to former CIA Director George Tenant, the agency obtained fragmentary intelligence that Osama bin Laden had dispatched emissaries to make contact with the Khan network, in order to discuss obtaining the equipment necessary for developing a nuclear weapons infrastructure, details of nuclear bomb design and information on how to construct radiological dispersal devices. There are also unconfirmed reports that **as recently as 2014, the Islamic State has also reached out to former members of the Khan network for assistance in securing atomic weaponry.** While the design and construction of a nuclear device is very likely beyond the capabilities of Al Qaeda, ISIS or any other militant jihadist group, the use of radiological dispersal devices, so called **dirty bombs**, is well within their capability. The Pakistani nuclear effort also received considerable assistance from China. It is believed, that starting in the late 1970s, Beijing supplied Pakistan with a broad array of missile and nuclear weapons related assistance. This assistance included warhead designs, highly enriched uranium (HEU), components of various short and intermediate range missile systems, gas centrifuge equipment and technical expertise. The A.Q. Khan network later transferred some of this technology to other countries. According to various intelligence sources, Pakistan currently has between 100 and 120 nuclear weapons under its control. It is believed, however, that Pakistan has produced and stockpiled around 3,000 kilograms (6,600 lbs) **of weapons grade HEU** and about 200 kilograms (440 lbs) of plutonium. Pakistan’s HEU based warheads utilize an implosion design that requires between 15 and 20 kg of HEU. The current stockpile is enough for an additional 150 to 200 weapons, depending on the warhead’s desired yield. The plutonium-based warheads need between 6 and 8 kg of plutonium. The current stockpile would yield between 25 and 35 additional warheads. As of the end of 2015, Pakistan has enough HEU and plutonium to produce an addition 175 to 235 warheads. This number could be higher if Pakistan opts for smaller warheads intended for battlefield weapons. This would raise the Pakistani nuclear arsenal to between 300 and 350 nuclear warheads. Pakistan is adding enough HEU and plutonium to its stockpile to produce around 10 to 20 additional bombs a year. According to the Federation of American Scientist’s latest tally, there are 15,465 nuclear weapons in the world. The vast majority of those are owned by the United States and Russia. France has about 300 warheads, China has around 250 and the United Kingdom has about 215. Israel is widely acknowledged to possess a sophisticated array of nuclear weapons. Estimates of the Israeli nuclear arsenal vary widely, from as little as 80 to as many as 400, with at least 100 of those weapons being thermonuclear “hydrogen bombs.” Since the late 1980s, Pakistan has used a variety of militant organizations as proxies in its ongoing struggle with India over Kashmir and elsewhere. This strategy may have been a direct result of its success with “Operation Cyclone,” the CIA and Saudi funded program to arm the Afghan mujahedeen during the Soviet invasion of Afghanistan. “Operation Cyclone” was also the code name for the terrorist attack in Mumbai. From November 26-29, 2008, ten members of Lashkar-e-Taiba, a Pakistani-based militant organization with long-standing ties to Pakistan’s Inter-Services Intelligence (ISI) agency conducted a series of 12 coordinating bombings and shooting attacks across Mumbai. The attacks resulted in the death of 164 people and the wounding of at least 308. The fact that the Mumbai operation used the same code word designation is a disturbing parallel. It is hard to believe that its use was a coincidence. Sponsored, organized, trained and funded by Pakistan’s ISI, Lashkar-e-Taiba is only one of several militant organizations that the ISI has used as proxies in its covert military operations. Other militant groups with documented links to the ISI include: Al-Qaeda, Lashkar-e-Omar, Jaish-e-Monammed, Sipah-e-Sahaba, the Jammu Kashmir Liberation Front (JKLF), Jamaat-ud-Da’wah, Harkat-ud-Jihad al-Islami, the Haqqani Network, Jamaat-ud-Mujahideen Bangladesh (JMB) and of course its most famous creation—the Afghan Taliban.

#### The Pakistani tactical nuke threat is the principal motivation for India’s “cold start doctrine”.

Micallef 2/7

Joseph V. Micallef, 2-7-2016, "The Other Bomb," Huffington Post, <http://www.huffingtonpost.com/joseph-v-micallef/the-other-bomb-pakistans_b_9180504.html> Best Selling Military History and World Affairs Author and Keynote Speaker [Premier]

Since 1990, given its record of defeat in conventional military conflicts with India, it appears that Pakistan’s military strategy has relied on a threefold approach: use militant proxy organizations to strike at Indian military positions in Kashmir, specifically, and to attack Indian targets in general, rely on the threat **to deploy nuclear weapons should India try to retaliate** with a military invasion of Pakistan and rely on the U.S. and China, in particular, and world opinion in general, to restrain India from attacking Pakistan before the ponderously slow Indian Army can mobilize and be in a position to attack. One of the lessons that India drew from the 1998 Kargil war was precisely that its slow mobilization and advance would give the Pakistani military plenty of advance warning of its intended strategy and military objectives. It would also give Pakistan plenty of time to mobilize world opinion to restrain India. Moreover, India found that it could not muster a strong enough offensive capability to do anything more than limited border incursions and low level attacks against border fortifications. In response, the Indian Army undertook a comprehensive review of its military operations with the goal of developing a quick strike capability into Pakistan. The resulting doctrine, called “**Cold Start**,” was designed to reorient India’s military forces from their traditional defensive posture toward a more aggressive, offensive capability. The doctrine called for the formation of several eight division-sized, integrated battle groups that would combine infantry, artillery and armor. They would be on a standby alert, ready at all times to thrust **deep into Pakistani territory** along several possible lines of advance. These battle groups would receive air support from the Indian Air Force (IAF) and, where appropriate, support from India’s naval forces as well. The rapid deployment of these battle groups would allow India to seize Pakistani territory before the international community could mobilize a consensus to restrain India. The Indian military has continued to insist that there is no “Cold Start” doctrine and that the debate over military doctrine that has been swirling around India’s Institute for Defense Studies and Analyses has been purely an academic exercise. **Pakistan’s military leadership and the ISI, however, believe that the “Cold Start” Doctrine is a fact.**

#### Cold start accelerates Pakistani development of battlefield nukes-escalates any confrontation and increases risk of terrorist acquisition relative to conventional nukes-causes dirty bombs. It’s also impossible to guard them-their close range nature means they need to be in the field, under local command, and close to the border

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Joseph V. Micallef, 2-7-2016, "The Other Bomb," Huffington Post, <http://www.huffingtonpost.com/joseph-v-micallef/the-other-bomb-pakistans_b_9180504.html> Best Selling Military History and World Affairs Author and Keynote Speaker [Premier]

Battlefield nuclear weapons **pose a whole different level of security risks than** conventional nuclear weapons. Islamabad’s current Strategic Command Organization for Pakistani atomic weapons relies on a threefold structure consisting of the National Command Authority (NCA), the Strategic Plans Division (SPD) and the Strategic Forces Command (SFC). The NCA and the SPD have operational control over Pakistan’s nuclear arsenal. The military’s SFC has only day to day “administrative control” and technical support of these weapons system. More importantly, Pakistan’s nuclear weapons are kept disassembled, typically in three or four component parts with each of those parts kept in separate facilities. Thus the nuclear warheads are kept separate from the delivery vehicles. Moreover, the fissile cores of the warheads are separated from the conventional, i.e., non-nuclear explosives. Even if a militant terrorist organization was to penetrate a facility where the nuclear components are stored it could not obtain a functioning nuclear weapon. The one drawback of this approach is that unless very close inventory control is maintained it is possible for component parts to go missing without being noticed. The combination of a multi-branch command authority and the fact that the weapons are kept in a disassembled state makes it extremely difficult for rogue elements within Pakistan or for militant organizations to secure or launch a nuclear weapon. **Battlefield weapons on the other hand, by their very nature, are more at risk to theft, diversion or unauthorized use.** As battlefield weapons they need to be under the control of **local commanders.** While the decision to deploy them may still be under the national command authority, their actual use has to be left to the commander in the field. Although most of them can be kept disassembled, it is likely that some portion has to be maintained in a ready state if they are to prove useful in stopping an Indian incursion. At the very least, some portion would need to be **assembled** and **deployed forward** in anticipation of a possible Indian attack in response to a Pakistani operation. Typically, these battlefield weapons have **short ranges.** Since the facilities where the components of Pakistan’s nuclear arsenal are stored are well back from the Indian frontier, this means that the weapons would likely need to be stationed relatively close to the frontline in a ready state. It is unclear how the Strategic Command Authority would exercise its control over such battlefield weapons once they were deployed or who would be responsible for guarding them.

#### Cold start increases risk of border war and contributes to an already existing arms race that goes nuclear-also increases risk of loose nukes

Hundley 12

Tom Hundley, 9-5-2012, "Pakistan and India: Race to the End," Pulitzer Center, <http://pulitzercenter.org/reporting/pakistan-nuclear-weapons-battlefield-india-arms-race-energy-cold-war> [Premier]

Pakistan, with an estimated 90 to 120 warheads**, is now believed to be churning out more plutonium than any other country on the planet** -- thanks to two Chinese-built reactors that are now online, a third that is undergoing trials, and a fourth that is scheduled to become operational by 2016. It has already passed India in total number of warheads and is on course to overtake Britain as the world's No. 5 nuclear power. Pakistan could end up in third place, behind Russia and the United States, within a decade. This April, Pakistan tested a short-range ballistic missile, the Hatf IX, a so-called "shoot and scoot" battlefield nuclear weapon aimed at deterring an invasion by India's conventional forces. This development carries two disturbing implications. First, Pakistan now has the know-how to build nuclear warheads compact enough to fit on the tip of a small missile or inside a suitcase (handy for terrorists). Second, Pakistan has adopted a war-fighting doctrine that does not preclude nuking its own territory in the event of an Indian incursion -- a dubious first in the annals of deterrence theory. India, meanwhile, has just tested its first long-range ballistic missile, the Agni-V, with a range of 3,100 miles. In April, the Indian Navy added a new Russian-made nuclear-powered submarine to its fleet and is now building its own nuclear subs. One has already been launched and will enter service next year, and India is determined to add submarine-launched ballistic missiles to its arsenal. This puts India on the verge of joining the elite nuclear "triad" club -- states with the ability to survive a first strike by an adversary and deliver a retaliatory strike by land, sea, or air. India has also said that it has successfully tested an anti-ballistic missile shield that could be deployed "in a short time" to protect New Delhi and Mumbai. The downside of this defensive measure -- putting aside the question of effectiveness -- is that it invites an adversary to build many more warheads in the hope that a few will be able to slip through the shield. India claims that it is not really engaged in an arms race -- or that, if it is, its opponent is not Pakistan, but China, a nuclear-armed superpower and economic rival with which it shares a disputed border. The Agni-V was dubbed the "China-killer" in some overheated Indian headlines. China's nuclear ambitions are geared toward deterring the United States and Russia, but it obligingly stirs the pot in South Asia by providing Pakistan with plutonium reactors -- in flagrant violation of its obligations as a member of the Nuclear Suppliers Group. Meanwhile, through a 2008 deal negotiated by George W. Bush's administration, the United States has given India access to nuclear fuel on the international market. In the past, India had been barred from such trade because the Nuclear Non-Proliferation Treaty does not consider its nuclear weapons program legitimate, and its limited supplies of domestic uranium forced it to choose between powering its reactors and building more nuclear weapons. "Power production was the priority; now they can have both," explained Toby Dalton, deputy director of the Nuclear Policy Program at the Carnegie Endowment for International Peace. **With both sides armed to the teeth,** it is easy to exaggerate the fears and much harder to pinpoint where the real dangers lie. For the United States, **the nightmare scenario is that some of Pakistan's warheads or its fissile material falls into the hands of the Taliban or al Qaeda** -- or, worse, that the whole country falls into the hands of the Taliban. For example, Rolf Mowatt-Larssen, a former CIA officer now at Harvard University's Belfer Center for Science and International Affairs, has warned of the "lethal proximity between terrorists, extremists, and nuclear weapons insiders" in Pakistan. This is a reality, but on the whole, Pakistan's nuclear arsenal appears to be reasonably secure against internal threats, according to those who know the country best. To outsiders, Pakistan appears to be permanently teetering on the brink of collapse. The fact that large swaths of the country are literally beyond the control of the central government is not reassuring. But a weak state does not mean a weak society, and powerful internal dynamics based largely on kinship and tribe make it highly unlikely that Pakistan would ever fall under the control of an outfit like the Taliban. During the country's intermittent bouts of democracy, its civilian leaders have been consistently incompetent and corrupt, but even in the worst of times, the military has maintained a high standard of professionalism. And there is nothing that matters more to the Pakistani military than keeping the nuclear arsenal -- its crown jewels -- out of the hands of India, the United States, and homegrown extremists. "Pakistan struggled to acquire these weapons against the wishes of the world. Our nuclear capability comes as a result of great sacrifice. It is our most precious and powerful weapon -- for our defense, our security, and our political prestige," Talat Masood, a retired Pakistani lieutenant general, told me. "We keep them safe." Pakistan's nuclear security is in the responsibility of the Strategic Plans Division, which appears to function pretty much as a separate branch of the military. It has its own training facility and an elaborate set of controls and screening procedures to keep track of all warheads and fissile material and to monitor any blips in the behavior patterns of its personnel. The 15 or so sites where weapons are stored are the mostly heavily guarded in the country. Even if some group managed to steal or commandeer a weapon, it is highly unlikely the group would be able to use it. The greater danger is the theft of fissile material, which could be used to make a crude bomb. "With 70 to 80 kilos of highly enriched uranium, it would be fairly easy to make one in the basement of a building in the city of your choice," said Pervez Hoodbhoy, a distinguished nuclear physicist at Islamabad's Quaid-i-Azam University. At the moment, Pakistan has a stockpile of about 2.75 tons -- or some 30 bombs' worth -- of highly enriched uranium. It does not tell Americans where it is stored. "All nuclear countries are conscious of the risks, nuclear weapons states especially so," said Gen. Ehsan ul-Haq, who speaks with the been-there-done-that authority of a man who has served as both chairman of Pakistan's Joint Chiefs of Staff Committee and head of the ISI, its controversial spy agency. "Of course there are concerns. Some are genuine, but much of what you read in the U.S. media is irrational and reflective of paranoia. Rising radicalism in Pakistan? Yes, this is true, and the military is very conscious of this." Perhaps the most credible endorsement of Pakistan's nuclear security regime comes from its most steadfast enemy. The consensus among India's top generals and defense experts is that Pakistan's nukes are pretty secure. "No one can be 100 percent secure, but I think they are more than 99 percent secure," said Shashindra Tyagi, a former chief of staff of the Indian Air Force. "They keep a very close watch on personnel. All of the steps that could be taken have been taken. This business of the Taliban taking over -- it can't be ruled out, but I think it's unlikely. The Pakistani military understands the threats they face better than anyone, and they are smart enough to take care it." Yogesh Joshi, an analyst at the Institute for Defense Studies and Analyses in New Delhi, agrees: "Different states have different perceptions of risk. The U.S. has contingency plans [to secure Pakistan's nukes] because its nightmare scenario is that Pakistan's weapons fall into terrorist hands. The view from India over the years is that Pakistan, probably more than any other nuclear weapons state, has taken measures to secure its weapons. At the political level here, there's a lot of confidence that Pakistan's nuclear weapons are secure." The greater concern -- not only for India and Pakistan, but for the United States and everyone else -- **may be the direct competition between the two South Asian states.** True, in terms of numbers and destructive capacity, the arms buildup in South Asia does not come close to what was going on during the Cold War, when the United States and the Soviet Union built enough bombs to destroy the planet many times over. India and Pakistan have enough to destroy it only once, perhaps twice. But in many ways, the arms race in South Asia is more dangerous. The United States and the Soviet Union were rival superpowers jockeying for influence and advantage on the global stage, but these were also two countries that had never gone to war with each other, that had a vast physical and psychological separation between them, that generally steered clear of direct provocations, and that eventually had mechanisms in place (like the famous hotline between Moscow and Washington) to make sure little misunderstandings didn't grow into monstrous miscalculations. By contrast, the India-Pakistan rivalry comes with **all the venom and vindictiveness of a messy divorce**, which, of course, it is. The two countries have officially fought three wars against each other since their breakup in 1947 and have had numerous skirmishes and close calls since then. They have a festering territorial dispute in Kashmir. The 1999 Kargil conflict, waged a year after both countries went overtly nuclear, may have come closer to the nuclear brink **than even the 1962 Cuban missile crisis.** At the height of the showdown, there was credible intelligence that both sides were readying their nuclear arsenals for deployment. Pakistan lost all three of these wars. Its very large army is still only half the size of India's, whose military budget is more than seven times larger than Pakistan's. Pakistan's generals are well aware that in any all-out conventional confrontation with India, they're toast. The guiding ideology of Pakistan's Army -- from the generals on down to their drivers -- is that India represents a permanent existential threat. This is why Pakistan clings to its nukes and attempts to maintain at least the illusion of what its generals call "bilateral balance." This conventional asymmetry increases the danger of the nuclear arms race -- it feeds India's hubris and Pakistan's sense of failure. Here are two countries headed in opposite directions. India's $1.7 trillion economy is eight times the size of Pakistan's and has grown at an enviable 8.2 percent annually over the last three years, compared to just 3.3 percent for Pakistan. India is in the forefront of the digital revolution, and while the country's leaders were embarrassed by this summer's massive two-day blackout, Pakistan's broken-down infrastructure struggles to provide citizens with more than a few hours of electricity each day. India, the world's largest democracy, is on the cusp of becoming a global power; Pakistan, with its on-and-off military dictatorships (off at the moment), ranks 13th on Foreign Policy's most recent Failed States Index. More significant than these statistics is the mindset behind them. India is brimming with confidence. Pakistan is hobbled by fear, paranoia, and a deep sense of inferiority. India's major cities, New Delhi and Mumbai, are modernizing global metropolises. Checking into the Marriott in Pakistan's capital is like checking into a maximum-security prison -- high walls topped with razor wire, armed guards in watchtowers. Islamabad today looks and feels like a city under siege where there could be a coup at any moment. Soldiers and checkpoints are everywhere. It felt this way the first time I visited, in 1985. This economic and cultural lopsidedness is strikingly reflected in the countries' nuclear competition. In perhaps no other major power is the military quite so submissive to civilian authority as it is in India. "The civilian side lords it over the military in a manner that often borders on humiliation -- and there is no pushback from the military," said Ashley Tellis, an India expert with the Carnegie Endowment. The reasons for this are rooted in India's long struggle for independence against a colonial master that filled the ranks of its police and army with natives. "The military was seen as a force that served a colonial occupier," said Tellis. With the Indian officer corps' fondness for whiskey, mustaches, and other Briticisms, "the nationalist leadership looked at them as aliens" and took extreme measures to make sure there would be no coups. From a nuclear standpoint, the result of this dynamic is a command-and-control system that is firmly in the hands of the civilian political leadership, a clearly stated "no first use" policy, and a view that nukes are political weapons -- a way to project global power and prestige -- not viable war-fighting tools. In theory, Pakistan's nuclear trigger is also in civilian hands. A body called the National Command Authority, headed by the prime minister, is supposed to be the ultimate decider of whether to initiate a nuclear attack. In reality, however, it is the military that controls the process from top to bottom. Pakistan has never formally stated its nuclear doctrine, preferring to keep the Indians guessing as to when and where it might use nukes. But now it appears to be contemplating the idea of actually using tactical nuclear weapons in a confrontation with India. The problem with this delicate state of affairs is not simply the two countries' history of war, but Pakistan's tactic of hiding behind its nuclear shield while allowing terrorist groups to launch proxy attacks against India. The 2001 attack on India's Parliament building and the 2008 Mumbai attack are the most egregious examples. Both were carried out by Lashkar-e-Taiba militants based in Pakistan with well-established links to the ISI and were far more provocative than anything the Americans or Russians dished out to each other during the four decades of the Cold War. (More than 160 people were killed in the attack that held India's largest city hostage for 60 hours.) Terrorism is the classic underdog tactic, but Pakistan is certainly the world's first nuclear-armed underdog to successfully apply {terrorism} the tactic against a nuclear rival. India has been struggling to respond. "For 15 years this country is bleeding from attack after attack, and there is nothing we can do," said Raja Mohan of the Observer Research Foundation, a New Delhi think tank. "The attacks correlate directly to Pakistan's acquisition of nuclear weapons. From the moment they got nukes, they saw it as an opportunity they could exploit. And India has no instruments to punish Pakistan or change its behavior." There are encouraging signs that Pakistan may be rethinking this tactic, realizing that over the long run the Taliban and others of its ilk pose a far greater danger to Pakistan than to India. The relentless succession of suicide bombings and attacks on police and military bases and a costly war to wrest control of the Swat Valley from the Taliban seem to have finally convinced Pakistan's military that, in the words of one general, "the threat today is internal, and if it is not pushed back and neutralized, it will continue to expand its influence and we will have an Afghanistan situation inside our own country." But even if the ISI is sincere about ending its relationship with jihadi proxies, India's military planners are still searching for an appropriate weapon with which to punish Pakistan in the event of "another Mumbai." The problem for India is that even though it holds a huge advantage in conventional forces, its mobilization process is ponderously slow. This shortcoming was humiliatingly exposed after the 2001 attack on the Parliament building, when it took the Indian Army about three weeks to deploy for a retaliatory strike -- enough time for the United States to step in and cool tempers on both sides. A potential nuclear crisis had been averted, but in 2004, India, still smarting from its inability to retaliate, announced a new war-fighting doctrine dubbed "Cold Start," which called for the capability to conduct a series of cross-border lightning strikes within 72 hours. The idea was not to hold territory or threaten the existence of the Pakistani state, but to use overwhelming firepower to deliver a punishing blow that would fall short of provoking a nuclear response. Pakistan's reaction -- or overreaction -- was to double down on developing its short-range battlefield nuclear weapon, the Hatf IX. Any incursion from India would be met with a **nuclear response** even if it meant Pakistan had to **nuke its own territory.** "What one fears is that with the testing of these short-range nuclear missiles -- five in the last couple of months -- this seems to indicate a seriousness about using theater nuclear weapons," said Hoodbhoy, the physicist. While strategists on both sides debate whether the Hatf IX, with a range of 60 kilometers and a mobile multibarrel launch system, would be enough to stop an advancing column of Indian tanks -- Hoodbhoy argues that "smaller, sub-kiloton-size weapons are not really effective militarily" -- they do agree that it would take more than one missile to do the job, instantly escalating the crisis beyond anyone's control. The last nuclear weapon state to seriously consider the use of battlefield nuclear weapons was the United States during the first decades of the Cold War, when NATO was faced with the overwhelming superiority of Soviet conventional forces. But by the early 1970s, U.S. strategists no longer believed these weapons had any military utility, and by 1991 most had been withdrawn from European territory. Pakistan, however, seems to have embraced this discarded strategy and is now, in effect, **challenging India to a game of nuclear chicken** -- which seems to have made India tread carefully. Tellingly, in 2008, when Lashkar terrorists attacked Mumbai, Cold Start was not implemented. These days, Indian officials seem to be backing away from the idea. "There is no Cold Start doctrine. No such thing. It was an off-the-cuff remark from a former chief of staff. I have been defense minister of the country. I should know," veteran Indian politician Jaswant Singh assured me. In a WikiLeaked classified document dated Feb. 16, 2010, Tim Roemer, then U.S. ambassador to India, described Cold Start as "a mixture of myth and reality" that, if implemented, "would likely encounter very mixed results." Pakistani military planners, however, continue to be obsessed with the idea of Cold Start. It comes up in every conversation about security, and it is the driving force behind the country's program to develop tactical battlefield nukes. For now, the focus is on missile delivery systems, but according to Maria Sultan, director of the South Asian Strategic Stability Institute, an Islamabad think tank, there is growing interest in using nukes in other ways -- such as to create an electromagnetic pulse that would fry the enemy's electronics. "In short, we will look for full-spectrum response options," she said. **The arms race could make a loose nuke more likely.** After all, Pakistan's assurances that its nuclear arsenal is safe and secure rest heavily on the argument that its warheads and their delivery systems have been uncoupled and stored separately in heavily guarded facilities. It would be very difficult for a group of mutinous officers to assemble the necessary protocols for a launch and well nigh impossible for a band of terrorists to do so. But that calculus changes with the deployment of mobile battlefield weapons. The weapons themselves, no longer stored in heavily guarded bunkers, would **be far more exposed.** Nevertheless, military analysts from both countries still say that a nuclear exchange triggered by miscalculation, miscommunication, or panic is far more likely than terrorists stealing a weapon -- and, significantly, that **the odds of such an exchange increase with the deployment of battlefield nukes.** As these ready-to-use weapons are maneuvered closer to enemy lines, the chain of command and control would be stretched and more authority necessarily delegated to field officers. And, if they have weapons designed to repel a conventional attack, there is obviously a reasonable chance they will use them for that purpose. "It lowers the threshold," said Hoodbhoy. "The idea that tactical nukes could be used against Indian tanks on Pakistan's territory creates the kind of atmosphere that **greatly shortens the distance to apocalypse.**"

#### Indo-Pak nuclear conflict expands and causes regional devastation and nuclear winter-extinction

Robock, environmental sciences prof @ Rutgers, 12

Robock, Alan, and Owen B. Toon. "Self-Assured Destruction: The Climate Impacts of Nuclear War." Bulletin of the Atomic Scientists 68.5 (2012): 66-74. Rutgers.edu. DOI: 10.1177/0096340212459127 Sage Pub. Web. 10 Aug. 2016. Alan Robock is an American climatologist. He is currently Professor II in the Department of Environmental Sciences at Rutgers University [Premier]

A nuclear war between Russia and the United States, even after the arsenal reductions planned under New START, could produce a nuclear winter. Hence, an attack by either side could be suicidal, resulting in selfassured destruction. Even a small nuclear war between India and Pakistan, with each country detonating 50 Hiroshima-size atom bombsÑonly about 0.03 percent of the global nuclear arsenal’s explosive power as air bursts in urban areas, could produce **so much smoke that temperatures would fall below those of the Little Ice Age of the fourteenth to nineteenth centuries, shortening the growing season around the world and threatening the global food supply.** Furthermore, there would be **massive ozone depletion**, allowing more ultraviolet radiation to reach Earth’s surface. Recent studies predict that agricultural production in parts of the United States and China would decline by about 20 percent for four years, and by 10 percent for a decade. The environmental threat posed by even a small number of nuclear weapons must be considered in nuclear policy deliberations. Military planners now treat the environmental effects as collateral damage, and treaties currently consider only the number of weapons needed to assure destruction of opposing forces. Instead, treaties must call for further reductions in weapons so that the collateral effects do not threaten the continued survival of the bulk of humanity. **Proliferation cannot be treated as a regional problem.** A regional conflict has the potential to cause **mass starvation worldwide through environmental effects.**

### India-Colonialism Advantage

#### Public support for nuclear programs stems from post-colonial resentment

Krishna, Political Science prof @ University of Hawaii, 09

Sankaran Krishna, article in South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan. Ed. Itty Abraham. Indiana University Press, Mar 26, 2009 - Political Science - 240 pages [Premier]

A significant number of Indians—both within and outside the governing elites—see the bomb redressing a disjuncture between India's actual status in the comity of the world's nations and its desired or deserved status. Critical to this disjunction is the idea that India is an overpopulated society. Many middle-class Indians believe that they are not given due respect and appreciation for what they have accomplished, because their attainments are literally drowned in a sea of humanity. The bomb, therefore, is not only an entity within an economy of threats, security concerns, alliances, and arms races; it also inhabits another realm, **one embedded in the desire for respect, status, attention, and appreciation.** An analysis of the bomb thus demands a wider focus that extends beyond conventional security studies or international relations and looks at the multiple meanings of the bomb as well as the many anxieties it seeks to quell.

#### Indian state-sponsored science is inextricably intertwined with colonial history

Krishna, Political Science prof @ University of Hawaii, 09

Sankaran Krishna, article in South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan. Ed. Itty Abraham. Indiana University Press, Mar 26, 2009 - Political Science - 240 pages [Premier]

As Gyan Prakuh notes, however, colonial science was always underlain by an important contradiction." On she one hand, the rationality and grandeur of colonial science presumed an intelligent and discerning native capable of comprehending the magnitude of what was being achieved. On the other, colonial rule, based as it was on notion of irreversible civilizational superiority over the native, also had to believe that he was irremediably unscientific and irrational, and hence incapable of serving as the discerning audience that could offer any admiration that was genuine. It was the native's inherent inferiority that necessitated colonial rule in the first place and justi-fied its continuance in the second. Among other things, this contradiction or paradox resulted in a translation of colonial science into the realm of the spectacular, **critical to efforts at legitimating alien rule** in a largely illiterate society. Further, **it resulted in science becoming a definitive icon of power, wealth, intelligence, success, and rank.** Science was not only statist from ire very inception—in the sense that science in the colonies was primarily conducted under nate auspices—but it was statist in that it was always also about legitimating (alien) political rule. Finally, the dissemination of science through society aimed not so much at the molecular transformation of ways of thinking among the °population' (itself a novel category at this time, as Foucault reminds us). the inculcation of scientific rationality or scientific temper, her focused on spectacular demonstrations of what one might term "state effect,' that is, **the legitimation of the state through the staging of scientific spectacles** or events under its auspices. This cluster of attributes that characterized Indian science during the colonial period—its spectacular quality. its iconic status. its statism, and its intimate relationship to the production of state effects—**would remain intact to a substantial degree after independence.**

#### The justification of colonialism rested on the belief in “civilizing” the native through science.

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During the colonial period modem science served as a critical differentiating principle between rulers and ruled." Westem mastery over space and time—revealed by the railway. the telegraph, the bridges that spanned raging rivers and the dams that controlled them, trigonometric land surveys, archaeological excavations, epidemiob ogy, immunization, and multiple other scientific achievements—stood in contrast to native awe and surrender to the forces of nature.' The "civilizing project' that redeemed colonialism was predicated on the assumption **that science** (emergent from Western rationality) and education **would eventually awaken the native from his sloth and slumber.**

#### Overdeveloped state science initiatives are part and parcel of the legacy of colonialism.

Krishna, Political Science prof @ University of Hawaii, 09

Sankaran Krishna, article in “South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan.” Ed. Itty Abraham. Indiana University Press, Mar 26, 2009 - Political Science - 240 pages [Premier]

The democratization of science that had occurred in the West—with mass lit-eracy, free public education, rising standards of living across all classes—**bypassed colonial and independent India.** In the well-worn cliché of science studies, science in the West owed more to the steam engine than the steam engine owed to science. What is conveyed by this cliché (alongside the old saw about necessity being the mother of invention) is that many an early inventor was not a scientist but rather a craftsman, an artisan, an improviser or innovator trying to find a way around a practical problem in production in an industrializing society. The contrast with the emergence of science in a place like colonial India **could not be more profound.** The social base of the scientist here **was overwhelmingly the literati**, a group quite unaccustomed to working with their hands. Science emerged in a colonial political-economy trapped in technological stagnation, deindustrialization, and the freezing of social relations in the agricultural sector that produced and further aggravated the idea of a °surplus" population. The state was focused on extraction of land revenue, maintenance of a captive market for British manufactured goods and raw material sources, and maintenance of law and order (defined minimally as the protection of settler property and lives). The linkages between science, society, and economy that characterized the early industrializers were not merely absent in India but were systematically distorted and extraverted into a classically colonial pattern, to use terms from a now unfashionable political economy literature. Just as Hamza Alavi spoke of the overdeveloped state as a postcolonial legacy in South Asia," one can similarly talk of a distorted and "overdeveloped" science there.

#### Prioritization of science initiatives reflects colonial priorities rather than indigenous ones

Krishna, Political Science prof @ University of Hawaii, 09

Sankaran Krishna, article in “South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan.” Ed. Itty Abraham. Indiana University Press, Mar 26, 2009 - Political Science - 240 pages [Premier]

The problems that Indian science set for itself **reflected metropolitan necessities rather than homegrown ones.** It is not that there was no awareness or resistance to such a form of intellectual colonization; rather, as in other realms, it was colonialism's abil-ity to present a certain understanding of the present and a certain desired vision of the future as a universal common sense (despite its provincially Western provenance) that has proved to be so enduring and difficult to overturn. To use Partha Chatterjee's framework, Indian science often constituted a form of resistance at the level of the problematic ("we, too, can do what you have done) but seemed incapable of concep-tualizing an alternative at the level of the thematic of a discourse of nationalism ("we can do what we need to do for ourselves')." The forgotten Luddites of alternative sciences in India—the Kumarappas, Gandhis, and others who argued for technologies appropriate to one of the most labor-abundant economies in the world—testify to the degree to which Indian science responded to alien puzzles and extraneous material requirements.

#### Indian independence movements and the middle class were forced to justify themselves in terms of Western-style scientific acumen-science functioned as an external requirement on Indian national autonomy

Krishna, Political Science prof @ University of Hawaii, 09

Sankaran Krishna, article in “South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan.” Ed. Itty Abraham. Indiana University Press, Mar 26, 2009 - Political Science - 240 pages [Premier]

Given the very limited ambit of formal education (at independence about 55% of the population was literate), proficiency in science, and fluency in the English lan-guage more generally, served as the marker separating the native middle classes from the people. Sections of the native middle classes took to science in the late nineteenth century, and their enthusiasm for the scientific method, deductive logic, positivism, and other accompaniments of the modern temper are indexed in journals, literature, scientific societies, social movements, religious reformations, and, increasingly, in domestically owned and operated textile mills, chemical plants, research laboratories, locomotive factories, steel mills, and the like. Science and nationalist politics came to be intertwined from the outset, as **scientific acumen was one of the prominent signi-fiers of readiness for self-government and independence**. As I have argued elsewhere, **for Indian nationalists, science was the definitive marker separating the colonizer from the colonized**, and also **the source of redemption for the colony once independence had been achieved.** Nehru, for example, systematically sets aside one reason after an-other for the conquest of India by the West and ultimately settles on two: first, India's political disunity and disintegration following the last of the great Mughal emperors; and, second, the fact that modern science and reason emerged initially in the West, al-lowing it to qualitatively distance itself from the rest of the world, and indeed colonize it. It was the twinning of these two historical events that explained the meteoric rise of England in the centuries after the Industrial Revolution, and the concomitant fall of a once-rich culture and civilization such as India." Science by the late colonial period was therefore burdened with an unrealistic set of expectations. It came to be regarded as the means by which India would reverse centuries of underdevelopment and speedily gain its rightful place in the comity of nations. As Prakash notes, "Introduced as a code of alien power and domesticated as an element of elite nationalism, science has always been asked to accomplish a great deal—to **authorize an enormous leap into modernity**, and anchor the entire edifice of modern culture, identity, politics, and economy."' In some senses, this was the temper and spirit of the early decades after independence—the Nehru years—as India sought to transform itself into a modern society through science, planning, and a state-led public sector. Yet, **given the sharp disjunction between the material culture of an "overpopulated' and largely poor society, and a scientific culture that had emerged in the shadow of a Western, colonial form of education** confined to the literati**, this transformation was always going to be very difficult.**

#### The legacy of colonialist science caused a culture of prize-seeking from the West, ignoring social issues and a problem-solving approach in favour of an obsession with international recognition and legitimacy.

-international legitness became an end in itself pursued by way of nuclear tech rather than a means for security

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What emerged was one of the most dedicated and ascetic attempts by an upper-caste elite to **develop an entire country while bypassing the social.** The focus on sci-ence, planning, a controlled industrial state-sector (financed largely through external aid), and the relative neglect of the agrarian sector (in terms both of state investment and effective land reforms) obviated the need to encounter the domestic social too closely. The Nehruvian state was a quintessentially pedagogical state that **spoke at and for the nation—it rarely ever spoke to it or with it**.' This was a form of development that abhorred contact with the masses, the soil, and the tools and machinery neces-sary for development, while emphasizing rhetorical exhortations, elegant planning models, and nuanced argumentation. India remains **one of the most assiduous efforts to theorize** one's way **to development**. The specific characteristics of Indian science—its limited ambit within society, its often derivative and extroverted character, its emphasis on spectacular effects—were fundamentally at odds with expectations that it would be the redemptive source of widespread development. The failure of the postcolonial nation to come into its own—in the sense of sufficient numbers of peoples seeing a tangible improvement in their lives as a consequence of independence—has meant that science remains an aca-demic •ractice divorced of an or•anic linka•e with the material requirements of the nation at large. It is an arcane practice of urban, educated, upper-caste middle classes locked in a competition for recognition and rewards by an ostensibly international but overwhelmingly Western jury. The tendency to confuse such recognitions and prizes with the real thing—meaningful change in the lives of a significant number of Indians—occasions one of the epigraphs at the head of this essay. Shiv Visvanathan notes the alienation of Indian science from a context-bound, socially relevant problem-solving enterprise to an obsession with recognition from Western scientific forums when he recounts how Atma Ram, a rarity among Indian scientists given his early work experience on the shop floor of a sugar factory, ... asked again and again, "Why is it that science in independent India, despite all the investments in it, is not the potentially creative force it threatened to be during the nationalist period ?" He then provided part of the answer. He confessed that the Nehruvian dream was to make India win Olympic medals in science: we really believed that Nobels in science went hand in glove with rise in GNP.' He then added that **it was a race in which we will always be poor thirds, or at best glorified seconds**!' Atma Ram's critique of Indian science encapsulates the limitations of a prize-wanting science as distinct from a problem-solving science.24

#### Colonial science inevitably causes a slide into weaponization and militarism

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Sankaran Krishna, article in “South Asian Cultures of the Bomb: Atomic Publics and the State in India and Pakistan.” Ed. Itty Abraham. Indiana University Press, Mar 26, 2009 - Political Science - 240 pages [Premier]

The 1974 and 1998 tests were perverse insignia of the failure of the middle class's self-defined historical mission. As Abraham's landmark work shows with careful at-tention to detail, the impetus to produce the bomb occurred in a context where the privileged enclave of scientists within the country's Atomic Energy Commission (AEC) realized they were not going to be able to deliver on the promise of cheap and efficient nuclear energy to the nation. The switch to the bomb within the AEC was a way to **ensure the** continued **legitimacy and stature of a strategic enclave that could not have withstood a social and political audit within a democratic society.** This shift on the part of the scientific elite **dovetailed with the conjunctural needs of state elites faced with problems regarding their own political and electoral legitimacy."**

## AFF – Iran



### A2 Breakout Capacity Solves

#### Breakout capability doesn’t solve-Iran stopping at breakout capability still causes Israel conflict, which motivates further prolif in the region-ultimately causes weaponization

Waltz 12

“Why Iran should get the Bomb”. Kenneth N. Waltz. HeinOnline -- 91 Foreign Affairs. 2 2012 Kenneth Waltz is Senior Research Scholar at the Saltzman Institute of War and Peace Studies and Adjunct Professor of Political Science at Columbia University. [Premier]

The problem is that a **breakout capability might not work as intended.** The United States and its European allies are primarily concerned with weaponization, so they might accept a scenario in which Iran stops short of a nuclear weapon. Israel, however, has made it clear that it views a significant Iranian enrichment capacity alone as an unacceptable threat. It is possible, then, that a verifiable commitment from Iran to stop short of a weapon could appease major Western powers but leave the Israelis unsatisfied. Israel would be less intimidated by a virtual nuclear weapon than it would be by an actual one and therefore would likely continue its risky efforts at subverting Iran's nuclear program through sabotage and assassination-**which could lead Iran to conclude that a breakout capability is an insufficient deterrent, after all, and that only weaponization can provide it with the security it seeks.**

### A2 Sanctions/Diplomacy CP

#### US action can’t solve-Iran domestic non prolif is key

Thrall and Koblentz 16

A. Trevor Thrall and Gregory D. Koblentz, The Diplomat, 2-12-2016, "Past as Prologue? What North Korea Teaches Us About Iran’s Nuclear Program," Diplomat, A. Trevor Thrall is senior fellow at the Cato Institute and an Associate Professor in the School of Policy, Government, and International Affairs at George Mason University. Gregory D. Koblentz is an Associate Professor in the School of Policy, Government, and International Affairs at George Mason University. [Premier]

North Korea’s test of a long-range ballistic missile last weekend, coming one month after its fourth underground nuclear test, spurred the usual rounds of global condemnation. During the last Republican debate in the United States, candidates took turns calling for expanding missile defense spending and suggesting that it is time for military action against the regime. Senator Ted Cruz linked North Korea with Iran. “The fact that we’re seeing the launch and we’re seeing the launch from a nuclear North Korea is a result of the failures of the first Clinton administration,” Cruz argued. “What we are seeing with North Korea is foreshadowing of where we should be with Iran.” Cruz’s attack goes to the heart of the debate about Iran’s nuclear program. Critics have consistently argued that Iran, like North Korea, will disregard the nuclear deal and develop nuclear weapons covertly with the help of funding generated by the easing of economic and financial sanctions. Is Cruz right? Does North Korea foreshadow the inevitable acquisition of nuclear weapons by Iran? Yes and no. On one level, Cruz is absolutely correct to connect the two; there are many similarities between the two situations that do, indeed, suggest that Iran will eventually develop a nuclear weapon. First, both nations are located in historically dangerous neighborhoods and face militarily superior adversaries. In North Korea’s case, South Korea and the United States; in Iran’s case, a Middle East full of Sunni Arabs and a nuclear-armed Israel. From a national security perspective, both countries have obvious reasons for pursuing a nuclear capability. Second, during the critical nonproliferation policy debates, North Korea and Iran both had an advanced nuclear program, one that was relatively close to being able to develop a weapon. The history of nuclear proliferation suggests that most nations that have abandoned the quest for nuclear weapons have given up early in the process. In contrast, few nations that have gotten as close as North Korea and Iran have forgone the opportunity to do so. Not only are there fewer financial and technical hurdles to manage at that point, but the benefits of going nuclear become much more visible as they get closer. Given this, the level of international effort it takes to prevent further progress toward nuclear weapons grows exponentially. Third, both North Korea and Iran are difficult to coerce because they are comfortable with their status as “rogue regimes.” Despite regular tongue lashings by the United Nations, neither state worries much about its reputation in the international community. For decades, neither state has responded much to the endless criticism about human rights violations and oppression at home, the sponsorship of terrorism and proliferation abroad, or any number of other issues. From a policy perspective, however, Cruz is wrong. North Korea’s nuclear program was an unfortunate development but it did not represent a failure of Clinton administration policy; the United States had no reasonable way to prevent North Korea from developing a nuclear weapon. **The same holds for Iran.** The primary reason for this lies in a final similarity between the two cases: neither one presented the United States with an acceptable military option to prevent proliferation.

#### Sanctions and diplomacy don’t solve-they radicalize Iran even further

Waltz 12

“Why Iran should get the Bomb”. Kenneth N. Waltz. HeinOnline -- 91 Foreign Affairs. 2 2012 Kenneth Waltz is Senior Research Scholar at the Saltzman Institute of War and Peace Studies and Adjunct Professor of Political Science at Columbia University. [Premier]

The crisis over Iran's nuclear program could end in three different ways. First, diplomacy coupled with serious sanctions could convince Iran to abandon its pursuit of a nuclear weapon. But this outcome is unlikely: **the historical record indicates that a country bent on acquiring nuclear weapons can rarely be dissuaded from doing so.** Punishing a state through economic sanctions does not inexorably derail its nuclear program. Take North Korea, which succeeded in building its weapons despite countless rounds of sanctions and UN Security Council resolutions. If Tehran determines that its security depends on possessing nuclear weapons, sanctions are unlikely to change its mind. In fact, adding still more sanctions now could make Iran feel even more vulnerable, **giving it still more reason to seek the protection of the ultimate deterrent.**

### Deal Bad

#### Iran deal set a terrible precedent for permitting uranium enrichment-destroys the NPT-other countries will prolif

Biswas 16

Arka Biswas, The Diplomat, 2-18-2016, "Iran Deal, NPT and the Norms of Nuclear Non-Proliferation," Diplomat, <http://thediplomat.com/2016/02/iran-deal-npt-and-the-norms-of-nuclear-non-proliferation/> [Premier]

A primary sticking point over Iran’s nuclear program was regarding Iran’s right to enrichment. Beginning from 2003, when concerns over Iran’s nuclear program emerged, Iran reiterated its longstanding position that the NPT bestows on it the inalienable right to enrich uranium on its soil. Article IV of the NPT states that “nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.” Enjoying this article? Click here to subscribe for full access. Just $5 a month. Though Article IV of the NPT does not directly refer to the right to uranium enrichment, its language, however, remains open to interpretation. While U.S. government officials have lately stated that “it has always been the U.S. position that article IV of the Nuclear Nonproliferation Treaty does not speak about the right of enrichment at all [and] doesn’t speak to enrichment, period,” as William O. Beeman explains, that has not always been the case. Moreover, the U.S. government has in the past recognized the legitimacy of the uranium enrichment programs of other non-nuclear weapon states (NNWS) of the NPT. Even if recognition does not reflect acceptance of uranium enrichment as an inalienable right, it demonstrates that the U.S. does not see uranium enrichment by NNWS as a violation of the latter’s NPT obligations. Moreover, the U.S. government alone cannot override the interpretation of the remaining 189 members of the NPT and other bodies such as the International Atomic Energy Agency (IAEA). Speaking from a legal perspective, Dan Joyner, a professor at the University of Alabama, School of Law, concludes that while Article IV continues to be open to interpretation, technical understanding of the right to peaceful use of nuclear energy refers to access to all steps of the nuclear fuel production cycle, which includes uranium enrichment. **The potential for this right to uranium enrichment to be misused by a NNWS to acquire the requisites to build a bomb, however, is real and remains a serious concern for the non-proliferation community.** While some of the NNWS already qualify as threshold states – meaning they have the requisites to build a nuclear weapon – permitting other NNWS to reach that status is based on the political understanding of the threat that might pose to the nuclear non-proliferation architecture, even without crossing over the nuclear Rubicon. **What the Iran deal does is that it acknowledges Iran’s right to enrichment, as a NNWS to the NPT**, but simultaneously restricts Iran’s capability to enrich uranium. Given the current understanding, however, it is not in the interest of the non-proliferation community to concede the right to enrichment, under NPT, to more states in future. And while Iran has agreed to accept the heavy restrictions on its enrichment capacity for at least the next ten years, other states may not agree to such conditions.

#### The deal sucks-Obama won’t enforce Iran non prolif-he doesn’t care about the region anymore-Syria proves

-prob functions as A2 deal solves

Biswas 16

Arka Biswas, The Diplomat, 2-18-2016, "Iran Deal, NPT and the Norms of Nuclear Non-Proliferation," Diplomat, <http://thediplomat.com/2016/02/iran-deal-npt-and-the-norms-of-nuclear-non-proliferation/> [Premier]

Jeffrey Goldberg’s detailed exposition in The Atlantic of Barack Obama’s foreign policy outlook has sparked a wave of media commentary as well as damage-limitation efforts by the White House. Based on a series of far-reaching interviews with the U.S. president, the piece contains a number of fascinating revelations, including Obama’s high regard for his own decision-making ability and corresponding disdain for the leadership skills possessed by many of his counterparts on the world stage; his suspicion of Washington’s foreign policy cognoscenti, whom he believes adulate the idea of deterrence credibility and in any case reflect the interests of their Jewish and Arab benefactors; and his disregard for America’s traditional allies in Europe and the Middle East. On this last point, Goldberg quotes Obama as saying “free riders aggravate me” – a sentiment that Donald Trump holds as well. So far, however, the exegesis of Obama’s views has missed a fundamental issue: How can a president who makes plain his deep aversion to new strategic entanglements in the Middle East and believes (in Goldberg’s words) that the region “is no longer terribly important to American interests” also insist his earlier threats to use military force to stop Iran’s acquisition of nuclear weapons were entirely serious? **There is a gaping logical** disconnect – nay, an outright **contradiction** – between these two tenets, given that any military action against Iran’s nuclear infrastructure was bound to trigger even greater levels of the regional violence and instability that Obama so obviously wants to keep at arm’s length. As the president himself acknowledged in an interview with National Public Radio last summer, “The one thing we should have learned from over a decade now of war in the Middle East is … even limited military actions end up carrying with them great costs and unintended consequences.” Enjoying this article? Click here to subscribe for full access. Just $5 a month. At the time his threats against Iran were uttered, mainly in the run-up to the 2012 presidential election, a number of observers, including Israeli Prime Minister Benjamin Netanyahu and then-Defense Minister Ehud Barak, thought the president was blowing smoke. The Goldberg piece, especially its focus on Obama’s abrupt retreat in August 2013 from enforcing his red line on chemical weapons use in Syria, **provides ample justification for this belief.** The military strike the administration planned for Syria was billed in advance by Obama as “a shot across the bow” and by Secretary of State John Kerry as an “unbelievably small, limited kind of thing.” A U.S. official confided that the real aim was to do something “just muscular enough not to get mocked.” Yet in the end even this **carefully circumscribed action proved too much for Obama.** The president tells Goldberg he ultimately felt he was being led into a strategic trap both by U.S. allies and adversaries. Goldberg reports that the commander-in-chief is “tired of watching Washington unthinkingly drift toward war in Muslim countries” and determined not to end up like his predecessor – “a president who became tragically overextended in the Middle East.” Although Obama had once spoken publicly about how America’s credibility mandated a forceful response to the Bashar Assad regime’s use of chemical weapons, he now derides **the very notion of deterrence credibility** for having steered Washington into the morass of the Vietnam war. He takes pride, he relates to Goldberg, in breaking decisively with foreign policy nostrums that prescribe “militarized solutions” to a variety of world problems. The catharsis of the red line retreat continues to inform Obama’s risk-averse stance on the Middle East. According to Goldberg, the president regularly rejects Kerry’s proposals to gain diplomatic bargaining chips in negotiations over Syria through the use of missile strikes. As a result, “Kerry’s looking like a chump with the Russians, because he has no leverage,” a senior administration official admits to Goldberg. Obama explains his caution this way: Any president who was thoughtful, I believe, would recognize that after over a decade of war, with obligations that are still to this day requiring great amounts of resources and attention in Afghanistan, with the experience of Iraq, with the strains that it’s placed on our military—any thoughtful president would hesitate about making a renewed commitment in the exact same region of the world with some of the exact same dynamics and the same probability of an unsatisfactory outcome [emphasis added]. Obama claims in his talks with Goldberg that the threat of military action against Iran was not idle, since Tehran’s possession of nuclear weapons would have directly affected U.S. national interests. Yet the views he articulates throughout the piece, including in the passage just cited, provide substantial evidence to the contrary. Indeed, the president dilutes his own claim by admitting “the argument that can’t be resolved, because it’s entirely situational, was what constituted [Iran] getting” nuclear weapons. Dennis Ross, who served as the White House’s point person on Iran for most of Obama’s first term, provides further evidence on this issue in his recently published book, excerpts of which appeared in Politico. He reports that Obama early on directed the Pentagon to draw up plans for military action against Iran’s nuclear infrastructure and measures were taken to strengthen the U.S. military presence in the Persian Gulf. Yet he also acknowledges that the additional deployments of missile defenses and naval forces were motivated in part by a desire to be ready for Iranian retaliation in the event Israel undertook its own military action against Tehran, a contingency that much worried the Obama White House. Moreover, Ross outlines the sharp lack of consensus within the Obama administration over the ultimate aim of U.S. policy – that is, whether Washington should be prepared to back up its rhetoric with military force in the event Iran did develop nuclear weapons or acquiesce to this event and work to contain the regional military consequences. As he puts it: … there was debate over whether we should use force to prevent the Iranians from crossing the threshold if crippling economic sanctions, isolation and diplomatic pressure and negotiations failed to do so. [Defense Secretary Robert] Gates and Mike Mullen, the chairman of the Joint Chiefs, made it clear that we were in two wars in the region and that was quite enough. They were not soft on Iran, but they were not in favor of the use of force if all other means failed to stop the Iranian nuclear weapons pursuit. (By the way, this debate found public expression in a May 2013 report on the challenges of containing a nuclear-armed Iran, which was put out by a Washington think tank with close ties to the Obama administration. It argued that a policy of containment “may eventually become the only path left.” Significantly, the report’s co-author was Colin H. Kahl, who had served as the Defense Department’s top staffer on the Middle East for much of the administration’s first term.) Where Obama came down in this internal debate is unclear. Ross contends he urged the president in early 2010 to jettison the vague statement that Iranian nuclear proliferation was “unacceptable” in favor of a stiffer formulation along the lines that the U.S. was “determined to prevent” this outcome. Obama finally accepted the more definitive language but only after thinking about it overnight. It is striking though that even this formulation is not as robust as the unequivocal red line the president drew two years later regarding Syrian chemical weapons use and then ultimately abandoned. Based on the sum of Obama’s thinking on the Middle East, as related by Goldberg, it is difficult to pay credence to his profession about the sincerity of his earlier threats against Tehran. Indeed, it **seems much more likely they were aimed more at restraining the Israeli government than pressuring the Iranian one.**

### Internal: Cheating on the deal

#### Iran is cheating on the deal—sanctions don’t check.

Rafizadeah 8/4 [Majid; author, political scientist, and TV commentator; Gatestone Institute; 8/4/2016; “Iran Is Cheating on the Nuclear Deal, Now What?”; <https://www.gatestoneinstitute.org/8543/iran-nuclear-cheating>; [Premier]

Iran has a history of deceiving the IAEA by conducting clandestine nuclear activities, as it did in Arak, Natanz, and Ferdow.

One of the primary concerns about the agreement is that the Iranian government could easily pursue a covert program after reaping the benefits of the deal -- the removal of four rounds of international sanctions that were imposed by the members of the UN Security Council, resumption of oil sales at any level that Iran desires, rejoining the global financial system, and obtaining billions of dollars of frozen assets and accumulated interest.

**One year into the** nuclear **deal,** two **credible** and timely **intelligence reports reveal that Iran has no intention of honoring the terms of the deal**, which, anyway, **it** never signed.

Germany's domestic intelligence agency, the Federal Office for the Protection of the Constitution, **revealed** in its annual report **that** the **Iran**ian government **has pursued** a "clandestine" path to obtain **illicit nuclear tech**nology and equipment from German companies "**at** what is, even by international standards, **a** quantitatively **high level.**"

The intelligence report also stated that "it is safe to expect that Iran will continue its intensive procurement activities in Germany using clandestine methods to achieve its objectives." Even German Chancellor Angela Merkel criticized Iran and emphasized the significance of these findings, in a statement to the German Parliament.

Although Germany did not state exactly what Iran was trying to buy, another detailed report by the Institute for Science and International Security appear to shed light on that topic. The report stated:

"The Institute for Science and International Security has learned that Iran's Atomic Energy Organization (AEOI) recently made an attempt to purchase tons of controlled carbon fiber from a country. This attempt occurred after Implementation Day of the Joint Comprehensive Plan of Action (JCPOA). The attempt to acquire carbon fiber was denied by the supplier and its government. Nonetheless, the AEOI had enough carbon fiber to replace existing advanced centrifuge rotors and had no need for additional quantities over the next several years, let alone for tons of carbon fiber. This attempt thus raises concerns over whether Iran intends to abide by its JCPOA commitments. In particular, Iran may seek to stockpile the carbon fiber so as to be able to build advanced centrifuge rotors far beyond its current needs under the JCPOA, providing an advantage that would allow it to quickly build an advanced centrifuge enrichment plant if it chose to leave or disregard the JCPOA during the next few years. The carbon fiber procurement attempt is also another example of efforts by the P5+1 to keep secret problematic Iranian actions."

The report, which was written by Andrea Stricker and David Albright (former United Nations IAEA nuclear inspector ), explains that the Iranian government is required to request permission from a UN Security Council panel for "purchases of nuclear direct-use goods."

Another critical issue is the revelation about a secret agreement, obtained by the Associated Press, which discloses that **Iran's** nuclear **deal would not only lift constraints on** **Iran's** nuclear **program after the** nuclear **deal**, **but** it **will also do so long before the deal expires.**

According to the secret agreement, the deal would pave the way for Iranian leaders to advance their nuclear capabilities at a higher level and even be capable of reducing nuclear weapons breakout capability from one year to six months, long before the nuclear agreement ends.

The Obama Administration has not made this document public yet. A diplomat, who works on Iran's nuclear program and who asked for anonymity, shared the secret document with the Associated Press:

"The diplomat who shared the document with the AP described it as an add-on agreement to the nuclear deal. But while formally separate from that accord, he said that it was in effect an integral part of the deal and had been approved both by Iran and the US, Russia, China, Britain, France and Germany, the six powers that negotiated the deal with Tehran."

This document suggests that **Iran can install thousands of centrifuges,** five times more than what it currently possesses, as well enrich uranium at much higher pace, also long before the agreement expires.

According to the Associated Press:

"Centrifuges churn out uranium to levels that can range from use as reactor fuel and for medical and research purposes to much higher levels for the core of a nuclear warhead. From year 11 to 13, says the document, Iran can install centrifuges **up to five times as efficient** as the 5,060 machines it is now restricted to using.

"Those new models will number less than those being used now, ranging between 2,500 and 3,500, depending on their efficiency, according to the document. But because they are more effective, **they will allow Iran to enrich at more than twice the rate it is doing now.**"

The Associated Press adds:

"The document also allows Iran to greatly expand its work with centrifuges that are even more advanced, including large-scale testing in preparation for the deal's expiry 15 years after its implementation on Jan. 18. ... The document is the only secret text linked to last year's agreement between Iran and six foreign powers. It says that after a period between 11 to 13 years, Iran can replace its 5,060 inefficient centrifuges with up to 3,500 advanced machines. Since those are five times as efficient, the time Iran would need to make a weapon would drop from a year to six months."

More importantly, this document and the rest of the nuclear agreement still do not explain what are the rules on Iran's nuclear proliferation after the 13 years are over. The only interpretation would be that since there is no restriction indicated, **Iran will** be then be free to do what it desires when it comes to its nuclear program, including installing advanced centrifuges, enriching uranium, and **obtain**ing **a** nuclear **bomb.**

Iran protested the disclosure of these documents. Last week, the spokesman for the Atomic Energy Organization of Iran (AEOI), Behrouz Kamalvandi, said that "the parts [of the document] published were confidential and were supposed to remain so. ... Our assumption is that it has been leaked by the (International Atomic Energy) Agency."

AEOI head Ali Akbar Salehi pressed on the secrecy of these documents "We do not intend to make this plan known to the public and (IAEA)'s action is a breach of promise."

This also shows that President Obama wanted the Congress to sign a deal that was not fully disclosed.

Another problem with **the** nuclear **agreement** is the **procedure** that was put in place **in case Iran violated the deal**. On paper, the nuclear agreement **indicates that sanctions would be re-imposed** on Iran.

President Obama repeatedly stated that the sanctions could be quickly and easily re-imposed if Iran violated the terms of the agreement. **However**, it's not really that simple. Once the four rounds of sanctions have been lifted, **it would require** **the approval of all** **five members of the UN Security Council** each to re-impose one round of sanctions. It goes without saying that **getting the approval of China and Russia would not be** as **easy** as Mr. Obama made it sound.

### Impact: Terror, nukes, prolif

#### A nuclear Iran is bad—Terrorism, nuclear war, and prolif.

ADL 15 [Anti-Defamation League; Anti-Semitism, Combating Hate, Israel & International, Civil Rights, Education & Outreach; 4/6/2016; The Iranian Nuclear Threat: Why it Matters; <http://www.adl.org/israel-international/iran/c/the-iranian-nuclear-threat-why-it-matters.html?referrer=https://www.google.com/#.V6i5rGgrJVc>; [Premier]

A nuclear-armed Iran would embolden Iran's aggressive foreign policy, resulting in greater confrontations with the international community. Iran already has a conventional weapons capability to hit U.S. and allied troops stationed in the Middle East and parts of Europe. If Tehran were allowed to develop nuclear weapons, this threat would increase dramatically.

Iran is one of the world's leading state sponsors of terrorism through its financial and operational support for groups such as Hezbollah, Hamas, and others. Iran could potentially share its nuclear technology and know-how with extremist groups hostile to the United States and the West.

While Iranian missiles can't yet reach America, Iran having a nuclear weapons capability can potentially directly threaten the United States and its inhabitants. The U.S. Department of Defense reported in April 2012: "With sufficient foreign assistance, Iran may be technically capable of flight-testing an intercontinental ballistic missile by 2015.” Many analysts are also concerned about the possibility of a nuclear weapon arriving in a cargo container at a major US port. Furthermore, a federally mandated commission to study electromagnetic pulse (EMP) attacks noted the vast damage that could be wrought by a single missile with a nuclear warhead, launched from a ship off the US coast, and detonated a couple of hundred miles in the air, high above America.

A nuclear-armed Iran poses a threat to America's closest allies in the Middle East. Israel is most at risk as Iran's leaders have repeatedly declared that Israel should "be wiped from the map." America's moderate Arab allies, such as Saudi Arabia, UAE, Bahrain, and others are already alarmed at Iran's aggressive regional policy and would feel increasingly threatened by a nuclear-armed Iran.

The Middle East remains an essential source of energy for the United States and the world. Iran's military posture has led to increases in arms purchases by its neighbors. A nuclear-armed Iran would likely spark a nuclear arms race in the Middle East that would further destabilize this volatile and vital region.

## AFF—Japan



### Structural Violence

#### Social stratifications present in Japan along lines of race and class

Shrader-Frechette 12 [Kristin Shrader-Frechette, O’Neill Family Endowed Professor, Department of Biological Sciences and Department of Philosophy, and also the director of the Center for Environmental Justice and Children’s Health, at the University of Notre Dame, “Nuclear Catastrophe, Disaster-Related Environmental Injustice, and Fukushima, Japan: Prima-Facie Evidence for a Japanese ‘‘Katrina’’” ENVIRONMENTAL JUSTICE Volume 5, Number 3, 2012] [Premier]

One of the first clues about pre-FD-accident E[nvironmental] I[njustice] is that Japanese economic inequality ‘‘is now higher than the OECD average; the ratio of people with incomes below the poverty line.ranks in the highest group’’ among OECD countries.’’4,5 In fact, economic inequality appears worse in Japan than the US—long considered the most economically unequal developed nation.6 Moreover, because Japanese ‘‘social stratification.is quite rigid,’’ its middle class is smaller than in the US and much smaller than in western Europe.7 Yet, the Japanese government neither acknowledges nor measures poverty,8 which contributes to prima facie evidence for pre-FD-accident EI.3 (Following ethicists John Rawls and W.D. Ross, prima-facie evidence is preliminary evidence that—in the absence of available, specific data—establishes a presumptive claim. Ultima-facie evidence is final-analysis (not merely presumptive) evidence based on specific, complete data.9 Because of incomplete FD radiation-risk and demographic data, this article surveys only prima-facie evidence for FD EI.) Besides poor people, prima-facie, pre-FD-accident evidence also suggests ‘‘buraku’’ or ‘‘blacks’’ face Japanese EI. Buraku are historically marginalized or offspring of Japanese-Korean parents, people with experiences like those of US Blacks. Although buraku do not look different, they are marginalized because of their low-level occupations and socio-economic status. Because of buraku, some African-Americans say Japanese racism ‘‘today is as crude’’ as it ever was in Europe/America; indeed, most Japanese viewed Obama’s election as ‘‘an aberration’’ because he would never have won in Japan; if only one of Obama’s parents were Japanese, he could not even have gained Japanese citizenship until 1985.10 Additional evidence for buraku’s and poor people’s social marginalization is their being the main victims of Japan’s ‘‘suicide epidemic’’—32,000 deaths annually.11 Japanese children likewise are prima-facie, pre-FD accident, EI victims, mainly because they have no adult defenses against pollution.12 Because their organ and detoxification systems are still developing, and because they take in more air, water, food, and pollutants than adults, per unit of body mass, ‘‘children are often more susceptible to environmental contaminants than adults.’’ Yet, most nations—including Japan—give no special pollution protections to children.13 Although prima-facie evidence suggests poor people, buraku, and children faced pre-accident EI, Japanese EI is barely recognized. Only after Akira Kurihara’s 2006 work on Minimata Disease, experts say, did Japanese accept ‘‘environmental-pollution diseases’’ and the ‘‘state of social exclusion’’ of EI victims.14 What happened to poor people, buraku, and children after the 2011 FukushimaDaiichi (FD) nuclear catastrophe? Were they DREI victims? To answer these questions, consider first the FD accident.

#### The poor received poor treatment in the aftermath of Fukushima

Shrader-Frechette 12 [Kristin Shrader-Frechette, O’Neill Family Endowed Professor, Department of Biological Sciences and Department of Philosophy, and also the director of the Center for Environmental Justice and Children’s Health, at the University of Notre Dame, “Nuclear Catastrophe, Disaster-Related Environmental Injustice, and Fukushima, Japan: Prima-Facie Evidence for a Japanese ‘‘Katrina’’” ENVIRONMENTAL JUSTICE Volume 5, Number 3, 2012] [Premier]

University scientists, nuclear-industry experts, and physicians say FD radiation will cause at least 20,000- 60,000 premature-cancer deaths.41,42 Japanese poor people are among the hardest hit by FD DREI because, like those abandoned after Hurricane Katrina, Japan’s poor received inadequate post-FD-disaster assistance. Abandoned by government and ‘‘marooned’’ for weeks without roads, electricity, or water, many poor people had no medical care,43,44 transportation, or heat—despite frigid, snowy conditions.45,46 At least four reasons suggest prima-facie evidence that Japanese poor near FD have faced DREI. One prima-facie reason is that because poor people tend to live near dangerous facilities, like reactors, they face the worst accident risks. Within weeks after the FD accident began, long-lived cesium-134 and other radioactive isotopes had poisoned soils at 7.5 million times the regulatory limit; radiation outside plant boundaries was equivalent to getting about seven chest X-rays per hour.47 Roughly 19 miles Northwest of FD, air-radiation readings were 0.8 mSv per hour; after 10 days of this exposure, IARC dose- response curves predict 1 in 5 fatal cancers of those exposed would be attributable to FD; two-months exposure would mean most fatal cancers were caused by FD. Such exposures are likely because many near-Fukushima residents were too poor to evacuate.20 Farther outside the evacuation zone—less than two weeks after the accident began—soil 25 miles Northwest of FD had cesium-137 levels ‘‘twice as high as the threshold for declaring areas uninhabitable around Chernobyl,’’ suggesting ‘‘the land might need to be abandoned.’’48 Not until a month after US and international agencies recommended expanding FD evacuation zones, did Japanese-government officials consider and reject expanding evacuation.49, 50 A second prima-facie reason for Fukushima DREI is that poor people, living near reactors, have higher probabilities of being hurt by both normal and disaster-related radiation releases. Reactors normally cause prima facie EI because they release allowable radiation that increases local cancers and mortality, especially among infants/ children.51–55 Because zero is the only safe dose of ionizing radiation (as the US National Academy of Sciences warns), its cumulative LNT (Linear, No Threshold for increased risk) effects are worst closer to reactors, where poor people live. The US EPA says even normal US radiation releases, between 1970–2020, could cause up to 24,000 additional US deaths.56,57 A third prima-facie reason for Fukushima DREI is that although nearby (poor) people bear both higher preaccident and post-accident risks, others receive little/no risks and most benefits. Wealthier Tokyo residents—140 miles away—received virtually all FD electricity, yet virtually no EI or DREI. A fourth prima-facie reason for DREI burdens on FD poor is that their poverty/powerlessness arguably forced them into EI and accepting reactor siting. Companies hoping to site nuclear facilities target economically depressed areas, both in Japan and elsewhere.17,58 Thus, although FD-owner Tokyo Electric Company (TECO) has long-term safety and ‘‘cover-up scandals,’’ Fukushima residents agreed to accept TECO reactors in exchange for cash. With Fukushima $121 million in debt, in 2007 it approved two new reactors in exchange for ‘‘$45 million from the government.60 percent’’ of total town revenue.17,59 Yet if economic hardship forced poor towns to accept reactors in exchange for basic-services monies, they likely gave no informed consent. Their choice was not voluntary, but coerced by their poverty. Massive Japanese-nuclear-industry PR and media ads also have thwarted risk-disclosure, thus consent, by minimizing nuclear risks.17,53,60–62 Scientists say neither industry nor government disclosed its failure to (1) test reactor-safety equipment; (2) thwart many natural-event disasters; (3) withstand seismic events worse than those that already had occurred; (4) withstand Fukushima-type disasters; (5) admit that new passive-safety reactors require electricity to cool cores and avoid catastrophe; or (6) base reactorsafety on anything but cost-benefit tests.17,53,60–62 Thus, because prima facie evidence suggests Fukushima poor people never consented to FD siting, they are EI victims whose reactor proximity caused them also to become DREI victims.

#### Racial minorities were also discriminated against during the disaster

Shrader-Frechette 12 [Kristin Shrader-Frechette, O’Neill Family Endowed Professor, Department of Biological Sciences and Department of Philosophy, and also the director of the Center for Environmental Justice and Children’s Health, at the University of Notre Dame, “Nuclear Catastrophe, Disaster-Related Environmental Injustice, and Fukushima, Japan: Prima-Facie Evidence for a Japanese ‘‘Katrina’’” ENVIRONMENTAL JUSTICE Volume 5, Number 3, 2012] [Premier]

Prima-facie evidence likewise shows buraku nuclear workers are both EI and DREI victims. Internationally, nuclear workers are prominent EI victims because even without accidents, they are allowed to receive ionizingradiation doses (50 mSv annually) 50 times higher than those received by the public. Yet, only low socioeconomic-status people—like buraku—tend to take such risks. This double standard is obviously ethically questionable, given that many developed nations (e.g., Germany, Scandinavian countries) prohibit it because it encourages EI—workers’ trading health for paid work, and innocent worker-descendants’ (future generations’) dying from radiation-induced genomic instability. Thus, both buraku children and their distant descendents face EI—higher radiation-induced death/disease.17,61,62 Prima-facie evidence shows, second, that FD-buraku nuclear workers also are EI and DREI victims because they likely consented to neither normal-, nor accident level, radiation exposures. Why not? Under normal conditions, 90 percent of all 83,000 Japanese nuclear workers are temporary-contract workers who receive about 16 times more radiation than the already-50-times-higherthan-public doses received by normal radiation workers. For non-accident exposures, buraku receive $350–$1,000 per day, for several days of high-radiation work. They have neither full-time employment, nor adequate compensation, nor union representation, nor health benefits, nor full dose disclosure, yet receive the highest workplace-radiation risks. Why? Industry is not required to ‘‘count’’ temporary workers’ radiation exposures when it calculates workers’ average-radiation doses for regulators. However, even if buraku were told their nonaccident doses/risks, they could not genuinely consent. They are unskilled, socially shunned, temporary laborers who are forced by economic necessity to accept even deadly jobs. This two-tier nuclear-worker system—where buraku bear most (unreported) risks, while highly-paid employees bear little (reported) risk—’’ ‘is the hidden world of nuclear power’ said.a former Tokyo University physics professor.’’ In 2010, 89 percent of FD nuclear workers were temporary-contract employees, ‘‘hired from construction sites,’’ local farms, or ‘‘local gangsters.’’ With a ‘‘constant fear of getting fired,’’ they hid their injuries/ doses—to keep their jobs.61–65 Among post-FD-accident buraku, lack of adequate consent also caused prima-facie DREI because government raised workers’ allowable, post-accident-radiation doses to 250 mSv/year—250 times what the public may receive annually.63 Yet IARC says each 250-MSv FD exposure causes 25 percent of fatal cancers. Two-years’ exposure (500 MSv) would cause 50 percent of all fatal cancers. Given such deadly risks and the dire economic situation of buraku, their genuine consent is unlikely.24,25 Still another factor thwarting FD-buraku consent—and indicating prima-facie DREI—is that FD workers likely received higher doses than government admitted. ‘‘The company refused to say how many [FD] contract workers had been exposed to [post-disaster] radiation’’; moreover, nuclear-worker-protective clothing and respirators, whether in the US or Japan, protect them only from skin/lung contamination; no gear can stop gamma irradiation of their entire bodies.56,63,66 Neither TECO, nor Japanese regulators, nor IAEA has released statistics on post-FDradiation exposures, especially to buraku inside the plant. IAEA says merely: ‘‘requirements for occupational exposure of remediation workers can be fulfilled’’ at FD, not that they have been or will be fulfilled—a fact also suggesting prima-facie DREI toward buraku.67,68

#### Environmental injustice is predictable and preventable

Shrader-Frechette 12 [Kristin Shrader-Frechette, O’Neill Family Endowed Professor, Department of Biological Sciences and Department of Philosophy, and also the director of the Center for Environmental Justice and Children’s Health, at the University of Notre Dame, “Nuclear Catastrophe, Disaster-Related Environmental Injustice, and Fukushima, Japan: Prima-Facie Evidence for a Japanese ‘‘Katrina’’” ENVIRONMENTAL JUSTICE Volume 5, Number 3, 2012] [Premier]

The plight of Japanese victims of prima-facie DREI suggests several lessons, similar to those from Hurricane Katrina. One lesson is that prima-facie EI can occur both before, and after, pollution disasters if government disaster-preparedness, government risk disclosure, or noxious-facility-siting violate justice or consent. A second lesson is that prima-facie DREI is predictable whenever disasters strike areas where poor people or shunned minorities, like buraku, live or work. A third lesson is that prima-facie DREI is predictable, given industry cover-up, data-falsification, and failure to retrofit/update facilities in predominantly poor/minority areas. For instance, Japanese and US reactors (unlike Swiss) are neither waterproof, armored against terrorists, earthquake resistant, nor able to operate for 10 hours after station blackout.41 The three previous lessons suggest that DREI often is predictable, not accidental. It also is no accident that FDDREI-related-economic losses are $700 billion, excluding health/medical losses72—at least 20 times more than any multiple-reactor owner’s market capitalization. As of late February 2012, the market capitalization of major US multiple-reactor owners, for instance, ranged from $7.40 billion (Ameren) to $30 billion (Exelon).73 Exelon’s 17 reactors have a total market capitalization of only $30 billion, equivalent to $1.8 billion per reactor, whereas individual banks have a market capitalization nearly 10 times higher.74 Nuclear capitalization may be so low because most nations give the nuclear industry freedom from 98–100 percent of total-accident liability, although the US government says a single reactor accident could cost at least $660 billion.17

#### Buraku workers are the ones cleaning up the Fukashima disaster in dangerous conditions and for below minimum wage

McCurdy 15 [Claire McCurdy, writer @ International Policy Digest, “Japan’s Nuclear Gypsies: The Homeless, Jobless and Fukushima,” International Policy Digest, August 21, 2015, <http://intpolicydigest.org/2015/08/21/japan-s-nuclear-gypsies-the-homeless-jobless-and-fukushima/>][Premier]

The cleanup efforts in the aftermath of the Fukushima disaster in northern Japan have revealed the plight of the Japanese unemployed, marginally employed day laborers and the homeless. They are called the “precariat,” Japan’s proletariat, living precariously on the knife-edge of the work world, without full employment or job security. They are derided as “glow in the dark boys,” “jumpers” (one job to another) and “nuclear gypsies.” They have even been dubbed “burakumin,” a hostile term for Japan’s untouchables, members of the lowest rung on the ladder in Japanese society. They are unskilled and virtually untrained and are the nuclear decontamination workers recruited by Japanese gangsters, Yakuza, to make Fukushima in northern Japan livable again. These jobs are some of the most dangerous and undesirable jobs in the industrialized world, a $35 billion, taxpayer-funded effort to clean up radioactive fallout across an area of northern Japan larger than Hong Kong. Reuters and the L.A. Times have both described the project as an unprecedented effort. Reuters made a direct comparison between Fukushima and the Chernobyl “incident.” Unlike Ukraine and the 1986 nuclear “accident” at Chernobyl, where authorities declared a 1,000 square-mile no-habitation zone, resettled 350,000 people and allowed radiation to take care of itself, Japan is attempting to make the Fukushima region livable again. The army of itinerant decontamination workers has been hired at well below the minimum wage to clean up the radioactive debris and build tanks to store the contaminated water generated to keep the reactor core cool. They work in unregulated environments, without adequate supervision, training or monitoring or the protection of health insurance. Most of the workers are subcontractors, drifters, unskilled and poorly paid. In an article for Al Jazeera’s “America Tonight,” David McNeill, a blogger about nuclear gypsies, commented: “They move from job to job. They’re unqualified, of course, in most cases.” Jeff Kingston, Dept. of Asian Studies, Temple University Japan, noted in October 2014 that the numbers of these nuclear gypsies or members of the “precariat” have increased from 15 percent of the Japanese workforce in the late 1980s to 38 percent to date and the numbers are expected to continue to rise.

#### Workers are exposing themselves to harmful radiation

CCNE 13 [Citizens’ Commission on Nuclear Energy, Organization Aiming at Fundamental Reform of Nuclear Energy Policy, “Our path to a nuclear-free Japan: an interim report Executive Summary,” October 2013] [Premier]

On-site at the Fukushima Daiichi Nuclear Power Plants, approximately 3,000 workers per day continue to engage in demanding operations, exposing themselves to high radiation doses. Over 80% of those workers are subcontractor workers. In the two and a half years since the accident, approximately 30,000 workers have worked at the Fukushima Daiichi. Their collective dose during this period already amounts to as much as 10% of the total collective dose of all workers at all nuclear power plants in Japan over the 40 years prior to the accident. This calculation does not include the doses of people who were most likely exposed to a very high level of radiation during emergency operations in March 2011 – such as fire-fighters, rescue workers, and SDF personnel. There are multiple problems concerning radiation protection and working environment (safety, health, and employment conditions) of the workers at the Fukushima Daiichi Nuclear Power Plant, and fundamental improvements are necessary in all aspects. On top of all these, it seems that a serious shortage of manpower is currently being experienced and is expected to continue in future, due to the amount of work that is and will be required to bring the situation under control and to decommission the plants. This labour shortage is serious and we demand immediate solutions.

### Econ Security

#### Japan’s nuclear program came out of a desire for economic securitization against their resource scarcity

Valentine & Sovacool 10 [Scott Victor Valentine, Graduate School of Public Policy, University of Tokyo, Benjamin K. Sovacool, b Lee Kuan Yew School of Public Policy, National University of Singapore, “The socio-political economy of nuclear power development in Japan and South Korea,” Energy Policy Vol 38, December 2010] [Premier]

Following World War II defeat, Japan was in ruins. More than 30 percent of the Japanese population was homeless, communication and transport networks were in shambles and industrial capacity had been bombed into insignificance (Hall, 1990). With the support of Occupation funding, Japan embarked on a modernization program that would achieve unprecedented economic success. By the 1960s, Japan boasted the second largest radio and television manufacturing industries in the world and its automotive industry had grown to become the third-largest in the world (Hall, 1990). Accordingly, when the government turned to development of the nuclear power program, most Japanese were already sold on the merits of technological progress. Japan’s nuclear energy program is an offspring of aspirations for enhanced national energy security. The nuclear power program accelerated in the 1970s, when the oil embargoes in 1973 and 1974 convinced many of the political elite that nuclear power was needed to buffer the Japanese economy from energy shocks. National planners also saw nuclear technology as an important export product, a tool to not only free the nation from energy dependence, but to also extend its economic reach into the Pacific and the world at large (Kim and Byrne, 1996). The sheer lack of indigenous energy resources justified a massive expansion of the nuclear program, including commitment to plutonium fueled fast breeder reactors (Byrne and Hoffman, 1996). The Japanese government’s support for nuclear technology was and is based on the tenet that a greater national risk is posed by dependence on imported energy than by a network of nuclear power plants. Japan imports more than 95 percent of its energy feed-stocks, and other than Italy (which is inter-connected to the European Union electricity grid) no other country in the OECD exhibits such precarious dependence on imported energy (FEPC, 2008). Japanese policymakers believe this places the economic well-being of the country at the mercy of a highly unstable global energy market (ANRE, 2006). For decades in Japan, expansion of the nuclear power program has been perceived as a strategic necessity for enhancing domestic energy security while preserving low energy costs. Recently, the challenge of reducing carbon emissions to fulfill Japan’s Kyoto Protocol commitments has bolstered the allure of nuclear power. Accordingly, if there is any lesson to be derived from Japan’s ongoing experiment with nuclear power, it is that dominant economic priorities can nullify conditions that may otherwise prevent nuclear power development. Not only was Japan in ruins following World War II, the nation’s dearth of natural resources placed industry in a precarious position for recovery. The only resource that Japan had in sufficient quantity was labor. Accordingly, the key tenets of Japan’s modernization strategy lay in supporting technologies that could help industries utilize labor more effectively or add-value to the production process (Inkster and Satofuka, 2000). Such technocratic ideology sired a host of now famous systems for enhancing productivity such as total quality management, just-intime inventory control and kanban production control (Chase and Aquilano, 1995). In the 1960s, the promise of generating cheap energy through applied nuclear technology meshed perfectly with government aspirations to enhance the international competitiveness of industry. For resource-poor Japan, developing the most technologically advanced energy infrastructure was akin to developing a new type of resource—a technological resource.

### Reactor Restart

#### Japan has restarted it’s facilities, opening the door for more reopenings.

Koren 15 [Marina Koren, senior associate editor at The Atlantic, “Japan Returns to Nuclear Power for the First Time in Two Years: Now What?” The Atlantic, August 11, 2015, <http://www.theatlantic.com/international/archive/2015/08/japan-nuclear-fukushima/400997/>] [Premier]

Two years ago, Japan shut down all of its nuclear reactors. On Tuesday morning, one of them kicked back into gear. Japan imposed a ban on nuclear-power generation in September 2013 in response to the meltdown of several reactors at the Fukushima Daiichi plant following a devastating tsunami in 2011. The nuclear disaster spewed radioactive materials into the air and nearby water, and forced 100,000 people to evacuate their homes. The disaster was the worst since the Chernobyl explosion in 1986, and it led Japanese regulators to rethink safety standards for the nation’s more than 40 commercial nuclear reactors. The reactor that restarted Tuesday, at the Sendai Nuclear Power Plant in southern Japan, is the first to come back online since officials announced new standards in June 2013. The Sendai reactor will start generating electricity by Friday, according to the plant’s operator, Kyushu Electric Power Company. It will reach full capacity by the start of next month. Its relaunch opens the door for other utility companies to apply to restart reactors, and applications for 25 reactors at 15 plants have already been submitted. But they face a long and expensive process—more than $100 million was poured into the Sendai plant to meet regulation requirements. More on the process, from The New York Times: The plants need to be retrofitted with new ventilation systems and other protections, and the operators require the approval of local political leaders to switch them back on. The Sendai plant was declared safe by regulators nearly a year ago, in September 2014. Again from the Times, on the standards introduced in 2013 by the Nuclear Regulation Authority, which was created specifically to replace existing regulation agencies: In the future, nuclear plant operators must bolster their tsunami defenses and check for active earthquake faults under their plants. They must also set up emergency command centers and install filtered vents to help reduce the discharge of harmful radioactive substances from the reactors. These safety standards are legally binding, unlike previous guidelines, which were not backed up by law and were adopted by nuclear operators on a voluntary basis. They also address, for the first time, the possibility of severe accidents like the Fukushima disaster, which set off multiple fuel meltdowns and forced more than 100,000 people from their homes. … It will take “many months” for the authority to conduct the necessary checks and approve bringing the reactors back online, authority officials said. Local news reports said the approval process would take at least six months. The decision to reboot Japan’s nuclear energy sector is controversial. The nuclear energy industry—unsurprisingly—welcomed the restart of operations, as did Japanese Prime Minister Shinzo Abe. He said the reactors at Sendai had passed "the world's toughest safety screening.”

#### Nuclear power restart unpopular with the general public in Japan

Koren 15 [Marina Koren, senior associate editor at The Atlantic, “Japan Returns to Nuclear Power for the First Time in Two Years: Now What?” The Atlantic, August 11, 2015, <http://www.theatlantic.com/international/archive/2015/08/japan-nuclear-fukushima/400997/>] [Premier]

For the past two years, Japan has imported expensive natural gas and coal to meet its power needs, causing electricity prices to jump by 20 percent since the Fukushima accident. But the memory of the disaster remains fresh in the Japanese consciousness. Before the disaster, when 30 percent of Japan’s energy came from nuclear sources, a majority of citizens supported expanding nuclear power, according to polls. Now, a majority want to end it altogether. Dozens of protesters attended the relaunch of Sendai’s nuclear reactor on Tuesday, including Naoto Kan, who was prime minister at the time of the Fukushima meltdown. The cleanup of the Fukushima plant is expected to take about 40 years.

#### 19 reactors will be operational in Japan by 2018 by standard predictions

WNN 7/28 [World Nuclear News, “Japanese institute sees 19 reactor restarts by March 2018,” July 28 2016, <http://www.world-nuclear-news.org/NP-Japanese-institute-sees-19-reactor-restarts-by-March-2018-2807164.html>] [Premier]

Seven Japanese nuclear power reactors are likely to be in operation by the end of next March and 12 more one year later, according to an estimate by the Institute of Energy Economics, Japan (IEEJ). Judicial rulings and local consents will influence the rate of restart, it notes. In its Economic and Energy Outlook of Japan Through 2017, the IEEJ has considered the economic and environmental impacts in financial years 2016 and 2017 (ending March 2017 and 2018, respectively) of various scenarios for the restart of reactors in Japan. The organization estimates that if restarts take place according to the current schedule - the "reference scenario" - seven reactors could restart by the end of FY2016 (ending March 2017). By the end of FY2017, 19 units could be restarted, generating some 119.8 TWh of electricity annually, compared with total nuclear output of 288.2 TWh in FY2010, the year prior to the accident at the Fukushima Daiichi plant. Under this scenario, compared with FY2010, total spending on fossil fuel imports in FY2017 decreases by JPY4.7 trillion ($45 billion), while the electricity cost - including fuel costs, feed-in tariffs and grid stabilization costs - increases by about JPY100/MWh. Relative to the same period, energy-related carbon dioxide emissions to 1094 million tonnes CO2. According to the IEEJ, energy-related emissions reached a historical high of 1235 million tonnes CO2 in FY2013. The IEEJ's high-case scenario assumes a total of 25 units are restarted by the end of FY2017, generating 151.2 TWh annually, with total fossil fuel imports spending decreasing by JPY0.7 trillion relative to the low-case scenario where only 12 reactors are assumed to restart, producing 39.1 TWh. In the high-case scenario, the average electricity unit cost is lowered by about JPY600/MWh and energy-related emissions decrease by 52 million tonnes CO2.

### Nuclear Denial

#### The use of nuclear power was used to deny it’s catastrophic effects

Perrow 13 [Charles Perrow, emeritus professor of sociology at Yale University and visiting professor at Stanford University, “Nuclear denial: From Hiroshima to Fukushima,” Bulletin of the Atomic Scientists, 2013] [Premier]

By exploiting the peaceful uses of the atom - in medicine, earth removal, and later in nuclear power plants - nuclear deniers embarked on an ambitious program to dissipate fears about things nuclear and gain acceptance for nuclear weapons. One element in the “friendly atom” program was Project Plowshare, in which atomic explosions would enlarge harbors and the Panama Canal. The chairman of the Atomic Energy Commission announced that the project was intended to “highlight the peaceful applications of nuclear explosive devices and thereby create a climate of world opinion that is more favorable to weapons development and tests” (Strauss, quoted in Kuznick, 2011, emphasis added). As a Pentagon official put it in 1953: “The atomic bomb will be accepted far more readily if at the same time atomic energy is being used for constructive ends” (Osgood, 2008: 156). Nuclear power became the major vehicle for this constructive change. The relationship between weapons and power is intimate; nuclear power plants produce low-grade plutonium that can be reprocessed into weapon-grade plutonium. As State Department Attorney William H. Taft IV warned in 1981, the civilian nuclear power industry could be seriously damaged because of the “mistaken impression” that low-level radiation is hazardous (Greene, 2012). It was not a mistaken impression. In 1953, an American anthropologist working for the Atomic Bomb Casualty Commission showed that Japanese children who were exposed to fallout were not only smaller than their counterparts but also had less resistance to disease in general and were more susceptible to cancer, especially leukemia. The report was censored (Johnston, 2011). But there would be more.

#### Fukushima denied to ensure survival of nuclear industry

Perrow 13 [Charles Perrow, emeritus professor of sociology at Yale University and visiting professor at Stanford University, “Nuclear denial: From Hiroshima to Fukushima,” Bulletin of the Atomic Scientists, 2013] [Premier]

The denial that Fukushima has any significant health impacts echoes the denials of the atomic bomb effects in 1945; the secrecy surrounding Windscale and Chelyabinsk; the studies suggesting that the fallout from Three Mile Island was, in fact, serious; and the multiple denials regarding Chernobyl (that it happened, that it was serious, and that it is still serious). Will Fukushima make nations reject nuclear power? It appears not. In June 2012, the US Department of Energy granted $800,000 to the Massachusetts Institute of Technology to address the “difficulties in gaining the broad social acceptance” of nuclear power. The Energy Department, as we have seen, has been attempting this for half a century. Giant companies such as Areva in France and South Korean firms are building more plants. In the United States, while three plants are being retired for mechanical reasons and one because its electricity is more expensive than power from gas-fired plants, construction is still going ahead for four US reactors. Europe is not on board. Germany is planning to shut down all its existing plants, and other European countries are phasing them out. But China leads the way in construction, and India is not far behind. While the picture is mixed, and cheap natural gas may greatly weaken the US nuclear industry, the number of plants worldwide will continue to grow. Ambiguities about radiation’s effects have at times appeared to be purposeful. Vast investments are at stake in both the weapons and the nuclear power industries, and there is enough ambiguity about low-level radiation and its social acceptance to keep government sponsored grants flowing to scientists. While international agencies now agree that there is no threshold below which radiation can be deemed harmless, that does not translate into policy recommendations for evacuations or power plant closures (Thompson, 2012). Only one United Nations agency, the UN Human Rights Council, has shown alarm about the post-disaster radiological effects, referring to them as “immense and longterm” and calling for greater transparency and accountability (Grover, 2013). Even if the only health impacts of nuclear power plants-during normal operations or following a serious accident-were stress and “nuclear phobia,” the risks of these human costs (which are said to include premature deaths) must be weighed against the advantages of producing nuclear power and weapongrade plutonium. Denials of radiation effects only exacerbate stress, by undermining public trust. While “no harm in low-level radiation” is an increasingly minority view, it has been replaced by “too low to measure any harm,” which is a handy excuse for continuing business as usual. For some scientists, it means there is no point in measuring the effects. The Japanese government assures the world that Fukushima victims will be closely monitored.2 The same government, however, assured the world that an accident like this could never happen.

### Impact Tools-SCS UQ

#### **Japanese subs are a show of strength against China**

Dancel 4-3

Raul, Philippines Correspondent, Straits Times, “Japanese submarine, warships dock at Philippine port near disputed South China Sea waters” <http://www.straitstimes.com/asia/se-asia/japanese-warships-dock-at-philippine-port-near-disputed-south-china-sea-waters> [Premier]

SUBIC BAY - **A Japanese submarine, escorted by two guided-missile destroyers, arrived in the Philippines on Sunday (April 3)**, ahead of annual war games between the Philippines and the United States **seen as a show of strength amid China's increasing assertiveness in the region.** The 70-man submarine Oyashio of the Japanese Maritime Self-Defence Force docked at Subic Bay, a former US military base 130km north of the capital Manila, 15 years after the last one made a port call in the Philippines. **The submarine was escorted by the Murasame-class Ariake and Asagiri-class Setogiri destroyers**. **The three warships will be on a three-day "training exercise" off Subic Bay, and then cross the disputed South China Sea, where it expects to be shadowed by the Chinese navy,** on their way to Cam Ranh Bay in Vietnam. Japanese submarine docked at Philippine port **Both the Ariake and Setogiri have had encounters with China's warships** in the East China Sea, Lieutenant Yoshinori Kobayashi told reporters during a tour of the Ariake. **This comes as the US is planning to conduct a third "freedom of navigation" passage near disputed islands in the South China Sea this month (April). Experts predict the next US challenge to the various claims in the South China Sea could occur near Mischief Reef, a feature claimed by the Philippines and which was submerged at high tide before China began** a dredging project **to turn it into an island** in 2014. Thousands of US and Filipino soldiers, meanwhile, will on Monday kick off the 12-day Balikatan (shoulder-to-shoulder) exercises to show how the Philippines, though severely outgunned, can counter China with the help of its longest-standing ally. This year's drills will for the first time involve two supersonic fighter jets the Philippines acquired recently from South Korea, and mobile surface-to-air missiles. Seriously outgunned by its much larger rival China, the Philippines has turned to allies like the US and Japan to upgrade its armed forces in recent years. In February, Japan agreed to supply the Philippines with military hardware, which may include anti-submarine reconnaissance aircraft and radar technology. **Tensions in the South China Sea - through which one-third of the world's oil passes - have mounted in recent months since China transformed contested reefs into artificial islands capable of supporting military facilities**. **Aside from the Philippines, Vietnam, Brunei, Malaysia and Taiwan also have overlapping claims. Japan and China are locked in a separate dispute over an uninhabited island chain in the East Sea**. The Philippines has asked a United Nations-backed tribunal to declare China's sea claims as illegal and the government expects a decision this year.

#### China is pissed about Japan’s exercises in the Philippines and cooperation with Vietnam– they see it as a threat

Macatuno 4-3

Allan, correspondent, Global Inquirer, Japanese submarine docks at Subic, http://globalnation.inquirer.net/138295/japanese-submarine-docks-at-subic[Premier]

The **Japanese decision to send the three vessels to the Philippines, one of the most vocal critics of China’s massive land-reclamation projects** in the region, **has drawn fire from Beijing. Top Chinese officials have slammed Japan’s push to shore up smaller regional claimants to the waters**, with **Foreign Ministry spokesman Hong Lei saying** last month that **Beijing was keeping a watchful eye on Tokyo’s moves in the area.** “**Japan** once **illegally occupied China’s islands** in the South China Sea **during WWII**,” Hong said. “**We are on high alert against Japan’s attempt to return to the South China Sea through military means**.” **The visit to Vietnam is also likely to spur an angry reaction from China.** The arrival of the Japanese vessels coincides with the Balikatan joint exercises between the U.S. and Philippine militaries, which are set to kick off Monday. MSDF personnel will also be in attendance as observers. Amy Searight, U.S. deputy assistant secretary of defense for South and Southeast Asia, said last week that **Japan is in talks with the Philippines about participating in the joint drills on a regular basis**. “Japan is talking to the Philippines about a status of forces agreement, so that Japan can regularly participate in those kinds of exercises,” Searight told a think tank event in Washington, according to Kyodo News. **The envisioned agreement would govern the operations of the Self-Defense Forces in the Philippines**. “Japan is participating (in the Balikatan drill) as an observer. Japan very much wants to participate more,” she said. **Tokyo has ramped up its cooperation** with both Manila and Hanoi, **leasing patrol aircraft** to the Philippines **and** **building stronger defense ties** with Vietnam. Defense Minister Gen Nakatani plans to visit Manila on April 23 and 24 for talks on further deepening security ties, **including the possible expansion of joint exercises** between the MSDF and the Philippine Navy, reports have said. In late February, Tokyo and Manila signed a defense equipment transfer agreement. This made the Philippines the first Southeast Asian country to have such an agreement with Japan. The agreement promotes the joint production and development of defense equipment and technology, and establishes a legal framework to do so. **According to media reports, the first transfer under the new agreement may be at least five retired MSDF TC-90 aircraft** the Japanese government plans to lease to the Philippine Navy. **The aircraft could be used for visual monitoring over the Spratly Islands.** Discussions on such a lease may take place during Nakatani’s visit slated for later this month.

#### Information asymmetries create miscalc potential in SCS

Jackson 3-30

Van Jackson, Visiting Fellow at the Center for a New American Security and a Council on Foreign Relations International Affairs Fellow, Saving the South China Sea Without Starting World War III, March 30, 2016 http://nationalinterest.org/feature/saving-the-south-china-sea-without-starting-world-war-iii-15624[Premier]

**The opaque, low-information nature of the South China Sea creates a permissive environment for many sources of conflict. When national governments lack real-time awareness** of who is doing what and where in the maritime domain, opportunistic **actors like China have the ability to exploit it—through contentious land reclamation, illegal fishing and the bullying of commercial ships** from other nations. But **even among states that aren’t tempted to exploit information asymmetries, a lack of situational awareness increases the prospect of misunderstandings, miscalculations and accidents** among nations with overlapping Exclusive Economic Zones.

#### China is upset over U.S. “freedom of navigation” exercises

Reuters 4-2

US plans third patrol near South China Sea islands Reuters | Apr 2, 2016, 09.52 PM IST, http://timesofindia.indiatimes.com/world/us/US-plans-third-patrol-near-South-China-Sea-islands/articleshow/51663965.cms[Premier]

News of the planned exercise comes a day after U.S. President Barack **Obama met with Chinese President Xi Jinping at a nuclear summit in Washington. During the meetings, Xi told Obama that China would not accept any behavior in the disguise of freedom of navigation that violates its sovereignty, in a clear warning to the United States**. Chinese **Foreign Ministry spokesman Hong Lei told** Reuters on Saturday **that** **China opposed any such exercise**. "**China** consistently respects and supports the freedom of navigation and fly over that all countries' enjoy in the South China Sea under international law, but **resolutely opposes any country using so-called 'freedom of navigation' as an excuse to damage China's sovereignty, security and maritime rights,**" Hong said.

## AFF—Natives Affirmative

#### Native Americans are disproportionately affected by nuclear waste.

Earth Talk 10 ["Reservations About Toxic Waste: Native American Tribes Encouraged To Turn Down Lucrative Hazardous Disposal Deals". March 31, 2010. Scientific American. Accessed August 8 2016. http://www.scientificamerican.com/article/earth-talk-reservations-about-toxic-waste/.][Premier]

Native tribes across the American West have been and continue to be subjected to significant amounts of radioactive and otherwise hazardous waste as a result of living near nuclear test sites, uranium mines, power plants and toxic waste dumps.  
  
And in some cases tribes are actually hosting hazardous waste on their sovereign reservations—which are not subject to the same environmental and health standards as U.S. land—in order to generate revenues. Native American advocates argue that siting such waste on or near reservations is an “environmental justice” problem, given that twice as many Native families live below the poverty line than other sectors of U.S. society and often have few if any options for generating income.  
  
“In the quest to dispose of nuclear waste, the government and private companies have disregarded and broken treaties, blurred the definition of Native American sovereignty, and directly engaged in a form of economic racism akin to bribery,” says Bayley Lopez of the Nuclear Age Peace Foundation. He cites example after example of the government and private companies taking advantage of the “overwhelming poverty on native reservations by offering them millions of dollars to host nuclear waste storage sites.”

#### **The government has historically targeted reservations to bear the brunt of radioactive waste.**

NIRS 1 ["Environmental Racism, Tribal Sovereignty And Nuclear Waste - NIRS". 2001. Nirs.Org. Accessed August 8 2016. http://www.nirs.org/factsheets/pfsejfactsheet.htm.] [Premier]

Nevadans and Utahans living downwind and downstream from nuclear weapons testing, uranium mining, and radioactive waste dumping have suffered immensely during the Nuclear Age. But even in the "nuclear sacrifice zones" of the desert Southwest, it is Native Americans--from Navajo uranium miners to tribal communities targeted with atomic waste dumps-- who have borne the brunt of both the front and back ends of the nuclear fuel cycle.

The tiny Skull Valley Band of Goshute Indians Reservation in Utah is targeted for a very big nuclear waste dump. Private Fuel Storage (PFS), a limited liability corporation representing eight powerful nuclear utilities, wants to "temporarily" store 40,000 tons of commercial high-level radioactive waste (nearly the total amount that presently exists in the U.S.) next to the two-dozen tribal members who live on the small reservation. The PFS proposal is the latest in a long tradition of targeting Native American communities for such dumps. But there is another tradition on the targeted reservations as well–fighting back against blatant environmental racism, and winning. Skull Valley Goshute tribal member Margene Bullcreek leads Ohngo Gaudadeh Devia (or OGD, Goshute for "Mountain Community"), a grassroots group of tribal members opposed to the dump. In addition to many other activities, OGD has filed an environmental justice contention before the Nuclear Regulatory Commission’s (NRC) Atomic Safety Licensing Board (ASLB).

Both the federal government and the commercial nuclear power industry have targeted Native American reservations for such dumps for many years. In 1987, the U.S. Congress created the Office of the Nuclear Waste Negotiator in an effort to open a federal "monitored retrievable storage site" for high-level nuclear waste. The Negotiator sent letters to every federally recognized tribe in the country, offering hundreds of thousands and even millions of dollars to tribal council governments for first considering and then ultimately hosting the dump. Out of the hundreds of tribes approached, the Negotiator eventually courted about two dozen tribal councils in particular.

#### **The nuclear industry is fueled by racism.**

Green 7 [Jim; “RADIOACTIVE RACISM IN AUSTRALIA”; Jim Green Friends of the Earth; Australia; February 2007; <http://www.foe.org.au/anti-nuclear/issues/oz/racism>. Accessed August 8 2016] [Premier]

The nuclear industry feeds off, profits from, and reinforces racism. The industry and its political allies have a long history of forcing uranium mines, nuclear reactors, radioactive waste dumps, and weapons tests on the land of Indigenous peoples. The industry also feeds off and reinforces imperialist, colonial patterns: colonies and Third World countries are generally home to the filthiest uranium mines, they have often been used for weapons testing, and are sometimes used as radioactive waste dumping grounds. This paper details some aspects of 'radioactive racism' in Australia. The final section also includes some articles about radioactive racism in the US and other countries.

#### **The colonial mindset justifies and enforces the nuclear oppression of indigenous people through nuclear mining and testing.**

Green 7 [Jim; “RADIOACTIVE RACISM IN AUSTRALIA”; Jim Green Friends of the Earth; Australia; February 2007; <http://www.foe.org.au/anti-nuclear/issues/oz/racism>. Accessed August 8 2016] [Premier]

Racism and atomic testing have gone hand in hand since 1945. Examples include US and British testing on Pacific islands, and French testing in the Pacific and Algeria. From 1952 to 1963, a series of nuclear weapons tests took place at Maralinga and Emu Field in South Australia, and on Monte Bello Island off the coast of Western Australia. It is highly likely that some of the uranium used in the weapons tests at Maralinga came from mines on Aboriginal land in South Australia. The tests, primarily under the control of the British government, included 12 atomic blasts as well as hundreds of "minor" tests. The twelve major nuclear tests were as follows:

Operation Hurricane (Monte Bello Islands, Western Australia)\* 3 October, 1952 - 25 kilotons – plutonium Operation Totem (Emu Field, South Australia)\* 'Totem 1' - 15 October, 1953 - 9.1 kilotons - plutonium\* 'Totem 2' - 27 October, 1953 - 7.1 kilotons – plutonium Operation Mosaic (Monte Bello Islands, Western Australia)'G1' - 16 May, 1956 - Trimouille Island - 15 kilotons'G2' - 19 June, 1956 - Alpha Island - 60 kilotons Operation Buffalo (Maralinga, South Australia)'One Tree' - 27 September, 1956 - 12.9 kilotons – plutonium 'Marcoo' - 4 October 1956 - 1.4 kilotons – plutonium 'Kite' - 11 October, 1956 - 2.9 kilotons – plutonium 'Breakaway' - 22 October, 1956 - 10.8 kilotons – plutonium Operation Antler (Maralinga, South Australia) 'Tadje' - 14 September, 1957 - 0.9 kilotons – plutonium 'Biak' - 25 September, 1957 - 5.7 kilotons – plutonium 'Taranaki' - 9 October, 1957 - 26.6 kilotons - plutonium

The general attitude of white settlers towards Aborigines was profoundly racist; Aboriginal society was considered one of the lowest forms of civilisation and doomed to extinction. Their land was considered empty and available for exploitation - 'terra nullius'. The British nuclear testing program was carried out with the full support of the Australian government. Permission was not sought for the tests from affected Aboriginal groups such as the Pitjantjatjara, Tjarutja and Kokatha.

#### **Disregard for native land justifies their disposability.**

Green 7 [Jim; “RADIOACTIVE RACISM IN AUSTRALIA”; Jim Green Friends of the Earth; Australia; February 2007; <http://www.foe.org.au/anti-nuclear/issues/oz/racism>. Accessed August 8 2016] [Premier]

In "Fallout – Hedley Marston and the British Bomb Tests in Australia" (Wakefield Press, 2001, p.32), Dr. Roger Cross writes: "Little mention was made of course about the effects the bomb tests might have on the Indigenous Australian inhabitants of the Maralinga area, a community that had experienced little contact with white Australia. In 1985 the McClelland Royal Commission would report how Alan Butement, Chief Scientist for the Department of Supply wrote to the native patrol officer for the area, rebuking him for the concerns he had expressed about the situation and chastising him for "apparently placing the affairs of a handful of natives above those of the British Commonwealth of Nations". When a member of staff at Hedley Marston's division queried the British Scientist Scott Russell on the fate of the Aborigines at Maralinga, the response was that they were a dying race and therefore dispensable."

Ernest Titterton, a leading member of the so-called Atomic Weapons Tests Safety Committee and the main apologist for the British tests, told a 1984 hearing of the Royal Commission into British Nuclear Tests in Australia that if the Aborigines objected to the tests, they could have voted the government out. Yet Aboriginal people did not gain voting rights until 1967. And they accounted for a very small minority of the Australian population.

#### **Modern plans associated with waste disposal for nuclear power parallel the logic of colonialism and attempt to fracture indigenous communities.**

Green 7 [Jim; “RADIOACTIVE RACISM IN AUSTRALIA”; Jim Green Friends of the Earth; Australia; February 2007; <http://www.foe.org.au/anti-nuclear/issues/oz/racism>. Accessed August 8 2016] [Premier]

In February 1998, the federal government announced its intention to build a national nuclear waste dump in central South Australia.

There were parallels between the atrocities inflicted on Aboriginal people during the British nuclear testing program and the plan for a national radioactive waste dump:

the dump represented another forced imposition of radiological toxins.

Aboriginal land was seized in support of the dump just as it was for the weapons tests. This alienation included but went beyond the annulment of formal Native Title rights and interests over the dump site, as part of the the Federal Government's compulsory acquisition of land for the dump.

One of the patterns of radioactive racism is that Indigenous communities are divided, dislocated and disempowered, and thus all the more vulnerable to the next assault from the nuclear industry. The victory in the campaign to prevent the imposition of a nuclear waste dump in SA was a welcome exception to the general pattern. The Kupa Piti Kungka Tjuta - a senior Aboriginal women's council, comprising women who had suffered the effects of the British nuclear testing program - played a leading role in the campaign against the dump, as were the Kokatha and Barngala Native Title claimant groups.

#### **Coercive actions are taken in order to force indigenous group to accept dump sites.**

Green 7 [Jim; “RADIOACTIVE RACISM IN AUSTRALIA”; Jim Green Friends of the Earth; Australia; February 2007; <http://www.foe.org.au/anti-nuclear/issues/oz/racism>. Accessed August 8 2016] [Premier]

Aboriginal groups were coerced into signing agreements consenting to test drilling of short-listed sites for the proposed dump. The Federal Government made it clear that if consent for test drilling was not granted by Aboriginal groups, that drilling would take place anyway. A clear signal of the Government's intent to proceed regardless of Aboriginal support for or engagement in the process came on April 30, 1999, when the Federal Government issued a Section 9 notice under the 1989 Land Acquisition Act which gave the government legal powers to conduct work on land that it might acquire to site the dump.

Aboriginal groups were put in an invidious position:

they could attempt to protect specific cultural sites by engaging with the Federal Government and signing agreements, at the risk of having that engagement being misrepresented or misunderstood as consent the dump per sé; or

they could refuse to engage in the process, thereby having no say in the process whatsoever.

#### **Governments disrespect native culture equating the value of their culture with paltry monetary figures.**

Green 7 [Jim; “RADIOACTIVE RACISM IN AUSTRALIA”; Jim Green Friends of the Earth; Australia; February 2007; <http://www.foe.org.au/anti-nuclear/issues/oz/racism>. Accessed August 8 2016] [Premier]

Dr. Roger Thomas, a Kokatha man, told an ARPANSA forum on February 25, 2004: "The most disappointing aspect to the negotiations that the Commonwealth had with us, as Kokatha, is to try to buy our agreement. This was most insulting to us as Aboriginal people and particularly to our elders. For the sake of ensuring that I don't further create any embarrassment, I will not quote the figure, but let me tell you, our land is not for sale. Our Native Title rights are not for sale. We are talking about our culture, our lore and our dreaming. We are talking about our future generations we're protecting here. We do not have a "for sale" sign up and we never will."

According to The Age, the meetings took place at a Port Augusta motel in September 2002 and the Commonwealth delegation included representatives of the Department of the Attorney-General, the Department of Finance and the Department of Education and Science and Training. (Penelope Debelle, "Anger over native title cash offer", The Age, May 17, 2003.)

The Age article quotes Dr. Thomas saying: "The insult of it, it was just so insulting. I told the Commonwealth officers to stop being so disrespectful and rude to us by offering us $90,000 to pay out our country and our culture."

The Age article quotes Kokatha Land Council representative Andrew Starkey saying "It was just shameful. They were wanting people to sign off their cultural heritage rights for a minuscule amount of money. We would not do that for any amount of money."

#### **Nuclear production requires racism.**

WISE 93 [Environmental Racism and Nuclear Development By the WISE-Amsterdam Collective WISE News Communique; 387-388; March 28, 1993; [www.antenna.nlwise](http://www.antenna.nlwise); Accessed August 8 2016] [Premier]

A nuclear society cannot exist without racism. It is impossible to even imagine a harmonious and sustainable society with nuclear power and weapons yet free of racism. On the other hand, it is impossible to imagine a harmonious and sustainable society without nuclear power and weapons but still racist.

Last year, the year that "celebrated" the 500th anniversary of Columbus's voyage, was a year that brought many reminders of this along with its stark reminders of the legacy of 500 years of colonialism, racial injustice and human rights problems. Forums such as the World Uranium Hearing and the Second Global Radiation Victims Conference held in September focused attention on a new kind of colonialism -- nuclear colonialism -- and we began hearing the term "environmental racism" coming up more and more in discussion. This special issue of the News Communique was conceived as our way of helping to keep international attention focused on these issues, as well as a way of contributing to the discussion, and to the search for solutions.

Environmental racism is defined by Arjun Makhijani ... as a "particular form that is reflected in the fact that many of the effects of environmental problems hit specific groups in the society the hardest." Those groups are victims of prejudice, whether racial or economic. Examples can be drawn from all over the world, but the nuclear establishment especially provides graphic illustrations: Each phase of nuclear development -- both civilian and military -- has a deadly impact on all forms of life, but those peoples who have been hit the hardest have been the traditional landholders.

Among those hardest hit by the Chernobyl catastrophe, for example, were the Sami reindeer herders and landowners living in northern Scandinavia, Finland and the former USSR. The Sami are a semi-nomadic people who follow the huge herds of reindeer on their natural migration from the uplands in summer to lowland pastures in winter. They have made a compromise between their culture and the outside world by selling their reindeer (from which they derive their staple food, much of their clothing, tools and shelter) to their southern neighbors. In this way they are able to retain their traditional ways, at the same time accepting some of the technological advances offered by 'civilization'. When Chernobyl's fallout dropped onto the feeding grounds of their reindeer herds, this way of life, even the very existence of these people, became threatened.

All too often it is people like the Sami who are the first to pay the costs of humankind's efforts to control the atom. This has been true from the very beginning of nuclear development, and it is true all along the nuclear chain -- a chain that begins in those few areas still occupied by their traditional landholders with uranium mining, and ends on those same lands with weapons testing and waste storage.”

#### **The nuclear industry wreaks havoc on native communities all over the world.**

WISE 93 [Environmental Racism and Nuclear Development By the WISE-Amsterdam Collective WISE News Communique; 387-388; March 28, 1993; [www.antenna.nlwise](http://www.antenna.nlwise); Accessed August 8 2016] [Premier]

This same scenario is elsewhere being played out again and again. On Aboriginal lands in Australia, the Kokotha are fighting exploitation and development of uranium resources on their lands by Australian and French mining companies. In Namibia, while still under illegal occupation by South Africa, uranium was mined and other resources plundered with the help of the British-based multinational Rio Tinto Zinc. Even now, three years after independence from occupation by South Africa, the mining continues. In Canada, because of destruction of their lands from uranium mining by Canadian corporations, Adele Ratt of the Cree Nation in La Ronge declared the entire north of Saskatchewan to be in a state of emergency. In the Pacific, the Tahitians and other Pacific Islanders are still feeling the devastating effects of French nuclear weapons testing, despite the current moratorium. Elsewhere in the Pacific, in the Marshall Islands, already devastated by US nuclear tests, the islanders' homes are being considered by the US as a dump site for nuclear wastes from the US mainland. In the former Soviet Union information is slowly coming to light about the effects of its nuclear weapons testing program on the Kazakh minority living near the Semipalatinsk test site, and on tribal societies such as the Samoyeds, Khanty, Mansi, Evenks and Chukchee, among others, living to the north of the Novaya Zemlya test site in Siberia. In addition, it only recently became known that there had been a secret nuclear weapons testing site in Chukotka during the 1950's and 1960's, further exposing the Chukchee people to fallout. The mortality rate resulting from cancer among the Chukchee is thought to be the highest in the world.

#### **The nuclearization of society enforces an epistemologically bankrupt mode of thinking in place of traditional ways of indegenous people.**

WISE 93 [Environmental Racism and Nuclear Development By the WISE-Amsterdam Collective WISE News Communique; 387-388; March 28, 1993; [www.antenna.nlwise](http://www.antenna.nlwise); Accessed August 8 2016] [Premier]

Racism, by itself, is a symptom of the deep sickness at the heart of our society. But racism never exists by itself. The sickness of which it is a symptom is rooted in the shattering of what was once a strong connection the people who walked the earth had with the land and all living systems. To understand this rupture -- a rupture which underlies the entwined oppressions of race, sex, class and ecological destruction -- we need to look at two things: first, at the current model of development, then at the history of the last 500 years which led to this model.

The current model of development includes a system that benefits a relatively small part of the world's population who can be found in the industrialized countries and in the local elites of Central and Eastern Europe and the South. For this model to operate, political choices have to be made. In the case of nuclear development, one of the choices has been to ignore the social costs. When social costs are ignored, selected groups of people are made victims. This is marginalization.

More is involved here than even the marginalization of people. Knowledge is also marginalized, set aside, lost. Traditional ways of thinking and practical knowledge disappear forever. With the development of a nuclear (nuclearized?) society, we are becoming poorer in knowledge and solutions. We have lost wisdom, impoverishing ourselves by cutting ourselves off from receiving what Starhawk, author of Dreaming the Dark, calls "the rich gifts of vision that come from those who see from a different vantage point."

#### **We must take a stand against dominant culture’s willingness to say some lives are worth less in order to reject the divisions dominant modes of power create.**

WISE 93 [Environmental Racism and Nuclear Development By the WISE-Amsterdam Collective WISE News Communique; 387-388; March 28, 1993; [www.antenna.nlwise](http://www.antenna.nlwise); Accessed August 8 2016] [Premier]

With its specialization and compartmentalization, the current model pushes us to be nuclear and racist, or anti-nuclear, or anti-racist. By accepting its divisions, we find ourselves still caught within its confines. In this way we play the game of those enforcing this model, of those in power. We need to be creative and change the rules. We must redefine power and reshape it. We must see that it becomes something shared with others, something empowering, and not something exercised over them or used against them. And we need to link these two movements, now separated under the current model, and move together to create a healthy society, based on justice, equality and sustainability, where people are no longer afraid of differences in others, or afraid to be different. But to do that, we first have to make the connections between all systems of domination. And we must recognize that the dominant culture is willing -- to a frightening extent -- to write off the lives and interests of those groups of people it considers of low value.

#### **Cap 🡪 Racism, Colonialism, Sexism**

WISE 93 [Environmental Racism and Nuclear Development By the WISE-Amsterdam Collective WISE News Communique; 387-388; March 28, 1993; [www.antenna.nlwise](http://www.antenna.nlwise); Accessed August 8 2016] [Premier]

Whole tracts of land that had once seen common use were being expropriated by the lords -- now truly landlords -- and put to producing for the market not what was needed, but what could be sold for profit. The poor -- and now landless -- were forced into wage labor at wages that did not provide even the subsistence income they had previously expected. Their communities became fragmented, and the decisions which had once been left to the villages or their representatives were appropriated by the landlords along with the land.

Those who emigrated were primarily those who had been cut off from the experience of a tie to the land and community -- some only for a generation. They took with them this new ethic of private property and the absolute right of ownership, which they imposed not only on the Americas, but on Africa, India and the Far East as well. What is more, they extended this ethic to the ownership of people. The property ethic supported a ruthless slave trade, justified the taking of lands from native peoples, and reinforced the European notion of the inferiority of women.

#### **Uranium mining disproportionately effects indigenous communities.**

PSR 16 ["Dirty, Dangerous And Expensive: The Truth About Nuclear Power". 2016.Psr.Org. Accessed August 8 2016. http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html?referrer=https://www.google.com/][Premier]

Uranium, which must be removed from the ground, is used to fuel nuclear reactors.  Uranium mining, which creates serious health and environmental problems, has disproportionately impacted indigenous people because much of the world’s uranium is located under indigenous land.  Uranium miners experience higher rates of lung cancer, tuberculosis and other respiratory diseases. The production of 1,000 tons of uranium fuel generates approximately 100,000 tons of radioactive tailings and nearly one million gallons of liquid waste containing heavy metals and arsenic in addition to radioactivity.([3](http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html#3))  These uranium tailings have contaminated rivers and lakes. A new method of uranium mining, known as in-situ leaching, does not produce tailings but it does threaten contamination of groundwater water supplies.

#### Nuclear production on native lands is nuclear colonialism

Endres 09

Endres, Danielle(2009)'The Rhetoric of Nuclear Colonialism: Rhetorical Exclusion of American Indian Arguments in the Yucca Mountain Nuclear Waste Siting Decision',Communication and Critical/Cultural Studies,6:1,39 — 60[Premier]

Whether the resulting technologies of nuclear production\*nuclear weapons and nuclear power\*are ultimately beneficial or harmful for society (as examined by early nuclear communication scholarship on the relationship between nuclear technologies and democracy) remains controversial.1 Although much public debate over nuclear technologies has focused on the consequences of nuclear power and weapons, increasingly these debates are turning to discussion of the localized health, environmental, and cultural legacies of nuclear production from cradle to grave. Every stage in the nuclear production process, from uranium mining and milling to fission reactors to nuclear weapons development, produces radioactive waste that, unless safely contained, will continue to emit unsafe levels of radiation for generations to come. The turn to examining the environmental consequences of nuclear production illustrates the disproportionate effects of our nuclear era on local indigenous populations. Nuclear weapons and nuclear power have devastating consequences for local populations surrounding the sites of nuclear production, particularly for indigenous people. Donald Grinde and Bruce Johansen, Grace Thorp and Valerie Kuletz have used a term coined by Ward Churchill and Winona LaDuke\*radioactive or nuclear colonialism\*to describe the disproportionate destruction of indigenous people and their land as a result of uranium mining and nuclear weapons development.2 Nuclear colonialism is a system of domination through which governments and corporations target indigenous peoples and their lands to maintain the nuclear production process. According to LaDuke, ‘‘much of the world’s nuclear industry has been sited on or near Native lands’’ including reservation, treaty-guaranteed or sacred lands.3 This system operates at the expense of the health of indigenous peoples, their cultural survival and their self-determination. Although there is sufficient evidence that nuclear colonialism is an empirically verifiable phenomenon, previous studies do not attend to a crucial aspect of this phenomenon, which is how nuclear colonialism is perpetuated through public policy deliberation and corporate discourses. In this essay, I argue that nuclear colonialism is significantly a rhetorical phenomenon that employs particular discursive strategies for enabling the perpetuation of nuclearism, continuation of colonialism, and deliberate exclusion of indigenous voices from decision-making. These strategies are successful, in part, due to the contested nature of indigenous nationhood and the public’s benign neglect of indigenous lands and peoples.

#### The world is scarred by the legacy of nuclear colonialism—nuclear power was inflicted upon Native populations to

Endres 09

Endres, Danielle(2009)'The Rhetoric of Nuclear Colonialism: Rhetorical Exclusion of American Indian Arguments in the Yucca Mountain Nuclear Waste Siting Decision',Communication and Critical/Cultural Studies,6:1,39 — 60[Premier]

Before attending to the rhetorical nature of nuclear colonialism, it is important to emphasize the scope and material effects of nuclear technologies on indigenous peoples and their lands. This is a history of systematic exploitation and indigenous resistance, spanning from the 1940s to present. As the Indigenous Environmental Network writes, the nuclear industry has waged an undeclared war against our Indigenous peoples and Pacific Islanders that has poisoned our communities worldwide. For more than 50 years, the legacy of the nuclear chain, from exploration to the dumping of radioactive waste has been proven, through documentation, to be genocide and ethnocide and a deadly enemy of Indigenous peoples. ... United States federal law and nuclear policy has not protected Indigenous peoples, and in fact has been created to allow the nuclear industry to continue operations at the expense of our land, territory, health and traditional ways of life. ... This disproportionate toxic burden\*called environmental racism\*has culminated in the current attempts to dump much of the nation’s nuclear waste in the homelands of the Indigenous peoples of the Great Basin region of the United States.4 From an indigenous perspective, the material consequences of nuclear colonialism have affected the vitality of indigenous peoples. This can be seen clearly in both uranium mining and nuclear testing. Uranium mining is inextricably linked with indigenous peoples. According to LaDuke, ‘‘some 70 percent of the world’s uranium originates from Native Communities.’’5 Within the US, approximately 66 percent of the known uranium deposits are on reservation land, as much as 80 percent are on treaty-guaranteed land, and up to 90 percent of uranium mining and milling occurs on or adjacent to American Indian land.6 To support the federal government’s desire for nuclear weapons and power production, the Bureau of Indians Affairs (BIA) has worked in collusion with the Atomic Energy Commission and corporations such as Kerr-McGee and United Nuclear to negotiate leases with Navajo, Lakota and other nations for uranium mining and milling on their land between the 1950s to the present.7 BIAnegotiated leases are supported by the complex body of Indian Law, which I will demonstrate enables federal intrusion into American Indian lands and governmental affairs. These leases are heavily tilted in favor of the corporations so that American Indian nations received only about 3.4 percent of the market value of the uranium and low paid jobs.8 Uranium mining has also resulted in severe health and environmental legacies for affected American Indian people and their lands. From uranium mining on Navajo land, there have been at least 450 reported cancer deaths among Navajo mining employees.9 Even now, the legacy of over 1000 abandoned mines and uranium tailing piles is radioactive dust that continues to put people living near tailing piles at a high risk for lung cancer.10 The history of exploitation and resistance continues with nuclear weapons production. As nuclear engineer Arjun Makhijani argues, ‘‘all too often such damage has been done to ethnic minorities or on colonial lands or both. The main sites for testing nuclear weapons for every declared nuclear power are on tribal or minority Nuclear Colonialism 41 Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 lands.’’11 From 1951 to 1992, over 900 nuclear weapons tests were conducted on the Nevada Test Site (NTS)\*land claimed by the Western Shoshone under the 1863 Treaty of Ruby Valley. The late Western Shoshone spiritual leader Corbin Harney proclaimed Western Shoshone to be ‘‘the most nuclear bombed nation in the world.’’12 According to Western Shoshone Virginia Sanchez, indigenous people may have suffered more radiation exposure because of their land-linked lifestyle of ‘‘picking berries, hunting and gathering our traditional foods,’’ resulting in ‘‘major doses of radiation.’’13 Yet, the federal government and legal system have made only token gestures toward compensating victims of nuclear testing. The Radiation Exposure Compensation Act (RECA) has strict qualification guidelines that have excluded many downwinders from receiving compensation.14 In addition to the effects on human health from nuclear testing, there is also an environmental toll through contaminated soil and water, which could harm animal and plant life.15

#### American Indians want the aff

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American Indian resistance is an important part of the story of nuclear colonialism. Despite the Radiation Exposure Compensation Act’s limitations, American Indian activists were instrumental in getting it passed. In response to discussion of renewed uranium mining in the US to support new nuclear reactors, the Navajo nation banned uranium mining and the Lakota nation successfully prevented corporate exploration of potential uranium mines on the Pine Ridge reservation.16 The Western Shoshone actively resisted nuclear testing from the 1980s to 1992 and challenged recent proposals that may portend renewed testing at the NTS. Every May, the Shundahai Network sponsors a Mother’s Day event at the Nevada test site, which culminates in a direct action to assert Western Shoshone land rights. Furthermore, resistance from Western Shoshone people and Utah downwinders forced the cancellation of a non-nuclear sub-critical test (Divine Strake) proposed for the NTS in June 2006. Now, with over 60 years of uranium mining, nuclear weapons production and nuclear power, we face a high-level nuclear waste crisis. Once again, power brokers have looked to exploit American Indian lands, resources and peoples. In the twentyyear process of researching and authorizing a federal high-level nuclear waste repository site, only sites on American Indian land were seriously considered. In addition to the Yucca Mountain site, American Indian nations were also targeted for temporary waste storage through the now-defunct Monitored Retrievable Storage (MRS) program.17 And recently, a proposal by Private Fuel Storage (PFS) and the Skull Valley Goshutes to temporarily store nuclear waste at Skull Valley Goshute reservation was defeated by Skull Valley activists working with the State of Utah against the Skull Valley government and PFS.18 The struggle over the Yucca Mountain nuclear waste site is, as Kuletz pointed out, a continuation of struggles against nuclear colonialism: ‘‘Indian protests over the use of Yucca Mountain as a high-level nuclearwaste dump cannot be seen as an anomaly. Rather, they are a part of a persistent pattern of resistance to military occupation and nuclear activity.’’19 Although we do not yet know the health and environmental effects of permanent nuclear waste storage, nuclear colonialism is not just about health and environmental devastation. It also intersects with sovereignty, nuclearism and colonialism, to which I now turn

#### The US and other countries dump radioactive waste in the Yakama Nation—that indefinitely threatens indigeneous peoples there

Ryser et al 16

[-- is descendant from Oneida and Cree relatives and lived his early life in Taidnapum culture. He is Chairperson of the Center for World Indigenous Studies (CWIS), a research, education and public policy institution and he is a Fulbright Research Scholar. He has served as Senior Advisor to the President George Manuel of the World Council of Indigenous Peoples, as former Acting Executive Director of the National Congress of American Indians (USA), and a former staff member of the American Indian Policy Review Commission - a Joint US Congressional Commission. He holds a doctorate in international relations, teaches Fourth World Geopolitics, Public Service Leadership, and Consciousness Studies at the CWIS Masters Certificate Program (www.cwis.org). He is the author of numerous essays including "Observations On Self and Knowing" in TRIBAL EPISTEMOLOGIES (Aldershot, UK), "Indigenous and Traditional Knowledge" (Berkshire) and four books including INDIGENOUS NATIONS AND MODERN STATES published by Routledge (2012). He is the Principal Investigator for the CWIS Radiation Exposure Risk Assessment Action Research Project, “The Indigeneous World Undera Nuclear Cloud,” 27 Mar 2016, Truth-out] [Premier]

The United States did not seek public opinions or debate about government plans to create the world's first nuclear weapons. The secretive Manhattan Project was launched to develop an atomic bomb. Secretary of War Henry L. Stimson, (a Republican serving under President Harry S. Truman) commissioned Hanford in 1943 to produce the extremely radioactive plutonium for the US government. Classified government research projects were first located at three public universities (Columbia University, University of Chicago, and University of California at Berkeley). Three custom-built facilities were constructed at Oak Ridge, Tennessee, Los Alamos, New Mexico and Hanford, Washington. In total, over 2 billion dollars ($17,7 billion in 2015 USD) was spent on nuclear war research and development. The estimated cost to the current and intergenerational health of peoples, lands, culture and waterways, however, is still unknown. The US government selected lands in the Yakama Nation's territory characterized as "barren." It was an ideal site for the nuclear reactors that would provide easy access to the Columbia River's fresh water. Hanford reactors were built on and used the surrounding land and a 50-mile stretch of the Columbia River to produce war grade materials. In most cases the 50,000 workers at the site did not know they were working to build three nuclear reactors. Just 18 months after breaking ground for the plutonium reactor the US military dropped an atomic bomb on Japan's Nagasaki. The 1985 Nobel Prize for Peace recipient Physicians for Social Responsibility reported that radioactive wastes were buried in the soil and dumped into the Columbia River. High-level waste was stored in single-shell storage tanks while the plutonium reactor was constructed. Hanford reactors refined 60 percent of the plutonium produced by the United States government and eventually closed the reactors down retaining the site for depositing more nuclear waste. The United States continues to add to this deadly mix of radioactive materials and toxic chemicals to this day. Human industry has many good and important qualities. Most human industry helps the quality of life. But, almost any and all human activity produces a byproduct -- waste -- that can damage the livability of human society. Human industrial waste does not generally concern communities when there is a working waste disposal program. Organized disposal takes unwanted leftovers to a disposal site and safely buries or incinerates it. But, what if the waste created in one place is then taken to your backyard and buried without anyone asking for your consent? And, what if that buried waste becomes lethal to life? What if it contaminates soil, plants, animals and people? Contaminating waste becomes a big problem. That is precisely what happened to the Yakama Nation along with 1.9 million non-tribal people in the Columbia River region. Since the US began uranium mining on the Spokane Reservation and bomb making in Yakama ceded territory it has created the most radioactively contaminated region in the world. With the construction and later decommissioning of nuclear power plants the disposal of spent radioactive fuel rods has added to the radioactive waste. The Hanford Nuclear waste site that receives radioactive materials from around the US and from some countries stores waste near the banks of the Columbia River. This places the peoples of Yakama and those living on the Yakama and Columbia Rivers in a state of indefinite danger. The Spokane Indian Tribe has the 350-acre Midnite Uranium Mine located inside its territory. The mine was originally opened in 1950 and is now closed [See Columbia River Basin Radiation Sites above]. The Midnite Mine was opened to support the U.S. nuclear arms race with the Soviet Union. It is now the site of 35 million tons of radioactive waste rock and uranium ore. According to Spokesman Review reporter Becky Kramer the dormant Midnite Mine will require at least a decade to "clean up." The managing company Newmont and its subsidiary Dawn Mining have the contract to perform the clean up at a cost of $193 million. Wastewater (monitored for radioactivity) is being discharged into the Spokane River that in turn, feeds into the Columbia River. The Yakama nation reserved territory and ceded territory hugs the middle of the Columbia River. This is where Hanford's engineers dumped 400,000 gallons of radioactive water and buried radioactive waste under ground. Yakama's governing Council is concerned with the effects of Hanford on its reserved 2,031 square mile territory as well as the ceded territory. The Yakama government regards locating the contaminated Hanford site in their territory as a violation of the Yakama/US Treaty of 1855. The Yakama has 10,851 members and another 20,000 residents. Its territory is larger than the states of Rhode Island or Delaware and half the size of Connecticut. The United States government without the consent of Yakama's government created the Hanford plutonium reactor in an atmosphere of intense secrecy. And then the US made the site a radioactive dump.

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Ryser et al 16

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Peoples in the Nuclear Bull's Eye The Yakama Nation and her neighboring nations (Spokane, Confederated Tribes of the Colville Indian Reservation, Nez Perce, Umatilla and the Confederated Tribes of the Warms Springs Reservation) are in the reach of the Hanford Nuclear Waste Site and the Midnite Uranium Mine. There are six other highly radioactively contaminated sites in Fourth World nation territories worldwide and many more storing spent fuel rods from nuclear power plants as well as radioactive hospital waste. 2016 0328n 3 Figure 2 - Nine states detonated more than 2150 nuclear bombs since 1945 into the present after most bomb tests ceased. (Click to enlarge in new window) An estimated total of twenty additional Fourth World territories in Asia, Europe, Africa, the Middle East, North America and the Pacific Islands similar to the Yakama, Navajo and Shoshone territories in the US function as sites for the detonation of nuclear bombs, and as storage sites for nuclear waste, and toxic chemicals. The United States government and contracted waste management companies have located up to six hundred radiation and toxic chemical waste sites on Indian reservations leasing their land for that purpose. Locating waste disposal sites in these ways easily resulted from legal loopholes Fourth World territories provide -- as spaces where state and international laws regarding environmental health and nuclear waste can be circumvented or laws are non-existent. The nuclear states (United States, Russia, France, Britain, China, Israel, and India) avoid testing weapons or storing radioactive and toxic waste on their own lands. They rather favor territories with relatively low-density populations and limited internal governmental regulation while generally avoiding obtaining informed consent or authorization from the affected communities. Significantly none of the bomb making and waste producing states considered in advance of developing plutonium reactors for bombs and electrical generation how to dispose of the waste safely. Despite all of the technological capabilities making radioactive materials no similar effort was early on developed to control the adverse effects of waste products on life. Burying radioactive waste with the probability of unanticipated emissions and leaks remains the method for disposing of the deadly materials. Some of the toxic sites resulting from more than 2150 nuclear bomb detonations and radioactive dump sites in Fourth World Territories and the responsible governments depicted on the map above include: The French government detonated thirteen nuclear bombs in Tuareg territory (Algeria) in the 1960s. They released radioactive gases into the atmosphere and spread radioactive molten rocks across the land. These events exposed Tuaregs to high levels of radiation. No study to date has been conducted to determine the effects these exposures may have on the health and intergenerational lives of the Tuareg. Kazakh territory on the steppe in northeastern Kazakhstan was the place for hundreds of atmospheric and underground nuclear tests conducted by the Union of Soviet Socialist Republics (Russian Federation is the successor) in the 1940s. Studies conducted years later determined that more than 200,000 Kazakh's and other local residents were exposed to intense radiation. These exposures resulted in high rates of cancers. No follow-up epidemiological studies have been conducted to assess the intergenerational consequences of radioactive exposures. The Uyghurs, Hui and Tadjiks in China's northwestern Xinjiang province were exposed to atomic radiation in 1964 and thermonuclear detonations in 1968. The People's Republic of China established Uyghur territory as its prime nuclear test site. At least two generations of Uyghurs, Hui and Tadjiks (a population of 10.95 million) may continue to experience the effects of radioactive and toxic waste exposures. The Pakistani government conducted nuclear detonations in 1998 in Baluchi territory at Ras Koh Hills. The Baloch Society of North America and Friends of Balochistan organized protests at the Pakistani Embassy during the detonations to call attention to the "heinous crime committed against our people." The Indian government conducted its first nuclear detonation in 1974 and continued nuclear test in 1998 in Rajastan the territory of Bhil. Britain conducted atmospheric tests in the 1950s in the Maralinga home of the Pitjantjatjara and Yankunytjatjara. Studies on these peoples were truncated. They did not result in any conclusions about exposure effects on health and genetic changes. The United States of America conducted more than 1100 nuclear detonations in the atmosphere, underground and aboveground (1944-1998) and nuclear waste dumps solely in Fourth World Territories. Marshal Islanders, Paiutes, Shoshone, Kiribati, Yakama, Spokane, Navajo, Mescalero Apache, and Aleutes are among the peoples directly affected by US radiation releases from 1943 to the present. The Taiwan government through the Taiwan Power Company (Taipower) stores 100,000 barrels of high level nuclear waste from the island country's three nuclear power plants. Storage was located at the Lanyu nuclear waste storage facility built in 1982 on the territory of the Tao (also known by the Japanese name as Yami). The Tao are a fishing people who have occupied their island (Ponso no Tao meaning "island of the people" [Orchid Island]) for at least a thousand years. In 2002 and 2012, there were major protests by the Tao, calling on Taipower to remove the nuclear waste from the island. The Yakama Nation and the Spokane Indian Tribe along the Columbia River host the most radioactively toxic region in the world. The Mescalero Apache are the first Fourth World nation to experience an atomic bomb detonated in their territory. Now many Fourth World nations live in irradiated territories under the nuclear cloud. In the name of "national security" all of the nuclear governments have maintained a policy of deliberately not informing residents of Fourth World territories in advance of nuclear tests. Human subjects experimentation using radioactive materials on native peoples, and siting of nuclear waste dumps go on without consent. No epidemiologic studies been concluded to determine exposure effects on health or cultures. Indeed the US Atomic Energy Commission (AEC) records predating 1974 documenting tests, human subject experimentations and radiation exposures have mysteriously disappeared. All records from 1974 remain top secret and not available for scrutiny outside the AEC or its successor the US Department of Energy.

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Risks of Radioactive and Chemical Exposures Faced by Fourth World Peoples Medical, genetic and social researchers have attempted to understand the complex public health effects of exposure to radioactive elements. Researchers conducting human subjects experiments repeatedly conclude that radioactive exposures cause many serious health problems. Various types of cancers, tumors, genetic mutations, congenital malformations, heart failure, gastrointestinal disorders, immunological dysfunction, and infertility are the common results. For Fourth World peoples, these risks overlap the destruction of culture and heritage, natural resources and and denial of their human rights. Contaminated plants, water, animals, and soil in the world's nuclear "hot spots" are also the foods, medicines, and sacred places. As with any human society these are central to indigenous religions, cultures, identities, societies, economies, and knowledge bases -- life. Thus, the burden of nuclear contamination essentially destroys these life-supporting resources and amounts to cultural genocide, or culturcide. These consequences are particularly acute on the Spokane Indian Reservation, parts of the Confederated Tribes of the Colville Reservation and the Yakama. Health Consequences Radioactive substances carry uniquely dangerous characteristics compared to other toxins made by human industry. When nuclear technology was first being developed, researchers quickly discovered that radioactive isotopes had a "super-poisonous" quality. They destroy cells, damage the immune and digestive system, and accelerate aging and death. Radioactive isotopes accumulate in different organs of the body, including the lungs, thyroid, or kidneys. There, they trigger growth of cancerous cells. Worse, the consequences are far-reaching: they cause trans-generational harm through genetic alteration. Anyone exposed to the fallout of nuclear accidents, waste disposal or tests may experience any number of consequences including increased cancer rates, birth defects, severe cognitive disabilities, premature aging and death. Thyroid cancer and leukemia are among the most common cancers associated with radiation exposure. It is also an established cause of cardiovascular disease and solid tumors. However, It is not just high-levels of radiation exposure that are dangerous. As early as 1956, a report commissioned by the US Atomic Energy Commission (AEC) found that even low-levels of radiation could cause harmful genetic changes in individuals and in entire populations with significant trans-generational results. In a recent major World Health Organization study, scientists pointed to the emissions from nuclear power plants as a specific source of potential increased cancer risk -- particularly from disposed spent radioactive fuel rods. Ecological Consequences Nuclear weapons, electrical power reactors and radioactive materials waste disposal results in the contamination of surface and subsurface water and soil with substances such as radioactive plutonium, uranium, strontium and cesium. These materials increase mutations, and they remain harmfully toxic for thousands or even millions of years. Accidents at nuclear power facilities have resulted in decreases in regional animal and plant populations and damaging food sources, water sources and entire ecosystems. Studies conducted around Hanford, Washington revealed that even small concentrations of nuclear waste damaged plants, contaminated soil, and rendered edible crops dangerous to eat. To date, the only containment "solution" is to bury the waste. However, burial is neither safe nor predictable, since there are no successful ways to dispose of waste or remediate contaminated sites. Various amounts of radioactive materials continue to be found in animals, soils, plants, and water near storage and production facilities. Studies suggest that protracted exposure to nuclear waste has resulted in genetic and epigenetic mutations in wildlife. Cultural Consequences The continuity of cultures in nuclear zones is an unstudied topic. The dynamic relationship between a people, earth and the cosmos is dramatically interrupted when the catastrophic introduction of nuclear radiation and toxic chemicals lays waste on a society. Fourth World nations across the globe repeatedly insist that the states responsible for the contamination of their territories have failed to clean up contaminated sites or to prevent further damage. Even where state's government bodies have tried to manage the health risks of radioactive contamination, they have done so in ways that neglect harmful consequences to cultures. Some state's governments use risk avoidance strategies to reduce or prevent damage to people's health. In northwest United States, for example, the US Department of Ecology uses fish consumptions rates to prevent people from eating irradiated fish -- telling the public not to eat high levels of fish to avoid cancer risks. Instead of cleaning up the waste, or preventing its storage in the first place, avoidance warnings ask Fourth World peoples to stop using foods and medicines, even though they are core aspects of their cultures and community.

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#### The aff breaks down rhetorical colonialism

Endres 09

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This essay is a first step in articulating nuclear colonialism as a rhetorical phenomenon. The rhetoric of nuclear colonialism draws from the discourses of colonialism and nuclearism to justify the continued disproportionate and unjust use of indigenous lands to sustain the US national interest in nuclearism. My articulation of the rhetoric of nuclear colonialism contributes to rhetorical theory by demonstrating how a phenomenon often expressed with empirical evidence fundamentally relies on discourse for its perpetuation. This reliance on rhetoric includes the use of particular rhetorical strategies such as naming practices, shifting the burden of proof, and strategic silence. These strategies work to exclude American Indian nations and their arguments from the deliberative process. These strategies also help to complete our understanding of the concept of rhetorical exclusion. Because the rhetoric of nuclear colonialism is more complicated than the limited strategies presented in this essay, further research should be done to disclose the rhetoric of nuclear colonialism. My exploration of the rhetoric of nuclear colonialism also suggests that colonial practices and discourse still exist in the US and other areas of the world. While critical-cultural communication scholars have engaged in post-colonial criticism, we should also engage in and encourage colonial and indigenous criticism. This essay identifies several aspects of colonialism, such as the catch-22 of political sovereignty, the complexity of American Indian nationhood and particular strategies of rhetorical exclusion, each meriting continued study. If we cannot recognize the colonial relationship between American Indians and the federal government, our attempts to understand American Indian movements and resistance will fall short. This essay is aligned with recent work in nuclear communication focused on localizing and particularizing the consequences of nuclear weapons and power on society. However, my essay expands this body of scholarship by specifically attending to the localized consequences of nuclear technologies for indigenous peoples. Nuclear colonialism is, in part, an example of environmental injustice. American Indian opponents of nuclear colonialism often identify with the environmental justice movement, whose members argue that toxic waste and pollution are disproportionately linked to marginalized communities\*people of color and the poor.83 Environmental racism, Robert Bullard argues, ‘‘is reinforced by government, legal, economic, political, and military institutions.’’84 The environmental justice movement was created to address the localized affects of technological development and globalization on marginalized communities. Environmental injustices often go unnoticed unless activists rise up to challenge the injustices. 54 D. Endres Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 As we build scholarship on the rhetoric of (nuclear) colonialism, it will also be important to examine the role of incommensurable values and standpoints between indigenous people and colonial powers. For instance, my analysis of American Indian public comments and the Department of Energy’s documents reveals fundamentally different perspectives on the value of the land. The Western Shoshone and Southern Paiute people argue that Yucca Mountain is sacred and that the project may irreparably destroy the spirituality and resources of the land. In contrast, the DOE describes the land as a ‘‘wasteland,’’ even saying that ‘‘no one lives at Yucca Mountain’’ and that ‘‘there are no known natural resources of commercial value at Yucca Mountain (such as precious metals, minerals, oil, etc.).’’85 From the perspective of the federal government, then, the land is valuable because of its role in furthering the national interest for a greater number of people than the ‘‘handful’’ of opponents. Assuming the greatest good for the greater number of people, a sacrifice is demanded of those living by Yucca Mountain for the good of the nation.86 Maurice Charland uses Lyotard’s notion of differe´nd to describe this type of radical incommensurability, a notion manifested in the inability of the republic to see outside its decision-making paradigm to include discussions of indigenous sovereignty and differing perspectives on land use. 87 If the rhetoric of nuclear colonialism is designed to exclude American Indian nations from deliberation and if Charland is correct that the decision-makers may not be capable of seeing outside their concept of decision-making, then the hope for challenging nuclear colonialism must come from resistance outside the deliberative system. Although my essay focuses on the discursive formation that supports the federal government’s perpetuation of nuclear colonialism, it is important to recognize that American Indian nations are resisting it in many ways\*protesting, filing lawsuits, seeking media attention, asserting their inherent right to proclaim their lands as Nuclear Free Zones and banning uranium mining on their lands. Even though nuclear colonialism attempts to silence American Indian voices, nuclear colonialism has not completely succeeded, because there is an active resistance movement. As Robin Clair notes, ‘‘within each practice of oppressive silence, there is a possibility of voice.’’88 We must also look for the possibilities of voice and the instances of voice that emerge from nuclear colonialism. Ultimately, the policies and discourse of nuclear colonialism continue. The Department of Energy recently submitted an application to the Nuclear Regulatory Commission (NRC) for a license for the Yucca Mountain project, which continues to be funded annually by Congress. Private Fuel Storage and the members of the Skull Valley government who support temporary storage on the reservation have filed a lawsuit to reverse the Department of Interior and Bureau of Land Management decisions which stopped the project.89 Interest in licensing new reactors and producing new types of nuclear weapons has created pressure to re-open and open new uranium mines on Lakota and Navajo land. However, there are still openings for resistance to nuclear colonialism. Although the Yucca Mountain site was authorized in 2002, it has not yet begun to accept waste. The DOE still needs to obtain their NRC license; and an interview with an NRC official reveals that the NRC usually takes three Nuclear Colonialism 55 Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 to four years to evaluate an application.90 Thus, American Indian activists argue that the 2002 siting decision has not foreclosed their fight against the site. Shortly after the site authorization decision, the Western Shoshone filed a lawsuit against the Yucca Mountain project based on their land rights under the Treaty of Ruby Valley.91 Beyond Yucca Mountain, Skull Valley activist Margene Bullcreek vowed to continue to fight against temporary nuclear waste storage on her reservation.92 And as discussed above, the Navajo and Lakota nations both experienced recent victories in their struggles against uranium mining. As nuclear colonialism continues, so does resistance to nuclear colonialism. Thus, further study of the discursive elements of nuclear colonialism can potentially reveal new strategies for resistance to nuclear colonialism.

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#### Resource colonialism operates as a modern-day imperialism

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Although the material implications of nuclear colonialism are undeniable, it is important to turn to the discursive dynamics of the phenomenon. Nuclear colonialism fundamentally depends on discourse because the policy decisions go through deliberation before being implemented. The decisions to site parts of the nuclear production process on or adjacent to indigenous lands rely on complex arguments and rhetorical strategies that invoke the interrelated discursive systems of colonialism and nuclearism. Colonialism Post-colonialism attends to the legacies of colonial systems. Diasporic Indian literary critic and theorist Gayatri Spivak has argued that attention must be paid to the identities of colonized peoples in relation to race, gender, ethnicity, and nationality.20 Raka Shome and Radha Hegde’s scholarship has pushed post-colonialism into critical-cultural communication scholarship.21 Although post-colonialism is a crucial area of study, it unfortunately implies that colonialism is over. For some countries (e.g., India, the Congo) the colonizers have left, leaving post-colonial peoples to grapple with the legacies of colonialism. However, colonialism still exists for indigenous people across the globe. Indigenous scholars such as Glenn Morris and the late Gail Valaskakis resist the notion of post-colonialism.22 As stated by Linda Tuhiwai Smith, ‘‘naming the world as ‘post-colonial’ is, from indigenous perspectives, to name colonialism as finished business ... post-colonial can mean only one thing: the colonizers have left. There is rather compelling evidence that in fact this has not happened.’’23 Despite the surprisingly common contemporary belief that colonization of indigenous nations is a thing of the past, we must not only recognize that colonialism still exists but also explore the communicative practices that maintain colonialism. The present form of colonialism in the US is what Al Gedicks has called resource colonialism, whereby ‘‘native peoples are under assault on every continent because their lands contain a wide variety of valuable resources needed for industrial development.’’24 As described by Marjene Ambler, the US government works in collusion with large national and multinational corporations to facilitate leases and access to indigenous resources that benefit the government and corporations to the detriment of indigenous communities.25 Resource colonialism depends on ignoring the land ownership rights of the colonized. As such, it also relies on the country’s legal and political system to limit the rights of the colonized, specifically drawing on both the domestic dependent relationship and the trust relationship that holds American Indian lands and monies in ‘‘trust’’ through the Bureau of Indian Affairs.26 As American Indian Studies scholar Sharon O’Brien states, ‘‘today’s ‘Indian wars’ are being fought in corporate boardrooms and law offices as tribes endeavor to protect and control their remaining resources.’’27 Resource colonialism is a reality for many tribes in the US, especially those with oil, gas, coal and uranium reserves. In the Nuclear Colonialism 43 Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 American West, the Western Shoshone, Navajo, Southern Ute, Paiute and Laguna nations possess a wealth of natural resources including uranium ore and vast desert ‘‘wastelands’’ for nuclear waste storage. Historian Gabrielle Hecht noted that ‘‘the history of uranium mining ... shows that colonial practices and structures were appropriated\*not overthrown\*by the nuclear age, and proved central to its technopolitical success.’’28 Nuclear colonialism is a tale of resource colonialism. Colonialism in all its forms is dependent on the discursive apparatus that sustains it. Mary Stuckey and John Murphy point out that rhetorical colonialism recognizes that the language used by colonizers is a crucial justification for the colonial project.29 Caskey Russell argues that ‘‘vast justification systems have been set up to keep colonizers from feeling guilty.’’30 Indian Law is an integral part of the discursive system of colonialism that is employed over an over again to grant political sovereignty while simultaneously restricting it. Political sovereignty for American Indians is a complex concept that reveals that US Indian Law views American Indian nations as colonized peoples. It is not based on the inherent sovereignty of American Indian nations but instead upon the laws of the US that grant political sovereignty to American Indians. Yet, when sovereignty is granted, it is dependent upon acknowledgment by the grantor and is therefore vulnerable to coercive restriction. Although the Constitution, hundreds of treaties, and US Supreme Court decisions affirm the political sovereignty of American Indian nations, this form of political sovereignty is egregiously and unilaterally limited by the US federal government through its laws and policies.31 Three Supreme Court decisions under Chief Justice John Marshall in the early 1800s solidified the assumption that Indian sovereignty is granted and introduced the concept of American Indian nations as ‘‘domestic dependent nations.’’32 According to Wallace Coffey and Rebecca Tsosie of the Native American Rights Fund, ‘‘the concept of Indian tribes as ‘domestic dependent nations’ means that tribal governmental authority is to some extend circumscribed by federal authority.’’33 The domestic dependent status defined by Supreme Court decisions in the 1860s discursively relegates American Indian nations to a partial and contingent nationhood. The term ‘‘domestic dependents’’ also calls forth paternalistic images of American Indians as child-like dependents who need to be protected by the federal government. Given these restrictions, if American Indian nations attempt to use Indian Law and its notion of political sovereignty for the improvement of the nation or to assert sovereignty, the nations are stuck in a catch-22 where they have to accept the limited notion of sovereignty granted through federal law in their quest for more rights within Indian Law. Although political sovereignty may acknowledge that American Indians have distinct nations and governments, this sovereignty is always defined as dependent on and subordinate to the US federal government. Indigenous resistance over the years has created cracks in the system of resource colonialism, resulting in more control over resources and more lucrative leases for many American Indian nations.34 Recognizing the limitations of political sovereignty as defined by US colonialist laws, Coffey and Tsosie and John Borrows have called for indigenous people to reject political sovereignty and to assert and live by their inherent sovereignty.35 Borrows calls for ‘‘an inherent, unextinguished, and continu- 44 D. Endres Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 ing exercise of self-government’’ that challenges the imposition of political sovereignty upon American Indian nations by the federal government.36 The concept of ‘‘inherent sovereignty’’ exemplifies the potential for resistance to colonization through a constitutive redefinition of sovereignty that supersedes the political definition.

#### Strategic silence is a form of exclusion

Endres 09

Endres, Danielle(2009)'The Rhetoric of Nuclear Colonialism: Rhetorical Exclusion of American Indian Arguments in the Yucca Mountain Nuclear Waste Siting Decision',Communication and Critical/Cultural Studies,6:1,39 — 60[Premier]

Strategic Silence In addition to outlining a decision calculus that shifts the burden of proof in a way that makes it impossible to offer a counterargument that would outweigh the national interest, the site recommendation report also ignores American Indian arguments when it outlines and responds to the ‘‘principal arguments’’ against the site. The third strategy of nuclear colonialism\*strategic silence\*explains how indigenous voices can be suppressed in official documents. In Sanchez, Stuckey and Morris’ conception, rhetorical exclusion is expressed through specific defining practices that label American Indians as threatening and already guilty.74 However, I argue that rhetorical exclusion can also be achieved through the strategic use of silence. Strategic silence acts as a form of rhetorical exclusion when silence is used by a group with power over another group as a way to exclude their voices or arguments. This way of defining strategic silence is different from Robin Clair’s notion of silence as an act of resistance by marginalized groups.75 It is also different from Barry Brummett’s articulation of strategic silence as an unexpected response that rhetorically calls attention to the silence.76 The Yucca Mountain case reveals that strategic silence can also be used to continue the silencing of an already silenced group by drawing attention away from the silence. This form of strategic silence works best when there is general lack of understanding among the public about the issue or group being silenced. For example, using strategic silence to exclude American Indian arguments against the Yucca Mountain site is enabled by the colonizer’s version of history that emphasizes that American Indians were defeated and have all been assimilated into ‘‘American’’ culture. As stated by Derek Buescher and Kent Ono, ‘‘contemporary culture masks the continuing lived history of people disenfranchised by colonialism by failing to acknowledge colonialism’s presence in the US today.’’77 So, how does Abraham’s site authorization report employ a strategic silence to rhetorically exclude American Indian arguments? In a section titled, ‘‘None of the Arguments against Yucca Mountain Withstands Analysis,’’ Abraham identifies seven ‘‘principal counterarguments’’ against the site:78 52 D. Endres Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 The final question I examine is whether the arguments against its designation rise to a level that outweighs the case for going forward. I believe they do not, as I shall explain. I do so by briefly describing these principal arguments made by opponents of the Project, and then responding to them.79 However, American Indian arguments are not included in the list of seven principal arguments. This strategic silence excludes American Indian arguments regarding treaty rights and the necessity of government-to-government consultation. Abraham justifies strategic silence through other rhetorical choices in the document, namely of the use of the term ‘‘principal counterarguments.’’ Using the word ‘‘principal’’ provides a justification for the selection of counterarguments that will then, by implication, make other non-included arguments seem trivial or irrelevant. Yet the arguments listed by Abraham are not the most important. Rather, from the perspective of the federal government, they are the most easily addressed and most easily weighed against the national interest. American Indian arguments against the site, on the other hand, are the most difficult to address and provide some of the most important challenges to the project. Recall that nearly all the American Indian public comments addressed the violation of the Treaty of Ruby Valley by proposing a high-level waste site on Western Shoshone land. To respond to this argument would require not only that the federal government prove that they actually hold rights over the land (which I have shown above to be quite contested) but also that the federal government acknowledge American Indians as members of separate nations (which makes it difficult to dismiss their arguments in the name of US national interest). Because American Indian arguments raise issues of fairness, treaty rights, legal protection for use of sacred lands and the systemic colonization of American Indians, these arguments may act together as a significant challenge to the project. Indeed, there is great risk for the US in relinquishing the colonial system; ‘‘genuine recognition of indigenous peoples (colonized without consent) must involve a redistribution of both political power and resources, which terminates not only their economic and social subordination but also the colonial relationship itself.’’80 Thus, American Indian opposition to the site threatens the very nature of the power relationship between the US and American Indian nations. Strategic silence depends upon how the discourse of colonialism gives the impression that the Indian wars are over, that the US won, that American Indians are an interest group instead of sovereign nations and that American Indians have been assimilated into the melting pot of the US. In a milieu where these arguments and perceptions exist, it is not surprising that many Americans lack knowledge about the contemporary struggles of American Indian nations and that Abraham was able to perpetuate this strategic silence. Besides American Indians and their supporters, there is little evidence that other audiences have noticed the rhetorical exclusion. In a review of over 300 stories in the national news media on the site authorization decision, only one covered the Western Shoshone and Southern Paiute opposition to the site.81 Thus, strategic silence serves the interests of continuing a system of nuclear colonialism and avoiding discussion of American Indian sovereignty. It is in the Nuclear Colonialism 53 Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 government’s interest not only to perpetuate nuclear colonialism but also to keep it under wraps. However, as Robin Clair notes, ‘‘a trace of the marginalized and silenced other can be found in what is said or written. The negation, or silence, we are told, is never complete.’’82

#### Rhetorical exclusion is used to erase the voices of Native Americans—reject it

Endres 09

Endres, Danielle(2009)'The Rhetoric of Nuclear Colonialism: Rhetorical Exclusion of American Indian Arguments in the Yucca Mountain Nuclear Waste Siting Decision',Communication and Critical/Cultural Studies,6:1,39 — 60[Premier]

Nuclearism Considering the use of American Indian resources and lands in support of the nuclear production process, the discourse of nuclearism intersects with the discourse of colonialism to create the discourse of nuclear colonialism. Nuclearism is the assumption that nuclear weapons and nuclear power are crucial to the national interest and national security, serving to normalize and justify all aspects of the nuclear production process.37 Nuclearism is an ideology and a discursive system that is ‘‘intertextually configured by present discourses such as militarism, nationalism, bureaucracy, and technical-rationality.’’38 Even with the end of the Cold War, we still see nuclearism present in contemporary US policy such as the call to license new nuclear reactors for the first time in over twenty years and research into new nuclear weapons technology (e.g., bunker busters). Resistance to nuclearism comes in many forms, one of which is the body of scholarship called nuclear communication criticism. Within this corpus, Bryan Taylor and William Kinsella advocate the study of ‘‘nuclear legacies’’ of the nuclear production process.39 The material legacies of the nuclear production process include the deaths of Navajo uranium miners, the left-over uranium tailings on Navajo land, and Western Shoshone downwinders. However, nuclear waste is in need of more examination; as Taylor writes, ‘‘nuclear waste represents one of the most complex and highly charged controversies created by the postwar society. Perhaps daunted by its technical, legal and political complexities, communication scholars have not widely engaged this topic.’’40 One of the reasons that nuclear waste is such a complex controversy is its connection with nuclear colonialism. Nuclear communication criticism has focused on examination of the ‘‘practices and processes of communication’’ related to the nuclear production process and the legacies of this process.41 At least two themes in nuclear discourse are relevant to nuclear colonialism: 1) invocation of national interest; and 2) constraints to public debate. First, nuclear discourse is married to the professed national interest, calling for the sacrifices among the communities affected by the legacies of the nuclear production process.42 According to Kuletz, the American West has been constructed as a ‘‘national sacrifice zone’’ because of its connection to the nuclear production process.43 Nuclearism is tautological in its basic assumption that nuclear production serves the national interest and national security and its use of national security and national interest to justify nuclearism. The federal government justifies nuclear production, which disproportionately takes place on American Indian land, as serving the national security. This justification works with the strategy of colonialism that defines American Indian people as part of the nation and not as separate, Nuclear Colonialism 45 Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 inherently sovereign entities whose national interest may not include storing nuclear waste on their land. A second theme in nuclear discourse is its ability to constrain public debate through invoking the national interest, defining opponents as unpatriotic and employing discursive containment.44 For instance, ‘‘discursive containment often operates on the premise that public participation is a potential hazard to official interests and should be minimized and controlled.’’45 The strategies of nuclear discourse that constrain public debate work in concert with strategies of rhetorical colonialism that exclude and constrain the participation of American Indians in decisions affecting their land and resources. Taken together, the intersection of the discourses of colonialism and nuclearism create a powerful discourse aimed at perpetuating the nuclear production process for the benefit of the colonizer at the expense of their colonial targets Nuclear Colonialism, Discourse, and Yucca Mountain Nuclear colonialism is inextricably linked to the concept of rhetorical exclusion. According to John Sanchez, Mary Stuckey and Richard Morris rhetorical exclusion is employed by those in power to ‘‘foreclose debate without appearing to engage in undemocratic action.’’46 Using American Indian Movement (AIM) activism and the case of Leonard Peltier as examples, they reveal that rhetorical exclusion provides ‘‘frames through which those who challenge the status quo may be understood.’’47 In their analysis, rhetorical exclusion is primarily a strategy of definition. They reveal the numerous ways that the federal government’s discourse explicitly defines American Indians as subversive, inherently dangerous, oppositional, and always already guilty. These definitions build upon and contribute to the assumption that the US federal government is democratic, legitimate, and inherently worthy of defense against any threats (i.e., American Indians). Rhetorical exclusion, then, is a strategy of definition that justifies taking ‘‘whatever actions those in power deem necessary to control challenges to its legitimacy.’’48 Despite the nuanced analysis offered by Sanchez, Stuckey and Morris, their articulation of the strategy of definition discussed above is not the only strategy of rhetorical exclusion in discourse about American Indians. Rather, their discussion of rhetorical exclusion provides a starting point for considering the multiple strategies of rhetorical exclusion in different situations.49 Sanchez, Stuckey and Morris’ articulation of rhetorical exclusion is limited to how American Indians are explicitly defined in federal government documents as threatening or subversive. However, this strategy is used in a context very different from that of the Yucca Mountain controversy. In the late 1960s and 1970s, AIM was highly active and widely covered in the media, such as the takeover of Alcatraz and Wounded Knee. AIM activism in the 1970s called forth a rhetorical situation to which the federal government had to respond. However, even though current American Indian grievances pose as big a threat to the federal government’s modus operandi of colonialism, these issues do not receive the national attention they did in the 1970s. Today, rhetorical exclusion 46 D. Endres Downloaded By: [Endres, Danielle] At: 06:40 17 February 2009 includes more subtle ways of excluding American Indian voices from deliberation. This study aims to contribute to a more comprehensive understanding of rhetorical exclusion. The nuclear waste controversy provides a good context for studying rhetorical exclusion. Although the nuclear waste crisis is on the radar of many Americans, the relationship between American Indians and nuclear waste is less apparent. According to a 2002 report by former Secretary of Energy Spencer Abraham, ‘‘we have a staggering amount of radioactive waste in this country.’’50 By 2035, there will be approximately 119,000 metric tons of high-level nuclear waste (well above the 77,000 metric ton limit) at the Yucca Mountain site.51 In anticipation of the current waste crisis, Congress passed the Nuclear Waste Policy Act (NWPA, 1982, amended 1987), which vested responsibility with the federal government for permanently storing high-level nuclear waste from commercial and governmental sources. The NWPA provides an immense subsidy for nuclear power industry because it stipulates that Congress assume billions of dollars of financial responsibility for nuclear waste storage. In 2002, the Secretary of Energy, the President, and Congress officially authorized the Yucca Mountain site as the nation’s first high-level nuclear waste repository. The site authorization was widely opposed by Western Shoshone and Southern Paiute nations who claim treaty-based and spiritual rights to the land. Other American Indian nations and indigenous organizations also opposed the site authorization decision because of its role in nuclear colonialism. My analysis reveals that the federal government, specifically the Department of Energy (DOE), rhetorically excluded American Indians and their arguments from the Yucca Mountain site authorization decision process. However, before discussing the rhetorical exclusion of American Indian arguments against the Yucca Mountain site, it is important to establish that there were indeed arguments against the site.

#### Cultual mpx too

Ryser et al 16

[-- is descendant from Oneida and Cree relatives and lived his early life in Taidnapum culture. He is Chairperson of the Center for World Indigenous Studies (CWIS), a research, education and public policy institution and he is a Fulbright Research Scholar. He has served as Senior Advisor to the President George Manuel of the World Council of Indigenous Peoples, as former Acting Executive Director of the National Congress of American Indians (USA), and a former staff member of the American Indian Policy Review Commission - a Joint US Congressional Commission. He holds a doctorate in international relations, teaches Fourth World Geopolitics, Public Service Leadership, and Consciousness Studies at the CWIS Masters Certificate Program (www.cwis.org). He is the author of numerous essays including "Observations On Self and Knowing" in TRIBAL EPISTEMOLOGIES (Aldershot, UK), "Indigenous and Traditional Knowledge" (Berkshire) and four books including INDIGENOUS NATIONS AND MODERN STATES published by Routledge (2012). He is the Principal Investigator for the CWIS Radiation Exposure Risk Assessment Action Research Project, “The Indigeneous World Undera Nuclear Cloud,” 27 Mar 2016, Truth-out] [Premier]

Peoples in the Nuclear Bull's Eye The Yakama Nation and her neighboring nations (Spokane, Confederated Tribes of the Colville Indian Reservation, Nez Perce, Umatilla and the Confederated Tribes of the Warms Springs Reservation) are in the reach of the Hanford Nuclear Waste Site and the Midnite Uranium Mine. There are six other highly radioactively contaminated sites in Fourth World nation territories worldwide and many more storing spent fuel rods from nuclear power plants as well as radioactive hospital waste. 2016 0328n 3 Figure 2 - Nine states detonated more than 2150 nuclear bombs since 1945 into the present after most bomb tests ceased. (Click to enlarge in new window) An estimated total of twenty additional Fourth World territories in Asia, Europe, Africa, the Middle East, North America and the Pacific Islands similar to the Yakama, Navajo and Shoshone territories in the US function as sites for the detonation of nuclear bombs, and as storage sites for nuclear waste, and toxic chemicals. The United States government and contracted waste management companies have located up to six hundred radiation and toxic chemical waste sites on Indian reservations leasing their land for that purpose. Locating waste disposal sites in these ways easily resulted from legal loopholes Fourth World territories provide -- as spaces where state and international laws regarding environmental health and nuclear waste can be circumvented or laws are non-existent. The nuclear states (United States, Russia, France, Britain, China, Israel, and India) avoid testing weapons or storing radioactive and toxic waste on their own lands. They rather favor territories with relatively low-density populations and limited internal governmental regulation while generally avoiding obtaining informed consent or authorization from the affected communities. Significantly none of the bomb making and waste producing states considered in advance of developing plutonium reactors for bombs and electrical generation how to dispose of the waste safely. Despite all of the technological capabilities making radioactive materials no similar effort was early on developed to control the adverse effects of waste products on life. Burying radioactive waste with the probability of unanticipated emissions and leaks remains the method for disposing of the deadly materials. Some of the toxic sites resulting from more than 2150 nuclear bomb detonations and radioactive dump sites in Fourth World Territories and the responsible governments depicted on the map above include: The French government detonated thirteen nuclear bombs in Tuareg territory (Algeria) in the 1960s. They released radioactive gases into the atmosphere and spread radioactive molten rocks across the land. These events exposed Tuaregs to high levels of radiation. No study to date has been conducted to determine the effects these exposures may have on the health and intergenerational lives of the Tuareg. Kazakh territory on the steppe in northeastern Kazakhstan was the place for hundreds of atmospheric and underground nuclear tests conducted by the Union of Soviet Socialist Republics (Russian Federation is the successor) in the 1940s. Studies conducted years later determined that more than 200,000 Kazakh's and other local residents were exposed to intense radiation. These exposures resulted in high rates of cancers. No follow-up epidemiological studies have been conducted to assess the intergenerational consequences of radioactive exposures. The Uyghurs, Hui and Tadjiks in China's northwestern Xinjiang province were exposed to atomic radiation in 1964 and thermonuclear detonations in 1968. The People's Republic of China established Uyghur territory as its prime nuclear test site. At least two generations of Uyghurs, Hui and Tadjiks (a population of 10.95 million) may continue to experience the effects of radioactive and toxic waste exposures. The Pakistani government conducted nuclear detonations in 1998 in Baluchi territory at Ras Koh Hills. The Baloch Society of North America and Friends of Balochistan organized protests at the Pakistani Embassy during the detonations to call attention to the "heinous crime committed against our people." The Indian government conducted its first nuclear detonation in 1974 and continued nuclear test in 1998 in Rajastan the territory of Bhil. Britain conducted atmospheric tests in the 1950s in the Maralinga home of the Pitjantjatjara and Yankunytjatjara. Studies on these peoples were truncated. They did not result in any conclusions about exposure effects on health and genetic changes. The United States of America conducted more than 1100 nuclear detonations in the atmosphere, underground and aboveground (1944-1998) and nuclear waste dumps solely in Fourth World Territories. Marshal Islanders, Paiutes, Shoshone, Kiribati, Yakama, Spokane, Navajo, Mescalero Apache, and Aleutes are among the peoples directly affected by US radiation releases from 1943 to the present. The Taiwan government through the Taiwan Power Company (Taipower) stores 100,000 barrels of high level nuclear waste from the island country's three nuclear power plants. Storage was located at the Lanyu nuclear waste storage facility built in 1982 on the territory of the Tao (also known by the Japanese name as Yami). The Tao are a fishing people who have occupied their island (Ponso no Tao meaning "island of the people" [Orchid Island]) for at least a thousand years. In 2002 and 2012, there were major protests by the Tao, calling on Taipower to remove the nuclear waste from the island. The Yakama Nation and the Spokane Indian Tribe along the Columbia River host the most radioactively toxic region in the world. The Mescalero Apache are the first Fourth World nation to experience an atomic bomb detonated in their territory. Now many Fourth World nations live in irradiated territories under the nuclear cloud. In the name of "national security" all of the nuclear governments have maintained a policy of deliberately not informing residents of Fourth World territories in advance of nuclear tests. Human subjects experimentation using radioactive materials on native peoples, and siting of nuclear waste dumps go on without consent. No epidemiologic studies been concluded to determine exposure effects on health or cultures. Indeed the US Atomic Energy Commission (AEC) records predating 1974 documenting tests, human subject experimentations and radiation exposures have mysteriously disappeared. All records from 1974 remain top secret and not available for scrutiny outside the AEC or its successor the US Department of Energy.

## AFF—Nuclear War

#### **Nuclear power leads to nuclear weapons and theft.**

PSR 16 ["Dirty, Dangerous And Expensive: The Truth About Nuclear Power". 2016.Psr.Org. Accessed August 8 2016. http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html?referrer=https://www.google.com/][Premier]

The inextricable link between nuclear energy and nuclear weapons is arguably the greatest danger of nuclear power.  The same process used to manufacture low-enriched uranium for nuclear fuel also can be employed for the production of highly enriched uranium for nuclear weapons.  As it has in the past, expansion of nuclear power could lead to an increase in the number of both nuclear weapons states and ‘threshold’ nuclear states that could quickly produce weapons by utilizing facilities and materials from their ‘civil’ nuclear programs a scenario many fear may be playing out in Iran.  Expanded use of nuclear power would increase the risk that commercial nuclear technology will be used to construct clandestine weapons facilities, as was done by Pakistan.

In addition to uranium, plutonium can also be used to make a nuclear bomb.  Plutonium, which is found only in extremely small quantities in nature, is produced in nuclear reactors.  Reprocessing spent fuel to separate plutonium from the highly radioactive barrier in spent fuel rods, as is being proposed as a ‘waste solution’ under the Global Nuclear Energy Partnership program, increases the risk that the plutonium can be diverted or stolen for the production of nuclear weapons or radioactive ‘dirty’ bombs.  Reprocessing is also the most polluting part of the nuclear fuel cycle.  The reprocessing facility in France, La Hague, is the world’s largest anthropogenic source of radioactivity and its releases have been found in the Arctic Circle.

#### **Most countries do not have the requisite corruption levels security needs to defend a successful nuclear power program.**

Miller & Sagan 9 [Steven, Scott; Director of the International Security Program, Editor-in-Chief of the quarterly journal, International Security, Caroline S.G. Munro Professor of Political Science at Stanford University and Senior Fellow at Stanford's Center for International Security and Cooperation; Fall 2009; “Nuclear power without nuclear proliferation?”; <http://www.mitpressjournals.org/doi/pdfplus/10.1162/daed.2009.138.4.7>; [Premier]

First, for nuclear energy programs to be developed and managed safely and securely, it is important that states have domestic “good governance” characteristics that will encourage proper nuclear operations and management. These characteristics include low degrees of corruption (to avoid of½cials selling materials and technology for their own personal gain as occurred with the A.Q. Khan smuggling network in Pakistan), high degrees of political stability (defined by the World Bank as “likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism”), high governmental effectiveness scores (a World Bank aggregate measure of “the quality of the civil service and the degree of its independence from political pressures [and] the quality of policy formulation and implementation”), and a strong degree of regulatory competence. Fortunately, we have a great deal of information measuring these domestic good governance factors across the globe. Unfortunately, the data highlight the grave security challenges that would be created if there were rampant proliferation of nuclear energy production facilities to each and every state that has expressed interest to the iaea in acquiring nuclear power. The World Bank publishes annual aggregate data, derived from multiple sources, on each of these good governance characteristics, and, as shown in Figure 2, the average scores of the potential new nuclear-energy states on each of these dimensions is significantly lower than the scores of states already possessing nuclear energy.

#### Most potentially nuclear countries are non-democratic—Increases the likelihood of NPT violations to get nukes.

Miller & Sagan 9 [Steven, Scott; Director of the International Security Program, Editor-in-Chief of the quarterly journal, International Security, Caroline S.G. Munro Professor of Political Science at Stanford University and Senior Fellow at Stanford's Center for International Security and Cooperation; Fall 2009; “Nuclear power without nuclear proliferation?”; <http://www.mitpressjournals.org/doi/pdfplus/10.1162/daed.2009.138.4.7>; [Premier]

Second, all NNWS under the NPT must accept iaea safeguards inspections on their nuclear power facilities in order to reduce the danger that governments might cheat on their commitments not to use the technology to acquire nuclear weapons; therefore, it is illuminating to examine the historical record of nnws violating their npt commitments. Here there is one very important finding about how domestic political characteristics influence the behavior of npt members: each known or strongly suspected case of a government starting a secret nuclear weapons program, while it was a member of the npt and thus violating its Article II npt commitment, was undertaken by a non-democratic government.2 (The con½rmed or suspected historical cases of npt member states starting nuclear weapons programs in violation of their Treaty commitments include North and South Korea, Libya, Iraq, Yugoslavia, Taiwan, Iran, and Syria, all of which were non-democratic at the time in question.) It is therefore worrisome that, as Figure 2 shows, the group of potential new states seeking nuclear power capabilities is on average significantly less democratic than the list of existing states with nuclear energy capabilities.

#### Nuclear Power means Nuclear Weapons

Higgin 6 [Davida; Campaign for Nuclear Disarmament Chair; Campaign for Nuclear Disarmament; April 2006; The links between nuclear power and nuclear weapons; [Premier]

Uranium ore contains only about 0.7% of the fissile isotope U235. In order to be suitable for use as a nuclear fuel for generating electricity it must be processed (by separation) to contain about 3% of U235 (this form is called Low Enriched Uranium - LEU). Weapons grade uranium has to be enriched to 90% of U235 (Highly Enriched Uranium or HEU), which can be done using the same enrichment equipment. There are about 38 working enrichment facilities in 16 countries. (1) The Hiroshima bomb was made using about 60kg. of (HEU). Today’s more sophisticated nuclear weapons can be made with 20 - 25 kg. because the numbers of warheads and their accuracy have been increased. Plutonium is a product of the chain reaction in nuclear reactors; it is separated by reprocessing the “spent” fuel (which is highly radioactive but no longer usable in the reactors in fuel rods). In 2000 Britain had an estimated stockpile of some 78 tonnes of civil plutonium out of a world store of about 210 tonnes. (2). The military stockpile was about 7.6 tonnes in 1999 (3). Only 2 -10 kg. are necessary to make a nuclear bomb.

#### Nuclear power production is easily translated into nuclear weapons, 3 different methods

Ackland 09 [Len Ackland, co-director of the Center for Environmental Journalism, “Weapons proliferation a big risk with nuclear power,” CE Journal, February 10, 2009, <http://www.cejournal.net/?p=903>] [Premier]

The first power-weapons crossover comes during uranium “enrichment,” after uranium ore is milled to extract uranium in the form called “yellow cake” that is then converted to uranium hexafluoride gas. Enrichment of the gas means increasing the amount of the fissile uranium-235 isotope, which comprises 0.7 percent of natural uranium, to the 3-6 percent needed to make fuel rods for commercial nuclear reactors. The same centrifuges (the modern technology of choice) that separate the U-235 from the U-238 can be kept running until the percentage of U-235 reaches about 90 percent and can be used for the kind of nuclear bomb that destroyed Hiroshima. Enrichment — low for nuclear power plants and high for bombs — is at the heart of the current controversy over Iran’s plans and capabilities. The second power-weapons crossover comes when low-enriched uranium fuel is burned in nuclear reactors, whether military, civilian, or dual use. Neutrons produced in the chain reaction are captured by the U-238 to form U-239 then neptunium-239 which decays into plutonium-239, the key fissile isotope for nuclear weapons. Other plutonium isotopes, such as Pu-240, Pu-241, and Pu-242 are also produced. The extent to which the uranium fuel elements are irradiated is called “fuel burnup.” Basically, military reactors designed specifically to produce Pu-239 burn the fuel for shorter periods, a few weeks, before the fuel rods are removed from the reactors in order to minimize the buildup of Pu-240 and other elements. Commercial reactors, aimed at maximizing the energy output in order to produce electricity, burn the fuel for a year or so before the fuel rod assemblies are changed out. The used or “spent” fuel contains higher percentages of the undesirable (for bomb builders) plutonium isotopes. Dual-use reactors, such as the one that caused the Chernobyl accident in 1986, tend toward the shorter fuel burnup times. The plutonium in the spent fuel is the 20,000 kilograms that the Federation of American Scientists estimates is produced each year by the world’s currently operating 438 reactors. Other sources estimate the amount of plutonium in spent fuel as much higher. For a good description of these issues, see David Albright, et. al., “Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies,” SIPRI, Oxford U. Press, 1997. Finally, before the plutonium-239 created in nuclear reactors can be used in weapons, it must first be separated from the uranium, transuranics and other fission products. This is done in “reprocessing” plants and is often benignly referred to as plutonium recycling. Currently there are only a handful of commercial reprocessing facilities, the one in France and the one in the United Kingdom having operated the longest. Much of the plutonium extracted by these plants is mixed with uranium and reused for nuclear fuel in commercial reactors. But reprocessing plants also exist in countries using plutonium for nuclear weapons. Thus, North Korea, the most recent country to join the nine-member nuclear weapons “club,” made weapons through its reprocessing facility.

## AFF—Phil



### Rights

#### **Plans to introduce nuclear power will be accompanied by restrictions on civil liberties.**

Martin 7 [Brian; Honorary professorial fellow at the University of Wollongong, Australia; "Opposing Nuclear Power: Past And Present"; 2016. Bmartin.Cc. Accessed August 8 2016. http://www.bmartin.cc/pubs/07sa.html] [Premier]

Should plans for nuclear power ever be rolled out, they will be accompanied by measures to squash opposition: severe penalties for public servants who speak out, severe penalties for trade union bans and consumer boycotts, and severe penalties for protesters. It is possible that violent incidents - perhaps provoked - will be used to justify a crackdown.

### Framework

#### Ethical discussion are key to discussions about nuclear power

Parkins et al 11

[professor at U Alberta in energy and society; energy transition; food security; sustainable agriculture; social impact assessment; natural resource management, “Social and Ethical Considerations of Nuclear Power Development,” University of Alberta, April 2011] [Premier]

Given this focus on risk theory and risk management, definitions of risk are an important first step in understanding the contribution of social science literature to the question of nuclear 3 power. Taken from Rohrmann and Renn (2000), risk is “understood as the possibility that human actions, situations or events might lead to consequences that affect aspects of what humans value” (p.14). The idea of human values is central to this definition. Families, communities, future generations, environments, wildlife, and many other dimensions of human value are wrapped up in questions of nuclear power development. Conversely, if human values are not in question, then we are no longer talking about risks and risk management. Because of this link to values, this paper positions risk assessment and management as an ethical deliberation. A key point here is that risks (and nuclear power more specifically) are inseparably linked to what people consider important to themselves and therefore represent a risk issue in broad terms. Experts, in particular, may argue that probabilities of harm are low from nuclear power, but given the link to human values (and ongoing public concern about nuclear power development), risk management will remain at the heart of the debate about nuclear power development for a long time to come. If risk is understood in terms of the Rohrmann and Renn definition above, then decisions about nuclear energy must weigh between competing value sets as they are put at risk by different nuclear choices. In this sense, ethics is a process of determining what is “good” and how we should develop things in order to facilitate more of the good. Institutions and social interaction implicitly make ethical decisions on a constant basis, but doing ethics is to make these decisions more explicitly, carefully, and with fuller awareness of the goods involved in different choices. Ethics are integral to decision-making and not something done separately. Other considerations – technical issues, economic calculations, possible ecological damage, climate change mitigation, risk assessments and so on – are pieces of information that feed into the decisionmaking about nuclear power. But the decisions cannot be made on technical information alone. Decisions depend on what various actors consider to be “the good” and what value they attach to each of the pieces of information. For example, cost-benefit analyses (which are often calculated in monetary terms) do not automatically decide a matter. If we accept that higher dollar figures on the benefit side show us which decisions to make, an ethical decision about what constitutes “the good” has first been made: the good is that which makes or saves more money. This ethical decision also assumes that all goods and bads can be measured on the single metric of money.

### Future Generations

#### They conflate rights and duties

Wilding 10 [Ethan, candidate at U Waterloo for PhD in philosophy, “The Ethics of Nuclear Power in Canada,” University of Waterloo, 2010] [Premier]

The most plausible solution to justifying obligations to future generations rests in realizing that not all obligations are contractual. As Kristin Shrader-Frechette (2002b) notes, social contracts “exist even when there is no prearranged plan of explicit reciprocity,” such as in the case of familial duties. This can most easily be seen in the parent-child relationship. By agreeing to bear children, parents take on the obligation to care for them. Even though some authors, like Callaghan, think that “children owe their parents a debt in return for their life . . . a parent’s duty is not contingent on the child’s reciprocity. The parents have duties [natural duties, perhaps] regardless of whether they are ever reciprocated” (Shrader-Frechette, 2002b, 102). In other words, there can be duties without rights. The same is true, so the argument from familial obligations proceeds, for future generations. We have a so-called natural duty toward future persons in a manner similar to the duty of care that obtains between a parent and child. Thus, even if future people have no rights, we can still be said to be under duties. For example, animals don’t have rights, yet we are plausibly said to have duties of non-cruelty, especially, toward them. Analogously, it would be cruel to dump a burden of poisonous waste on our descendants.

#### \*For future generations, the duty to do no harm outweighs the positive duty

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

We could distinguish between our two duties in terms of the types of goods protected by claiming that **the no harm duty has to do with protecting the** vital interests **linked to the safety and security issues that exposure to radiation will bring.** Similarly, **the duty to sustain well-being relates to energy resources** in the form of goods **that could be used to safeguard well-being;** we might therefore call them nonvital interests. If we accept this distinction, then the conclusion that in an internal conflict situation **the no harm duty has a stronger moral appeal** would seem straightforward enough. **We have more compelling moral reasons to protect vital rather than non-vital interests**. Let us now evaluate whether the distinction presented between the two duties is as clear-cut as has been indicated here; any overlap or interdependency might affect their moral stringency. One can, for instance, argue that **if future generations are to enjoy their equal opportunity for well-being, their health and safety first need to be guaranteed.** In other words, **in order to be able to enjoy the fruits of the resources at their disposal, future generations must first be protected against ionizing radiations** (one assumes that also in the future, being exposed to ionizing radiation will lead to serious health problems).12 It is indeed true that the no harm duty is a fundamental prerequisite attached to the duty to sustain welfare, but the scope of the no harm duty is much broader. **Endangering the safety and health of people of the future would be wrong, regardless of the duty to sustain well-being.** What is so innately morally wrong is the fact that **future people** whose safety and security are conceivably **compromised by exposure to radiation would never be able to enjoy “equal opportunity.”** Hence, the distinction in terms of the types of good these duties protect will still apply.

#### \*Discount positive duties to future generations to preserve energy resources – we can’t predict that far

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

Another important distinction we should make between the two duties pertains to the time periods (and thus to the number of generations) to which they relate. **The duty to sustain wellbeing has been presented as a positive duty relating to the time span during which we could affect the lives of close future generations by influencing the availability of energy resources. However, our knowledge about future energy provision is very limited.** Let me illustrate this with an example. **There are now 440 nuclear power reactors operational** worldwide, and an estimation made in 2010 forecasts that in due course, some **500 new reactors will be built** (WNA 2010). These estimations that stem from before the Fukushima accident could turn out to be unreliable, but let us assume—for the sake of argument—that such predictions will be borne out. Even then, **our ability to positively affect the well-being of people on the basis of the availability of the necessary energy resources will hardly extend to a hundred years.**13 Beyond that period, **it is** very difficult or, more to the point, **virtually impossible to foresee what the energy landscape will look like, let alone to positively affect it. On the other hand, the “no harm duty” as presented here will have a time span of thousands of years, the duration for which nuclear waste is radiotoxic and potentially harmful.** Hence, if we cannot comply with both duties simultaneously, **the no harm duty will become morally more compelling because of the type of goods it is protecting and because of the time span and the number of generations it involves**.

#### \*What future generations will want and need is unpredictable

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

In view of these considerations, **it seems unjustifiable to impose more risks on the present generation simply in order to reduce the waste lifetime.** However, one of the problems with long-term waste disposal is the inherent uncertainty both in terms of technical predictions and regarding future societies. **There is enough historical evidence to underpin the notion that we are hardly in a position to anticipate human behavior and the status of future societies a few hundred years from now, let alone 10,000 or 100,000 years on.** The question that naturally follows from this is whether this should have a bearing on our moral responsibility towards future generations. Kristian Skagen Ekeli argues that **our ignorance with respect to future generations “reduces our responsibility in a temporal dimension because in most areas it is impossible to foresee the interests and resource needs of future generations”** (Skagen Ekeli 2004, 442); this corresponds to the way in which Martin Golding (1981, 70) views our duties to future generation as he argues “the more distant the generation we focus upon, the less likely it is that we have an obligation to promote its good.” Skagen Ekeli (2004, 442) argues, on the other hand, that there are things that we could be certain about such as the physiological needs of future people and that it is therefore immoral to impose risks upon future generations that threaten these physiological needs when risk assessment is presented that is “supported by scientifically based harm scenarios.” Even though Skagen Ekeli acknowledges the difficulties that arise from scientific disagreement about harm scenarios, he does not consider this to be an insurmountable problem. Unlike Skagen Ekeli, I argue that in addressing the acceptability of a certain technology with long-term consequences, **all the uncertainties and the ensuing problem of disagreement on predictions do pose intractable challenges. This is particularly the case in the foreseeing of the long-term consequences of geological repositories**.

#### \*The closer the future generations are, the stronger our duties toward them

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

At the same time as acknowledging the difficulties surrounding the long-term uncertainties of technical systems, **it has been proposed that we should distinguish between different future people**: **“a repository must provide reasonable protection and security for the very far future, but this may not necessarily be at levels deemed** 185 **protective** (and controllable) **for the current or succeeding generations”** (EPA 2005, 49036). **People living in the next 10,000 years deserve a level of protection equal to the current level, and the generations belonging to the period extending beyond 10,000 years could be exposed to a much higher radiation limit.** **The underlying argument for this distinction is sought in the low degree of predictability for the remote future and the fact that any positive influence on such societies is meaningless, all of which is believed to diminish our responsibility towards future generations**.22

#### \*Status quo injustice outweighs risk of harming future generations

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

If we now accept these arguments by acknowledging that **the least well-off in society are indeed exposed to higher environmental risks** and if we go on to conclude that **the latter violates the norms of distributive justice**—**as for instance** argued by Wigley and Shrader-Frechette (1996) **in the case of a uranium enrichment facility in Louisiana**—then the question of whether the extending of these activities is justified seems legitimate. To put it bluntly, **can we justify increasing the injustice among contemporaries and disadvantaging the least well-off in present-day society in order to reduce the possibility of harming remote future generations? This casts serious doubt on the extent of the moral legitimacy of the prima facie duty of not harming future generations**.25 This reasoning is however dubious as it assumes that current injustice should continue. We can argue that if there is a problem surrounding the distribution of burdens and benefits among contemporaries, we need to address and solve this problem irrespective of any additional activity.

### A2 State not moral

#### Rulings on preemption prove Congress has an intent

Henderson 80

George B. II, lawyer, The Nuclear Choice: Are Health and Safety Issues Pre-empted? 8 B.C. Envtl. Aff. L. Rev. 821 (1980), [lawdigitalcommons.bc.edu/ealr/vol8/iss4/5](http://lawdigitalcommons.bc.edu/ealr/vol8/iss4/5) [Premier]

The result of the modern cases has been to shift to Congress the burden of expressing its intent clearly. It is important to note that this establishes an important principle of federalism, one that puts on Congress rather than on the courts the burden of defining the reach of federal power. loa As an unelected body, the Supreme Court is poorly equipped to assess the competing interests of federal and state governments. **Congress**, on the other hand, **in its unique role of simultaneously representing national and state interests, can** better **elaborate the scope of its laws and** can better **adjust and readjust their reach through the legislative process.** The pre-emption doctrine is more appropriately used with restraint so that Congress, as the more qualified of the branches, will have the greater role in deciding where the proper balance of federal-state power should lie. lOB **By refusing to "infer"** lightly **a congressional intent** to pre-empt, **the Court forces Congress to clarify its intentions.** **If the Court errs on the side of not finding a clear enough intent** to pre-empt when in fact the intent was there, **Congress can subsequently make itself heard.**110 But where legislative ambiguity has indicated a failure to resolve issues relating to the federal-state balance of powers, the Court should refrain from substituting its own views of what the proper balance should be. The Supremacy Clause is more properly invoked as a consequence of statutory construction than as a result of judicial conclusions as to proper federal-state relations.lll

### Coercion Advantage

#### Nuclear power requires government subsidies

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

The economics of nuclear power are such that government subsidies are almost always required **to support private sector construction of nuclear plants.** Yet in many countries that wish to develop nuclear energy, limited government resources compete with pressing needs from health, education, and poverty reduction programs.5 Finally, it must be noted that **the investment required for nuclear energy is not restricted to the power stations, but also must support a fully functioning nuclear program, a safe and secure site, supporting power generators, a large water supply, roads and** 21 **transportation and waste management facilities.** An analysis from the Canadian Centre of International Governance Innovation (CIGI) suggests that **“[r]eaching just a fraction of these milestones, requiring them to invest billions of dollars on infrastructure upgrades for several years, will be impossible for most** **SENES [emerging nuclear] states.”**6

#### Consumers will be forced to pay

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

The cost of capital is perhaps the most important—and most variable—element in the economics of nuclear energy. **The capital cost depends in part on the credit ratings of both the country and the power utility in question; countries with more stable economies tend to get lower interest rates, as do utilities** that have sounder finances. But the structure of the electricity industry is a factor as well. **In countries that have traditional monopoly utilities, consumers effectively bear the project risk because any incurred costs are passed on—allowing for full-cost recovery.** For financiers, this is the ideal situation, as **consumers always pay.** **Some markets**, such as those in most developing countries and some U.S. states, **still assume full-cost recovery, making the financing of new nuclear build possible**.

## AFF – Proliferation

#### Nuclear Power is on the rise—NPT doesn’t check prolif.

Miller & Sagan 9 [Steven, Scott; Director of the International Security Program, Editor-in-Chief of the quarterly journal, International Security, Caroline S.G. Munro Professor of Political Science at Stanford University and Senior Fellow at Stanford's Center for International Security and Cooperation; Fall 2009; “Nuclear power without nuclear proliferation?”; <http://www.mitpressjournals.org/doi/pdfplus/10.1162/daed.2009.138.4.7>; [Premier]

The global nuclear order is changing. Concerns about climate change, the volatility of oil prices, and the security of energy supplies have contributed to a widespread and still-growing interest in the future use of nuclear power. Thirty states operate one or more nuclear power plants today, and according to the International Atomic Energy Agency (iaea), some 50 others have requested technical assistance from the agency to explore the possibility of developing their own nuclear energy programs. It is certainly not possible to predict precisely how fast and how extensively the expansion of nuclear power will occur. But it does seem probable that in the future there will be more nuclear technology spread across more states than ever before. It will be a different world than the one that has existed in the past. This surge of interest in nuclear energy–labeled by some proponents as “the renaissance in nuclear power”– is, moreover, occurring simultaneously with mounting concern about the health of the nuclear nonproliferation regime, the regulatory framework that constrains and governs the world’s civil and military-related nuclear affairs. The Nuclear Non-Proliferation Treaty (npt) and related institutions have been taxed by new worries, such as the growth in global terrorism, and have been painfully tested by protracted crises involving nuclear weapons, proliferation in North Korea and potentially in Iran. (Indeed, some observers suspect that growing interest in nuclear power in some countries, especially in the Middle East, is not unrelated to Iran’s uranium enrichment program and Tehran’s movement closer to a nuclear weapons capability.) Confidence in the npt regime seems to be eroding even as interest in nuclear power is expanding.

#### Expanding nuclear power increases the risk of terrorism and proliferation

Shrader-Frechette 8 [Kristin; teaches biological sciences and philosophy at the University of Notre Dame; “Five Myths About Nuclear Energy”; American Magazine, 6/23; <http://www.americamagazine.org/content/article.cfm?article_id=10884>; [Premier]

Myth 4. Nuclear Energy Will Not Increase Weapons Proliferation Pursuing nuclear power also perpetuates the myth that increasing atomic energy, and thus increasing uranium enrichment and spent-fuel reprocessing, will increase neither terrorism nor proliferation of nuclear weapons. This myth has been rejected by both the [International Atomic Energy Agency](http://www.iaea.org/) and the U.S. Office of Technology Assessment. More nuclear plants means more weapons materials, which means more targets, which means a higher risk of terrorism and proliferation. The government admits that Al Qaeda already has targeted U.S. reactors, none of which can withstand attack by a large airplane. Such an attack, warns the U.S. National Academy of Sciences, could cause fatalities as far away as 500 miles and destruction 10 times worse than that caused by the nuclear accident at Chernobyl in 1986. Nuclear energy actually increases the risks of weapons proliferation because the same technology used for civilian atomic power can be used for weapons, as the cases of India, Iran, Iraq, North Korea and Pakistan illustrate. As the Swedish Nobel Prize winner Hannes Alven put it, “The military atom and the civilian atom are Siamese twins.” Yet if the world stopped building nuclear-power plants, bomb ingredients would be harder to acquire, more conspicuous and more costly politically, if nations were caught trying to obtain them. Their motives for seeking nuclear materials would be unmasked as military, not civilian.

#### Nuclear energy is too vulnerable to misuse towards prolif

Arms Control Today 8 [Peter Crail and Jessica Lasky-Fink; “Middle Eastern States Seeking Nuclear Power”; May 2008. Vol. 38, Iss. 4; pg. 40; [Premier]

In addition to the concern that an expansion of nuclear energy may lead to state proliferation, the development of a nuclear industry in states with little regulatory capacity and a history of illicit trafficking points to a vulnerability for the smuggling of nuclear materials and technology.

A September 2007 study commissioned by the Pacific Northwest National Laboratories on the expansion of nuclear energy in the region claimed that, in the case of several states in the region, the threat from illicit nuclear trafficking is a greater proliferation concern than the potential development of nuclear weapons by states. The study cites in particular Egypt's defense collaboration with states such as Russia and North Korea, and the UAE's history as a transshipment point for illicit nuclear technology aiding nuclear weapons programs in Libya and Iran.

#### Nuclear power plants are vulnerable to diversion to proliferation—Japan proves

Assadourian 03[Erik; research associate at Worldwatch Institute**;** “The new clear threat”; World Watch; May/Jun 2003, Vol. 16, Iss. 3; pg. 30; World Watch; [Premier]

. In addition, nuclear plants are often unsecured against terrorist attack. In January, 19 Greenpeace activists stormed the U.K.'s Sizewell power plant, scaling the reactor without resistance. The goal was simply to expose the plant's vulnerability, but if the intruders had been actual terrorists the result would have been catastrophic. Finally, nuclear materials have also been known to disappear, and not just in Russia; early this year, the Japanese government admitted that it could not account for 206 kilograms of plutonium-enough to make 30 to 40 bombs**.**

#### Nuclear power plants are bomb factories risking prolif

Caldicott 6 [Helen; Founder and President of the Nuclear Policy Research Institute; “Nuclear Power is not the answer”; [PREMIER]]

Adding to the danger, nuclear power plants are essentially atomic bomb factories. A 1,000 megawatt nuclear reactor manufactures 500 pounds of plutonium a year; normally ten pounds of plutonium is fuel for an atomic bomb. A crude atomic bomb sufficient to devastate a city could certainly be crafted from reactor grade plutonium. Therefore any non-nuclear weapons country that acquires a nuclear power plant will be provided with the ability to make atomic bombs (precisely the issue the world confronts with Iran today). As the global nuclear industry pushes its nefarious wares upon developing countries with the patent lie about "preventing global warming," collateral consequences will include the proliferation of nuclear weapons, a situation that will further destabilize an already unstable world.

#### Nuclear energy provides the perfect cover for nuclear weapons development by militarizing states.

Caldicott 6 [Helen; Founder and President of the Nuclear Policy Research Institute; “Nuclear Power is not the answer”; [PREMIER]]

As for those nations currently vying to add nuclear capability to their arsenals, nuclear power plants offer the perfect cover. It is only a short step from uranium enrichment for energy to the pro­duction of highly enriched uranium suitable for atomic bomb fuel, or even to reprocessed plutonium from spent fuel, suitable for bomb fuel. Most nuclear technology associated with nuclear power can be diverted for use in weapons production: North Korea has almost certainly built at least two nuclear weapons using pluto­nium obtained from its research nuclear reactors.

Many countries are angry about the paternalism and arrogance displayed over the years by the nuclear-haves. As the new president Mahmoud Ahmadinejad of Iran, which is now actively developing uranium enrichment facilities, said recently when referring to the United States, "Who do you think you are in the world to say you are suspicious of our nuclear activities? ... What kind of right do you think you have to say Iran cannot have nuclear technology? It is you who must be held accountable."! Hugo Chavez of Venezuela displayed similar feelings when he said recently, "It cannot be that some countries that have developed nuclear energy prohibit those of the third world from developing it. We are not the ones developing atomic bombs, it's others who do that.

In addition to Iran and North Korea, this chapter will look at three of the nuclear-haves who built their nuclear weapons arsenals using various components of the nuclear fuel cycle. Israel developed a very large nuclear arsenal from plutonium created in a reactor specifically designated for that purpose, India created a nuclear arsenal from heavy water nuclear power plants, and Pakistan developed nuclear weapons largely from uranium enrichment facilities.

#### Nuclear power is inextricably linked to prolif-science and politics prove

Gottfried 6 [Kurt; "Climate Change and Nuclear Power." Social Research: An International Quarterly 73.3 (2006): 1011-1024. Project MUSE. Web. 8 Aug. 2016. <https://muse.jhu.edu/>.][Premier]

Both the fuel entering a nuclear reactor and the spent fuel pose serious proliferation risks. A nuclear chain reaction can take place in suitably configured assemblies of either of the elements uranium or plutonium. Uranium exists in nature, but plutonium does not because it decays with a half life of some 24,000 years. Both elements can be used in a controlled manner—that is in nuclear power reactors—or as an explosive—in nuclear weapons. That is why nuclear power and nuclear armaments have an **inherently deep relationship.** Naturally occurring uranium from uranium ore must be “enriched” before the material can be used as reactor fuel, but that same enrichment technology can, with a relatively small additional effort, produce **highly enriched weapons grade uranium.** When the uranium fuel is “burned” in a reactor, a fraction of the uranium atoms are turned into atoms of **the preferred weapons materiel, plutonium.** The latter can be extracted from the spent fuel by a chemical process called “reprocessing.” (The nuclear reactor was invented in the Manhattan Project for the express purpose of producing plutonium from uranium, and this plutonium was then used on the bomb that destroyed Nagasaki. The Hiroshima bomb used highly enriched uranium.) There is a serious worry that Iran will with time gain a weapon capability by acquiring the ability to enrich uranium for its large civilian nuclear reactor. The reason is that such a reactor needs a very large and steady stream of reactor grade uranium, and that a plant that can produce this “docile” stream can very quickly prepare the rather small quantity of weapons grade uranium needed for a bomb (Albright and Hinderstein, 2004). Climate Change and Nuclear Power 1019 The nuclear Non-Proliferation Treaty (NPT) suffers from a serious defect in that it allows a non-nuclear power to acquire essentially all the capabilities for manufacturing weapons material short of actually using this capability for that purpose, and to leave the treaty regime shortly before taking this last step. That was done by North Korea. Removing this defect in the NPT is very difficult politically, mainly because the nuclear powers have for decades put higher priority on satisfying their own, separate national interests than on strengthening the NPT regime. In recent years the United States has p u t an extra heavy burden on the NPT by adopting nuclear weapons policies that are in conflict with the spirit (though n o t the letter) of its obligations under the NPT, and by refusing to ratify the Nuclear Test Ban Treaty. The United States has not carried out any reprocessing to obtain plutonium from civilian reactors for some 30 years. But North Korea did while abiding to the letter though certainly not the spirit of the NPT. Some countries that do not worry us also reprocess. In particular, Japan does, but its accounting system is such that **enough plutonium for more than 10 weapons is not accounted for.** The rising concern about climate change, and the heightened interest in nuclear power, has brought with it a campaign in favor of reprocessing in the United States. The nuclear power industry is not behind this because it knows that reprocessing is not even close to being cost-effective. Other private interests, some government laboratories, and segments of the Bush administration are pushing reprocessing, however. They claim that the supply of naturally occurring uranium will eventually run out, and that it is cheaper and safer to deal with the radioactive wastes after reprocessing than with the waste from conventional uranium -fueled reactors. However, the case for reprocessing in the near term (a decade at least) cannot withstand scrutiny on technical or economic grounds. It seems that nuclear power will acquire a significant share of the global energy menu, even if it does not in the United States. At least some of the new plants will be in politically volatile countries. Unless an effective international regime governing the supply of fissile fuel is established, this will bring with it an **unacceptable proliferation risk.** The Bush administration has recently created a new initiative—the Global Nuclear Energy Partnership (GNEP), which would require nations with advanced nuclear knowledge to provide nuclear fuel to new comers under the aegis of the International Atomic Energy Agency so as to limit the proliferation risk (see Global Nuclear Energy Partnership, n.d.). This is a laudable concept, but it is being advertised in terms of a technology that would in an integrated manner bum and reprocess fissile material. At this time the technology only exists in PowerPoint. It is far too early to claim that GNEP will provide a proliferation-proof or affordable means for a major expansion of nuclear power (Garwin, 2006)

#### Rogue nations, bad security, and transferring intel leads to weaponization

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

**There are three issues of particular concern** for the international community when the nuclear energy option is considered by any government as a real alternative to satisfy the foresee increase in the demand of electricity in the country in the coming decades. These issues are the following**: a) the existing stocks of fissionable materials in the hands of several countries that are directly usable for the production of nuclear weapons; b) the number of nuclear facilities with inadequate physical protection and controls. The lack of adequate physical protection of nuclear installations in several countries could be used by terrorist groups to have access to certain amount of fissionable materials in order to use them for the production of a nuclear weapon; c) the transfer of sensitive nuclear technology, especially enrichment and reprocessing technology, to countries implementing a nuclear power programme that brings them closer to a nuclear weapons capability**.

#### Empirically, nuclear power leads to nuclear weapons

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

Political stability. **Globally, civil nuclear power production has often been accompanied by, and in some cases led to, the spread of nuclear weapons and the threat of nuclear proliferation.** Further **deployment of nuclear power raises genuine concerns** about the proliferation of nuclear materials, **especially** **in politically sensitive regions.** Energy expert José Goldemberg notes that **of the nine developing countries that have installed nuclear reactors for electricity production** (Argentina, Brazil, China, India, Iran, Mexico, Pakistan, South Africa, and North Korea), **five of them** (China, India, Pakistan, South Africa, and North Korea) **developed nuclear weapons**, although South Africa later dismantled its stockpile.10 **And Argentina and Brazil both had weapons programs, even if they did not actually manufacture them. The current case of Iran provides an even more graphic example**, given the considerable concern within the international community about Iran’s nuclear program and the risk of direct or indirect leakage.

### AT Ban CP

#### Ban on nuclear proliferation is useless – most states don’t want nukes

Biswas 14

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

In his most recent book, titled Atomic Obsession, John Mueller (2010), in his characteristically witty, unsubtle, and provocative manner, offered a devastating account of the “usefulness” of nuclear weapons and nonproliferation efforts. **In thrall to the alleged awesome powers of nuclear weapons, we live in such great fear of them and spend endless effort to prevent their proliferation. Yet nuclear weapons have been historically useless**, Mueller suggested— **unnecessary ­ in bringing an end to World War II and irrelevant in keeping the peace during the Cold War. Hence spending massive resources on acquiring and keeping them has been wasteful. But also useless**, he argues, **have been the enormous and quite costly efforts expended on nonproliferation—** ­useless, **because most states don’t want nukes, and the few who do won’t be any the better for acquiring them.** Nor are terrorists really able to buy or make or operate them, despite all the hyped-­ up drama around nuclear terrorism in policy and popular culture. **Wasteful and costly expenditures pursuing useless nonproliferation initiatives trying to prevent the acquisition of useless weapons!** Mueller’s critique was brutal and controversial.

### AT Deterrence

#### Major states already have nukes – don’t need that many for deterrence

Biswas 14

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

But questioning the quality of survival of a relatively small-­ scale nuclear attack still leaves us with **the issue of the massive overkill capacity that many states, such as the United States, continue to possess in the name of deterring just such an attack. Someone could reject Mueller’s claim that nuclear weapons are simply not necessary for deterrence but still have no sound basis to argue for the massive stockpile of thermonuclear weapons that the United States and other nuclear weapons states have and continue to possess, during the Cold War and long after its supposed demise,** far in excess of what may be necessary for deterrence. In that sense, I think Mueller pushes us to think about the usefulness of nuclear weapons in ensuring security, and I believe the case for the uselessness of nuclear weapons for poorer states, such as Iran and North Korea, with fewer resources to expend is stronger still. But I suggest that we think a little harder about how to think about this question of usefulness: if nuclear weapons are not just instruments of security, how else might they be useful for states that have a lot of them and want to keep many of them, and even for those who want to acquire them despite their massive expenses and the global opprobrium they now seem to invite?

#### Deterrence backfires and arms reduction measures fail, outweighed by the structural violence of sanctions

Biswas 14

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

Along with his dismissal of the usefulness of nuclear weapons, **Mueller** also, and in my mind more controversially, questions the usefulness of the countless efforts and initiatives undertaken on behalf of arms control and nuclear nonproliferation. On one hand, he **suggests that many anti-­ and counterproliferation efforts aimed at particular rogue states have been enormously costly and essentially ineffective and, indeed, have only served to make nuclear weapons more attractive.** In this respect, his attempts to document **the costly actual toll in human life and suffering that the long and brutal sanctions imposed on Iraq and North Korea, to prevent** a **nuclearization** that could have devastating possible effects in the future, are commendable. Sanctions against Iran to prevent its acquisition of nuclear weapons are taking a similar toll on ordinary citizens, while possibly only **strengthen**ing **the resolve of** sections of **the regime**. Any possible **military action** against Iran, as is suggested time and again by Israeli and sometimes U.S. leaders, **will only make that worse**. That preventing future nuclear weapons use is currently costly— ­n i tragic human forms— ­is a singularly important point to make.

But Mueller is also skeptical of the outcomes of a massive undertaking of **nuclear arms control and nonproliferation and disarmament efforts,** efforts that he suggests have involved countless amounts of time, energy, and money yet **have neither curtailed the ambitions of nuclear states nor made the world more or less safe.** He takes a particularly hard swipe at various key treaties. The 1962 Partial Test Ban Treaty (**PTBT**) **simply** banned the kinds of tests that had already been discarded and **drove more tests underground**, where they are still conducted by the one state (North Korea) that continues to test explosively. The bilateral arms control treaties negotiated between the United States and the Soviet Union were quite ineffective— for ­ instance, SALT I only offered a pretext to the two sides to innovate by adding more warheads to missiles when the former were limited, and **SALT II capped the level of weapons, but at very high levels,** and did not prohibit qualitative improvements. Most important, however, is the NPT— that ­ linchpin of nuclear nonproliferation efforts— practically ­ universal in scope, negotiated and extended indefinitely in 1995 with such great and heroic efforts, and yet, according to Mueller, so utterly useless in restraining the nuclear desires of those few hapless idiots who still want to pursue nuclear weapons. **Most states refrain from acquiring nuclear weapons because they have smartly realized that they are a waste of time, money, and energy, not because of the force of the NPT**. So can it be that such a well-­regarded treaty such as the NPT and so many well-­intentioned efforts to restrain the awesome destructive powers of nuclear weapons and create at least some semblance of nuclear peace are that useless?

### Discourse Key

#### The way we talk about nuclear power spills up to policy

Biswas 14 summarizes Tannenwald

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

To find the “objective” existence of this taboo, **Tannenwald** (2007, 13) **looks for** evidence in **“discourse,” which she defines as “the way people talk and think about nuclear weapons,” which includes “public opinion, the diplomatic statements of states and leaders, the resolutions of international organizations, and the private moral concerns of individual decisionmakers.”** **International laws, arms control agreements, state policies on nuclear weapons, all “supplement” this discourse, and** in her chronological narrative, **the taboo emerges “bottom-­ up” as a result of “societal pressure” and is subsequently “institutionalized in bilateral (U.S.–­ Soviet) and multilayered arms control agreements and regimes”** (56). Indeed, it is only in chapter 7 of a very long book that Tannenwald takes up the question of institutionalization and discusses the different arms of **the NNP regime** that **helped delegitimize the use of nuclear weapons.** Even though different in emphasis and more attuned to societal processes of norms diffusion, Tannenwald’s characterization of institutions and regimes, and that of the norms-­ based accounts of IR more generally, is ultimately fairly consistent with the neoliberal institutionalist understanding of regimes as mechanisms to instantiate the good intentions of policy makers in collaborative state actions toward the ends of global peace. Thus both Adler’s account of the ways that the work and strategic assumptions of the arms control epistemic community helped draw the United States and the Soviet Union toward negotiations on the Anti-­ Ballistic Missile (ABM) Treaty and Tannenwald’s account of the many bilateral and multilateral arms control treaties as emergent from the efforts of policy makers to stabilize deterrence and circumscribe the use of nuclear weapons see the institutions and agreements of the NNP as well-­ intentioned steps toward a more peaceful nuclear world.

## AFF—Psychoanalysis Aff

#### Clinging to nukes is a form of narcissistic attachment to technology

Kokubun 13

Address delivered at Asian Frontiers Forum: “Questions Concerning Life and Technology after 311”, National Taiwan University, May 30th, 2013. [Premier]

The concepts that Nakazawa provides in his analysis of nuclear technology will help us to answer these questions. As mentioned above, giveness and mediation have been the two traits characterising energy use by humankind up to the rise of nuclear technology. The latter aimed at overcoming these two conditions imposed on humankind. This means that nuclear technology tries to achieve a life without giveness. This technology dreams of living without being given, which means being fully independent, totally autonomous and standing alone. Is it not this “nuclear dream” that goes on fascinating some people and making them attached to this technology? In order to imagine how powerfully this dream attracts or seduces people, it is helpful to understand what nuclear power was expected to realise. A Japanese filmmaker, Noriaki Tsuchimoto (1928–2008), filmed a very interesting movie in this respect: Genpatsu Kirinuki-Cho [Tsuchimoto Noriaki's Nuclear Scrapbook] (1982, Japan), which is a kind of experimental movie consisting solely of images of newspaper clippings. There, we see some articles from the 1950s discussing the future that nuclear technology would bring about. For example, all the buildings have their own nuclear reactors, so they need no energy supply. In addition, all the vehicles, including airplanes, are equipped with nuclear reactors, which allow people to move so freely that intercultural marriage increases and the world becomes peaceful (I am not joking! In that period, people really talked like this!) The gist of these expectations is simple: if we have this small box (that is, the nuclear reactor) and if we keep on cooling the nuclear fuel inside, we no longer have to depend on anything; we become totally independent and acquire a life without giveness. Psychoanalysis is competent in analysing such a desire promoted by nuclear technology. This desire seems susceptible to being translated into a psychoanalytic term: omnipotence, which defines primary narcissism. As we know, Freud considered the child to live in a sort of megalomania, which it abandons in the next stage of its struggle with reality. However, it is so painful to abandon this original God-like feeling of omnipotence that it recurs in the individual’s adult life, which defines secondary narcissism. It is probable that the nuclear belief mentioned above is deeply rooted in secondary narcissism. This accounts for the fact that this belief is so firm and strong. Perhaps humankind believed that nuclear power would allow individuals to retrieve their original God-like feeling of omnipotence, which is, of course, deceiving. If this psychoanalytic reading of nuclear power is well-grounded, the movement for abandoning nuclear power generation (Datsu-Genpatsu) would require great effort due to secondary narcissism usually being very strong. Also, since this narcissism entails regression to the illusionary feeling of omnipotence in early childhood, abandoning nuclear power would mean some kind of maturity of humankind. This seems very difficult, but perhaps we should not forget that Freud did not give up his expectations for the maturity of humankind.

## AFF—Radiation

#### Just the normal operation of nuclear power plants can lead to health defects

Perrow 13 [Charles Perrow, emeritus professor of sociology at Yale University and visiting professor at Stanford University, “Nuclear denial: From Hiroshima to Fukushima,” Bulletin of the Atomic Scientists, 2013] [Premier]

Even the normal operation of a nuclear power plant is expected to release some radiation. While most studies have concluded there is no risk to human health, some see radiation damages. A study published in 2002 looked at the health effects on children in the two years following the closing of eight US nuclear plants in 1987. Strontium-90 levels in local milk declined sharply, as did death rates of infants who lived downwind and within 40 miles of the plants, suggesting a link between low-dose radiation from gases emitted by the plants and early deaths (Mangano et al., 2002). The research task is daunting. Children are the most vulnerable population, and the biggest risk is childhood leukemia, so most studies focus on this. But since the disease is rare among children, a doubling of the tiny number of expected deaths is still so small it is hard to detect. In 2007, a German study found increased rates of childhood leukemia in the vicinity of all 16 nuclear power plants in Germany. Children who lived less than 5 kilometers (about 3 miles) from a plant were more than twice as likely to develop leukemia as children who lived more than 5 kilometers away. It should not surprise us that, despite their findings of leukemia, the study’s authors said they could not determine the cause (Federal Office for Radiation Protection, 2009). It could not be radiation because the levels were too low! A French study, for the years 2002 to 2007, found a clear correlation between the frequency of acute childhood leukemia and proximity to 19 nuclear power stations. The study reported a doubling of childhood leukemia incidence under the age of five, but the researchers concluded that there was only a “possible” excess risk for this cancer, and are explicit that it cannot be attributed to gaseous discharges because the radiation is so low. They called for more studies (Sermage-Faure et al., 2012). A metastudy of 136 reactor sites in seven countries, extended to include children up to age nine, found childhood leukemia increases of 14 percent to 21 percent (Baker and Hoel, 2007).

### Food Poisoning

#### Radioactive isotopes can enter the food supply

Christodouleas et al 11 [John P. Christodouleas, M.D., M.P.H.,“Short-Term and Long-Term Health Risks of Nuclear-Power-Plant Accidents,” New England Journal of Medicine, June 16, 2011] [Premier]

Reactor accidents can release a variety of radioisotopes into the environment. Table 1TABLE 1 Estimated Releases of Isotopes during the Chernobyl Accident. lists the radioisotopes that were released during the Chernobyl accident.8 The health threat from each radioisotope depends on an assortment of factors. Radioisotopes with a very short half-life (e.g., 67 hours for molybdenum-99) or a very long half-life (e.g., 24,400 years for plutonium-239), those that are gaseous (e.g., xenon-133), and those that are not released in substantial quantities (e.g., plutonium-238) do not cause substantial internal or external contamination in reactor accidents. In contrast, iodine-131 can be an important source of morbidity because of its prevalence in reactor discharges and its tendency to settle on the ground. When iodine-131 is released, it can be inhaled or consumed after it enters the food chain, primarily through contaminated fruits, vegetables, milk, and groundwater. Once it enters the body, iodine-131 rapidly accumulates in the thyroid gland, where it can be a source of substantial doses of beta radiation. The release of radioactive water into the sea at the Fukushima plant has resulted in an additional route whereby the food chain may be affected, through contaminated seafood. Although the radioactivity in seawater close to the plant may be transiently higher than usual by several orders of magnitude, it diffuses rapidly with distance and decays over time, according to half-life, both before and after ingestion by marine life.

### Cancer

#### Reactor meltdowns increase risk of cancer

Christodouleas et al 11 [John P. Christodouleas, M.D., M.P.H.,“Short-Term and Long-Term Health Risks of Nuclear-Power-Plant Accidents,” New England Journal of Medicine, June 16, 2011] [Premier]

In the region around Chernobyl, more than 5 million people may have been exposed to excess radiation, mainly through contamination by iodine-131 and cesium isotopes.7 Although exposure to nuclear-reactor fallout does not cause acute illness, it may elevate long-term cancer risks. Studies of the Japanese atomic-bomb survivors showed clearly elevated rates of leukemia and solid cancers, even at relatively low total body doses.28,29 However, there are important differences between the type of radiation and dose rate associated with atomic-bomb exposure and those associated with a reactor accident. These differences may explain why studies evaluating leukemia30-36 and nonthyroid solid cancers37-40 have not shown consistently elevated risks in the regions around Chernobyl. Alternatively, small increases in the risks of leukemia and nonthyroid solid cancers may become more apparent with improved cancer registries or longer follow-up. In the population around Three Mile Island, there was a notable temporary increase in cancer diagnoses in the years immediately after the accident, but this increase may have been the result of intensified cancer screening in the area. Long-term follow-up has shown no increases in cancer mortality.4 However, there is strong evidence of an increased rate of secondary thyroid cancers among children who have ingested iodine-131. Careful studies of children living near the Chernobyl plant (which included estimates of the thyroid radiation dose) suggest that the risk of thyroid cancer increased by a factor of 2 to 5 per 1 Gy of thyroid dose.41-43 Although this relative increase in incidence is large, the baseline incidence of thyroid cancer in children is low (<1 case per 100,000 children). Factors that increase the carcinogenic effect of iodine-131 include a young age and iodine deficiency at the time of exposure. Among children in regions with endemic iodine deficiency, the risk of thyroid cancer per 1 Gy of thyroid dose was two to three times that among children in regions in which iodine intake was normal.44,45 Moreover, the risk of thyroid cancer among children who were given stable iodine after the Chernobyl accident was one third that among children who did not receive iodine.45 Studies of the effect of thyroid exposure to radiation in utero46,47 and in adulthood48-50 have been inconclusive. In accidents in which iodine-131 is released, persons in affected areas should attempt to minimize their consumption of locally grown produce and groundwater. However, since the half-life of iodine-131 is only 8 days, these local resources should not contain substantial amounts of iodine-131 after 2 to 3 months. On the advice of public health officials, area residents may take potassium iodide to block the uptake of iodine-131 in the thyroid. To be most effective, prophylactic administration of potassium iodide should occur before or within a few hours after iodine-131 exposure. The administration of the drug more than a day after exposure probably has limited effect, unless additional or continuing exposure is expected.51 Although potassium iodide can have toxic effects, the Polish experience with en masse administration of the drug after Chernobyl was reassuring. More than 10 million children and adolescents in Poland were given a single dose of prophylactic potassium iodide, with very limited morbidity.52 The Food and Drug Administration has issued guidelines for the administration of potassium iodide according to age and expected radiation exposure.53

## AFF—Terror

#### **Nuclear reactors are devastating terror targets.**

PSR 16 ["Dirty, Dangerous And Expensive: The Truth About Nuclear Power". 2016.Psr.Org. Accessed August 8 2016. http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html?referrer=https://www.google.com/][Premier]

In addition to the threat of nuclear materials, nuclear reactors are themselves potential terrorist targets.  Nuclear reactors are not designed to withstand attacks using large aircraft, such as those used on the September 11, 2001.([7](http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html#7))  A well-coordinated attack could have severe consequences for human health and the environment.  A study by the Union of Concerned Scientists concluded that a major attack on the Indian Point Reactor in Westchester County, New York, could result in 44,000 near-term deaths from acute radiation sickness and more than 500,000 long-term deaths from cancer among individuals within 50 miles of the reactor.

#### Further Nuclear Power proliferation massively increases the chances of terrorists getting nukes.

Miller & Sagan 9 [Steven, Scott; Director of the International Security Program, Editor-in-Chief of the quarterly journal, International Security, Caroline S.G. Munro Professor of Political Science at Stanford University and Senior Fellow at Stanford's Center for International Security and Cooperation; Fall 2009; “Nuclear power without nuclear proliferation?”; <http://www.mitpressjournals.org/doi/pdfplus/10.1162/daed.2009.138.4.7>; [Premier]

Third, states that face significant terrorist threats from within face particular challenges in ensuring that there is no successful terrorist attack on a nuclear facility or no terrorist theft of fissile material to make a nuclear weapon or dirty bomb. Figure 3 displays data from the United States Counterterrorism Center comparing the five-year totals of terrorism incidents in the existing states that have nuclear power facilities and the iaea list of aspiring states. India and Pakistan, both of which have nuclear weapons and nuclear power facilities and which face severe terrorist threats from homegrown and outsider terrorist organizations, clearly lead the pack. But as Figure 3 shows, the states that are exploring developing nuclear power would take up six of the slots on a “terrorist top ten risk list” if each of them develops civilian nuclear power in the future.

#### NPPs at risk of terror attacks-warning, risk management,, and backup systems fail

Gottfried 6 [Kurt; "Climate Change and Nuclear Power." Social Research: An International Quarterly 73.3 (2006): 1011-1024. Project MUSE. Web. 8 Aug. 2016. <https://muse.jhu.edu/>.][Premier]

In the last two decades the American nuclear power industry has learned how to operate its plants more reliably, and there have been fewer malfunctions that require the Nuclear Regulatory Commission (NRC) to demand a shutdown. But serious problems persist. The most glaring example is the Davis-Besse plant in Ohio, which came to within 6 months of having a large hole bored through its head by boric acid, which could have led to a catastrophic core meltdown. This was not just a technical near-failure, but a failure by the NRC, as its own post incident review concluded. Nevertheless, after more than two years the NRC has not implemented a quarter of its “high priority lessons learned.” Climate Change and Nuclear Power 1017 That terrorism poses a serious threat to nuclear power plants only became widely recognized after 9/11. Not only the nuclear reactors, but the neighboring spent fuel, could wreak havoc if attacked. Since 9/11, the NRC has upped the “Design Basis Threat” (DBT) that defines the level of attack that the plant operator is responsible for; above this the government is responsible. The DBT is classified, as it should be. It is known, however, to be based on the unrealistic assumption that the risk attending an attack can be reckoned in the same way as the risk of an accident. However, in an accident, backup systems should work, whereas they would also be the target of terrorists. Moreover, testing of readiness, which was ridiculously weak before 9/11, is still too limited, and the Department of Homeland Security does not have the authority or resources to insure that operators can handle the Design Basis Threat. If nuclear power is to play a major role in addressing the climate challenge, the NRC must undergo fundamental reforms that will make it truly independent of the industry it is supposed to regulate. Congress must provide it with the funding and political authority to strictly enforce the existing regulations pertaining to accidents. Homeland Defense and the NRC must together establish a coherent and effective security regime that can cope credibly with the threats of the post 9/11 world.

#### Increased nuke power means more people can share secret intel

Kanellos 10

Michael Kanellos, Green Tech Media, January 22, 2010 “Should the U.S. Expand Nuclear Power?” <http://www.greentechmedia.com/articles/read/should-the-u.s.-expand-nuclear-power> [Premier]

A knowledge problem also exists. **Expanding nuclear power means educating more engineers and technicians on how to build and operate plants. In turn, that means more people that could be susceptible to bribes and blackmail from less democracy friendly nations. This can't be dismissed** lightly. **If the Physical Dynamics Research Laboratory in the Netherlands hadn't hired and trained a newly minted PhD named A.Q. Khan back in 1972, Pakistan and North Korea may not have missiles today.** **On the same day that Areva announced its Fresno plans, an intelligence report from the International Atomic Energy Agency stated that Iran cut a secret deal to obtain uranium from Kazakhstan**.

### A2 NPT Checks Terror

#### The NPT is too permissive-North Korea proves

Gottfried 6 [Kurt; "Climate Change and Nuclear Power." Social Research: An International Quarterly 73.3 (2006): 1011-1024. Project MUSE. Web. 8 Aug. 2016. <https://muse.jhu.edu/>.][Premier]

The nuclear Non-Proliferation Treaty (NPT) suffers from a serious defect in that it allows a non-nuclear power to acquire essentially all the capabilities for manufacturing weapons material short of actually using this capability for that purpose, and to leave the treaty regime shortly before taking this last step. That was done by North Korea. Removing this defect in the NPT is very difficult politically, mainly because the nuclear powers have for decades put higher priority on satisfying their own, separate national interests than on strengthening the NPT regime. In recent years the United States has put an extra heavy burden on the NPT by adopting nuclear weapons policies that are in conflict with the spirit (though not the letter) of its obligations under the NPT, and by refusing to ratify the Nuclear Test Ban Treaty. The United States has not carried out any reprocessing to obtain plutonium from civilian reactors for some 30 years. But North Korea did while abiding to the letter though certainly not the spirit of the NPT. Some countries that do not worry us also reprocess. In particular, Japan does, but its accounting system is such that enough plutonium for more than 10 weapons is not accounted for.

## AFF—US



### Decomissioning Module

#### Plan Text: The USFG should prohibit the production of nuclear power by ceasing all upgrade and new plant construction licenses.

Lovins 13 [Amory; (2013) The economics of a US civilian nuclear phase-out, Bulletin of the Atomic Scientists, 69:2, 44-65, DOI: 10.1177/0096340213478000] [Premier]

Using the Nuclear Regulatory Commission’s 2012”2013 Information Digest report on current plant licenses and generation capacity, this path assumes that **no further uprates will be approved or further licenses renewed.** It assumes completion of the four new units mentioned above, plus two Tennessee Valley 52 Bulletin of the Atomic Scientists 69(2) Downloaded by [University of Minnesota Libraries, Twin Cities] at 21:17 08 August 2016 Authority units that began construction in 1972 and 1974. . Transform. The entire US nuclear fleet would retire by 2050 as all plants are closed at age 60 and the final 2 gigawatts are retired in 2050.

#### It’s topical-gradual decommissioning is normal means-we obviously can’t just cold stop reactors

#### Plan uniquely solves-avoids massive costs

Lovins 13 [Amory; (2013) The economics of a US civilian nuclear phase-out, Bulletin of the Atomic Scientists, 69:2, 44-65, DOI: 10.1177/0096340213478000] [Premier]

Phasing out existing nuclear plants as just sketched could potentially avoid many costs. Some of those costs will exceed historic averages if aging effects, not yet fully understood, prove real. Subject to that uncertainty, not running nuclear plants can avoid fuel purchases, routine operation and maintenance costs, major repairs or retrofits (net capital additions), and paying to relicense plants not yet approved to run for an extra 20 years. Phase-out also proportionately reduces waste-management burdens 32 and somewhat reduces decommissioning costs (but may increase their present value by incurring them sooner). Figure 3 summarizes these potential gross savings, which total on the order of $0.4 trillion to $0.5 trillion.

### A2 States CP

#### Previous cases demonstrate the principle of federal preemption in nuke energy policy – CP is unconstitutional

Henderson 80

George B. II, lawyer, The Nuclear Choice: Are Health and Safety Issues Pre-empted? 8 B.C. Envtl. Aff. L. Rev. 821 (1980), [lawdigitalcommons.bc.edu/ealr/vol8/iss4/5](http://lawdigitalcommons.bc.edu/ealr/vol8/iss4/5) [Premier]

Aside from the procedural problems of duplicative hearings, the impact on state authority of the NRC's licensing activities has been mainly in the area of health and safety. Ever since the enactment of the 1954 Act, the AEC and its successor, **the NRC have been consistent in their position that the Atomic Energy Act preempts any and all state regulation in matters concerned with radiation hazards.**42 **This position was affirmed in the oft-cited case, Northern States Power Co. v. State of Minnesota**,48 **where it was held that states are pre-empted from setting radioactive emmisions standards that are more stringent than those set by the AEC.**44 The scope of this decision has been the subject of extensive commentary. Some, limiting its holding to the context of design, safety, and emmisions standards, find support for a narrow view of preemption. U Others cite the decision in support of the view that **a state may not prohibit nuclear power if its underlying purpose is arguably to protect against" radiation hazards.** 48 The Northern States decision is a classic example of how a case can be cited as authority for either a proposition based on a narrow reading of the case or one based on a broad reading. At the outset of the opinion Judge Matthes states that "**the sole issue to be determined is whether the federal government, through the United States Atomic Energy Commission ... , [has] exclusive authority to regulate the radioactive waste releases from nuclear power plants so as to preclude Minnesota from exercising any regulatory authority over the release of such discharges** .... "47 Later, however, he states his broader conclusion that "Congress intended federal occupancy of regulations over all radiation hazards except where jurisdiction was expressly ceded to the states . . . . "48

Northern States has become the starting point of analysis in subsequent pre-emption cases arising under the Atomic Energy Act, and a number of decisions have further refined its holding. In cases where a state or local government has attempted to regulate the operation of an existing nuclear plant, courts have uniformly applied the pre-emption doctrine to invalidate the attempted regulation.49 Since Northern States, only two cases have squarely dealt with situations where a state has asserted some form of regulatory control prior to the construction of a nuclear power plant. **In Marshall v. Consumers Power Co**., ao the plaintiff sought a declaration of rights that the defendant's proposed power plant would constitute a common law nuisance because of the steam fog and icing that would result from the plant's cooling towers. The court held that the claim was not barred by federal pre-emption because it involved matters not concerned with regulation of radiation hazards. al The court stated: The license granted by the AEC is merely a permit to construct a power plant, not a federal order to do so. Therefore, a state which, pursuant to its Atomic Energy Act power to regulate nonradioactive hazards, stopped a power company from operating until it met reasonable state standards or abated a nuisance under state law could not be frustrating a federal mandate.1II However, in a subsequent part of the opinion, **the court stated: "[i]f [abatement] measures made the construction of a nuclear plant impossible, they could not be required. In such a case,** the Federal interest would prevent state action from absolutely prohibiting the construction of nuclear power plants within its boundaries. "&3

### A2 Reactors Old

#### U.S. reactors are constantly getting updated – increased output proves

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**The United States has more operating nuclear power plants than any other country in the world, with 104 commercial reactors providing 20.2 percent of U.S. electricity in 2009** (down from a maximum of 22.5 percent in 1995). Although the country is home to a large number of operating reactors, the number of cancelled projects—138 units—is even larger. **It now has been 38 years (since October 1973) since a new order has been placed that has not subsequently been cancelled.** The last reactor to be completed—in 1996—was Watts Bar 1, near Spring City, Tennessee, and in October 2007 the Tennessee Valley Authority (TVA) announced that it had chosen to complete the two-thirds-built 1.2 GW Watts Bar 2 reactor for $2.5 billion. Construction had originally started in 1972 but was frozen in 1985 and abandoned in 1994. Construction has restarted and is now expected to take until 2012 to finish the reactor. Watts Bar 1 was one of the most expensive units of the U.S. nuclear program and took 23 years to complete. **Despite the failure so far to build more reactors, the U.S. nuclear power industry remains highly successful in two main areas: increased output from existing reactors and plant life extensions.** Due to changes in the operating regimes and increased attention to reactor performance, **the energy availability of U.S. reactors has increased significantly from 56 percent in the 1980s to 90 percent in 2009**. **As a result, along with new capacity coming on line and reactor uprates, the output from U.S. reactors has tripled over this period**. The lack of new reactor orders means that over 40 percent of U.S. reactors will have operated for at least 40 years by 2015. Originally it was envisaged that these reactors would operate for a maximum of 40 years; however, projects are being developed and implemented to allow reactors to operate for up to 60 years. As of February 2011, 61 U.S. nuclear reactors had been granted a life-extension license by the Nuclear Regulatory Commission (NRC); another 21 applications are under review and some 14 have submitted letters of intent covering a period up to 2017

### Gen IV UQ

#### Gen IV reactors coming now – pressures

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation: Current and Future Role in the World Electricity Generation, New York. [Premier]

**The Department of Energy has recently initiated a Generation IV programme to develop innovative and new commercial nuclear power reactor designs by 2040**. Why the development of new nuclear power reactors designs is so important? According with recent estimates, **it is expected that the total US electricity consumption will increase another 20% to 30%,** at least, over the next ten years. The power to satisfy the increase demand of energy has to come from somewhere. **Neither solar, wind, hydroelectric nor other available alternatives energy sources in the market will provide the necessary additional energy supply to satisfy the foresee increase in energy demand in the USA in the future.** **The only technology** that could decisively reduce the current level of US carbon emissions to the atmosphere **in the near term** and could satisfy the foresee increase in the energy demand **is the nuclear technology that uses uranium as a fuel**. **Uranium is emission-free and is available in several countries located in stable political regions. It is time, due to economic, ecological and geopolitical reasons, that the US politicians adopt a decision to promote the use of nuclear energy for the generation of electricity in the country in the future**.

### Tax Credits UQ

#### New nuke power coming now – USFG increased tax credits and insurance

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

It is important to note that **there are some initiatives that have been adopted by the US government to encourage the power industry to consider the construction of new nuclear power** plants **in the coming decades**. Some of these initiatives have been described in previous paragraphs. Other initiatives have been adopted with the same purpose. **One of these initiatives provided by the Energy Policy Act, is the adoption of the so-called Nuclear Production Tax Credit. Through this initiative a US$1.8 cents/kWh tax credit for up to 6 000 MW of new nuclear power capacity for the first eight years of operation, up to US$125 million annually per 1 000 MW, is offered by the US authorities to the utilities that request a license construction for a new nuclear power plant.** An eligible nuclear power reactor under this initiative must be entered into service before January 1, 2021. **Another initiative to reduce cost and avoid unnecessary delays in the construction and in the beginning of the operation of new nuclear power plants, is the adoption of the so-called Regulatory Risk Insurance**. Continuing concern over potential regulatory delays, **despite** **the streamlined licensing system now available** in the country described in previous paragraphs, **prompted Congress to include an insurance system that would cover some of the principal and interest on debt and extra costs incurred in purchasing replacement power because of licensing delays. The first two new nuclear power reactors licensed by NRC that meet other criteria established by DOE could be reimbursed for all such costs, up to US$500 million apiece**, whereas each of the next four newly licensed reactors could receive 50% reimbursement of up to US$250 million. (Parker and Holt, 2007)

## AFF—Waste

#### **The United States has no plans to deal with hazardous nuclear waste.**

PSR 16 ["Dirty, Dangerous And Expensive: The Truth About Nuclear Power". 2016.Psr.Org. Accessed August 8 2016. http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html?referrer=https://www.google.com/][Premier]

Each year, enormous quantities of radioactive waste are created during the nuclear fuel process, including 2,000 metric tons of high-level radioactive waste([1](http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html#1))  and 12 million cubic feet of low-level radioactive waste([2](http://www.psr.org/chapters/washington/resources/nuclear-power-factsheet.html#2)) in the U.S. alone. More than 58,000 metric tons of highly radioactive spent fuel already has accumulated at reactor sites around the U.S. for which there currently is no permanent repository.  Even without new nuclear production, the inventory of commercial spent fuel in the U.S. already exceeds the 63,000 metric ton statutory capacity of the controversial Yucca Mountain repository, which has yet to receive a license to operate.  Even if Yucca Mountain is licensed, the Department of Energy has stated that it would not open before 2017.

#### US and Japanese nuclear power causes massive health risks-effects are long term, so operators can’t be held accountable-means the judge should increase credence in the scenario to compensate

Hunziker 3/8 [Robert. "Indian Point: Fukushima's Mini-Me." Www.counterpunch.org. CounterPunch, 08 Mar. 2016. Web. 08 Aug. 2016. <http://www.counterpunch.org/2016/03/08/fukushimas-mini-me/>.][Premier]

A Leaky Industry As previously mentioned, **75% of America’s nuclear power plants leak.** This therefore begs the question of how serious the problem is to health and well-being. That answer is impossible to get if only because illnesses and deaths caused by radiation can take years to develop as radiation accumulates in the body over time, and by the time cancer is detected, it can be difficult to know the cause. This is called the “latency effect.” Essentially**, the latency effect is a layer of protection, effectively removing the risks of citizens lining up in front of nuclear power plants, hollering,** screaming, throwing bricks. According to the U.S. General Accountability Office, there have been 56 nuclear reactor accidents in the U.S. but few fatalities. Yet, a significant pressing question is: Who’s counting? A very recent example of non-reported deaths from radiation exposure comes by way of Fukushima. Even though mainstream sources in Japan claim no serious health issues, i.e., deaths, from Fukushima radiation exposure, non-mainstream journalists in Japan have uncovered a series of **unreported deaths** of workers. Evidently, if a worker “dies at home,” the company (TEPCO) does not report it as “death at work.” By all appearances, this is how radiation-induced deaths are handled; they’ve gotta die at the work site or no reporting, nada, nil, a big goose egg. So, in order to get reported as “a worker death,” the worker needs to crawl out of bed and struggle to the work site, maybe on hands and knees, plop down and die on the premises. All of this segues perfectly into one of the best arguments of the pro-nuclear crowd, which is there have been so few deaths from nuclear radiation exposure, other than dropping nukes directly on the Japanese during WWII, when America very stupidly wiped out tens, maybe hundreds of thousands of innocent people at the very moment when the Emperor of Japan was already waving a white flag, which the White House was well aware of. It is far and away the world’s all-time biggest Duh! Anyway, as it happens, deaths from nuclear radiation exposure don’t show up for years or decades, unless zapped with a huge dosage all at once, like happened to workers at the Chernobyl plant. Zap! Death within hours-to-days. Speaking of which, Chernobyl’s radiation continues, yes currently, to take countless unreported lives, either by death or permanent disability and deformity, 30 years later, still deforming and distorting another generation of people thirty years after the fact. To read all about it here, jump to subsection “Hidden Casualties of Radiation, and while there, maybe check out the subsection “U.S. Sailors Hit Hard with Radiation,” which describes how **Fukushima radiation impacts U.S. sailors.**

## NEG—A2 Accidents Advantage



### Fish

#### Fish are OK even after Fukushima

Buesseler 12

Ken O. Buesseler, Senior Scientist @ Woods Hole Oceanographic Institution w/ PhD in Marine Chemistry from MIT, “Fishing for Answers” <https://darchive.mblwhoilibrary.org/bitstream/handle/1912/5816/Buesseler%20Perspecitves%20Fukushima%20Fish%20final%20revised.pdf?sequence=1&isAllowed=y> [Premier]

**Fortunately, the MAFF data show that the vast majority of fish remain below even the new, stricter regulatory limit for seafood consumption.** In addition, it must be remembered that **we are surrounded by a sea of radioactivity, in that many naturally occurring radionuclides appear in fish at similar or higher levels and are not considered a health threat**. For example in fish we sampled in June 2011 off Japan, natural levels of potassium-40 were more than 10 times greater than Fukushima derived cesium (2). Moreover, because cesium is rapidly lost from muscle after exposure stops, **fish that migrate to less affected waters will gradually lose much of their Fukushima-derived cesium**, as seen in a report of tuna caught off San Diego (10).

### Waste Disposal

#### Waste is solved

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

It is important to note that the management of spent fuel should ensure that the biosphere is protected and the public must be convinced of the effectiveness of the methods used. **Since the spent fuel contains very long-lived radionuclides, some protection is required for at least 100,000 years. There are two means to reach this goal. One of them is** the following: Society can wait for the natural decay of the radioactive elements by **isolating them physically from the biosphere through installation of successive barriers at a suitable depth in the ground. This strategy leads to deep geological disposal.** The second one is the following: **Society can make use of nuclear reactions that will transmute the very long-lived wastes into less radioactive** or shorter-lived products. In the opinion of several experts, deep geological repository disposal is the most appropriate solution available today. It is important to stress that **the technology for the safe management of nuclear waste is now available and can be used by any countries with an important nuclear power programme. The USA; Finland and Sweden have achieved some progress** regarding the final disposal of high radioactive nuclear waste and **the technology used by these countries could represents a real and objective solution** to this problem for other countries as well.

## NEG—A2 Mining Aff

#### No Solvency-production bans increase enrichment processes-hawks want to hedge in the name of national security

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

. Of course, one should not assume that US enrichment would wither away with US power reactors (just as the Urenco enrichment plant in Gronau, Germany, will keep producing, even though Germany is moving to zero nuclear power plants). But supporting continued US enrichment on the basis of national security, rather than on meeting demand, is a step onto a slippery slope; it could lead toward spending money on unneeded facilities.

## NEG—A2 Phil



### A2 Intent

#### Countries have at least three good reasons for nuke power

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

**Governments may have different reasons for considering the introduction of a nuclear power programme to achieve their national energy needs. These reasons could be: a) a lack of available indigenous energy resources; b) the desire to reduce dependence upon imported energy, particularly if the imported energy is done from unstable political regions; c) the need to increase the diversity of energy resources and/or the mitigation of carbon emission increases** with the purpose to reduce the CO 2 emission to the atmosphere, among others.

## NEG—A2 Polls/Democracy Aff



### (Whole Res) UK PIC

#### Text: All Countries should prohibit the development of nuclear power except the United Kingdom.

#### The UK public support high-different from rest of Europe

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Although public acceptance of nuclear power is low in several OECD Europe countries, in others, such as in the United Kingdom, nuclear power is perceived as an important option for energy and electricity security as well as a key contributor to decarbonising the power sector. Europe’s nuclear industry is mature, has strong well-functioning regulatory systems, and significant R&D capacities with highly experienced and skilled staff. These advantages make the development of nuclear power particularly attractive for the region.

### UK Politics DA

#### Insider political support for nuclear energy from nuclear lobby and conservative politicians in the UK

Lucas 12 [Caroline Lucas, MP for Brighton Pavilion and a member of the cross-party parliamentary environment audit committee, “Why we must phase out nuclear power,” The Guardian, February 17, 2012, <https://www.theguardian.com/environment/2012/feb/17/phase-out-nuclear-power>] [Premier]

In the UK, the government is determined to push ahead with the development of a new fleet of nuclear reactors, as the partnership announced by David Cameron and Nicholas Sarkozy shows. The orchestrated effort between coalition officials and the nuclear industry to create a pro-nuclear public information campaign in the days after Fukushima showed that not even a large-scale nuclear incident could halt ministers' obsession with new nuclear. Officials did not even wait for the results of the government's own safety review before rushing to assure the British people that a similar disaster is not possible in the UK. Now, the proposed electricity market reform is set to rig the energy market in favour of nuclear – with the introduction of a carbon price floor likely to result in huge windfall handouts of around £50m a year to existing nuclear generators. Despite persistent denials by ministers, this is clearly a subsidy by another name, making a mockery of the coalition pledge not to gift public money to this already established industry. The Energy Fair group is arguing that the cap on liabilities for nuclear accidents is technically a subsidy and therefore illegal under EU law – and is now taking the case to the European commission.

### US Specific

#### Public support more nuclear power

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

US public opinion supports the use of nuclear energy for the production of electricity and this support is continuing an upward trend during the last years. **In 2005, a National Survey** was **carried out** by Bisconti Researc h, Inc., in which 1 000 adult‘s age18 and older participated. **As result of this survey, around 70% of the public has a position in favor of using nuclear energy for electricity generation in the country in the future.** In addition, the survey found that **85% of the participants agree that the current nuclear power plant license should be renewal.** According with the result of this survey, planning for the future has become a basic value in considerations about energy policy. **Seventy seven percent agreed that electric companies should be prepared to build new nuclear power reactors, when needed in the future,** and 71% would approve companies participating in federal site approval reviews for a possible construction of new units at nuclear power plant site nearest to where they live. Also, **69% said that if a new nuclear power reactor were needed to supply electricity, they would find it acceptable to add a new units at the nearest existing nuclear power plant**. [142]

## NEG—A2 Prolif



### Impact

#### Apocalyptic scenarios for nuclear war are overblown

Biswas 14

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

Mueller’s argument on nuclear dangers goes something like this. **The fears of nuclear use mostly come from bombs possessed by small rogue-­ state or nonstate actors. But these are relatively simple devices, no more lethal than Fat Man and Little Boy— ­the atomic bombs dropped on Hiroshima and Nagasaki in 1945. They do not possess the explosive capacities of the far more lethal thermonuclear devices that established nuclear weapons states possess. The apocalyptic scripts of most nuclear armageddon scenarios are projections made from the power of these more deadly weapons. The detonation of a relatively simpler device by a rogue actor in downtown Manhattan will no doubt be devastating but not catastrophic. Such a detonation is unlikely to lead to the demise of an established, resilient state like the United States, let alone result in planetary annihilation.** Framed in this manner, **the dangers of nuclear weapons do, indeed, seem exaggerated.** One could question Mueller’s rendition of the extent of any such devastation caused by any such attack. What kind of political, social, and cultural formation might emerge from a nation-­ state that was able to withstand the instantaneous devastation of a nuclear attack? After all, time, in addition to scale, is as much a variable in the revolution that nuclear weapons are thought to have wrought. The United States might survive, and even return the favor in considerable kind, but in what form and with what long-­term political and economic consequences?

## NEG—A2 Solvency



### Generic

#### **Nuclear power generation is susceptible to water shortages, and external risk from supply concentration.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Nuclear power and other thermal plants are also subject to heat waves and water shortages. In 2006, France, Spain, and Germany had to shut down or scale back electricity production in several of their nuclear power plants due to low water levels. With growing concerns over water availability due to increasing pressure from uses and climate change, thermal power plants could face problems involving water supply more frequently. In addition to these robustness concerns, there are also sovereignty issues associated with nuclear power since capacities for fuel enrichment and nuclear reactor construction are concentrated in relatively few countries. Only six countries currently possess large-scale enrichment plants, and seven countries possess small-scale enrichment facilities (see Figure 5.5 ). 10 The fact that several countries (including Australia, Brazil, and South Africa) are considering constructing enrichment facilities indicates that even though countries can relatively easily stockpile nuclear fuel, national governments may feel too vulnerable if they rely solely on foreign suppliers. In addition to the concentration of nuclear fuel enrichment, construction capacity for new nuclear power plants is concentrated in just 12 companies in eight countries (see Figure 5.5 ). The number of countries holding the ability to forge the bottleneck component of large LWR pressure vessels is currently even more restricted.

### Imports

#### Aff will just lead to importing nuclear power

Korosec 11

KIRSTEN KOROSEC, Fortune journalism, “Germany's Nuclear Ban: The Global Effect” Money Watch, May 31, 2011, 4:28 PM <http://www.cbsnews.com/news/germanys-nuclear-ban-the-global-effect/> [Premier]

**Germany's plan to shut all of its nuclear power plants** within the next 11 years **will send waves** -- not ripples -- **through the energy industry** and the offices of policymakers throughout the world. In short, Germany's nuclear ban is a global game-changer. The plan, created in the aftermath of the Japan's Fukushima nuclear disaster, calls for all 17 of Germany's reactors to be phased out by 2022. **The energy void left behind is massive**. Nuclear energy generates 23 percent of Germany's electricity. What will fill the gap? More fossil fuels, imports and renewables. **In the short term** ... Eleven years to replace an energy source that provides nearly a quarter of its electricity is no small feat. **It's particularly difficult for Germany because it must adhere to European CO2 emissions caps. Meaning Germany has to find a low-carbon source of energy.** In the short term, **Germany, most likely will import nuclear power from France and the Czech Republic. This will place pressure on the existing nuclear power supply and drive up costs as a result.** Consumers will feel the pinch. For big industrial companies, it will feel more like a punch.

### Circumvention

#### The plan gets circumvented—Countries will just import from neighboring countries.

Harrell 11 [Eben; 5-31-2011; "Germany Bans Nuclear Power," TIME, http://science.time.com/2011/05/31/germany-bans-nuclear-power/][Premier]

But other countries—the U.S., U.K., and Poland to name but a few—will proceed with nuclear power despite Fukushima, as will many developing countries. And it’s even questionable whether Germany—with it’s booming, heavy industries—will manage to meet its energy demands without nuclear power. Areva’s CEO Anne Lauvergeon told the Wall Street Journal that Germany would likely have to go the route of Austria, which has opposed nuclear power plants inside its own borders even as it imports nuclear energy from neighboring countries. Of course, Lauvergeon would say this, as it’s French nuclear energy that Germany would likely turn to in the future. But there’s no doubt that, in Germany and elsewhere, meeting increasing energy demands while also tackling climate change will make it difficult to shun any low-carbon energy sources, no matter how troubling. Remember Pacala and Socolow‘s seven “stabilizing wedges,” each of which represents a technology that grows enough to avoid the emission of one billion tons a year of carbon by 2050? To make nuclear power one of these wedges would require tripling the world’s current nuclear power generating capacity by replacing all the world’s reactors and building some 25 reactors (of current average size) every year around the world until 2050.¹ That’s how big these “wedges” need to be: and some even estimate they need to be larger than Pacala and Socolow envisaged. It’s no wonder that some countries feel that nuclear—as a proven, low-carbon source—is worth the risk. Some anti-nuclear campaigners say that the growth required in nuclear generating capacity to even make a dent in the fight against climate change is unattainable—no new reactors were connected to the grid anywhere in the world in 2008 and only two were in connected in 2009. Regulatory hurdles and complicated construction means it takes at least a decade to bring new plants on-line–and possibly more if regulations tighten following Fukushima. But saying the threat of climate change is too large or too urgent for nuclear power seems illogical—we’re going to need as much help as we can get.

### Inherency

#### Nuclear power not happening; accidents control public opinion—popularity key to government backing.

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

As a result, strong government backing is necessary for the development of nuclear power (Finon and Roques, 2008 ). Such political backing depends on the public support of nuclear power, which has been very uneven. In particular, public opinion is swayed by nuclear accidents such as the ones at Three Mile Island in the United States in 1979, Chernobyl in the USSR in 1986, and Fukushima in Japan in 2011. Each such change of public opinion and the resulting change in the government policy may affect energy security both in the short term (e.g., as a result of shutting down nuclear power plants immediately affected by the accident 9 and those deemed unsafe) and in the longer term (through complicating the investment climate). Unlike other energy sources and electricity-generating technologies, for nuclear energy the risks associated with accidents extend beyond the plant level or national level to the entire nuclear power plant fleet. Thus, nuclear power globally faces the systemic risk of nuclear accidents.

#### **Nuclear infrastructure waning now.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Currently, 29 countries with a total population of 4.4 billion people operate nuclear reactors. Nuclear power is located in middle- and high income countries that are almost all relatively stable (see Figure 5.5 ). Nuclear energy comprises more than 10% of the electricity supply in 21 countries with a population of 1.3 billion people. Of these, only 200 million people live in 13 countries that rely on nuclear energy for at least 30% of their electricity generation, and about 80 million people live in three countries that rely on nuclear energy for more than 50% of their electricity production. The most pressing energy security concerns for nuclear power in most countries are robustness concerns related to the age and obsolescence of their nuclear power programs combined with a lack of recent investment. Twenty-one out of the 29 countries with nuclear power (with a combined population of 1.3 billion people) have not started constructing a new nuclear power plant in the last 20 years. Without new nuclear power plants, the nuclear industry in these countries lacks the vitality of recent activity.

#### No nuclear production now—Fukushima, perception of cost, and cheap natural gas.

Broder 11 [John; New York Times Reporter; 2014; "The Year Of Peril And Promise In Energy Production"; Nytimes.Com; Accessed August 8 2016; http://www.nytimes.com/2011/10/11/business/energy-environment/the-year-of-peril-and-promise-in-energy-production.html] [Premier]

Global energy markets were rocked over the past year by a series of natural, political and market upheavals that are likely to affect patterns of energy supply and consumption for decades. The tsunami and earthquake that devastated northern Japan in March crippled the Fukushima nuclear reactor complex and shook faith in the safety of nuclear power worldwide. A tide of revolutionary fervor in North Africa and the Middle East temporarily cut oil production, pushed up prices and raised questions about political stability in the critical oil­producing region. At the same time, new discoveries and increased production of natural gas in the United States and elsewhere drove prices down, foretelling a major shift to natural gas as both a transportation fuel and as a possible substitute for coal in electricity generation. But offshore oil drilling in the United States is still feeling the political and regulatory effects of the April 2010 BP blowout and spill in the Gulf of Mexico. One of the most eventful periods in energy news in recent memory has led to a shifting of the global landscape that is characterized by both promise and potential peril. Not only industry, but capitals around the world are trying to figure out how to plan for the new energy order. A concerted international move in June to release oil stockpiles to stabilize world prices in response to the unrest in Libya sent a sharp signal to the Organization of the Petroleum Exporting States that its power to dictate oil prices was on the wane. “The energy sector is undergoing a major transformation globally,” said Rajendra K. Pachauri, director general of The Energy and Resources Institute in New Delhi and chairman of the Intergovernmental Panel on Climate Change of India. “There are new concerns arising out of the Fukushima nuclear disaster and the serious Deepwater Horizon oil spill that expansion in supply of energy would be associated with larger risks,” Dr. Pachauri said. “Therefore, many countries are rethinking energy supply strategies and the very drivers of energy demand.” Germany, for example, aims by 2022 to **eliminate nuclear power on its territory** — today nuclear power provides 23 percent of the country’s electricity. The government is establishing plans to increase the share of electricity generated from renewable sources to 35 percent by 2020, up from about 18 percent now. Many doubt whether either is possible, but the country has undertaken an aggressive program of energy conservation and efficiency to reduce demand. The future of nuclear power suffered another blow in September, when Siemens, the largest engineering company in Europe, announced that it would no longer build nuclear power plants anywhere in the world. The company’s chairman, Peter Löscher, said that Siemens was ending plans to cooperate with Rosatom, the Russian state­controlled nuclear power company, in the construction of dozens of nuclear plants throughout Russia over the coming two decades. Mr. Löscher also said that his company planned to expand significantly its portfolio of renewable energy technologies. Even before Fukushima, the future of nuclear energy in the United States was already shaky because of the high cost of building and insuring nuclear plants there, and because — unlike Germany and other European countries — the United States 8/8/2016 The Year of Peril and Promise in Energy Production ­ The New York Times http://www.nytimes.com/2011/10/11/business/energy­environment/the­year­of­peril­and­promise­in­energy­production.html 3/5 has not moved aggressively toward requiring renewable, noncarbon­emitting power generation. “Two things have happened in the last year, both affecting nuclear power negatively,” said Jason Grumet, president of the Bipartisan Policy Center in Washington, a nonpartisan research organization. “First Fukushima, and then the rising supplies and falling prices of natural gas have fundamentally changed the economics of nuclear power.” Utilities find it **far cheaper to turn to natural gas** for supplemental power generation and see **no value in investing in new nuclear generating plants**, which can cost $10 billion or more, he said. Natural gas now sells for $4 to $5 per thousand cubic feet, or 28.3 cubic meters, in the United States, far below its peak price. “If natural gas were still selling for $13,” Mr. Grumet said, “we’d be building several nuclear plants right now.”

#### Fukushima made banks skittish-no financing for any nuclear power projects now

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Since the 2010 IEA/NEA Technology Roadmap: Nuclear Energy, two events have further added to the challenges of financing nuclear energy by commercial banks. The first is the adoption of Basel III regulations in the banking sector, which set limits to the amount that banks can lend and effectively reduced the availability of long-term debt. The second is the Fukushima Daiichi NPP accident, which led many banks to re-evaluate lending policies for nuclear projects.

#### UBS has shifted to financing renewable energy instead of nuclear production-creation of dedicated group proves

Ovide 10 [Shira; "UBS Launches Renewable Energy Banking Group." WSJ. Dow Jones & Company, 29 Sept. 2010. Web. 8 Aug. 2016. <http://blogs.wsj.com/deals/2010/09/29/ubs-launches-renewable-energy-banking-group/>.][Premier]

UBS is launching a group devoted to capital raising and deal advice for the renewable energy and clean technology sectors, according to an internal memo from the heads of the company’s investment-banking department. The new UBS group will be led by Jim Schaefer as global head and David Dolezal as Americas head. Both are UBS vets. “We have had a strong renewable and cleantech practice for over four years, and finally we decided it made sense to create a formal practice,” Schaefer said. “We are also planning to grow our coverage footprint and potentially expand our product offering beyond traditional M&A and financing.” BLOOMBERG NEWS UBS has experience in this field, having helped to raise more than $20 billion since 2006 and advised on more than a dozen deals for renewable energy and cleantech companies. Their deals included the sale of solar-cell maker Solaicx to MEMC Electronic Materials and Verenium’s July sale of its biofuels business to BP for about $100 million. But until now the green energy work had been spread around UBS’s utilities, tech, industrials and healthcare groups. The new green group is expected to consist of roughly 25 senior and junior staffers.

#### No expansion of nuclear power production now-high perceived risk among the public

Gottfried 6 [Kurt; "Climate Change and Nuclear Power." Social Research: An International Quarterly 73.3 (2006): 1011-1024. Project MUSE. Web. 8 Aug. 2016. <https://muse.jhu.edu/>.][Premier]

Expansion of nuclear power is a serious proposition because nuclear power does not lead to the emission of greenhouse gases, or to 1016 social research air pollutants (sulfur and nitrogen oxides, mercury, soot). But nuclear power has very serious negatives that have no counterparts in the other options. A nuclear power plant accident or a terror attack on a plant or associated facilities can inflict massive medical and environmental damage. Disposal of spent nuclear fuel is already a vexing problem, and will become much worse if there is a large-scale expansion. And the civilian nuclear-fuel cycle carries an inherent risk of nuclear weapon proliferation. A major expansion of nuclear power will **only be accepted by the American public** if it can be assured that the risk of release of radioactivity from an accident, a terror attack, or a waste depository is remote. In principle, that could be done, but the history of nuclear power in this country tells us that this will be very difficult. The proliferation danger is a major international problem, and one that is getting significantly more difficult even without any significant expansion of nuclear power.

#### Nuke power decreasing now

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

Nuclear power plants generated 2,558 Terawatt-hours (TWh or billion kilowatt-hours) of electricity in 2009.10a **World nuclear production fell for the third year in a row, generating** 103 TWh (**nearly 4 percent**) **less power than in 2006.** This **decline corresponds to more than the domestic annual nuclear generation in four-fifths of the nuclear power countries.** The gap between the public’s perception of an increasing role for nuclear power and reality seems to be widening. **The main reasons for nuclear’s poor global performance are linked to technical problems with the reactor fleets of larger nuclear players**, with the small producers remaining more or less stable. **Between 2008 and 2009, nuclear generation declined in four of the “big six” countries—France, Germany, South Korea, and the United States**. In Japan, the industry had been slowly recovering from the 2007 Kashiwasaki earthquake, and in Russia, production remained stable. These six countries generate nearly three-quarters (73 percent in 2009) of the world’s nuclear electricity, a share that increased in 2009. In 2010, the nuclear role of four of the “big six” remained stable while two (Germany and South Korea) declined. Many countries are now past their nuclear peak. The three **phase-out countries** (Italy, Kazakhstan, and Lithuania) and Armenia **generated their historical maximum of nuclear electricity in the 1980s. Several other countries had their nuclear power generation peak in the 1990s**, among them Belgium, Canada, Japan, and the UK). And **seven additional countries peaked between 2001 and 2005**: Bulgaria, France, Germany, India, South Africa, Spain, and Sweden.

#### Future nuclear levels are unclear

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**Renewal of the aging world nuclear fleet, or even extension of the operating power plants, encounters four major problems: a short-term manufacturing bottleneck, a dramatic shortage of skilled worker and managers, a skeptical financial sector, and public opinion. Other issues include widely fluctuating costs for raw materials, the aftermath of the Fukushima disaster, and the new dimension of the threat of nuclear terrorism.** The world economic crisis has exacerbated these problems further, particularly in potential “newcomer” countries.

### Status Quo Solves

#### Too many hurdles to Nuclear Power—Status Quo Solves.

Miller & Sagan 9 [Steven, Scott; Director of the International Security Program, Editor-in-Chief of the quarterly journal, International Security, Caroline S.G. Munro Professor of Political Science at Stanford University and Senior Fellow at Stanford's Center for International Security and Cooperation; Fall 2009; “Nuclear power without nuclear proliferation?”; <http://www.mitpressjournals.org/doi/pdfplus/10.1162/daed.2009.138.4.7>; [Premier]

The essays collected in these two volumes of Dædalus focus on three broad, interlocking subjects: nuclear power, nuclear disarmament, and nuclear proliferation. The new nuclear order that will emerge years hence will be the result of the interplay of state motives for pursuing nuclear power and constraints on that pursuit. Contributors to the volumes consider in detail the changing technical, economic, and environmental factors that are making nuclear power seem more attractive around the globe. But they also address factors inhibiting the growth of nuclear power: enormous capital costs, the need for public subsidies, limited industrial capacity to build power plants, inadequate electricity grids, the possible emergence of alternative energy technologies, concern about the cost and risks associated with nuclear wastes, public fear of nuclear technology, as well as concern about the security risks created by the possible spread of weapons-usable nuclear technologies. When the constraints are taken into account, it may well be that the spread of nuclear power will be neither as fast nor as extensive as many anticipate.3

#### SQ Solves—Capacity decreases inevitable

Ruiz 16

[Irene Banos Ruiz, “Nuclear power faces uncertain future in Europe” Apr 26 2016, Deutsche Welle] [Premier]

The Chernobyl nuclear disaster on April 26, 1986, was a shock for Europe - and a turning point. The accident made the consequences of nuclear power visible, and scuttled many plans for new nuclear power plants. In the years since, reactors in Europe have become old and many European countries have come to resist nuclear power - motivated mainly by the long-term risks that underlie it. However, about a third of all electricity in the European Union still comes from nuclear power, figures from the International Atomic Energy Agency (IAEA) show. Monetary struggles According to the World Nuclear Industry Status Report, in 2015 only 128 reactors are still functioning in the EU, of which almost half (58) are in France. Two reactors under construction by the French nuclear company Areva in France and in Finland - started in 2005 and 2007 - will not be finished before 2018, years after they should already have gone online. According to current estimates, these plants have already cost three times more than planned - about 9 billion euros ($10 billion) per plant. The planned Hinkley Point C nuclear power station in England, spearheaded by French utility EDF, is also facing cost overruns, financing difficulties and delays to scheduled construction begin. Nuclear power plant in France (Picture: CHARLY TRIBALLEAU/AFP/Getty Images) The Flamanville nuclear power plant in France will not be finished before 2018 The French nuclear industry has not been able to sell a single new nuclear power plant for eight years. If EDF does nIfdasot acquire Areva as planned, the company will likely face bankruptcy. The European Commission has calculated costs for nuclear decommissioning and management of radioactive waste at 268 billion euros by 2050. A study from European Parliament Greens put that figure at 485 billion euros. According to the EU, electric companies will only finance 150 billion euros of these costs. Few new plants Three EU member states - Finland, France and Slovakia - are currently constructing new nuclear plants. But all these projects are facing cost overruns and delays - works on Slovakia's new reactors started in 1986. By 2030, capacity expansions to existing nuclear facilities are planned or proposed in Bulgaria, the Czech Republic, Finland, France, Hungary, Lithuania, Poland and the United Kingdom - according to the World Nuclear Association, a pro-nuclear group. Number of nuclear power plants in Europe But in order to use old reactors safely, their infrastructure needs to be upgraded, said Frank Peter from the Berlin office of the Switzerland-based economic consultancy Prognos. Existing reactors in Europe are on average around 30 years old, and their original operational life time was planned to run 30 to 35 years. Peter believes upgrading old reactors is not financially viable. "For the old power plants to produce electricity at a same level of safety as new ones, each power plant would need an investment of 3 to 4 billion euros," Peter told DW. Due to financial pressures, one reactor in Switzerland and four in Sweden will go offline before 2020 - much earlier than planned, nuclear energy expert Mycle Schneider explained. Nuclear power capacity The 128 nuclear power reactors operating in 14 of the 28 EU member states account for more than a quarter of the electricity generated in the whole of the EU, according to the World Nuclear Association. The group says numerous power reactors across Europe have increased their generating capacity, in countries such as Belgium, Sweden and Germany. Net nuclear capacity in the EU The capacity of Switzerland's five reactors has increased more than 13 percent; Spain is planning to boost its nuclear capacity up to 13 percent; and Finland has boosted capacity of its Olkiluoto plant 29 percent since the 1980s, the association said. IAEA figures show nuclear power still represents 76 percent of total electricity production in France; 56 percent in Slovakia; 53 percent in Hungary; and 38 percent in Belgium. However, the IAEA indicates that net nuclear capacity in the EU has been decreasing since 2000. Laws are also restricting nuclear power generation, by trying to work more renewables into the energy mix. In France, for instance - where nuclear power covers three-quarters of the country's electricity demand - a law adopted in autumn 2015 aims to reduce this to 50 percent by 2025. Future fight Adding to the controversy around new nuclear plants, citizens and politicians are voicing more concerns over the potential risks of old reactors. Existing European nuclear plants have been having more close calls, and could be targeted by terrorist attacks. Demonstration in Belgium (Picture: Gero Rueter DW) Chernobyl sparked increased worry over nuclear disaster in Europe According to a recent Greenpeace survey, 85 percent of Germans over 45 years old believe a disaster similar to Chernobyl could take place in Europe. "People are really aware of the great hazard presented by ramshackle nuclear plants in Germany and neighboring countries," said Tobias Münchmeyer from Greenpeace. The major challenges facing nuclear power within the European Union will probably result in a future decrease from current capacity, the World Nuclear Association concludes in its report.

### AT Nuclear Renaissance

#### Reactors are prohibitively expensive for small countries

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

Investment costs. Although **the costs of producing electricity from nuclear energy are often prohibitively high**, **the investment cost schedule** for building a nuclear plant itself **can be an even greater barrier. The size and complexities of nuclear reactors make both their cost per megawatt and the upfront investment requirements far higher than for conventional and renewable alternatives. This can disproportionally affect countries that have relatively small electricity grids**. Consequently, the World Bank has noted that **if nuclear power were a large part of the energy mix “the high costs would require large increases in tariffs and could threaten the financial viability of the systems.”**4

The economics of nuclear power are such that **government subsidies are almost always required to support private sector construction of nuclear plants.** Yet in many countries that wish to develop nuclear energy, **limited government resources compete with pressing needs from health, education, and poverty reduction programs**.5 Finally, it must be noted that **the investment required for nuclear energy is not restricted to the power stations, but also must support a fully functioning nuclear program, a safe and secure site, supporting power generators, a large water supply, roads and** 21 **transportation and waste management facilities.** An analysis from the Canadian Centre of International Governance Innovation (CIGI) suggests that **“[r]eaching just a fraction of these milestones, requiring them to invest billions of dollars on infrastructure upgrades for several years, will be impossible for most** **SENES [emerging nuclear] states.”**6

## NEG—A2 US Aff



### A2 US Modeling

#### **US isn’t modeled-key developing countries chart their own course and the US loses influence in the NSG**

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

Just as other countries continued to pursue nuclear power through the US Òdark agesÓ when no new nuclear plants were ordered, some countries will chart their own course on nuclear energy, **regardless of what happens in the United States.** China and India will continue to build and possibly export nuclear power plant technology, and South Korea is likely to do the same. If nuclear power makes a slow exit in the United States, the country may face major challenges in maintaining coherence within the Nuclear Suppliers Group and among new nuclear technology suppliers in support of the nonproliferation objectives that the United States has worked so assiduously to promote.

### Inherency

#### **Nuclear power unlikely to be built in US.**

Broder 11 [John; New York Times Reporter; 2014; "The Year Of Peril And Promise In Energy Production"; Nytimes.Com; Accessed August 8 2016; http://www.nytimes.com/2011/10/11/business/energy-environment/the-year-of-peril-and-promise-in-energy-production.html] [Premier]

Even before Fukushima, the future of [**nuclear energy**](http://topics.nytimes.com/top/news/business/energy-environment/atomic-energy/index.html?inline=nyt-classifier) in the United States was already shaky because of the high cost of building and insuring nuclear plants there, and because — unlike Germany and other European countries — the United States has not moved aggressively toward requiring renewable, noncarbon-emitting power generation.

“Two things have happened in the last year, both affecting nuclear power negatively,” said Jason Grumet, president of the Bipartisan Policy Center in Washington, a nonpartisan research organization. “First Fukushima, and then the rising supplies and falling prices of natural gas have fundamentally changed the economics of nuclear power.” Utilities find it far cheaper to turn to natural gas for supplemental power generation and see no value in investing in new nuclear generating plants, which can cost $10 billion or more, he said.

#### US market will phase out nuclear power – current exists prove

Bradford 13 [Peter; prof @ Vermont Law School, former NRC member; March/April 2013; “How to close the US nuclear industry: Do nothing”, Bulletin of the Atomic Scientists vol. 69 no. 2 12-21; <http://bos.sagepub.com/content/69/2/12.full>; [PREMIER]]

The United States is on course to all but exit the commercial nuclear power industry even if the country awakens to the dangers of climate change and adopts measures to favor low-carbon energy sources. Nuclear power had been in economic decline for more than three decades when the Bush administration launched a program that aimed to spark a nuclear power renaissance through subsidies and a reformed reactor licensing process. But Wall Street was already leery of the historically high costs of nuclear power. An abundance of natural gas, lower energy demand induced by the 2008 recession, increased energy-efficiency measures, nuclear’s rising cost estimates, and the accident at the Fukushima Daiichi Nuclear Power Station further diminished prospects for private investment in new US nuclear plants. Without additional and significant governmental preferences for new nuclear construction, market forces will all but phase out the US nuclear fleet by midcentury. Here’s what the US government must do to bring about a gradual phase-out of almost all US nuclear power plants: absolutely nothing. The United States is more or less on course to exit the commercial nuclear power industry, even if the country awakens to the dangers of climate change and adopts broad-based measures to favor low-carbon energy sources. Only a massive, government-driven infusion of taxpayer or customer dollars, targeted specifically to new nuclear reactors, will produce a different result. Dominion Resources Inc. recently announced that it will close the Kewaunee Power Station in Carlton, Wisconsin in 2013. The decision, said Dominion CEO Thomas Farrell, “was based purely on economics” (Dominion Resources, 2012). With that announcement, the 30-year struggle between pronuclear prophets and market realities in the United States appears to be entering a new phase, one in which market forces challenge the economic viability even of existing nuclear plants, while making new reactors hopelessly unattractive as investments. The Kewaunee shutdown is not an anomaly. Duke Energy has announced that it will not restart the Crystal River unit in Florida, closed since 2009 by construction errors. In late 2012, both the Exelon Corporation and Xcel Energy Inc. canceled plans to expand existing nuclear units, citing declining forecasts of demand for electricity and long-term forecasts of low natural gas prices (Meredith and Benedetto, 2012). In January 2013, industry analysts speculated that several other units might also close in the near future for economic reasons (Maloney et al., 2013). How could this possibly happen to an industry that was trumpeting a “nuclear renaissance” as recently as five years ago? Well, the nuclear renaissance was always ballyhoo; it was based on the number of reactors for which federal or state governments (or both) would conscript the necessary capital from captive taxpayers or customers, not the number that customers needed or that markets would fund. Absent an extremely large injection of government funding or further life extensions, the reactors currently operating are going to end their licensed lifetimes between now and the late 2050s. They will become part of an economics-driven US nuclear phase-out a couple of decades behind the government-led nuclear exit in Germany.

#### It's politically dead-parochial interest lobbies vote down the siting proposals

Cohen 11 [Steven; Executive Director, Columbia’s Earth Institute; 3-21-2011, "," Huffington Post, http://www.huffingtonpost.com/steven-cohen/the-political-demise-of-n\_b\_838291.html] [Premier]

While there may be good reasons for nuclear power to be used as a bridge fuel to a renewable energy future, I am confident that nuclear power is politically dead in the United States. This makes the research and development of alternative energy and carbon capture and storage that much more important and urgent. It also means that environmentalists who have either reluctantly or enthusiastically embraced nuclear power as a form of carbon free energy should move on to other solutions. The catastrophe in Japan will not soon be forgotten, and it will shape the politics of nuclear power plant siting for decades. This analysis is based on a few fundamental facts of American political structure. Despite the strength of our national government, this remains a federal system of divided power. States retain sovereignty, and we have a deeply rooted tradition of local control of land use. Our national elected leaders pay a great deal of attention to geography and to opinion leaders at the community level. Presidents are elected by an Electoral College, with members selected by states. Presidents are not elected by a majority vote of the American public (ask Al Gore about that). Our legislators must pay a great deal of attention to the parochial interests of their constituents. Take for example the issue of nuclear waste. Despite billions of federal dollars spent to develop and complete a nuclear waste repository in Yucca Mountain, Nevada, the Nevada delegation to the U.S. Congress, especially Senate Majority leader Harry Reid, have effectively vetoed its operation. The “Not-in-my Backyard” (NIMBY) syndrome **is not a passing fad in American politics; it is a central element of land use politics** in communities throughout this country. While it is true that the definition of a noxious facility varies from place to place, no one doubts the ability of an American locality to veto a land use they do not like. In New York City we have an extreme version of NIMBY where we even have trouble siting big box retailers. Most places are happy to allow Wal-Mart, but even before last week, few communities were interested in hosting a nuclear power plant. The images of destruction and danger from the nuclear disaster in Japan will dominate the local politics of nuclear power plant siting **for a generation.** The images of earthquake and tsunami damage will be combined with the nuclear accident and form a single image in the public’s mindset about nuclear power. While I accepted the argument that nuclear power might be necessary and could be made less risky, I have always been troubled by the extreme toxicity of nuclear fuel and waste. As a student of organizational management, I tend to assume “Murphy’s Law” when it comes to human beings running complex organizations or technologies: if it can go wrong it will go wrong. But my view of the future of U.S. nuclear politics has nothing to do with my personal concerns about nuclear power. The fundamental problem with nuclear power is that after the recent events in Japan, **no community in the United States will permit a nuclear plant to be built nearby.** Additionally, some of the nuclear power plants already in operation will be under increasing pressure to close. The strength of anti-nuclear power politics should not be underestimated. Here in New York, people on Long Island are still paying off $3.3 billion in debt for a nuclear power plant called Shoreham that, like the Yucca Mountain repository, was completed but never opened. Governor Andrew Cuomo has already started to move against re-licensing the nuclear power plant at Indian Point, located about 30 miles north of New York City. With the demise of nuclear power in the United States, we exacerbate the problem of meeting our growing energy needs while reducing the release of greenhouse gasses into the environment. How can we solve these problems without nuclear power? My suggestion is that we focus on the development of distributed, rather than centralized, generation of electricity and of smart grid technology to make better use of the energy we generate. Increased energy efficiency in our buildings and technology, carbon capture and storage, and solar R & D will all be needed. I think that we need to move away from our reliance on large, centralized energy generation facilities. We need to focus federal funding on energy R & D rather than on subsidizing politically infeasible nuclear power. Some might argue that nuclear technology is here now and these other technologies are still under development. That is true, and we need to figure out a way to develop and commercialize decentralized electric power generation. Perhaps we should look to other models of technological development and diffusion that we have seen in recent years. The best example I can think of is the cell phone. According to the International Telecommunication Union, there are over five billion cell phones in the world. Twenty years ago, this technology was barely in use. Most kids today cannot imagine life without the internet and cell phones. These very decentralized technological tools are now in everyone’s pocket and have changed the way we live. They demonstrate how quickly new technologies can take root in the modern interconnected global economy. Of equal importance, they rely on networks that could serve as a technical and business model for the distribution of electricity in the not too distant future. Since I’m a political scientist, I have a lot more confidence in my political analysis than in my ability to forecast technological development. I am quite certain that **until and unless we start shutting off lights all over America, we will not see any new nuclear power plants sited in this country.** On the other hand, I don’t really know if alternative energy technologies will be developed and if they will be able to compete with fossil fuels. But if our goal is to be pragmatic and develop a carbon-free energy system**, it is time to drop nuclear power from the equation.**

#### Large operator just closed a major plant-indicates lack of confidence in the industry

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

Kewaunee had just received a license extension to operate until 2033 (Wald, 2012). ÒThe situation Dominion faces at Kewaunee is the result of circumstances unique to the station and do not reflect the nuclear industry in general,Ó said Thomas Farrell, DominionÕs chief executive and chairman. ÒThe nation will be hard pressed to meet its energy needs, let alone do so in a secure and affordable manner, without a robust and growing nuclear energy programÓ (Dominion Resources, 2012). Actually, Kewaunee may not be unique; it could be the first in **a series of early retirements of aging US nuclear power plants.** The fact that Dominion, with a $30 billion market capitalization, prefers to pay $281 million in decommissioning fees and other closing costs rather than operate the plant for another 20 years signals a generally grim Bulletin of the Atomic Scientists 69(2) 22–33 ! The Author(s) 2013 Reprints and permissions: sagepub.co.uk/journalsPermissions.nav DOI: 10.1177/0096340213477997 http://thebulletin.sagepub.com Downloaded by [University of Minnesota Libraries, Twin Cities] at 16:47 08 August 2016 economic outlook for nuclear energy in the United States.

#### Civilian nuclear decline coming now-it’s economically unjustifiable

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

A nuclear exit for the United StatesÑthe first country to commercialize nuclear power, and the country with the most nuclear energy capacity in the worldÑis almost inconceivable. Or is it? The US government has spent hundreds of millions of dollars in the last decade alone on programs and policies intended to jump-start a next generation of nuclear power plants. But those efforts haven’t resulted in much new construction. Nuclear supporters have given many reasons for the lack of power plant starts: The federal government doesnÕt have a comprehensive energy policy or system for putting a price on carbon dioxide emissions. Its loan guarantees and export support are insufficient. Nuclear regulation and licensing are inefficient and costly. And so on. But the real threat to both new and existing plants in the United States has been low natural gas prices coupled with stable or declining electricity demand. General Electric CEO Jeffrey Immelt puts it this way: ÒItÕs just hard to justify nuclear, really hard. Gas is so cheap, and at some point, really, **economics rule.** So I think some combination of gas and either wind or solar ...thatÕs where we see most countries around the world goingÓ (Clark, 2012).

#### No nuclear renaissance-financial markets hate it

Mecklin 13 [John; (2013) Introduction: US nuclear exit?, Bulletin of the Atomic Scientists, 69:2, 9-11, DOI: 10.1177/0096340213478937] [Premier]

The Southern Company is indeed building two new units at its Vogtle nuclear power plant in Georgia, but the administrationÕs rosy energy report omitted some key context: Those reactors, which likely wouldnÕt be financed without a federal loan guarantee, are rare sunbeams in a dismal nuclear power landscape. Because of the nuclear industryÕs long history of permitting problems, cost overruns, and construction delays, financial markets have been wary of backing new nuclear construction for decades. The supposed Ònuclear renaissanceÓ ballyhooed in the first decade of this century never really materialized.

#### Market forces mean gas, wind, and other renewables competition gut the nuclear energy market-no incentive to renew or build plants.

Lovins 13 [Amory; (2013) The economics of a US civilian nuclear phase-out, Bulletin of the Atomic Scientists, 69:2, 44-65, DOI: 10.1177/0096340213478000] [Premier]

The 104 nuclear power plants operating in the United States totaling 102 gigawatts of capacity and long assumed to run so cheaply that they could always make economic sense now face competitive risks less obvious than those bedeviling new plants, but no less real. The most recent reliably operating US nuclear plant to be written off as uneconomic the 38-yearold, small (566-megawatt), single-unit Kewaunee pressurized water reactor in Wisconsin, which has been relicensed to operate until 2033 will instead close in 2013, because its owner could neither sell it nor make it compete with natural gas-fired electricity (DiSavino, 2012; Dominion, 2012). Once closed, the plant is extremely unlikely to reopen even if gas prices rise again. But gas isnÕt nuclear powerÕs only competitive threat. With the benefit of the production tax credit, a federal subsidy for wind and other renewable energy installations, new wind farms in the High Plains wind belt are highly competitive with both wholesale power prices (Wiser and Bolinger, 2012)2 and typical nuclear operating costs, and wind power’s costs continue to fall. The tax credit, which partly offsets nonrenewable generatorsÕ permanent and generally larger subsidies (Koplow, 2011), is set to expire for wind farms whose construction doesnÕt start by the end of 2013. But even after the credit’s ultimate expiration the wind industry has proposed a sixyear phase-down to zero (Trabish, 2012)windÕs very low generating cost (Wiser and Bolinger, 2012) will still beat the best nuclear plantsÕ generating cost, despite continuing nuclear operating subsidies3 and despite costs for grid integration to address wind powerÕs distinctive operating characteristics.4

#### Civilian nuclear production is unprofitable-expensive labour, high maintenance, regulations and decommissioning costs

Lovins 13 [Amory; (2013) The economics of a US civilian nuclear phase-out, Bulletin of the Atomic Scientists, 69:2, 44-65, DOI: 10.1177/0096340213478000] [Premier]

This first group sustains, and scales directly with, the plants day-to-day operation. While one can argue that few costs in a nuclear plant are truly variable its skilled staff, for example, can hardly be furloughed in a skill-short market and then rehired these costs nonetheless are treated as variable because they approximate the plants marginal cost of sending out electricity over time. The operators 2010 reports to the Federal Energy Regulatory Commission on its required Form FERC-1 show that 46 Bulletin of the Atomic Scientists 69(2) Downloaded by [University of Minnesota Libraries, Twin Cities] at 21:17 08 August 2016 operating costs averaged $266 per megawatt-hour of output to the grid, including about $17 for routine operation and maintenance,7 $1 for the statutory federal nuclear-waste-management fee, and almost $7 for fuel,8 plus an unreported and **highly discounted** cost of operation9 nearly $1 to cover **future decommissioning,** for which operators must book a **reserve fund** on their balance sheet.

#### Massive and unpredictable maintenance and upgrade costs-high plant capacity doesn’t compensate

Lovins 13 [Amory; (2013) The economics of a US civilian nuclear phase-out, Bulletin of the Atomic Scientists, 69:2, 44-65, DOI: 10.1177/0096340213478000] [Premier]

The second group comprises two kinds of post-construction capital investments (so big and durable that they’re capitalized rather than expensed) that may overlap: major capital maintenance and upgrading to address issues of aging and reliability, and equipping a plant, with Nuclear Regulatory Commission approval, to produce more power than its original license allowed.10 Net capital additions averaged $4.2 per megawatt hour in 1993,11 when last assessed by government analysts, **but have more than doubled since**,12 and are highly erratic and unpredictable. Adding $26 per megawatt-hour for operating costs to at least $4 per megawatt-hour for net capital additions yields a total generating cost that averaged at least $30 per megawatt-hour in 2010. In comparison, and in the same 2010 dollars, US wholesale electric energy prices in 2011 averaged $36 per megawatt-hour and normally13 ranged from around $24 to $45. If an industry value (below) were used for today’s typical net capital additions, the average 2010 nuclear generating cost would match the grid’s $36 average 2011 wholesale price. Moreover, that price fell **even further** in 2012 (DOE/EIA, 2013b) than the year before (DOE/EIA, 2012f), **so competition against 2010Õs average nuclear generating costs is tightening.** Even though each nuclear plant is unique, this parity of average costs suggests that the industry should be experiencing heightened competitive pressures, to which operators must and will respond. But the full picture is more complex. The wholesale electricity price range varies widely, both across the country and over time (Wald, 2012b). Wholesale prices also reflect the existing generating mix, and could shift whether higher or lower is unclear with less or no nuclear generation. And it is fair to include capacity prices as well as energy prices. Nuclear plants’ high average capacity factor (around 90 percent) and relatively low variability earn bigger capacity credits than such competitors as gas, solar, and wind power. This nuclear advantage can range from zero (in markets that pay no capacity credit) to about $4 per megawatt-hour14Ñuseful for operators, but {are} still not enough to put many nuclear plants safely clear of the lower end of the average wholesale energy-price band. In fact, that $4 equals the real increase in average operating costs from 2010 to 2011 (EUCG, 2012), **the biggest annual rise in a decade.** The implication is profound: Nuclear power plants, long thought to be very cheap to run once constructed, are under increasing competitive pressure more immediately for some reactors than others, as new industry data reveal next.

#### History proves-nuclear “renaissance” cycles get good PR, then inevitably bust.

Lovins 13 [Amory; (2013) The economics of a US civilian nuclear phase-out, Bulletin of the Atomic Scientists, 69:2, 44-65, DOI: 10.1177/0096340213478000] [Premier]

New nuclear plants face daunting economic and financial challenges **rooted in recurrent history.** From the early 1960s to 1978, when the first US nuclear boom stalled before the 1979 Three Mile Island accident,18 US utilities ordered 253 reactors. Three-fifths were **abandoned or prematurely closed as lemons** (Lochbaum, 2008). The completed units averaged **threefold construction-cost overruns** (Koomey and Hultman, 2007), due mainly to evolving safety regulations, unstandardized and unstable designs, challenges in managing big, complex projects, and deteriorating finances as demand growth slackened and costs soared (MoodyÕs Investor Service, 2009).19 Owners, paying hundreds of billions more than expected, averaged four-notch downgrades on 40 of 48 debt issuances (MoodyÕs Investor Service, 2009). Then in the 2000s, proposed next-generation US reactors suffered **even steeper cost escalation** (Lovins and RMI, 2011).

### Elections—Rollback

#### Impact rolls back the aff – Trump loves nuclear; Clinton solves it

Follett 16

Andrew, energy and environment reporter, The Daily Caller, “Here’s Where The 2016 Candidates Stand On Nuclear Power” <http://dailycaller.com/2016/02/20/heres-where-the-2016-candidates-stand-on-nuclear-power/#ixzz4GrlBAENQ> [Premier]

Former Secretary of State Hillary **Clinton**: The former Secretary of State **claimed to be “agnostic about nuclear power” in the** **2007** YouTube **Democratic Primary debate**. As a result, **she rarely directly discusses nuclear energy**, though one of her campaign fact sheet claims she favors “advanced nuclear,” which requires “expand[ing] successful innovation initiatives, like ARPA-e, and cut those that fail to deliver results.” Sen. Bernie Sanders: The Vermont senator vehemently opposes nuclear power. He opposes the construction of new nuclear reactors “when we do not know how we get rid of the toxic waste from the ones that already exist.” Sanders’ campaign website states “Bernie has called for a moratorium on nuclear power plant license renewals in the United States.” **Donald Trump**: The real estate mogul **has made strong public statements supporting nuclear power**, but tends to favor further development of natural gas. **In the aftermath of the 2011 Japan Fukushima nuclear disaster**, Trump told Fox News “**nuclear is a way we get what we have to get, which is energy**.” “**I’m in favor of nuclear energy, very strongly in favor of nuclear energy,**” Trump said. “If a plane goes down people keep flying. If you get into an auto crash people keep driving.”

### Solvency—Peak Uranium

#### U.S. has tons of uranium but peak is long passed

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

The **USA ranks fourth in the world for known uranium resources**, with reserves of 342 000 tU (reasonably assured plus inferred resources certified in 2005). **Exploration expenditure reached US$50.3 million in 2007, which is more than doubled the 2006 level.** The **peak production was 16,800 tU reached** **in 1980**, when there were over 250 uranium mines in operation in the country. This number abruptly dropped to 50 in 1984 when 5 700 tU was produced, and then there was steady decline until 2003, with **most US uranium requirements for the operation of its nuclear power reactors being imported.** **By 2003, there were only two small mines in operations in the country producing a total of less than 1,000 tons of uranium per year.** Most US production has been from New Mexico and Wyoming. Known resources are 167 000 tons of U-3O8 in Wyoming, 155,000 tons in New Mexico, 2,000 tons in Texas and around 50,000 tons in Utah, Colorado and Arizona, all to US$50/lb. [99]

### States CP

#### Pre-emption only applies if compliance with the policies is mutually exclusive or state action is antithetical to federal goals – neither of which is satisfied here

Henderson 80 [George B. II, lawyer, The Nuclear Choice: Are Health and Safety Issues Pre-empted? 8 B.C. Envtl. Aff. L. Rev. 821 (1980), [lawdigitalcommons.bc.edu/ealr/vol8/iss4/5](http://lawdigitalcommons.bc.edu/ealr/vol8/iss4/5) [Premier]

Pre-emption cases can be generally classified as falling into either of two categories.78 First, **the Court will hold the state law invalid where there is an actual conflict with federal law.**80 **If the conflict is obvious, as where compliance with both laws is a physical impossibility, "a holding of federal exclusion of state law is inescapable** and requires no inquiry into congressional design. "81 Where the conflict is more subtle, however, the Court must decide whether the state law stands as an obstacle to the objectives of the federallaw.81 **Cases of this type generally turn on how the Court interprets the statutes.** In some instances minor conflicts have been upheld where other considerations weigh in favor of upholding the state law. This has been especially true in areas traditionally controlled by the states, such as health and safety, criminal law, and contract law.83

#### Henderson concludes neg

Henderson 80

George B. II, lawyer, The Nuclear Choice: Are Health and Safety Issues Pre-empted? 8 B.C. Envtl. Aff. L. Rev. 821 (1980), [lawdigitalcommons.bc.edu/ealr/vol8/iss4/5](http://lawdigitalcommons.bc.edu/ealr/vol8/iss4/5) [Premier]

**When Congress passed the Act in 1954, it was not its intent to involve the federal government in the logistics of comparing one type of technology to another, or one location to another, and deciding which is best.** Instead, **both Congress and the NRC have expressed their understanding that the decisions with respect to the environmental acceptability of the plant and the need for the power remain within the traditional powers of the states.** A comparative assessment of the health and safety impacts of a power plant is too closely related to these other decisions to be logically segregated from the state decision-making process. It follows that a **state decision** based on a comparative health and safety analysis **should not be viewed as regulating** "for purposes . . . [of] protection against radiation hazards," **so as to invoke the sanctions of the pre-emption doctrine. Numerous manifestations of congressional intent and traditional notions of federalism suggest that the preemptive areas of NRC jurisdiction is limited to those licensing and other regulatory areas that the Atomic Energy Act delegates to NRC control, i.e., plant design, construction, operation, and other technical matters.** Viewed in its proper perspective **the comparative health and safety evaluation falls outside of the ambit of federal authority, and takes on the broader purpose of** regulating in order to choose the most acceptable method of generating electricity.

## NEG—Advantage CPs



### EIA CP

#### CP: Require strict environmental impact assessments should be required; increased public awareness solves the rest

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

For the siting and analyses, **environmental impact assessment** (EIA) **processes should be carried out** (see Box 12). It should also be mentioned that when an operator wants to operate a facility beyond the original design lifetime, or when the design conditions change (for instance, due to power uprates), an EIA should be performed again to take into account the new operating and environment conditions. At all stages of siting, stakeholder involvement in the decision-making process is necessary. Following the Fukushima Daiichi accident, renewed attention has been paid to the vulnerability of existing (and future) sites with respect to the possibility of major earthquakes and flooding, whether from tsunamis or other causes (dam breaks, extreme precipitation events). This may reduce the number of possible new sites that a country can select for its nuclear programme. Another aspect **that has received more attention** is the particular case of multi-unit sites, i.e. sites that accommodate several nuclear reactors. Building several hundreds of GW of new capacity by 2050 will require the extension of existing sites to accommodate additional units, if the sites are suitable, as well as the assessment and selection of new sites. For countries that already have nuclear power plants (NPPs), it is often easier to consider building nuclear facilities on existing sites as local communities are already informed about the risks and benefits of nuclear energy.

### IFNEC CP

#### Text: All countries already or considering developing nuclear power should join the International Framework for Nuclear Energy Cooperation.

#### It creates networks for nuclear power without having to establish domestic facilities, educates countries on the safe and proper use of nuclear power—solves prolif and warming.

WNA 15 [World Nuclear Association; Information on nuclear energy and the nuclear fuel cycle; August 2015; “International Framework for Nuclear Energy Cooperation”; <http://www.world-nuclear.org/information-library/current-and-future-generation/international-framework-for-nuclear-energy-coopera.aspx>; [PREMIER]]

The International Framework for Nuclear Energy Cooperation (IFNEC), formerly the Global Nuclear Energy Partnership (GNEP), aims to accelerate the development and deployment of advanced nuclear fuel cycle technologies while providing greater disincentives to the proliferation of nuclear weapons. GNEP was initiated by the USA early in 2006, but picked up on concerns and proposals from the International Atomic Energy Agency (IAEA) and Russia. The vision was for a global network of nuclear fuel cycle facilities all under IAEA control or at least supervision. Domestically in the USA, the Global Nuclear Energy Partnership (GNEP) was based on the Advanced Fuel Cycle Initiative (AFCI), and while GNEP faltered with the advent of the Barack Obama administration in Washington from 2008, the AFCI was being funded at higher levels than before for R&D "on proliferation-resistant fuel cycles and waste reduction strategies." Two significant new elements in the strategy were new reprocessing technologies which separate all transuranic elements together (and not plutonium on its own), and advanced burner (fast) reactors to consume the result of this while generating power. However, this then disappeared from the US Department of Energy (DOE) budget. GNEP was set up as both a research and technology development initiative and an international policy initiative. It addresses the questions of how to use sensitive technologies responsibly in a way that protects global security, and also how to manage and recycle wastes more effectively and securely. The USA had a policy in place since 1977 which ruled out reprocessing used fuel, on non-proliferation grounds. Under GNEP/IFNEC, reprocessing is to be a means of avoiding proliferation, as well as addressing problems concerning high-level wastes. Accordingly, the DOE briefly set out to develop advanced fuel cycle technologies on a commercial scale. As more countries consider nuclear power, it is important that they develop the infrastructure capabilities necessary for such an undertaking. As with GNEP, IFNEC partners are working with the IAEA to provide guidance for assessing countries' infrastructure needs and for helping to meet those needs. For countries that have no existing nuclear power infrastructure, IFNEC partners can share knowledge and experience to enable developing countries to make informed policy decisions on whether, when, and how to pursue nuclear power without any need to establish sensitive fuel cycle facilities themselves. With the USA taking a lower profile and effectively relinquishing leadership from 2009, the partners are focused on collaboration to make nuclear energy more widely accessible in accordance with safety, security and non-proliferation objectives, as an effective measure to counter global warming, and to improve global energy security. A change of name to International Framework for Nuclear Energy Cooperation (IFNEC) was adopted in June 2010, along with a new draft vision statement, which read: "The Framework provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient, safe, secure, and supports non-proliferation and safeguards." By some accounts, this envisages "cradle to grave" fuel management as central, along with assurance of fuel supply.In mid-2015 the technical secretariat transferred from the DOE to the OECD NEA which will play a similar role as with the Generation IV International Forum (GIF) and the Multinational Design Evaluation Programme (MDEP).

#### Solves efficiency and cost.

WNA 15 [World Nuclear Association; Information on nuclear energy and the nuclear fuel cycle; August 2015; “International Framework for Nuclear Energy Cooperation”; <http://www.world-nuclear.org/information-library/current-and-future-generation/international-framework-for-nuclear-energy-coopera.aspx>; [PREMIER]]

A second issue addressed by IFNEC is the efficiency of the current nuclear fuel cycle. The USA, the largest producer of nuclear power, has employed a 'once through' fuel cycle. This practice only uses a small part of the potential energy in the fuel, while effectively wasting substantial amounts of useable energy that could be tapped through recycling. The remaining fissionable material can be used to create additional power, rather than treating it as waste requiring long-term storage. Others, notably Europe and Japan, recover the residual uranium and plutonium from the used fuel to recycle at least the plutonium in light water reactors. However, no-one has yet employed a comprehensive technology that includes full actinide recycle. In the USA, this question is pressing since significant amounts of used nuclear fuel are stored in different locations around the country awaiting shipment to a planned geological repository which was to be at Yucca Mountain in Nevada. This project is delayed, and in any case will fill very rapidly if it is used simply for used fuel rather than the separated wastes after reprocessing it. IFNEC also aims to address cost issues associated with the development and expansion of nuclear power in developing countries. Nuclear programs require a high degree of technical and industrial expertise. This is a serious obstacle for emerging countries attempting to develop nuclear power, although efforts are underway to increase the number of indigenously-trained nuclear experts through a variety of education and training initiatives. Internationally, the countries identified by the US Department of Energy (DOE) as likely participants at both enrichment and recycling ends were the USA, UK, France, Russia and Japan. The USA now provides the steering group chairman, and Japan, China and France the vice-chairmen.

#### Eliminates extra plutonium—solves terror and war.

WNA 15 [World Nuclear Association; Information on nuclear energy and the nuclear fuel cycle; August 2015; “International Framework for Nuclear Energy Cooperation”; <http://www.world-nuclear.org/information-library/current-and-future-generation/international-framework-for-nuclear-energy-coopera.aspx>; [PREMIER]]

An early priority was seen to be the development of new reprocessing technologies to enable recycling of most of the used fuel. One of the concerns when reprocessing used nuclear fuel is ensuring that separated fissile material is not used to create a weapon. One chemical reprocessing technology – PUREX – has been employed for over half a century, having been developed in wartime for military use (see page on Processing of Used Nuclear Fuel). This has resulted in the accumulation of 240 tonnes of separated reactor-grade plutonium around the world (though some has been used in the fabrication of mixed oxide fuel). While this is not suitable for weapons use, it is still regarded as a proliferation concern. New reprocessing technologies are designed to combine the plutonium with some uranium and possibly with minor actinides (neptunium, americium and curium), rendering it impractical to use the plutonium in the manufacture of weapons. GNEP/IFNEC creates a framework where states that currently employ reprocessing technologies can collaborate to design and deploy advanced separations and fuel fabrication techniques that do not result in the accumulation of separated pure plutonium.

#### Solves waste—prevents eco collapse.

WNA 15 [World Nuclear Association; Information on nuclear energy and the nuclear fuel cycle; August 2015; “International Framework for Nuclear Energy Cooperation”; <http://www.world-nuclear.org/information-library/current-and-future-generation/international-framework-for-nuclear-energy-coopera.aspx>; [PREMIER]]

With respect to the ultimate disposition of nuclear waste from recycling, three options exist conceptually:

User responsibility. The radioactive wastes from the nuclear fuel recycling centre could be considered as processed waste belonging to the user nation that sent its used nuclear fuel to the recycling centre. These wastes might then be shipped back to that user nation for final disposal.

Supplier responsibility. The nation hosting the recycling centre might retain the waste or, if a different supplier nation had manufactured the original fuel, all wastes arising from the original fuel could be considered the responsibility of that fuel supplier nation.

Third-party responsibility. A disposal facility might be sited in a country that is, in particular cases, neither the supplier nor the user, but is using its technological capability and geological suitability to manage the safe delivery of a commercially and environmentally valuable service.

The IFNEC program is considering the ownership and final disposal of waste, but this discussion has not yet reached beyond the preliminary stages. The second and third conceptual options for waste disposal would require one or more international radioactive waste final disposal facilities (see page on International Nuclear Waste Disposal Concepts), and serious discussion of those options will begin only when nations enter into real consideration of the sensitive issue of the hosting of such facilities.

#### Makes Reactors smaller and safer—Solves Accidents.

WNA 15 [World Nuclear Association; Information on nuclear energy and the nuclear fuel cycle; August 2015; “International Framework for Nuclear Energy Cooperation”; <http://www.world-nuclear.org/information-library/current-and-future-generation/international-framework-for-nuclear-energy-coopera.aspx>; [PREMIER]]

Finally, IFNEC is concerned to foster the development of 'grid-appropriate reactors', i.e. smaller units (perhaps 50-350 MWe) for electricity grids of up to 3 GWe. These should incorporate advanced features including safety, simplicity of operation, long-life fuel loads, intrinsic proliferation-resistance and security3. In mid-2014 Jordan hosted a small modular reactors workshop to consider how SMRs could be effectively deployed in specific types of markets while identifying key challenges and opportunities.

#### International organizations and regulatory frameworks solve (?)

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Regulators, whether in newcomer countries or established nuclear countries, should be strong and independent. They need to have sufficient, well-qualified and resourced staff to carry out their missions (NEA, 2014a). There is an important role for international organisations to promote efficient regulation, harmonise requirements and share experience (see Box 11). In particular, peer review processes, whether among operators or among regulators, is seen as an effective process to improve the overall level of nuclear safety. The nuclear industry is sometimes concerned about the risk of over-regulation, through the multiplication or duplication of regulatory requirements. Better co-ordination and harmonisation of these requirements is needed in order to have an efficient regulation of the industry. Finally, to accelerate the deployment of new technologies, licensing frameworks should be flexible enough to regulate such technologies in a risk-informed manner. The United States is addressing this challenge for SMRs through the DOE’s Licensing Technical Support programme, which supports the development of certification and licensing requirements for US-based SMR projects. **Similar initiatives should be launched in other countries**, for SMR and advanced technologies such as Gen IV designs, so as to facilitate the deployment of these technologies once they have been demonstrated. It should be noted, however, that there are examples of regulatory regimes around the world (United Kingdom and Canada) whose frameworks already contain this flexibility and are prepared to address SMRs and Gen IV technologies. In general**, greater international collaboration is needed** so that a design approved in one major nuclear-competent country can be built elsewhere with a minimum of duplicated effort and time.

### Education CP

#### Education and professional mobility initiatives solve safety & security

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

In parallel to an increased globalisation of the nuclear industry, there has been an increase in the internationalisation of R&D. This is to a large extent due to decreasing R&D budgets at national levels, which encourages research organisations to pool resources, share experimental facilities and carry out projects at the international level. There are a number of international and bilateral initiatives focused on collaborative research, education, training and knowledge management, including the Sustainable Nuclear Energy Technology Platform in the European Union, which gathers industry, research and academia, or the Generation IV International Forum, which provides a framework for international R&D on Gen IV systems. The NEA itself provides support to international projects such as code validation benchmarks or safety-related experiments. The global nuclear industry is acutely aware of the need to ensure a high level of nuclear skills development in existing and newcomer countries and has well-developed training programmes that are shared across countries, providing an important source of nuclear training. In addition, global partnerships such as the World Nuclear University (WNU) and the European Nuclear Education Network (ENEN) have been developed to enhance international education and training for the development of nuclear energy. WNU was created in 2003 with the support of the IAEA, OECD/NEA, WANO and WNA to provide global guidance on preparing the future generation of nuclear industry leaders and to enhance nuclear education worldwide. WNU activities include the Summer Institute (a six-week intensive course for future nuclear leaders), the Radiation Technologies School (a two-week course for future leaders in the radiation and radioisotope field) and a one-week course focused on key issues in the nuclear industry today. These courses are offered in host countries where significant interest exists for the development of nuclear energy8. Training events are held in partnership with other organisations and trainers come from industry, government and academia. The WNA provides administrative support to the WNU. To date, almost 900 professionals have attended the Summer Institute, while 200 have attended the Radiation Technologies School and approximately 6 000 have benefited from the one-week training courses. Mobility of nuclear literate workers across borders will be particularly important both in terms of providing sufficient specialised nuclear workers (such as nuclear engineers and welders) as well as facilitating a transfer of expertise to newcomer countries. The UK skills passport and French ticketing system provide a good basis for developing mutual recognition of qualifications from one country to another and help to support workforce mobility.

### Prolif CP

#### Implement the following regulations to stop nuclear proliferation

Rauf 03 [Tariq Rauf, Head of the Verification and Security Policy Coordination Office at the International Atomic Energy Agency, “PROLIFERATION RESISTANCE: POLITICAL FACTORS,” International Conference held in Vienna, organized by the International Atomic Energy Agency, June 23, 2003] [Premier]

The following extrinsic measures, inter alia, were identified: ʊ States’ commitments, obligations and policies with regard to nuclear non-proliferation and disarmament. These measures would include all relevant legal instruments, such as the Treaty on the NonProliferation of Nuclear Weapons (NPT) and nuclear-weapon-free zone treaties. Although these treaties do not form an insurmountable barrier to proliferation, verification activities by the IAEA have overwhelmingly guaranteed compliance. In the case of the NPT, only once has a party made use of its right to withdraw from the Treaty. In addition, such legal commitments provide for continuity in the international non-proliferation regime by transcending government changes in States party to the Treaty. Nevertheless, it should be noted that many of these measures work best as long as conditions remain static. History has shown that many of the non-proliferation policies of States and arrangements between States may change over time. National export control legislation and co-operative arrangements, particularly those that limit nuclear energy use to peaceful purposes, constitute efficient extrinsic measures. The Zangger Committee, for instance, has developed common understandings concerning the interpretation and implementation of Article III.2 of the NPT, which regulates the provision of special material and equipment to States. In the same way, the Zangger Committee and the Nuclear Suppliers’ Group have established, through their “trigger lists”, export control principles designed to minimize the proliferation risk of nuclear exports. ʊ Agreements between exporting and importing States to limit the use of nuclear energy systems to agreed purposes. This could be supported by an agreement between exporting and importing States that guarantees supplies of nuclear fuel or services. These measures include (1) bilateral arrangements for supply and return of nuclear fuel and other components of a nuclear energy system; (2) bilateral agreements governing the reexport of a nuclear energy system or its components by an importer; and (3) guarantees by a nuclear exporter of commercially attractive supplies of fresh fuel and waste management services over the life-cycle of the nuclear energy system, thus reducing the need of the importer to develop indigenous enrichment or reprocessing technologies. Several countries have laws and regulations that limit the spread of sensitive knowledge or prevent the export of such knowledge and of sensitive equipment and materials in case certain conditions are not met. Many States do not export unless the recipient country has indeed accepted full scope safeguards. ʊ Commercial, legal or institutional arrangements that control access to nuclear material and nuclear energy systems. These measures could include (1) the existence of a legal framework to ensure that operators of nuclear energy systems are subject to specific requirements governing the use of those systems and associated materials; (2) common legal provisions to be incorporated in all contracts involving nuclear energy systems; and (3) multi-national ownership, management or control of nuclear energy systems. ʊ The application of IAEA verification and, as appropriate, regional, bilateral and national measures. These measures include the application of safeguards, for the detection – and deterrence – of diversion or undeclared production of nuclear material. The Agency’s verification activities under the NPT are based on the comprehensive safeguards agreements that follow the INFCIRC/153 model agreement. Additional legal authority allowing the IAEA to implement further verification measures is conferred by the additional protocols to the safeguards agreements. The Agency’s strengthened safeguards system has a confidence-building function that strongly contributes to proliferation resistance. Naturally, for a verification system to be efficient and therefore credible, it requires adequate funding, technical competence and, as noted in the INPRO Report, an adequate number of sensitive and reliable measurement instruments and sensors. ʊ Legal and institutional arrangements to address violations of nuclear non-proliferation or peaceful-use undertakings. These measures could include (1) a credible system of reporting verification conclusions in a timely manner; (2) reliable institutional arrangements for bringing evidence of violations before the international community; and (3) the existence of an effective international response mechanism. 3. CONCLUSION The extrinsic measures mentioned above would be greatly complemented by intrinsic proliferation resistance features. Whereas the possibility of applying safeguards to and controlling exports of future nuclear energy systems will continue to play an important part – it is unlikely that we will have a fully proliferation-resistant system based only on extrinsic features. Thus, the development and implementation of intrinsic features should be encouraged. Proliferation resistance measures, both intrinsic and extrinsic, could help ensure that future nuclear energy systems will continue to be an unattractive means to acquire materials for a nuclear-weapon programme, thus guaranteeing that lack of trust does not result in technologydenial. The benefits of enhancing proliferation resistance are not limited to the field of international security; by facilitating the access of developing States to nuclear technologies, proliferation resistance also could play a fundamental role in the field of development. Finally, to ensure the widest possible acceptance and support for the concepts, principles and technologies for proliferation resistance, it is essential that “proliferation resistant” technologies be developed in as transparent and inclusive a manner, and as co-operatively, as possible.

### Safeguards CP

#### Prolif must be reduced by increased IAEA standards and multilateral checks

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

Nuclear power should be expanded in the world only if **the risk of proliferation from operation** of the commercial nuclear fuel cycle **is made acceptably small**. How to achieve this goal? **First**, **the international community should strengthen the application of the IAEA safeguards system to all states by putting into force, for all of them, the IAEA Additional Protocol. Second, the international community should adopt a multilateral approach to the nuclear fuel cycle. The international community must adopt all necessary measures to prevent the acquisition of weapons-usable material, either by diversion** (in the case of plutonium) **or by misuse of nuclear fuel cycle facilities** (including related facilities, such as research reactors or hot cells) now operating in different countries. However, it is important to stress that **the adoption of a multilateral approach to the nuclear fuel cycle should be done in a way that respect the right of any states to develop their own nuclear fuel cycle but under full IAEA safeguards**, including the Additional Protocol.

### Free Market CP

#### Investors look for short-term gains, but nuke power is a long-term capital-intensive investment, so the free market would avoid it

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

Many countries had privatized government owned energy utilities, following a privatization policy of public companies promoting by the International Monetary Fund (IMF) and the World Bank (WB) within the current economic development policy promoted by these two organizations. Others have decided to keep the energy sector within the public sector of the country. **One of the objectives to be achieved with the privatization of public utilities,** according with the opinion of those that support a privatization policy, **is to make them operate under conditions that are more commercial. However, the adoption of this privatization policy could limit these utilities to seek funds only in the commercial money markets, with their stronger emphasis on short-term returns on investment. This may means that capital-intensive plants such as nuclear power plants will not be favored by utilities planning to construct these types of plants without government support**. This is an important element that needs to be carefully study when the nuclear option is being under consideration for its possible inclusion in the energy balance of any country.

#### Nuclear power isn’t competitive-subsidizing and supporting it just wastes money, and the government has to insure and clean up for accidents.

Gottfried 6 [Kurt; "Climate Change and Nuclear Power." Social Research: An International Quarterly 73.3 (2006): 1011-1024. Project MUSE. Web. 8 Aug. 2016. <https://muse.jhu.edu/>.][Premier]

In the United States and in other countries where power generation is not a government function, the market can, in principle, decide whether nuclear power is economically viable. Here “in principle” alludes to familiar conditions required to create an unbiased market, and in addition to the special circumstances that stem from the unique dangers that attend nuclear power. First, the fact that no new plants have been built in the United States for more than two decades demonstrates that **nuclear power has not been an attractive investment.** (The claim that this is due to the licensing process is a red herring.) That would change were the US government to impose a sufficiently high price on putting carbon into the atmosphere either by a carbon tax or by creating an obligatory carbon emission cap-and-trade regime. Such restrictions on carbon emission would, of course, be of advantage to all sources of energy that do not add carbon to the atmosphere, and will almost certainly be necessary if the climate challenge is to be met. It remains to be seen Climate Change and Nuclear Power 1021 whether a regime that would suffice to make other noncarbon and carbon-neutral energy sources competitive will also suffice to do so for nuclear power, but that is a question that the market can, in principle, settle. Second, the market can only give a legitimate evaluation of the economic viability of nuclear power if the government refrains from favoring it over other energy sources by means of **subsidies.** Thus far the American nuclear power industry has not been competitive despite the fact that since World War II the US government has spent about h alf its total energy R&D budget on nuclear power, taken responsibility for nuclear w aste, and, through the Price-Anderson Act, has insured the industry against m ajor accidents. Many advocates for an expansion of nuclear pow er seek a continuation of Price-Anderson and o ther subsidies. In doing so they are adm itting th a t nuclear pow er is not com petitive now or in th e near-term . A sufficiently h ig h price on carbon em ission would, of course, change this picture. In th e A m erican setting, therefore, th e question o f w h eth er nuclear pow er is an econom ically viable contributor to cutting GHG em ission can, aside from a critical caveat, be settled by the m arket if all m eans o f reducing GHG em issions are treated equally in term s of subsidies and/or a price on carbon emissions. The critical caveat stem s from th e unique dangers posed by n uclear power, w hich th e m ark et cannot adequately assess because the conventional m eaning o f “cost-effective” does not apply to nuclear power. In the last analysis, any m ajor catastrophe arising from nuclear pow er would becom e the responsibility of the governm ent—th a t is, of the nation as a whole. No m atter who bears legal responsibility, only the nation as a w hole can deal w ith a disaster o f Katrina or 9/11 proportions, not to m ention w hat could easily be m uch m ore dire if a nuclear explosion or a large radioactive release w ere the cause. The m arket knows this, and does not count such risks in evaluating the econom ic viability of any technology th at could produce a calam ity of catastrophic proportions. Hence the level o f com m itm ent to an expansion of nuclear power 1022 social research is a profoundly political and n o t an econom ic decision in the U nited States and o ther democracies, w here the energy supply is governed by an ostensibly free m arket.

### Fusion CP

#### Hybrid fusion-fission reactors solve – zero chance of accidents

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

The nuclear fusion has been the power ideal for more than half century, but the problems that have being impeding until now the use of this type of energy for electricity production are not been solved in a satisfactory manner and for this reason, the use of fusion technology for the generation of electricity is not yet ready to be used commercially and will not so at least until 2050. **According with several experts‘ opinions, it is expected that nuclear fusion will not be available for the production of electricity before 2050**. The USA, that reduced significantly basic research in nuclear fusion some years ago, has now announced that **the Laboratory Lawrence Livermore has begun fusion tests on May 2009.** The tests will be extended until 2012 and the objective of it is to demonstrate that it is possible to generate thermonuclear energy. Why takes so long time to obtain specific results in this field. The answer is the following: The physics of the fusion is very difficult and the technology that there is to develop to prove the physical theoretical principles experimentally is also very complex and expensive, and all this demands long time‖, assures Mr. Diaz the Blonde, head of Investigation and Development of Lawrence Livermore National Laboratory, in California, USA. According to Diaz of the Blonde, ―**we hoped that a power gain of the order of a factor of 10 takes place**. But this is not sufficient, which causes that it is precise **a mixed system fusion and fission,** a concept that already formulated Andrei Sakharov. It **is a very interesting alternative and it allows closing the cycle of the nuclear energy of a very safe form, since the part of the fission is not the normal one** (it requires a critical mass of nuclear fuel neither uranium enrichment nor reprocessing of the radioactive waste), reason why **the probability of a accident like the Chernobyl one is zero. The hybrids of fusion and fission can be a power alternative from 2025. These characteristics, plus the fact that in our concept the power gains are enormous and very high amounts of electricity of base without emitting CO 2 can be produced,** allow us to think that this will be a very interesting thing in the midterm‖. According to the calculations of Diaz of the Blonde, **at least 10 more years are needed to construct the prototype of a commercial plant that generates energy using the fusion technology.** However, there is a great expectation in using hybrids of fusion and fission technologies to produce energy and this could be ready in the second quarter of the 21 th century. In the opinion of Diaz of the Blonde, the power model of the future must be mixed, with combinations of sources, including the improvement of the current renewable energies systems and the advance in the use of the fusion and the fission technologies. The scientist community is conscious of the distrusts that the nuclear energy provoke between the public opinion and, for this reason, **the concept of fusion-fission by confinement has tremendous advantages and could allow**s **[us] to think about the possibility of expanding the nuclear energy in a safe form in the future reducing the volume of radioactive waste volume**.

### Phase Out

#### A phase out is not a prohibition

Plumer 6-17

Brad Plumer, “Sweden decides it’s not so easy to give up nuclear power” on June 17, 2016, 9:40 a.m. ET <http://www.vox.com/2016/6/17/11950440/sweden-nuclear-power> [Premier]

**A 2015 study in Energy Policy found that a premature shutdown would raise Sweden’s system costs "disproportionately."** Another study in The European Physical Journal Plus found that replacing the entire nuclear fleet with wind and gas would cause Sweden’s electricity CO2 emissions to double. Swedish industry groups — heavy electricity users like Volvo or steelmaker SSAB — lobbied to save the reactors. Ultimately, the prospect of a premature shutdown seemed too daunting. Last Friday, Sweden’s governing Social Democrats and Greens reached a deal with the opposition to scrap the tax on nuclear power over the next two years, giving the existing reactors some room to avoid early closure. They also agreed to permit utilities to build up to 10 reactors at existing sites to replace the ones coming offline in the coming decade. Shortly after the agreement, Vattenfall approved safety upgrades at the three reactors at Forsmark, enabling the plants to continue operating well past 2020. **The government still has a goal of 100 percent renewable energy by 2040, but the agreement states this doesn’t necessarily rule out nuclear: "**This is a goal, not a cut-off date that would prohibit nuclear power, **and it does not mean either the end a closure of nuclear power."** According to the Financial Times, Energy Minister Ibrahim Baylan said of the deal**: "This is a traditional Swedish compromise." There’s** still **no guarantee that Sweden's utilities will actually build new nuclear plants.** These plants remain extremely costly to construct. Next door in Finland, the French state company Areva is building a 1,720-megawatt reactor now estimated to cost some $9.5 billion — three times the original price, thanks to delays and overruns. More recently (and controversially), a Finnish consortium decided to partner with Russia’s Rosatom to build a separate reactor in Pyhäjoki in the hopes of lowering costs. It’s unclear what direction Sweden might go for new plants, but **it can’t move forward unless the economics work out.** **The government isn't offering subsidies for new builds**, and wholesale prices are extraordinarily low right now. So some **analysts are skeptical** that we'll see a future boom.

## NEG—Cap K

#### Nuclear power oils the engines for ruthless capitalist expansion

Gegendspunkt no date

[--Marxist quarterly magazine, “Nuclear energy as a weapon in the imperialist competition between states.” Ruthless Criticism, no date] [Premier]

All modern life requires the use of energy, especially in the form of electricity. The question of nuclear energy is in fact all about the supplying the economy with sufficient energy. Opponents of nuclear energy simply refuse to accept that radioactive contamination is a necessary part of being supplied with energy. Although they are correct in that they are expected to put up with a monstrosity, opponents of nuclear power are mistaken in their assumption that nuclear energy is about their electricity supply. If this were the case, if nuclear energy were really about supplying people with electricity, it would be sensible for the critics of nuclear power to implore politicians to abolish it. As it is, nuclear energy is about supplying the economy with energy, and this is in fact what energy and electricity generation are all about. Only in this sense is nuclear energy about supplying people with electricity, which is indeed provided to everyone, including the inhabitants of remote countryside hamlets. By providing electricity to the last villager, even those citizens not involved in public life are turned into a resource that is economically accesible, available, and actionable. Without electricity, a modern state would be without radio and television news, internet access, the ability to refrigerate food – essentially, without a people that could be governed. The state thus organizes the supply of electricity to its citizens to keep them functional as a resource for itself as well as for business, which is not quite the same as providing people with the electricity they need to operate night lamps and make cold drinks. Indeed, the fact that the production of energy is not at all about the daily electricity consumption of individual citizens is evident in the impenitent disregard for the safety of human life evinced by the nuclear industry, as well as in the organization of (nuclear) power production and distribution as a profitable business: Everyone has to pay for electricity, and those who cannot afford to do so have their supply cut and will be left to sit in the dark. In this way, the citizen is turned into a paying consumer, and supplying the population with electricity is made useful for economic growth. In other words, an industrial nuclear supply of energy is about providing sufficient energy to power a capitalist economy (rather than about sending a little electricity to grandma’s kitchen). But why does this form of economic organization require the consumption of an ever-increasing amount of energy? The reason for this is quite simply that the goal of the capitalist economy is growth, and its measure of success is the rate of growth. Growth here does not refer to the production of an increasing quantity of material wealth, i.e., useful goods. Rather, growth refers to an increase in invested capital, whose purpose it is to provide the investor with a profit, and in this way to make more of itself – thus the growth for which the state organizes its energy industry is the growth of wealth in the form of money. Since the goal of a capitalist economy is the endless growth of capital, the energy needed to fuel this growth is equally without limit. (This is not all contradicted by recent attempts to “decouple” economic growth and energy consumption. The strategy of lowering the energy cost of growth is itself aimed at increasing profitability and economic growth, even if the increase in energy demand is slowed a little.) Accordingly, those living in a capitalist state are forced to accept and to pay for the energy industry in order to satisfy the requirement of economic growth – even if this entails environmental pollution and radioactive contamination.

## NEG—Colonialism

#### Denuclearization is a colonial imposition by Western states, asserting that all other countries are irrational and dangerous

Biswas 14

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

**How does this international community enforce its will? The military option— the ­ willingness by the United States and Israel to preemptively strike Iran’s nuclear facilities—** has ­ not been used but **has remained on the table.** But the United States and Israel have already successfully collaborated on more **clandestine forms of intrusion**— ­he t smuggled **computer virus Stuxnet** brought Iran’s centrifuges to a halt in 2010, and **five nuclear scientists** were **assassinated** in broad daylight on Tehran’s streets between 2009 and 2011. Even more forcefully, **sanctions imposed by the international community** have been steadily expanded to virtually paralyze the Iranian economy, **with devastating consequences** for ordinary Iranian citizens. Iran, it is fair to say, is truly desperate. The P-­5 plus 1 has offered to begin loosening the noose of these sanctions ever so slightly, if Iran is willing to halt its ambitions to acquire nuclear weapons. This is a minimal easing, President Obama has assured all, and easily reversible; **the United States is willing to ratchet up the pressure in the future if need be. We are reminded time and again by reasonable, thoughtful, concerned interlocuters that “we are all safer in a world with a denuclearized Iran.” But who is this “we”—­ this mythical international community that speaks of peace and well-­ being for all made possible by reigning in this nuclear upstart?** What kinds of questions about nuclear order and disorder are precluded when we invoke this “we”? Iran’s current ability to produce even a single missile-­ deliverable nuclear weapon is fairly limited. Every single member of the P-­5 (and Israel) has a sizeable nuclear weapons stockpile and considerable ability to deliver weapons. Each considers nuclear \ weapons as essential to its security, and none has ever engaged in any serious negotiations to eliminate its own nuclear ambitions. Nobody may be better off with Iranian nuclear weapons, but from what kinds of questions about the global nuclear order does **this exaggerated attention to the disorderly conduct of Iran deflect[s] attention**? But also, who is the “we” that talks in the form of the state at these international negotiations? **For whom do the “well-­ mannered, Western-­ educated” representatives speak when they speak to each other?** The current accord places certain limitations on Iran’s ability to make and possess uranium enriched to a capacity more easily translated into weapons. But during the negotiations, **Iran stood adamantly on demanding recognition from the international community of its “right to enrich uranium.”** This demand has been put on hold for now; at least on this question, the United States has been willing to agree to disagree. But what kind of right is the right to uranium enrichment, and who gains from that right— whether ­ it be for the unremarkable case of the United States or for a so-­ called rogue state such as Iran? If sanctions are finally lifted, and Iran resumes its “peaceful” nuclear program with international approval, who will profit and who may be damaged from those pursuits?

#### The global move to nuclear power puts developing countries at risk – there’s a double standard where only developed nations have the best safety standards

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**The UAE project also raises serious safety issues.** In 2010, AREVA’s Lauvergeon told a French National Assembly Committee **that “the outcome of the UAE bid poses fundamental questions about the nature of the world nuclear market and the level of safety requirements for reactors that will still be operating in 2050 or 2070.”** She raised **the specter of “a nuclear [market] at two speeds”: a high-tech, high-safety mode for developed countries and a lower-safety mode for emerging countries. “The most stringent safety standards are in the U.S. and Europe,”** Lauvergeon said**. “In Europe we couldn’t construct the Korean reactor. Are American and European safety standards going to become international standards, or not?”**4 **The negotiating of nuclear orders at a political level is also troubling.** The UAE order was placed before the country had a functioning safety regulator, meaning that **politicians effectively have decided that the Korean design will be licensable.** Meanwhile, if South Africa decides to buy a Chinese or Korean reactor, what will the South African regulatory body do if it is not comfortable with licensing reactors that fall well below the standards required in Europe? If the Fukushima accident does reveal significant inadequacies in earlier designs, however, the renewed interest in older designs may well prove short-lived.

### Statism Link

#### Non-prolif regimes are attempts at statist intervention that harm privacy and prop up colonialism

Biswas 14

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But **even if these efforts may not have been particularly “effective” in making the world safe from nuclear weapons or “efficient” in the use of enormous redundant resources to produce constantly receding goals, it has had other and quite real effects.** Albeit quite differently from the regime of development whose projects have a much more direct effect on people’s everyday lives, **the NNP regime**, too, **has extended the reach and power of the state in multiple ways. Arms control measures are, after all, a technology of the state, deployed by the state for particular ends.** 45 Interstate treaties rely on and empower states in particular ways; **the creation of a global inspections regime requires the cooperation of states in tracking and monitoring various societal conduits for the flow of goods and money and in enforcing the system of nuclear safeguards and helps** extend the panopticon-­ like gaze of the state in all kinds of directions**.** Though at first the IAEA had much more limited access to only facilities declared by governments, with the Additional Protocol, NNWS in particular have had to accept much more extensive and intrusive inspections that could be imposed unannounced and in locations outside declared facilities. **Required to cooperate with the IAEA, such states find their external sovereignty truncated even as their internal sovereignty is strengthened. The development of the nuclear weapons programs of Iraq, North Korea, Libya, and possibly Iran, especially since the discovery of the transnational clandestine operation run by A. Q. Khan, has made this question of monitoring even more urgent**. A substantial revision of the Nuclear Suppliers’ Guidelines in 1993 extended its reach from exports of primarily nuclear materials to regulations pertaining to a wide range of “dual-­ use” goods, which now required national permits and fortified export-­ licensing processes as well as tougher domestic laws and penalties for transgressors (Walker 2004, 36). **Post September 11, 2001, vulnerability of nuclear weapons and material to theft or sabotage by a terrorist group generated calls to increase interstate cooperation that would tighten materials protection, control, and accounting efforts** (Busch 2002). In April 2010, President Obama hosted a Nuclear Security Summit attended by forty-­ seven international leaders, including representatives from recognized and unrecognized NWS as well as NNWS— the ­ largest gathering of world leaders organized by an American president since the 1945 meeting that created the UN— w ­ hose purpose was securing nuclear materials from possible theft by terrorists. **The UN Security Council Resolution 1540, adopted on April 28, 2004, implicitly recognizes that only states can be legitimate holders of WMD** and explicitly calls on states to enact domestic controls that would prevent proliferation of WMD, related materials, and their delivery vehicles to nonstate actors. 46 **In the implementation of this massive apparatus of nonproliferation, overlapping state, interstate, and intrastate bureaucracies extend the practices of governmentality in all sorts of ways that reinforce the state’s monopoly on the use of lethal force** (Krause 2011). Furthermore, **the very logic of governmentality as encoded in various arms control practices— meant ­ to ensure strategic stability and balance through the governmental rationality of the modern state— militates ­ against the goals of disarmament** (Mutimer 2011; Krause 2011). 47 **If this expansion of state power in the case of development happens in the name of national development** (Ferguson 1994, 268), **in the case of nonproliferation, it happens in the name of national security and hence acquires a certain sense of urgency that allows all kinds of intrusions into civil society and the realm of the private that might otherwise be considered problematic.** The IAEA expects and depends on collaboration with national intelligence services, and the task of monitoring nuclear materials and technology diffusion in a rapidly globalizing world adds even more urgency to this collaboration. But in doing so, **it also bolsters a state system within which states are positioned quite unequally, and hence empowered quite differently by the NNP regime. In other words, the NNP regime depends, builds on, and strengthens state power and does so by engaging states in a collaborative exercise within which some states will always remain marginal. It is this question of the hierarchical global order kept in place through the NNP regime that is the subject of the following chapter. And as with development in which all political challenges to the system are effectively squashed “not only by enhancing the powers of administration and repression, but by insistently reposing political questions of land, resources, jobs, or wages as technical ‘problems’ responsive to the technical ‘development’ intervention”** (Ferguson 1994, 270), **political challenges that might call into question the conceptualization of security, or draw attention to the inefficient use of resources in arms control and disarmament proposals, or suggest inequality and justice to be issues more worthy than peace can be evacuated of their radical potential by making nonproliferation and disarmament technical issues that need urgent policy interventions for their successful resolution.** As I argue later in the book, **this depoliticization of nonproliferation can mask the underlying desires and the economic and political interests that drive the production and proliferation of nuclear weapons.** Processes through which the desire for nuclear weapons is cultivated and the political economy through which their production is sustained are the subjects of chapters 3 and 4, respectively.

#### Aff is a palliative – it’s fearmongering about nuke power that makes us think we’ve solved the problem while leaving current weapons systems intact

Biswas 14

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**How may we understand the replication and multiplication of the NNP regime despite its lackluster record in making the world safe from the persistent presence of nuclear weapons?** Like the development industry, it is not the **good intentions of** the many different agents involved in the regime— ­**policy makers, scientists, lawyers, researchers, scholars, activists,** and so on— that ­ is in question. Indeed, it is safe to say that the multiplicity of efforts aimed at tracking, monitoring, lobbying, raising public awareness, and in general working toward preventing the spread of nuclear weapons and associated materials and technology or the elimination of existing stockpiles and programs are all a product of these good intentions. But much as the development **discourse often uses an unconscious form of backward reasoning** from the conclusion that more development is needed to the premises required to generate that conclusion (Ferguson 1994, 259– 6 ­ 0), **the NNP regime reproduces and replicates itself from the genuine desire for nuclear peace to the endless and redundant articulations of the “problem of nuclear weapons.”** Thus it is that **the much-­ anticipated peace dividend from the end of the Cold War was largely dissipated as massive and redundant weapons systems continued to exist and be modernized at the same time as some cuts were made, and more and more initiatives to curtail proliferation and urge disarmament emerge from many different quarters that largely regurgitate the same fears and same proposed actions, while little gets accomplished**.

### Enlightenment

#### Non-proliferation is enlightenment rationality, so it’s no surprise that non-nuclear states are told to denuclearize while Western states get to keep their arsenals

Biswas 14

Biswas, Shampa. Prof of PoliSci @ Whitman, Nuclear Desire: Power and the Postcolonial Nuclear Order. Minneapolis, US: Univ Of Minnesota Press, 2014. ProQuest ebrary. Web. 8 August 2016. [Premier]

In one of the most celebratory defenses of the NPT offered recently, William Walker has famously suggested that **the NPT helped instantiate a liberal Enlightenment Order based on progressive values of human reason and rationality. This order, he argued, was threatened by the counter-­ Enlightenment forces undergirding the George W. Bush administration’s unilateralist aggressiveness.** Walker’s argument about the Enlightenment-­ inspired nuclear order was developed over a series of writings, which began with his distress at the possible fraying of the NPT and the ensuing disorder that that portends and then only later fully developed as an argument about liberal Enlightenment values. I begin by outlining the main contours of this argument as it developed over the course of his writings 5 before turning to its critique by several commentators, most of whom question the liberal optimism underlying his analysis and accuse him of giving short shrift to the realist power configurations that gave rise to, and will be necessary to sustain, an understandably imperfect but important treaty. In an obvious precedent to his later work on the nuclear Enlightenment, William Walker began developing his influential thesis on the role of the NPT in creating a nuclear order in the journal International Affairs in 2000. Without really fleshing out the concept of an “international order” but concerned that the old nuclear order was crumbling, in this article Walker essentially describes the kind of nuclear order that emerged with the negotiation of the NPT and argues strenuously for its restoration and reform. In an obvious precedent to his later work on the nuclear Enlightenment, William Walker began developing his influential thesis on the role of the NPT in creating a nuclear order in the journal International Affairs in 2000. Without really fleshing out the concept of an “international order” but concerned that the old nuclear order was crumbling, in this article Walker essentially describes the kind of nuclear order that emerged with the negotiation of the NPT and argues strenuously for its restoration and reform so as to avoid rampant proliferation and nuclear catastrophe. Written on the eve of the George W. Bush presidency, Walker emphasizes the centrality of the United States in the creation and maintenance of the NPT regime, even then seeing the impending disorder emergent from U.S. arrogance and unilateralism, and concludes with a ringing endorsement of the multilateralism and commitment to disarmament enshrined in the Final Document that emerged from the 2000 NPT Review Conference (Walker 2000). An oft-­ cited and significant text, it is only in his 2004 Adelphi paper that Walker further develops his previous thesis through a more sustained engagement with the conceptual question of international order, especially in light of what he sees as all the disorder-­ inducing actions of the Bush administration following the terrorist attacks of September 11, 2001, actions that had further eroded the NPT-­ centered regime since he wrote his 2000 article (Walker 2004). Though Walker elaborates and substantiates his previous argument in light of these changed circumstances, what is most interesting about this Adelphi paper is his more careful effort to conceptualize “order.” In his Adelphi paper, Walker alludes to the Enlightenment values undergirding the NPT-­ centered order, but it is in his later 2007 article, also in International Affairs, that Walker fully develops the argument that the NPT-­ centered nuclear order embodied an Enlightenment project that combined faith in human rationality (deterrence) with efforts to prevent proliferation (abstinence) and accuses the Bush administration of following a counter-­ Enlightenment project imperiling a carefully crafted multilateral order. To make his arguments, Walker presents a triumphalist narrative of historical progress, progress whose undoing is his grave concern. In this, a series of steps (Intermediate-­R ange Nuclear Forces Treaty, Strategic Arms Reduction Treaty [START] I and II, NPT Additional Protocols, Nuclear Weapons Free Zones, Missile Technology Control Regime) made the decade from 1986 to 1995 the “golden age” in the increasing marginalization of nuclear weapons, all of them culminating in the 1995 NPT review conference (at which the NPT was indefinitely extended), which seemed to offer a new dawn for nuclear reductions and nonproliferation. But these hopes were dashed as the NPT’s project proved too optimistic, because it assumed nuclear weapons could be drained out of international politics, that U.S. and Russian commitments to disarmament had a solid domestic political backing, that Russian economic modernization would eventually make deterrence irrelevant, that the Middle East peace process could foster genuine solutions, and that India and Pakistan would exercise nuclear restraint. The failing of all of these things put the regime under stress, but the real crisis that unhinged the order was the U.S. Senate’s decisive rejection of the Comprehensive Test Ban Treaty and its pursuit of a National Missile Defense that demonstrated a lack of faith in deterrence (Walker 2000). 6 The September 11, 2001, terrorist attacks further opened room for formerly fringe understandings of international order, encouraging U.S. primacy and unilateral counterproliferation efforts to dominate U.S. policy making. Though the events of September 11, 2001, ultimately brought these ideas to the fore, Walker traces them in his 2004 article to the 1991 Gulf War, when the United States realized its military preponderance, blurred distinctions between nuclear and other weapons through the language of weapons of mass destruction (WMDs), 7 grasped the ramifications of technological advancement on nuclear weapons procurement, and framed the Western relations with the Middle East in adversarial terms. Concurrent with the September 11, 2001, transformation of the international order, a series of other crises also shook the existing geopolitical framework: the Indian and Pakistani test explosions, the U.S. abrogation of the Anti-­ Ballistic Missile (ABM) Treaty, the breakdown of the United Nations Special Commission monitoring WMD production in Iraq, and the revelation of covert supply networks— a ­ ll combining to portend the possible dissolution of a carefully crafted and quite effective global nuclear order. This piece concludes right on the eve of the 2005 NPT Review Conference, on the reiterated hope of a return to an international order founded on international legitimacy and multilateralism rather than U.S. unipolarity (Walker 2004). 8 Two central concepts underlie this historical analysis— order ­ and Enlightenment values; let me turn to Walker’s discussion of these. A Nuclear Order **Three fundamental facts after the invention of nuclear weapons create an “ordering imperative” in international politics— nuclear ­ weapons facilitate an extremely rapid and total war; new nuclear states threaten major instability; and technology will eventually diffuse** (including through the development of civilian nuclear programs) **to make proliferation possible in a range of new state**s (Walker 2000). **Indeed, the preoccupation with international order that emerged from the experiences of twentieth-­ century wars became an “obsession” once the destructive power of nuclear weapons was recognized** (Walker 2004). In his 2007 piece on Enlightenment values that engages the question of modernity, this ordering imperative emerges from the twin “paradoxes of modernity”: on one hand, **Hiroshima revealed the inescapable modern paradox that scientific and technological progress had inadvertently produced the possibility and fear of catastrophic destruction,** 9 **but on the other hand, the anarchy of international relations made political control over those forces quite difficult. The result of this was**, Walker says, gesturing in slightly tongue-­ in-­ cheek fashion toward political realists, **that if “states were left to their brutish ways,” one could have a “lethal nuclear anarchy”** (Walker 2007, 437). Thus, and recognizing the absence of any “satisfactory response” to the “profound questions of legitimacy” that any unequal nuclear order posed, **Walker suggests that the NPT-­ centered order that began to be fashioned, especially after the 1962 scare of the Cuban Missile Crisis, relied on a two-­ pronged approach: “a managed system of deterrence” that held among existing nuclear states** 10 **and “a managed system of abstinence” for NNWS** (Walker 2000, 706). This description of the nuclear order as a combination of managed systems of deterrence and abstinence continues to be central in all of Walker’s writings. 11

## NEG—Desalinization DA

#### Nuclear power k2 stable desalinization

IAEA 15 [-- widely known as the world's "Atoms for Peace" organization within the United Nations family. Set up in 1957 as the world's centre for cooperation in the nuclear field, the Agency works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies, “New Technologies for Seawater Desalination Using Nuclear Energy,” IEAE TecDoc Series, 2015] [Premier]

It is anticipated that by 2025, 33% of the world population, or more than 1.8 billion people, will live in countries or regions without adequate supplies of water unless new desalination plants become operational. In many areas, the rate of water usage already exceeds the rate of replenishment. Nuclear reactors have already been used for desalination on relatively small-scale projects. In total, more than 150 reactor-years of operating experience with nuclear desalination has been accumulated worldwide. Eight nuclear reactors coupled to desalination projects are currently in operation in Japan. India commissioned the ND demonstration project in the year 2008 and the plant has been in continuous operation supplying demineralised (DM) quality water to the nuclear power plant and potable quality to the reservoir. Pakistan has launched a similar project in 2010. However, the great majority of the more than 7500 desalination plants in operation worldwide today use fossil fuels with the attendant emission of carbon dioxide and other GHG. Increasing the use of fossil fuels for energy-intensive processes such as large-scale desalination plants is not a sustainable long-term option in view of the associated environmental impacts. Thus, the main energy sources for future desalination are nuclear power reactors and renewable energy sources such as solar, hydro, or wind, but only nuclear reactors are capable of delivering the copious quantities of energy required for large-scale desalination projects. Algeria is participating in an IAEA’s CRP in the subject related to “New technologies for seawater desalination using nuclear energy’’ with a project entitled “Optimization of coupling nuclear reactors and desalination systems for an Algerian site Skikda”. This project is a contribution to the IAEA CRP to enrich the economic data corresponding to the choice of technical and economical options for coupling nuclear reactors and desalination systems for specific sites in the Mediterranean region

#### Only solution to water shortages

IAEA 15 [-- widely known as the world's "Atoms for Peace" organization within the United Nations family. Set up in 1957 as the world's centre for cooperation in the nuclear field, the Agency works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies, “New Technologies for Seawater Desalination Using Nuclear Energy,” IEAE TecDoc Series, 2015] [Premier]

Addressing water shortages is a difficult challenge for many countries due to population growth and the increasing need for water to support industry, agriculture and urban development. Innovative water management strategies are certainly needed to preserve water resources. But they may not be sufficient. Throughout the world, many highly populated regions face frequent and prolonged droughts. In these areas, where, for some reason, the natural hydrologic cycle cannot provide people with water, desalination is used to provide people with potable water. Desalination systems fall into two main design categories, namely thermal and membrane types. Thermal designs –including MSF and MED- use flashing and evaporation to produce potable water while membrane designs use the method of RO. Desalination is the main technology being used to augment fresh water resources in water scarce coastal regions. With almost 64.4 million m3 /day (GWI 2012) of worldwide desalination water production capacity, about two third is produced by thermal distillation, mainly in the Middle East. Outside this region, membrane-based systems predominate. Both processes are energy-intensive (Fig. I-1.). Even if power consumption has been reduced as technological innovations, such as energy recovery systems and variable frequency pumps (reverse RO plants), are introduced, it remains the main cost factor in water desalination. Traditionally, fossil fuels such as oil and gas have been the major energy sources. However, fuel price hikes and volatility as well as concerns about long term supplies and environmental release is prompting consideration of alternative energy sources for seawater desalination, such as nuclear desalination and the use of renewable energy sources. Replacing fossil fuel by renewable (solar, wind, geothermal, biomass) or nuclear energy, could reduce the impacts on air quality and climate. FIG. I-1. Typical energy consumption of technologically mature desalination processes. The idea of using nuclear energy to desalinate seawater is not new. Since the USS nautilus was commissioned more than a half century ago, the drinking water on nuclear submarines has come from reactor-powered desalination systems. Today, nuclear desalination is being 106 used by a number of countries, including India and Japan, to provide fresh water for growing populations and irrigation. Commercial uses are also being considered in Europe, the Middle East and South America. The IAEA has always been an important contributor to the R&D effort in nuclear desalination. In 2009, it launched a coordinated research programme entitled “New Technologies for Seawater Desalination using Nuclear Energy”, focusing on the introduction of innovative nuclear desalination technologies, producing desalted water at the lowest possible cost and in a sustainable manner. The French atomic and alternative energies commission (CEA) expressed interest in participating to the CRP. A research proposal, aiming at using CEA software tools to develop optimized nuclear desalination systems was established and submitted to the IAEA. The studies focused on the development of optimized nuclear desalination systems producing large amounts of desalinated water while minimizing the impact on the efficiency of power conversion. Technologically mature desalination processes viz. MEE and RO have been considered for the study. Each of these systems will be modelled using innovative techniques developed in CEA. Models would first be validated (against experimental results published in literature, or obtained through bilateral collaborations involving CEA) and then applied to optimize the energy use in the integrated power and water plants.

### A2 Unpractical

#### Models exist in the status quo

IAEA 15

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There is a great interest in using nuclear energy for producing desalinated water. This interest is growing worldwide, motivated by a wide variety of reasons such as the economic competitiveness of nuclear energy and energy supply diversification. It seems that it is the time to go beyond techno-economic studies, and invest in promoting R&D on new technologies that can be employed in nuclear desalination systems to make nuclear desalination a viable option. One of the distinct results of this CRP was the close collaboration established and information sharing among participants to the CRP. The range of desalination technologies available to couple with nuclear power stations was presented, their pros and cons compared via an economic evaluation and comparison of the various energy source options coupled with different seawater desalination processes. In particular, LT desalination technologies such as HT multieffect distillation and hybrid desalination systems are found to be especially efficient, with reduced pretreatment costs and required pumping power in addition to having an increased desalinated water recovery ratio when compared to other processes. The use of heat pipes as heat transfer devices has been proposed and they do seem like a reasonable alternative, as when equipping heat exchangers, they allow for a complete flow separation as well as boosting lower operation and maintenance costs, reducing the risk of leaks in the desalination loop. New modelling approaches were suggested by participants from France and USA. The suggested model by the French authority for nuclear energy was intended to set up a simulation programme for different desalination plants. The US-suggested model was an Excel-based financial modelling tool which was used to perform NPV calculations for cogeneration projects. The simulation model is useful for the development of nuclear desalination simulator in the future. However, the second model has already been used for multiple case studies to demonstrate the model outputs for determining the feasibility of cogeneration projects at site-specific locations. A sensitivity analysis was also performed to investigate the impacts of desalination units on climate change. It was found that the amount and the cost of the greenhouse emissions depends on a range of variables, including the power required, the efficiency, plant lifetime and fuel consumption. An update to the DEEP was also done, with the purpose of increasing the model’s robustness and reliability to predict the cost of different power plants. A major update of DEEP was based on the US-suggested model for NPV analysis. Several predictions were done with the software and it was found that the costs for the distinct types of units change wildly depending on the application. The comparison with solar stills was not possible due to lack of significant data available The biggest case study available was that of Skikda, in Algeria, a plant that was constructed due to the lack of potable water in Algeria. It was proven that nuclear desalination option is more competitive compared to desalination based on fossil energy mainly based on the pollution caused by the latter as well as higher cost per litre of water. 100 Overall the CRP was a very successful event, for both the showcase of new technology and applications of current models in real-life power plants. A great part of the CRP work was directed towards modification of DEEP software and the development of a precise model, which estimates the performance and evaluates the economics of the MED/TVC system. Hybrid nuclear desalination systems do seem to be the way forward for both energy and drinkable water production.

## NEG—Generic



### Laundry

#### Nuke power is baller – many reasons

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, Nova 2012, New York. [Premier]

There are a number of strong arguments in favor of the use of **nuclear energy for electricity generation.** These arguments are the following: **1)** it **brings technological development in advanced areas from the technological point of view in comparison with any other form of energy; 2**) it **is a proven technology that can meet large-scale energy demands** in the coming years; **3)** it **provides a continuous supply of energy.** Other available technologies such as hydroelectric, solar and wind power depend on environmental factors difficult to predict; **4) there are no supply problems, at least in the medium and long terms, with regards the nuclear fuel. Global stocks of uranium are more than enough** to satisfy any future increase in the world energy demand. **5) the proven reserves of uranium are not located in politically sensitive regions of the world; 6) the international cost of the nuclear fuel at this moment is acceptable and can be afforded by those countries with nuclear power programme** and also by those thinking to introduce this type of programme for the first time in the future.

### Uranium Seawater

#### Uranium seawater makes nuclear power effectively renewable

Conca 7/1 [James Conca, contributor at Forbes magazine, “Uranium Seawater Extraction Makes Nuclear Power Completely Renewable,” Forbes magazine, July 1, 2016, <http://www.forbes.com/sites/jamesconca/2016/07/01/uranium-seawater-extraction-makes-nuclear-power-completely-renewable/#5f8077a46e2a>] [Premier]

America, Japan and China are racing to be the first nation to make nuclear energy completely renewable. The hurdle is making it economic to extract uranium from seawater, because the amount of uranium in seawater is truly inexhaustible. And it seems America is in the lead. New technological breakthroughs from DOE’s Pacific Northwest (PNNL) and Oak Ridge (ORNL) national laboratories have made removing uranium from seawater within economic reach and the only question is – when will the source of uranium for our nuclear power plants change from mined ore to seawater extraction? Nuclear fuel made with uranium extracted from seawater makes nuclear power completely renewable. It’s not just that the 4 billion tons of uranium in seawater now would fuel a thousand 1,000-MW nuclear power plants for a 100,000 years. It’s that uranium extracted from seawater is replenished continuously, so nuclear becomes as endless as solar, hydro and wind. Specifically, this latest technology builds on work by researchers in Japan and uses polyethylene fibers coated with amidoxime to pull in and bind uranium dioxide from seawater (see figure above). In seawater, amidoxime attracts and binds uranium dioxide to the surface of the fiber braids, which can be on the order of 15 centimeters in diameter and run multiple meters in length depending on where they are deployed (see figure below). After a month or so in seawater, the lengths are remotely released to the surface and collected. An acid treatment recovers the uranium in the form of a uranyl complex, regenerating the fibers that can be reused many times. The concentrated uranyl complex then can be enriched to become nuclear fuel. Gary Gill, deputy director of PNNL’s Coastal Sciences Division who coordinated the marine testing, noted, “Understanding how the adsorbents perform under natural seawater conditions is critical to reliably assessing how well the uranium adsorbent materials work.” In addition to marine testing, PNNL assessed how well the adsorbent attracted uranium versus other elements, how durable the adsorbent was, how buildup of marine organisms might impact performance, and which adsorbent materials are not toxic. This marine testing shows that these new fibers had the capacity to hold 6 grams of uranium per kilogram of adsorbent in only about 50 days in natural seawater. A nice video of U extraction from seawater can be seen on the University of Tennessee Knoxville website. And later this month, July 19 to 22, global experts in uranium extraction from seawater will convene at the University of Maryland-College Park for the First International Conference on Seawater Uranium Recovery. Stephen Kung, in DOE’s Office of Nuclear Energy, says that “Finding alternatives to uranium ore mining is a necessary step in planning for the future of nuclear energy.” And these advances by PNNL and ORNL have reduced the cost by a factor of four in just five years. But it’s still over $200/lb of U3O8, twice as much as it needs to be to replace mining uranium ore. Fortunately, the cost of uranium is a small percentage of the cost of nuclear fuel, which is itself a small percentage of the cost of nuclear power. Over the last twenty years, uranium spot prices have varied between $10 and $120/lb of U3O8, mainly from changes in the availability of weapons-grade uranium to blend down to make reactor fuel. So as the cost of extracting U from seawater falls to below $100/lb, it will become a commercially viable alternative to mining new uranium ore. But even at $200/lb of U3O8, it doesn’t add more than a small fraction of a cent per kWh to the cost of nuclear power. However, the big deal about extracting uranium from seawater is that it makes nuclear power completely renewable. Uranium is dissolved in seawater at very low concentrations, only about 3 parts per billion (3 micrograms/liter or 0.00000045 ounces per gallon). But there is a lot of ocean water – 300 million cubic miles or about 350 million trillion gallons (350 quintillion gallons). So there’s about 4 billion tons of uranium in the ocean at any one time.

### Abundant

#### No peak uranium

Jewell 10

[-- Jessica, is a Research Scholar in the Energy Program where she works on energy security, nuclear energy and the political economy of energy transitions. She is particularly interested in understanding the political implications of and institutional preconditions for sustainable energy transitions. At IIASA, her research focuses on incorporating insights on the institutional constraints and drivers of energy policies into energy modeling. She has published on energy security under decarbonization scenarios, nuclear energy prospects and global energy governance in journals such as Energy Policy, Climatic Change and Nature Climate Change as well as popular-press pieces on the politics of energy in the Economist and other outlets, “Ready for nuclear energy?:Anassessment of capacities and motivations for launchingnewnationalnuclearpowerprogram,” Oct 29 2010, ScienceDirect] [Premier]

With rising concerns over energy security and climate change, interest in nuclear power has recently reemerged. Unlike oil and gas, proven uranium reserves are abundant: even in the face of large nuclear expansion, they are estimated to last at least a century and most likely well beyond (Macfarlane and Miller, 2007; NEA, 2008a). Uranium is also more evenly geographically distributed than oil and gas with a large portion located in OECD or other developed countries (NEA, 2008a). In addition, nuclear energy offers greater protection from commodity price fluctuations. In 2008, the International Atomic Energy Agency (IAEA) estimated that a doubling of uranium prices resulted in a 5–10% increase in electricity generation cost while a doubling for coal and gas led to a 35–45% and 70–80% increase, respectively (IAEA, 2008a). Thus, nuclear power is considered to provide a more secure, in both short- and long-term, supply of energy.

#### **Definitely no uranium peak.**

NEA 08

NEA, 2008a. Nuclear Energy Outlook (No. 6348). OECD, Paris. [Premier]

Nuclear energy is more able than fossil energy to provide security of supply because the fuel – uranium – comes from diverse sources, the main suppliers being in politically stable countries. Uranium’s high energy density (one tonne of uranium produces the same energy as 10 000-16 000 tonnes of oil with current practices) also means that transport is less vulnerable to disruption. Furthermore, the high energy density and the low contribution of uranium to the cost of nuclear electricity production make the storage of a large energy reserve practical and affordable. Identified uranium resources are sufficient to fuel an expansion of global nuclear generating capacity employing a once-through fuel cycle (i.e. without reprocessing) at least until 2050, allowing decades for further discoveries. Nuclear energy can provide electricity with almost no CO2 emissions – it is the only nearly carbonfree technology with a proven track record on the scale required. 16 Nuclear Energy Outlook 2008 – Executive Summary, ©OECD 2008 Nuclear Energy Outlook 2008 – Executive Summary, ©OECD 2008 17 The current resource to consumption ratio of uranium is better than that for gas or oil. Based on regional geological data, resources that are expected to exist could increase uranium supply to several hundreds of years. Reprocessing of existing irradiated nuclear fuel, which contains over half of the original energy content, could provide fuel for about 700reactor-years, assuming 1 000 MWe light water reactors (LWRs) operating at an 80% availability factor. Additional existing resources, such as depleted uranium stocks and uranium and plutonium from ex-military applications, could provide nuclear fuel for about another 3 100 reactor-years. Converting non-fissile uranium to fissile material in fast breeder reactors with closed fuel cycles can multiply the energy produced from uranium by up to 60 times. This technology could extend nuclear fuel supply for thousands of years, but fast breeder reactors are not yet in commercial operation. France, the Russian Federation, India and Japan have operable fast reactors (some of which are research reactors).

## NEG—Heidegger K

#### Belief in nuclear power stems from technocratic thinking

WISE 11

[--World Information Service on Energy, founded in 1978 to promote anti-nuclear ideology, “THE "SELF-LIMITING" FUTURE OF NUCLEAR POWER,” Dec 9 2011] [Premier]

4. Hubris and Technological Fantasy One final factor pushing nuclear power is its association with progress, complexity , and modernity . Early advocates promised not only a future of electricity too cheap to meter, but an age of peace and plenty (without high prices or shortages in which atomic energy would provide the power needed to desalinate water for the thirsty , irrigate deserts for the hungry , and fuel interstellar travel deep into outer space. Other exciting opportunities included atomic golf balls that could always be found and a nuclear- powered airplane, which the US federal government even spent US$ 1.5 billion researching between 1946 and 1961.(\*20) This section suggests that one explanation for the attractiveness of nuclear energy could be its association with national visions of progress. While these visions vary by country and over time, John Byrne and Steven Hoffman propose that the single most consistent predictor of whether a society will embrace nuclear energy is their ability to think in the ´future tense". That is, planners and promoters become enthralled by the possible benefits of nuclear energy in the future, and are willing to accept the costs in the present to realize them. Put another way, they tend to overestimate the advantages of nuclear energy and discount its future costs in the absence of knowledge about current economic or technical compatibility; the reality of present risks and costs is discounted by the unrealized possibilities of future gain.(\*21) Indeed, the energy historian Martin Melosi has noted that "it's amazing that commercialization of nuclear power occurred at all.... The energy market had little to do with this important event, since there was no pressing need for a new source of power in the United States. There was, however, strong interest in enhancing American prestige."(\*22) Although these psychological benefits are intangible, they are often believed to be real. A cursory look at the genesis of nuclear programs in eight countries - China, France, India, Japan, the former Soviet Union, the US, Spain, and Canada - reveals that, in each case, optimism in the technology and an overarching vision of what nuclear energy could deliver in the future played a role in trumping concerns about present costs.

## NEG—Heg DA



### Prolif

#### Loss of US civilian capability causes prolif and loss of US influence-we can’t set innovation and regulatory norms-the US is modeled by the world

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

The argument for US involvement in civilian nuclear energy to strengthen nonproliferation efforts has two strands: The United States can influence countriesÕ nuclear energy decisions to help support nonproliferation objectives only if it is demonstrating leadership (e.g., innovation) in the civilian nuclear sector. And US exports help maintain American pre-eminence in shaping the nonproliferation regime itself. The first strand of the argument maintains that leadership in the civilian nuclear sector is critical to nonproliferationÑraising the question of what counts for leadership. Is it cutting-edge research and development, and if so, is the R&D confined to particular areas like reactor designs and safety? A wide array of entities, including reactor vendors and US government laboratories, conduct nuclear energy research and development, but electric utilities largely do not. It is plausible to assert that without a vibrant domestic nuclear Squassoni 27 Downloaded by [University of Minnesota Libraries, Twin Cities] at 16:47 08 August 2016 energy sector, reactor vendors will find it more difficult to justify research and development spending. This was in part the justification for the Energy DepartmentÕs Nuclear Power 2010 program. US research into technologies and approaches that improve the **proliferation resistance of fuel cycles** will need to continue, but such research is not dependent on the operation of civilian nuclear power reactors. Alternatively, one may argue that leadership stemming from operational experience is what will be valued by potential nuclear partners. If so, the operational expertise of utilities would be helpful. The Obama administration has hinted at this kind of leadership in the rationale behind support for peaceful nuclear energy: As countries move increasingly to tap peaceful nuclear energy to provide power generation while advancing climate goals, the world must develop an infrastructure in the countries that seek to use nuclear energy for their energy security needs and climate goals to ensure that nuclear energy is developed in a safe manner. We will do so by promoting safety through regulatory bodies and training of operators, promoting physical security to prevent terrorist acts, and assuring safe and secure handling of fuel at the front and back ends of the nuclear fuel cycle. (White House, 2010) Here, the kind of leadership envisioned for the United States is **promotion of norms, training, and best practices**, as well as hands-on help. US technological leadership in these areas could help encourage other countries to accept the lead of the United States. The loss of US regulatory and operational expertise from a nuclear exit could potentially mean the loss of that form of leadership.

#### **US exports k2 international norm setting**

Squassoni 13 [Sharon (2013) The limited national security implications of civilian nuclear decline, Bulletin of the Atomic Scientists, 69:2, 22-33, DOI: 10.1177/0096340213477997] [Premier]

The second strand of the national security argument for civilian US nuclear power centers on the role of US nuclear exports in setting nonproliferation rules. The basic premise is that the United States can wield more nonproliferation influence if it remains a nuclear supplier. This is because US agreements for peaceful nuclear cooperation (so-called 123 agreements, after the relevant section in the Atomic Energy Act) contain provisions governing how material and equipment can be stored, used, processed, and transferred, mostly designed to limit proliferation risk. Also, nuclear suppliers have what many see as an effective forum for discussing how to limit proliferation risksÑthe 47-member Nuclear Suppliers Group (NSG). With respect to bilateral nuclear cooperation agreements, the United States can control only how US material, equipment, and technology are handled.7 The more that other countries engage in nuclear cooperation among themselves, **the less impact US policies have.** Moreover, the record is mixed on the nonproliferation impact of those policies: Several countries engaged in nuclear cooperation with the United States have, at the same time, engaged in activities that either supported nuclear weapons programs or contributed to capabilities that would support a clandestine nuclear weapons program. These include Taiwan, South Korea, Iran under the shah, and Argentina and Brazil in the 1950s. In the cases of Taiwan and South Korea, the United States exerted extraordinary diplomatic pressure to shut down incipient nuclear weapons programs, all the while engaging in nuclear cooperation.

## NEG—Imperialism K



### Link

#### **Fossil Fuels are an imperialist strategy—nuclear power plants provide countries with energy sovereignty.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Launching or expanding national nuclear energy programs may also be viewed as a sovereignty strategy. Although few states can build and manage a nuclear power plant and the related nuclear fuel cycle on their own, they typically feel that there are fewer uncertainties beyond their control once the facility is up and running. Nuclear power can also be considered a diversification strategy for states relying on fossil fuels. For example, several Gulf States are import-independent but excessively relying on oil and gas for their electricity generation (Jewell, 2010 ). Another example is Belarus, whose electricity sector almost entirely depends on imported Russian natural gas. Belarus’ planned nuclear power plant will be manufactured from Russian parts and most likely use Russian fuel and expertise, thus not reducing the country’s dependency on its neighbor. However, it will provide the much-needed diversity in terms of related technologies, markets, and institutions so that disruptions of natural gas supply will not necessarily be devastating for the country’s electricity sector.

## NEG—Nuclearity K



### Nuclear Discourse

#### Human made nuuclear energy production entails certain ontological value (REVISE)

Hecht 12 [Gabrielle Hecht, professor of history at the University of Michigan, “An elemental force: Uranium production in Africa, and what it means to be nuclear,” Bulletin of the Atomic Scientists, 2012] [Premier]

Yet whatever the political leaning, exceptionalism expressed the sense that an immutable ontology distinguished the nuclear from the non-nuclear. The difference between nuclear and non-nuclear came down to fission and radioactivity or so it seemed. The nuclear was thus rendered as a universal and universalizing ontology one that applied in the same way, all over the globe. Scholars and policy makers have tended to follow suit. This has made it difficult to understand nuclearity that is, how places, objects, or hazards get designated as nuclear. Designating something as nuclear whether in technoscientific, political, or medical terms carries high stakes. Fully understanding those stakes requires layering stories that are usually kept distinct: atomic narratives and African ones, histories of markets and histories of health. Things that count as nuclear at one time and place may not count as such at another. Rendering something a state, an object, an industry, a workplace as nuclear and therefore exceptional is a form of technopolitical claims-making. And so is the obverse: namely, insisting that certain things are not especially nuclear and are hence banal. But nuclearity cannot be understood as a transparent ontological distinction. Instead, it should be treated as a contested technopolitical category. Nuclearity is not so much an essential property of things as it is a property distributed among things. Radiation matters, but its presence does not suffice to turn mines into nuclear workplaces. After all, as the nuclear industry is quick to point out, people absorb radiation all the time by eating bananas, sunbathing, or flying over the North Pole. For a workplace to fall under the purview of agencies that monitor and limit exposure, the radiation must be human-made, rather than natural. But is radiation emitted by underground rocks natural (as mine operators sometimes argued) or human-made (as occupational health advocates maintained)? The nuclearization of uranium and of its mines requires work: work that is at once scientific, technological, political, and cultural. Nuclearity is something achieved, which also means that it can be undone. Put differently: Radiation is a physical phenomenon that exists independently of how it’s detected or politicized. Nuclearity is a technopolitical phenomenon that emerges from political and cultural configurations of technical and scientific things. It is not the same everywhere, it is not the same for everyone, and it is not the same at all moments in time.

#### Africa remains the Dark Continent in the eyes of the West

Hecht 12 [Gabrielle Hecht, professor of history at the University of Michigan, “An elemental force: Uranium production in Africa, and what it means to be nuclear,” Bulletin of the Atomic Scientists, 2012] [Premier]

In January 2003, US President George W. Bush declared in his State of the Union address that “the British government has learned that Saddam Hussein recently sought significant quantities of uranium from Africa.” The intelligence, his administration insisted, was unequivocal: Iraq had tried to purchase 500 tons of yellowcake from Niger. Trust us, said officials, trotting out more questionable evidence: Saddam is building “the bomb.” If the death toll were not so huge, the suffering and violence not so vast and ongoing, the next part of the story would be comical. The so-called evidence-procured by a shady Italian businessman-turned out to be forged. In fact, the forgeries were so inept that when International Atomic Energy Agency (IAEA) experts finally saw them in March, they immediately guessed the documents were fake and proved it within hours. By then it was too late, of course. The war had already begun. As the story unfolded, layers of intrigue accumulated in the US press. Former diplomat Joseph Wilson wrote to the New York Times, describing his visit to Niger and discrediting Bush’s claims. The administration retaliated by outing Wilson’s wife, CIA operative Valerie Plame. The media set out to “fol-low the yellowcake road,” and did so by focusing on Americans’ Wilson, Plame, and various Bush officials-rather than on the actual heart of the story: The transmutation of “uranium from Africa” into “atom bomb for Iraq,” an alchemy that -still today - most people don’t question. The (nonexistent) 500 tons of yellowcake became the most vis-ible element of the dubious evidence concerning Iraqi atomic bomb efforts. So what explains the power of the phrase “uranium from Africa”? Why did the claim work so well from a polit-ical and cultural perspective? Had the forged evidence concerned Kazakhstan -another major produ-cer -would the administration have talked about “uranium from Asia”? Highly unlikely. In mainstream Western political imagination and media, Africa remains the Dark Continent, mysterious and politically corrupt-plausible qualifications for a nuclear supplier. And what better candi-date for shady dealings than Niger, a nation most Americans couldn’t distin-guish from Nigeria? Consider also the assumption that acquisition of uranium would constitute prima facie evidence of a bomb program’s existence. Before uranium becomes weapons-usable, it must be mined as ore, processed into yellowcake, converted into uranium hexafluoride, enriched, and pressed into bomb fuel. “Uranium” is therefore as underspecified technologically as “Africa” is underspecified politically. The Niger episode reflects the ambi-guities of the nuclear state, and the state of being nuclear. But what exactly is a nuclear state? Does a uranium enrich-ment program suffice to make one of Iran, as its president Mahmoud Ahmadinejad has claimed? Or are atomic bomb tests the deciding factor?Such ambiguities cannot be dismissed as doublespeak or grandiose ranting. They matter too much to be discounted so easily. The nuclear status of uranium is an important aspect of these ambiguities. When does uranium count as a nuclear substance? When does it lose that status?And what does Africa have to do with it? Such issues lie at the heart of today’s global nuclear order. Or disorder, as the case may be. The questions them-selves sound deceptively simple. Understanding their significance and scope requires knowing their history.

#### Historically, certain materials were not labelled as “nuclear” in order to open up the commodities market

Hecht 12 [Gabrielle Hecht, professor of history at the University of Michigan, “An elemental force: Uranium production in Africa, and what it means to be nuclear,” Bulletin of the Atomic Scientists, 2012] [Premier]

To understand when uranium counts as a nuclear thing, when it loses its nuclearity - and what Africa has to do with that distinction - it is worth revisiting 1957, the year the IAEA was founded. Writing the agency’s governing statute involved discussions over which countries would secure permanent seats on its Board of Governors. Knowing that international opposition to apartheid could prevent its election to the board, South Africa engaged in a strong lobbying effort. It wanted to influence the emergence of a uranium market: Its uranium contracts with the United States and the United Kingdom would soon draw to a close, and it needed new customers. In the thick of the Suez crisis, South Africa seemed more palatable than Egypt or Israel as the board representative from the so-called Africa and Middle East region. On the strength of its uranium production, South Africa won the seat. Barely a decade later, however, uranium mines lost their nuclear status. The IAEA’s 1968 safeguards document specifically excluded mines and mills from the classification of “principal nuclear facility,” defined as “a reactor, a plant for processing nuclear material irradiated in a reactor, a plant for separating the isotopes of a nuclear material, [or] a plant for processing or fabricating nuclear material (excepting a mine or ore-processing plant).” The 1972 safeguards document further excluded uranium ore from the category of “source material.”1 International authorities thus did not consider uranium as nuclear until it became feed for enrichment plants or fuel for reactors. Excluding uranium ore and yellowcake from the category of nuclear things meant that mines and yellowcake plants were formally excluded from the Nuclear Non-Proliferation Treaty’s (NPT) safeguards and inspection regimes. Uranium’s nuclearity plummeted because several uranium producing countries - most notably, apartheid South Africa - actively lobbied for such an exclusion starting in the late 1960s. South Africa, for one, now had other nuclear facilities and didn’t need mines to qualify as a “nuclear” nation.

#### Denuclearization led to the commodification of fissile materials

Hecht 12 [Gabrielle Hecht, professor of history at the University of Michigan, “An elemental force: Uranium production in Africa, and what it means to be nuclear,” Bulletin of the Atomic Scientists, 2012] [Premier]

The IAEA consensus in the 1970s - that uranium mining was not an inherently “nuclear” activity - paved the way for buyers and sellers to treat uranium oxide like an ordinary market commodity. Because of this, Niger’s uranium companies were able to ship significant amounts of yellowcake to countries whose nuclear activities weren’t approved by the world’s nonproliferation regime. Meanwhile, in Gabon, Niger, and many other African countries, public health infrastructures shaped by colonialism, missionary work, mineral extraction, and other interests have focused on infectious disease, malnutrition, and fertility. This focus has influenced which health statistics are collected, and has resulted in a widespread absence of national cancer and tumor registries (Livingston, forthcoming). This, in turn, has made it nearly impossible to track the health effects of uranium mining. How could anyone know whether uranium has caused excess cancer without data establishing the baseline cancer rate? The scientific question - does radon exposure cause cancer? - is always one of history and geography. It has no single, simple answer outside the politics of expert controversy, labor organization, capitalist production, or colonial difference and history. As an epistemological question, it is fundamentally about the relationship of the past to the future. As a political question, it is about laying claim to (or withholding) resources. For workers, of course, these two aspects of the question are inseparable. Their question then becomes: When and how can the universalizing claims of nuclearity work for them? The question is more salient now than ever. Although the Fukushima accident has led to a pause in some excavations, many large mining projects are proceeding apace in Namibia, Niger, and Malawi. In other countries with identified uranium deposits (such as Tanzania and the Central African Republic), state officials appear keen to proceed with mining. Eager to do business, mine operators - backed by state officials - pit the immediate urgency of development against the long-term uncertainties of contamination. Namibia has a fledgling regulatory system, but the other countries mostly lack the complex infrastructures required to monitor and mitigate exposures. How much would the price of uranium rise if it incorporated the full cost of nuclearity in Africa? That remains to be calculated.

## NEG—Shift DA



### Link

#### Eliminating nuclear increased natural gas in the U.S., empirics

Plumer 8-2

Brad Plumer, Vox journalist, “Nuclear power and renewables don’t have to be enemies. New York just showed how” August 2, 2016, <http://www.vox.com/2016/8/2/12345572/new-york-nuclear-wind-solar> [Premier]

Yet, oddly enough, **many states have struggled** with this simple concept. Even **as policymakers have stepped up subsidies for renewable energy, they’ve been letting their nuclear plants shut down prematurely — to be replaced by dirtier natural gas. We’ve already seen this in California, Vermont, Wisconsin. And it’s going to keep happening in the years ahead** without serious policy changes. **These early nuclear retirements are poised to wipe out many of the impressive gains made by renewables**.

#### Japan proves – nuclear substitutes will increase emissions

Korosec 11

KIRSTEN KOROSEC, Fortune journalism, “Germany's Nuclear Ban: The Global Effect” Money Watch, May 31, 2011, 4:28 PM <http://www.cbsnews.com/news/germanys-nuclear-ban-the-global-effect/> [Premier]

**Japan** also has **ditched plans to build 14 more reactors. The power capacity lost by retiring old plants and canceling the 14 new ones would be about 399 billion kilowatt-hours by 2030, according to the Breakthrough Institute**. To replace that lost generation would require a nearly 49-fold increase in electricity generated by wind, solar and geothermal. **The impact: Japan is left with imported coal, liquefied natural gas (LNG) and renewable energy for its power needs. But in all likelihood Japan will rely primarily on imported coal and LNG, two options that will increase emissions. Renewable energy will ramp up, but the obstacles are too numerous to allow it to completely replace the lost nuclear power capacity**.

#### Germany proves – nuclear substitutes increase emissions

Korosec 11

KIRSTEN KOROSEC, Fortune journalism, “Germany's Nuclear Ban: The Global Effect” Money Watch, May 31, 2011, 4:28 PM <http://www.cbsnews.com/news/germanys-nuclear-ban-the-global-effect/> [Premier]

Emissions Germany's nuclear ban will add about 25 million metric tons of CO2 emissions a year. And **since Germany is subject to a cap, it will have to find some way to offset the increase in CO2 emissions.** The easiest solution is **to buy nuclear power from other countries**, as I mentioned above. But it's **not great and** it **certainly won't work over the long haul. So, Germany also will have to ramp up renewable and replace more of its coal-fired power plant with natural gas.** The upshot? **Without low-carbon nuclear energy, Germany will be using more fossil fuels at least for a few years. And that's not good news for the world. The International Energy Agency reported Monday that global CO2 emissions in 2010 were the highest in history**.

#### Nuke energy is orders of magnitude better for emissions

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

**Nuclear energy produces very few emissions of CO 2 to the atmosphere**. **If the whole production cycle is considered**, this means from the construction of the nuclear power plant to their exploitation, **the production of one kWh of nuclear origin electricity supposes less than six grams of CO2 emission to the atmosphere**, mainly associated to the construction of the nuclear power plant and the transport of fuel. On the other hand, **a combined cycle gas power plant generates 430 g of CO2 and a coal power plant between 800 g to 1050 g of CO2, according with the type of tech**nology used. Based on this facts can be stated that the use of **nuclear energy for electricity generation is one of the cleanest type of energy available in the world, in comparison with any of the fossil fuel power plants** currently in operation all over the world.

Renewable capacity is rising, still doesn’t compete with coal.

Plumer 15

Plumer, Brad. 2015. "Clean Energy Is Growing Fast — But It's Not Yet Winning The Race Against Fossil Fuels". Vox. Accessed August 9 2016. http://www.vox.com/2015/4/15/8420297/fossil-fuels-race-renewables. [Premier]

The second criticism of the chart above is that it only shows electricity capacity additions. "Capacity" [is defined as](http://www.eia.gov/tools/faqs/faq.cfm?id=101&t=3) the maximum output a power plant can produce under specific conditions. It is not same as how much electricity a power plant will actually generate in its lifetime. Here's a way to illustrate the difference: coal plants can burn coal pretty much around the clock. So, over the long run, a coal plant will typically produce between 50 to 80 percent of its maximum output. Solar photovoltaic panels, by contrast, only work when the sun is shining. In the long run, they might produce just 20 percent of their maximum output. These percentages are known as ["capacity factors."](http://en.wikipedia.org/wiki/Capacity_factor) This is important to keep in mind. Imagine that the world installed 2 gigawatts' worth of solar panels and a 1-gigawatt coal plant. If you only looked at a chart of capacity additions, you'd assume solar is absolutely crushing coal. But that's not necessarily true! When you take capacity factors into account, the coal plant is likely producing more total electricity.

Despite policy efforts to promote renewables, their share of global energy consumption has not increased since 1999. Plumer 16:

Plumer 15

Plumer, Brad. 2015. "Clean Energy Is Growing Fast — But It's Not Yet Winning The Race Against Fossil Fuels". Vox. Accessed August 9 2016. http://www.vox.com/2015/4/15/8420297/fossil-fuels-race-renewables[Premier]

All told, **fossil fuels made up 87 percent of the world's primary energy consumption in 2013**. By contrast, **low-carbon sources** — including nuclear, hydropower, wind, solar, and biomass — **made up just 13 percent**. **That ratio** [**hasn't changed**](http://rogerpielkejr.blogspot.com/2014/06/treading-water.html) **since 1999**, as the University of Colorado's Roger Pielke Jr. has pointed out. In other words, **the world's energy supply hasn't gotten any cleaner for 14 years**. Yes, clean energy sources have been rising over that time. That little yellow sliver showing renewable energy is growing at rapid clip (that includes solar and wind, but it also includes biomass energy and biofuels/ethanol for vehicles, both of which [often](http://thinkprogress.org/climate/2015/04/16/3644889/woody-biomass-is-thicket-of-trouble/)come in [for criticism](http://www.vox.com/2014/4/21/5635962/uh-oh-advanced-corn-ethanol-might-be-worse-for-global-warming-than)). Hydropower is also expanding. Nuclear power, by contrast, [is stagnating](http://www.vox.com/2014/8/1/5958943/nuclear-power-rise-fall-six-charts). But **coal, natural gas, and oil have more than kept pace with the growth of clean energy**. An illustrative example: In 2013, non-hydro renewable energy consumption grew by 38.5 million TOE (tons of oil equivalent). But coal consumption grew by 103 million TOE — more than twice as much. **If this is a race, fossil fuels are holding their own**.

Closing nuclear plants increases emissions dramatically.

Follet-energy and environmental reporter-16

Andrew Follet. "Getting Rid Of California’S Last Nuclear Reactor Will Increase CO2 Emissions". 2016. The Daily Caller. Accessed August 9 2016. <http://dailycaller.com/2016/06/28/getting-rid-of-californias-last-nuclear-reactor-will-increase-co2-emissions/>. [Premier]

[Media reports acknowledged Tuesday](http://ww2.kqed.org/science/2016/06/27/why-plans-to-replace-diablo-canyon-with-100-percent-clean-energy-could-fall-short/?utm_source=dlvr.it&utm_medium=twitter) that **shutting down the reactor would actually boost greenhouse gas emissions**, **even if it was replaced entirely with wind and solar power**. Studies have shown that [**replacing nuclear with wind and solar power would double CO2 emissions**](http://phys.org/news/2016-06-nuclear-power-doesnt-sweden.html) **by making the electrical grid unreliable. This unreliability would need to be compensated for by building new conventional power plants,** [which would create more CO2 emissions](http://www.science20.com/news_articles/why_sweden_says_no_to_replacing_nuclear_power_with_wind-174480)**.** Green groups including Friends of the Earth and the Natural Resources Defense Council (NRDC) made a deal with a California power company last week to shutdown the Diablo Canyo plant starting in 2024. **When the state of California closed the two-reactor San Onofre nuclear plant in 2012, CO2 rose by 9 million metric tons**, which is equivalent to putting another 2 million cars onto the road. **The average nuclear reactor** [prevents 3.1 million tons of CO2 emissions annually](http://blogs.wsj.com/experts/2015/11/16/why-closing-nuclear-power-plants-is-short-sighted/) **and accounts for 63 percent of non-CO2 emitting power sources**. **Nuclear power is far cheaper than wind or solar power, making it “the most cost-effective zero-emission technology**,” [according to The Economist](http://www.economist.com/news/finance-and-economics/21608646-wind-and-solar-power-are-even-more-expensive-commonly-thought-sun-wind-and).

Stated plans to close nuclear plants and replace with all renewable fall short and increase CO2 emissions. Diablo Canyon closure proves. Sommer 16

Sommer, Lauren. 2016. "Why Plans To Replace Diablo Canyon With 100 Percent Clean Energy Could Fall Short". KQED Science. Accessed August 9 2016. http://ww2.kqed.org/science/2016/06/27/why-plans-to-replace-diablo-canyon-with-100-percent-clean-energy-could-fall-short/?utm\_source=dlvr.it&utm\_medium=twitter. [Premier]

**Even considering** PG&E’s **rapid renewable energy growth**, some **energy analysts say PG&E may need to turn to natural gas for the first few years after Diablo Canyon’s retirement**, **a move that could add to California’s greenhouse gas emissions**. “**They** actually **increase their dependence on gas-fired generation over a short time frame because** **that’**s really **the only option** that’s **available to them**,” **said Morris Greenberg, Managing Director of North American Power at** [**PIRA Energy Group**](http://www.pira.com/)**, an energy market research firm**. **PIRA ran an analysis of the Western electric grid and found that while the use of natural gas is currently declining in Northern California, it could rise around 34 percent from 2023 to 2026 because of Diablo’s closure**. Greenberg says **the analysis takes into account** PG&E **renewable energy goals**, but not the exact specifics of the plan announced last week.

Renewables can only run at certain times and occasionally would overload the grid making them unable to totally replace fossil fuels. Sommer 16

Sommer, Lauren. 2016. "Why Plans To Replace Diablo Canyon With 100 Percent Clean Energy Could Fall Short". KQED Science. Accessed August 9 2016. http://ww2.kqed.org/science/2016/06/27/why-plans-to-replace-diablo-canyon-with-100-percent-clean-energy-could-fall-short/?utm\_source=dlvr.it&utm\_medium=twitter. [Premier]

**As clouds cover the sun or the wind dies down, the power supply drops**, **creating fluctuations on the electric grid**. **To prevent** **widespread outages**, the state’s grid operator, the [California Independent System Operator](http://www.caiso.com/Pages/default.aspx) (**ISO**), **has to have another source of energy ready** to fill in the gap immediately. Generally, **it’s been natural gas power plants, which can be turned up and down as needed**. **That means gas plants have to be run at the same time as renewables, because once turned off, they can take hours to turn back on**. But **as more renewable energy comes online**, **running renewables, natural gas and other power sources all together sometimes creates more power than the state needs. At those times, the California ISO has to** [**switch off solar farms**](http://ww2.kqed.org/science/2016/04/04/what-will-california-do-with-too-much-solar/) **to avoid overloading the grid**.

When nuclear plants close gas and coal plants fill the gap.

Kern 16

"As U.S. Nuclear Plants Close, Carbon Emissions Could Go Up". July 31 2016.Rebecca Kern. Accessed August 9 2016. http://www.bna.com/us-nuclear-plant-n73014445640/.[Premier]

Carbon emissions will rise in parts of the country when natural gas and coal plants replace electricity provided by nuclear plants that are scheduled to close, analysts and climate change experts predict. “In the near term, emissions are going to increase,” Doug Vine, a senior energy fellow at the Center for Climate and Energy Solutions, a nonprofit, nonpartisan think tank focused on climate change, told Bloomberg BNA. He said in the past, combined cycle natural gas plants have replaced closed nuclear plants in the U.S., and “we assume that'd continue at least through the 2025 time frame.” To date, seven plants (encompassing nine reactors) are scheduled to close between 2016 and 2025. The majority of operators say they are retiring these plants early due to difficulty competing in wholesale energy markets against record-low natural gas prices. The plants that are closing in the near future are likely to be replaced in some circumstance by generation from natural gas plants, which would lead to emission increases and could pose a difficulty meeting state and global climate goals.

#### Closing only 7 plants leads to 2% more CO2 emissions.

Kern 16

"As U.S. Nuclear Plants Close, Carbon Emissions Could Go Up". July 31 2016.Rebecca Kern. Accessed August 9 2016. http://www.bna.com/us-nuclear-plant-n73014445640/.[Premier]

Total carbon emission increases as a result of the expected seven nuclear plant closures could range from 30 million to 46 million metric tons, according to analysis compiled for Bloomberg BNA by Energy Venture Analysis Inc. and the Energy Information Administration, respectively. This would be the equivalent of annual carbon emissions from approximately 6.4 million to 10 million cars in the U.S., representing as much as 2 percent of the total U.S. carbon emissions from the electricity sector.

Nuclear plants are the largest source of zero-emission power in the U.S., producing about 60 percent of zero-emission electricity and approximately 20 percent of total electricity.

#### Experts predict that closing nuclear plants will prevent meeting goals set by the CPP.

Kern 16

"As U.S. Nuclear Plants Close, Carbon Emissions Could Go Up". July 31 2016.Rebecca Kern. Accessed August 9 2016. http://www.bna.com/us-nuclear-plant-n73014445640/.[Premier]

Emily Fisher, vice president, legal at the Edison Electric Institute, which represents investor-owned electric utilities, said her group has been worried about the potential for closing nuclear plants and reliance on carbon-emitting resources to replace the electricity they generate.

“I think there’s a general misconception that we don’t need zero-emission megawatt hours from nuclear because we can do it all with renewables, and that just isn’t true right now,” Fisher said. “So if what you care about are climate goals, and reducing emissions, then this is not the right outcome.”

#### **The US will not be able to meet its commitments under the Paris Agreement if it closes nuclear plants.**

Kern 16

"As U.S. Nuclear Plants Close, Carbon Emissions Could Go Up". July 31 2016.Rebecca Kern. Accessed August 9 2016. http://www.bna.com/us-nuclear-plant-n73014445640/.[Premier]

Vine said that the closing units could have even greater impacts on the ability of the U.S. to meet its target to reduce carbon emissions by 26 percent to 28 percent by 2025 as it agreed to do in the Paris climate accord in 2015. Vine said his group found that in looking at current policies in place and additional policies that have been proposed, the U.S. can only get to 22 percent carbon emission reductions by 2025 with existing policies, and the closing nuclear plants won't help. “We need to do more, and a lot of these models are assuming we'll get these five new plants, but we're going to lose some as well,” Vine said. Fisher agreed that closing nuclear plants will have implications for overall U.S. compliance with the Paris agreement, because the U.S. pledge takes into consideration both new and existing power plants.

#### Every major nuclear plant closure across the globe has led to increased CO2 emissions.

Kern 16

"As U.S. Nuclear Plants Close, Carbon Emissions Could Go Up". July 31 2016.Rebecca Kern. Accessed August 9 2016. http://www.bna.com/us-nuclear-plant-n73014445640/.[Premier]

There are examples of nuclear plants closing in the past, and carbon emissions rising in those regions. For example, after Southern California Edison officially closed its San Onofre Nuclear Generating Station in Pendleton, Calif., in 2012, in-state carbon emissions in the electricity sector increased approximately 10 million metric tons, or 24 percent, the following year. The electricity was replaced with renewable resources and natural gas generation, Vine said, according to data from the California Environmental Protection Agency. Likewise, Entergy's Vermont Yankee Nuclear Power Plant in Vernon, Vt., closed in 2014, and as a result, carbon emissions in the electricity sector increased approximately 1.4 million metric tons, or 5 percent, from 2014 to 2015, according to Marcia Blomberg, a spokeswoman for ISO New England, which operates the electric grid across the six New England states. There have been similar emission increases across the globe after nuclear plants have closed. For example, in Japan, after the Fukushima Daiichi nuclear reactor disaster occurred in March 2011, the Japanese energy-related carbon emissions increased nearly 10 percent from 2010 to 2013 after the government progressively shut down its nuclear reactors, Vine said. Similarly, Germany had 17 reactors before Fukushima, and then shut down eight reactors in March 2011. The country's emissions had been steadily declining since 1990, but have been essentially flat from 2010-2015, Vine said. They increased from 2012 to 2013, fell in 2014 and were up again slightly in 2015.

#### Despite different circumstances, CO2 emissions consistently go up when nuclear plants are closed.

Kern 16

"As U.S. Nuclear Plants Close, Carbon Emissions Could Go Up". July 31 2016.Rebecca Kern. Accessed August 9 2016. <http://www.bna.com/us-nuclear-plant-n73014445640/>. (Brackets are authors’) [Premier]

Revis James, the vice president of policy planning and development at the Nuclear Energy Institute, which represents the nuclear industry, told Bloomberg BNA: “Each of these plants is unique. The states are different, the policies, the economics are different, but basically there are some very common threads.” “The first common thread is when these do close, you lose a very significant portion of regional electricity generation and it has to be replaced, either entirely or partially. Some states are counting on being able to conserve electricity consumption, so they don't have to replace all of it,” he said. “But when you look at what power replaces the output from these closed nuclear units, it's unpredictable, but very often, it's replaced by a significant amount of natural-gas fired generation.” While James said natural gas generation emits much less carbon dioxide than coal, it still emits approximately 1,000 pounds of carbon dioxide per megawatt hour. “So basically you go from zero [emissions] per megawatt hour to a significant amount, so you see an increase in emissions over time in these areas where these units have closed,” he said.

#### Plants close, emissions go up, even when the intent is to replace with renewables. Lovering et al 16:

Lovering et al 6/30

"In Most Cases, Closing A Nuclear Plant Is All Pain And No Gain". June 30 2016. Amber Robson and Jessica Lovering. Accessed August 9 2016. <https://medium.com/@ThirdWayTweet/in-most-cases-closing-a-nuclear-plant-is-all-pain-and-no-gain-135911655b8e#.c3dvjddji>. [Premier]

Recent history backs up this case, confirming that when nuclear plants close, total CO2 emissions go up as a mix of both renewable energy and carbon-emitting natural gas power plants ramp up to replace lost power generation. There are several examples of this in the United States, the most relevant being the recent closure of the San Onofre Nuclear Generating Station (SONGS) in 2012. After the SONGS closure, annual statewide emissions of CO2 from electricity production [increased by 24 percent](http://www.sandiegouniontribune.com/news/2015/nov/09/nuclear-retirements-challenge-san-onofre/) as the plant was replaced by a combination of renewable and natural gas-fired sources. Similarly, after Vermont Yankee in Vermont closed in 2014, CO2 [emissions in the New England power grid increased 5%,](https://www.bostonglobe.com/metro/2016/05/15/carbon-emissions-rising-new-england-power-plants/9WfbtQMJEMBszzxPzf2OLO/story.html) reversing five-years of steady reductions in CO2 emissions. In Wisconsin, emissions [jumped more than 15 percent](http://www.nei.org/News-Media/News/News-Archives/5-Reasons-Nuclear-Energy-Is-Vital-to-EPA-s-Clean-P) following the shutdown of the Kewaunee nuclear facility. It’s important to note that in many of these cases, there were expectations that these units would be replaced with carbon-free electricity. But good intentions don’t always hold up against the complex realities of the electric grid. Evidence strongly suggests that closing down a nuclear plant will increase fossil fuel use and undermine climate efforts. Compare this to the guaranteed zero-carbon electricity generated by plants like Diablo Canyon and the whole venture seems like a risky ordeal.

#### **Replacing nuclear with renewables is extremely expensive and an inefficient way to achieve low carbon goals.**

Lovering 6/30

"In Most Cases, Closing A Nuclear Plant Is All Pain And No Gain". June 30 2016. Amber Robson and Jessica Lovering. Accessed August 9 2016. <https://medium.com/@ThirdWayTweet/in-most-cases-closing-a-nuclear-plant-is-all-pain-and-no-gain-135911655b8e#.c3dvjddji>. [Premier]

The future is uncertain. The cost of renewables and storage could dip significantly by 2024, increasing the amount of Diablo Canyon’s generation that could feasibly be replaced by wind and solar. But even if every last electron of Diablo Canyon’s power is replaced by some combination of emissions-free sources, this is hardly a victory. Preliminary estimates by [Bloomberg](http://www.bloomberg.com/news/articles/2016-06-22/cost-to-replace-california-nuclear-plant-with-solar-15-billion) and [the Breakthrough Institute](http://thebreakthrough.org/index.php/issues/nuclear/diablo-canyon-nuclear-power-shutdown-risk) estimate that replacing Diablo Canyon with wind and solar will cost as much as $15 billion. Then there’s the time and political capital that will be spent to achieve these goals. That’s an enormous amount of resources to devote to this effort in order to make zero progress toward emissions goals. If decarbonization is the ultimate goal, policies should [promote](http://thebreakthrough.org/index.php/issues/energy/low-carbon-portfolio-standards) all zero-carbon technologies, instead of creating a situation in which a favored set of zero-carbon technologies (renewables) simply cannibalizes a less favorable one (nuclear). PG&E [has even stated](http://www.eenews.net/stories/1060039199) that, if it weren’t for the constraints of California’s RPS, they could have accomplished a low-carbon generation mix for less money that would include nuclear.

### Enviro-Laundry List

#### Nuke power avoids 10% of CO2 emissions – prevents pollution, ozone depletion

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

**One of the available energy source that does not emit any greenhouse gas** (carbon dioxide, methane, nitrous oxide and others) **or any gas causing** acid rain or photochemical air **pollution** (sulfur dioxide and nitrogen oxides) **when it is for the production of electricity is nuclear energy. This type of energy does not emit also any carcinogenic, teratogenic, or mutagenic metals** (As, Hg, Pb, Cd, etc.). **The utilization of nuclear energy does not release gases or particles that cause urban smog or depletion of the ozone layer**. At the same time, **nuclear** power is the only energy technology that treats, manages, and contains its wastes in a way that is complete and segregated from the public and the environment and **does not require large areas for resettling large populations because it is a highly concentrated form of energy**. Hence, **its environmental impact on land, forests and waters is minimal.** In 2007, nuclear energy generated 15% of world electricity production; in 2008, according with the IAEA data, this percentage was 14%. **The use of nuclear energy for electricity production avoids some 10% of additional CO2 emissions to the atmosphere, considering all economic sectors, and about one-third in the power sector.** However, it is important to stress that nuclear power alone cannot solve the environmental load created by the emissions of greenhouse gases, but **without the use of nuclear power, no other solution for this crucial problem exists within a reasonable time span and the state of the art of energy generation technologies.** [21]

### AT Uranium Shocks / Prices

#### Volatile prices don’t affect the nuclear energy market – and it’s basically cost competitive with fossil fuels

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, Nova 2012, New York. [Premier]

**Nuclear power is cost competitive with other forms of electricity generation**, except where there is direct access to low-cost fossil fuels. **Fuel costs for nuclear power plants are a minor proportion of total generating costs, though capital costs are greater than those for coal and oil fired power plants.** The evolution of the price of uranium in the period 1968-2008 is shown in the following figure. From this figure can be concluded that **the price of uranium increased significantly** since 2004 from US$50 (both spot price and long term price) to US$250 spot price and to around US$190 long term price, **an increase between 4 and 5 times in four years. However, this increase in the uranium price does not make more expensive the use of nuclear energy for electricity production in comparison with fossil fuels power plants. The reason is the following: Nuclear power is hardly sensitive to fluctuations** **in the price of uranium, so that price shocks and market volatilities, as experienced recently, influence the generation price marginally.**

## NEG—Subs DA

#### China’s military hegemony is based on naval supremacy but the US controls the region now

Denyer 15

[Simon, is The Post’s bureau chief in China. He served previously as bureau chief in India and as a Reuters bureau chief in Washington, India and Pakistan/Afghanistan. He is author of “Rogue Elephant - Harnessing the Power of India’s Unruly Democracy,” published by Bloomsbury in 2014, and co-editor of “Foreign Correspondent: Fifty Years of Reporting South Asia.” He has also worked as a print and television correspondent in Nairobi, New York and London, and has made frequent TV appearances in the United States, Britain and India; “Chinese military sets course to expand global reach as ‘national interests’ grow,” May 26 2015, Washington Post] [Premier]

BEIJING — China said Tuesday that it plans to extend its global military reach to safeguard its economic interests, while defending its territorial claims at sea against “provocative actions” by neighbors and “meddling” by the United States. A policy document setting out China’s military strategy, issued by the State Council, or cabinet, underlined the dramatic growth of the country’s defense ambitions — especially its naval ambitions — in tandem with its rapid economic rise. Beijing insisted in the document that its military is dedicated to “international security cooperation” and peaceful development. But it also said the navy will expand its focus from “offshore waters defense” to a greater emphasis on “open seas protection” as China aims to establish itself as a maritime power. The air force, meanwhile, will shift its focus from “territorial air defense to both defense and offense.” Patrick Cronin, director of the Asia-Pacific Security Program at the Center for a New American Security, called the white ­paper ­“a blueprint for achieving ­slow-motion regional hegemony.” “It asserts a confidence backed by growing capability on land and increasingly at sea,” he said. “While it calls for balancing China’s territorial ‘rights’ with ‘stability,’ there should be little doubt on the part of its neighbors that China is building a maritime force to assert the former.” China’s officially disclosed defense budget was expanded by just over 10 percent this year, to $141 billion, marking two decades of nearly unbroken double-digit growth. The navy is reportedly building a second aircraft carrier and has invested heavily in submarines and warships. “China has made it a strategic goal to become a maritime power,” Senior Col. Wang Jin said at a news conference Tuesday. “Therefore, we need to build a strong navy.” He added that the development of long-range precision weapons means that the battlefield at sea is widening. “Offshore-waters defense alone can no longer provide effective defense of the country’s maritime interests,” he said. In Washington, State Department spokesman Jeff Rathke said the administration was aware of the paper and continued to monitor China’s military developments carefully. “We also continue to urge China to exhibit greater transparency with respect to its capabilities and to its intentions,” he said. According to a Pentagon report released this month, China is developing missiles designed to “push adversary forces — including the United States — farther from potential regional conflicts.” The Chinese military is mainly focused on readying for possible conflict in the Taiwan Strait but also is investing to prepare for “contingencies” in the East China Sea and the South China Sea, where it is engaged in several territorial disputes, the Pentagon report said. Chinese officials say that the country’s declared annual defense spending is significantly below the global average when compared with the size of its economy. Its actual defense spending is almost certainly higher than the declared number but is still far lower than the Pentagon’s fiscal 2015 budget of $560 billion, experts say. Chinese navy warns U.S. plane over disputed islands Play Video2:49 The U.S. Navy released this video showing flight operations aboard a P-8A Poseidon over the South China Sea on May 20, 2015. During the flight, the crew documented several warnings issued by China’s navy to leave the area. (U.S. Navy) In a move welcomed by other nations, China sent a 700-strong peacekeeping force in December to South Sudan, where it has extensive oil interests, marking the first time it has sent an infantry battalion on a U.N. mission. Beijing also is negotiating with the strategic port nation of Djibouti to open a military base there to support anti-piracy naval escort missions in the Gulf of Aden and off the coast of Somalia, the Agence France-Presse news agency reported this month. The United States and France already have a military presence in the tiny Horn of Africa country. [Mapping Asia’s Chinese fears] “With the growth of China’s national interests, the security of our overseas energy and resources, strategic sea lines of communication and the safety of our overseas institutions, personnel and assets have become prominent issues,” Senior Col. Zhang Yuguo said at Tuesday’s news conference.

#### Prohibiting nuclear power stops the US’s technological supremacy

Majumbar 6/27

[Dave Majumbar, “Why the US Navy Should Fear China's New 093B Nuclear Attack Submarine,” June 27 2016, National Interest] [Premier]

Is China’s new Type 093B nuclear-powered attack submarine on par with the U.S. Navy’s Improved Los Angeles-class boats? At least some U.S. naval analysts believe so and contend that the introduction of the new People’s Liberation Army Navy (PLAN) submarines is an indication of just how quickly Beijing is catching up to the West. “The 93B is not to be confused with the 93. It is a transition platform between the 93 and the forthcoming 95,” said Jerry Hendrix, director of the Defense Strategies and Assessments Program at the Center for a New American Security—who is also a former U.S. Navy Captain. “It is quieter and it has a new assortment of weapons to include cruise missiles and a vertical launch capability. The 93B is analogous to our LA improved in quietness and their appearance demonstrates that China is learning quickly about how to build a modern fast attack boat.” Other sources were not convinced that Beijing could have made such enormous technological strides so quickly—but they noted that the topic of Chinese undersea warfare capability is very classified. Open source analysis is often extremely difficult, if not impossible. “Regarding the question on the Type 093B, I really don’t know, anything is possible I suppose, but I doubt it,” said retired Rear Adm. Mike McDevitt, now an analyst at CNA’s Center for Naval Analyses. “I have no doubt that the PLAN has ambitions to at least achieve that level of capability and quietness.” Though the Seawolf and Virginia-classes have surpassed the Improved Los Angeles-class as the premier U.S. Navy attack submarines, such older vessels will remain the mainstay of the service’s undersea fleet for many years to come. If the People’s Liberation Army Navy’s newest boats are able to match the capabilities of the U.S. Navy’s shrinking undersea fleet, Washington could be in serious trouble. Indeed, the U.S. Navy already anticipated that it could be facing-off against a Chinese submarine fleet that is nearly twice its size, but not as technically capable. The U.S. Navy—which has roughly 52 attack submarines—is on track to have 41 attack boats by 2029. The Chinese, meanwhile would have “at least 70, and they’re building,” Vice Adm. Joseph Mulloy, the service’s deputy chief of naval operations for integration of capabilities and resources told the House Armed Services Committee’s seapower and projection forces subcommittee on February 25. “You get back into the whole quality versus quantity issue, but at the same time the Russians are also building...and they build much higher-end submarines.” In a 2016 report to Congress, the Pentagon noted that Beijing continues to upgrade and expand its submarine fleet: “China continues to improve its SSN force, and four additional SHANG-class SSN (Type 093) will eventually join the two already in service. The SHANG SSN will replace the aging HAN class SSN (Type 091). These improved SHANG SSNs feature a vertical launch system (VLS) and may be able to fire the YJ-18 advanced anti-ship cruise missile (ASCM). Over the next decade, China may construct a new Type 095 nuclear-powered, guided missile attack submarine (SSGN), which not only would improve the PLAN’s anti-surface warfare capability but might also provide it with a more clandestine land-attack option.” The problem, however, is if Hendrix’s assessment is correct and future Chinese submarines are only slightly less capable than the Virginia or Seawolf-class vessels, the Navy could be in trouble. The technological edge the U.S. Navy—which is already woefully short on attack boats—is counting on might not be sufficient to counter Chinese numerical superiority. However, the service is continuing to improve the performance capabilities of its submarines on a continual basis. Nonetheless, one former U.S. Navy undersea warfare officer suggested that the service would come to regret having truncated the high-performance submarine-hunting Seawolf-class at three boats and focusing instead on the more multi-role Virginia-class.Aware of the coming attack boat shortfall, the U.S. Navy is hoping to boost its attack submarine fleet by continuing to build two Virginia-class vessels per year even while it builds the next-generation Ohio Replacement Program ballistic missile submarine. However, if the Chinese are truly catching up technologically, Congress might consider accelerating the attack submarine build rate to the maximum capacity of America’s two nuclear-capable shipyards. At the same time, the U.S. Navy might have to accelerate the development of the next-generation successor to the Virginia-class, which has been tentatively designated the SSN(X) program and is scheduled to enter service in 2044.

#### That destroys hegemony, especially near Taiwan

Schroeter et. al 10

[--Thilo, Johns Hopkins University SAIS, International Relations, Alumnus; “Challenging US Command of the Commons,” Apr 1 2010, SAIS Europe Journal] [Premier]

Sea-Launched Ballistic Missiles (SLBM) For China, contingency planning and force diversification are essential to preserving strategic deterrence, particularly due to constantly improving US ABM technology. Submarine-launched nuclear ballistic missiles (SLBM) provide this diversification. The type 094 Jin class ballistic missile submarine is expected to become operational in 2012-2015, and will complement the limited range type 092 Xia class, first launched in 1981.[65] The Jin class will carry JL-2 ballistic missiles. Derived from the DF-31, the JL-2 missile has a range of 7,000 km—meaning that to hit the continental US, it would have to be launched outside of Chinese waters. While this requires a degree of operational skills that may not currently be present in the Chinese navy,[66] the production of the Jin class nuclear submarine will nonetheless provide China with another survivable nuclear option.[67] Nuclear command & control The PLA is also improving its nuclear command and control (NC2) systems.[68] This chain of authority is vital to the functioning of any nuclear force as the command lines are meant to function up to and including thermonuclear war. The commander of the Second Artillery Corps General Jing Zhinyuan was assigned a special seat in China’s Central Military Commission (CMC) in September 2004, showing the increasing integration of nuclear forces into the decision making process.[69] The use of information technology and systems of release authority has modernized Chinese NC2. The development of a fiber-optic network, as well as switching systems, satellite communications, and microwave communications has increased operational flexibility and survivability of Chinese NC2.[70] Communications with SSBNs will be an essential part of naval NC2 and will most likely happen through a diverse set of means, most probably via high frequency and very-high-frequency radios. Extremely low frequency communications offer more stealth and survivability as it is receivable up to a depth of 200-300 meters, but it is doubtful whether China possesses the capability.[71] Strategic Implications The PRC’s expanding strategic nuclear capabilities will likely lead to a shift in strategic nuclear deterrence strategy – it has already significantly reduced China’s sensitivity to nuclear compellence. Improved NC2 will not only reduce the chance of accidents or launches by rogue elements, but will also contribute to the credibility of a rapid Chinese nuclear response.[72] Overall, this may shift China’s nuclear strategy from a mature minimum deterrence strategy, to a strategy more in conformity with finite deterrence. This evolving strategic situation could enable China to distance itself from its earlier No First Strike policy and thereby create a more assertive foreign policy stance. Improved command and control will provide for more operational flexibility and “muscle flexing” and might directly improve the PRC’s nuclear brinkmanship capabilities. Increased flexibility combined with a stronger nuclear posture may allow for greater emphasis on limited war-fighting strategies for China.[73] Over the medium-term, the United States is not without recourse when it comes to countering Chinese strategic nuclear threat. The much-discussed National Missile Defense System (NMD), while touted as a defense against rogue nuclear states, could perhaps be adapted to defend against larger numbers of incoming nuclear ICBMs. However, this program is not only heavily disputed; it is also far from completion.[74] The second-order consequences of increased Chinese nuclear forces may prove significant. With the credible risk of US nuclear blackmail reduced or altogether eliminated, the US ability to escalate any conflict over Taiwan to the nuclear level becomes much more problematic, making an outcome favorable to China more likely. Conclusion The advancement of Chinese military capabilities in the areas of information warfare, anti-access measures, and strategic nuclear forces has substantially altered the strategic environment surrounding a US-China conflict, particularly in the Chinese littoral theaters. By hampering US intelligence gathering and communication assets and using anti-access measures, China could delay a US military response to a possible confrontation across the Taiwan Strait. Given the Chinese-Taiwanese balance of forces, which has tilted significantly against Taiwan in the last years, any delay in the US response to such a crisis could allow China to achieve its unification goals militarily and present the US with a fait accompli. Meanwhile, China’s enhanced capability to inflict substantial damage on US military and civilian assets at different levels of escalation has increased the costs of a potential military conflict between the US and China and thus, may reduce the readiness of US decision-makers to intervene in favor of Taiwan – particularly given China’s evolving ability to withstand US nuclear coercion and deny the US potential benefits from escalation. China has thus effectively challenged US command of the commons, contesting US military power in several key areas. By definition, this erodes one of the pillars of hegemony, namely unrivaled military prowess.

### Link – Nuclear subs key

#### Nuclear submarines deter great power war—allows retaliation

PBS 15

[PBS interview between James McIntyre, Judy Woodruff, Commander John Cage, Vice Admiral Mike Connor, and others; “How many ballistic missile submarines does the U.S. really need?,” PBS Newshour, July 31 2015] [Premier]

JUDY WOODRUFF: During the 1980s and ’90s, the U.S. Navy built a fleet of nuclear-armed submarines. Their mission? Deter an attack against the United States, and, if that failed, fight a nuclear war. Those submarines are now approaching the end of their life spans. The Navy plans to build replacements, but there’s growing debate over how many are needed and how to pay for them. Veteran Pentagon reporter Jamie McIntyre, who is now national security correspondent for Al-Jazeera America, has been on special assignment for the “NewsHour.” His report was produced in partnership with the Pulitzer Center on Crisis Reporting. MAN: Man battle stations, missile. Spin up all missiles. MAN: Sound the general alarm. JAMIE MCINTYRE: If America’s strategy of nuclear deterrence ever fails, the beginning of the end might look something like this. The U.S. Navy’s ballistic missile submarines are all part of the Ohio class, named for the first submarine of the design, the USS Ohio. They have only one mission: to lurk silently, deep beneath the ocean, ready to rain nuclear devastation on virtually any target anywhere any time on orders of the president. Submerged just off the coast of Hawaii, the 180-man crew of the USS Pennsylvania demonstrated for the PBS NewsHour an abridged version of what it practices every week the sub is at sea. The submarine’s video screens display only unclassified data. MAN: We have a verified and correct launch order directing the launch of missiles 7, 3, and 5. JAMIE MCINTYRE: And the Navy reviewed our footage to ensure nothing was compromised. What we saw was a mock doomsday scenario. MAN: This is the captain. This is an exercise. JAMIE MCINTYRE: The launching of three nuclear-tipped missiles, enough to destroy several major cities and kill millions of people. It’s a drill where there can be no questioning of orders, no consideration of consequences, no second thoughts. Lieutenant A.J. Walker is the triggerman, whose job is to what’s euphemistically termed close the circuit. This is the missile compartment. It what makes this submarine such a fearsome weapon, 24 missile tubes, each one capable of holding a Trident missile with multiple independently targeted warheads. That means this single ship could deliver massive destructive power to multiple targets around the globe. To critics back in Washington, that raises an obvious question: If one submarine can bring on Armageddon, how many does the U.S. really need? Joseph Cirincione is president of the Ploughshares Fund, a foundation that supports eliminating nuclear weapons. JOSEPH CIRINCIONE, President, Ploughshares Fund: One sub carries at its minimum the equivalent of 600 Hiroshimas. If they launched those missiles, if they launch those warheads, it would be a destructive event beyond history. JAMIE MCINTYRE: It’s not just an academic argument. The military commander of America’s nuclear arsenal, Admiral Cecil Haney, wants to upgrade the aging fleet of 14 Ohio class ballistic missile subs in the coming decades by building 12 new next-generation subs. ADM. CECIL HANEY, U.S. Strategic Commander: Replacing the Ohio class submarine is one of my top priorities. JAMIE MCINTYRE: Each submarine has a price tag of upwards of $5 billion, although, when you count research and development, the total price climbs to over $100 billion, according to the Congressional Budget Office. VICE ADM. MIKE CONNOR, Commander, U.S. Submarine Forces: However you want to calculate it, this fleet is a bargain. JAMIE MCINTYRE: Vice Admiral Mike Connor commands the Navy submarine forces. At his headquarters in Norfolk, Virginia, he makes the case for an almost one-for-one replacement of the current fleet, arguing the cost is just 1 percent of the overall defense budget, while the benefit is incalculable, measured, he says, in wars that never start. VICE ADM. MIKE CONNOR: The truth is that we use them every day to deter a major power war. JAMIE MCINTYRE: The ballistic missile submarine is an awesome war machine. At 560 feet, it is as long as the Washington Monument is high, yet nearly invisible to enemy eyes when slinking silently deep beneath the waves, which makes it the most survivable leg of America’s nuclear triad of subs, bombers, and land-based missiles. VICE ADM. MIKE CONNOR: And what would happen if they did attempt a massive strike, no matter how massive that strike was, the submarine force that is at sea would survive and be in a position to retaliate. JAMIE MCINTYRE: As the U.S. cuts the number of nuclear weapons in the latest round of reductions negotiated with the Russians, submarines will play an outsized role in the deterrence mission, carrying 70 percent of America’s active nuclear arsenal. Still, critics like Ploughshares’ Joe Cirincione argue building enough new subs to destroy the world a dozen times over is expensive overkill. JOSEPH CIRINCIONE: If you just need this to be a deterrent force, to respond in case someone is crazy enough to actually attack the United States and thereby deter them from ever doing that, well, you really could be talking about four, five, six nuclear submarines, each of which would have 16 missile tubes, each of which would carry five or six warheads. That’s a lot of nuclear weapons. JAMIE MCINTYRE: But, as Admiral Connor war-games various worst-case scenarios, involving Russia, China, and North Korea, he insists the psychological calculus of deterrence can’t be reduced to a simple math problem. VICE ADM. MIKE CONNOR: So you think about an intelligent adversary, and our adversaries, in a peer competitor situation, they are intelligent, they are thinking adversaries, you wouldn’t want to have a situation where there is an incentive where they say, you know, if we strike on this day or when this ship is being repaired or when they’re just leaving port and the other one is just coming in, that maybe the balance of force would change in our favor. JAMIE MCINTYRE: But, ultimately, it could be money, not strategy, that torpedoes the Navy’s pricey plan to design and build a state-of-the-art sub to replace the current 14. SEN. RICHARD BLUMENTHAL (D), Connecticut: The cost of that program has been estimated in the range of $100 billion. The Navy has said that it cannot pay for it out of its Navy budget. JAMIE MCINTYRE: At his Senate hearing to be confirmed as Joint Chiefs chairman, General Joseph Dunford agreed paying for a whole new fleet of subs out of the regular ship building account would bust the Navy’s budget. GEN. JOSEPH DUNFORD, Commandant, U.S. Marine Corps: And what I can tell you with a degree of surety is that, were we to fund the Ohio class replacement out of the Department of the Navy, it would have a pretty adverse effect on the rest of the ship building plan, and the estimates are between two-and-a-half and three ships a year. NORMAN POLMAR, Naval Historian: The cost is — some people would say outrageous. I just say it’s tremendous. JAMIE MCINTYRE: Naval historian and consultant Norman Polmar says, either way you fund the plan, through the normal budget or a special account, it’s unaffordable, and unworkable. NORMAN POLMAR: If Congress were to fund the Navy strategic submarines out of a separate fund, tomorrow afternoon, the Air Force would come in and say, hey, Congress has approved a new bomber; we want that funded out of a separate strategic fund. JAMIE MCINTYRE: Polmar says there are smarter, cheaper ways to buy the same level of nuclear deterrence. Modifying smaller attack submarines already in service, he argues, would allow the Navy to buy fewer of the bigger ballistic missile subs. NORMAN POLMAR: Today, every attack submarine can carry Tomahawk land attack conventional missiles. Most of our submarines have vertical launch tubes for 12 of these Tomahawk missiles. Those missiles tomorrow or, say, a couple of years could have nuclear warheads. JAMIE MCINTYRE: But the Navy counters, the smaller attack subs don’t have the endurance of the bigger boomers, and that their cruise missiles don’t have the intercontinental range, nor carry multiple warheads that can destroy different targets. And advocates for far deeper weapons cuts say the whole debate underscores the folly of expensive new nuclear weapons that would only be used if a war were essentially already lost.

#### US needs to increase submarines in its arsenal—it’s possible

Majumbar 5/23

[--defense editorof the national interest; “The U.S. Navy's Dangerous Nuclear Attack Submarine Shortage,” May 23 2016, The National Interest] [Premier]

The U.S. Navy hopes to continue to build two Virginia-class attack submarines per year while also building the Ohio Replacement Program ballistic missile submarine starting in 2021. But does the United States still have the industrial capacity to build more than two nuclear submarines at a time? The increased build rate would help to alleviate a severe shortfall in the number of available attack submarines in the Navy’s inventory—which is set to drip to 41 boats by 2029. But moreover, with the growing threat from a resurgent Russia and an increasingly hostile China, the service is recalibrating its stated requirement for 48 attack submarines. It has become clear that the service needs more than 48 attack submarines. Even with 52 boats currently in service—four more than the stated requirement—the Navy is not able to meet the worldwide demand for submarine capability. “We have a compelling need for additional attack submarines,” Sean Stackley, assistant secretary of the Navy for research, development and acquisition told the Congress in late February. “Today, we have 52 boats, a requirement for 48, we have a valley of 41 boats in the 2030s, we start falling below the line in the late 2020s.” The Navy is working on reducing the costs of the Ohio Replacement Program to pay for an additional Virginia-class boat when the new ballistic missile submarine enters production in 2021. “We’ve got to nail down what it’s going to cost to add a second Virginia in 2021 in POM 18. We’ve got to come to grips with that funding requirement, because it’s going to come out of somewhere else,” Stackley told the Senate on April 6. The service hopes to maintain a build rate of two Virginia-class boats thereafter until the future SSN(X) enters production in the mid-2030s. The problem, however, is that one ORP and two Virginia-class boats is the equivalent of building four attack submarines—each boomer is more than twice the size of an SSN. Indeed, the question of if industry can handle the massive volume of work has come up. One also has to take into account the fact that the new Block V Virginia-class submarines are going to be fitted with a new module that increases their capacity to 40 Tomahawk cruise missiles. With the length of the boat increasing by 83-feet and displacement rising from 7,833-tons to 10,177-tons, the newer Virginia-class boats require much more work. That means the amount of throughput is essentially doubling. Can industry rise to the challenge? The answer from both the Navy and industry is: Yes. The Navy is developing a plan called the Submarine Unified Build Strategy (SUBS) to spread the work between General Dynamics Electric Boat and Huntington Ingalls Industries Newport News Shipbuilding intelligently. Once the Ohio Replacement Program starts being built, Electric Boat will deliver all twelve boomers while Newport News will deliver the majority of the Virginia-class boats. “We know with pretty high confidence they can handle two per year with Ohio Replacement,” Capt. Michael Stevens, Naval Sea Systems Command’s program manager for the Virginia-class told an audience at the Navy League’s Sea, Air and Space symposium on May 17. “But we’ll have to do some facilitization and, of course, hire people.” Industry is also confident that it can handle the workload. “We feel pretty comfortable that we’ll be in a position to handle that,” said Will Lennon, Electric Boat’s vice president of engineering and design programs in an interview with The National Interest. However, both Electric Boat and Newport News will have to grow their facilities and hire more people to handle the enormous task—particularly during the 2020s. “We’re looking at what it would take to scale up to be able to handle additional Virginias during the time of Ohio Replacement,” Lennon said. “So adding the second ship in ’21 is really not a big impact to us. It changes the phasing of our facility expansion, but it doesn’t increase the number of facilities we have to have.”

#### Subs key to US hegemony in the South China Sea

Chan 7/23

[Staff writer for the scmp; “China and US in silent fight for supremacy beneath waves of South China Sea,” Jul 23 2016, South China Morning Post] [Premier]

As the world focuses on the war of words between China and the US over the militarisation of the disputed South China Sea, a silent, underwater fight for supremacy between the two countries is heating up. US Defence Secretary Ash Carter said in a speech in New York in April that the US would spend more than US$8 billion next year to ensure it had “the most lethal and most advanced undersea and anti-submarine force in the world”. That budget – a roughly 14 per cent increase – will include spending on the development of undersea drones. Mapping the conflicting claims in the South China Sea: SCMP multimedia package details reclamation work, military outposts and historical flashpoints PLAN subs can operate more regularly with the facilities in the South China Sea, such as Fiery Cross, and they will be in a better position to monitor US naval movementsCOLLIN KOH SWEE LEAN, NANYANG TECHNOLOGICAL UNIVERSITY Two months earlier, Admiral Harry Harris, the head of the US Pacific Command, complained to lawmakers in Washington that “I don’t have the submarines that I feel I need” to counter Chinese militarisation of the South China Sea. The People’s Liberation Army Navy now has about 70 submarines – very close to the US’ total – with 16 of them nuclear-powered, according to the Pentagon’s annual report to Congress last year on China’s military and security development. Fifteen of China’s non-nuclear submarines are stealthy, equipped with quiet Stirling air-independent propulsion (AIP) engines that also allow them to stay submerged for longer. The US Navy operated 75 nuclear-powered submarines in 2014, with around 15 being the more modern Virginia or Seawolf-class designs, according to the World Nuclear Association. However, it deploys just four Los Angeles-class submarines in the Asia-Pacific region, operating out of its naval base in Guam. How the world’s submarine fleets in the Asia Pacific compared in 2015. SCMP Graphic ‘Underwater Great Wall’: Chinese firm proposes building network of submarine detectors to boost nation’s defence The PLA Navy’s submarine fleet could get an even higher profile soon, sources close to the PLA have told the South China Morning Post, with veteran submarine commander Admiral Sun Jianguo, deputy chief of the PLA’s Joint Staff Department, among the contenders to succeed Admiral Wu Shengli as head of the navy at next year’s Communist Party congress. (Veteran submariner Admiral Sun Jianguo is a contender to become PLA Navy chief next year. Photo: Xinhua Sun, 64, was captain of the PLA’s first operational nuclear submarine, Long March III, in 1985 when the newly launched submarine set a world record by submerging for 90 days, eclipsing the previous record of 84 days held by a US submarine. This year and last, Sun has been Carter’s Chinese counterpart at the annual Shangri-La Dialogue in Singapore, a regional security forum that has been dominated by the South China Sea row recently. Years ago, the US Pacific fleet used to mock Chinese submarines for being too noisy and too easy to detect, but that changed when they successfully tailed US aircraft carriers in the East China Sea in recent years. In 2006, a People’s Liberation Army Navy Type 039 (Song class) diesel-electric submarine surfaced within five nautical miles (9km) of the USS Kitty Hawk when the aircraft carrier was on a training exercise in the East China Sea between Japan and Taiwan. 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The US has also conducted joint drills with Japan and the Philippines in the South China Sea Meanwhile, Beijing’s reclamation of almost 13 square kilometres of land in the Spratlys in the past two years, including the construction of airstrips up to 3km long on three of the artificial islands, has added to US concerns about access to the South China Sea. The 3.5 million square kilometre sea is one of the world’s busiest trade routes. China claims nearly 2 million square kilometres of it, and to help protect that claim has built Asia’s largest submarine base, Yulin, on the south coast of Hainan, near Sanya. The base features underground submarine facilities with tunnel access, shielding Chinese submarines that enter the South China Sea from the prying eyes of US reconnaissance satellites. It’s an open secret that the US has been sending submarines and spy planes to the South China Sea since early 2000, when it realised Beijing was starting to build the submarine base. The collision between a PLA fighter jet and a US EP-3 spy plane off the coast of Hainan in April 2001 that killed a Chinese pilot was the most serious incident to date in the two countries’ anti-submarine warfare contest. Japanese submarine makes first port call to Philippines in 15 years amid China maritime tensions Collin Koh Swee Lean, a submarine expert from the S. Rajaratnam School of International Studies at Singapore’s Nanyang Technological University, said a newly built deep-water port at Fiery Cross Reef in the Spratlys, more than 1,000km from Sanya, could extend the PLA Navy’s reach. “We can see the PLAN subs having ‘longer legs’ in operating for more sustained periods in the South China Sea without the need to frequently return to their home bases in Hainan or the mainland coast,” Koh said. “PLAN subs can operate more regularly with the facilities in the South China Sea, such as Fiery Cross, and they will be in a better position to monitor US naval movements. Such ‘cat-and-mouse’ tracking and counter-tracking operations could be reminiscent of what happened between American and Soviet naval forces.” A US EP-3 spy plane was involved in a mid-air collision with PLA jet fighter near Hainan in April 2001. Photo: Reuters With more close surveillance operations by Chinese, American or Japanese submarines conceivable in the South China Sea as the US presses ahead with freedom of navigation operations, Koh said the risk of collisions between submarines and even naval surfaces vessels had increased. “If we take note of the numerous incidents that happened back during the cold war, the prospect of such incidents in the South China Sea can easily result in a diplomatic event that can be embarrassing for either party and add to tensions,” Koh warned. A nine-day tour of the Spratlys in May by an entertainment troupe starring military folk singer Song Zuying that performed to audiences of workers and troops was seen as a signal that construction work on naval ports on the man-made islands had been completed. State-owned China Central Television showed the amphibious transport dock Kunlun Shan, the PLA Navy’s second-biggest warship, which took the troupe to the islands, anchored close to Fiery Cross Reef. Philippines mulls submarines as Japan seeks inclusion in military drills in disputed South China Sea “Building naval ports and airstrips in the Spratly archipelago extends China’s air force reach in the region by at least 1,000km from Yongxing (Woody Island),” Beijing-based naval expert Li Jie said, adding they would enable the provision of air, naval and land support to Chinese submarines. The PLA has already deployed long-range HQ-9 surface to air missiles, J-10 and J-11 fighter jets and sophisticated radar systems on Woody Island in the disputed Paracel Islands, which are claimed by Beijing, Hanoi and Taipei. In April, a military source told the Post that Beijing planned to start reclamation work at Scarborough Shoal, just 230km off the coast of the Philippines and more than 900km from Sanya, later this year and might add an airstrip there to further extend the air force’s reach. China to build up atoll in contested South China Sea, source says China is now concentrating on its latest nuclear-powered submarine, the Type 094 or Jin-class, most of which are based at Yulin. Four of the boats are operational, with a fifth under construction, according to the Pentagon’s report to congress. It said they were expected to be equipped with up to 12 JL-2 ballistic missiles – with an estimated range of 7,400km, enough to reach US territory from the waters of the Western Pacific – and were considered a “credible sea-based nuclear deterrent”. The USS North Dakota, a US$2.6 billion attack submarine capable of launching Tomahawk cruise missiles, delivering special forces and carrying out surveillance over land and sea, was commissioned in October 2014. 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#### US needs to increase submarines in its arsenal—it’s possible

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### Impact – SCS

#### China sends its nuclear submarines to assert dominance over the South China Sea

Mizokami 6/1

[Kyle Mizokami writes on defense and security issues in Asia, particularly Japan. He is the founder and editor for the blogs Japan Security Watch and Asia Security Watch. Contributor at The Daily Beast, The Atlantic.com, Salon, The Japan Times and The Diplomat; “This is the real reason China is deploying its nuclear subs,” June 1 2016, The Week] [Premier]

Last week, The Guardian announced that China was preparing to send its nuclear missile-armed submarines into the South China Sea. China's excuse — that it is merely countering American moves in neighboring South Korea — is a flimsy one, intended to paint China as the victim. In reality, China has planned this move for decades. The People's Republic of China is in the midst of a territorial grab that has placed itself on one side and virtually all of its neighbors — and the United States — on the other. At stake is freedom of navigation in one of the busiest waterways in the world, and China's plans for fighting a nuclear war. Lying off the coast of Southeast Asia, the South China Sea is one of the most strategic and economically vital stretches of water in the world. A third of the world's merchant traffic passes through the area. It's also packed with resources, including rich fishing grounds and large reserves of oil and natural gas. The South China Sea functions as a sea border for a number of countries, including China, Vietnam, Malaysia, Brunei, Indonesia, the Philippines, and Taiwan. In recent years, China has laid claim to roughly 90 percent of the South China Sea, trampling competing claims by her neighbors. China has used dredging to turn several shoals, reefs, and islets into bustling military outposts. During the Cold War, the Soviet Union and the United States split their nuclear weapons between long-range missiles, bombers, and missile-firing submarines. Diversifying ensured that it would be difficult to destroy a country's nuclear stockpile in a single, surprise attack. The United States, with a powerful navy and technological edge, was less restrictive on where it could send its submarines. The Soviet Union, on the other hand, had inferior submarines, shorter-range missiles, and a less capable navy. In order to protect their missile submarines, the Soviets established two "bastions" — one in the Atlantic and one in the Pacific — adjacent to their territory where they could be better protected. As a rising power, China is roughly charting the same course the Americans and Soviets did 50 years ago. China has land-based missiles, bombers, and missile submarines. And China is establishing its own bastion — in the South China Sea. This sea grab is a logical response to China's strategic dilemma. China's coming submarine deployment is allegedly in response to the deployment of the American THAAD anti-missile system in South Korea. While it is true that the U.S. is deploying THAAD on the Korean peninsula, the system can only be used against missiles targeting South Korea — coming from China's ally, North Korea. China's explanation is designed to make Beijing look like the victim. But China, which has its main submarine missile base adjacent to the South China Sea, has been preparing to sail its missile submarines there for years. China's aggression in the South China Sea is not likely merely for aggression's sake, or the result of a rising power feeling its oats. China is acting out of strategic necessity, something even more dangerous because it feels it is doing something because it must, not simply because it can. The ruling Chinese Communist Party has made the calculation that the strategic benefits — having a safe location for its nuclear missile submarines — outweighs the negative attention the country is receiving worldwide. What does that mean? It means that Beijing is not going to back down. Chinese nuclear weapons, which are the ultimate guarantor of Communist Party rule, are involved, and anything crucial to the survival of the regime is non-negotiable. Barring a new nuclear strategy — perhaps one that rules out submarines and relies on land-based missiles hidden in tunnels — controlling the sea is a must. Beijing has access to other stretches of the Pacific, but they can be easily accessed by traditional rivals including Taiwan and Japan. The South China Sea, for example, is adjacent to a number of relatively poor, weak states. At the same time, the United States and its regional allies are lining up to contest China's sea grab. At stake for the allies is having an expansive China on their doorstep and the loss of freedom of navigation in an essential waterway. From Washington's point of view, losing control of the South China Sea would be a blow to its credibility as a superpower. Better to push back against Beijing now, while the country is comparatively weak and before China's neighbors become resigned to the new reality. Would it be better to informally cede control of the South China Sea to China, much the way the U.S. has de facto control over the Gulf of Mexico? Unfortunately, no. American control of the Gulf of Mexico doesn't come at the expense of other nations, while China is running roughshod over its neighbors. Also, while China may be acting out of necessity now, American weakness could embolden China to make strictly elective territorial grabs in the future. There is no easy way to placate China. Facing off in the South China Sea are two sides, both doing what they think they must. It's a dangerous combination, with no room for negotiation or backing down. Expect to hear much more about this faraway stretch of ocean for years to come.

### Internal link – Hegemony

#### **Nuclear submarines complete the nuclear triad—gives China unlimited nuclear deterrence**

Axe 5/18

[David Axe, “China’s Nuclear Subs Are Ready to Terrorize the Sea,” 5/18/16, The Daily Beast] [Premier]

China’s about to join an exclusive club for nuclear powers. After decades of development, 2016 could be the year the Chinese navy finally sends its ballistic-missile submarines—“SSBN” is the Pentagon’s designation—to sea for the first time for operational patrols with live, nuclear-tipped rockets. If indeed the Jin-class subs head to sea this year, China will achieve a level of nuclear strike capability that, at present, just two countries—the United States and Russia—can match or exceed. “China will probably conduct its first SSBN nuclear deterrence patrol sometime in 2016,” the Pentagon warned in the latest edition of its annual report on the Chinese military, published in mid-May (PDF). Once the Jins set sail, Beijing will command a nuclear “triad” composed of ground-, air-, and sea-launched nuclear weapons. That’s a big deal, according to the dominant theory of nuclear warfare. “The theory is that a diverse array of delivery systems creates survivability by complicating a first strike,” Jeffrey Lewis, an expert on nuclear geopolitics with the James Martin Center for Nonproliferation Studies, told The Daily Beast. In other words, if a country possesses all three kinds of nukes, it’s harder for an enemy to wipe them all out in a surprise attack. And if you can’t destroy your enemy’s entire atomic arsenal, he can nuke you back—so you’d better not attack at all. The word for that is “deterrence.” And China could be on the verge of gaining a deterrence capability that most countries simply can’t afford. China reportedly possesses several hundred atomic warheads, but no one outside of the Chinese Communist Party leadership and, perhaps, top foreign intelligence agencies, knows the exact number. Regardless, that’s far fewer than the roughly 7,000 warheads that the U.S. and Russia each possess but more than any of the world’s other nuclear powers, with the possible exception of France. And compared to Beijing only Moscow and Washington boast a wider range of launchers for their nukes. The Chinese military’s rocket branch maintains around a hundred long-range rockets in land-based silos. The Chinese air force’s H-6 bombers first dropped atomic bombs back in the 1970s—and modern versions of the bombers can fire cruise missiles that are compatible with nuclear warheads. When the Jins are finally war-ready, they will complete Beijing’s land-air-sea atomic triad. To be fair, the Chinese vessels are, in a sense, playing catch-up. The Soviet Union and the United States deployed the first nuclear ballistic-missile submarines at the height of the Cold War in the 1960s—and France and the United Kingdom soon followed suit. Today the U.S. Navy’s 14 Ohio-class missile subs take turns quietly sailing deep in the Pacific and Atlantic Oceans, ready to fire their 24 nuclear-tipped rockets on a moment’s notice. Russia, France, and the U.K. still operate SSBNs, and India is developing one of its own. The Chinese navy began tinkering with missile subs in 1981. The experimental Xia-class vessel and its JL-1 rocket were technological failures and never sailed on an operational mission. Since 2007, the Chinese navy has completed four of the follow-on Jin-class subs and is reportedly planning on building four more. More than 400 feet long, a Jin can carry as many as a dozen JL-2 rockets, each with a range of 4,500 miles. A Jin sailing in the central Pacific Ocean could strike targets anywhere in the United States. If the Jins finally deploy this year, a whopping 35 years will have passed since China first tried to develop a functional SSBN. But developing a missile sub is hard. Expensive, too. China has not disclosed the cost of the Jins, but consider that the U.S. Navy plans to spend $97 billion replacing its 14 Ohios with a dozen new submarines. Missile subs are big and complex—and their rockets are, too. Training reliable crews and designing an effective command-and-control system are equally difficult to do. Chinese subs have been plagued with quality-control problems. “While it is clear that the [Chinese navy] is making strides towards correcting these issues, the capabilities of China’s nuclear-powered submarine fleet remain in a process of maturity,” the Nuclear Threat Initiative, a Washington, D.C.-based advocacy group, explains on its website. To Beijing, achieving a nuclear triad is apparently worth the labor and expense. But Lewis cautions against reading the development of the Chinese atomic triad as the result of some sort of clear, top-down policy. Officials in the U.S. and Russia take for granted the wisdom of a nuclear triad. But in fact, the triads in both of those countries developed as a result of rivalries within their respective militaries. During the early Cold War, the U.S. Navy lobbied lawmakers and the president for missile submarines in part to wrest from the U.S. Air Force some of the funding and prestige that came with being America’s main nuclear strike force. The same internal conflict could be behind the Jins’ development. And whether China’s missile subs set sail for the first time this year could depend as much on politics as on technology and training. “There are a lot of rivalries and intrigues playing out that might result in a triad—or not,” Lewis said.

### A2 Conventional subs solve

#### Conventional subs don’t solve—laundry list

Spencer and Spring 07

[Jack Spencer is Research Fellow in the Thomas A. Roe Institute for Economic Policy Studies, and Baker Spring is F.M. Kirby Research Fellow in National Security Policy for the Kathryn and Shelby Cullom Davis Institute for International Studies, at The Heritage Foundation; “The Advantages of Expanding the Nuclear Navy,” Heritage Foundation, Nov 5 2007] [Premier]

Nuclear Propulsion's Unique Benefits As the defense authorization bill is debated, Members of the House and Senate should consider the following features of nuclear propulsion: Unparalleled Flexibility. A nuclear surface ship brings optimum capability to bear. A recent study by the Navy found the nuclear option to be superior to conventional fuels in terms of surge ability, moving from one theater to another, and staying on station. Admiral Kirkland Donald, director of the Navy Nuclear Propulsion Program, said in recent congressional testimony, "Without the encumbrances of fuel supply logistics, our nuclear-powered warships can get to areas of interest quicker, ready to enter the fight, and stay on station longer then their fossil-fueled counterparts." High-Power Density. The high density of nuclear power, i.e., the amount of volume required to store a given amount of energy, frees storage capacity for high value/high impact assets such as jet fuel, small craft, remote-operated and autonomous vehicles, and weapons. When compared to its conventional counterpart, a nuclear aircraft carrier can carry twice the amount of aircraft fuel, 30 percent more weapons, and 300,000 cubic feet of additional space (which would be taken up by air intakes and exhaust trunks in gas turbine-powered carriers). This means that ships can get to station faster and deliver more impact, which will be critical to future missions. This energy supply is also necessary for new, power-intensive weapons systems like rail-guns and directed-energy weapons as well as for the powerful radar that the Navy envisions. Real-Time Response. Only a nuclear ship can change its mission and respond to a crisis in real-time. On September 11, 2001, the USS Enterprise--then on its way home from deployment--responded to news of the terrorist attacks by rerouting and entering the Afghan theater. Energy Independence. The armed forces have acknowledged the vulnerability that comes from being too dependent on foreign oil. Delores Etter,Assistant Secretary of the Navy for Research, Development, and Acquisition, said in recent congressional testimony, "[We] take seriously the strategic implications of increased fossil fuel independence." The Navy's use of nuclear propulsion for submarines and aircraft carriers already saves 11 million barrels of oil annually. Using nuclear propulsion for all future major surface combatants will make the Navy more energy independent. Survivability. U.S. forces are becoming more vulnerable as other nations become more technologically and tactically sophisticated. Expanding America's nuclear navy is critical to staying a step ahead of the enemy. A nuclear ship has no exhaust stack, decreasing its visibility to enemy detection; it requires no fuel supply line, assuring its ability to maneuver over long distances; and it produces large amounts of electricity, allowing it to power massive radars and new hi-tech weaponry. Force Enhancement. Though effective, modern aircraft carriers still depend on less capable fossil-fueled counterparts in the battle group. Increasing the number of nuclear surface ships would increase the capability of U.S. naval forces to operate both independently and as part of a battle-group. Superiority on the Seas. Policymakers have taken for granted the United States' superiority on the seas for many years. This has led to a decline in America's overall naval force structure and opened the door for foreign navies to potentially control critical blue-water regions. Expanding the nuclear navy will allow the United States to maintain its maritime superiority well into the 21st century. Environmentally Clean Source of Energy. Congress is considering placing CO2 restrictions on all federal government activities, including the Pentagon's. This mandate would be highly detrimental to the armed forces. More people are starting to realize the often-overlooked environmental benefits of a nuclear navy. Expanding nuclear power would help to achieve many of the objectives of a CO2 mandate in addition to increasing America's military capability. Unlike a conventionally powered ship, which emits carbon dioxide and other pollutants into the atmosphere, a nuclear ship is largely emissions-free. America's Nuclear Shipbuilding Industrial Base Some have erroneously argued that America's industrial base is inadequate to support a nuclear cruiser. Additional nuclear shipbuilding can not only be absorbed by the current industrial base but also will allow it to work more efficiently. That said, Congress could consider the option of expanding the infrastructure at a later date by licensing additional nuclear production facilities and shipyards should further expansion be necessary. America's shipyards are not operating at full capacity. Depending on the vendor, product, and service, the industrial base is currently operating at an average capacity of approximately 65 percent. Additionally, Navy leaders have testified that without further investments, their training infrastructure is adequate to handle the influx of additional personnel necessary to support an expansion of nuclear power. Construction of additional ships would not be limited to the nuclear shipbuilding yards. Modules could be produced throughout the country and assembled at nuclear-certified yards. Another alternative might be to build the ship in a non-nuclear yard and then transport it to a nuclear yard where the reactor can be installed. The work would be spread throughout the aircraft carrier and submarine industrial bases. Today, the aircraft carrier industrial base consists of more than 2,000 companies in 47 states. Likewise, the submarine industrial base consists of more than 4,000 companies in 47 states. Economic Viability The Navy recently did a cost analysis of nuclear ships versus conventionally powered ships. Delores Etter on March 1 said: [M]edium surface combatants [like cruisers], with their anticipated high-combat system energy demands, th[e] break-even point is between $70 and $225 per barrel [of oil]. This indicates that nuclear power should be considered for near-term applications for those ships. At the time of that statement, the price of a barrel of crude oil was about $65; oil is currently trading at nearly $100 per barrel. The Navy pegged the cost premium for a nuclear cruiser at between zero to 10 percent with the oil price at $74.15. That premium would obviously be much lower with today's prices. Given that every $10 hike in the price of oil costs the Department of Defense $1.3 billion, policymakers must consider nuclear propulsion for future ships. Furthermore, the Navy's cost comparisons do not even consider the savings that would result from additional volume going through under-utilized shipbuilding infrastructure. Economies of Scale Savings Increasing construction of nuclear ships and submarines yields significant cost reductions. For example, increased workloads could save the Navy 5 percent to 9 percent on propulsion plant component costs. Building two Virginia-class submarines annually would result in approximately $200 million in savings per submarine. Adding a nuclear cruiser every two years to the workload would reduce the price of other nuclear ship power plants by about 7 percent. This equates to savings of approximately $115 million for each aircraft carrier and $35 million for each submarine. Furthermore, the cost of a nuclear ship includes its life-cycle costs. While nuclear ships can cost more up front, policymakers should consider lifetime costs, which include operations and maintenance, fuel, and decommissioning. Cost-comparison studies have not considered many of the costs unique to fossil-fueled ships, such as the cost of protecting fuel supply lines, which the Navy will protect as primary combat ships or the environmental costs of emissions.

\*Also we literally have no conventional subs—they can’t solve conflict occurring rn

### A2 Nuclear accidents

#### Doesn’t apply to submarines—they’re well-run and don’t cause environmental degradation

Holan 08

[--Angie, editor of PolitiFact. She previously was deputy editor, and before that a reporter for PolitiFact, helping launch the site in 2007. She was a member of the PolitiFact team that won the Pulitzer Prize for its coverage of the 2008 election. She has been with the Tampa Bay Times since 2005 and previously worked at newspapers in Florida, Alabama, Louisiana and New Mexico; “Navy’s Record Unblemished,” June 9 2008, Politifact] [Premier]

"My friends, the U.S. Navy has sailed ships around the world for 60 years with nuclear power plants on them and we've never had an accident," McCain said in Nashville, Tenn., on June 2, 2008. "That's because we have well-trained and capable people." Indeed, the U.S. Navy turned to nuclear power in the 1950s to make its submarines faster and able to stay submerged longer. They are also quieter, more stealth. Since commissioning the world's first nuclear-powered submarine, the USS Nautilus , in 1954, the Navy has steamed 139-million miles around the world on various nuclear-powered vessels. Currently, there are 102 nuclear reactors aboard 80 Navy combat vessels, mainly submarines and aircraft carriers. "We have never had an accident or release of radioactivity which has had an adverse effect on human health or the environment," said Lukas McMichael, a public affairs officer for Naval Reactors, the U.S. government office that oversees the operation of the Navy's nuclear propulsion program. "His (McCain's) statement is correct." Now, two nuclear subs still sit on the Atlantic floor, having sunk in the 1960s. The first to go down was the USS Thresher in April 1963 during deep-diving tests 200 miles off the coast of Cape Cod. All 129 officers, crewmen and military and civilian technicians aboard were killed. The USS Scorpion submarine went down about 400 miles southwest of the Azores in May 1968. All 99 crewmen aboard died. While there is some disagreement about the cause of the accidents, neither went down as a result of problems with the nuclear reactors. The Navy has done some environmental monitoring over the years of the ocean floor around where the subs sank, and has determined there has been no significant impact to the environment. The low levels of radioactivity close to the submarines, McMichael said, were no different than the background levels of radioactivity found anywhere on the ocean floor. While environmental and nuclear watchdog groups agree with McCain's statement about the Navy's accident-free record, many take issue with its significance as it relates to expanding the number of commercial nuclear power plants in the United States. "The Navy, they train their people well," said Kurt Zwally, National Wildlife Federation global warming solutions manager. "The Navy's safety record is admirable. But there is a different safety record with plants in the U.S." Edwin Lyman, a senior staff scientist at the Union of Concerned Scientists in Washington, D.C., said commercial nuclear power plants have at times been run haphazardly and sloppily. The Navy is one thing, Lyman said. "Are they going to be able to run the commercial sector with that kind of discipline? I doubt it." The Navy's good safety culture is certainly one reason for its success, said Thomas B. Cochran, senior scientist in the nuclear program at the Natural Resources Defense Council. But there are other reasons. The Navy's reactors are much smaller and more robust than reactors used commercially. They are designed for combat and to take jolts from being in a submarine. So the comparison isn't entirely fair, he said. In short, while there is debate about the relevance of McCain's statistic, McCain is right when he says there have been no reactor accidents aboard the U.S. Navy's nuclear-powered vessels. We rate his statement True.

### A2 No link—no nuclear submarines

#### Every submarine in the US fleet uses nuclear power

Heinrich 4/14

[--Torsten, military historian from Germany, currently living in Switzerland. “Why the US Needs Conventional Submarines,” Apr 14 2016, The Diplomat] [Premier]

The U.S. Armed Forces operate a wide array of sophisticated weaponry, in many cases superior to anything else in the world. But while the new destroyers, carriers, or the F-22 might have no equal, the U.S. Armed Forces face a significant gap in their capabilities: the total lack of any conventional submarines. The United States hasn’t produced any conventional submarines since the Barbel-class in the late 1950s; every submarine class since then has been nuclear powered.

#### Here’s more evidence on this issue

Holmes 14

[Professor of Strategy at the Naval War College and coauthor of Red Star over the Pacific. The views voiced here are his alone; “U.S. Submarines: Run Silent, Run Deep...On Diesel Engines?,” Sep 18 2014, The National Interest] [Premier]

"Underway on nuclear power", radioed the skipper of USS Nautilus in 1955, after taking history's first nuclear-powered attack submarine to sea for the first time. Nautilus's maiden cruise left an indelible imprint on the navy. Her success, cheered on by the likes of Admiral Hyman Rickover, the godfather of naval nuclear propulsion, helped encode the supremacy of atomic power in the submarine force's cultural DNA. Things were never the same after that. America built its last diesel-electric sub, once the state of the art, not long after Nautilus took to the sea. Not since 1990 has the U.S. Navy operated conventionally powered boats. It's been longer than that since they were frontline fighting ships. For a quarter-century, then, it's been all nukes, all the time. No U.S. shipbuilder even constructs diesel boats nowadays.

### A2 Tech not key

#### History proves—only technological superiority ensures US hegemony

Schroeter et. al 10

[--Thilo, Johns Hopkins University SAIS, International Relations, Alumnus; “Challenging US Command of the Commons,” Apr 1 2010, SAIS Europe Journal] [Premier]

This paper argues that the advancement of Chinese capabilities in the areas of information warfare, anti-access measures, and strategic nuclear forces has substantially altered the balance of forces between China and the US, particularly regarding potential conflicts in China’s littoral waters, including over Taiwan. This challenge to US “command of the commons” may undermine America’s regional dominance in East Asia. More specifically, the article argues that the nature of any conflict between the two powers has been fundamentally changed by China’s development and implementation of technologies aimed at: degrading US communication and intelligence gathering capabilities; limiting the ability of the US to deploy air and sea assets in the Chinese theater of operations; and denying the US the ultimate trump card of an assured nuclear first strike capability. Introduction The ability to dominate rivals militarily is one of the pillars of hegemony. The US has long enjoyed a “command of the global commons,” i.e. the ability to freely use sea, air, and space for projecting military power and if necessary, to simultaneously deny the use of these spaces to others.[1] It has been argued that command of the commons acts as a multiplier for other sources of US economic and military power, and thus, is even more central to the maintenance of US hegemony. This article argues that China’s technological advances in certain fields already threaten US command of the global commons, which we also take to encompass the domain of cyberspace. By converting sea, air, space, and cyberspace into “contested zones” for the US military, China undermines the existing basis of US influence in East Asia and possibly, US hegemony. History provides many examples where technological breakthroughs have not only affected tactics, but have also had a direct influence on strategy. The development of siege artillery in Europe in the 15th century was seen as central in reducing the strategic value of medieval castles and town fortifications.[2] Additionally, the simple ability to drop torpedoes into waters 6-9 meters shallower than before gave Japan the option to pursue a strategy that included a surprise strike against US naval power at its core.[3] Meanwhile, the development of nuclear weapons led to a revaluation of military strategy by both nuclear and non-nuclear powers.[4] China is purportedly making active use of the lessons of history. This article argues that Chinese technological developments in certain fields have substantially altered China’s strategic options in potential military conflicts with the US. Such military confrontations are arguably most likely to erupt if hostilities break out between China and Taiwan. This paper is not intended to be an exhaustive study of evolving Chinese military capabilities and Chinese policy vis-à-vis Taiwan, nor is it meant to encompass all of the dynamics of a possible US-China conflict. Rather, by examining a few key technological developments and exploring the implications of their deployment, the article aims to demonstrate how China’s leveraging of asymmetric warfighting technologies is redefining the battlefield. This paper analyzes technological advances in the areas of:

## NEG—Phil



### Future Generations NC

#### Harm to future generations is inevitable – if we use resources or don’t – so the only ethical solution is to use them AND compensate future generations

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

The second obligation relates to the appropriate consumption of nonreplicable resources or to what is known as intergenerational resourcism. Brian Barry (1989a: 515) states that **“[f]rom a temporal perspective, no one generation has a better or worse claim than any other to enjoy the earth’s resources**.” **It would**, however, **be irrational to expect the present generation to leave all nonrenewable resources to its successors.** For one thing, **such restriction would seriously affect current well-being, which would inevitably affect future well-being as well**. Another thing is that **such a ban would not only include the present generations but also future generations and would therefore be beneficial to no one** (Gosseries 2001, 344). As replicating such resources is not an option either, Barry (1989a, 519) argues that **we need to offer compensation or recompense for depleted resources “in the sense that later generations should be no worse off** […] **than they would have been without depletion.”** In this paper, I adopt Barry’s reasoning regarding the adequate consumption of nonrenewable resources: **“[t]he minimal claim of equal opportunity is an equal claim on the earth’s natural resources”** (Barry 1989b, 490). **If we assume that welfare and well-being**8 **rely heavily on the availability of energy resources—a claim that could be historically underpinned by considering** developments from the time of **the industrial revolution** until the present day—I would argue that **we should compensate for a reduction in the opportunities for well-being as they can be brought about by energy resources**.

#### Sustainable energy sources key to avoid harm to future generations – (but that doesn’t mean positive duties outweigh)

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

Conversely, we can argue that **not complying with the duty of sustaining wellbeing could be viewed as harmful**. In other words, **without a safe and affordable energy supply, many basic needs such as medical care will inevitably be compromised, all of which could then harm future generations.** It is indeed true that well-being inherently entails certain health issues. However, even **when we accept that “sustaining well-being” involves the negative duty of “not imposing harm” by virtue of the positive duty of safeguarding energy resources, this does not affect the moral decisiveness of the two duties in relation to each other.**

#### We can use nuclear power and fulfill duties to future generations -- Nuclear power sustainable for hundreds or even thousands of years

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

One important aspect of this type of compensation relates to the available reserves of natural uranium. The availability of uranium is usually taken to refer to its geological certainty and to production costs. **According to recent estimations, there will be at least enough reasonably priced uranium available for approximately 100 years when using only existing conventional reactors. If we include estimations of all the available resources (i.e., phosphate deposits and seawater** (SER 2008)), **the period of uranium availability will extend to thousands of years** (IAEA-NEA 2008). A related issue that could also justify compensation within the boundaries of nuclear technology involves looking to the alternative, to **thorium**, that **is naturally more abundant than uranium.** From the very early days of nuclear fission deployment, thorium has been seen as **a serious alternative** (Kazimi 2003). Indeed, starting up thorium fuel cycles has certain negative implications, a key one of which is that during production, a ready-made material will be produced that is deployable for the manufacture of nuclear bombs (WNA 2008).

In conclusion, if we assume that nuclear power production will continue, we can say that the technologies that should then be preferred should be those that keep more resource options open to future generations. **Whether future generations will ultimately deploy the available nuclear resources is something that we cannot and** perhaps **should not even want to decide for them; we merely provide them with the opportunity to do so**.14 There is, however, no doubt that long-term compensation in terms of extending nuclear fuel is sound if, and only if, we assume that nuclear fission (i.e., the current nuclear power production method) will continue for a long period of time. The latter downgrades the moral importance of this notion of compensation within the boundaries of nuclear technology as defended here, especially when the two duties cannot be complied with simultaneously.

#### Proper waste management balances protection between present and future generations

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

It is widely accepted that since the present generation has created the waste, it should also—as far as possible—bear the responsibility of managing it (NEA-OECD 1995, 9). Quite how the latter point should be interpreted is, however, open to debate. Some argue that **since the benefits of nuclear power are mainly enjoyed by the present generation, they should also be the ones to bear the burdens. A general consensus in nuclear waste management is the principle of equality between generations, meaning that similar levels of protection for people living now and in the future should be guaranteed** (NEA-OECD 1984); **geological repositories are believed to best comply with this principle.** However, **as emerged from the American example, designing such an underground disposal repository amounts to a violation of the equality principle**.

#### There are positive and negative duties to future generations

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

Internal conflict occurs when we cannot comply with both duties simultaneously. The question which then follows is: **are we more duty-bound to consider other people's well-being or do we have a greater duty not to harm them or to at least decrease the likelihood of harm?** In more philosophical terms, **one can question whether the positive duty to secure benefits for posterity is in principle more morally compelling than the negative duty not to harm posterity.** This has, in fact, given rise to a long-lasting debate among contemporary philosophers. In proposing his fundamental prima facie duties, David **Ross** (1930/2002, 21) **distinguished between the two duties of beneficence and non-maleficence**, even though he admits that “to injure others is incidentally to fail to do them good.” He makes this distinction because he ascribes more stringent stipulations to the duty of non-maleficence than to beneficence. John Rawls furthermore emphasizes that negative duties that require us not to cause harm carry more weight when compared with the positive duty to do something good for others (Rawls 1971, 98).10 The scholars Martin Golding and Daniel Callahan added a temporal dimension to this discussion. **While Golding** (1981, 62) **conceives of a temporal duty by stating that we should produce and promote “conditions of good living for future generations,” Callahan** (1981, 78) **emphasizes the duty “to refrain from doing things which might be harmful to future generations.” These two positions differ** mainly in the way that they relate to future generations; **Golding defends a positive duty to benefit close future generations, while Callahan’s negative duty extends much further into the future to contemplate the possibility of harm caused to remote future generations.** The political philosopher Avner **de-Shalit** (1995, 13) **merges these two positions**; he emphasizes that **contemporaries have a strong positive obligation** **to close and immediate future generations** to “supply them with goods, especially those goods that we believe […] will be necessary to cope with the challenges of life”, **but** he **also** advocates **less strong** **negative duties towards the distant future**.11

#### Any disproportionate benefit to current generations must be justified – presume generations are equally morally valuable

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

I would even go one step further by arguing that the rationale of the equal treatment argument is faulty. **The equal treatment principle presupposes that there is an equal temporal distribution of benefits that should justify an equal distribution of the burdens. A utilitarian would argue that nuclear power production serves the higher good of the well-being of mankind so that everyone is better off, even those who belong to future generations**. Even if—for a while—we take this argument for granted, we can assert that the temporal distribution of benefit is not properly incorporated into this line of reasoning. **The current benefits are unquestionably greater than the benefits for those who will be alive 100,000 years hence; this could justify placing a higher burden on the present generation in order to establish a fair distribution of burdens and benefits.** So, the default situation should be that the present generation remains responsible for the waste problem. **If one then decides to transfer parts of this risk to the future and if this necessitates putting remote future generations at a disadvantage, then “the burden of proof is on the person who wishes to discriminate,”** as Shrader-Frechette (2002, 97) rightly stated.23

## NEG—PICs



### SMR PIC

#### Ban all nuclear production except for small modular reactors (SMRs); solves their offense.

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Small modular reactors (SMRs) could extend the market for nuclear energy by providing power to smaller grid systems or isolated markets **where larger nuclear plants are not suitable.** The modular nature of these designs may also help to address financing barriers.

#### SMRs key to nuclear power in developing countries-overcomes financing barriers

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Given large upfront capital requirements, the financing of nuclear power plants (NPPs) is a major hurdle for most countries. The large size of Generation III (Gen III) nuclear reactors, typically in the range of 1 000-1 700 megawatts (MW), could limit the number of countries in which nuclear power is an option – the usual “rule of thumb” is that a nuclear reactor or any other single generating unit in an electric system should not represent more than 10% of the size of the grid. Smaller reactors such as small modular reactors (SMRs) could target countries or regions with less developed electric grids.

#### **SMRs save the industry from EPA regs**

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

There is strong interest in the United States to redevelop its nuclear industry, and particular attention has been focused in recent years by the US Department of Energy on the development of SMRs. SMRs could potentially replace coal-fired power plants that will need to shut down because of new, strict regulations on air pollution from the Environmental Protection Agency. Recently, however, the outlook for the deployment of SMRs has been revised, with some leading SMR design companies reducing developing efforts since no near term deployment is expected in the United States.

#### SMRs save money; adoption is on the brink-legislative action now key

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

SMRs could perform a useful niche role as they can be constructed in regions or countries that have small grid systems that cannot support larger NPPs, or they can address specific nonelectric applications such as district heating or desalination. However, the economics of SMRs have yet to be proven. Interest in SMRs is driven both by the need to reduce the impact of capital costs and to provide power and heat in small or off-grid systems. For some SMR designs, the use of passive safety systems also represents an attractive feature, allowing, for example, decay heat removal in the case of accidents without the need for operator intervention. The creation of a market for SMRs will first require successful deployment of FOAK reactors in the vendor’s country before other countries will consider deploying the technology. **Unless governments and industry work together in the next decade to accelerate the deployment of the first SMR prototypes** that can demonstrate the benefits of modular design and construction, **the market potential of SMRs may not be realised** in the short to medium term.

#### SMR tech in the US is ready-it’s question of bringing it to the market-it replaces dirty coal plants

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

The United States has had a very active SMR programme over the last years. Its objective is to accelerate the timelines for the commercialisation and deployment of these technologies by developing certification and licensing requirements for US-based SMR projects through cost-sharing agreements with industry partners, as well as to resolve generic SMR issues. SMRs in the United States could **replace coal-fired power plants** that do not meet newly released emissions regulations. Two SMR technologies have been selected so far by the DOE, Babcock & Wilcox’s (B&W) mPower design and Nuscale’s SMR design. Though industry was hoping to find customers for near-term deployment of their SMR designs, it seems that customers in the United States are not yet ready for SMR technology. B&W has reduced the scale of the mPower development programme, while Westinghouse, which also developed an SMR design, is concentrating its development efforts on the AP1000 design.

### Gen IV PIC

#### Ban all nuclear power production except for production done with Generation IV reactors, including sodium, gas, lead, and supercritical water cooled reactors, as well as molten salt and very-high-temperature reactors-they’re uniquely safe and efficient, solves aff advantages

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

The Generation IV International Forum (GIF), a framework for international co-operation in R&D for the next generation of nuclear energy systems, was launched in 2001 by Argentina, Brazil, Canada, France, Japan, the Republic of Korea, South Africa, the United Kingdom and the United States. Switzerland, the European Commission, China and the Russian Federation have since joined this initiative. The goals set forward for the development of Gen IV reactors are improved sustainability, safety and reliability, economic competitiveness, **proliferation resistance** and physical protection. GIF published A Technology Roadmap for Generation IV Nuclear Energy Systems in 2002, which describes the necessary R&D to advance six innovative designs selected as the most promising: the gas-cooled fast reactor (GFR), the lead-cooled fast reactor (LFR), the molten salt reactor (MSR), the sodium-cooled fast reactor (SFR), the supercritical water-cooled reactor (SCWR) and the very-high-temperature reactor (VHTR). A Technology Roadmap Update for Generation IV Nuclear Energy Systems was published in 2014 (GIF, 2014), and assesses progress made in the first decade, identifies the remaining technical challenges and the likely deployment phases for the different technologies. It also describes the approach taken by GIF to develop specific safetydesign criteria for Gen IV reactors, building on lessons learnt from the Fukushima Daiichi accident. According to the GIF 2014 Technology Roadmap Update for Generation IV Nuclear Energy Systems, the first Gen IV technologies that are the most likely to be demonstrated as prototypes are the SFR, the LFR, the supercritical water-cooled reactor and the VHTR technologies. Benefits of fast reactors include a better use of the fuel – for the same amount of uranium, fast reactors can produce 60 or more times the energy than Gen III LWRs by multi-recycling of the fuel – and improved waste management by reducing longterm radiotoxicity of the ultimate waste. The main advantage of the SCWR is its improved economics compared to LWRs, which is due to **higher efficiency** and plant simplification. The benefits of VHTRs include the passive safety features of hightemperature reactors and the ability to provide very-high-temperature process heat that can be used in a number of cogeneration applications, including the **massive production of hydrogen.**

#### Sodium-cooled fast reactors specifically solve-Argonne experiments prove

ANL 2 [Argonne National Labs; “Passively safe reactors rely on nature to keep them cool”: Argonne's Nuclear Science and Technology Legacy. Argonne Logos National Labs, 2002. Web. 8 Aug. 2016. <http://www.ne.anl.gov/About/hn/logos-winter02-psr.shtml>.][Premier]

Imagine a nuclear power plant so safe that even the worst emergencies would not damage the core or release radioactivity. And imagine that this is achieved not with specially engineered emergency systems, but through the laws of nature and behavior inherent in the reactor's materials and design. This goal, known in the nuclear industry as "passive safety," is pursued and even claimed by a number of reactor concepts. Argonne's advanced fast reactor (AFR) has demonstrated its passive safety conclusively on a working prototype. "Back in 1986, we actually gave a small prototype advanced fast reactor a couple of chances to melt down," says Argonne nuclear engineer Pete Planchon, who led the 1986 tests. "It politely refused both times." He's joking, but only partly. The reactor was Experimental Breeder Reactor-II (EBR-II), located at Argonne-West in Idaho. EBR-II was a small experimental facility, an AFR prototype with a 20-megawatt electrical output. Under Planchon's guidance, a series of experiments were conducted at EBR-II, starting at extremely low power and culminating in two landmark tests at full power that convincingly demonstrated the passive safety advantages of the AFR concept. Aerial photo of Argonne-West in southeastern Idaho Argonne researchers demonstrated the passive safety of a nuclear reactor design at the Argonne-West site in Idaho. "We subjected the reactor," Planchon says, "to what are considered two of the most serious accident initiators for liquid-metal reactors: a loss of pumped coolant flow through the core and a loss of heat removal from the primary system. Both tests were performed at full reactor power with the automatic shutdown features intentionally disabled. "Before the tests," he adds, "we had installed special systems to let us stop the reactor at any time. But they weren't needed, because the reactor performed **exactly as we predicted**." In the first test, with the normal safety systems intentionally disabled and the reactor operating at full power, Planchon's team cut all electricity to the pumps that drive coolant through the core, the heart of the reactor where the nuclear chain reaction takes place. In the second test, they cut the power to the secondary coolant pump, so no heat was removed from the primary system. Chart of reactor core temperature during 1986 passive safety tests. Chart of reactor core temperature during 1986 loss-of-flow-without-scram test. "In both tests," Planchon says, "the temperature went up briefly, then the passive safety mechanisms kicked in, and it began to cool naturally. Within ten minutes, the temperature had stabilized near normal operating levels, and the reactor had shut itself down without intervention by human operators or emergency safety systems." The reactor was shut down permanently in 1994, having completed its research mission. But for 30 years, it operated safely and reliably while providing all the electricity for Argonne-West, the 900-acre site Argonne operates near Idaho Falls, Idaho. The reactor was a prototype AFR and demonstrated **once and for all the technology's passive safety.** The basic purpose of reactor safety is to protect the public and plant workers from harmful radiation exposure. Walt Deitrich, Argonne reactor safety expert, explains how modern reactor design approaches that task: "The goal of modern safety design is to provide this protection by relying on the laws of nature, rather than on engineered systems that require power to operate, equipment to function properly and operators to take correct actions in stressful emergency situations. We call this approach, which relies on the laws of nature, 'passive safety.' "To achieve this," he continues, "you have to provide for passive performance of three basic safety functions: You have to maintain a proper balance between heat generation and heat removal, you have to remove decay heat, and you have to contain radioactive materials, primarily fuel and fission products." Decay heat comes from radioactive materials in the core, even when the reactor is shut off. The AFR's passive safety is based on three key aspects of its materials and design: its **liquid sodium coolant,** its pool-type cooling system and its metal alloy fuel.

#### Russia, China, India already developing the tech-US needs to catch up

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

**A number of countries** are **already pushing ahead** with the design and/or construction of reactor prototypes that prepare the ground for future Generation IV designs. For fast reactor technology, the Russian Federation, which has a long history of operating sodium-cooled reactors – the 600 MW BN600 reactor, connected to the grid in 1980, is the world’s largest sodium reactor in operation – is in the process of commissioning the 800 MW BN800 reactor and designing an even larger reactor called BN-1200, which could be deployed by 2030. France is moving ahead with the detailed design study of the advanced sodium technological reactor for industrial demonstration (ASTRID) reactor, which could be completed by 2019. China is operating the China experimental fast reactor (CEFR), a 20 MW research reactor connected to the grid in 2011, and is designing a 1 000 MW prototype reactor. Finally, India, which is not a member of GIF, has been working on sodium-cooled FBRs **for decades**, for their potential to operate on the thorium cycle, and is planning to start the commissioning of the 500 MW prototype fast breeder reactor (PFBR) before the end of 2014. Modular SFRs, such as the PRISM reactor (“Power Reactor Innovative Small Module”) based on the integral fast reactor technology developed in the United States in the 1980s, are also being considered by some countries as part of a plutonium (from reprocessed spent fuel) recycling strategy.

### Nuclear Co-Generation PIC

#### CP: Ban all nuclear power production except for nuclear cogeneration. It doesn’t produce electricity-used for district-wide heating.

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Nuclear cogeneration, in particular but not exclusively with high-temperature reactors, has significant potential, and nuclear energy could target markets **other than just electricity production**, offering low-carbon heat generation alternatives to fossil-fired heat production. This would have several benefits, such as reducing greenhouse gas emissions from industrial heat applications, and it would improve the security of energy supply in countries that import fossil fuels for such applications. Although not widespread, nuclear cogeneration is not an unproven concept; in fact, there is significant industrial experience of nuclear district heating, for example in the Russian Federation and in Switzerland. In the latter country, the Beznau NPP (2x365 MW) has been providing district heating for over Box 7: Nuclear fusion: A long-term source of low-carbon electricity Nuclear fusion, the process that takes place in the core of our Sun where hydrogen is converted into helium at temperatures over 10 million °C, offers the possibility of generating base-load electricity with virtually no CO2 emissions, with a virtually unlimited supply of fuel (deuterium and tritium, isotopes of hydrogen), small amounts of short-lived radioactive waste and no possibility of accidents with significant off-site impacts. However, the road to nuclear fusion power plants is a long route that still requires major international R&D efforts. The International Thermonuclear Experimental Reactor (ITER) is the world’s largest and most advanced fusion experiment, and is designed to produce a net surplus of fusion energy of about 500 MW for an injected power (to heat up the plasma) of 50 MW. ITER will also demonstrate the main technologies for a fusion power plant. According to the Roadmap to the Realisation of Fusion Electricity (EFDA, 2012), ITER should be followed by a prototype for a power-producing fusion reactor called DEMO. During the period from 2021 to 2030, exploitation of ITER and design and construction of a prototype for a power-producing fusion reactor called DEMO. DEMO should demonstrate a net production of electricity of a few hundreds of MW, and should also breed the amount of tritium needed to close its fuel cycle. Indeed, while deuterium is naturally abundant in the environment, tritium does not exist in nature and has to be produced. Thus, it is essential that tritium-breeding technology is tested in ITER and then demonstrated at large scale in DEMO. DEMO will also require a significant amount of innovation in other critical areas such as heat removal and materials. Beyond the demonstration of fusion power, the success of the technology as a source of electricity will require that it is competitive with respect to other low-carbon technologies such as renewables or nuclear fission. Major efforts in reducing the capital costs of fusion reactors through optimised designs and materials will be needed. Nuclear energy technology development: Actions and milestones 33 25 years. About 142 GWh heat is sold each year to nearly 2 500 customers, thus avoiding about 42 000 tonnes CO2. Nuclear district heating is an option that is being considered for some new build projects, for instance in Finland or in Poland.

#### Nuclear cogeneration encompasses nuclear hybrid energy systems-it can switch between heat and hydrogen production without losing efficiency-benefits transport and chemicals industry-Korea proves

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Cogeneration could also provide “energy storage” services by allowing NPPs to switch from electricity to heat or hydrogen production while maintaining base-load operation, depending on the price of electricity on the wholesale market (for instance, when a large inflow of wind-generated electricity enters the grid). Hydrogen can then be converted back to electricity using fuel cells, or it can be injected into natural gas pipelines, providing additional revenue streams to the operator of the NPP. These are just some concepts of so-called “nuclear hybrid energy systems” that optimise the co-existence of nuclear and renewable technologies in future low-carbon energy systems. Process heat applications, in particular those with a view to producing hydrogen (for transport or for the petrochemical industry or for coal to liquids), are one of the major non-electric applications of nuclear energy – high-temperature reactors, and in particular the Gen IV concept of VHTR, are well suited for this purpose. At present, the Republic of Korea is pursuing a programme that has the interest of one of the major steel manufacturers of the country. Other initiatives, in Europe, in Japan and in the United States, are looking at attracting industry support to nuclear cogeneration. The lack of a demonstration programme with a prototype high-temperature reactor coupled with a process heat application is seen as a major hurdle. Public private partnership could be an effective way to initiate such a programme and demonstrate the benefits of using nuclear reactors as a source of low-carbon electricity and process heat.

### Nuclear Desalination PIC

#### CP: Ban all nuclear power production except for that used to power desalination processes-solves Middle East water shortages

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

There is also a potential for desalination to become a new market for nuclear power. The production of fresh water during off-peak hours would allow NPPs to operate economically well above usual base-load levels. The Middle East region, which gathers half of the world’s desalination capacities (using gas and oil-fired processes) is also likely to experience a significant growth in nuclear electricity generation, which **could be coupled with desalination.** Many SMR designs, for instance the Korean SMART, the Chinese ACP-100 or the Russian KLT-40S, target desalination markets, but no firm project has yet been launched. Challenges include the development of a robust business model that includes the operator of the NPP, the operator of the desalination plant and the customers of the electricity and water produced by the cogeneration plant.

### Immediate Dismantling Only

#### Immediate dismantling works best-efficacy and future generations.

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Increasingly, utilities are choosing the immediate dismantling option, to benefit from the knowledge of the plant’s operating staff, as well as to limit the burden borne by future generations.

## NEG—Resource Wars DA

#### **Energy insecurity is rampant and especially prominent in low income countries.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Uninterrupted provision of vital energy services (see Chapter 1 , Section 1.2.2 ) – energy security – is a high priority of every nation. Energy security concerns are a key driving force of energy policy. These concerns relate to the robustness (suffi ciency of resources, reliability of infrastructure, and stable and affordable prices); sovereignty (protection from potential threats from external agents); and resilience (the ability to withstand diverse disruptions) of energy systems. Our analysis of energy security I ssues in over 130 countries shows that the absolute majority of them are vulnerable from at least one of these three perspectives. For most industrial countries, energy insecurity means import dependency and aging infrastructure, while many emerging economies have additional vulnerabilities such as insufficient capacity, high energy intensity, and rapid demand growth. In many low-income countries, multiple vulnerabilities overlap, making them especially insecure.

#### **Resource concentration and increased demand cause resource wars over oil.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Oil and its products lack easily available substitutes in the transport sector, where they provide at least 90% of energy in almost all countries. Furthermore, the global demand for transport fuels is steadily rising, especially rapidly in Asian emerging economies. Disruptions of oil supplies may thus result in catastrophic effects on such vital functions of modern states as food production, medical care, and internal security. At the same time, the global production capacity of conventional oil is widely perceived as limited. These factors result in rising and volatile prices of oil affecting all economies, especially low-income countries, almost all of which import over 80% of their oil supplies. The costs of energy (primarily oil) imports exceed 20% of the export earnings in 35 countries with 2.5 billion people and exceed 10% of gross domestic product (GDP) in an additional 15 countries with 200 million people. The remaining conventional oil resources are increasingly geographically concentrated in just a few countries and regions. This means that most countries must import an ever-higher share or even all of their oil. More than three billion people live in 83 countries that import more than 75% of the oil products they consume. This does not include China, where oil import dependency is projected to increase from the current 53% to 84% in 2035. The increasing concentration of conventional oil production and the rapidly shifting global demand patterns make some analysts and politicians fear a “scramble for energy” or even “resource wars.”

#### **Nuclear infrastructure is aging and limited to a handful of rich countries—Continued investment key.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Many countries using nuclear power are experiencing an aging of the reactor fleet and workforce, as well as difficulties in accessing capital and technologies to renew, expand, or launch new nuclear programs. Twenty of the 31 countries with nuclear power programs have not started building a new reactor in the last 20 years, and in 19 countries the average age of nuclear power plants is over 25 years. Large-scale enrichment, reactor manufacturing, and reprocessing technologies and capacities are currently concentrated in just a few countries. Transfer of these technologies and capacities to a larger number of countries is constrained by serious concerns over nuclear weapons proliferation, which is one of the main controversies and risks associated with nuclear energy. If nuclear energy can address energy security challenges, it will only happen in a few larger and more prosperous economies.

#### **Over half the world lives in a country that needs to massively expand energy production, blackouts are rampant.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Various vulnerabilities in electricity supply are often made worse by demand-side pressures. Some 4.2 billion people live in 53 countries that will need to expand the capacity of their electricity systems massively in the near future because they have either less than 60% access to electricity or an average demand growth of over 6% over the last decade. Both fuels and infrastructure for such an expansion will need to be provided without further compromising the sovereignty or resilience of national electricity systems. The reliability of electricity supply is a serious concern, especially in developing countries. In almost three-quarters of low-income countries blackouts are on average for more than 24 hours per month, and in about one-sixth of low-income countries blackouts average over 144 hours (six days) a month. In over one-half of low-income countries blackouts occur at least 10 times a month.

#### **Nuclear energy supply is more stable and secure than oil.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

Whereas the energy security concerns related to fossil fuels are primarily related to the supply and demand of resources, in case of nuclear power the primary concerns relate to nuclear energy infrastructure and technologies. Unlike fossil fuels, the fuel of nuclear energy (uranium) has a fairly high security of supply, offers protection from fuel price fluctuations, and is possible to stockpile. In comparison to oil and gas, uranium is abundant and more geographically distributed, with a third of proven reserves in OECD countries (NEA, 2008 ). Recent estimates indicate that even in the face of a large expansion of nuclear energy, proven uranium reserves would last at least a century (Macfarlane and Miller, 2007 ; NEA, 2008 ). 8 Furthermore, electricity produced from nuclear energy offers a greater protection from fluctuations in raw commodity prices; while doubling uranium prices leads to a 5–10% increase in generating cost for nuclear power, doubling the cost of coal and gas leads to a 35–45% and 70–80% increase, respectively (IAEA, 2008 ). Uranium is also a relatively easy fuel to stockpile. The refueling of a nuclear power plant generally provides fuel for two to three years of operation (Nelson and Sprecher, 2008 ), and it is possible to store up to a 10-year supply of nuclear fuel (IAEA, 2007b ). In contrast, oil and gas emergency reserves, where they exist, are measured in days, weeks, or – in exceptional cases – months, not years.

#### **Nuclear power requires government support.**

Cherp 12 [Aleh; Professor of Environmental Sciences and Policy, Central European University; 2012; “Chapter 5 – Energy and Security. In *Global Energy Assessment – Toward a Sustainable Future*”*;* Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria; pp. 325-384] [Premier]

At the same time, there are significant energy security risks associated with technological, economic, and institutional characteristics of nuclear power production. As the most capital-intensive electricity generation technology, it is economically difficult for nuclear energy to compete in liberalized markets where the investor has to assume the financial risk of investment. As a result, strong government backing is necessary for the development of nuclear power (Finon and Roques, 2008 ).

## NEG—Spec



### Decommissioning Spec

#### Decommissioning processes are a key element of the nuclear power debate-the public doesn’t know about it, so discussion of the issue is key to raise awareness.

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Decommissioning will become **an increasingly important part of the nuclear sector activity** in the coming decades, as dozens of reactors will be shut down. **Industry must provide further evidence that it can dismantle these plants safely and cost effectively.** Further improvements in technology (for instance, robotics) and adaptation of regulations (for instance, allowing the clearance of nonradioactive material from a power plant as ordinary or municipal waste) can help to reach these objectives. It is **important** that decommissioning activities are **covered by sufficient funds**, and **governments have a responsibilit**y to ensure that this financial security is in place. In most countries, operators are required to **set aside dedicated funds**, the costs of which are internalised in the cost of nuclear electricity. Once a nuclear facility is closed permanently, whether it is for technical, economic or political reasons, it needs to be put into a state where it can do no harm to the public, workers or the environment. This includes removal of all radioactive materials, decontamination and dismantling, and finally demolition and site clearance. This process, **known as decommissioning**, consists of several stages that can take place over many years. The general public is often not well informed about decommissioning activities, and the ill-founded belief that decommissioning of nuclear facilities is an unsolved issue is one of the factors that can explain poor public acceptance of nuclear power. This Roadmap recognises that decommissioning is a significant challenge given the size of the fleet that will be retired in the coming decades. However, it is also a great opportunity for new business and skills to be developed. Demonstrating that NPPs that have been shut down can be dismantled safely and in a financially controlled manner is a key factor for allowing new build projects to move ahead. Today, decommissioning is a well-regulated activity of the nuclear fuel cycle, with specific safety guides and standards (e.g. IAEA, Western European Nuclear Regulators Association [WENRA]). As of December 2014, 150 power reactors had been permanently shut down and were in various stages of decommissioning. International information exchange forums exist, where processes are reviewed, lessons learnt and best practices shared. But it is also an area of technological expertise where operators and new industries compete (see Box 10).

#### Two main methods of decommissioning-can’t just dump the shit somewhere

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

There are essentially two main strategies for decommissioning: (i) immediate dismantling, where after the nuclear facility closes, equipment, structures, and radioactive materials are removed or decontaminated to a level that permits release of the property and termination of the operating licence within a period of about 10 to 15 years; (ii) deferred dismantling, where a nuclear facility is maintained and monitored in a condition that allows the radioactivity to decay – typically for about 30-40 years, after which the plant is dismantled and the property decontaminated. A third strategy exists called entombment, where all or part of the facility is encased in a structurally long-lived material. It is not a recommended option, although it may be a solution under exceptional circumstances (such as after a severe accident).

#### **There are three types of decommissioning strategies and it makes a big difference**

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, New York. [Premier]

**The decommissioning of nuclear power plants means the removal of some or all of the regulatory controls that apply to a nuclear site whilst securing the long-term safety of the public and the environment.** Underlying this there are other practical objectives to be achieved, including release of valuable assets such as site and buildings for unrestricted alternative use, recycling and reuse of materials and the restoration of environmental amenity. In all cases, the basic objective is to achieve an endpoint that is sensible in technical, social and financial terms, that properly protects workers, the public and the environment and, in summary, complies with the basic principles of sustainable development. [131] In other words, the term decommissioning covers all of the administrative and technical actions associated with cessation of operation and withdrawal from service. **It starts when a facility is shut down and extends to eventual removal of the facility from its site** (termed dismantling). **These actions may involve some or all of the activities associated with dismantling of plant and equipment, decontamination of structures and components, remediation of contaminated ground and disposal of the resulting wastes**.

**There are three main decommissioning strategies that can be applied. These are the following: a) immediate dismantling; b) deferred dismantling, also called safe enclosure; and c) entombment. In the first case, a facility is dismantled right after the removal of materials and waste from the facility. In the second case, after the removal of materials and waste, the facility is kept in a state of safe enclosure for 30-100 years followed by dismantling. In the third case, a facility is encapsulated on site and kept isolated until the radionuclides decayed to levels that allow a release from nuclear regulatory control.** The present **trend is in favor of immediate dismantling**. [120]

The selection of the correct decommissioning strategy depends of several factors that can be grouped into the following three categories: a) policy and socio-economic factors; b) technological and operational factors; and c) long-term uncertainties. Policy and socioeconomic factors are dominated by the national and/or the local situation, which varies from country to country. **Countries with important nuclear power programmes tend to dismantle obsolete nuclear power plants immediately in order to use the sites for the construction of new facilities.** Decommissioning costs associated to a nuclear power reactor include, among other elements, the following components: a) dismantling the nuclear power plant; b) waste treatment; c) disposal of all types of radioactive waste; d) security; e) site cleanup; and f) project management. Dismantling and disposal represents a major share, each accounting for approximately 30% of the total decommissioning cost. **The average cost estimates are in the range of US$320 to US$420/kWe for most nuclear power reactor types**. In general, GCR are more expensive to decommission than water-cooled reactors, because they must dispose of large quantities of graphite. The cost for dismantling the older, smaller 160 MWe nuclear power reactor at Zorita nuclear power plant in Spain has recently been estimated by Union Fenosa at €850 Euro/kW and the dismantling of the German pla nt Obrigheim was estimated at € 1,400/kWe.

**National policy may influence decommissioning strategy to be selected either directly or indirectly.** If a national decommissioning policy is reflected in legislation, direct influence is exerted by way of the legal framework, **and the extent of this influence depends on the degree to which laws are either prescriptive or enabling**. **Policies and regulations vary from country to country and affect some or all of the issues associated with public and occupational health and safety, environmental protection, the definition of end-state, waste management, reuse and recycling of materials, arrangements for release of materials from regulatory control and matters concerning regional development.** However, national policy may influence decommissioning strategy indirectly. In this case, influence may be by way of national policies that are not concerned specifically with the process of decommissioning but may be to it by way of wider issues. These may include matters such as the future use of power, economic and societal issues associated with the effects of shutting down industrial facilities, safety issues and broad financial issues concerned with costs, the available funds and the timing of their deployment. Although perhaps not associated national policy, as such, the prospects for continued availability of qualified and trained may also have such an influence. [120]

### Country Spec

#### 1: Depth – without specifying a country, there’s no way to have an in-depth debate about the morality of nuclear power. Relevant background context like the political climate, renewable development, other energy resources available, a country’s wealth, etc. play a role and we can debate those factors only if we limit the scope of the rez.

#### 2: Clash – France has 80% nuclear and probably should have nuclear power, but Iran probably shouldn’t. These vastly different examples make it impossible to draw a general conclusion when evaluating the Iran aff vs. the France DA. There’s no clash and it’s impossible to evaluate.

#### 3: Stable ground – without specifying, we don’t know what the aff defends. All countries, hypothetical countries, countries in general, or on balance? Only my interp solves this ambiguity so the aff can’t delink neg DAs.

## NEG—T



### T-Plural

#### The aff must defend more than one country prohibits the production of nuclear power

Google n.d. “country” accessed 8/10/16 google.com/search?num=40&safe=off&espv=2&q=countries+definition&oq=countries+definition [Premier]

**plural noun: countries 1. a nation with its own government, occupying a particular territory.**

#### Violation – aff defends one country

#### 1: Predictability – my interp at least doubles the chance the neg has prep and blocks against the aff. Key since the topic is underlimiting – they can pick any of 200 countries to avoid neg prep.

#### 2: Grammar – only my interp is grammatical since it respects the plural form of the word country. Most predictable on common usage too – no one would look at your plan and think it proves countries ought to prohibit. Grammar is a constraint – even if it’s better to debate something else, grammar tells us what the res actually says.

#### 3: Ground – you still get all your ground since you can read your aff but with ONE more similarly-situated country. But better balance since your ground is massively better on your interp.

### T-Nuke Power=energy

#### Nuke power = energy produced by atomic reaction

West Law 08

West's Encyclopedia of American Law, edition 2. Copyright 2008 The Gale Group, Inc. All rights reserved. <http://legal-dictionary.thefreedictionary.com/Nuclear+Power> [Premier]

A form of energy produced by an atomic reaction, capable of producing an alternative source of electrical power to that supplied by coal, gas, or oil.

### T- No Weapons

#### nuclear weapons are distinct—they’re not electricity

Corrice 16

[--includes a Bachelors degree in Nuclear Technology and Environmental Sciences. I also have a Masters degree in Philosophy. I am a member of the American Nuclear Society and Scientists for Accurate Radiation Information; “Uranium is not an explosive,” Hiroshima Syndrome, 2016] [Premier]

Uranium is not an explosive In January, 1957, Walt Disney Studios released the animated short film Our Friend the Atom. It was an instant sensation, shown in theaters and classrooms across America. In it, a nuclear chain reaction was demonstrated using ping-pong balls and mousetraps. A large box was lined across the bottom with mousetraps loaded with two ping-pong balls each. One additional ball was tossed into the box, tripping one mousetrap, sending two other balls flying to trip other traps, and soon all the mousetraps were tripped with ping-pong balls flying everywhere. This was a very good demonstration of how the nuclear chain reaction worked for bombs, but it didn’t work for reactors. The reason is two-fold; first, the Uranium used in bombs is highly concentrated in Uranium isotope 235 (U-235) while reactors use only a very dilute, non-explosive concentration of U-235. Bomb grade Uranium (U-235) is so concentrated (>90%) that the high-energy neutrons released from each initial fission immediately causes just enough additional fissions to make the "prompt, supercritcal" explosion happen. However, the neutrons from fresh fissions are about a million times too energetic to produce a chain reaction in low-concentration reactor fuel. This was either unknown to Disney’s staff, or considered too technical for the audience. Whatever the reason, the mousetrap and ping-pong ball demonstration resulted in misleading the public's understanding of chain reactions in bombs and reactors. They seemed to be the same. But, they are not. It’s the wrong kind of Uranium Naturally-occurring Uranium cannot be used to make a bomb because it is not a natural explosive. Natural Uranium is a uniform mix of two isotopes, U-238 and U-235. Natural Uranium is 99.3% U-238 and 0.7% U-235. U-238 is such a poor neutron-induced fissioner, under any conditions, that we can correctly say it won't experience a chain reaction in any way,shape, or form. It’s the U-235 that makes the nuclear chain reaction possible because it is a very good fissioner, relative to U-238. However, U-235 doesn't fission very much when bombarded by high energy neutrons which is the kind of neutrons released out of the fission. In order to make a bomb core that will actually explode, the U-235 concentration must be increased to in excess of 90% to produce enough immediate fissions to make an explosion possible. This highly concentrated form of U-235 is necessary for a detonation...anything less won't work. This is in no way a secret, at least not any more. The U-235 concentration needed to make a bomb that works can be easily found in library encyclopedias and numerous websites on the internet. Regardless, anything less than a 90% U-235 concentration, and you can’t make a weapon small enough for a deliverable bomb…even if launched by a powerful rocket. In theory, a ridiculously enormous amount of Uranium with about a 20% U-235 concentration is possible, but in no way realistic; the bomb would be bigger in diameter than the Empire State Building is tall. Less than a 20% concentration of U-235 and a nuclear explosion is absolutely impossible, no matter how much of the material is amassed. However, this is the reason that 20% "enriched" Uranium and Plutonium are defined as "weapon's grade". The 1-3% U-235, and/or Pu-239 in reactor fuels cannot explode, regarless of how much is amassed. Power plant reactors never use Uranium with a high U-235 concentration, in order to keep fuel costs manageable. Back in the 1960s, early power plant reactors used Uranium with concentrations of U-235 in the 3-5% range. These were relatively small power plants using cores so small that a concentration increase of U-235 from the natural level was needed to sustain a chain reaction sufficient to produce electricity. As plants got bigger and the reactor cores larger, the U-235 concentrations dropped to between 1 and 3%. The precious few nuclear power plants completed in America after the Three Mile Island accident were quite large, and did not need the natural abundance of U-235 changed much at all. They used what is essentially natural Uranium, but those levels have been increased in order to allow longer in-core lifetimes between refuelings. In all cases, the concentration of U-235 found in any reactor fuel is way-too dilute to produce anything like a nuclear explosion. No matter how severe a reactor accident that can possibly be imagined, the fuel cannot explode like an atomic bomb. How can an explosive be made out of something that is not itself an explosive? Perhaps the best commonly-known example is Nitrogen. About 79% of each breath you take is Nitrogen. No one would mistake it for an explosive. It is the wrong form of Nitrogen to detonate. However, chemically transformed from a gas into another, non-gasseous molecular structure, the Nitrogen becomes the primary active ingredient in Nitroglycerine and Tri-Nitro Toluene (TNT), which are unquestionably explosive. Devastating explosives can be made out of Nitrogen, which is not-itself an explosive. With Uranium, the natural form of the element must be metallurgically transformed into a highly un-natural type of Uranium in order to become the primary ingredient in a nuclear bomb. A terrible explosive can be made out of Uranium, which is not-itself an explosive. Power plant reactors use a very dilute concentration of U-235 in their fuel, a level which can never cause a nuclear detonation. It’s not even weapon's grade. Power reactors cannot explode like a nuclear bomb.

### T-Power=fission

#### Nuclear power is the

Energy.gov 16

[“Nuclear Power,” USFG] [Premier]

Nuclear power is the use of sustained nuclear fission to generate heat and electricity. Nuclear power plants provide about 6 percent of the world's energy and 13–14 percent of the world's electricity.

#### Several steps to the nuclear fuel process

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

**Any nuclear fuel cycle consists of several major steps, including the mining and milling of uranium ore, its enrichment, fuel fabrication, irradiation in a reactor, and the optional waste treatment methods employed after irradiation and before the final disposal of the waste.**

### T-Implementation

#### Careful reflection on nuclear power requires discussing opportunity costs, specifying different technological methods of nuclear energy

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

Obviously, nuclear power has serious disadvantages too, one needs only think of the accident risks—the unfolding disaster in Japan speaks for itself—there are security concerns in relation to the proliferation of nuclear weapons and, indeed, there is the matter of long-lived waste. In this paper, **I do not intend to get involved in the general desirability debate.** I assert that **when carefully reflecting on the desirable energy mix** for the future, **one needs to reflect on nuclear energy in relation to other energy sources.** In so doing, **one should first be aware of the distinctive aspects of nuclear technology, such as the problems that long-lived waste poses to future generations. We should furthermore include different technological methods in the production process (or fuel cycles) as these methods deal differently with the distinctive aspects**.

### T-Prohibit Allows Research/Mining

#### Australia prohibits power but allows research and mining

WNA 15

World Nuclear Association, submission to the South Australian Nuclear Fuel Cycle Royal Commission, ISSUES PAPER THREE – ELECTRICITY GENERATED FROM NUCLEAR FUELS, <http://world-nuclear.org/getmedia/ac94e701-1980-4af4-a5b1-c5215fc5f385/WNA-Nuclear-Fuel-Cycle-Royal-Commission-issues-paper-3-submission-final.pdf.aspx> [Premier]

The World Nuclear Association is grateful for this opportunity to answer in full the Royal Commission’s questions regarding the potential development of nuclear energy in South Australia. We note that for this to be possible there must first be changes at the national level. Regardless of other outcomes, we hope to see the Commission recommend the revision of **the federal Environment Protection and Biodiversity Conservation Act of 1999 and Australian Radiation Protection and Nuclear Safety Act of 1998**, both of which **currently prohibit nuclear power** plants and other nuclear fuel cycle facilities from being constructed **in Australia. [but] In many ways Australia is already a nuclear nation.** **It is home to one of the most advanced nuclear research** and medical **facilities in the world** at Lucas Heights **and is also one of the world’s largest suppliers of uranium.** Many advanced nuclear technologies have also been developed with the assistance of Australian scientists. The country has a long and proud nuclear history and is well placed from a technical, regulatory and social standpoint to start a nuclear power program

### T-Plans Good ☺

#### Here’s an author using “prohibit” in the context of the res to mean something smaller than a total ban on all processes

Nuclear Regulatory Commission 99

"Nuclear Regulatory Commission Issuances: Opinions and Decisions of the Nuclear Regulatory Commission with Selected Orders, Volume 49" 1999. Google Books. [Premier]

**In addition to requesting that the NRC take steps to prohibit nuclear power plants from operating with fuel cladding damage, the report specifically requests that plants be shut down upon detection of fuel leakage**, and that safety evaluations be included in plant licensing bases that consider the effects of operating with leaking fuel to justify operation under such circumstances.

## NEG—Warming DA



### UQ

#### Squo energy use doubles emissions and causes warming-low carbon tech is key

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Current trends in energy supply and use are unsustainable. Without decisive action, energyrelated emissions of carbon dioxide will nearly double by 2050 and increased fossil energy demand will heighten concerns over the security of supplies. We can change our current path, but this will take an energy revolution in which lowcarbon energy technologies will have a crucial role to play. Energy efficiency, many types of renewable energy, carbon capture and storage, **nuclear power** and new transport technologies will all require widespread deployment if we are to sharply reduce greenhouse gas (GHG) emissions. **Every major country and sector of the economy would need to be involved. The task is urgent** if we are to make sure that investment decisions taken now do not saddle us with sub-optimal technologies in the long term.

#### Warming is skyrocketing now-drastic action key-just cutting fossil fuels won’t work.

Gottfried 6 [Kurt; "Climate Change and Nuclear Power." Social Research: An International Quarterly 73.3 (2006): 1011-1024. Project MUSE. Web. 8 Aug. 2016. <https://muse.jhu.edu/>.] [Premier]

I now turn to the climate issue. Here it is important to understand that our global environment is a **delicately balanced system.** Many large forces that move the system in different ways strike this balance. As a result, if the mean temperature—the average over the whole globe and over a number of years—changes by only a couple of degrees, the system can undergo **dramatic change.** For the same reason, there are considerable uncertainties in the temperature change that would be caused by a given amount of additional greenhouse gasses. To establish concrete policies for meeting the climate challenge one needs a credible quantitative target for cutting carbon emissions. Setting such a target, given our state of knowledge, is not an exercise in pure science, although science provides indispensable guidance. Political judgments must be made. Given what is at stake, it is essential to exercise caution and prudence. All this has led the British government, the European Union and other major actors to adopt the target of a global mean temperature rise of no more than 1.2° C (or 2.1° F) above today’s, which translates into a CC>2 com position of the atmosphere no greater than by about Climate Change and Nuclear Power 1013 a third above the current level (Avoiding Dangerous Climate Change, 2005). To achieve this goal will require industrialized countries like the United States to reduce annual emissions by 60 to 80 percent by midcentury! Obviously, this is a huge challenge. Furthermore, deep cutting would have to continue during the rest of the century because CO2 remains in the atmosphere for so long. What is there already would produce considerable warming **even if we could, today, halt all further growth in the use of fossil fuels.**

#### Nuclear power will reduce carbon emissions in the short term but will be supplanted by renewables

Chakravorty 09 [Ujjayant Chakravorty, Professor of Economics at Tufts University and Fellow at the Toulouse School of Economics and CESifo, “Can Nuclear Power Supply Clean Energy in the Long Run? A Model with Endogenous Substitution of Resources,” Technical report, University of Alberta, Department of Economics, 2009] [Premier]

This paper applies a model with price-induced substitution across resources to examine the role of nuclear power in reducing global warming. The cost of fossil fuels and uranium, the main input in nuclear power generation, rises with depletion. The main insight is that nuclear power can help us switch quickly to carbon free energy, but in the long run, large scale adoption of nuclear power will be hindered by the rising cost of uranium and the problem of waste disposal. Only significant new developments such as the availability of new generation nuclear technology that is able to recycle nuclear waste may lead to a steady state where nuclear energy plays an important role. If expansion of nuclear capacity occurs at historical rates, uranium producers could engage in cartel-like behavior since the ore is found mainly in four countries, fewer than for crude oil.24 These results are similar to recent engineering studies of the potential for nuclear power (MIT, 2003). In the long run, renewable energies such as biomass and wind become economical and supply a major portion of energy. But significant supplies also come from clean coal technologies. The availability of new nuclear technologies such as Fast Breeders reduces the dependence on clean coal. Meeting carbon concentrations of 550 ppm is modestly costly but a 450 ppm target implies a rapid ramp-up in terms of clean energy use in the near term (by 2050). This significantly raises the cost to the economy. The cost of carbon jumps up from $18 to $150/ton in 2050. This is somewhat lower than predictions by other studies such as the DICE model of Nordhaus (2007) which predicts a 450 ppm carbon price of $250/ton in 2050.25 Going from a freeze on further expansion of nuclear power to a continued expansion of nuclear power at historical rates, the shadow price of carbon declines by almost 50%. This suggests that political constraints on continued expansion of nuclear power are likely to result in a significantly higher cost of reducing carbon. However this price is not sensitive to whether new nuclear technologies such as fast breeders become available or not, since these technologies play a role in the distant future. The shadow price of carbon plays an important part in determining which abatement options may be feasible as well as the size of a global permit market. Lower carbon prices may suggest that such a market may be smaller than expected, with lower benefits relative to no trading. The damage to economies that may be potential buyers of carbon, such as the United States or China, may be smaller than currently estimated. Similarly, potential benefits to sellers of permits such as Russia and Ukraine may be correspondingly lower. The model results are quite robust to changes in cost parameters. However, the results are sensitive to the choice of the discount rate. A lower discount rate favors capital intensive technologies with relatively low operation and maintenance costs such as wind power. Renewable energy technologies become economical earlier leading to a lower cost of carbon and lower aggregate emissions. Across-the-board higher learning rates also benefit technologies such as solar energy because they have a lower floor cost. Nuclear power quickly becomes redundant in this scenario.

### Link

#### **Empirical data from France proves that nuclear power reduces CO2 emissions.**

Iwata 10 ["Empirical Study On The Environmental Kuznets Curve For CO2 In France: The Role Of Nuclear Energy"; 2010. Sciencedirect.Com; Accessed August 8 2016; http://www.sciencedirect.com/science/article/pii/S0301421510001941] [Premier]

Based on cointegration analysis and a Granger causality test, our estimation results show that the EKC for CO2 emissions in France is proven, and the effects of nuclear energy on CO2 emissions are significantly negative. The causality tests confirm the uni-direction running from income and nuclear energy to CO2 emissions. The estimated results show that the turning point in the relationship between income and CO2 emissions is within the sample period. To check for robustness, our study estimates the model, adding trade, energy consumption or urbanization in addition to income and nuclear energy. While the effects of trade, energy consumption or urbanization are insignificant, the EKC for CO2 is still satisfied, and the effects of nuclear power are also significantly negative.

#### **Nuclear power decreases CO2 in the short and long run.**

Iwata 10 ["Empirical Study On The Environmental Kuznets Curve For CO2 In France: The Role Of Nuclear Energy"; 2010. Sciencedirect.Com; Accessed August 8 2016; http://www.sciencedirect.com/science/article/pii/S0301421510001941] [Premier]

From the estimation results, we find evidence supporting the EKC hypothesis for the case of France. The stability tests also indicate that estimated models are stable over the sample period. The impact of nuclear energy on CO2 emissions is shown to be significantly negative in both the short-run and long-run. Our results indicate that trade and urbanization are not statistically significant in both the long-run and short-run. On the impact of energy consumption on CO2 emissions, unlike previous studies in the case of France, we only find evidence of statistical significance in the short-run, but not in the long-run.

#### **Methodology.**

Iwata 10 ["Empirical Study On The Environmental Kuznets Curve For CO2 In France: The Role Of Nuclear Energy"; 2010. Sciencedirect.Com; Accessed August 8 2016; http://www.sciencedirect.com/science/article/pii/S0301421510001941] [Premier]

Our study uses the annual data spanning from 1960 to 2003 for estimation. This sample is chosen based on the availability of all data. CO2 emissions (co2) are measured as metric tons per capita. Real GDP (y) is GDP per capita in constant local currency. Electricity produced from the nuclear source (nuc) is the percentage of the total electricity produced. Trade (tr) is the total trade as the percentage of GDP. Per capita energy use or consumption (en) is measured as kg of oil equivalent per capita. Urbanization rate (urb) is measured as the percentage of urban population in the total population.

#### **Nuclear Power key to Prevent Warming**

Magill 15 [Bobby; Senior Science Writer for Climate Central; Scientific American; 1/30/2015; “Nuclear Power Needs to Double to Curb Global Warming”; <http://www.scientificamerican.com/article/nuclear-power-needs-to-double-to-curb-global-warming/>; [PREMIER]]

The International Energy Agency and the Nuclear Energy Agency suggest in a report released Thursday that nuclear will have such a significant role to play in climate strategy that nuclear power generation capacity will have to double by 2050 in order for the world to meet the international 2°C (3.6°F) warming goal.

With fossil fuels growing as sources of electricity across the globe, the IEA sees nuclear power as a stable source of low-carbon power helping to take polluting coal-fired plants offline.

To accomplish the needed CO2 emissions cuts to keep warming no greater than 2°C, the IEA says global nuclear power generation capacity needs to increase to 930 gigawatts from 396 gigawatts by 2050. With nearly 100 nuclear reactors, the U.S. has more nuclear power plants than any other country, representing 105 gigawatts of production. France, Japan, Russia and China round out the top five countries using nuclear power.

Globally, nuclear energy is already making a comeback with 72 nuclear reactors now under construction worldwide, mainly in Asia.

“This marked the greatest number of reactors being built in 25 years,” IEA Executive Director Maria van der Hoeven said in a statement. “Nuclear energy also remains the second-largest source of low-carbon electricity worldwide. And, indeed, if we are to meet our collective climate goals, nuclear energy is critical.”

All forms of low-carbon energy must be employed to reduce global greenhouse gas emissions, she said.

That conclusion is consistent with the Intergovernmental Panel on Climate Change’s findings last year that global carbon dioxide emissions need to be capped at 450 parts per million in order to prevent warming greater than 2°C, Robert N. Stavins, director of the Project on Climate Agreements at Harvard University and a drafting author of the IPCC’s Working Group III Report, said.

“It is virtually inconceivable that the 2 degree or 450 parts per million target as a cap can be achieved in this century without a variety of factors, among which are substantially greater reliance on nuclear power than current trajectories would suggest,” Stavins, who is unaffiliated with the IEA’s report, said.

Charles Kolstad, professor of economic policy research at Stanford University, suggested the IEA’s conclusions may be too strident.

“Nuclear is not necessary to meet any target except the most stringent,” he said. “The IPCC relies heavily on CCS (carbon capture and storage). Nuclear would certainly help, though.”

That’s because global power demand is growing and nuclear is a good alternative to coal, the main source of power in parts of the world where cheap natural gas is unavailable to replace coal, he said.

The IEA said nuclear reactor safety issues raised by Fukushima can be addressed by strong regulations, independent regulators, a culture of safety surrounding nuclear plants and the development of new safety technology, the report says.

#### Nuclear power k2 lower emissions

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Nuclear power is the largest source of low-carbon electricity in OECD countries, with an 18% overall share of electricity production in 2013 and second at global levels with an 11% share. The updated vision for the 2014 Nuclear Roadmap – based on the 2 degrees Celsius (°C) scenario (2DS)1 of Energy Technology Perspectives: Scenarios and Strategies to 2050 (IEA, forthcoming 2015) – sees nuclear continuing to play a major role in lowering emissions from the power sector, while improving security of energy supply, supporting fuel diversity and providing large-scale electricity at stable production costs. z In the 2D scenario, global installed capacity would need to more than double from current levels of 396 gigawatts (GW) to reach 930 GW in 2050, with nuclear power representing 17% of global electricity production. Although lower than the 2010 Roadmap vision of 1 200 GW and 25% share of generation, this increase still represents a formidable growth for the nuclear industry.

#### Nuclear power k2 solve

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Nuclear safety remains the highest priority for the nuclear sector. Although the primary responsibility for nuclear safety lies with the operators, regulators have a major role to play to ensure that all operations are carried out with the highest levels of safety. Lessons learnt from the Fukushima Daiichi accident have emphasised that regulators should be strong and independent. Safety culture must be promoted at all levels in the nuclear sector (operators and industry, including the supply chain, and regulators) and especially in newcomer countries. z Governments have a role to play in ensuring a stable, long-term investment framework that allows capital-intensive projects to be developed and provides adequate electricity prices over the long term for all low-carbon technologies. Governments should also continue to support nuclear research and development (R&D), especially in the area of nuclear safety, advanced fuel cycles, waste management and innovative designs. z Nuclear energy is a mature low-carbon technology, which has followed a trend towards increased safety levels and power output to benefit from economies of scale. This trajectory has come with an increased cost for Generation III reactors compared with previous generations, but this should also lead to better performance and economics for standardised Nth-of-a-kind (NOAK) plants, although this has yet to be confirmed.

#### Nuclear empirically reduces emissions when replacing other methods

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Nuclear energy currently contributes to a reduction of CO2 emissions from the power sector of about 1.3 to 2.6 gigatonnes (Gt) of CO2 every year, assuming it replaces either gas- or coal-fired generation. It is estimated that since 1980 the release of over 60 Gt{onnes} CO2 has been avoided thanks to nuclear power.5 The contribution of nuclear energy to decarbonising the electricity sector 5. The avoided CO2 emissions were calculated by replacing nuclear generation by coal-fired generation. would result in annual CO2 emission reductions of 2.5 Gt CO2 in the 2DS compared with the 6DS (see Figure 5). Globally, **this represents 13% of the emissions reduction needed** in the power sector with the contribution in different regions varying from as high as 24% in the Republic of Korea to 23% in the European Union and 13% in China. Nuclear clearly plays an important role in providing reliable, low-carbon electricity in most regions of the world.

#### Nuclear power’s the only route to curb emissions-expert testimony

Harvey 12[Fiona Harvey, 5-3-2012, "Nuclear power is only solution to climate change, says Jeffrey Sachs," Guardian, https://www.theguardian.com/environment/2012/may/03/nuclear-power-solution-climate-change] [Premier]

Combating climate change will require an expansion of nuclear power, respected economist Jeffrey Sachs said on Thursday, in remarks that are likely to dismay some sections of the environmental movement. Prof Sachs said **atomic energy was needed because it provided a low-carbon source of power,** while renewable energy was not making up enough of the world's energy mix and **new technologies** such as carbon capture and storage **were not progressing fast enough. "We won't meet the carbon targets if nuclear is taken off the table,"** he said. He said coal was likely to continue to be cheaper than renewables and other low-carbon forms of energy, unless the effects of the climate were taken into account. "Fossil fuel prices will remain low enough to wreck [low-carbon energy] unless you have incentives and [carbon] pricing," he told the annual meeting of the Asian Development Bank in Manila. A group of four prominent UK environmentalists, including Jonathon Porritt and former heads of Friends of the Earth UK Tony Juniper and Charles Secrett, have been campaigning against nuclear power in recent weeks, arguing that it is unnecessary, dangerous and too expensive. Porritt told the Guardian: "It [nuclear power] cannot possibly deliver – primarily for economic reasons. Nuclear reactors are massively expensive. They take a long time to build. And even when they're up and running, they're nothing like as reliable as the industry would have us believe." But Sachs, director of the Earth Institute and professor of sustainable development at Columbia University in the US, said the world had no choice because the threat of climate change had grown so grave. He said greenhouse gas emissions, which have continued to rise despite the financial crisis and deep recession in the developed world, were "nowhere near" falling to the level that would be needed to avert dangerous climate change. He said: "Emissions per unit of energy need to fall by a factor of six. That means electrifying everything that can be electrified and then making electricity largely carbon-free. It requires renewable energy, nuclear and carbon capture and storage – these are all very big challenges. We need to understand the scale of the challenge." Sachs warned that "nice projects" around the world involving renewable power or energy efficiency would not be enough to stave off the catastrophic effects of global warming – a wholesale change and overhaul of the world's energy systems and economy would be needed if the world is to hold carbon emissions to 450 parts per million of the atmosphere – a level that in itself may be inadequate. "We are nowhere close to that – as wishful thinking and corporate lobbies are much more powerful than the arithmetic of climate scientists," he said.

#### Closing nuclear plants leads to increased fossil fuel use

Roston 15 [Eric Roston, writer for Bloomberg, “Why Nuclear Power Is All but Dead in the U.S.” Bloomberg News, April 15, 2015, <http://www.bloomberg.com/news/articles/2015-04-15/soon-it-may-be-easier-to-build-a-nuclear-plant-in-iran-than-in-the-u-s->] [Premier]

\*ellipsis from original text

Say what? The U.S. achieved fission before anybody else. It learned before anybody else to control nuclear power, train it to boil water, to spin turbines, to generate electricity. There are 99 nuclear reactors across the U.S., providing about 19 percent of Americans’ electricity. They account for about 30 percent of global nuclear capacity. No new U.S. nuclear plant has opened since Watts Bar 1, in Tennessee, in 1996. And 20 more may close, “which makes no sense at all, from a common sense standpoint, or anything else,” Gregg said. Not because there’s something dramatically wrong with them. They’re victims of the success of natural gas, a shortage of power lines, eternal environmental enmity, and the eternally unresolved issue of where to store nuclear waste. Natural gas has driven power prices lower than nuclear’s operating costs. If bad economic trends persist for nuclear, more and more of the U.S. fleet may retire in coming years, leaving the communities they serve at the tyranny of plants powered by fossil fuels. That’s a huge problem for climate activists who oppose nuclear power. Nuclear plants would likely be replaced by natural gas or (shudder) coal plants, which would drive up carbon dioxide emissions. It’s happening in Germany, where the government decided to abandon nuclear power after the March 2011 catastrophe at Fukushima. In Vermont, where a 600-megawatt plant closed in December, carbon-free nuclear power is being replaced largely by fossil-powered electricity from the grid. That makes nuclear an energy source that could help nations meet the goal of keeping global warming below 2 degrees Celsius. We're already about 0.8 degree there. “I can’t see a scenario where we can stick to the 2 degree warming commitment ... without a substantial contribution from nuclear,” said Michael Liebreich, the founder of Bloomberg New Energy Finance, at its annual conference yesterday. “We have got to figure out nuclear if that envelope is to mean anything to us."

#### Nuclear energy is the only alternative to coal

Abrams 13

[Lindsay, “Is nuclear power the only real alternative to coal?” The Atlantic, Aug 21 2013] [Premier]

America’s reliance on its “black hope” has been building since the late 1970s, argues Times columnist Eduardo Porter, and wind turbines and solar panels won’t be enough to convince us to leave the rest of our coal in the ground. Even though we know that fossil fuels are destroying the environment, there’s no ready alternative to fuel the sort of paradigm shift needed to curb carbon emissions. “The arithmetic is merciless,” according to Porter’s economic analysis: The United States Energy Information Administration forecasts that global energy consumption will grow 56 percent between now and 2040. Almost 80 percent of that energy demand will be satisfied by fossil fuels. Under this assumption, carbon emissions would rise to 45 billion tons a year in 2040, from 32 billion in 2011, and the world would blow past its carbon ceiling in fewer than 25 years. “We have trillions of tons of coal resources in the world,” Vic Svec, spokesman for Peabody Energy, told me. “You can expect the world to use them all.” The only way around this is to put something in coal’s place, at a reasonably competitive price. Neither the warm glow of the sun nor the restless power of the wind is going to do the trick, at least not soon enough to make a difference in the battle to prevent climate change. There’s only one such something, according to Porter, that really makes sense: nuclear power. It would be cheaper than coal, he cites a study as finding, and more capable of scaling up wind or solar power. He mostly brushes off natural gas, which is neither clean nor renewable, as a long-term solution. Porter cites the 2011 disaster at Fukushima as good reason for global opinion to have turned against nuclear power of late, although he fails to mention that two years later, the situation remains a crisis. Still, he finds reason to believe that the tide of public opinion may be turning: “Younger environmentalists don’t associate nuclear power with Chernobyl and the cold war,” he writes. “Studies have revealed it to be safer than other fuels.” He concludes: Still, the hurdles are substantial. There are fewer nuclear generators in the United States than in 1987. Just maintaining nuclear energy’s share of 19 percent of the nation’s electricity generation will require adding several dozen new ones. Each will take some 10 years and $5 billion to construct. If nuclear power is to play a leading role combating climate change, it should start now. What Porter is ultimately asking for is a mitigation of our expectations for a greener future. It’s time, he’s saying, that we give up the dream of wind and solar power for a more realistic — if less ideal — alternative.

## AFF/NEG Countries UQ



### Asia General

#### Asian countries catching up in nuclear development

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Bangladesh is also planning to start the construction of its first reactor by 2015. Thailand and Indonesia have well-developed plans but have yet to make a firm commitment, while Malaysia is currently studying the feasibility of developing an NPP. The Philippines, which began construction of a nuclear plant in the late 1970s (never completed), is suffering from electricity shortages and high electricity costs, and is still considering nuclear as a possible future option. Singapore is monitoring the progress of nuclear energy developments to keep its options open for the future. In these countries, SMRs could potentially offer an alternative to larger Gen III units, as they would be more easily integrated in small electricity grids. Strong expected electricity demand growth and stable electricity production costs are the main drivers for nuclear development in the region. For Viet Nam, Thailand and the Philippines, which import the majority of their energy needs, nuclear would help to improve energy security and reduce dependence on imported fossil fuels. For these newcomer countries, the development of the necessary nuclear regulatory infrastructure, a skilled nuclear workforce, financing, and public acceptance are major challenges to the development of nuclear energy. International collaboration to support the development of a regulatory infrastructure, as well as training and capacity building to develop local expertise, are needed.

### China

#### China production high now

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

The People’s Republic of China is the fastest growing nuclear energy market in the world. According to the “Mid- to Long-Term Nuclear Development Plan (2011-2020)” issued in October 2012, China aims to have 58 GW (net) in operation by 2020, and 30 GW under construction at that time. China’s nuclear energy programme began in the 1980s, and its first reactor started commercial operations in 1994. Of the 27 units currently under construction, eight are of Gen III design (four AP1000, two EPR, two VVER), 18 are of Gen II design, and one is a prototype reactor with Gen IV technology features. The country’s nuclear fleet is based on technology developed nationally as well as technologies transferred from Canada, France, Japan, the Russian Federation and the United States. Following the Fukushima Daiichi accident, China revised its targets for nuclear from 70-80 GW to 58 GW by 2020 with another 30 GW under construction. Safety requirements were also enhanced, and only Gen III designs will now be approved in China. The Hualong-1 and CAP1000 designs will represent the bulk of the new developments. The latter design is based on Westinghouse’s AP1000 design. China will deploy the technology domestically, including on inland sites, and hopes to begin exporting the technology with a larger version, the CAP1400, also being designed. China’s nuclear programme has evolved significantly in the last decade with more rapid development of domestic reactor designs and domestic supply chains. The country has made an impressive transition from importing nuclear technology to developing local capabilities that have already been exported. Local air pollution concern from coal-fired plants is one of the main drivers today of nuclear power development in China. Other key drivers include improved energy security, and stable and economic electricity production costs. With China’s impressive rates of economic development and continued urbanisation, the demand for electricity is expected to continue its rapid ascension. The attractive economics of nuclear power, stable base-load operations and siting near the main demand centres along the Eastern coast, combined with its environmental benefits, make it an attractive alternative to coal-fired power.

#### Despite Fukashima, China has continued full steam with its nuclear program

Nakano 13 [Jane Nakano, Fellow, Energy and National Security Program Center for Strategic and International Studies, “The United States and China: Making Nuclear Energy Safer,” Brookings Institute, July 2013] [Premier]

Since the beginning of this century, growing concern over climate change has pushed nuclear energy to the forefront of energy policy considerations across the world. The enormous growth in China’s energy demand over the last decade has made nuclear energy expansion an attractive option to address the country’s growing dependence on energy imports. What’s more, as a zero-carbon form of power generation, nuclear offers the simultaneous benefit of reducing reliance on coal and addressing rising concerns with environmental pollution and climate change. With the remarkable pace and scope of its domestic nuclear power program, China has quickly become a formidable force in the global nuclear energy industry. with the remarkable pace and scope of its domestic nuclear power program expansion. At the beginning of 2011, roughly 40 percent of reactor construction around the world was taking place in China, and it is poised to become the largest market in the coming decades. Hope of a global nuclear renaissance within some quarters, however, has evaporated since the nuclear power disaster in Fukushima, Japan in March 2011. The Fukushima accident had varying degrees of impact on nuclear power programs around the world, including that of China. With the exception of a few advanced economies with slower energy demand growth, the overall response from governments was not to scrap or severely limit nuclear energy in their respective national energy mix. Those countries, such as Germany, that wanted to move to a post-nuclear energy strategy seized the crisis to push forward. Those that wanted to expand nuclear power as a matter of domestic energy strategy were not going to abandon it because of one accident. Ultimately, Fukushima’s effect on global nuclear power programs was somewhat neutral—it neither set them back for decades nor boosted the prospects of a renaissance. In the case of China, its leadership decided to continue nuclear power expansion. But Fukushima had an undeniable effect on raising China’s concern over nuclear safety, just as it had also triggered a wave of safety inspections and prompted reevaluation of nuclear safety and accident mitigation capabilities around the world. What are the key effects of Fukushima on China’s nuclear energy plans and programs? Specifically, what efforts exist to address safety-related concerns in the context of the phenomenal pace of nuclear development in China? Moreover, what opportunities exist for China and the United States to collaborate on nuclear safety? The US nuclear industry has a wealth of operational experiences but is in decline due to stagnant domestic demand while China’s growing nuclear reactor fleet is short of human capital with rich operational experiences. These contrasting but complementary profiles bring synergies to strengthen bilateral cooperation in the area of nuclear safety.

#### China is looking to diversify its energy consumption away from coal

Nakano 13 [Jane Nakano, Fellow, Energy and National Security Program Center for Strategic and International Studies, “The United States and China: Making Nuclear Energy Safer,” Brookings Institute, July 2013] [Premier]

China’s robust energy demand, driven by continued economic and population growth, as well as massive urbanization trends of the last decade has elevated nuclear energy—along with renewable energy and natural gas—as a key energy source. For example, between 2001 and 2010, China’s energy consumption grew at three times the rate of the previous decade.1 Over the next decade, China’s primary energy consumption is expected to continue growing although it is forecast to begin slowing down beyond 2020.2 According to the International Energy Agency (IEA), China’s demand for energy is expected to account for roughly one-third of total global energy demand growth and nearly a quarter of total global energy demand by 2035.3 In China’s energy mix, coal is by far the dominant fuel and its predominance isn’t likely to wane in the foreseeable future (see Figure 2). For example, nearly 70% of China’s primary energy consumption and its electricity needs are met by coal.4 In contrast, nuclear energy plays a miniscule role in the total energy mix. With an installed capacity of just 13 gigawatts (GW), nuclear capacity now constitutes only 2% of total generation capacity. 5 Consequently, reducing reliance on coal is a priority in China’s broad energy strategy. As a technologically proven and relatively cheap source of electricity, nuclear energy has come to play a central role in China’s plan to diversify its fuel mix away from coal. Although the Chinese government approved the country’s first nuclear power plant decades ago in 1982,6 the sector only began to see dramatic acceleration during the 10th Five-Year Plan (FYP, 2001-2005), when China launched a concerted expansion of its nuclear sector and constructed four reactors.7 For a country whose civilian nuclear program took off only in the middle of the last decade, China has a remarkably ambitious expansion plan. That ambition was captured in the Medium- and Long-Term Nuclear Power Development Plan of 2007, which called for 40 GW of installed capacity by 2020, or about 5% of the total energy mix.8 One of the policy drivers for backing nuclear was the mandatory 20 percent energy intensity reduction target in the 11th FYP (2006-2010), which provided momentum for developing clean energy sources such as nuclear power. Similarly, the 12th FYP (2011-2015) also includes several, arguably stronger, policy drivers that supports nuclear development. Specifically, this FYP calls for a 16% reduction in energy intensity, raising non-fossil energy to 11.4% of total primary energy use, as well as a 17% reduction in carbon intensity. Beijing’s stepped up efforts to reduce energy and carbon intensity made nuclear energy an industrial darling showered with strong policy support and state financial largess. It certainly did not hurt that Zhang Guobao, a long-time energy policymaker and the founding head of the National Energy Administration (NEA), was a big proponent of nuclear energy. By then, China already had over a dozen reactors in operation and a preliminary target of 40 GW capacity under the 2007 plan. But leading up to the Fukushima disaster, the Chinese government indicated that up to 86 GW by 2020 and as much as 500 GW by 2050 could be installed in the country.9 In addition to strong growth targets, the Chinese government announced in 2010 plans to develop several nuclear power industrial parks that would focus on developing the country’s nuclear supply chain as well as training and education.10 For example, China announced that it would begin developing a nuclear industrial park in Haiyan with a price tag of about $175 billion over ten years.11 Also, the China National Nuclear Corporation (CNNC) plans to spend up to RMB 500 billion ($81.5 billion) on nuclear power plant construction through 2015.12 Finally, as part of its civilian nuclear power program development, China has emphasized building capabilities to establish a fully integrated domestic supply chain—including “indigenous” nuclear fuel fabrication, self-reliance on design, and project management— with the objective of exporting next-generation nuclear technologies to a global marketplace. This is textbook industrial policy similar to what Japan and South Korea had done before, both of which export civilian nuclear technology.

#### Fukashima only marginally slowed the country’s drive to attain nuclear power

Nakano 13 [Jane Nakano, Fellow, Energy and National Security Program Center for Strategic and International Studies, “The United States and China: Making Nuclear Energy Safer,” Brookings Institute, July 2013] [Premier]

The Fukushima accident did not fundamentally alter China’s strategy for nuclear energy. Although the safety inspections in the aftermath of Fukushima temporarily slowed the pace of new builds and the 2015 target remained at the more realistic 40 GW,13 the country’s White Paper on Energy Policy in October 2012 reaffirmed the central role for nuclear energy in boosting the proportion of non-fossil fuels in the primary energy mix. The White Paper also included plans to “invest more in nuclear power technological innovations, promote application of advanced technology, improve the equipment level, and attach great importance to personnel training.”14 Even as China did not waver on its basic commitment to expanding nuclear energy, it was affected by Fukushima in one important aspect: raising concerns about the safety of its own plants. In the immediate aftermath of the emergency, Beijing in fact responded rather swiftly and decisively. It quickly halted approval of all new, planned reactor construction, a moratorium that also applied to the four approved units scheduled to start construction in 2011.15 Within a week of the Japanese disaster, Beijing ordered safety inspections of the country’s 11 operational reactors and the 26 that were already under construction—without bringing the units off-line or halting construction.16 These actions gave the government time to digest the lessons from Fukushima, especially with regard to reactor siting, plant layout, and containing radiation release.17 Two months after Fukushima, Chinese officials called attention to the need to upgrade the country’s emergency procedures at nuclear power plants as well as the need to improve coordination among government departments.18 By fall 2011, the reactor inspections were completed as well. But it took until May 2012 for Beijing to finally approve the reactor inspection report, which illuminated some shortfalls, including a lack of severe accident mitigation guidelines at some nuclear power plants, and called for improvements and remediation by 2015 in 16 areas that mainly concern emergency backup systems, flooding prevention, and earthquake related safety issues.19 Many of these concerns on nuclear safety found their way into the 12th FYP, approved around the same time as the reactor inspection report in 2012. It indicated that most Chinese nuclear plants met the current domestic safety regulations and are in line with International Atomic Energy Agency (IAEA) safety standards and requirements. 20 Highlighting the regulatory challenges associated with China’s deployment of multiple reactor technologies, designs, and safety standards, the plan recommended an investment of nearly RMB 80 billion ($13 billion) by 2015 to improve safety at both operating and incomplete reactors.21 In October 2012, the State Council officially approved the nuclear safety plan, which unequivocally stressed the importance of safety and called for domestic safety regulations to fully incorporate the internationally accepted level of safety standards by 2020.22 In addition to recommending that older reactors be phased out sooner and the level of nuclear safety related research and development be enhanced,23 the plan called for no nuclear incidents at or above the International Nuclear and Radiological Events Scale (INES) Level 3 throughout the Chinese civilian nuclear reactor fleet.24 China has not had nuclear events that exceed Level 2 on the INES—a globally accepted scale used by the IAEA for prompt and effective public communications. For example, the 1979 Three Mile Island nuclear incident in Pennsylvania, which entailed a partial core meltdown with minor levels of radiation release, was considered a Level 5 event on the INES scale. Finally, with the approval of the new safety plan came the lifting of the moratorium on new reactor construction. However, delays due to the moratorium and a heightened concern for overall safety led the Chinese government to settle on an installed capacity target of 58 GW by 2020, notably lower than what was previously speculated.

#### China has the demand for nuclear energy while the U.S. has the supply of nuclear specialists and infrastructure

Nakano 13 [Jane Nakano, Fellow, Energy and National Security Program Center for Strategic and International Studies, “The United States and China: Making Nuclear Energy Safer,” Brookings Institute, July 2013] [Premier]

Nuclear energy has become central to energy planning for China, the world’s most populous country whose pace and scope of economic growth and social transformation continue to put upward pressures on its national energy demand. Heavy dependence on energy imports and rising levels of greenhouse gas emissions are two of the negative externalities of this immense energy demand. Irrespective of the Fukushima disaster, these two macro factors drive political support for, and public and private investment in, the expansion of nuclear power generation in China. The gap between China’s physical nuclear capacity expansion and institutional capacity, however, warrants serious attention. This concern has fostered a range of cooperative engagements between the United States and China. In one sense, each country’s nuclear energy profile is quite different and, therefore, the logic for cooperation may not be readily evident. The United States is home to the largest nuclear reactor fleet in the world but with a declining demand while China is a nascent market with by far the most ambitious build-out targets in the world. Key characteristics of their nuclear energy profiles, however, provide a unique synergy and basis for growing bilateral cooperation. In fact, as the world continues to learn and process lessons of the Fukushima nuclear accident, the value of nuclear safety cooperation will only grow for the United States and China. The emerging commercial ties between the two countries began shifting the tone of relationship from some variation of “co-existence” to a nascent version of “mutual dependence” in the global nuclear energy sector. As American and Chinese businesses eye an increasing level of partnership in the global marketplace, US participants will have a bigger stake in preventing a low-probability, high-impact event like a nuclear accident in China, even if it did not involve a US-designed reactor. For bilateral cooperation to effectively enhance nuclear safety standards in the US and in China, the engagement needs to continue growing in a more multifaceted direction. In particular, human dimensions in nuclear safety warrant engagement at regulatory, technology, and commercial levels as each brings a unique and indispensable value that are also synergistic. Bilateral safety cooperation has for the past decades centered on regulatory issues and technology R&D primarily through government-to-government channels. But the introduction of a US-design reactor has opened up an opportunity for closer safety engagement at the industry level too. The US nuclear industry has decades of operational experiences and has a critical role to play in helping to enhance operational safety standards in China, just as US nuclear regulators have been fostering regulatory best practices through bilateral and multilateral engagements despite the limited level of funding and staff. Because operational expertise reside primarily with US utilities (and not government agencies or reactor vendors), greater exchange between US nuclear reactor operators and their Chinese counterparts would help facilitate homegrown efforts to enhance the safety culture in China.

#### China and the U.S. have cooperated bilaterally on nuclear safety before

Nakano 13 [Jane Nakano, Fellow, Energy and National Security Program Center for Strategic and International Studies, “The United States and China: Making Nuclear Energy Safer,” Brookings Institute, July 2013] [Premier]

A range of cooperation exists between the United States and China that aims to help strengthen nuclear safety in China, including the regulatory environment, human resources, and technology options. Bilateral cooperation has become even more central in the post-Fukushima environment, as the incident highlighted the urgent need for improving nuclear safety standards across the world. On the regulatory side, bilateral cooperation dates back to 1981, when the US NRC and China’s State Science and Technology Commission (and later the NNSA) signed a protocol on Cooperation in Nuclear Safety Matters.52 Over the following decades, the two sides cooperated on regulatory matters concerning civilian nuclear power plants such as assessment and inspection of construction, operation and decommissioning, emergency preparedness and radiation protection through the exchange of information and specialists, as well as collaborative research and joint seminars.53 Personnel training has been a key part of the bilateral cooperative arrangement. For example, the protocol makes numerous areas available to Chinese regulators for training purposes, including accompanying US inspectors on operating reactor and reactor construction inspections, participating in NRC staff training at its center in Tennessee, and inviting US nuclear safety experts to China to facilitate safety related discussions and understandings.54 Under the auspices of the NRC Assignee Program, which provides foreign regulators with hands-on training for six to twelve months, three Chinese regulators were trained in 2004 on matters such as regulatory requirements for digital instrumentation and control systems and reactor decommissioning process.55 In 2011- 2012, the NRC also hosted one Chinese inspector at its Region II for six months for hands-on training. 56

#### China intends to expand nuclear facilities into the ocean

Roulstone 5/10 [Tony Roulstone, visiting Professor of Nuclear Engineering at City University in Hong Kong, “Fukushima at sea? China wants a fleet of floating nuclear power plants,” CNN, May 10, 2016, <http://www.cnn.com/2016/04/28/opinions/china-floating-nuclear-reactors/>] [Premier]

China is planning to build nuclear reactors that will take to the sea to provide power in remote locations, possibly including the controversial man-made islands in the contested waters of the South China Sea. These small power plants will be built in Chinese shipyards, mounted on large sea-going barges, towed to a remote place where power is needed and connected to the local power grid, or perhaps oil rig. After pausing its nuclear program after the Fukushima disaster in Japan in 2011, China has since committed to a huge clean energy drive of wind, solar and nuclear generation, each as big as any in the world. The ambitious 2016 nuclear plan, formalized in China's 13th five-year plan in March, includes completing 58 power reactors by 2020 and building perhaps another 100 gigawatt-sized reactors by 2030, when China would become the largest nuclear power producer in the world. As part of this plan China is going to build up to 20 floating nuclear plants. The plans have raised eyebrows and many are asking: Why are they being planned? Will they be safe? Will they be economic?

#### Plans to expand into the South China Sea

Roulstone 5/10 [Tony Roulstone, visiting Professor of Nuclear Engineering at City University in Hong Kong, “Fukushima at sea? China wants a fleet of floating nuclear power plants,” CNN, May 10, 2016, <http://www.cnn.com/2016/04/28/opinions/china-floating-nuclear-reactors/>] [Premier]

But China's plans are much more ambitious. Construction of the first demonstration floating power plant is to start in 2017, with electricity generation to begin in 2020. The first plant of 20 that are planned may be destined for a site on Hainan Island in Southern China. China National Nuclear Company has been touring industry conferences for more than year explaining their small reactors and their applications and I visited the company in 2013. Reports suggest that oil and gas company China National Offshore Oil Corporation (CNOOC) is expected to use floating nuclear power plants for offshore exploration in the South China Sea. Also, it has been reported that these floating nuclear power plants are being considered for remote locations in the South China Sea, where China has been building man-made islands that are at the heart of disputes over ownership of what is expected to be oil-rich waters. China is using small modular reactors of 50 or 100MW in output, designed for alternative nuclear applications: industrial steam supply, desalination, district heating and remote power supplies. These small reactors are similar to ones being considered in U.S. and Europe as an alternative to the large reactors, which are the norm for power generation. They use the same proven water reactor technology as their larger cousins, but are small enough for much of plant to be built in factories, where costs are potentially much lower. Many of these reactor designs have all the main components inside a single large reactor vessel. In the case of the Chinese design, the pumps are mounted on the outside of the reactors, with the steam generators and the reactor core inside the vessel.

#### China and Russia are both expanding floating nuclear facilities

Dujmovic 1/21 [Jurica Dujmovic, columnist at Market Watch, “China and Russia plan to cover the oceans with floating nuclear power plants,” Market Watch, January 21, 2016, <http://www.marketwatch.com/story/china-and-russia-plan-to-cover-the-oceans-with-floating-nuclear-power-plants-2016-01-21>] [Premier]

In an effort to become the largest exporter of nuclear-energy technology, China has started building a reactor housed in a floating vessel, which is scheduled to be finished by 2020. If that sounds alarming, brace yourself: More than 100 additional nuclear reactors are planned for the next decade. The idea behind this “micro” 200-megawatt reactor (1 megawatt can power 1,000 homes) was to create a mobile energy source for offshore oil and gas exploration, as well as provide electricity, heating, and facilitate desalination for islands and coastal areas. I don’t know about you, but this certainly gets my Geiger counter beeping with unease. While some dismiss the danger, saying floating nuclear reactors aren’t all that dangerous — nuclear-powered submarines and aircraft carriers basically fit that description — the truth remains that it’s still a freaking nuclear reactor. History taught us the price we have to pay every time “highly unlikely” disasters happen, and now that another 100 of these will be built in the coming decade, the likelihood of yet another nuclear disaster will increase. A grim foreshadowing of what might happen is the horrific explosion at a chemical-storage facility in Chinese port Tianjin, where a blast eerily similar to a nuclear explosion took place in August. The accident killed 173 and injured 797, both from the shocking blast and the hazardous material that rained down on the area. The explosion generated seismic shock waves with an energy equivalent of 21 tons of TNT. The Chinese government did its best to cover up the disaster, silencing local and foreign journalists. Now imagine if it were a floating nuclear reactor. Nothing would change, apart from more dire consequences and even more censorship. Also looking to join the fun in the radioactive sun is Russia’s Akademik Lomonosov. This floating nuclear power plant will be ready for deployment in October. It’s going to be used to power port cities, industrial infrastructure, and oil and gas drilling rigs and refineries, which, according to Russian Deputy Prime Minister Dmitry Rogozin, will prove to be a great asset in Arctic exploration. The ship is 144 meters long with two reactors capable of producing 70 megawatts of electricity. Although they have their fair share of nuclear “mishaps,” the Russians are kicking their nuclear efforts up a notch: Akademik Lomonosov is only the first of many floating nuclear power plants that will be built. Vessels will also be available to rent. So far, 15 countries have shown interest in having these power plants for their own use. Here’s where things get scary: Imagine that out of hundreds of these floating nuclear power plants, just a dozen or so become targeted by terrorists or a military force. Regardless of the scenario, the resulting tragedy would be felt worldwide. Of course, I could be wrong. Perhaps we’re ushering in a sort of a nuclear renaissance, an age in which nuclear energy really proves to be a safer and better solution than fossil-fuel sources. But I doubt it. Humanity has proven that it understands the dangers of something only when the worst has already happened, and even then just for a brief while. Consider this chart:

#### China is lacking in safety and security regulations now

Zhou et al 11 [Yun Zhou, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, “Is China ready for its nuclear expansion?” Energy Policy Vol 39, 2011] [Premier]

The public’s top concern about nuclear energy since the 1986 Chernobyl accident has been nuclear safety, and the Chinese government’s top priority as it expands nuclear energy capacity has been to maintain its relatively clean nuclear safety record. Since the first nuclear plant was connected to the Chinese electricity grid in 1991, China’s nuclear power plants have operated without any major safety incidents. According to the 2008 NNSA annual report, no incident at an operational Chinese plant has risen to or above a level-one incident as classified by the IAEA (NNSA, 2008). In 1998, what nuclear safety officials described as a ‘‘welding problem’’ crippled the Qinshan I reactor for more than 12 months, yet the incident did not reach the severity of a level-two accident (BBC news, 1999). The CAEA and NNSA regularly inspect nuclear power plants to ensure that operators follow regulations and laws. On-site safety personnel typically comply carefully and strictly with safety regulations and standards, and all employees and managers have a strong awareness of and comply with regulations and laws. Yet, plant staffs might not necessarily appreciate the necessity of these regulations and laws. They also might not understand why regulations and standards are set and enforced, and fail to proactively improve the system.16 The planned nuclear expansion requires strong regulations in order to succeed and it also needs plant employees and managers to comply with regulations proactively, not reactively. This would effectively lower the already low number of accidents and reinforce the awareness that unsafe and insecure conditions are intolerable. An additional concern that could impact plant safety is China’s general poor construction quality, which has been a chronic problem in China. Poor planning, poor quality control, unqualified construction workers, corruption and bribes, and/or theft of materials may be to blame for widespread poor construction. As China’s nuclear power program expands it could designate civilian nuclear development as local infrastructure projects, rather than projects requiring national priority. This could lead to construction quality becoming an even bigger challenge. Nuclear experts are optimistic that China will be able to provide quality construction capacity to build two to three 1-GWe reactors every year, a rate that will match the Medium- and Long-term Plan’s goals. Furthermore, with more conventional construction companies, such as coal-fired power plants, beginning to work in nuclear area, compliance with the special safety needs and safety cultures of nuclear power plant construction is likely to become more difficult.17 If China wants to award licenses to the construction companies that have typically worked on the conventional island of nuclear power plant projects, the NNSA must ensure that these companies meet nuclear safety standards.

#### No legal infrastructure in place now

Zhou et al 11 [Yun Zhou, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, “Is China ready for its nuclear expansion?” Energy Policy Vol 39, 2011] [Premier]

China has not issued a major law to govern the use of nuclear energy and related activities (something akin to Japan’s Japanese Atomic Energy Basic Law). The one related statute is the Law on Prevention and Control of Radioactive Pollution, which was published by the Chinese State Environmental Protection Administration (SEPA) in 2003 and focuses on radioactive pollution and does not cover nuclear power safety and operation (SEPA is now known as MEP). Additionally, China’s State Council has released three major regulations related to nuclear energy: one that outlines ways to ensure the safe supervision and management of civilian nuclear facilities (HAF 001, 1986); one that addresses nuclear material control (HAF 501, 1987);18 and another that outlines emergency measures for accidents at nuclear power plants (HAF 002, 1993).19 These regulations might seem relatively complete, yet most current regulations and rules were issued at least a decade ago and need to be updated to meet new requirements. Existing Chinese nuclear regulations, rules, and standards have been adopted from international regulations and technical standards, such as those drafted by the IAEA and regulatory authorities in France and the United States. However, the regulatory and supervisory agency for civilian nuclear activities, NNSA, lacks independence and authority. First, NNSA is under the current MEP as a sub-division. Therefore, the NNSA is less powerful in China’s public administrative hierarchy system, while large state-owned nuclear companies are directly under the authority of the State Council. This setting could significantly limit the independence and authority of the agency when it regulates the nuclear industry. Second, NNSA lacks its own research and development branch that would allow it to set up its own safety technical standards and assess conditions that are not covered by existing regulations and laws. For example, it does not have capabilities to verify the safety design of purchased reactor technologies.20 Third, NNSA does not have enough staff to cope with the increasing demands of the rapid nuclear expansion. The agency has around 50 staff members, who manage 12 subdivisions, and around 100 staff members are assigned to 6 regional nuclear safety inspection offices (Chen and Li, 2007). The technical support center conducting technical analyses and inspections has currently around 200 staff member. With such a small nuclear safety workforce, NNSA will not be able to ensure the necessary regulatory enforcement of the expanding nuclear fleet. Although, recent proposals foresee to expand the NNSA workforce and its technical support center from the current 300–1600 in the next few years,21 its number of permanent staff per GWe installed capacity ratio is still significantly lower than the level in othermajor nuclear power countries. If China reaches 70 GWe installed capacity by 2020, the number of permanent staff per GWe installed capacity is approximately 22.9 staff/ GWe, only two thirds of the US Nuclear Regulatory Commission (NRC) level (38.6 staff/GWe in 2009) (NRC, 2009). With such a small nuclear safety workforce, it is doubtful whether the NNSA will be able to effectively ensure the necessary regulatory enforcement of nuclear safety for China’s fast expanding nuclear fleet.

#### Transparency is also an issue in China

Zhou et al 11 [Yun Zhou, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, “Is China ready for its nuclear expansion?” Energy Policy Vol 39, 2011] [Premier]

In the short run, China’s closed-loop decision making process might have an advantage in terms of efficiency, especially as the industry is beginning to grow and the public’s knowledge about nuclear energy is limited. The close relationship between the NDRC and important stakeholders (prestigious research and industrial units and the panel format for discussing important proposals) has effectively streamlined the policy and decision making process. Yet, public understanding of how the State Council and top-level officials assess the discussions and make decisions is still unclear. Since nuclear energy development will involve hundreds of billions of RMB in investment from a range of parties (e.g. a government planning agents, regulatory authorities, vendors, utilities, manufactures, construction contractors, research institutes, etc.), the decision making process will need to become more transparent in order to ensure that all stakeholders’ interests are met. Any discussion between top government agencies, the State Council, and/or NDRC should include all relevant parties and make space for a variety of opinions, studies, and proposals. Also, efforts should be made to avoid conflict of interests. For example, the current expert panel discussions organized by CIECC include experts that are involved in both the drafting process and the evaluation process of proposals for different projects. Involvement in both processes could cause conflict of interest.24 NDRC could create a special entity to manage an expanded decision-making process.

#### China has an insufficient number of college graduates to sustain a nuclear energy program

Zhou et al 11 [Yun Zhou, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, “Is China ready for its nuclear expansion?” Energy Policy Vol 39, 2011] [Premier]

Significant human resources will be needed to support the implementation of China’s aggressive nuclear energy policy. As a part of its military-related nuclear program in the 1950s, China had a strong nuclear technology workforce made up of technocrats, engineers, designers, and researchers. Most of these workers had prestigious Western academic backgrounds, which supported progress on the Chinese nuclear weapons program. China built on this foundation in the 1960s, as many of China’s major universities built nuclear science and engineering programs that trained students who helped design, construct, and manage China’s early nuclear energy program. China’s modest nuclear energy industry, however, could not sustain interest in the field. Low student demand forced many universities that had trained the initial nuclear workforce to cancel their nuclear engineering programs. Today, only a few Chinese universities have nuclear engineering programs, including Tsinghua University, Shanghai Jiaotong University, Harbin Institute of Technology, and XiAn Jiantong University. In addition, these universities have struggled to keep in the field those students who joined with an interest in nuclear engineering. According to 2004 data, major nuclear engineering programs admit approximately 372 undergraduate students and 145 graduate students every year. However, only about 30 percent of these students remain in the field (Guo, 2004). Many students admitted to nuclear engineering programs end up switching their majors. The Chinese nuclear industry is well aware of these problems and is attempting to ensure the training of the necessary workforce for future nuclear energy development.22 Universities are pitching in by launching new nuclear engineering programs. Some of these programs matriculate junior students from other engineering majors and offer one-year professional training programs focused on nuclear science and engineering. These students are often offered work in nuclear power plants directly after they graduate. Nuclear power plants pay competitive wages and offer excellent benefits in order to keep talent, yet it remains to be seen whether personnel who undergo such a short training program will be able to maintain current quality standards. These recruitment programs do not address the need for high-level research and development personnel to work on core areas, such as nuclear reactor design. If industry and university efforts fail, there is likely to be a severe imbalance between the supply and demand of capable personnel in China. A recent survey suggests that China will need 6000 nuclear engineering professionals to staff the nuclear expansion planned by 2020 (Li and Ding, 2006).

#### China is the global leader in nuclear

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**China in particular has become the global leader for new capacity in both nuclear and wind power. Forty percent of all reactors under construction are in China. The extent to which both technologies are expected to grow is unparalleled,** although the installed capacity for wind power, at roughly 45 GW, is currently more than four times that for nuclear (roughly 10 GW).23 (See Figure 14.) Even with a 3–4 times lower load factor, wind is likely to produce more electricity in China in 2011 than nuclear. China’s wind power growth is so dramatic that the country must continually raise its production targets, as they are repeatedly being met prematurely.24 China is not only a major implementer of wind technologies, but a global player in related manufacturing. In India, meanwhile, wind generation outpaced nuclear power already in 2009, according to data from the U.S. Department of Energy.25 **In the United States, no new nuclear capacity has been added since the Watts Bar-2 reactor in Tennessee was commissioned in 1996, after 23 years of construction.** Meanwhile, the share of renewables in newly added U.S. electricity capacity jumped from 2 percent in 2004 to 55 percent in 2009.26 And although Germany provisionally shut down seven of its reactors after the Fukushima disaster, if the remaining 10 units generate a similar amount of electricity as they did in 2010, then in 2011 for the first time ever renewable energy will produce more of the country’s power than nuclear. Four German states generated more than 40 percent of their electricity from wind turbines alone already in 2010.27 An analysis by the European Wind Energy Association (EWEA) shows that while more than 100 GW of wind and solar were added to the EU power grid between 2000 and 2010, nuclear generation declined by 7.6 GW, joining the rapidly declining trend of coal- and oil-fired power plants. (See Figure 15.)

#### Developing economies like China’s will triple energy demand over 20 years

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**Traditional energy forecasts anticipate rapid increases in energy demand, driven primarily by the need to fuel Asia’s growing economies, particularly in China and to a lesser extent in India.** The International Energy Agency assumes that, **if current policies continue, global energy demand will increase 47 percent by 2035. Based on this scenario, energy consumption in China will effectively triple,** whereas in the European Union and the United States it will increase about 4 percent.3

### France

#### France’s nuclear reactors have led to fewer emissions and better GDP per unit of energy

Moreno 11 [Joel Moreno, Bachelors of Arts in International Studies in Nuclear Engineering, “How the Progression of Nuclear Technology in French Culture Has Led to a More Sustainable Country,” A THESIS Submitted to Oregon State University, June 2011] [Premier]

Graphs of various issues concerning energy, Gross Domestic Product and pollution are presented below. Part of the challenge of comparing these two countries was establishing proper context. Superficially, the United States is much larger than France; beneath that reveals a bigger consumption. As seen in figure 1C, America has had substantially higher consumption rates. To begin comparison of sources, a graph of nuclear energy utilization is presented in Figure 2C. Nuclear power experienced a spike in percent of total usage after the 1970’s Oil Crisis as a result of the legislation passed. Along with overall electricity consumption, the United States consumes more oil in general than France. Graph 2C shows that at the onset, both countries used roughly the same percent of fossil fuels, coal and gas out of their total energy consumption. However, after the 1970’s, France has made an outstanding effort to limit this use, bringing it down to about 10%, whereas the United States has maintained it at roughly 70%. In terms of the environmental impact France is having, it remains wholly lower than the United States in terms of how much energy they consume. Figure 3C shows that their CO2 emissions dwarf that of France, and despite the spotty data, produce significantly less water pollution as well. The water pollutants considered are chemicals defined by the International Standard Industrial Classification, measured by biochemical oxygen demand. Furthermore, Figure 5 C shows that the amount of CO2 produced per kg of oil equivalent dropped significantly after France made the switch to nuclear power. Finally, comparing present day results in figures 6C and 7C, the United States produces roughly 7.75 times more energy, in kW-hrs, than France, yet produces 15.7 times as much CO2 emissions. In addition to a better environmental standard, the economic benefits may be observed in Figure 8C, showing GDP per unit of energy use. A sharp spike is observable for the world GDP per energy consumed around the end of the first decade of the 21st century. This coincides with an economic downturn, indicating that as market value of electricity from the energy industry dropped, consumption dropped substantially more, contradicting the idea that the value of electricity must increase with an increase in consumption. Also, France experiences an sharp incease in GDP per energy consumed from its sales to the European Union during this time. America’s market value per energy consumption is a steady growth, but substantially lower than that of France.

#### Nuclear power allowed France to survive oil shocks

Moreno 11 [Joel Moreno, Bachelors of Arts in International Studies in Nuclear Engineering, “How the Progression of Nuclear Technology in French Culture Has Led to a More Sustainable Country,” A THESIS Submitted to Oregon State University, June 2011] [Premier]

France uses some 12,400 tonnes of uranium oxide concentrate (10,500 tonnes of U) per year for its electricity generation. Much of this comes from Areva in Canada (4500 tU/yr) and Niger (3200 tU/yr) together with other imports, principally from Australia, Kazakhstan and Russia, mostly under long-term contracts. Its fuel supply is therefore well established. Whether it was intentional or not, the energy shift to nuclear in 1974 was particularly well-timed, investing the small advantage during the Oil Crisis into the nuclear industry would result in drastic declines in waste produced and power generating capacity. Nuclear power in France has always been for the people, wrapping the industry in “ouvrier”, or working-man, mentalities. For example, the PEON, Production d'Electricité d'Origine Nucléaire, commission is a commission of nuclear enthusiasts. Its principal of proportional deterrence dissuaded foreign invasion while allowing it to maintain its position of technological superiority along with its national pride. Strategic nuclear alliances permitted France to ride out tumultuous oil crises while still obtaining crucial nuclear technology. Finally, it is evident in amount of pollution they produced per capita that their nuclear program allowed them to obtain all the electricity they need while preserving their environment to a much higher degree than the United States. This is the result of a much more sophisticated and comprehensive waste disposal program.

#### France is starting to lag behind which is stigmatizing the market as a whole

Jolly & Reed 15 [David Jolly, Stanley Reed, international journalist for more than two decades, having been posted to Paris, Hong Kong, Tokyo and New York, “French Nuclear Model Falters,” The New York Times, May 7, 2015, <http://www.nytimes.com/2015/05/08/business/energy-environment/france-nuclear-energy-areva.html>] [Premier]

For decades, France has been a living laboratory for atomic energy, getting nearly three-quarters of its electricity from nuclear power — a higher proportion by far than in any other country. And France’s nuclear companies have long been seen as leaders in building and safely operating uranium-fueled reactors around the world — including in the United States — and championed by Paris as star exporters and ambassadors of French technological prowess. But in the last few years, the French dynamo has started to stall. New plants that were meant to showcase the industry’s most advanced technology are years behind schedule and billions of euros over budget. Worse, recently discovered problems at one site have raised new doubts about when, or even if, they will be completed. This is not France’s problem alone, but a challenge to the entire energy-consuming world. As worries mount about the dangers fossil fuels pose to the global climate, many countries still see atomic power as a path to clean energy, despite the 2011 Fukushima disaster in Japan. When Paris plays host to United Nations climate talks later this year, French officials are planning to remind anyone who will listen that nuclear reactors are a low-carbon power source. But if the French can no longer demonstrate that modern nuclear power plants can be built on time and on budget, that could add to the stigma that has made many countries think twice, over concerns about safety and radioactive waste. Germany and Switzerland, for example, have dropped nuclear power as an energy option.

#### French nuclear energy proves Kuznet’s curve

Iwata et al 9 [Hiroki Iwata, Graduate School of Global Environmental Studies, Kyoto University, Japan, “Empirical Study on the Environmental Kuznets Curve for CO2 in France: The Role of Nuclear Energy,” Munich Personal RePEc Archive, December 2009] [Premier]

Our study focuses on the effect of nuclear power on the E[nvironmental] K[uznets] C[urve] for CO2 emissions in France. The world demand for energy is increasing with economic growth and electricity can be produced by various resources such as oil, coal, natural gas, hydro, and nuclear power, the latter two of which exhaust little amounts of CO2 emissions when producing electricity. Our study therefore analyses the EKC for CO2 taking into account nuclear power generation.2 It is interesting to analyze the case of France, which has the world highest nuclear power ratio to its entire amount of electricity produced (78%, 2003).3 Our estimation results show that the EKC for CO2 emissions is proven in France and the effects of nuclear energy on CO2 emissions are signifi- cantly negative. The causality tests confirm the uni-direction running from income and nuclear energy to CO2 emissions. The estimated results show that the turning point in the relationship between income and CO2 emissions is within the sample period. To check the robustness, our study estimates the model, adding trade or energy consumption in addition to income and nuclear energy. While the effects of trade or energy consumption are insignificant, the EKC for CO2 is still satisfied and the effects of nuclear power are also significantly negative.

#### This study uniquely proves the Kuznet’s curve in regards to French nuclear power

Iwata et al 9 [Hiroki Iwata, Graduate School of Global Environmental Studies, Kyoto University, Japan, “Empirical Study on the Environmental Kuznets Curve for CO2 in France: The Role of Nuclear Energy,” Munich Personal RePEc Archive, December 2009] [Premier]

In this paper, unlike previous studies, we estimate the environmental Kuznets curve for the case of France by taking nuclear energy in electricity production into account. Due to the fact that other factors such as international trade and energy consumption may also have impacts on CO2 emissions, we expand our estimation model by including these factors into the model. For the econometric technique, we adopt the autoregressive distributed lag (ARDL) approach to cointegration developed by Pesaran et al. (2001). Additionally, stability and causality tests are also conducted. From the estimation results, we find evidence supporting the EKC hypothesis for the case of France. The stability tests also indicate that estimated models are stable over the sample period. The impact of nuclear energy on CO2 emissions is shown to be significantly negative in both the short-run and long-run. For the impact of trade, our results point out that it is not statistically significant in both the long-run and short-run. On the impact of energy consumption on CO2 emissions, unlike previous studies in the case of France, we only find evidence of statistical significance in the short-run, but not in the long-run. Our finding on the uni-directional causality relationship running from income to CO2 emissions implies that although economic growth causes more CO2 emissions, any effort to reduce them does not restrain the development of the economy. This result is consistent with that of previous studies. In addition, from the result of the statistical significance on nuclear energy and uni-directional causality relationship running from nuclear energy to CO2 emissions, our study statistically provides evidence of the important role of nuclear energy in reducing CO2 emissions. However, it is necessary to bear in mind that nuclear power generation requires safety management costs in order to avoid any accident that may potentially damage the environment and human beings.

### Germany

#### After ceasing use of nuclear power, most German energy sources were in private individuals and small companies

Smedley 13 [Tim Smedley, freelance features writer for national newspapers and magazines, specialising in work, sustainability and social issues, “Goodbye nuclear power: Germany's renewable energy revolution,” The Guardian, May 10, 2013, <https://www.theguardian.com/sustainable-business/nuclear-power-germany-renewable-energy>] [Premier]

While a lot of the media attention has been focused on large-scale wind farms (and Fischedick expects wind power to contribute half of the 80% renewable energy target by 2050), one of the most fascinating aspects of Energiewende is how it embraces micro-generation and micro-ownership. Public acceptance is, says Fischedick, much easier to maintain if it is paralleled with levels of individual ownership. Also known as a 'prosumer' model, over 50% of renewable-energy capacity is owned by individuals or farmers in Germany; the Big Four energy companies own just 6.5% (according to 2010 figures). "This is PV, co-generation... really small facilities," says Fischedick. "The prosumer aspect is vitally important... if you only have the chance to look from outside at the changes then you are much more [likely to be] complaining about what is going on." This in turn is causing the big utility companies to reassess their role. Rather than continuing to rely on business-as-usual, they are significantly ramping up investment in biomass plants, offshore wind and large-scale photovoltaic plants, informs Fischedick. "In addition we have some utility companies looking at becoming a sort of service provider for the prosumer; RWE for instance provide a new service for the typical house owner to help them construct their own PV system on the roof, and to combine it with a small-scale battery. They have really changed their business portfolio in the last two years, just to be part of the game."

### India

#### India production high now-little uranium reserves, so they’re making thorium cycle reacctors

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

India has been developing nuclear energy technology since the 1950s, and its first reactor began operations in 1969. As it is not party to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), India’s nuclear industry has essentially evolved indigenously, with a longer term objective of developing nuclear power reactors that can operate on the thorium cycle, the country having significant thorium reserves and very little natural uranium reserves. India has a long history of nuclear energy R&D and is currently constructing a sodium-cooled fast breeder reactor which could operate on the thorium cycle. India expects to have an estimated 20 GW of nuclear capacity by 2020 and has announced ambitious targets to increase the share of nuclear electricity in the following decades. It is estimated that India could become the third-largest nuclear energy country in the world by 2040. Rapid economic and population growth, combined with increased urbanisation, are expected to fuel strong electricity demand. The need for reliable base-load electricity at competitive costs is the main driver for nuclear energy development in India. Other drivers include enhanced energy security and local pollution concerns.

### Indonesia

#### Indonesia is looking to build nuke power, but most of the country is prone to earthquakes and tsunamis

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

Hudi Hastowo, head of **Indonesia’s** National Atomic Energy Agency (Batan), told the Jakarta Post that using **nuclear energy** was **one of the best solutions to address** the country’s **power shortage** issue. He played down safety issues that critics have been voicing, saying that it would be safe to operate a nuclear plant.8 Chalid Muhammad from the environmental NGO Indonesia Green Institute, **however**, has argued that **the government should stop the plan to build a reactor because 83 percent of Indonesia’s area is prone to disasters such as earthquakes and tsunamis.** “The government should focus on building decentralized power plants that use renewable energy sources, such as micro-hydro and geothermal plants,” Muhammad said, stating that these small-scale plants can meet the needed electricity demand and are much safer compared to larger plants.9 Environment Minister Gusti Muhammad Hatta observed in mid-March that **Indonesia is not ready to build nuclear plants due to human resource issues and public opposition**. He argued that nuclear power plants should be the last resort because the country has several other energy options. But Gusti’s statement comes even as **Batan insists on going ahead** with its nuclear program **despite mounting opposition**.10

### Japan

#### Japan Nuclear Power on the decline—SQUO solves.

Hoyle & Negishi 7/31 [Rhiannon, Mayumi; Reporters for the Wall Street Journal; The Wall Street Journal; 7/31/2016; “Japan Nuclear-Power Jitters Weigh on Global Uranium Market”; <http://www.wsj.com/articles/japan-nuclear-power-jitters-weigh-on-global-uranium-market-1469990663>; [PREMIER]]

**Antinuclear sentiment is gaining momentum** in Japan **with the election** three weeks ago **of an antinuclear governor in the only** Japanese **prefecture with an operating nuclear-power plant**, and the likelihood that a court injunction will halt the next reactor slated to go online in August.

Japan was once the world’s No. 3 nuclear-power generator, behind the U.S. and France. The slump in the uranium market is being exacerbated by weak demand from the U.S. and plentiful uranium supplies in China, an emerging nuclear-power producer.

**The price of uranium has slumped to** $25 a pound, **its lowest level since** April **2005**, according to the Ux Consulting Co., a nuclear-fuel research firm​that publishes weekly market prices. The fuel’s value is down 27% since the start of this year and is a fraction of the $136 a pound it traded for at its 2007 peak.

It is the worst-performing mined commodity this year. Other natural resources such as copper, coal and iron ore have gained year to date.

There is plenty to fret about. In the U.S., a market awash with cheap natural gas, nuclear reactors have been closing. A few years ago, France said it would start reducing its reliance on atomic energy. China, while rolling out a broad expansion of its nuclear fleet, has built up inventories of uranium that could last more than a decade.

In Japan, a long-awaited revival hasn’t happened.

The **Fukushima** Daiichi meltdowns in 2011 **sparked protests and** **the shutdown of its** fleet of **50-plus nuclear plants**, and tarnished uranium’s image globally. The government had planned to restart more than 30 reactors by 2030, and analysts had expected as many as 10 back online by 2017.

Now, **it isn’t certain the two reactors that are operating will remain running and that the dozens of other reactors not slated for decommissioning will ever be restarted.**

“The restart pace is way behind earlier expectations,” said Jonathan Hinze, international executive vice president at Ux Consulting. “As long as the Japanese reactors are sitting idle, it just keeps feeding the negative perceptions in the uranium market about the demand side.”

**A court injunction in March forced Kansai Electric** Power Co. **to halt its Takahama plant, less than two months after it went online** at the beginning of the year. The court said the utility had failed to show that the plant would be safe in the event of a quake or tsunami.

The governor of Kagoshima, Satoshi Mitazono, elected three weeks ago, has promised voters to suspend operations at the only other plant in operation, Kyushu Electric Power Co.’s Sendai nuclear plant. He cited heightened fears among residents following the April quakes in the Kumamoto area, which had long been thought to be safe from large tremors.

**Residents across Japan are seeking court injunctions to prevent restarts elsewhere**, including a suit to stop the planned August restart of Shikoku Electric Power Co.’s No.3 reactor at its Ikata plant.

#### No new nuclear plants in Japan-Fukushima killed public opinion

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Unlike the United States and Europe, which have generally struggled to build new nuclear plants on time and to budget, both Japan and the Republic of Korea were able to maintain successful new build programmes with impressive construction times thanks to sustained construction programmes over the last decades, increased modularity of designs, and well-managed supply chains. This contrasts with the situation in the United States and in Europe, where the last nuclear construction projects to be completed were launched in 1977 and 1991 respectively. With the exception of the two reactors currently under construction, prospects for new build in Japan are unclear and probably limited, given low public acceptance for nuclear after the Fukushima Daiichi accident and the challenge of restarting its nuclear plants as they await regulatory and local political approval. The government hopes that it will be able to restart several reactors at the beginning of 2015.

### ME General

#### High incentive for Middle East production now-Saudi Arabia and Jordan prove

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

With rapid electricity demand growth expected over the next decades, some countries in the region are looking at nuclear power to improve energy security through energy diversification and also to reduce domestic consumption of natural gas and oil, freeing up more resources for export. In addition to rising electricity demand, the region’s rising demand for fresh water makes desalination from nuclear an attractive opportunity in the mid to long term. Saudi Arabia has announced plans to construct 16 nuclear reactors with a total capacity of 17 GW by 2032 and hopes to have its first reactor operating by 2022. Jordan is also planning the construction of up to two reactors and signed an agreement with Russia in October 2013. For the Middle East, the main challenges in developing nuclear power will be in setting up the needed nuclear infrastructure and training, as well as the education of a highly skilled nuclear work force. The region is **working closely with the IAEA** to set up the necessary infrastructure and the UAE’s implementation of the IAEA milestones has been recognised as **exemplary** (see Box 4). For oil- and gas-rich countries in the region, overcoming these challenges has been facilitated by the significant resources made available to attract foreign experts, who provide training thereby passing their expertise and knowledge on so that **local expertise and capacity** are developed. However, there remains some concern about the availability of highly skilled and experienced nuclear experts if nuclear programmes are to develop extensively in the region.

### Russia

#### Russia nuclear power production high now-renewing old reactors and leading R & D

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

With Japan’s nuclear fleet idle, the Russian Federation is currently the third largest nuclear power country − behind the United States and France − with 33 reactors in operation and a total installed capacity of 25 GW. The State Atomic Energy Corporation, Rosatom, is also one of the leading providers of nuclear technology globally with extensive industry experience. Most of Russia’s reactors are being considered for lifetime extensions; to date, 18 reactors with total capacity of over 10 GW have received 15- to 25-year licence extensions. VVER reactors, which comprise half of the fleet, are also likely to be uprated, which would provide an additional 7% to 10% capacity. The oldest VVERs and all of the operating RBMK reactors are expected to be retired by 2030. The main drivers for future nuclear energy development in Russia include the replacement of ageing reactors due to be decommissioned and the development of additional new capacity to increase the share of nuclear electricity from 17% today to 25% to 30% by 2030. Increased nuclear generation would also free up natural gas for export. Currently, there are ten reactors with a total installed capacity of 9.2 GW under construction (one of them, Rostov 3, was actually connected to the grid on 29 December 2014) and a further 24 reactors (about 29 GW) planned by 2030, including advanced Gen III VVER reactors and sodium-cooled fast breeder reactors, and a BN-800 under construction that reached criticality in June 2014. Russia has invested significantly in nuclear R&D and is one of the leading developers of fast breeder reactors and of small floating reactors that provide nuclear power to remote areas. Two floating SMR KLT-40S units on the Lomonosov barge are under construction in Russia.

### South Korea

#### **South Korea production high now**

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

The Republic of Korea currently has 20.7 GW of nuclear capacity, accounting for 27% of total electricity generation in 2013. To reduce reliance on imported fossil fuels and to enhance energy security, the country has, for a long time, had a strategic goal to increase the share of nuclear generation. However, after the Fukushima Daiichi accident, a more moderate policy has been put forward which will see nuclear capacity increase up to 29% of the total electricity generation capacity by 2035, down from a previous target of 41%. With average capacity factors in recent years of 96.5%, the Republic of Korea has developed strong operating experience and competence. In 2009, the Republic of Korea won its first export contract from the United Arab Emirates and hopes to expand exports to other Middle East countries and Africa.

#### Nuclear energy development was tied with militaristic visions and economic independence

Valentine & Sovacool 10 [Scott Victor Valentine, Graduate School of Public Policy, University of Tokyo, Benjamin K. Sovacool, b Lee Kuan Yew School of Public Policy, National University of Singapore, “The socio-political economy of nuclear power development in Japan and South Korea,” Energy Policy Vol 38, December 2010] [Premier]

Nuclear energy was ideologically linked with visions of military autonomy and strength, as well as economic competiveness. In particular, the nuclear program was closely aligned with creating an image of military strength. Nuclear technology was coveted not only as an electricity technology that would power the economy, but also for enhancing national defense. Desiring to pre-empt the potential social upheaval and economic disruption of a war with North Korea by a show of strength, government leaders embraced technological development in general and the attainment of nuclear weapons in particular as long-term goals. President Park Chung Hee openly announced ambitions to develop indigenous nuclear weapons to ensure that South Korea possessed a strong military deterrent that was independent from US military protection. President Park established a covert Weapons Exploitation Committee in 1969 to obtain highly enriched uranium and negotiate purchases of advanced nuclear weapons components (Siler, 1998). Efforts to intensify the nuclear weapons program were accelerated in the 1970s when Presidents Richard Nixon and Jimmy Carter called on South Korea to bolster its self-defense capacity and announced plans to reduce America’s military presence in South Korea (Kang and Feiveson, 2001). The military dimensions of the nuclear power program were only put on hold after 1976, when the United States, shocked over South Korea’s decision to bolster self-defense capacity through nuclear rather than conventional means, threatened to suspend export licenses and credits necessary to acquire American nuclear reactor designs unless it forwent plans for nuclear weapon development (Kim and Byrne, 1996). Thus, for at least two decades, nuclear power production was intertwined with the allure of nuclear weapons, deterrence, and Korean military strength. Nuclear power was also attached to visions of economic modernization and industrialization. With limited natural resources, key political leaders endorsed cooperation between industry and government and promoted advanced technology as a way to achieve economic growth and international sovereignty. South Korea, strongly influenced by the Korean War and Japanese colonization and further conditioned to create a free-standing electricity system after North Korea abruptly cut off supply in 1948, placed a strong emphasis on achieving energy security amidst expanding demand for energy. Government elites saw nuclear power as central to lifting South Korea out of impoverishment after civil war (Byrne and Hoffman, 1996).

### Switzerland

#### Public opposition

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**Switzerland was one of the first countries to take domestic action in response to the Fukushima crisis.** On March 14, 2011, Energy Minister Doris Leuthard suspended the approval process for three new nuclear power stations so safety standards could be revisited.56 **Support for nuclear plants fell sharply in Switzerland following the crisis, with a poll published on March 20 showing that 87 percent of the population wants the country’s reactors phased out**.57

### Thailand

#### Huge public opposition

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**An opinion poll in late March 2011 found that 83 percent of respondents disagreed with the plan to build nuclear plants in Thailand, and only 16.6 percent backed the move**. **When asked about construction of a nuclear plant in their respective provinces, 89.5 percent of respondents objected while only 10.5 percent agreed.**18 Thailand’s study on nuclear plant construction will be thoroughly reviewed in light of the crisis in Japan, which will serve as a study case for Thailand, Energy Minister Wannarat Channukul said.19

### UAE

#### UAE production high now-developing nuclear tech to replace dwindling natural gas

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

The Bushehr NPP in Iran that began commercial operation in September 2013 was the first nuclear power plant to operate in the Middle East. The United Arab Emirates (UAE) is the most advanced newcomer country in the region, with construction started on three of four units of the Korean-designed APR1400 (the construction of the third unit stated in 2014), which will have a total installed capacity of 5.6 GW, at the Barakah site. The first unit is expected to start generating electricity in 2017, and the final unit is scheduled for operation in 2020. With electricity demand expected to exceed 40 GW by 2020, nearly doubling 2010 levels, the UAE has identified nuclear energy as an important source of future electricity supply. Electricity needs are currently met almost exclusively by natural gas. As a proven, cost-competitive and low-carbon source of electricity, UAE is developing nuclear power to provide a significant source of base-load electricity.

#### Nuke power is a cornerstone of the ties between Korea and the UAE

Schneider et al 11

Mycle – consultant and project coordinator, Antony Frogatt – consultant, Steve Thomas – prof of energy policy @ Greenwich University, “Nuclear Power in a Post-Fukushima World 25 Years After the Chernobyl Accident” World Nuclear Industry Status Report 2010-11, <http://www.worldnuclearreport.org/IMG/pdf/2011MSC-WorldNuclearReport-V3.pdf> [Premier]

**South Korean president Lee Myung-bak dismissed concerns about** the **safety** of nuclear plants that the South Korean industry plans **to build in the UAE.** Safety concerns have been rising since the Fukushima crisis began. Lee said that South Korea will make all-out efforts to ensure the safety of reactors. “**The construction of the nuclear power plants reflects growing economic ties between Korea and the UAE.** We will take all possible measures to ensure their safety,” **Lee said three days after the Fukushima crisis started, at a groundbreaking ceremony for initial work at the proposed nuclear site in Braka**, some 300 kilometers west of Abu Dhabi. The Crown Prince of Abu Dhabi, Sheikh Mohammed bin Zayed al Nahyan, was also present.24

### United States

#### Energy demand massively increasing – nuclear will fill a big chunk

Pedraza 12

Jorge Morales Pedraza, consultant on international affairs, ambassador to the IAEA for 26 yrs, degree in math and economy sciences, former professor, Energy Science, Engineering and Technology : Nuclear Power: Current and Future Role in the World Electricity Generation : Current and Future Role in the World Electricity Generation, Nova 2012, New York. [Premier]

As can be easily see from Figure 8 the number of nuclear power reactors under construction dropped significantly during the period 1999-2004. After 2005, **there is a trend to increase slowly the total number of nuclear power reactors under construction each year. It is expected that this trend will continue in the coming years. One of the major problems that several countries have to deal with in the coming years, particularly in the case of North America and Europe, is the increase ageing power-generation capacity,** even in the field of electricity generation using nuclear energy. **To overcome this problem both regions have an urgent need for major investment** in the energy sector in order to meet the expected increase in the electricity demand and **to replace ageing infrastructures** in the energy sector. According to the World Energy Outlook for 2006, ―**around 800 -900 GWe capacity will be required by 2030 to replace the existing capacity and to address increasing needs.** It is reasonable to assume that out of these potential new 800-900 GWe, **at least 100 GWe will be produced by Generation-III nuclear power reactors. This corresponds to the construction of 60 to 70 big nuclear power reactors, which represents an investment of €150 billion over 20 years** (for an average overnight construction cost of €1,500 per kWe). These new nuclear power reactors to be constructed in the coming years should be designed to operate 60 years. In the following figure the ageing of the nuclear power reactors currently in operation is shown.

### Vietnam

#### Vietnam increasing nuclear capability now

IEA 15 ["Technology Roadmap: Nuclear Energy." IEA Technology Roadmaps (n.d.): n. pag. 2015. Web. 8 Aug. 2016] [Premier]

Among developing Asian countries, Viet Nam is the most advanced with respect to its nuclear programme. The country has committed plans for developing nuclear and is in the process of developing its legal and regulatory infrastructure. Viet Nam is planning at least 8 GW of nuclear capacity by the end of the 2020s and hopes to have a first unit in operation by 2023.

## AFF/NEG Framework



### Future Generations

#### It is morally corrupt and unjust to prioritize current peoples at the expense of future generations

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

There are two reasons why this generation’s production of **nuclear power creates the problem of intergenerational justice.** First of all, if we assume that all generations (ours and those that follow) have access to the same finite resources (uranium) and that we might be able to asymmetrically influence their interest, **a “Pure Intergenerational Problem”** (PIP), as argued by Gardiner (2003), will emerge, which **is in fact an exacerbated form of the prisoner’s dilemma extended over generations.** He imagines a world consisting of temporally distinct groups that can asymmetrically influence each other; “**earlier groups have nothing to gain from the activities or attitudes of later groups**.” Each generation has access to a diversity of temporally diffuse commodities. **Engaging in activity with such goods culminates in modest present benefits and substantial future cost and that in turn poses the problem of justice.**

A typical example of the PIP is the general (fossil fuel) energy consumption situation which is characterized by predominantly good immediate effects but deferred bad effects in terms of the anthropogenic greenhouse gas emissions that cause climate change. Intergenerational justice and climate change have received increasing attention in recent years (Page 1999; Shue 1999; Gardiner 2001; Athanasiou and Baer 2002; Shue 2003; Meyer and Roser 2006; Page 2006). The main rationale behind these discussions is that change in a climate system that threatens the interest of future generations raises questions concerning justice and posterity. The same rationale also applies to the production of nuclear power. In the case of fossil fuel combustion, it is the emitting of greenhouse gasses that can trigger long-term climatic change for posterity, while **with nuclear power deployment, it is the creation of long-lived radiotoxic waste that could potentially pose safety and security problems to future generations.** In addition to the presence of long-lived waste, **depleting a nonrenewable resource (uranium) in nuclear power production adds another important intergenerational dimension to the problem**.

A further salient feature of this problem is that it could be “perfectly convenient” for the present generation to “exploit its temporal position” and to visit costs on future generations (Gardiner 2006, 408). Let me elaborate on what is meant here by our beneficial temporal position. When discussing future benefits, a typical economic argument is that future generations will be better off than the present generation, all of which should justify treating future benefits differently. This obviously conflicts with the beneficial position of the present generation. What is meant by our beneficial position is, however, the plain fact that we live now while they will live in the future. So **we are—temporally speaking—in a position to influence their interests, while they cannot influence ours in any way whatsoever. In nuclear power discussions, we can easily pass on the burden of waste to posterity and that makes us susceptible to “the problem of moral corruption”** (Gardiner 2006, 408).1 **This provides us with a moral ground for defending obligations to future generations**.

#### It is unfair to deplete future generations of some good below our present levels – two warrants based on responsibility and protecting interests

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

In the remainder of this section, I will explore the way in which we can contemplate justice to posterity in the case of nuclear power. In so doing, I shall follow Brian **Barry’s** (1999) **principles concerning the fundamental equality of human beings when it comes to** the matter of **addressing intergenerational justice**. Barry expounds his theory by **spell[s]**ing **out the normative aspects of the notion of sustainable development** and **by commenting that the value of an entity X as we enjoy it should be sustained into the future so that future generations do not fall below our level of X.** He then presents principles for the theorems of fundamental equality, two of which are **the principle of responsibility—“[a] bad outcome for which somebody is not responsible provides a prima-facie case for compensation”— and the principle of vital interests: “location in space and time do not in themselves affect legitimate claims … [therefore] the vital interests of people in the future have the same priority as the vital interests of people in the present”** (Barry 1999, 97–99).

**What is this valuable entity of X that should be distributed equitably over generations?** That is the next question we have to ask ourselves. Barry proposes **opportunity as a metric of justice: a requirement of justice is that “the overall range of opportunities open to successor generations should not be narrowed.** If some openings are closed off by depletion or rather irreversible damage to the environment, others should be created (if necessary at the cost of some sacrifice) to make up” (Barry 1978, 243). So, while adhering to the guiding principle that we should not narrow the total range of opportunities, I will develop two other principles that will lead to the matter of how this main principle relates to nuclear power generation, the main rationale being that whenever we find ourselves in a position to negatively influence the opportunities open to future generations, we should be careful not to narrow these opportunities. 2

#### Prima facie duties are contextual moral reasons that can be overridden or outweighed

Taebi 11

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Pluralists believe that **morality cannot be captured in one single principle or value in the way that that is done with monist views such as utilitarianism.** Situations in which a plurality of morally relevant features should be taken into consideration are conceivable; the question of how to act then depends on which of these moral features is more compelling, and that in turn depends upon the situation context. In order to facilitate this distinction, William David **Ross** (1930/2002, 19–21) **presents “prima facie duties” as duties that one has moral reason to follow in a certain situation. Such duties hold as long as they are not overridden by any more morally compelling duties. Our actual duty** (or “duty proper” as Ross terms it) **is then an allthings- considered duty in which moral conflicts have been properly addressed.** **Ross** (1930/2002, 20) **distinguishes between seven basic prima facie duties, including the duties of justice, beneficence, and non-maleficence.**

“The phrase ‘prima facie duty’ must be apologized for,” Ross states, as it “suggests that one is speaking only of an appearance which a moral situation presents at first sight, and which may turn out to be illusory” (Ross 1930/2002, 20). Nevertheless, Ross sticks to this notion as he believes that there is no better alternative. The phrase prima facie duty serves to highlight the fact that **such duties might sometimes be overridden** by more morally compelling duties. The latter does not, however, downplay their moral relevance: “these prima facie duties are features that give us genuine (not merely apparent) moral reasons to do certain actions.” 4 The distinction between prima facie duty and actual duty is “best interpreted as being a distinction between a duty-imposing reason and a duty” (Wellman 1995, 249). In my interpretation of prima facie duties, I also emphasize that **there are genuine grounds for duties** (or legitimate duty-imposing reasons) **but that says nothing about their moral stringency;** this issue will be elaborated on in the next section.

Like moral pluralists, **I consider it unfeasible to capture all morally relevant features in one single principle or value.** I furthermore consider Ross's notion of our prima facie duty to relate to our temporal relationship with our descendants before then going on to formulate the specific duties that emanate from this relationship.5 The two duties presented in this paper do, to some extent, resemble certain basic Rossian duties. For instance, **handing down resources to future generations could be a derivative of Ross's duty of justice or beneficence while not jeopardizing future people's vital interest can be subsumed under his duty of non-maleficence.** However, unlike Ross (1930/2002, 29–30) who asserts that the basic (or fundamental) prima facie duties should be taken for granted as “mathematical axioms” or seen as “part of the fundamental nature of the universe,” I derive these duties from the intergenerational nature of nuclear power production and consumption.

#### Obligation not to harm future generations is based on the prima facie duty to do no harm. It’s widely accept in medical and environmental contexts

Taebi 11

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Following Barry's principle of vital interest to the effect that “the vital interests of people in the future have the same priority as the vital interests of people in the present” (Barry 1999, 97–99), **I present the obligation not to negatively influence the vital interests of future generations by safeguarding their safety and security. This can alternatively be termed the obligation “not to harm” posterity.** There is something that has to be said about the origins and the applications of this principle. **One of the fundamental ethical obligations underscoring all human interaction is that of avoiding harm to others. In social interaction between people, for instance, it has been argued that an individual is sovereign as long as he is not harming another individual** (Mill 1859/1998: 14). **This no harm principle is also a leading creed for health care professionals;** the related maxim that is frequently invoked in health care is thus: **“to do no harm above all else”** (Beauchamp and Childress 2009: Ch. 5). **In environmental policy making, too, this principle is becoming increasingly influential, for instance, where it inspires the Precautionary Principle:** namely “[w]hen an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically”, as stipulated in the Wingspread Statement.6 What is particularly interesting about the precautionary principle is that it shifts the burden of proof; so, we should refrain from an activity (e.g., developing or applying a technology) unless there is enough evidence that it will not cause severe harm (Jonas 1984). Critics argue that this principle sets the bar so high that it could hamper technological innovation, but the question of where to set the bar is a matter of how to interpret the precautionary principle in the face of uncertainty. The precautionary principle has, above all else, “a purposeful role in guiding future political and regulatory action” (O’Riordan and Cameron 1994, 16). **The no harm duty as advocated here resembles the precautionary principle in that it urges us to refrain from action whenever our actions might result in harm being inflicted upon future generations.** So, in this interpretation, **we would not guarantee future generations’ “equal opportunity”; rather, we should refrain from action if such action could endanger posterity’s “equal opportunity.”**

#### Obligation not to RISK harm to future generations is merely a prima facie duty, not an absolute duty

Taebi 11

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Before turning to discussing the moral stringency of the presented duties, let me first address two relevant questions with respect to this “no harm principle”: i.e., (1) what exactly constitutes harm? and (2) how does this account of harm relate to Barry’s vital interest? **In the relevant literature, there is a general consensus that present generations should not harm future generations, and if it is unequivocally evident that an activity will harm future generations, then the ethical assertion that we should refrain from such an activity is rather simple and straightforward.**7 **In the case of nuclear waste, however, it is not about imposing direct harm, it is rather about the risk of harming people in the future. Indeed, it is inherently included in the definition of risk** (as undesired effect times probability) **that we can never completely exclude it, which is why I present this temporal no harm duty notion as a prima facie duty rather than an absolute duty.** **My notion of the temporal no harm duty should be read as a duty-imposing reason that urges us to decrease the possibility of causing harm to future generations.**

#### Standard util impacts like war link to future generations frameworks

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

The next objection I discuss relates to the justifiability of additional burdens for contemporaries. As argued above, developing and deploying P&T to reduce any future burdens linked to nuclear waste bring with it serious additional economic, safety, and security burdens for the present generation. In this paper, I will leave the issue of whether it is justifiable for this generation to bear the economic burdens unanalyzed. Instead, **I will focus on the morally more important question of whether the additional safety and security risks are justified. Let us just remind ourselves that more nuclear activities are involved in P&T and that during reprocessing, separated plutonium** (in an initial step towards P&T) **involves high proliferation risks. If it is indeed true that a nuclear accident or nuclear warfare could have consequences that would be suffered far beyond the present generation, some people**—such as Axel Gosseries (2008b)—**argue that we should avoid risks of malevolent use, particularly from the intergenerational justice point of view, by defending geological disposal as the fastest and best feasible option for the disposal of waste in the near future**.

#### Future generations framework is key education now

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

In this paper, I introduce the desirable option in relation to nuclear power production, which I shall approach from **a moral point of view.** In other words, if we intend to continue with nuclear power production, which technology is most morally desirable? The latter **will be approached from the perspective of the duties** of contemporaries if we are **to safeguard the interests of future generations. There are two basic reasons for focusing on the interest of posterity** when addressing the desirability issue: **(1) in producing nuclear power, we are creating an intergenerational problem**; namely, **the benefits are predominantly for this generation and the burdens will, in part, be postponed and (2) we are in a temporally beneficiary position to visit costs on our descendants and can therefore easily exploit this position.** In Section 1, I shall elaborate on this discussion.

### Intent-Foresight TJF

#### Intent-foresight distinction key on this topic

Taebi 11

Behnam Taebi, prof of philosophy @ Delft University, “The Morally Desirable Option for Nuclear Power Production” Philos. Technol. (2011) 24. [Premier]

Reprocessing is a chemical process employed for the separation of uranium and plutonium; it is a process that creates considerable safety, security, and economic burdens for the present generation. To be precise, it necessitates more nuclear activity than usual, and the chemical radiotoxic residual of reprocessing subsequently has to be disposed of as well.18 **In nuclear technology, one distinguishes between safety and security in order to emphasize the distinction between unintentional and intentional harm.** **In this case, safety is connected with the unintentional release of radiotoxic material that can subsequently lead to health problems. Security, on the other hand, refers to the intentional releasing of radioactive substances; both as a result of sabotage and in the form of proliferation pertaining to the manufacturing and disseminating of nuclear weapons** (IAEA 2007). Reprocessing creates additional proliferation risk for contemporaries if one considers that plutonium separated during reprocessing could also be used for destructive purposes. Indeed, such separating is primarily undertaken for civil purposes (to produce nuclear fuel and to reinsert it in the cycle), but security concerns will certainly mount during this process and will remain until the separated plutonium is again deployed in a nuclear reactor.19 Furthermore, since reprocessing plants are quite expensive, only a few countries have them at their disposal. In Europe, where a majority of the countries tend to favor the closed fuel cycle approach, there are currently two operational reprocessing plants located in Great Britain and in France.