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#### Nuclear PRODUCTION must be for the PURPOSE of energy generation

International Atomic Energy Agency 7

<http://www-pub.iaea.org/MTCD/publications/PDF/Pub1290_web.pdf>

Under the terms of Article III of its Statute, the IAEA is authorized to establish or adopt standards of safety for protection of health and minimization of danger to life and property, and to provide for the application of these standards. The publications by means of which the IAEA establishes standards are issued in the IAEA Safety Standards Series. This series covers nuclear safety, radiation safety, transport safety and waste safety, and also general safety (i.e. all these areas of safety). The publication categories in the series are Safety Fundamentals, Safety Requirements and Safety Guides.

 The process of inducing radioactivity.􀁌 Most commonly used to refer to the induction of radioactivity in moderators, coolants, and structural and shielding materials, caused by irradiation with neutrons.􀁌 The BSS definition — “The production of radionuclides by irradiation.” [1] —is technically adequate; however, the term ‘production’ gives a connotation that this is being done intentionally rather than, as is normally the case,incidentally.

All demonstration gets class 104 licenses – that’s research, not production

Matuzan and Walker 85

 Controlling the Atom:

The Beginnings of Nuclear Regulation, 1946-1962

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Sections of the 1954 act reflected the state of the technology by establishing two classes of licenses for atomic facilities. One section authorized the AEC to issue commercial or "class 103" licenses (after the section number in the law) whenever it had determined that a facility had been "sufficiently developed to be of practical value for industrial or commercial purposes." Since the agency and the Joint Committee interpreted "practical value" to mean that atomic facilities had to be judged eco- nomically competitive with other energy sources, issuance of class-103 licenses was postponed until the industry had passed through its research and development phase.33 Instead, early power reactor facilities received "class-104" licenses un- der the terms of section 104. Reactors used in medical therapy, university research, and power demonstration came under this category. A key phrase authorized reactor licenses that would lead to the "demonstra- tion of the practical value . . . for industrial or commercial purposes." Class-104 licenses, then, covered all power reactors used during the developmental period until the industry could find a design that would eventually meet the "practical value" criterion of a class-103 commercial license. Furthermore, section 104 specifically instructed the AEC to im- pose the minimum amount of regulation on a licensee consistent with the public health and safety. In other words, a class-104 license indicated that the government wanted to encourage the new industry to undertake research and development under minimum regulation that would lead to major advances in power-reactor technology.34

#### Violates Energy production---it’s pre-production

Koplow 4 Doug Koplow is the founder of Earth Track in Cambridge, MA. He has worked on natural resource subsidy issues for 20 years, primarily in the energy sector "Subsidies to Energy Industries" Encyclopedia of Energy Vol 5 2004www.earthtrack.net/files/Energy%20Encyclopedia,%20wv.pdf

3. SUBSIDIES THROUGH THE FUEL CYCLE Because no two fuel cycles are exactly the same, examining subsidies through the context of a generic fuel cycle is instructive in providing an overall framework from which to understand how common subsidization policies work. Subsidies are grouped into preproduction (e.g., R&D, resource location), production (e.g., extraction, conversion/generation, distribution, accident risks), consumption, postproduction (e.g., decommissioning, reclamation), and externalities (e.g., energy security, environmental, health and safety). 3.1 Preproduction Preproduction activities include research into new technologies, improving existing technologies, and market assessments to identify the location and quality of energy resources. 3.1.1 Research and Development R&D subsidies to energy are common worldwide, generally through government-funded research or tax breaks. Proponents of R&D subsidies argue that because a portion of the financial returns from successful innovations cannot be captured by the innovator, the private sector will spend less than is appropriate given the aggregate returns to society. Empirical data assembled by Margolis and Kammen supported this claim, suggesting average social returns on R&D of 50% versus private returns of only 20 to 30%. However, the general concept masks several potential concerns regarding energy R&D. First, ideas near commercialization have much lower spillover than does basic research, making subsidies harder to justify. Second, politics is often an important factor in R&D choices, especially regarding how the research plans are structured and the support for follow-on funding for existing projects. Allocation bias is also a concern. Historical data on energy R&D (Table III) demonstrate that R&D spending has heavily favored nuclear and fossil energy across many countries. Although efficiency, renewables, and conservation have captured a higher share of public funds during recent years, the overall support remains skewed to a degree that may well have influenced the relative competitiveness of energy technologies. Extensive public support for energy R&D may also reduce the incentive for firms to invest themselves. U.S. company spending on R&D for the petroleum refining and extraction sector was roughly one-third the multi-industry average during the 1956-1998 period based on survey data from the U.S. National Science Foundation. For the electric, gas, and sanitary services sector, the value was one-twentieth, albeit during the more limited 1995-1998 period. 3.1.2 Resource Location Governments frequently conduct surveys to identify the location and composition of energy resources. Although these have addressed wind or geothermal resources on occasion, they most often involve oil and gas. Plant siting is another area where public funds are used, primarily to assess risks from natural disasters such as earthquakes for large hydroelectric or nuclear installations. Survey information can be important to evaluate energy security risks and to support mineral leasing auctions, especially when bidders do not operate competitively. However, costs should be offset from lease sale revenues when evaluating the public return on these sales. Similarly, the costs of siting studies should be recovered from the beneficiary industries. 3.2 Production Energy production includes all stages from the point of resource location through distribution to the final consumers. Specific items examined here include resource extraction, resource conversion (including electricity), the various distribution links to bring the energy resource to the point of final use, and accident risks.

Vote negative for Limits and precision – research reactors are both formally and technically distinct. There are HUNDREDS of types

World Nuclear Assocation 10

http://www.world-nuclear.org/info/inf61.html

 The World Nuclear Association (WNA), formerly the Uranium Institute, is an international organization that promotes nuclear power and supports the many companies that comprise the global nuclear industry. Its members come from all parts of the nuclear fuel cycle, including uranium mining, uranium conversion, uranium enrichment, nuclear fuel fabrication, plant manufacture, transport, and the disposition of used nuclear fuel as well as electricity generation itself [1]. Together, WNA members are responsible for 95% of the world's nuclear power outside of the U.S. [2] as well as the vast majority of world uranium, conversion and enrichment production.[3] The WNA says it aims to fulfill a dual role for its members: Facilitating their interaction on technical, commercial and policy matters and promoting wider public understanding of nuclear technology. [4] Accredited to the United Nations, the WNA is an independent, non-profit organization, funded primarily by membership subscriptions

Many of the world's nuclear reactors are used for research and training, materials testing, or the production of radioisotopes for medicine and industry. They are basically neutron factories.

These are much smaller than power reactors or those propelling ships, and many are on university campuses. There are about 240 such reactors operating, in 56 countries. Some operate with high-enriched uranium fuel, and international efforts are underway to substitute low-enriched fuel. Some radioisotope production also uses high-enriched uranium as target material for neutrons, and this is being phased out in favour of low-enriched uranium. Research reactors comprise a wide range of civil and commercial nuclear reactors which are generally not used for power generation. The term is used here to include test reactors, which are more powerful than most. The primary purpose of research reactors is to provide a neutron source for research and other purposes. Their output (neutron beams) can have different characteristics depending on use. They are small relative to power reactors whose primary function is to produce heat to make electricity. They are essentially net energy users. Their power is designated in megawatts (or kilowatts) thermal (MWth or MWt), but here we will use simply MW (or kW). Most range up to 100 MW, compared with 3000 MW (i.e. 1000 MWe) for a typical power reactor. In fact the total power of the world's 283 research reactors is little over 3000 MW.Research reactors are simpler than power reactors and operate at lower temperatures. They need far less fuel, and far less fission products build up as the fuel is used. On the other hand, their fuel requires more highly enriched uranium, typically up to 20% U-235, although some older ones use 93% U-235. They also have a very high power density in the core, which requires special design features. Like power reactors, the core needs cooling, though only the higher-powered test reactors need forced cooling. Usually a moderator is required to slow down the neutrons and enhance fission. As neutron production is their main function, most research reactors also need a reflector to reduce neutron loss from the core.As of October 2011 the IAEA database showed that there were 241 operational research reactors (92 of them in developing countries), 3 under construction, 202 shut down (plus 13 temporary) and 211 decommissioned.Types of research reactors There is a much wider array of designs in use for research reactors than for power reactors, where 80% of the world's plants are of just two similar types. They also have different operating modes, producing energy which may be steady or pulsed.A common design (67 units) is the pool type reactor, where the core is a cluster of fuel elements sitting in a large pool of water. Among the fuel elements are control rods and empty channels for experimental materials. Each element comprises several (e.g. 18) curved aluminium-clad fuel plates in a vertical box. The water both moderates and cools the reactor, and graphite or beryllium is generally used for the reflector, although other materials may also be used. Apertures to access the neutron beams are set in the wall of the pool. Tank type research reactors (32 units) are similar, except that cooling is more active.The TRIGA reactor is another common design (40 units). The core consists of 60-100 cylindrical fuel elements about 36 mm diameter with aluminium cladding enclosing a mixture of uranium fuel and zirconium hydride (as moderator). It sits in a pool of water and generally uses graphite or beryllium as a reflector. This kind of reactor can safely be pulsed to very high power levels (e.g. 25,000 MW) for fractions of a second. Its fuel gives the TRIGA a very strong negative temperature coefficient, and the rapid increase in power is quickly cut short by a negative reactivity effect of the hydride moderator.Other designs are moderated by heavy water (12 units) or graphite. A few are fast reactors, which require no moderator and can use a mixture of uranium and plutonium as fuel. Homogenous type reactors have a core comprising a solution of uranium salts as a liquid, contained in a tank about 300 mm diameter. The simple design made them popular early on, but only five are now operating.Research reactors have a wide range of uses, including analysis and testing of materials, and production of radioisotopes. Their capabilities are applied in many fields, within the nuclear industry as well as in fusion research, environmental science, advanced materials development, drug design and nuclear medicine.The IAEA lists several categories of broadly classified research reactors. They include 60 critical assemblies (usually zero power), 23 test reactors, 37 training facilities, two prototypes and even one producing electricity. But most (160) are largely for research, although some may also produce radioisotopes. As expensive scientific facilities, they tend to be multi-purpose, and many have been operating for more than 30 years.A total of over 670 research and test reactors has been built worldwide, 227 of these in the USA and 97 in the former Soviet Union. In the USA, 193 were commissioned in 1950s and 1960s.

### CP 1

#### The State and Territorial Governments of the United States should make substantial funding available for an increase in loan guarantees for companies to demonstrate, develop, and build Integral Fast Reactors

#### States can empirically fund energy research at DOE national labs

Kay Corditz, 3-15-2010, “State Grant to Fund Advanced Battery Materials Partnership,” Brookhaven National Lab, http://www.bnl.gov/newsroom/news.php?a=21663

Funded by a $550,000 grant from the New York State Energy Research and Development Authority (NYSERDA), Brookhaven National Laboratory will partner with battery materials researchers from leading New York State universities to explore new chemistries and synthesize new materials for long-lasting batteries. The Laboratory will partner with SUNY’s University at Buffalo and Binghamton University on three projects to develop improved batteries for use in stationary grid-scale energy storage applications, including lithium-air, lithium-ion, and lithium-titanate batteries. The Brookhaven effort, led by Brookhaven materials scientist Jason Graetz, will focus on the development and synthesis of new materials, and application of advanced experimental techniques to characterize these materials using Brookhaven’s National Synchrotron Light Source (NSLS). The SUNY-Buffalo lead is Esther S. Takeuchi, and the Binghamton University lead is M. Stanley Whittingham. “This partnership among Brookhaven and two leading SUNY schools will capitalize on the research strengths of each, and our materials characterization capabilities will be a key element of the project,” said James Misewich, Brookhaven’s Associate Laboratory Director for Basic Energy Sciences. The collaboration grew out of a workshop sponsored by Brookhaven and Stony Brook University’s Joint Photon Sciences Institute (JPSI) last spring. Chi-Chang Kao, NSLS Chair and Founding Director of JPSI, coordinated the collaboration’s successful proposal. “It is an excellent example of how universities, industries, and national laboratories can work together to address an important scientific challenge with major societal impact,” said Kao. Said Graetz: “NYSERDA’s funding of this program will give us the opportunity to expand our energy storage research to large-scale stationary energy storage systems, which are crucial for integrating intermittent renewable generation sources such as wind and solar. In the past, the vast majority of battery research investment has focused on the important problem of electrical energy storage for transportation. However, a different set of criteria exist for stationary systems, and this project will allow us to explore new electrode materials, like lithium titanate, that meet those criteria.”

#### States can fund nuclear research.

Miller 7 (Warren, Research Professor and Associate Director of the Nuclear Security Science and Policy Institute – Texas A%26M University, "Nuclear’s Human Element", A Report By the American Nuclear Society Special Committee on Federal Investment in Nuclear Education, February, http://www.ans.org/pi/fine/docs/finereport.pdf)

In addition, in the long run, the mission‐directed NSE research efforts of the nation will need a healthy NSE infrastructure. This need includes a healthy and reasonably sized fleet of university‐based reactors for research and NSE education. These reactors can obtain some funding through efforts on the part of their directors to seek federal, state, and private funding. However, experience has indicated that an important role can be performed by the DOE in monitoring these reactors and establishing peer‐reviewed grant programs to support them. Support from the DOE for the nuclear fuel for these reactors is also required.

### CIR DA

#### CIR will pass---but fights are coming

Miami Herald 2/5 (“Will immigration reform go the distance?” http://www.miamiherald.com/2013/02/05/v-print/3218867/will-immigration-reform-go-the.html

Immigration reform is having a “Kumbaya” moment, with support from the White House, a bipartisan contingent in Congress, business and labor. The Republicans are petrified after their dismal showing among the fastest-growing slices of the electorate, Hispanics and Asians; President Barack Obama wants to reward the loyalty of those voters. Business and labor, as well as many politicians, want to fix a dysfunctional system. There are more than 11 million undocumented immigrants, 5 percent of the work force. Many of these people live in fear of discovery, while jobs go unfilled in some areas. Hold the champagne. When it comes to immigration laws, the concept is always easier than the reality. Change failed to happen six years ago, even with a push from a high-powered coalition led by President George W. Bush and Senators John McCain and Edward M. Kennedy. The dynamics are more favorable today. Still, the same obstacles persist; the powerful countervailing considerations include: • A Pathway to Where? There’s a fairly broad consensus for ending the illegal status of the undocumented. The White House, Hispanic groups and most Senate supporters insist that any reform must lead to a pathway to citizenship. That approach faces great resistance. Some lawmakers demand that any move toward citizenship must come second to solving the border-security problem, at a minimum. For some, this is a political cover; under the Obama administration, resources for border security have been increased sharply, including the use of drones. And deportations of undocumented immigrants are at a record high. A border-security trigger is realistic if it includes quantifiable goals, such as the number of new Border Patrol agents, the amount of resources allocated and the new technologies utilized. It isn’t reasonable if it requires meeting an amorphous standard such as “operational control” of a border that is always changing. Hispanic groups assert that the real motive for such demands is to unreasonably stretch out any possibility of granting citizenship. “There would be a backlash if citizenship is delayed for 15 or 20 years,” warns Gary Segura, a Stanford University professor and co-founder of Latino Decisions, a research organization on Hispanic public opinion. • A Fragile Coalition: Equally contentious is the question of future flows of immigrants. One proposal would link the number of legal immigrants to economic conditions: more would be let in when times are good, fewer in tougher times. That sounds easier than it is. There will be clashes over how great a priority should be given to those with high-tech skills or to agricultural workers or to family reunification. Small businesses will rebel against any costly verification plan. Most independent studies show that immigration is a decided economic plus, bringing in revenue and increasing productivity and innovation. Yet the arguments of the populist right may resonate more as the debate heats up. NumbersUSA, a leading anti-immigration group, is reviving charges that immigration reform would drive down wages for middle- and low-income workers. Kris Kobach, the Kansas secretary of state who authored anti-immigration measures in several states and the Republican Party’s platform position on the issue last summer, charges taxpayers would be hit with $2.6 trillion in added food stamp, Medicare and Medicaid and welfare costs. That estimate is refuted by reliable studies; it still cuts. • The Ghost of Dennis Hastert: The former Republican speaker of the House decreed that any bill must command majority support among majority party members. Last month, House Speaker John Boehner, Ohio, waived the rule twice: To pass a measure avoiding the automatic spending cuts and tax increases known as the fiscal cliff and then for aid to victims of Hurricane Sandy. Boehner, along with most party leaders, understands his party’s serious difficulties with Hispanic voters and fears making matters worse by blocking an overhaul. Two of the most virulent anti-immigration Republicans in the House, Lamar Smith of Texas and Steve King of Iowa, no longer hold important committee chairmanships. Yet with anti-immigration sentiment still running high among many Republican rank-and-file voters, it’s tough to imagine a majority of the party’s House members backing a comprehensive bill, even if, as is certain, the Senate goes first. Boehner’s only option might be to let a bill pass primarily with Democratic votes. To do that, he would need the support of House Majority Leader Eric Cantor and the whip, Kevin McCarthy; there’s no shrewder politician than McCarthy, who is always attuned to the party’s base. He’s also from California where, after Gov. Pete Wilson played the anti-immigration card in 1994, the Democrats completely dominate politics. • Who is the Ted Kennedy or Rahm Emanuel? The successful, if flawed, passage of Obama’s health-care measure probably wouldn’t have been possible without the savvy hand of former White House Chief of Staff Emanuel. Congressional Democrats and some outside advocates see no Emanuel counterpart in the current White House; privately, some say they would like the White House to enlist a special envoy — perhaps former Housing Secretary and San Antonio Mayor Henry Cisneros or former Senate Majority Leader Tom Daschle — to shepherd the legislation. There was no more capable legislator or deal-maker than the late Senator Kennedy. Egos and tensions already are surfacing among supporters of reform; Republicans don’t trust the White House, and some Democrats worry that Marco Rubio, the ambitious young Republican senator from Florida, will look for a reason to peel off as he comes under pressure from his party’s right wing. There is no senator today who possesses Kennedy’s skill for navigating these shoals. It’s still a slightly better bet that a big immigration bill will be enacted in this Congress. Getting there will be ugly, and the measure will seem to die more than once as it battles these cross pressures.

#### Plan sparks political battles – constituencies and Kerry.

Blees 2008

Tom, Prescription for the Planet, p345-346, president of the Science Council for Global Initiatives, http://www.thesciencecouncil.com/pdfs/P4TP4U.pdf

Clinton’s hatchet man in the Senate was none other than John Kerry, who came loaded for bear. During the debate on the Senate floor he put on an impassioned presentation to convince his fellow senators to terminate the IFR project. But since there were no good reasons to terminate the program—and many reasons not to—other than political posturing on the part of himself and Clinton, Kerry pulled out all the tools of the desperate debater: misinformation, misdirection, appeals to authority, and cherry-picking of reports and data. With an overbundance of fairness to Kerry (considering his behavior) it might be pointed out that politicians are automatically in a sticky position by virtue of the nature of their jobs. A majority of Kerry’s constituents were (and probably still are) almost assuredly dead-set against nuclear power. When people vote for someone to represent them in Washington, the assumption is that their representative will faithfully represent their wishes on policy matters. So what is a politician to do if he finds himself in the awkward position of believing that a policy position the majority of his constituents finds abhorrent is actually a good thing? Does he vote according to his belief, or does he take the position that his constituents would have him take? In cases of high emotion and intense activism (like nuclear power, in many states), repudiating his constituents’ wishes can lead to electoral defeat. “It was for your own good” isn’t something voters want to hear when their leaders have been dismissive of their clear wishes. I have no personal ax to grind against John Kerry (except for this issue). I voted for the guy! Not only that, but I agree with the majority of his votes in Congress. Nor am I about to put words in his mouth. I am prepared, however, to use his own words pulled verbatim from the Congressional Record, and then to refute the bogus arguments he used in order to rob them of any credibility they might conceivably have in future debates. Those senators who successfully refuted Kerry’s arguments and carried the day (alas, only in the Senate) are senators no longer. Kerry, on the other hand, is not only still there but has grown in stature and influence over the years. While I would like to think that in the intervening years he would have investigated the subject and might have a more nuanced and educated view of the different types of nuclear power, I have every reason to believe that this is not the case.

Energy push requires massive political capital---Obama doesn’t have time and energy to get energy and immigration reform

Davenport-energy correspondent for National Journal-12/6/12

How Obama and Congress Could Find Common Ground on Energy

<http://www.nationaljournal.com/magazine/how-obama-and-congress-could-find-common-ground-on-energy-20121206>

AGAINST THE CLOCK One big obstacle is time. A second-term president has about two years to push through major legislation before the next presidential campaign begins. In addition, two huge issues are already on the docket: immigration and tax reform. A sweeping overhaul of the nation’s tax code, which could easily absorb Congress through 2014, offers the first opportunity for major energy reform. Some lawmakers will probably insert a carbon-tax swap proposal in a broader tax-reform package, although for now the carbon tax seems unlikely to succeed. Democrats will also try to end tax breaks for the oil industry while extending those for renewable energy. But if the tax-reform debate ends without comprehensive new energy provisions, it may be too late to enact an energy overhaul. “If President Obama has victories on immigration and the deficit, that’s two potentially momentous victories for the president in a second term, where victories are not typical,” says historian Alfred Zacher, author of Trial and Triumph: Presidential Power in the Second Term. “It’s difficult to believe he’d win three.” Still, Zacher says, “because of his desire for a legacy, and the fact that he won’t need to worry about his base or reelection, he could come up with some unexpected environmental solutions. He’ll have to be a very capable politician, but if he can pull it off, he’ll be revered.” Ultimately, as Dorgan puts it, “there needs to be a will to do it, and it needs to come from the president and the leaders of Congress. If there’s not a will on the part of the president and the leaders of the House and Senate, it won’t happen. He needs to make it a priority.” If President Obama wants a legacy on energy, he’ll have to bring to the issue the same passion that candidate Obama once did.

Political capital is key

Weigant 1/23 (Chris WeigantPolitical writer and blogger at ChrisWeigant.com “Handicapping Obama's Second Term Agenda”

http://www.huffingtonpost.com/chris-weigant/obama-second-term\_b\_2537802.html

The second big agenda item is immigration reform. President Obama holds virtually all the cards, politically, on this one. All Republicans who can read either demographics or polling numbers know full well that this may be their party's last chance not to go the way of the Whigs. Their support among Latinos is dismal, and even that's putting it politely. Some Republicans think they have come up with a perfect solution on how to defuse the issue, but they are going to be proven sadly mistaken in the end, I believe. The Republican plan will be announced by Senator Marco Rubio at some point, and it will seem to mirror the Democratic plan -- with one key difference. Republicans -- even the ones who know their party has to do something on the immigration problem -- are balking at including a "path to citizenship" for the 11 million undocumented immigrants who are already in America. The Republicans are trying to have their cake and eat it too -- and it's not going to work. "Sure," they say, "we'll give some sort of papers to these folks, let them stay, and even let them work... but there's no need to give them the hope of ever becoming a full citizen." This just isn't going to be good enough, though. There are essentially two things citizens can do which green card holders cannot: serve on juries, and vote. The Republicans are not worried about tainted juries, in case that's not clear enough. Republicans will bend over backwards in an effort to convince Latinos that their proposal will work out just fine for everyone. Latinos, however, aren't stupid. They know that being denied any path to citizenship equals an effort to minimize their voice on the national political stage. Which is why, as I said, Obama holds all the cards in this fight. Because this is the one issue in his agenda which Republicans also have a big vested interest in making happen. Obama and the Democrats will, I believe, hold firm on their insistence on a path to citizenship, and I think a comprehensive immigration bill will likely pass some time this year, perhaps before the summer congressional break. The path to citizenship it includes will be long, expensive and difficult (Republicans will insist on at least that), but it will be there. On gun control, I think Obama will win a partial victory. On immigration, I think he will win an almost-total victory. On global warming, however, he's going to be disappointed. In fact, I doubt -- no matter how much "bully pulpiting" Obama does -- that any bill will even appear out of a committee in either house of Congress. This will be seen as Obama's "overreach" -- a bridge too far for the current political climate. Anyone expecting big legislative action on global warming is very likely going to be massively disappointed, to put it quite bluntly. In fact, Obama will signal this in the next few months, as he approves the Keystone XL pipeline -- much to the dismay of a lot of his supporters. Of course, I could be wrong about any or all of these predictions. I have no special knowledge of how things will work out in Congress in the immediate future. I'm merely making educated guesses about what Obama will be able to achieve in at least the first few years of his second term. Obama has a lot of political capital right now, but that could easily change soon. The House Republicans seem almost demoralized right now, and Obama has successfully splintered them and called their bluff on two big issues already -- but they could regroup and decide to block everything the White House wants, and damn the political consequences. Unseen issues will pop up both on the domestic and foreign policy stages, as they always do. But, for now, this is my take on how the next few years are going to play out in Washington. Time will tell whether I've been too optimistic or too pessimistic on any or all of Obama's main agenda items. We'll just have to wait and see.

#### Comprehensive immigration reform is key to the economy and highly skilled workers

Farrell 12/13/12 (Chris, a contributing editor for Bloomberg Businessweek. From 1986-97, he was on the magazine's staff, as a corporate finance staff and department editor and then as an economics editor. Farrell wrote Right on the Money: Taking Control of Your Personal Finances and Deflation: What Happens When Prices Fall? Among Farrell's many awards are a National Magazine Award, two Loeb Awards, and the Edward R. Murrow Award. Farrell is a graduate of the London School of Economics and Stanford University. “Obama’s Next Act: Immigration Reform” <http://www.businessweek.com/articles/2012-12-13/obamas-next-act-immigration-reform>)

Washington won’t get much of a reprieve from verbal pyrotechnics once the drama of the fiscal cliff is over. Up next: major immigration reform. President Obama has made it clear that a comprehensive overhaul of the nation’s badly frayed immigration system is a second-term priority. Many Republican lawmakers are convinced the big takeaway from the 2012 election results is that conservatives need to rethink their hard-line stance on immigration—including illegal immigrants. Here’s what Washington should do before tackling the tough job of rewriting the immigration laws: Create a quicksilver path to citizenship for the 11 million to 12 million undocumented workers in the U.S. (excluding the small number convicted of violent crimes or multiple felonies). The shift in status acknowledges that these foreign-born newcomers, like previous generations of immigrants, overcame significant obstacles to come to the U.S. to make a better life for their families. Illegal immigrants are neighbors heading off to work, sending their kids to school, and attending church. Their everyday lives would vastly improve by moving from the shadows of society into the mainstream. More important from a public-policy perspective, the change would give a boost to the economy’s underlying dynamism. “What you’re doing in the short run is making it easier for workers to move between jobs, a relatively small effect,” says Gordon Hanson, a professor of economics at the University of California at San Diego. “The larger effect from eliminating uncertainty for these immigrants is creating incentives for them to make long-term investments in careers, entrepreneurship, education, homes, and community.” Let’s state the obvious: A rapid transformation of illegal immigrants into legal immigrants isn’t in the cards. Amnesty—let alone citizenship—is an anathema to large parts of the electorate. Too bad, since the scholarly evidence is compelling that immigrants—documented or not, legal or illegal—are a boon to the net economy. “Competition fosters economic growth,” says Michael Clemens, senior fellow at the Center for Global Development in Washington. The economic return from attracting skilled immigrants to the U.S. is well known. Foreign-born newcomers account for some 13 percent of the population, yet they are responsible for one-third of U.S. patented innovations. The nation’s high-tech regions such as Silicon Valley, the Silicon Hills of Austin, Tex., and Boston’s Route 128 rely on immigrant scientists, engineers, entrepreneurs, and employees. Better yet, economist Enrico Moretti at the University of California at Berkeley calculates that a 1 percent increase in the share of college-educated immigrants in a city hikes productivity and wages for others in the city. Less appreciated is how much the economy gains from the efforts of less-skilled immigrants, including illegal workers. Throughout the country, foreign-born newcomers have revived beaten-down neighborhoods as immigrant entrepreneurs have opened small businesses and immigrant families have put down stakes. Immigrant workers have played a vital role keeping a number of industries competitive, such as agriculture and meatpacking. Cities with lots of immigrants have seen their per capita tax base go up, according to David Card, an economist at UC Berkeley. Despite the popular impression that a rising tide of immigrants is associated with higher crime rates, research by Robert Sampson of Harvard University and others offer a compelling case that it’s no coincidence that the growing ranks of immigrants tracks the reduction in crime in the U.S. But don’t newcomers—legal and illegal—drive down wages and job opportunities for American workers? Not really. A cottage industry of economic studies doesn’t find any negative effect on native-born wages and employment on the local level. On the national level the research shows the impact on native-born Americans doesn’t drift far from zero, either positively or negatively. “In both cases, immigrants are more likely to complement the job prospects of U.S.-born citizens than they are to compete for the same jobs as U.S.-born citizens,” Giovanni Peri, an economist at the University of California at Davis, writes in Rationalizing U.S. Immigration Policy: Reforms for Simplicity, Fairness, and Economic Growth. The counterintuitive results reflect a numbers of factors. Immigrants expand the size of the economic pie by creating new businesses, new jobs, and new consumers. Middle-class families find it easier to focus on careers with affordable immigrant labor offering gardening, child care, and other services. Many illegal immigrants aren’t fluent in English, so they don’t compete for the same jobs as native-born workers. Another factor behind the lack of direct competition is the higher educational level of native-born Americans. In 1960 about half of U.S.-born working-age adults hadn’t completed high school, while the comparable figure today is about 8 percent. The real downside concern is on the fiscal side of the immigrant ledger. Yes, more taxes would go into Social Security, Medicare, and the like with legalization, but more people would qualify for Medicaid, welfare, and other benefits. At the local level, many school districts are strained financially from educating immigrant children, legal and illegal. That said, the prospect of fiscal costs would diminish as newly legalized immigrant workers move freely around the country seeking jobs, entrepreneurs are comfortable expanding their payrolls, and immigrant parents push their children to live the American Dream. “Over time, as entrepreneurs emerge and families are better able to get their kids through high school and college, you’re reducing the long-run fiscal claim of the group,” says Hanson. There is no economic evidence that making roughly 6 percent of the workforce illegal will benefit the economy. Plenty of research supports the opposite case. A fast track to legality offers Washington a rare twofer: a just move that’s economically efficient.

**Decline goes nuclear**

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Mathew, and Jennifer “Revisiting the Future: Geopolitical Effects of the Financial Crisis” <http://www.ciaonet.org/journals/twq/v32i2/f_0016178_13952.pdf>

Of course, the report encompasses more than economics and indeed believes the future is likely to be the result of a number of intersecting and interlocking forces. With so many possible permutations of outcomes, each with ample Revisiting the Future opportunity for unintended consequences, there is a growing sense of insecurity. Even so, history may be more instructive than ever. While we continue to believe that the Great Depression is not likely to be repeated, the lessons to be drawn from that period include the harmful effects on fledgling democracies and multiethnic societies (think Central Europe in 1920s and 1930s) and on the sustainability of multilateral institutions (think League of Nations in the same period). There is no reason to think that this would not be true in the twenty-first as much as in the twentieth century. For that reason, the ways in which the potential for greater conflict could grow would seem to be even more apt in a constantly volatile economic environment as they would be if change would be steadier. In surveying those risks, the report stressed the likelihood that terrorism and nonproliferation will remain priorities even as resource issues move up on the international agenda. Terrorism’s appeal will decline if economic growth continues in the Middle East and youth unemployment is reduced. For those terrorist groups that remain active in 2025, however, the diffusion of technologies and scientific knowledge will place some of the world’s most dangerous capabilities within their reach. Terrorist groups in 2025 will likely be a combination of descendants of long established groups\_inheriting organizational structures, command and control processes, and training procedures necessary to conduct sophisticated attacks\_and newly emergent collections of the angry and disenfranchised that become self-radicalized, particularly in the absence of economic outlets that would become narrower in an economic downturn. The most dangerous casualty of any economically-induced drawdown of U.S. military presence would almost certainly be the Middle East. Although Iran’s acquisition of nuclear weapons is not inevitable, worries about a nuclear-armed Iran could lead states in the region to develop new security arrangements with external powers, acquire additional weapons, and consider pursuing their own nuclear ambitions. It is not clear that the type of stable deterrent relationship that existed between the great powers for most of the Cold War would emerge naturally in the Middle East with a nuclear Iran. Episodes of low intensity conflict and terrorism taking place under a nuclear umbrella could lead to an unintended escalation and broader conflict if clear red lines between those states involved are not well established. The close proximity of potential nuclear rivals combined with underdeveloped surveillance capabilities and mobile dual-capable Iranian missile systems also will produce inherent difficulties in achieving reliable indications and warning of an impending nuclear attack. The lack of strategic depth in neighboring states like Israel, short warning and missile flight times, and uncertainty of Iranian intentions may place more focus on preemption rather than defense, potentially leading to escalating crises. 36 Types of conflict that the world continues to experience, such as over resources, could reemerge, particularly if protectionism grows and there is a resort to neo-mercantilist practices. Perceptions of renewed energy scarcity will drive countries to take actions to assure their future access to energy supplies. In the worst case, this could result in interstate conflicts if government leaders deem assured access to energy resources, for example, to be essential for maintaining domestic stability and the survival of their regime. Even actions short of war, however, will have important geopolitical implications. Maritime security concerns are providing a rationale for naval buildups and modernization efforts, such as China’s and India’s development of blue water naval capabilities. If the fiscal stimulus focus for these countries indeed turns inward, one of the most obvious funding targets may be military. Buildup of regional naval capabilities could lead to increased tensions, rivalries, and counterbalancing moves, but it also will create opportunities for multinational cooperation in protecting critical sea lanes. With water also becoming scarcer in Asia and the Middle East, cooperation to manage changing water resources is likely to be increasingly difficult both within and between states in a more dog-eat-dog world.

### China DA

#### China is assuming leadership role over new nuclear power innovation, commercialization, and exports.

Froggatt 6/6/12

http://nuclearexportcontrols.blogspot.com/2012/06/chinese-nuclear-goes-global.html

Chinese Nuclear Goes Global

In the space of a couple of decades, China has become a major player in the global nuclear sector. With by far the largest number of reactors under construction of any country in the world, and further reactors on order, it is seen as a vital market for uranium, a testing ground for new reactors designs and, increasingly, a potential partner for nuclear developments across the world. But the Fukushima crisis in Japan has had a significant – and under reported – impact on Chinese nuclear developments, triggering a freeze on the start of new construction, a re-consideration of the safety standards of domestic designs and unprecedentedly visible opposition to the building of new, inland nuclear plants. While an announcement was made by the State Council last week that the ban will be lifted shortly, the events of the last 15 months will still result in a failure to meet China’s current five-year plan on nuclear development and, depending on how things develop, its 2020 objectives as well. The global clout of China’s nuclear sector is such that the impacts of its decisions stretch far beyond the nation’s borders. From France to Namibia, from reactor designers to uranium-mining firms, the industry will be waiting anxiously for news from China. China came relatively late to the civil nuclear industry: it started construction of its first commercial reactor only in 1985. As of May this year, the country had 16 reactors in operation, which in 2011 provided 1.85% of the country’s electricity, the lowest share of any country with nuclear power. But, despite its late arrival to the party, China was – until Fukushima – proving an energetic player, with an impressive recent history of construction starts. Today, it has 26 reactors under construction, representing 39% of global new build. But Fukushima changed the picture. Three days after the 2011 tsunami triggered equipment failures at the Japanese plant, Xie Zhenhua, vice chairman of China’s top economic planning body, the National Development and Reform Commission, was quoted by Bloomberg as saying “[e]valuation of nuclear safety and the monitoring of plants will be definitely strengthened.” Then, an account of a meeting of the State Council, chaired by premier Wen Jiabao, in mid-March 2011 included the following: “We will temporarily suspend approval of nuclear-power projects, including those in the preliminary stages of development....We must fully grasp the importance and urgency of nuclear safety, and development of nuclear power must make safety the top priority.” As a result, a new China National Plan for Nuclear Safety with short-, medium- and long-term actions was ordered, and the construction of new plants suspended pending its approval. A May 31 meeting of the State Council is said to have given provisional approval to both the safety plan and a set of goals for 2020. If implemented, these proposals will require some of the existing reactors to undertake safety modifications to meet new standards on earthquakes and flooding. However, it is still unclear when construction on new projects might begin again, or when the proposal for a new safety standard will be released for public comments. It is suggested the delay has been partly caused by uncertainty over the strategic direction for future reactor designs, and in particular whether future construction would be dominated by China’s second-generation CPR 1000 design or move towards greater deployment of third-generation designs from overseas. China has not yet fully developed its own third-generation design and would have to rely initially on the European Pressurized Water Reactor (EPR) or the American AP1000 reactor. The potential move towards much greater, or even total, dependence on the most modern design is affected by conflicting concerns: the higher costs of the international design and greater confidence in the safety standard. Tange Zede, a member of China’s State Nuclear Power Technology Corporation (SNPTC), was reported in Nuclear Intelligence Weekly as saying the domestically designed CPR-1000 could not even meet the national safety standards issued in 2004, let alone the most up-to-date international standards. Zede stated that “unless the constructed second generation reactors are renovated, they should not be allowed to load fuel and start operation.” Historically, international nuclear vendors have sought to construct their latest models in China. Russia’s reactor-exporting company Atomstroyexport provided its latest design, the AES-91, and equipment for units one and two at Jiangsu province’s Tianwan power plant, which was completed in 2007. It is said that two further reactors will be commissioned, but no date has been set for construction. Atomic Energy of Canada Ltd (AECL) built two of its heavy-water reactors at theQinshan phase-three plant in Zhejiang, on China’s east coast, but despite the fact these were completed in 2002 and 2003 respectively, no further orders have been placed. Finally, the French utility EDF was engaged in the construction of two reactors at Daya Bay, south China, which were completed in 1994 using technology from French firm Framatome, now AREVA. Two further reactors at phase one of the Ling Ao plant in Shenzhen, also in the south, were built using Framatome equipment, though with a larger domestic contribution. But by the time it came to phase two, a domestic Chinese design was used. Today, the world’s major international reactor vendors, notably AREVA and Westinghouse, are building their most advanced designs in China. In the case of Westinghouse, the AP1000 is the company’s flagship third-generation design, and China is its only sale. The contract, worth around US$5.3 billion (34 billion yuan), is for construction of four reactors, including transfer of both reactor technology and back-end services, particularly waste management. Construction of these four units, two at Sanmen in Zhejiang province and two at Haiyang, further north in Shandong province, is under way, though delays of six to 12 months are reported. For the first unit at Sanmen, the slippage is said to be due to design changes post-Fukushima. For the remaining three units, supply-chain issues relating to the increased use of local components are blamed. If reports are accurate, use of domestic parts across the series of the four reactors will increase from 30% to 70%, and any future reactors will be built with Chinese components alone. The estimated construction costs of the AP1000 are also quoted as rising. In 2009, it was said they would cost US$1,940 per kilowatt (12,400 yuan), but the latest figures range from US$2,300 to US$2,600 per kilowatt. While this is far below the estimated costs of any other third-generation project, globally it is higher than the reported costs for China’s CPR 1000 at US$1,800 per kilowatt. In November 2007, AREVA announced the signing of an €8 billion (US$11.6 billion) contract with China Guangdong Nuclear (CGN) for the construction of two EPRs in Taishan, in south China’s Guangdong province, and said it would provide all the materials and services required to operate them. The Taishan project is owned by Guangdong Taishan Nuclear Power Joint Venture Company Limited, a hook-up between EDF (30%) and CGN. First concrete was poured in October 2009, and unit one was expected to begin operating in 2013, followed by a second unit in 2014. Two other EPR reactors are being built in Europe, one in Finland and one inFrance, but are both running at least 100% over budget and four to five years behind schedule. The delays are such that the Chinese reactors may now be operational before those being built in Europe. Completing the EPRs in China to time and budget will be a vital test for AREVA, which the company will hope can offset its bad experience in Europe. Troubles closer to home are said to be contributing to its lack of sales in other parts of the world, such as the United Arab Emirates. China is also stepping up its nuclear export activity. The most consistent example is Pakistan, which China has supplied with equipment for two reactors at Chashma in Punjab. Construction of units three and four reportedly began at the end of 2011, with China Zhongyuan Engineering as the general contractor and China Nuclear Industry No. 5 Construction Company as the installer. Finance is also coming from China. It doesn’t stop with Pakistan. In recent months, the Chinese industry has been linked with many other projects around the world. The visit of Turkey’s prime minister, Recep Tayyip Erdogan, to Beijing in April was used to discuss China’s assistance for a proposed nuclear-power station at the Turkish city of Sinop. Other possible deals include the sale of a plant to South Africa and a nuclear co-operation agreement in Saudi Arabia, while there has been speculation over potential Chinese ownership of the energy company Horizon Nuclear Power, established by utilities Eon and RWE to build nuclear plants in the United Kingdom, but now up for sale. To fuel the country’s expectation of a rapidly growing nuclear sector, two companies – CGN and China National Nuclear Corp (CNNC) – are permitted to import uranium. To meet official fuel requirements, they are set to increase imports from around 3,600 tonnes per year in 2010 to some 10,000 tonnes in 2020. Of the two firms, CGN has been the more successful over recent years and has signed a number of deals. In November 2010, its leaders inked a 10-year agreement for the supply of 24,200 tonnes of uranium from Kazakhstan’s Kazatomprom. In addition, CGN and Chinese equity funds each have a 24.5% share in AREVA’s mines in Namibia, South Africa and the Central African Republic, which could provide an additional 40,000 tonnes of uranium starting in 2022. CGN signed another deal in November 2010 with Cameco of Canada for the supply of 13,000 tonnes of uranium through 2025. More recently, in February this year, CGN completed a takeover of Extract Resources, which is developing Africa’s largest known uranium resource. CGN, together with the China-Africa Development fund paid €2.2 billion (US$2.7 billion) for the company and associated companies, such as Kalahari Minerals. The CGN activity contrasts starkly with the limited success of CNNC, which has secured little supply outside of China despite attempts in Mongolia, Kazakhstan and Niger. Though, in light of its ambition to secure 2,500 tonnes of uranium a year by 2015, CNNC is likely to increase its activity in the market, and there are suggestions it might take a stake in AREVA’s new project in Niger. Prior to the accident at Fukushima, China’s 12th Five-Year Plan anticipated 43 gigawatts of nuclear power in operation by the end of 2015. Meeting this target would have required the completion of all reactors under construction at the end of 2010, plus those scheduled to start in 2011. It therefore cannot be met. A report on implementation of the 12th Five-Year Plan, published by the China Electricity Council in March estimated that China’s nuclear-generating capacity would reach 80 gigawatts by 2020. But the suspension of the start of new construction and the uncertainty over the strategic direction for future designs make meeting this 2020 target highly unlikely. Public opinion could also pose an obstacle. In a poll carried out by research agency Ipsos MORI after Fukushima, 42% of those surveyed in China were supportive of nuclear power – but 48% were opposed. It is also reported that public opposition and environmental concerns have led to the delay in construction of three inland nuclear power sites. In March this year, oppositionto the proposed Pengze power plant in Jiangxi erupted into the public sphere on a scale not previously seen when local authority documents critical of the project were posted on the internet. Given nuclear’s small contribution to China’s electricity supply, a doubling or trebling of new-build capacity won’t significantly alter the electricity mix or, for that matter, Chinese emission trajectories. However, the future direction of its choice of reactor design domestically could fundamentally change the number of orders for a particular manufacturer. This is something global companies are well aware of, though they should note that – so far – China has not deployed any foreign reactor design at scale, rather ordering a couple and then largely carrying on with domestic designs. Fukushima has already had a significant impact on the Chinese nuclear sector and, more than 15 months after the accident, the moratorium on new construction starts remains in place. The questions are now, one, will future orders be placed at the pre-Fukushima rate? And, two, what new design safety standards are required? The answers to these questions are not only eagerly awaited in Paris and Tokyo, the homes of AREVA and Westinghouse, but also uranium suppliers in Africa and prospective nuclear builders in the United Kingdom, Turkey and Saudi Arabia, to name but a few. China’s nuclear developments probably matter more to the rest of the world than they do to China.

#### US regulatory climate causing shift to China to develop next generation reactors

Hall-Energy Digital-1/23/12

US to Explore Small Nuclear Reactor Designs

<http://www.energydigital.com/green_technology/us-to-explore-small-nuclear-reactor-designs>

In the wake of the Fukushima nuclear power plant disaster last year, technology companies are stepping up to develop safer, more economical nuclear reactors in an attempt to wean dependence on conventional, large-scale nuclear used all over the world today. After Bill Gates took his concepts to China—where regulations on nuclear plants are less stringent and innovations gain support—the DOE's announcement is a positive step in spurring more US manufacturing. “America’s choice is clear - we can either develop the next generation of clean energy technologies, which will help create thousands of new jobs and export opportunities here in America, or we can wait for other countries to take the lead,” said Energy Secretary Steven Chu. “The funding opportunity announced today is a significant step forward in designing, manufacturing, and exporting U.S. small modular reactors, advancing our competitive edge in the global clean energy race.”

#### The plans revitalizing of the US industry undermines Chinese export markets

Ferguson 10—President of the Federation of American Scientists. Adjunct Professor in the Security Studies Program at Georgetown University and an Adjunct Lecturer in the National Security Studies Program at the Johns Hopkins University. (Charles, Nuclear Energy and Nonproliferation: The Implications of Expanded Nuclear Energy in Asia, in Asia’s Rising Power and America’s Continued Purpose, Ed Tellis, Marble and Tanner, 146)

Although China began to develop commercial nuclear energy a decade or two after Japan and South Korea, Beijing is emulating the course charted by Tokyo and Seoul. If China achieves its ambitious goal of more than one hundred operating commercial reactors by 2030, it will likely become the state with the most nuclear power plants in the world unless a major surge in construction occurs in the United States. China may also emerge by then as a major supplier of nuclear technologies and may garner clients in Africa, the Middle East, and Southeast Asia.

Chinese nuclear exports key to soft power

Blank-prof strategic studies institute, Army War College-6/16/10

China puts down marker in nuclear power race<http://www.atimes.com/atimes/China_Business/LF16Cb01.html>

Therefore, China's recent nuclear exports to Pakistan and the future of its nuclear exports in general need to be examined in these three contexts. The first context is that of the overall growth of the assertiveness of China's diplomacy in general and efforts to use nuclear power and military instruments like missiles as sources of influence abroad. In the case of exports to Pakistan, a second context is the long-standing geopolitical rivalry among India, China and Pakistan in which China's "all-weather" friendship with Pakistan has been a deliberate and conscious Chinese strategy to inhibit the growth of Indian power. Finally, we must keep in mind that China is not only an exporter of nuclear energy, it also is a consumer of that energy and so it will be a key market for other exports from the likes of Russia, the United States, France, South Korea, and Japan. As an importer, it obviously will welcome the rivalry of exporters who wish to sell to it so that it can obtain more favorable terms. However, as an exporter of nuclear energy and a power that wants to export more of it for both economic and political gain, it cannot afford to let either its rivals outpace it in Asia or in other areas that China deems as essential to the pursuit of its larger strategic goals.

#### Chinese soft power key to international security and resolving all global problems

Zhang-professor at the Geneva School of Diplomacy and International Relations-9/4/12

http://www.china.org.cn/opinion/2012-09/04/content\_26421330.htm

The rise of China's political soft power

As China plays an increasingly significant role in the world, its soft power must be attractive both domestically as well as internationally. The world faces many difficulties, including widespread poverty, international conflict, the clash of civilizations and environmental protection. Thus far, the Western model has not been able to decisively address these issues; the China model therefore brings hope that we can make progress in conquering these dilemmas. Poverty and development The Western-dominated global economic order has worsened poverty in developing countries. Per-capita consumption of resources in developed countries is 32 times as large as that in developing countries. Almost half of the population in the world still lives in poverty. Western countries nevertheless still are striving to consolidate their wealth using any and all necessary means. In contrast, China forged a new path of development for its citizens in spite of this unfair international order which enabled it to virtually eliminate extreme poverty at home. This extensive experience would indeed be helpful in the fight against global poverty. War and peace In the past few years, the American model of "exporting democracy'" has produced a more turbulent world, as the increased risk of terrorism threatens global security. In contrast, China insists that "harmony is most precious". It is more practical, the Chinese system argues, to strengthen international cooperation while addressing both the symptoms and root causes of terrorism. The clash of civilizations Conflict between Western countries and the Islamic world is intensifying. "In a world, which is diversified and where multiple civilizations coexist, the obligation of Western countries is to protect their own benefits yet promote benefits of other nations," wrote Harvard University professor Samuel P. Huntington in his seminal 1993 essay "The Clash of Civilizations?". China strives for "being harmonious yet remaining different", which means to respect other nations, and learn from each other. This philosophy is, in fact, wiser than that of Huntington, and it's also the reason why few religious conflicts have broken out in China. China's stance in regards to reconciling cultural conflicts, therefore, is more preferable than its "self-centered" Western counterargument. Environmental protection Poorer countries and their people are the most obvious victims of global warming, yet they are the least responsible for the emission of greenhouse gases. Although Europeans and Americans have a strong awareness of environmental protection, it is still hard to change their extravagant lifestyles. Chinese environmental protection standards are not yet ideal, but some effective environmental ideas can be extracted from the China model. Perfecting the China model The China model is still being perfected, but its unique influence in dealing with the above four issues grows as China becomes stronger. China's experiences in eliminating poverty, prioritizing modernization while maintaining traditional values, and creating core values for its citizens demonstrate our insight and sense of human consciousness. Indeed, the success of the China model has not only brought about China's rise, but also a new trend that can't be explained by Western theory. In essence, the rise of China is the rise of China's political soft power, which has significantly helped China deal with challenges, assist developing countries in reducing poverty, and manage global issues. As the China model improves, it will continue to surprise the world.

And, fast expansion of domestic nuclear power necessary to reduce carbon emissions and avoid environmental harms of coal dependence

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<http://www.japanfocus.org/-Augustin-Boey/3698>

Nuclear Power and China’s Energy Future: Limited Options

China’s energy needs, climate change and nuclear power As a growing superpower, China has been making its presence felt in a variety of international arenas. It has long been the world’s most populous country, with over 1.3 billion people. China’s burgeoning economy, with annual GDP growth around ten percent since the 1980s, allowed it to surpass Japan in 2010 to become the world’s second largest economy after the US. As the “world’s factory,” China has become the world’s largest emitter of carbon dioxide since overtaking the US in 2006 in annual volume of emissions, although China’s carbon dioxide emitted per capita remains significantly lower than that in the US. Since China’s economic opening and reform program in the 1970s, the demographic, economic and environmental shift that has occurred has necessarily built upon a commensurate growth in electricity demand. Most of the electricity produced in China has thus far been supplied by coal, which provided 2,940,525 GWh of electricity in 2009 and constituted almost 80 percent of the total electricity generation mix.3 However, the combustion of coal also produces a large quantity of greenhouse gases and other pollutants and is as such a distinctly environmentally-unfriendly fuel, particularly as it is used in conventional coal-burning power plants. With climate change becoming an increasingly important issue on environmental and political fronts, China’s energy policy must therefore simultaneously confront the twin challenges of ensuring energy security and climate change mitigation. Amongst China’s energy security issues is the pressing need to ensure that domestic power demands are met. China’s power generation capacity has increased rapidly, as has its electricity infrastructure, but this growth in supply has only unevenly met the growing demands for electricity.4 This growth is predicted to continue in coming decades – the International Energy Agency has projected that China’s total electricity generation will increase by a compound annual growth rate (CAGR) of 3.9 percent from 2009 to 2035.5 Of this total, coal is projected to increase by a CAGR of 2.5 percent while nuclear power, which has a much smaller base, is projected to increase by a CAGR of 10.6 percent in the same period.6 The need to meet the sustained increase in electricity demand is unlikely to let up as China’s economy continues to grow. This represents a perennial energy policy challenge.7 Recent reports indicate that China’s power supply in 2012 will again be strained by the low capacity additions relative to growth in power consumption.8 China’s unrelenting consumption of electricity is complicated by its quest for energy self-sufficiency. While China does possess substantial fossil fuel reserves, and indeed used to export oil and coal, it has become a net importer of fossil fuels and has extended its geopolitical reach in part to feed its growing power demands.9 The government’s decision to continue its nuclear power programme can thus be seen as a combination of realism about the growing requirements of its electricity grid and belief that the viability and safety of nuclear power technology has not been seriously compromised by the Fukushima nuclear disaster which, unlike Chernobyl or Three Mile Island, was triggered by natural disaster rather than human error.10 Nuclear power has also been legitimized in China’s public policy due to its favourable greenhouse gas profile. Nuclear power produces almost zero carbon directly and its substitution for fossil fuel plants reduces the net greenhouse gas emissions emanating from electricity production.11 Greenhouse gas emissions in China are largely produced by the power sector due to its heavy use of coal.12 China’s need to quickly reduce carbon emissions in power generation is highlighted by the government’s objective to reduce the ratio of GDP to carbon dioxide emissions by 40-45 percent between 2005 and 2020.13 Furthermore, the heavy reliance upon coal fired power generation causes immediate local health and environmental problems. Pollutants released from coal combustion have been identified as causing the rise of respiratory illnesses and has precipitated increased occurrences of acid rain and a consequent degradation in soil quality.14 These factors enhance nuclear power’s appeal as a means to reduce greenhouse gas emissions and improve environmental quality.

China key to global emissions reductions-comparatively more important than the plan

Ekstrom-Joint Program on the Science and Policy of Global Change MIT-5/24/12

Report: China’s actions are crucial on climate change

http://web.mit.edu/newsoffice/2012/china-focus-addressing-climate-change.html

As climate negotiators wrap-up talks in Bonn, Germany, this week, a major point of contention is who needs to do what to slow global warming. Nations such as China and the United States have held back from making substantial emission reduction pledges in the past, as both nations waited for the other to act. But new research out of MIT shows the importance of all major nations taking part in global efforts to reduce emissions — and in particular, finds China's role to be crucial. The report — titled "The Role of China in Mitigating Climate Change" — published in the journal Energy Economics, compares the impact of a stringent emissions reduction policy with and without China's participation. It finds that China's actions are "essential." "As the largest greenhouse gas emitter in the world, without China, climate goals — like the 2 degrees Celsius target that most agree is necessary to prevent serious irreversible consequences — are out of reach," says Sergey Paltsev, the lead author of the study and the assistant director for economic research at MIT's Joint Program on the Science and Policy of Global Change. Specifically, the study finds that with China's help the global community is able to limit warming to 2 degrees Celsius, relative to pre-industrial levels. But without China, we miss that mark by about 1 degree Celsius. Not only will it be close to impossible to achieve the 2 degrees mark without China's participation, but emissions reductions will also be more expensive because substantial costs would shift to only some countries.

### Case

### 1NC Solvency

#### Tech fails – their authors are overly optimistic

Feiveson et al 2010

Harold, senior research scientist at Princeton University’s Program on Science and Global Security, It’s time to give up on breeder Reactors, Bulletin of Atomic Scientists, http://fissilematerials.org/library/Breeders\_BAS\_May\_June\_2010.pdf

The breeder reactor dream is not dead, but it has receded far into the future. In the 1970s, breeder advocates were predicting that the world would have thousands of breeder reactors operating this decade. Today, they are predicting commercialization by approximately 2050. In the meantime, the world has to deal with the hundreds of tons of separated weapons-usable plutonium that are the legacy of the breeder dream and more being separated each year by Britain, France, India, Japan, and Russia. In 1956, U.S. Navy Admiral Hyman Rickover summarized his experience with a sodium cooled reactor that powered early U.S. nuclear submarines by saying that such reactors are “expensive to build, complex to operate, susceptible to prolonged shutdown as a result of even minor malfunctions, and difficult and time-consuming to repair.” More than 50 years later, this summary remains apt.

#### Can’t compete with conventional reactors

Feiveson et al 2010

Harold, senior research scientist at Princeton University’s Program on Science and Global Security, It’s time to give up on breeder Reactors, Bulletin of Atomic Scientists, http://fissilematerials.org/library/Breeders\_BAS\_May\_June\_2010.pdf

Breeder reactors are costly to build and operate. About $100 billion (in 2007 dollars) has been spent worldwide on breeder reactor research and development and on demonstration breeder reactor projects. Yet none of these efforts has produced a reactor that is economically competitive with a conventional light water reactor. The capital costs per kilowatt of generating capacity of demonstration liquid sodium-cooled fast reactors have typically been more than twice those of water cooled reactors of comparable capacity. Although it could be expected that once in production this cost ratio would decline, today few, if any, experts argue that breeder reactor capital costs could be less than 25 percent higher than that of similarly sized water cooled reactors. 4 Detailed economic comparisons of light water and breeder reac-tors show that light water reactors operating on a “once-through” fuel cycle (i.e., with spent fuel stored or disposed of in a deep geological repository) would be far less expensive than plutonium breeder reactors under a wide range of assumptions. 5

#### Empirically IFRs cannot be scaled up – their evidence is nuclear industry hype.

Brown 2008

Paul, former Guardian environment correspondent, author of Global Warning and Voodoo Economics and the Doomed Nuclear Renaissance, email exchange with Polly Higgins, an environmental lawyer, The Environmentalist's Nuclear Debate: (2) Mark Lynas, http://thelazyenvironmentalist.blogspot.com/2008/08/environmentalists-nuclear-debate-2-mark.html

1. Is it true, as Lynas asserts, that 4th gen nuclear would prevent nuclear proliferation? 2. Is the design indeed close to fail-safe? 3. Is it accurate to say that 4th Generation nuclear is more realistic than Carbon Capture and Storage? This is the response I received from Paul Brown: "There are no grounds for saying that a fourth generation of nuclear power would prevent proliferation. There are three generations at present, the third generation is the one being constructed in Finland and another in France. It is the type the government wants to build in England. Many "new" designs for new nuclear power stations exist, all of them called fourth generation reactors. What this means is they could be the new form of reactors adopted after this present third generation. For all of them it is claimed they will be cheaper, safer, and better in every way than the present generation. All this is unproved hype. None has been built so it all theory - like so much else about the nuclear industry. The reason they have not been built is essentially because the first one (of every design) would be very expensive to build and might not work. No government is prepared to fund them so far. The fourth generation that Lynas is talking about is a design that will burn existing stocks of plutonium and uranium thereby reducing stocks of these bomb making materials, therefore reducing proliferation dangers. The UK government was asked by British Nuclear Fuels to sanction research and development into building one of these at Sellafield but was refused on the grounds of cost. So the answer to your first question is no - Lynas is not correct - and no one knows whether an "integral fast reactor breeder plant" would really work. Fast breeders only worked on small scale dustbin size projects and broke every time France, Japan, and Russia tried to scale them up. Second question: Note the "close to" fail-safe. Could have said in theory the design is fail safe. In other words it has not been tried, so how can you know? Nuclear fission is a controlled nuclear explosion. It is virtually impossible to make it fail-safe.

#### Doesn’t work in practice

Green 2009

Jim, PhD in Science and Technology Studies, Nuclear Weapons and 'Fourth Generation' Reactors, July 2009, http://www.foe.org.au/anti-nuclear/issues/nfc/power-weapons/g4nw

Pyroprocessing technology would be used − it would not separate pure plutonium suitable for direct use in nuclear weapons, but would keep the plutonium mixed with other long-lived radioisotopes such that it would be very difficult or impossible to use directly in nuclear weapons. Recycling plutonium generates energy and gets rid of the plutonium with its attendant proliferation risks. These advantages could potentially be achieved with conventional reprocessing and plutonium use in MOX (uranium/plutonium oxide) reactors or fast neutron reactors. IFR offers one further potential advantage − transmutation of long-lived waste radioisotopes to convert them into shorter-lived waste products. In short, IFRs could produce lots of greenhouse-friendly energy and while they're at it they can 'eat' nuclear waste and convert fissile materials, which might otherwise find their way into nuclear weapons, into useful energy. Too good to be true? Sadly, yes. Nuclear engineer Dave Lochbaum from the Union of Concerned Scientists writes: "The IFR looks good on paper. So good, in fact, that we should leave it on paper. For it only gets ugly in moving from blueprint to backyard." Complete IFR systems don't exist. Fast neutron reactors exist but experience is limited and they have had a troubled history. The pyroprocessing and waste transmutation technologies intended to operate as part of IFR systems are some distance from being mature. But even if the technologies were fully developed and successfully integrated, IFRs would still fail a crucial test − they can too easily be used to produce fissile materials for nuclear weapons.

#### Will fail – empirics and costs

Dorfman et al 2012

Paul, nuclear policy analyst at the University of Warwick, Letter to the Guardian, 2-8-12, http://www.guardian.co.uk/environment/2012/feb/08/renewed-push-for-nuclear-power

Proponents of integral fast reactors have so far failed to answer three key questions: do these reactors work, how much do they cost, and how long to build? There have been many unsuccessful attempts to build a working fast reactor. The Japanese spent four decades and $13bn trying. A UK fast reactor at Dounreay was a costly failure which we are still working out how to decommission. No one has built a fast reactor on a commercial basis. Even if these latest plans could be made to work, prism reactors do nothing to resolve the main problems with nuclear: the industry's repeated failure to build reactors on time and to budget. Even the Department of Energy and Climate Change's scientific adviser, David MacKay, says "it isn't the nuclear fuel that's the expensive bit – it's the power stations and the other facilities that go with them." We have a very small window in which to get a grip on our greenhouse gas emissions, but despite proven green technologies existing we are being asked to wait while an industry that has a track record for very costly failures researches yet another much-hyped but still theoretical new technology. You can make paper designs for anything, but that is a long way from sorting out the real world engineering and economic issues that will actually deliver affordable and low-carbon energy. That is why ideas like fast reactors work much better in the headlines than they do in fine print.

#### Not enough waste to solve

Blees 2008

Tom, Prescription for the Planet, 383, president of the Science Council for Global Initiatives, http://www.thesciencecouncil.com/pdfs/P4TP4U.pdf

Before the IFR startup target date of 2015, we should be able to build a few very high capacity reprocessing facilities near the spent fuel depositories around the world. Taking advantage of economies of scale, this plan would minimize the cost of converting spent thermal reactor fuel into IFR startup fuel assemblies, as well as creating an optimal security situation. (For added security these plants could be built below ground. It’s quite easy to build reinforced concrete structures in a hole that’s been excavated with earthmoving equipment, then simply cover it back up. This would protect against both airliner strikes and even the most determined of terrorists.) I know it will sound almost nonsensical after hearing the doomsayers moaning about nuclear waste all these years, but the real problem is that we don’t have enough of it. If we’re going to start building IFRs at the rate envisioned in Chapter Seven, we’ll need more fuel assemblies than the spent fuel can provide. We’ll either have to build them at a slower rate (thus missing our 2050 goal of eliminating all major sources of anthropogenic GHGs) or else augment the IFRs, in the early years, with the best of the third generation thermal reactors to make up the shortfall.

NO chance for IFR’s

---waste

Lovins 9 (Amory Lovins, a student of nuclear issues since the 1960s, is Chairman and Chief Scientist of RMI, Nonprofit research and educational foundation aiming to foster efficient and sustainable use of resources. “New” nuclear reactors, same old story” you have to download it, here is the link http://www.rmi.org/Knowledge-Center/Library/2009-07\_NuclearSameOldStory)

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

---costs from novel risks

Lovins 9 (Amory Lovins, a student of nuclear issues since the 1960s, is Chairman and Chief Scientist of RMI, Nonprofit research and educational foundation aiming to foster efficient and sustainable use of resources. “New” nuclear reactors, same old story” you have to download it, here is the link http://www.rmi.org/Knowledge-Center/Library/2009-07\_NuclearSameOldStory)

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 pres­sure, 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.

Their evidence is industry optimism---no way they solve waste

Lovins 9 (Amory Lovins, a student of nuclear issues since the 1960s, is Chairman and Chief Scientist of RMI, Nonprofit research and educational foundation aiming to foster efficient and sustainable use of resources. “New” nuclear reactors, same old story” you have to download it, here is the link http://www.rmi.org/Knowledge-Center/Library/2009-07\_NuclearSameOldStory)

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,[vii] that such hypothe­tical 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.

### 1NC Warming

Status quo solves warming---epa regs

Baltimore Sun 12 (“EPA's climatic victory” http://www.baltimoresun.com/news/opinion/editorial/bs-ed-epa-climate-20120627,0,7041174.story)

Tuesday's victory by the U.S. Environmental Protection Agency in federal appeals court in the District of Columbia has once again demonstrated that the science of climate change, while famously "inconvenient," is virtually impossible for fair and reasonable people to deny. In upholding the agency's right to regulate the emission of greenhouse gases, including carbon dioxide, under a handful of cases, the three-judge panel recognized climate change as the legitimate threat to public health and safety that it is, and that the Clean Air Act gives the agency appropriate authority to regulate it. This shouldn't have come as much surprise to opponents, as the decision is in line with the Supreme Court's 2007 decision affirming the EPA had that power. It would be nice, of course, if we lived in a world where coal and other fossil fuels could be burned without regard to the pollution they emit, but that's not real life. Unfortunately, the longer the U.S. and other developed countries wait to address climate change, the less chance they can do much about it. We would be sympathetic to polluters' complaints that climate change should be addressed by Congress and not by a regulatory agency if those same opponents had not worked so hard to thwart that very effort two years ago. They now must reap what they sowed: a less political and more science-driven regulatory process. The court's decision means the EPA can move forward with clean car standards that are, incidentally, already supported by industry and labor, and the issuance of restrictive permits to power plants and other major industrial polluters. There are, of course, winners and losers in this transition. Coal-producing states like West Virginia will be hurt economically as they gradually lose a market for their product. But until power plants and other major users of coal develop a reliable and economical method to capture carbon emissions (or at least offset them), this is unavoidable. Yet that setback for coal is a potential boon for alternative sources of energy. Much of the attention now will be on generating power from natural gas, which is less harmful to the environment (though hardly carbon-free), and on improving biofuels, solar and wind technologies. Conservatives can grouse all they want that the transition will inevitably cause consumer prices to rise. Coal was relatively cheap compared to the alternatives — if the harmful effects of greenhouse gas emissions are not factored into its price. Mitt Romney is already running ads in critical states like Ohio attacking the EPA, always a favorite Republican whipping boy, and promising to strip the agency of its authority to regulate carbon. But Mr. Romney may also find himself politically vulnerable on this issue. He has admitted in the past that the earth's climate is changing, that humans are contributing to the problem and that he favored reducing greenhouse gas emissions. Yet his refusal to endorse the EPA's regulatory role would seem to put him in a political no-man's land of recognizing that global warming is real and distressing but declining to do anything worthwhile about it. Even with the mountain of evidence supporting the reality of climate change and now a growing number of court opinions endorsing it, it's hard to believe a politically gridlocked Congress is capable of taking appropriate action on its own. Thus, the EPA represents the best hope for responsible behavior — and for the U.S. to set an example for countries that have been similarly reluctant to embrace reforms. This week's ruling may yet be appealed to the Supreme Court, but experts say there's little chance of reversal there, particularly given the high court's related 2007 decision and the slam-dunk nature of the appeals court's unanimous findings. Opponents would be better served putting their energy where it should have been in the first place — in developing methods to reduce greenhouse gas emissions. From Western fires and Southern flooding to severe weather, threatened animal and plant species and melting ice caps, the impact of global warming is real and distressing. A recent study from the U.S. Geological Survey suggests the East Coast is a "hot spot," as sea levels are rising more rapidly than previously thought. All of which strongly suggests it's time Washington stopped bickering over global warming and started supporting the EPA's efforts.

#### Can’t solve warming –

#### A. Uranium economy

Howard 4/6/9 (Brian C., staffwriter, “Is Green Opposition to Nuclear Power to Blame for Global Warming?” <http://www.thedailygreen.com/living-green/blogs/recycling-design-technology/nuclear-power-global-warming-460409>)

Well nuclear is not zero carbon, as uranium mining is extremely dirty and fossil-fuel heavy, as well as dangerous. It also leaves a lot of toxic fallout (just ask the Native American communities suffering from high cancer rates in their vicinity). Also the only two uranium smelting plants in the U.S. are coal fired and are extremely dirty, releasing a lot of CFCs (since they are grandfathered). Transportation of fuels, storage and protection of nuke plants uses a lot of energy. Also they are plagued with enormous cost overruns and down times, as well as many staffing problems (mistakes, repeated problems with guards sleeping, etc). And they are too expensive and totally uninsurable (without the Congressional act that strictly limits liability to completely unrealistic levels).

#### B. Takes too long

#### Aurilio and Sargent 2011

Anna and Rob, Anna Aurilio is Director of the DC office for Environment America responsible for policy development, research and advocacy on energy issues and anti-environmental subsidies and MS in Environmental Engineering from MIT. Rob Sargent is the Energy Program Director for Environment America. Nuclear Power Will Set Back Race Against Global Warming, New Report Shows <http://www.environmentamerica.org/news/ame/nuclear-power-will-set-back-race-against-global-warming-new-report-shows>

Washington, DC- Far from a solution to global warming, nuclear power will actually set America back in the race to reduce pollution, according to a new report by Environment America. Environment America, the Sierra Club and a national energy expert called on states and Congress to focus on energy efficiency and renewable energy instead of nuclear power as the solution to global warming. “When it comes to global warming, time and money are of the essence and nuclear power will fail America on both accounts,” said Anna Aurilio, Washington DC Office Director of Environment America. “With government dollars more precious than ever, nuclear power is a foolish investment that will set us back in the race against global warming,” she added. Environment America’s new report released today, Generating Failure: How Building Nuclear Power Plants Would Set America Back in the Race Against Global Warming (click here for report) analyzes the role, under a best-case scenario, that nuclear power could play in reducing global warming pollution. Some key findings of the report include: To avoid the most catastrophic impacts of global warming, America must cut power plant emissions roughly in half over the next 10 years. No new reactors are now under construction in the United States, and building a single reactor could take a decade or longer. As a result, it is quite possible that nuclear power could deliver no progress in the critical next decade, despite spending billions on reactor construction. Even if the nuclear industry somehow managed to build 100 new nuclear reactors by 2030, nuclear power could reduce total U.S. emissions of global warming pollution over the next 20 years by only 12 percent. As a result, America would burn through its 40-year electric sector carbon budget - the limit on carbon emissions determined by scientists to be necessary to stave off the worst impacts of climate change - in just 15 years. In contrast, energy efficiency and renewable energy can immediately reduce global warming pollution. Energy efficiency programs are already cutting electricity consumption by 1-2 percent annually in leading states, and the U.S. wind industry is already building the equivalent of three nuclear reactors per year in wind farms. America has vast potential to do more. Building 100 new reactors would require an up-front investment on the order of $600 billion dollars – money which could cut at least twice as much carbon pollution by 2030 if invested in clean energy. Taking into account the ongoing costs of running the nuclear plants, clean energy could deliver as much as 5 times more pollution-cutting progress per dollar overall. Nuclear power is not necessary to provide clean, carbon-free electricity for the long haul. The need for base-load power is exaggerated and small-scale clean energy solutions can actually enhance the reliability of the electric grid. “Nuclear energy remains as flawed an idea today as it was in the 1980’s -- the last time it was rejected by the American public,” said Dave Hamilton, Director of Energy Programs at the Sierra Club. “Today we have cleaner, cheaper, faster solutions that we should be investing in before we seriously consider reviving the nuclear dinosaur,” he added. To address global warming, state and federal policy makers should focus on improving energy efficiency and generating electricity from clean sources that never run out – such as wind, solar, biomass and geothermal power, according to Environment America and the coalition groups that attended today’s event. “Every new nuclear power plant built would be a step backwards when it comes to solving global warming.” said Aurilio. “Clean energy solutions like energy efficiency and renewable energy sources such as wind and solar power are far more effective than nuclear power in both cutting global warming pollution and saving consumers’ money,” she added. “New nuclear power investments would actually worsen climate change because the money spent on nuclear reactors would not be available for solutions that fight it faster and at lower cost,” said Peter Bradford, a former U.S. Nuclear Regulatory Commissioner. “Counting on new nuclear reactors as a climate change solution is no more sensible than counting on an un-built dam to create a lake to fight a nearby forest fire."

No extinction – adaptation

Barrett, professor of natural resource economics – Columbia University, ‘7

(Scott, Why Cooperate? The Incentive to Supply Global Public Goods, introduction)

First, climate change does not threaten the survival of the human species.5 If unchecked, it will cause other species to become extinction (though biodiversity is being depleted now due to other reasons). It will alter critical ecosystems (though this is also happening now, and for reasons unrelated to climate change). It will reduce land area as the seas rise, and in the process displace human populations. “Catastrophic” climate change is possible, but not certain. Moreover, and unlike an asteroid collision, large changes (such as sea level rise of, say, ten meters) will likely take centuries to unfold, giving societies time to adjust. “Abrupt” climate change is also possible, and will occur more rapidly, perhaps over a decade or two. However, abrupt climate change (such as a weakening in the North Atlantic circulation), though potentially very serious, is unlikely to be ruinous. Human-induced climate change is an experiment of planetary proportions, and we cannot be sur of its consequences. Even in a worse case scenario, however, global climate change is not the equivalent of the Earth being hit by mega-asteroid. Indeed, if it were as damaging as this, and if we were sure that it would be this harmful, then our incentive to address this threat would be overwhelming. The challenge would still be more difficult than asteroid defense, but we would have done much more about it by now.

#### Next Ice Age is 50,000 to 130,000 years away

Brock 11**.** (3/19/11. Chris, staff writer. “Taking long, long view on climate change” Watertown Daily Times. http://www.watertowndailytimes.com/article/20110319/CURR04/303199998/?loc=interstitialskip)

Mr. Stager writes that most climate models predict another ice age at the year 50,000. Humans, he said, have stopped that "in its tracks" because of carbon dioxide emissions. The next ice age will arrive around the year 130,000. But not if "we burn through all our remaining coal reserves during the next century or so," Mr. Stager writes. If we do that, he said, the next ice age won't hit for the next half million years.

#### An Ice Age will not result in extinction – US has enough resources to survive

Zbigniew Jaworowski, M.D., Ph.D., D.Sc. Chairman of the Scientific Council of the Central Laboratory for Radiological Protection in Warsaw ,Winter 2004, “Solar Cycles, Not CO2, Determine Climate,” 21st Century Science and Technology, http://www.21stcenturysciencetech.com/Articles%202004/Winter2003-4/global\_warming.pdf

Also, it does not seem possible that we will ever gain influence over the Sun’s activity. However, I think that in the next centuries we shall learn to control sea currents and clouds, and this could be sufficient to govern the climate of our planet. The following “thought experiment” illustrates how valuable our civilization, and the very existence of man’s intellect, is for the terrestrial biosphere. Mikhail Budyko, the leading Russian climatologist (now deceased), predicted in 1982 a future drastic CO2deficit in the atmosphere, and claimed that one of the next Ice Age periods could result in a freezing of the entire surface of the Earth, including the oceans. The only niches of life, he said, would survive on the active volcano edges.60 Budyko’s hypothesis is still controversial, but 10 years later it was discovered that 700 million years ago, the Earth already underwent such a disaster, changing into “Snowball Earth,” covered in white from Pole to Pole, with an average tempera- ture of minus 40°C.15 However let’s assume thatBudyko has been right and that everything, to the very ocean bottom, will be frozen. Will [hu]mankind survive this? I think yes, it would. The present technology of nuclear power, based on the nuclear fission of uranium and thorium, would secure heat and electricity supplies for 5 billion people for about 10,000 years. At the same time, the stock of hydrogen in the ocean for future fusion-based reactors would suffice for 6 billion years. Our cities, industrial plants, food-producing greenhouses, our livestock, and also zoos and botanical gardens turned into greenhouses, could be heated virtually forever, and we could survive, together with many other organisms, on a planet that had turned into a gigantic glacier. I think, however, that such a “passive” solu- tion would not fit the genius of our future descendants, and they would learn how to restore a warm climate for ourselves and for everything that lives on Earth.

#### No food war

Salehyan 2007

Idean, Professor of Political Science at the University of North Texas. “The New Myth About Climate Change Corrupt, tyrannical governments—not changes in the Earth’s climate—will be to blame for the coming resource wars.” http://www.foreignpolicy.com/articles/2007/08/13/the\_new\_myth\_about\_climate\_change

First, aside from a few anecdotes, there is little systematic empirical evidence that resource scarcity and changing environmental conditions lead to conflict. In fact, several studies have shown that an abundance of natural resources is more likely to contribute to conflict. Moreover, even as the planet has warmed, the number of civil wars and insurgencies has decreased dramatically. Data collected by researchers at Uppsala University and the International Peace Research Institute, Oslo shows a steep decline in the number of armed conflicts around the world. Between 1989 and 2002, some 100 armed conflicts came to an end, including the wars in Mozambique, Nicaragua, and Cambodia. If global warming causes conflict, we should not be witnessing this downward trend. Furthermore, if famine and drought led to the crisis in Darfur, why have scores of environmental catastrophes failed to set off armed conflict elsewhere? For instance, the U.N. World Food Programme warns that 5 million people in Malawi have been experiencing chronic food shortages for several years. But famine-wracked Malawi has yet to experience a major civil war. Similarly, the Asian tsunami in 2004 killed hundreds of thousands of people, generated millions of environmental refugees, and led to severe shortages of shelter, food, clean water, and electricity. Yet the tsunami, one of the most extreme catastrophes in recent history, did not lead to an outbreak of resource wars. Clearly then, there is much more to armed conflict than resource scarcity and natural disasters.

#### China won’t lash out – comparatively worse

Ross 2004

Robert, Professor of Political Science @ Boston College, Chinese Foreign Policy in Transition, pg. 147

China’s ability to wreak havoc is not new to East Asia. Since 1949 the United States has had to cope with U.S.-Chinese conflicts of interest. In many respects, it is easier to deal with these conflicts today than ever be¬fore. Indochina is no longer an issue. China is collaborating with South Korea to encourage North Korean moderation. Even the conflict with Taiwan has become more manageable. Taiwan now has a stable government, a prosperous economy, and a vastly improved military. The mainland’s ability to challenge Taiwan’s security is less today than ever before. Moreover, the mainland is no longer allied with a global superpower that can shield it in a conflict with the United States over Taiwan. Nor is it an antagonist in a polarized East Asian balance of power. Participation in the global economy and a stake in regional stability encourage China to avoid confrontations with the United States over Taiwan.

#### **They don’t access extinction from biodiversity—empirics prove**

Jablonski 1 (Prof @ Department of Geophysical Sciences, University of Chicago “Lessons from the past: Evolutionary impacts of mass extinctions” May 16. http://www.pnas.org/content/98/10/5393.full//Donnie)

Mass extinctions have never entirely reset the evolutionary clock: even the huge losses at the end of the Permian, which appear to have permanently restructured marine and terrestrial communities, left enough taxa and functional groups standing to seed the recovery process without the origin of new phyla ([39](file:///C%3A%5CUsers%5CDebate%2013%5CDownloads%5Cimpact%20defense-earth%20destruction-or-disease%20%281%29.doc#ref-39)). One key to understanding the past and future evolutionary role of extinctions will involve the factors that permit the persistence of certain biological trends or patterns—e.g., net expansion or contraction of clades or directional shifts in morphology—in the face of extensive taxonomic loss and ecological disruption. Besides extinction, at least four evolutionary patterns can be seen in the fossil record. These are: (i) unbroken continuity, (ii) continuity with setbacks, (iii) survival without recovery (“dead clade walking”), and (v) unbridled diversification.

Not key to anything

Dodds 2k (Donald, M.S. P.E., President of North Pacific Research, 2000, <http://webcache.googleusercontent.com/search?q=cache:X8s-Gaf_5r0J:northpacificresearch.com/downloads/The_myth_of_biodiversity.doc+the+planet+was+microbial+and+not+diverse.+Thus,+the+first+unexplainable+fact+is+that+the+earth+existed+for+3.5+billion+years&cd=1&hl=en&ct=clnk&gl=us>)

Biodiversity is a corner stone of the environmental movement. But there is no proof that biodiversity is important to the environment. Something without basis in scientific fact is called a Myth. Lets examine biodiversity through out the history of the earth. The earth has been a around for about 4 billion years. Life did not develop until about 500 million years later. Thus for the first 500 million years bio diversity was zero. The planet somehow survived this lack of biodiversity. For the next 3 billion years, the only life on the planet was microbial and not diverse. Thus, the first unexplainable fact is that the earth existed for 3.5 billion years, 87.5% of its existence, without biodiversity. Somewhere around 500 million years ago life began to diversify and multiple celled species appeared. Because these species were partially composed of sold material they left better geologic records, and the number of species and genera could be cataloged and counted. The number of genera on the planet is a indication of the biodiversity of the planet. Figure 1 is a plot of the number of genera on the planet over the last 550 million years. The little black line outside of the left edge of the graph is 10 million years. Notice the left end of this graph. Biodiversity has never been higher than it is today.

Institutions check escalation of food conflict

Gartzke 2012

Erik, Associate Professor, Department of Political Science, University of California, San Diego, Could climate change precipitate peace?, Journal of Peace Research January 2012 vol. 49 no. 1 177-192

To understand why global warming can coincide with a reduction in interstate conflict, it will be useful to recall that the contemporary situation differs from earlier eras of climate change to the degree that warming is a product of human activity. Human beings burn fossil fuels that produce greenhouse gases that lead to global warming. These same fossil fuels propel economic and political systems that appear less inclined to certain forms of violent conflict (Gartzke & Rohner, 2010, 2011). Industrialization leads to economic development and democracy, each of which has been associated with peace. Prosperity also encourages international institutions and stabilizing global and regional hierarchies. Thus, global warming may coincide with peace, while not actually inhibiting warfare. This study explores the relationship between climate change, liberal processes fueled by industrialization (development, democracy, international institutions), and interstate conflict. Previous studies of liberal peace have not paid much attention to climate change. Climatic peace may be yet another benefit purchased by all but accruing mostly to the developed world. At the same time, there might be trade-offs to consider in terms of the pace of development and the environment. The curvilinear relationship between development and interstate peace reported here and elsewhere (Boehmer & Sobek, 2005) suggests important advantages to increasing the pace of development, rapidly moving states through the ‘danger zone’ of partial industrialization. If efforts to combat climate change cause nations to stagnate economically, then the world may unintentionally realize the worst fears of pundits and politicians for climate-induced conflict. While the findings reported below clearly indicate that the rise in global temperatures has not (yet) led to increased interstate conflict, there remains room for debate about whether global warming has other deleterious, or even beneficial, effects. Under some conditions climate change appears to reduce the frequency of interstate disputes, though there is no compelling rationale for why this should be the case, even as this particular relationship is not robust with respect to the broadest set of coincident explanations. It may be too soon to provide a definitive answer to whether warming increases, reduces, or has no effect on interstate conflict, though of course waiting for more data also poses trade-offs. Conversely, the consequences of global warming may well differ across countries and regions. Some states may become more violent under pressure from a warmer planet, even as other states or regions find greater cause for cooperation. For now, I focus on detailing global patterns of climate change and interstate conflict, a necessary first step.

#### Nuclear winter outweighs – no adaptation.

Starr 2008

Steven, Associate member of the Nuclear Age Peace Foundation Director of Clinical Laboratory Science Program, University of Missouri-Columbia, Catastrophic Climatic Consequences of Nuclear Conflict, International Network of Engineers and Scientists Against Proliferation, Bulletin 28 April 2008, http://www.inesap.org/bulletin-28/catastrophic-climatic-consequences-nuclear-conflict

Climatic changes resulting from nuclear conflict would occur many thousands of times faster – and thus would likely be far more catastrophic – than the climatic changes predicted as a result of global warming.40 The rapidity of the war-induced changes, appearing in a matter of days and weeks, would allow human populations and the whole plant and animal kingdoms no time to adapt. It is worth noting that the same methods and climate models used to predict global warming were used in these studies to predict global cooling resulting from nuclear war. These climate models have proved highly successful in describing the cooling effects of volcanic clouds during extensive U.S. evaluations and in international intercomparisons performed as part of the Fourth Assessment of the Intergovernmental Panel on Climate Change.41 Predicted drops in average global temperatures caused by small, moderate, and large nuclear conflicts are contrasted with the effects of global warming during the last century in Figure 4 and with average surface air temperatures during the last 1,000 years in Figure 5. There are, of course, other important considerations which must be made when estimating the overall environmental and ecological impacts of nuclear war. These must include the release of enormous amounts of radioactive fallout, pyrotoxins, and toxic industrial chemicals into the ecosystems. A decade after the conflict, when the smoke begins to clear, there will also be massive increases in the amount of deadly ultraviolet light which will reach the surface of the Earth as a result of ozone depletion. All these by-products of nuclear war must be taken into account when comparing the danger of nuclear conflict to other potential dangers now confronting humanity and life on Earth. Conclusions We cannot allow our political and military leaders to continue to ignore the potential cataclysmic climatic and environmental consequences posed by the use of nuclear weapons. Civilization remains at risk from nuclear winter despite a three-fold reduction in global nuclear arsenals during the last 20 years. This is due in part to the fact that nuclear arms control agreements have focused primarily on the dismantlement of delivery systems and have failed to include the verified dismantlement of nuclear warheads. Future negotiations must consider all the potential effects of the total number of nuclear weapons in the nuclear arsenals.44 The U.S. and Russia must recognize the senselessness of continued planning for a nuclear first-strike which, if launched, would make the whole world including their own country uninhabitable. As a first step, they should end their preparations for the pre-emptive use of their nuclear arsenals, stand-down their high-alert strategic nuclear forces, and eliminate the standard operating procedure of launch-on-warning.45 It is essential that all the nuclear weapon states be convinced of the need to honor their commitments under Article VI of the Non-Proliferation Treaty, to “act in good faith” to eliminate their nuclear arsenals. As long as they ignore this commitment and maintain nuclear weaponry as the cornerstone of their military forces, they confer validity to the false idea that nuclear weapons provide security to those who possess them, and thus encourage non-nuclear weapon states to follow in their footsteps. The unalterable conclusion is that a nuclear war cannot be won and must not be fought. Nuclear weapons must be seen not only as instruments of mass murder, but as instruments of global annihilation which put all humanity and civilization under a common threat of destruction.

### 1NC Labs

#### Argon is highly adaptable---cooperative agreements make them resilient

Clayton 11 (Deborah Clayton, director, Argonne National Laboratory's Technology Development & Commercialization Division “Economy, Energy, and Entrepreneurship: Argonne National Laboratory” http://www.rdmag.com/articles/2011/12/economy-energy-and-entrepreneurship-argonne-national-laboratory)

Livingstone: How does your organization make adjustments to changes in funding or times when funding seems uncertain? And, that seems to have been quite a bit recently.

Clayton: As we all know, the national laboratory system continues to face budget uncertainties. The ongoing national debate about America's investment in scientific research has made us keenly aware of the need to achieve our mission more efficiently and to find ways to reduce spending wherever possible.

To support that effort, Argonne has implemented a reorganization plan designed to increase efficiency and enhance delivery of our mission support functions. That plan included elimination of about 70 positions, a move that is expected to save the laboratory about $13 million a year.

By trimming our operations and refocusing on the bottom line, we are demonstrating our fiscal responsibility, improving the delivery and effectiveness of our mission support functions, and safeguarding the laboratory’s ability to do groundbreaking science in the months and years ahead.

We also are expanding our outreach to potential collaborators in industry, to raise their awareness of our exceptional facilities and research expertise. Through cooperative research and development agreements (CRADAs) and Work for Others agreements, we can provide unique research capabilities to industry. These agreements give our industrial partners access to research opportunities that otherwise would not be available to them, and they also constitute a revenue stream for Argonne.

Additionally, we are developing new models of licensing—both exclusive and non-exclusive—that will create revenues both today and going forward. However, our mission always will be to address the most important scientific and societal needs of our nation, and to world-class science, engineering, and user facilities to deliver innovative research and technologies in our national interest. So even though we hope to build stronger collaborative partnerships with industry, our main focus always will be science and engineering in the public interest—and for that reason, the Department of Energy will remain the major sponsor of our work.

Status quo solves – incentives and university grants

DOE 8/9/11

Department of Energy Announces $39 Million to Strengthen University-Led Nuclear Energy Research and Development

<http://energy.gov/articles/department-energy-announces-39-million-strengthen-university-led-nuclear-energy-research>

Washington, D.C. – The Department of Energy today announced that it has awarded up to $39 million in research grants aimed at developing cutting-edge nuclear energy technologies and training and educating the next generation of leaders in the U.S. nuclear industry. Speaking at the U.S. Department of Energy’s annual Nuclear Energy University Programs (NEUP) workshop in Chicago, Assistant Secretary Peter Lyons said the grants would support up to 51 projects at colleges and universities around the country. Through NEUP, the Department is working to leverage the research and development capabilities of American universities and colleges to enhance U.S. leadership in the global nuclear energy industry. NEUP builds upon the Obama Administration’s efforts to ensure that nuclear power is a part of our clean energy mix. Through programs like NEUP, the Department is taking action to restart the nuclear industry as part of a broad approach to create new clean energy jobs and cut carbon pollution. “The Obama Administration continues to believe that nuclear energy has an important role to play as America moves to a clean energy future,” said Secretary of Energy Steven Chu. “As part of our commitment to restarting the American nuclear industry and creating thousands of new jobs and export opportunities in the process, we are investing in cutting-edge nuclear energy research projects that can develop the technologies required to advance our domestic nuclear industry and maintain global leadership in the field.” The 51 awards announced today are led by 31 U.S. universities in more than 20 states. Other universities, industry leaders, and national laboratories will serve as collaborators and research partners. The projects selected for negotiation of award cover four nuclear energy research fields including Fuel Cycle Research and Development; Reactor Concepts Research, Development and Demonstration; Nuclear Energy Advanced Modeling and Simulation; and Transformative Research.

#### More evidence – cash for workforce now increases nuclear expertise

Gene Aloise, Director, Natural Resources and Environment, GAO, April 12, MODERNIZING THE NUCLEAR SECURITY ENTERPRISE: Strategies and Challenges in Sustaining Critical Skills in Federal and Contractor Workforces, http://www.gao.gov/assets/600/590488.pdf

According to NNSA officials, these five metrics are tracked very closely by M&O contractors at all sites, and attrition, employment acceptance rates, and pay and benefits comparability data are systematically collected at regular intervals enterprisewide. If any of these metrics indicate a problem in retention, for example, NNSA officials told us, action would be taken to address it. For example, these metrics were monitored very closely by NNSA and the M&O contractors at Los Alamos National Laboratory and Lawrence Livermore National Laboratory during their 2006 transition to a new M&O contract with less generous retirement and medical benefits. There were concerns that this change could lead to a spike in attrition among highly skilled staff that could in turn lead to difficulties in the laboratories meeting deadlines on project deliverables. Similarly, NNSA is now carefully watching the same metrics at Sandia National Laboratories because the M&O contractor substantially cut future retirement benefits that took effect for those employees who remained at the lab beyond the end of 2011. If the metrics indicate greater attrition than expected, the laboratory could adjust its recruiting strategies to hire more staff.

#### Incentives now solve the advantage enough

Gene Aloise, Director, Natural Resources and Environment, GAO, April 12, MODERNIZING THE NUCLEAR SECURITY ENTERPRISE: Strategies and Challenges in Sustaining Critical Skills in Federal and Contractor Workforces, http://www.gao.gov/assets/600/590488.pdf

Some of the human capital challenges facing the enterprise are beyond the control of NNSA and its M&O contractors, and in these cases, NNSA has authorized increased compensation to help the sites acquire or retain the personnel they require. The site locations are fixed, and site staff cannot change the number of U.S. citizens completing graduate science and technology programs. Similarly, NNSA and its contractors have no choice but to adapt to the increased mobility of their staff resulting from the shift to a defined contribution retirement systems. To mitigate these challenges, NNSA and its contractors continue to offer financial incentives to recruit and retain critically skilled employees, with competitive starting salaries. The scale of these financial incentives can vary by location and position, but NNSA reported that this strategy has thus far been adequate for recruiting and retaining the talent they need.

**Fears of ‘grey goo’ are outlandish and based on dated information**

**Center for Responsible Nanotechnology**, **2003** (“Grey Good is a Small Issue” December 13, http://crnano.org/BD-Goo.htm)

Fear of runaway [nanobots](http://crnano.org/BD-Nanobots.htm), or “grey goo”, is more of a public issue than a scientific problem. Grey goo as a result of out of control nanotechnology played a starring role in an article titled "[The Grey Goo Problem](http://www.nytimes.com/2003/12/14/magazine/14GRAY.html%20/%20_blank)" by Lawrence Osborne in today's [*New York Times Magazine*](http://www.nytimes.com/pages/magazine/index.html%20/%20_blank). This article and other recent fictional portrayals of grey goo, as well as statements by scientists such as [Richard Smalley](http://crnano.org/Debate.htm), are signs of significant public concern. But although biosphere-eating goo is a gripping story, current [molecular manufacturing](http://crnano.org/crnglossary.htm%20/%20Molecular) proposals contain nothing even similar to grey goo. The idea that nanotechnology manufacturing systems could run amok is based on outdated information. The earliest proposals for molecular manufacturing technologies echoed biological systems. Huge numbers of tiny robots called “[assemblers](http://crnano.org/crnglossary.htm%20/%20Assembler)” would self-replicate, then work together to build large products, much like termites building a termite mound. Such systems appeared to run the risk of going out of control, perhaps even “eating” large portions of the biosphere. Eric Drexler warned in 1986, “We cannot afford certain kinds of accidents with replicating assemblers.” Since then, however, Drexler and others have developed models for making safer and more efficient machine-like systems that resemble an assembly line in a factory more than anything biological. These mechanical designs were described in detail in Drexler's 1992 seminal reference work, [*Nanosystems*](http://www.foresight.org/Nanosystems/toc.html%20/%20_blank), which does not even mention free-floating autonomous assemblers. Replicating assemblers will not be used for manufacturing. Factory designs using integrated nanotechnology will be much more efficient at building products, and a [personal nanofactory](http://crnano.org/bootstrap.htm) is nothing like a grey goo nanobot. A stationary tabletop factory using only preprocessed chemicals would be both safer and easier to build. Like a drill press or a lathe, such a system could not run wild. Systems like this are the basis for responsible molecular manufacturing proposals. To evaluate Eric Drexler's technical ideas on the basis of grey goo is to miss the far more important policy issues created by general-purpose nanoscale manufacturing. A grey goo robot would face a much harder task than merely replicating itself. It would also have to survive in the environment, move around, and convert what it finds into raw materials and power. This would require sophisticated chemistry. None of these functions would be part of a molecular manufacturing system. A grey goo robot would also require a relatively large computer to store and process the full blueprint of such a complex device. A nanobot or nanomachine missing any part of this functionality could not function as grey goo. Development and use of molecular manufacturing will create nothing like grey goo, so it poses no risk of producing grey goo by accident at any point.

**‘Grey Goo’ is science fiction – nanotechnology can be built without self replicating. Their authors are just fear-mongering.**

**Institute of Physics, 2004** (“Nanotechnology pioneer slays “grey goo” myths” July 6, http://www.iop.org/EJ/news/-topic=763/journal/0957-4484)

Eric Drexler, known as the father of nanotechnology, today (Wednesday, 9th June 2004) publishes a paper that admits that self-replicating machines are not vital for large-scale molecular manufacture, and that nanotechnology-based fabrication can be thoroughly non-biological and inherently safe. Talk of runaway self-replicating machines, or “grey goo”, which he first cautioned against in his book Engines of Creation in 1986, has spurred fears that have long hampered rational public debate about nanotechnology. Writing in the Institute of Physics journal Nanotechnology, Drexler slays the myth that molecular manufacture must use dangerous self-replicating machines. “Runaway replicators, while theoretically possible according to the laws of physics, cannot be built with today’s nanotechnology toolset,” says Dr. Drexler, founder of the Foresight Institute, in California, and Senior Research Fellow of the Molecular Engineering Research Institute (MERI). He continued: “Self-replicating machines aren't necessary for molecular nanotechnology, and aren’t part of current development plans.” The paper, Safe Exponential Manufacturing by Chris Phoenix, Director of Research of the Center for Responsible Nanotechnology, (CRN) and Dr. K. Eric Drexler, also warns that scaremongering over remote scenarios such as “grey goo” is taking attention away from serious safety concerns, such as a deliberate abuse of the technology. Phoenix said: “Runaway replication would only be the product of a deliberate and difficult engineering process, not an accident. Far more serious, however, is the possibility that a large-scale and convenient manufacturing capacity could be used to make powerful non-replicating weapons in unprecedented quantity, leading to an arms race or war. Policy investigation into the effects of molecular nanotechnology should consider deliberate abuse as a primary concern, and runaway replication as a more distant issue.”

**The scientist who first promulgated the ‘grey goo’ theory has since rejected – self replicating nanobots are only possible in Michael Chriton’s novels**

**Kalaugher, 2004** (Liz, Northwestern University, “ Grey Goo and Other Scary Stories” June 9, http://www.discovernano.northwestern.edu/affect/societalimpact/scarystories)

In 1986, Dr. Eric Drexler published his book entitled *Engines of Creation*. The book included Drexler’s fears about the future of nanotechnology and vividly described the possibility of miniature devices called “nanobots,” capable of reproducing themselves and eventually taking over the planet. He labeled the resulting mess “grey goo” and the notice generated a great deal of fear (not to mention subject matter for a number of science fiction writers). Since then, researchers have learned enough about nano-manufacturing to declare the grey goo scenario “obsolete.” In a 2004 interview, Eric Drexler stated, “Updated molecular manufacturing concepts…make fears of accidental runaway replication - loosely based on my 1986 grey goo scenario - quite obsolete. Chris Phoenix [of the Center for Responsible Nanotechnology] and I wrote the paper to counter the main threat posed by grey goo, which is that all the hype diverts attention from more important issues - research directions, development paths, and the role of advanced nanotechnologies in medicine, the environment, the economy, and in strategic competition.” About the time that the “nanobots” story was cooling off, Michael Crichton’s science fiction thriller *Prey* was released in bookstores. In Crichton's book, miniature devices called “nano-robots” capable of reproducing themselves, eventually take over the world. Sound familiar? Although the story is about as possible as the story lines from Crichton’s other works like *Jurassic Park*, there are just enough scientific facts sprinkled into the story to make it sound somewhat plausible. While there are still many unknowns surrounding nanotechnology, it’s important to separate the science fact from the science fiction. The majority of nanotechnology research focuses on issues other than nanobots, and specifically the design of new materials with properties that derive from their size and composites, and which can be used to make a positive impact in fields ranging from medicine to energy conversion and storage.

**BLUE GOO SOLVES GREY GOO**

**Arrius in 2003** [Quintus – staff writer for Strategy Page – 11/6, “Nanotechnology: Apocalyptic Development?,” www.strategypage.com]

<One suggested solution to the problem of "grey goo" is "blue goo" - special "policeman" nanotech devices designed specifically to recognise and disassemble molecular machines which are out of control. The blue goo would be deliberately released into the world, and allowed to replicate to a pre-determined level, there to wait and monitor the activity of other nanotech and act in case of runaway self-replicators. It's a physically possible solution to the problem - but the human race has a long history of developing technologies which destroy the environment well before they develop the technologies to control them. With nanotech, we will only get one chance - the first accidental release could be the end of all life on earth.>

**Grey Goo wouldn’t destroy the universe even if it happened**

**Webb in ’02** (Stephen, Physicist at Open University of London, “If the Universe Is Teeming with Aliens... Where Is Everybody? Fifty Solutions to Fermi's Paradox and the Problem of Extraterrestrial Life”, p. 127)

This solution to the paradox, which has been seriously proposed, suffers the same problem as many other solutions: even if it can occur it is not convincing as a "universal" solution. Not every ETC will succumb to the gray goo.

## \*\*\*2NC

### \*\*\*Immigration Reform DA

## Impact

### Econ Impact Calc

#### Economic decline risks nuclear conflict, increased propensity to fight over resources, military stimulus causes proliferation and miscalculation, short timeframe for decisions magnifies our impact, that’s Harris and Burrows, prefer our evidence because it assumes the current recession.

#### And, these wars cause extinction

Daguzan 10 (Citing Jean Francois, PhD and Senior Research Fellow at the Foundation for Strategic Research, “Economic crisis threatens existence of human beings” November 26, 2010, Right Vision News, pg online @ lexisnexis)

The financial and economic crisis being faced by the world is in fact a human catastrophe as it may threaten the well-being and existence of human beings in the globe, said Dr. Jean-Francois Daguzan, senior research fellow at the Foundation for Strategic Research, France. He was speaking at a roundtable discussion on ‘The Strategic Consequences of World Financial and Economic Crisis’ organised by the South Asia Strategic Stability Institute (SASSI) here on Wednesday. Former ambassador Tasawur Naqvi conducted the proceedings. Dr. Jean-Francois Daguzan said that the crisis could lead to violence. Every effort should be made to control it as it may lead to risky and dangerous situations. He said that the balance of power had already changed. He said that if economic crisis is compared with 9/11 and invasions of Iraq and Afghanistan, the World Trade Centre debacle seemed to be a contingent affair. The financial crisis to him was like a nuclear war, which is tilting the balance of power in the world. He said that an amount of $50,000 billion went to the aid of developing nations. He noted the impact of the snowballing crisis on stock exchanges and investment potential of different countries. He said that the crisis also affected stability of nations by impacting equities and stock exchanges. He said that the war in currencies is the last impact of the crisis in an age of artificial monetary powers of currencies, which would provoke and continue with economic crises within countries. He said that it is rebalancing the power politics in the world. He enumerated Southeast Asia’s economies facing problems in 1988 when China was big, but not enough to become the lone competitor of the west.

### **Econ Turns Warming**

Elliott 2008

Larry, Economics Editor at the Guardian, Can a dose of recession solve climate change?, http://www.guardian.co.uk/business/2008/aug/25/economicgrowth.globalrecession

There are many reasons why it is not quite as simple as that. My rudimentary understanding of the science of climate change is that concentrations of greenhouse gases have been building up over many decades, and you can't simply turn them off like a tap. Even a three- or four-year 1930s-style global slump would have little or no impact, particularly if it was followed by a period of vigorous catch-up growth. On a chart showing growth since the dawn of the industrial age 250 years ago, the Great Depression is a blip. Similarly, Britain's trade deficit always comes down in recessions because imports go down, but then widens again once the economy returns to its trend rate of growth. Politically, recessions are not helpful to the cause of environmentalism. Climate change is replaced by concerns about unemployment and stimulating growth. To be fair, politicians respond to what they hear from voters: Gordon Brown's survival as prime minister depends on how well his package of economic measures is received, not on what he does or doesn't do to limit greenhouse gases. Looking back, it is clear that every advance in the green movement has coincided with period of strong growth - the early 1970s, the late 1980s and the first half of the current decade. It was tough enough to get world leaders to make tackling climate change a priority when the world economy was experiencing its longest period of sustained growth: it will be mightily difficult to persuade them to take measures that might have a dampen growth while the dole queues are lengthening. Those most likely to suffer are workers in the most marginal jobs and pensioners who will have to pay perhaps 20% of their income on energy bills. Hence, recession does not offer even a temporary solution to the problem of climate change and it is a fantasy to imagine that it does. The real issue is whether it is possible to challenge the "growth-at-any-cost model" and come up with an alternative that is environmentally benign, economically robust and politically feasible. Hitting all three buttons is mightily difficult but attempting to do so is a heck of a lot more constructive than waiting for industrial capitalism to collapse under the weight of its own contradictions.

High skilled workforce key to US clean tech leadership

Norris 10--Teryn, "Racing for Clean Tech Jobs: Why America Needs an Energy Education Strategy", Daily Kos, March 18th, [http://www.dailykos.com/story/2010/3/18/847363/-Racing-for-Clean-Tech-Jobs:-Why-America-Needs-an-Energy-Education-Strategy](http://www.dailykos.com/story/2010/3/18/847363/-Racing-for-Clean-Tech-Jobs%3A-Why-America-Needs-an-Energy-Education-Strategy)

In the aftermath of the Great Recession, the United States faces serious questions about the future of its economy and jobs market. Where will the good jobs of the future come from, how do we prepare the American workforce, and what is our strategy to maintain economic leadership in an increasingly competitive world? A growing consensus suggests that clean tech will be one of our generation's largest growth sectors. The global clean-tech market is expected to surpass $1 trillion in value within the next few years, and a perfect storm of factors - from the inevitability of a carbon-constrained world, to skyrocketing global energy demand, to long-term oil price hikes - will drive global demand for clean-energy technologies. That is why the national debate about global clean-tech competitiveness is so important, sparked by the rapid entry of China and other nations. My colleagues and I recently contributed to the discussion with "Rising Tigers, Sleeping Giant," a large report providing the first comprehensive analysis of competitive positions among the U.S. and key Asian challengers. In order to compete, we found, "U.S. energy policy must include large, direct and coordinated investments in clean-technology R&D, manufacturing, deployment, and infrastructure." But even if the United States adopts a real industrial policy for clean energy, there is little evidence that our workforce is skilled enough to compete. Unfortunately, according to the Department of Energy, "The U.S. ranks behind other major nations in making the transitions required to educate students for emerging energy trades, research efforts and other professions to support the future energy technology mix." A competitive energy workforce requires much more than technicians and building retrofitters. Scientists, engineers, high-tech entrepreneurs, and advanced manufacturers will play a critical role, just as they have in strategic sectors like infotech, aerospace, and biotech. The federal government has started to address the need for green technician and efficiency retrofit training, such as with the Green Jobs Act, but it has not implemented an education strategy to keep the U.S. at the leading edge of energy science, technology, and entrepreneurship. Unfortunately, the majority of our colleges and universities lack degree programs focused on energy, and the U.S. power engineering education system is on the decline. Over the next five years, 45 percent of electric utility engineers will be eligible for retirement, along with 40 percent of key power engineering faculty at U.S. universities, according to a report by IEEE. "Engineering workforce shortages are already occurring," the report concludes. "We need more electrical engineers to solve industry challenges, and to build the 21st century electric power grid... Meeting these needs requires long-term investment now." Meanwhile, other countries are producing a substantially larger portion of scientists, engineers, and researchers that will benefit their clean-tech industries. Science and engineering make up only about one-third of U.S. bachelor's degrees, compared to 63 percent in Japan, 53 percent in China and 51 percent in Singapore, and the number of Chinese researchers is now on par with the United States (though some have pointed out that the quality of these graduates and researchers is not always comparable). "Over time," stated a recent report by the National Science Board, "the United States has fallen from one of the top countries in terms of its ratio of natural science and engineering degrees to the college-age population to near the bottom of the 23 countries for which data are available." The energy workforce deficit and STEM education gap will substantially limit the nation's ability to lead the clean-tech industry and accelerate clean energy development. As Nobel Laureate Paul Krugman put it, "If you had to explain America's economic success with one word, that word would be 'education.'" In order to succeed in the clean-tech industry, the U.S. must develop an energy education strategy to develop tens of thousands of advanced energy scientists, engineers, and entrepreneurs, as well as technicians.

## Uniqueness

### 1nr—Uniqueness frontline

#### Immigration is having a kumbaya moment, but hold the champagne, path to citizenship can hold it up, the GOP will fold because of obama’s massive political capital but the plan can change that, that’s Miami herald and weigant

Will pass---our evidence cites a political science professor

The Pendulum 2/6/13 (“Immigration reform returns to legislative forefront,” http://www.elonpendulum.com/2013/02/immigration-reform-returns-to-legislative-forefront/)

A bipartisan committee of eight senators put out a framework for an immigration reform bill Jan. 28. Among other things, the proposal includes a system to provide undocumented immigrants currently in the United States a way to obtain “probationary legal status” after completing a background check and paying various fines and taxes. To receive a green card, these individuals would complete mandatory English and civics courses, show a history of employment and undergo further background checks. “It’s not guaranteed just because there’s bipartisan and bicameral support, but it’s nonetheless a sign that something is going to happen,” said Jason Husser, assistant professor of political science at Elon University. “Even more telling is that the president is also behind it and it has some bipartisan support in both the House and Senate.” Obama offered another proposal that focuses on creating paths to citizenship for the nearly 11 million undocumented workers in the United States. The proposal aims to crack down on businesses that hire illegal immigrants and implement better immigration regulations. The proposed legislation includes a provision to give green cards to foreign students who complete a master’s degree or Ph.D. in math, science, engineering or technology at an American university. “If you open up any macroeconomic textbook, it’s likely to say that one of the best ways to stimulate the economy is to invest in human capital,” said Kenneth Fernandez, assistant professor of political science. “So if people are being trained here and we’re not letting them stay, it seems to be shooting ourselves in the foot.” Sophomore Nicole Payne spoke about the way immigration is handled by both political parties at Elon’s Debating the Issues forum last year. She argued Obama and Mitt Romney, former governor of Massachusetts, “seemed more interested in either their number of votes or propping up the current system than about the people who are actually involved.” With this new push for legislative action, Payne said she is slightly optimistic.

The ugly duckling has turned into a swan---people are all over CIR

Santiago 2/2 (Fabiola, is a journalist for The Miami Herald, where she shared her second Pulitzer Prize for feature writing. “Commentary: Is Congress finally serious about immigration reform?”

http://www.star-telegram.com/2013/02/02/4586433/commentary-is-congress-finally.html

The ugly duckling of Capitol Hill — immigration reform — has turned into a swan. Behind the transformation is the powerful message sent by the nation’s Hispanics in the presidential election: 71 percent voted to reelect President Barack Obama, who admitted his failure to bring reform to the forefront but promised it would be a priority of his second term. Only 27 percent voted for Mitt Romney, who fumbled the topic throughout the campaign, most famously with his “self-deport” offer. It’s no coincidence that Romney’s showing was the poorest for Republicans since 1996, when Bob Dole lost the Hispanic vote to Bill Clinton. Now, a growing number of Republican and Democratic lawmakers agree that a comprehensive overhaul of the immigration system — one that may put 11 million undocumented immigrants on a path toward citizenship — is good for the nation. Among those leading the way is Florida Republican Sen. Marco Rubio, whose failed plan early last year on behalf of Dreamers, the undocumented children brought here by their parents as children, did not include citizenship. That Rubio now sees the need for citizenship — instead of policy that creates a stratum of second-class citizens — is a positive development, as Rubio is an influential party leader. Whatever the motivation, politics or economic necessity — or that elusive reason, to honor our history as a nation of immigrants — the bipartisanship of the eight senators who released their thoughtful plan Monday is a welcome change. The plan also would tighten border security, calling for drones and other surveillance equipment, prescribe a stricter employment-verification process and increase the number of guest-worker permits. Obama endorsed the proposal Tuesday in Las Vegas, but warned of obstacles to overcome as details of the Senate plan are hashed out and sent to the Republican-controlled House. Let’s trust that Miami’s Republican representatives will show leadership in the House, too. For a nation divided by political extremes and for the suffering undocumented living in the shadows, the Senate proposal is cause for hope. Two significant national associations — the National Association of Latino Elected and Appointed Officials Educational Fund and the National Council for La Raza — endorsed the bipartisan effort but stressed the importance that reform measures be accessible and affordable.

#### BUT this new momentum is a ticking timebomb---gone by august

Soto 2/1 (Victoria M. DeFrancesco Soto, Ph.D. is a MSNBC and NBCLatino Contributor and fellow at the Center for Politics and Governance at the LBJ School of Public Affairs at the University of Texas.

“Immigration Reform Reality Check” http://www.laprogressive.com/immigration-reform-reality-check/)

A ticking time bomb

For immigration reform to become a reality it must be passed by the end of July before Congresses’ summer recess. If it is not passed by then, consider immigration reform as good as dead.

The House of Representatives will be the biggest challenge to immigration reform because of its Republican majority. The closer we get to the 2014 primary season, the greater the number of GOP House members who will get skittish about voting for reform. Immigration reform will not be wildly popular with the Republican base, but at least if there is the buffer of time it will give representatives more freedom to support immigration reform.

If immigration reform is not passed before members of congress go home to their districts for summer recess then we could see a replay of the disastrous Health Care Reform town halls of 2009. Anti-immigration reform media outlets and conservative public voices (e.g. RushLimbaugh, the National Review) have already started stoking public opinion against immigration reform. Come August, town halls could turn amnesty into the new “death panels” and scare the begeezus out of all Republicans.

By design Congress is a slow-moving vehicle. Incrementalism, not sweeping change, is the name of the game. As such, comprehensive immigration reform faces a built-in institutional speed bump. Add to that the time the inter party and inter branch haggling that the conditional clause will take. The president currently has momentum, but it won’t last long; more specifically, it’ll last him till August.

Insider polls prove our argument---the house and tea party feel emboldened and can wreck the deal but there is sufficient support now

National Journal 2/2 (“Insiders Optimistic About Immigration Reform,” http://www.nationaljournal.com/blogs/hotlineoncall/2013/02/insiders-optimistic-about-immigration-reform-02)

Cautious optimism: That's the best way to describe how both Democratic and Republican Political Insiders feel about the chances of comprehensive immigration reform, including a pathway to citizenship, passing Congress this year.

A majority of Democrats and Republicans think it's either very or somewhat likely that such legislation passes in the 113th Congress, while only 3 percent of Democratic Insiders and 2 percent of the Republican Insiders say it's very unlikely.

Democrats view Republicans as finally having to accept a political reality after losing decisively in 2012 and eager to jab the GOP over what they see as a political winner for their party.

"The GOP has gone from bigotry to opportunism faster than Sarah Palin can take down a caribou," said one Democratic Insider.

Indeed, some Democrats argue their opponents will be forced to back immigration reform because of demographic realities.

"Enough Republicans have seen the light to make it happen," said another Democratic Insider.

Republicans don't disagree but, as you would expect, they put it differently.

"Republicans get over their headache, after banging into the wall for years," said one Republican.

Still others argue that Republican Sen. Marco Rubio of Florida, a prominent advocate and member of the bipartisan group of eight senators who outlined immigration reform principles this week, will rehabilitate the party's image.

"Rubio is to immigration policy as Nixon is to China," said one Republican Insider.

But not all GOP Insiders are so optimistic. They argue that reform will hit a wall in the House, where tea party members have signaled their opposition and feel emboldened after attempting to derail the fiscal cliff deal earlier this year.

## Link

### Reprocessing link---1nc

#### Reprocessing is politically controversial

WGA 11 (Western Governors’ Association, June 2011“The Future of Nuclear Energy: Shaping a Western Policy” pdf)

Nuclear reprocessing technology was developed to chemically separate and recover fissionable plutonium from irradiated nuclear fuel. Originally, reprocessing was used to extract plutonium for producing nuclear weapons, but with the commercialization of nuclear power, the reprocessed plutonium was recycled back into mixed oxide nuclear fuel for thermal reactors. Breeder reactors (a type of nuclear reactor) can use a greater percentage of the recycled spent fuel, closing the nuclear fuel cycle and potentially multiplying the energy extracted from natural uranium by more than 60 times. Although there are energy and waste disposal benefits obtainable through nuclear reprocessing, *reprocessing has been politically controversial* because of concerns about nuclear proliferation, the potential vulnerability to nuclear terrorism, and because of its higher cost compared to the once-through fuel cycle.

### Japan Accident

#### Nuclear power is a political tripwire-Japan crisis

Energy Compass 3/18/11

HEADLINE: United States: Obama's Nuclear Contortion

Japan's nuclear crisis has put US President Barack Obama in another awkward spot on energy policy. Even as fears mounted of a catastrophe, the White House this week reiterated its support for expanded nuclear power capabilities -- a key component of the administration's focus on curbing greenhouse gas emissions. But the crisis in Japan has nonetheless exposed new vulnerabilities in the nuclear sector that could make it more difficult for US lawmakers to incorporate nuclear energy incentives as a way to compromise on energy legislation. Already, several prominent Democrats have called for the US to tone down its nuclear ambitions.

### Incentives

#### Support for nuclear power eroding-deficit hawks and Japanese crisis causing defections

Energy Compass 3/18/11

HEADLINE: United States: Obama's Nuclear Contortion

The wild card is the Tea Party wing of the Republican Party, where some favor cutting financial assistance to the nuclear industry. Recent opinion polls suggest popular support for this as a way to reduce the budget deficit. "Pro-nuclear forces are unlikely to reverse their prior stance in response to the unfolding disaster," says Michael Levi of the Council on Foreign Relations, a US think tank. However, "moderate skeptics" who had been willing to compromise as part of a "grand bargain on climate policy" may revert to their antinuclear stance, he says. Already, the Japanese crisis has emboldened the antinuclear agenda of House Natural Resources Committee Chairman Edward Markey, a Democrat from Massachusetts. He has urged the NRC to rethink its pending approval of Westinghouse's new AP1000 reactor design for operation in the US "until serious safety concerns about its shield building have been addressed." Independent Senator Joe Lieberman has called for a temporary halt on efforts to advance new nuclear plants.

## **Warming**

### **Warming**

#### Warming won’t cause extinction

Barrett, professor of natural resource economics – Columbia University, ‘7

(Scott, Why Cooperate? The Incentive to Supply Global Public Goods, introduction)

First, climate change does not threaten the survival of the human species.5 If unchecked, it will cause other species to become extinction (though biodiversity is being depleted now due to other reasons). It will alter critical ecosystems (though this is also happening now, and for reasons unrelated to climate change). It will reduce land area as the seas rise, and in the process displace human populations. “Catastrophic” climate change is possible, but not certain. Moreover, and unlike an asteroid collision, large changes (such as sea level rise of, say, ten meters) will likely take centuries to unfold, giving societies time to adjust. “Abrupt” climate change is also possible, and will occur more rapidly, perhaps over a decade or two. However, abrupt climate change (such as a weakening in the North Atlantic circulation), though potentially very serious, is unlikely to be ruinous. Human-induced climate change is an experiment of planetary proportions, and we cannot be sur of its consequences. Even in a worse case scenario, however, global climate change is not the equivalent of the Earth being hit by mega-asteroid. Indeed, if it were as damaging as this, and if we were sure that it would be this harmful, then our incentive to address this threat would be overwhelming. The challenge would still be more difficult than asteroid defense, but we would have done much more about it by now.

#### **Warming won’t destroy the world---their models are empirically false**

Fuller 10 (Thomas, SF Environmental Policy Examiner, Mar 3, <http://www.climatechangefraud.com/climate-reports/6518-global-warming-is-real-but-effects-have-been-exaggerated-and-we-dont-know-the-future>)

Temperatures have risen 0.7 degrees Celsius over the past century, which is about twice the rate of the previous century. Even if Anthony Watts and Steve McIntyre are absolutely correct about urban heat island effects and paleoclimatic temperature reconstructions, the earth has warmed--and both Watts and McIntyre have said so on their websites repeatedly. This is not really part of the controversy at all. Nor is the reality of the greenhouse effect. Nor is the capability of CO2 contributing to the greenhouse effect. Nor is the reality of human contributions of large amounts of CO2. Almost all skeptics agree with the scientific consensus about this. (It is very convenient for the climate establishment to say they 'deny' this, but the skeptics mostly don't.) What many (not just skeptics) disagree on is the observed effects to date and the future effects as estimated. The Effects Have Been Exaggerated The current warming began around 1880 (give or take a decade) upon the conclusion of the Little Ice Age. The warming has not been even or steady--it accelerates and decelerates for reasons we don't really understand. Those who cry for political action to combat global warming have described some effects of it that they claim have already occurred. In almost every case, their claims have proven to be exaggerated. The 'poster children' for global warming have been polar bears, Himalayan glaciers, African agriculture, increased damage and destruction due to hurricanes and floods, Amazonian rainforests and Arctic ice. Polar bears face an uncertain future. Climate change is just one of many factors that are changing for them. Other factors include human encroachment on their habitat, the response of other wildlife to changes, and most importantly, hunting. Some of the sub-populations of polar bears are decreasing. Some are increasing and some are staying the same. The single most important contribution we could make to helping the population of polar bears increase is to stop shooting them. If we were serious about preserving large numbers of polar bears, we would limit the expansion of human activities throughout their habitat, which would make polar bears less of a threat to people and remove one of the reasons for our killing them. Polar bears have lived through periods of higher temperatures than now, including periods of zero Arctic ice cover. They can swim 200 miles without resting, and Arctic ice loss in and of itself is not a threat to polar bears. Arctic ice comes and goes. We're not sure exactly why, and we're not sure exactly of the cycles that govern its increase and decrease. The most recent decrease was dramatic, but only because it was the first decrease we were able to photograph from satellites. We now know that much of the reason for the 2007 low point of ice cover was that winds and currents pushed Arctic ice out of the Arctic to warmer parts of the Atlantic, where it then melted normally. It has since recovered dramatically. Himalayan glaciers increase and decrease, and always have, just like glaciers all over the world. Claims in the IPCC report that they will disappear by 2035 are flat out wrong. The error was caused because for years the area of Himalayan glaciers were measured in November, when snow cover made them look bigger. When the time of measurement was switched to September, they amazingly looked smaller. Although Indian scientists understood this, the journalists whose comments were hijacked for the IPCC report did not. The Amazonian rain forest can be compared to polar bears. The biggest threat it faces is encroachment of humans on its territory. The Amazon is being torn down for firewood, hardwood furniture and living space. It is being burned for slash and burn agriculture--some of that to grow biofuels to combat global warming. Like all forests, it is vulnerable to drought--being rainforest, it is more vulnerable than some other forests. If global warming produces drought in the Amazon, it will have an impact. However, the computer models that project scenarios of global warming cannot produce sufficient detail to say whether global warming will bring drought to the Amazon. The most that models can say is that overall precipitation worldwide should increase by 5%. Hurricanes and floods cause damage. Loss of life due to them has been reduced by between 95% and 99%, due to better weather predictions, but damage has increased. But none of the increase is attributable to climate change. Rather, a host of papers have shown that all of the increased damages due to hurricanes and floods is easily explained by richer people building more expensive property in areas vulnerable to storms and floods. African agriculture is, like agriculture anywhere, vulnerable to drought--just like the Amazon rainforest. However, a single report examining the possible effects of drought on cereal production on irrigated farms in 3 African countries was taken by the IPCC and reported as the probable future for all agricultural production throughout all the continent. The report was incorrect. African agricultural production is increasing and is expected to increase in the future. The Future Is Not Likely To Be As Desperate As We Are Told The rate of temperature rise has slowed, from about 2 degrees C per century (1975-19998) to about 1.2 degrees C per century (1995-2009). However, the recent slowdown is over too short a period to be statistically significant. Nonetheless, this is quite different from projections of accelerating temperature rises. This is what Phil Jones, director at CRU and a staunch advocate of the global warming establishment, said in an interview last week. Flaws in recent scientific studies have been found which make it distinctly possible that the temperature rises we have experienced are not unique--not even unusual. Keith Briffa, a member of the CRU team and a staunch advocate of the global warming establishment, said that he thought temperatures had been warmer than today 1,000 years ago in an email that was part of the Climategate release of emails and documents. Arctic ice has recovered about 25% of the ice it lost in 2007. Hurricanes are predicted to be less frequent in future--although it is possible that some will be stronger. The Amazon and polar bears both need our help and attention--but the current threats to them are from sources other than climate change, and we can easily make both strong enough to resist climate change if we change our current bad habits of shooting polar bears and burning down forests. Global warming is predicted to provide net benefits to many parts of the world, especially in the first few decades of this century. Generally speaking, cold kills more people than heat (although this is not a straightforward issue), CO2 is often good for many crops (but not all, and it's good for weeds as well), and the natural progress of economic development will strengthen the communities of people who are currently very poor enough that, like the Amazon and the polar bear, they will be better able to resist the effects of climate change after 2050. A generation of politicians supported by a cadre of scientists have consistently exaggerated the extent of the effects of past and projected climate change due to human contributions of CO2. This has distorted the debate, caused enormous expenditures of taxpayers' money on green projects that will have little or no effect on global warming and led to scientific misbehaviour that threatens public confidence in the best way we have for understanding the world around us. The scientists and politicians who have performed this disservice need to be held accountable for this. It has badly distracted us from doing the right things at the right times to take better care of each other and the planet we live on.

#### Nuclear winter outweighs and turns warming, faster, no adaptation.

Starr 2008

Steven, Associate member of the Nuclear Age Peace Foundation Director of Clinical Laboratory Science Program, University of Missouri-Columbia, Catastrophic Climatic Consequences of Nuclear Conflict, International Network of Engineers and Scientists Against Proliferation, Bulletin 28 April 2008, http://www.inesap.org/bulletin-28/catastrophic-climatic-consequences-nuclear-conflict

Climatic changes resulting from nuclear conflict would occur many thousands of times faster – and thus would likely be far more catastrophic – than the climatic changes predicted as a result of global warming.40 The rapidity of the war-induced changes, appearing in a matter of days and weeks, would allow human populations and the whole plant and animal kingdoms no time to adapt. It is worth noting that the same methods and climate models used to predict global warming were used in these studies to predict global cooling resulting from nuclear war. These climate models have proved highly successful in describing the cooling effects of volcanic clouds during extensive U.S. evaluations and in international intercomparisons performed as part of the Fourth Assessment of the Intergovernmental Panel on Climate Change.41 Predicted drops in average global temperatures caused by small, moderate, and large nuclear conflicts are contrasted with the effects of global warming during the last century in Figure 4 and with average surface air temperatures during the last 1,000 years in Figure 5. There are, of course, other important considerations which must be made when estimating the overall environmental and ecological impacts of nuclear war. These must include the release of enormous amounts of radioactive fallout, pyrotoxins, and toxic industrial chemicals into the ecosystems. A decade after the conflict, when the smoke begins to clear, there will also be massive increases in the amount of deadly ultraviolet light which will reach the surface of the Earth as a result of ozone depletion. All these by-products of nuclear war must be taken into account when comparing the danger of nuclear conflict to other potential dangers now confronting humanity and life on Earth. Conclusions We cannot allow our political and military leaders to continue to ignore the potential cataclysmic climatic and environmental consequences posed by the use of nuclear weapons. Civilization remains at risk from nuclear winter despite a three-fold reduction in global nuclear arsenals during the last 20 years. This is due in part to the fact that nuclear arms control agreements have focused primarily on the dismantlement of delivery systems and have failed to include the verified dismantlement of nuclear warheads. Future negotiations must consider all the potential effects of the total number of nuclear weapons in the nuclear arsenals.44 The U.S. and Russia must recognize the senselessness of continued planning for a nuclear first-strike which, if launched, would make the whole world including their own country uninhabitable. As a first step, they should end their preparations for the pre-emptive use of their nuclear arsenals, stand-down their high-alert strategic nuclear forces, and eliminate the standard operating procedure of launch-on-warning.45 It is essential that all the nuclear weapon states be convinced of the need to honor their commitments under Article VI of the Non-Proliferation Treaty, to “act in good faith” to eliminate their nuclear arsenals. As long as they ignore this commitment and maintain nuclear weaponry as the cornerstone of their military forces, they confer validity to the false idea that nuclear weapons provide security to those who possess them, and thus encourage non-nuclear weapon states to follow in their footsteps. The unalterable conclusion is that a nuclear war cannot be won and must not be fought. Nuclear weapons must be seen not only as instruments of mass murder, but as instruments of global annihilation which put all humanity and civilization under a common threat of destruction.

#### No impact to warming, the world is highly adapaptable, we survived an asteroid, and more C02 escapes than your ev assumes, this is from a peer reviewed science journal using NASA data

Taylor 11 (James, is a senior fellow for environment policy at the Heartland Institute and managing editor of Environment & Climate News. “New NASA Data Blow Gaping Hole In Global Warming Alarmism” <http://www.forbes.com/sites/jamestaylor/2011/07/27/new-nasa-data-blow-gaping-hold-in-global-warming-alarmism/>)

NASA satellite data from the years 2000 through 2011 show the Earth’s atmosphere is allowing far more heat to be released into space than alarmist computer models have predicted, reports a new study in the peer-reviewed science journal Remote Sensing. The study indicates far less future global warming will occur than United Nations computer models have predicted, and supports prior studies indicating increases in atmospheric carbon dioxide trap far less heat than alarmists have claimed. Study co-author Dr. Roy Spencer, a principal research scientist at the University of Alabama in Huntsville and U.S. Science Team Leader for the Advanced Microwave Scanning Radiometer flying on NASA’s Aqua satellite, reports that real-world data from NASA’s Terra satellite contradict multiple assumptions fed into alarmist computer models. “The satellite observations suggest there is much more energy lost to space during and after warming than the climate models show,” Spencer said in a July 26 University of Alabama press release. “There is a huge discrepancy between the data and the forecasts that is especially big over the oceans.” In addition to finding that far less heat is being trapped than alarmist computer models have predicted, the NASA satellite data show the atmosphere begins shedding heat into space long before United Nations computer models predicted. The new findings are extremely important and should dramatically alter the global warming debate. Scientists on all sides of the global warming debate are in general agreement about how much heat is being directly trapped by human emissions of carbon dioxide (the answer is “not much”). However, the single most important issue in the global warming debate is whether carbon dioxide emissions will indirectly trap far more heat by causing large increases in atmospheric humidity and cirrus clouds. Alarmist computer models assume human carbon dioxide emissions indirectly cause substantial increases in atmospheric humidity and cirrus clouds (each of which are very effective at trapping heat), but real-world data have long shown that carbon dioxide emissions are not causing as much atmospheric humidity and cirrus clouds as the alarmist computer models have predicted. The new NASA Terra satellite data are consistent with long-term NOAA and NASA data indicating atmospheric humidity and cirrus clouds are not increasing in the manner predicted by alarmist computer models. The Terra satellite data also support data collected by NASA’s ERBS satellite showing far more longwave radiation (and thus, heat) escaped into space between 1985 and 1999 than alarmist computer models had predicted. Together, the NASA ERBS and Terra satellite data show that for 25 years and counting, carbon dioxide emissions have directly and indirectly trapped far less heat than alarmist computer models have predicted. In short, the central premise of alarmist global warming theory is that carbon dioxide emissions should be directly and indirectly trapping a certain amount of heat in the earth’s atmosphere and preventing it from escaping into space. Real-world measurements, however, show far less heat is being trapped in the earth’s atmosphere than the alarmist computer models predict, and far more heat is escaping into space than the alarmist computer models predict.

Experts agree

Hsu 10 (Jeremy, Live Science Staff, July 19, pg. <http://www.livescience.com/culture/can-humans-survive-extinction-doomsday-100719.html>)

His views deviate sharply from those of most experts, who don't view climate change as the end for humans. Even the worst-case scenarios discussed by the Intergovernmental Panel on Climate Change don't foresee human extinction. "The scenarios that the mainstream climate community are advancing are not end-of-humanity, catastrophic scenarios," said Roger Pielke Jr., a climate policy analyst at the University of Colorado at Boulder. Humans have the technological tools to begin tackling climate change, if not quite enough yet to solve the problem, Pielke said. He added that doom-mongering did little to encourage people to take action. "My view of politics is that the long-term, high-risk scenarios are really difficult to use to motivate short-term, incremental action," Pielke explained. "The rhetoric of fear and alarm that some people tend toward is counterproductive." Searching for solutions One technological solution to climate change already exists through carbon capture and storage, according to Wallace Broecker, a geochemist and renowned climate scientist at Columbia University's Lamont-Doherty Earth Observatory in New York City. But Broecker remained skeptical that governments or industry would commit the resources needed to slow the rise of carbon dioxide (CO2) levels, and predicted that more drastic geoengineering might become necessary to stabilize the planet. "The rise in CO2 isn't going to kill many people, and it's not going to kill humanity," Broecker said. "But it's going to change the entire wild ecology of the planet, melt a lot of ice, acidify the ocean, change the availability of water and change crop yields, so we're essentially doing an experiment whose result remains uncertain."

### EXT-Squo solves

Increased EPA emission authority will displace fossil fuels in favor of renewable energy, that gives the US climate credibility to stop warming with diplomacy and does so by decreasing emissions, that’s Baltimore sun.

And, a new department of the interior ruling is favoring renewables over fossil fuels now

Casey 11/12/12 (Tina is a career public information specialist and former Deputy Director of Public Affairs of the New York City Department of Environmental Protection, and author of books and articles on recycling and other conservation themes. “November Surprise? Obama Resets “All of the Above” Energy Policy” http://www.triplepundit.com/2012/11/november-surprise-obama-resets-all-above-energy-policy/)

Over the past four years, President Obama has delivered on his all-of-the-above energy policy with a healthy dose of clean energy initiatives alongside staunch support for fossil fuels. In fact, the President’s support for fossil fuels has been quite a bit more emphatic than clean energy advocates would desire. His first term saw a natural gas boom and a renewal of offshore oil leases along with new federal funding for “clean coal” technology. However, just three days after winning re-election, there’s an indication that the President is heading off in a new direction: Last Friday, the Department of the Interior proposed a steep cutback on the amount of federal land available for oil shale development. The move comes on the heels of several other initiatives that clear the way for increased clean energy production on public property, and it could set up an epic showdown with certain members of Congress when the next legislative session begins. *Putting the squeeze* on fossil fuels According to Zack Colman of thehill.com, last Friday the Department of the Interior finalized a proposal to shut oil shale development out from 1.6 million acres of federal land in several western states. The land is part of a larger area that had been previously slated for oil shale by the Bush Administration. It’s important to note that oil shale is not the same thing as shale oil. As we explained in an earlier article, oil shale refers to a type of rock that contains a significant amount of organic material called kerogen. Basically, kerogen rock is a form of low-grade fuel. When subjected to high heat, it produces a vapor that can be cooled and then reduced to oil. That’s entirely different from shale oil. Shale oil refers to oil that can be extracted from shale formations by the drilling method called fracking or hydraulic fracturing. Fracking is also used to extract natural gas from shale formations.There is another important difference. Putting aside environmental issues for the moment, fracking is a cost-effective technology that has proven itself in the marketplace. In contrast, oil shale processing is still in the experimental phase and there are significant operational obstacles to surmount before it’s ready for prime time. In addition to ripping up virgin landscapes, the production of oil shale involves copious amounts of water, a scarce commodity in the western U.S. these days. As matter of rational public policy for the use of federal property, oil shale faces steep competition from other new energy technologies, namely wind, solar and other renewable forms of energy. Opening the door for clean energy The Obama Administration’s recent energy moves weren’t all bad news for fossil fuels. For example, on October 25, the administration announced a continuation of last year’s offshore oil leases in the Gulf of Mexico. However, on balance, the last few weeks saw a flurry of activity in favor of alternative energy. On October 23, the administration announced an initiative that will open 96,000 acres of waters off the coast of Delaware for commercial alternative energy development. On October 12, the administration announced that it had put the finishing touches on an environmental impact statement for utility-scale solar energy development on public land in Arizona, California, Colorado, Nevada, New Mexico and Utah, complete with access to existing or planned transmission lines. Just a few days earlier, on October 9, the administration announced that it had approved public lands for wind power development consisting of the Chokecherry and Sierra Madre Wind Energy Project in Wyoming. That complex alone has the potential for up to 3,000 megawatts. Pushing the timeline back a couple of months, in August the Departments of the Interior and Defense signed a memorandum of understanding that makes 13 million acres of public land available as potential sites for clean energy development. The land had previously been set aside for military use, including training. Aside from reserving more public land for alternative energy, the first term of the Obama Administration was marked by a series of initiatives aimed at leveraging private dollars and public resources for alternative energy. Last year, the Department of Defense launched the Energy Initiatives Task Force, to streamline the process for private companies to build utility-scale alternative energy installations on military property. Another recent initiative is the Re-Powering America’s Land program, which aims to reclaim Superfund sites, brownfields and other classified lands for wind and solar production. In the summer of 2011, the administration also launched an initiative that marries rural economic development with a full-bore advanced biofuels program, including research and development as well as support for building refineries and growing biofuel crops. The initiative is supported by a memorandum of understanding between the Departments of Agriculture and Energy. The Navy is a partner in the effort, serving as a large-scale customer to help kickstart the commercial market for new biofuel products.

Renewable energy is competitive now---will be 80 per cent of our energy by 2050

Cunningham 8/27/12 (Nicholas Cunningham “U.S. Has Potential for 80% Renewables by 2050” http://americansecurityproject.org/blog/2012/u-s-has-potential-for-80-renewables-by-2050/)

A June report from the National Renewable Energy Laboratory (NREL) estimated that renewable energy could provide 80% of the nation’s electricity demand by 2050 (Check out this really cool animated map that shows how our electricity mix changes over time under this scenario). In July, NREL put out another report that looked at the renewable potential state by state. The results were interesting in that all states have large potential for renewable energy. Even the Southeast, where many politicians believe renewable energy is more difficult to pull off, has large potential. A mix of solar, offshore wind and biomass could provide a big chunk of electricity demand for states in the Southeast. Although a theoretical exercise, the report highlights an important point. Some politicians dismiss renewable energy as a niche market, but the upside is huge. Costs are rapidly coming down for solar and wind power. The average price for solar has dropped by nearly 50% since the beginning of 2011, for example. The rate of solar and wind installations are strong in 2012. The solar industry installed over 500 megawatts (MW) in the first quarter of this year, its second highest quarter on record. The wind industry installed 2,896 MW in the first half of 2012, a 34% increase from the year before. (It should be noted, however, that despite this progress, the wind industry faces an uncertain future with the expiration of the production tax credit, a key policy incentive, looming over the industry). Renewable energy critics point to the fact that many renewable energy technologies are not ready to compete with coal and natural gas. It is true that low natural gas prices are making it extremely difficult for the renewable energy industry. However, natural gas prices have historically been quite volatile. If natural gas prices rise, renewable energy will suddenly look very attractive. Bloomberg New Energy Finance predicts that the average wind farm will reach grid-parity by 2016. Fang Peng, an executive at JA Solar, a large Chinese solar manufacturer, predicts that solar will be cost-competitive with fossil fuels in most places by 2015. He said this will lead to a “second wave of growth.”

### \*\*\*Case Defense

### **Warming**

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Barrett, professor of natural resource economics – Columbia University, ‘7

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First, climate change does not threaten the survival of the human species.5 If unchecked, it will cause other species to become extinction (though biodiversity is being depleted now due to other reasons). It will alter critical ecosystems (though this is also happening now, and for reasons unrelated to climate change). It will reduce land area as the seas rise, and in the process displace human populations. “Catastrophic” climate change is possible, but not certain. Moreover, and unlike an asteroid collision, large changes (such as sea level rise of, say, ten meters) will likely take centuries to unfold, giving societies time to adjust. “Abrupt” climate change is also possible, and will occur more rapidly, perhaps over a decade or two. However, abrupt climate change (such as a weakening in the North Atlantic circulation), though potentially very serious, is unlikely to be ruinous. Human-induced climate change is an experiment of planetary proportions, and we cannot be sur of its consequences. Even in a worse case scenario, however, global climate change is not the equivalent of the Earth being hit by mega-asteroid. Indeed, if it were as damaging as this, and if we were sure that it would be this harmful, then our incentive to address this threat would be overwhelming. The challenge would still be more difficult than asteroid defense, but we would have done much more about it by now.

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African agriculture is, like agriculture anywhere, vulnerable to drought--just like the Amazon rainforest. However, a single report examining the possible effects of drought on cereal production on irrigated farms in 3 African countries was taken by the IPCC and reported as the probable future for all agricultural production throughout all the continent. The report was incorrect. African agricultural production is increasing and is expected to increase in the future. The Future Is Not Likely To Be As Desperate As We Are Told The rate of temperature rise has slowed, from about 2 degrees C per century (1975-19998) to about 1.2 degrees C per century (1995-2009). However, the recent slowdown is over too short a period to be statistically significant. Nonetheless, this is quite different from projections of accelerating temperature rises. This is what Phil Jones, director at CRU and a staunch advocate of the global warming establishment, said in an interview last week. Flaws in recent scientific studies have been found which make it distinctly possible that the temperature rises we have experienced are not unique--not even unusual. Keith Briffa, a member of the CRU team and a staunch advocate of the global warming establishment, said that he thought temperatures had been warmer than today 1,000 years ago in an email that was part of the Climategate release of emails and documents. Arctic ice has recovered about 25% of the ice it lost in 2007. Hurricanes are predicted to be less frequent in future--although it is possible that some will be stronger. The Amazon and polar bears both need our help and attention--but the current threats to them are from sources other than climate change, and we can easily make both strong enough to resist climate change if we change our current bad habits of shooting polar bears and burning down forests. Global warming is predicted to provide net benefits to many parts of the world, especially in the first few decades of this century. Generally speaking, cold kills more people than heat (although this is not a straightforward issue), CO2 is often good for many crops (but not all, and it's good for weeds as well), and the natural progress of economic development will strengthen the communities of people who are currently very poor enough that, like the Amazon and the polar bear, they will be better able to resist the effects of climate change after 2050. A generation of politicians supported by a cadre of scientists have consistently exaggerated the extent of the effects of past and projected climate change due to human contributions of CO2. This has distorted the debate, caused enormous expenditures of taxpayers' money on green projects that will have little or no effect on global warming and led to scientific misbehaviour that threatens public confidence in the best way we have for understanding the world around us. The scientists and politicians who have performed this disservice need to be held accountable for this. It has badly distracted us from doing the right things at the right times to take better care of each other and the planet we live on.

#### Nuclear winter outweighs and turns warming, faster, no adaptation.

Starr 2008

Steven, Associate member of the Nuclear Age Peace Foundation Director of Clinical Laboratory Science Program, University of Missouri-Columbia, Catastrophic Climatic Consequences of Nuclear Conflict, International Network of Engineers and Scientists Against Proliferation, Bulletin 28 April 2008, http://www.inesap.org/bulletin-28/catastrophic-climatic-consequences-nuclear-conflict

Climatic changes resulting from nuclear conflict would occur many thousands of times faster – and thus would likely be far more catastrophic – than the climatic changes predicted as a result of global warming.40 The rapidity of the war-induced changes, appearing in a matter of days and weeks, would allow human populations and the whole plant and animal kingdoms no time to adapt. It is worth noting that the same methods and climate models used to predict global warming were used in these studies to predict global cooling resulting from nuclear war. These climate models have proved highly successful in describing the cooling effects of volcanic clouds during extensive U.S. evaluations and in international intercomparisons performed as part of the Fourth Assessment of the Intergovernmental Panel on Climate Change.41 Predicted drops in average global temperatures caused by small, moderate, and large nuclear conflicts are contrasted with the effects of global warming during the last century in Figure 4 and with average surface air temperatures during the last 1,000 years in Figure 5. There are, of course, other important considerations which must be made when estimating the overall environmental and ecological impacts of nuclear war. These must include the release of enormous amounts of radioactive fallout, pyrotoxins, and toxic industrial chemicals into the ecosystems. A decade after the conflict, when the smoke begins to clear, there will also be massive increases in the amount of deadly ultraviolet light which will reach the surface of the Earth as a result of ozone depletion. All these by-products of nuclear war must be taken into account when comparing the danger of nuclear conflict to other potential dangers now confronting humanity and life on Earth. Conclusions We cannot allow our political and military leaders to continue to ignore the potential cataclysmic climatic and environmental consequences posed by the use of nuclear weapons. Civilization remains at risk from nuclear winter despite a three-fold reduction in global nuclear arsenals during the last 20 years. This is due in part to the fact that nuclear arms control agreements have focused primarily on the dismantlement of delivery systems and have failed to include the verified dismantlement of nuclear warheads. Future negotiations must consider all the potential effects of the total number of nuclear weapons in the nuclear arsenals.44 The U.S. and Russia must recognize the senselessness of continued planning for a nuclear first-strike which, if launched, would make the whole world including their own country uninhabitable. As a first step, they should end their preparations for the pre-emptive use of their nuclear arsenals, stand-down their high-alert strategic nuclear forces, and eliminate the standard operating procedure of launch-on-warning.45 It is essential that all the nuclear weapon states be convinced of the need to honor their commitments under Article VI of the Non-Proliferation Treaty, to “act in good faith” to eliminate their nuclear arsenals. As long as they ignore this commitment and maintain nuclear weaponry as the cornerstone of their military forces, they confer validity to the false idea that nuclear weapons provide security to those who possess them, and thus encourage non-nuclear weapon states to follow in their footsteps. The unalterable conclusion is that a nuclear war cannot be won and must not be fought. Nuclear weapons must be seen not only as instruments of mass murder, but as instruments of global annihilation which put all humanity and civilization under a common threat of destruction.

#### No impact to warming, the world is highly adapaptable, we survived an asteroid, and more C02 escapes than your ev assumes, this is from a peer reviewed science journal using NASA data

Taylor 11 (James, is a senior fellow for environment policy at the Heartland Institute and managing editor of Environment & Climate News. “New NASA Data Blow Gaping Hole In Global Warming Alarmism” <http://www.forbes.com/sites/jamestaylor/2011/07/27/new-nasa-data-blow-gaping-hold-in-global-warming-alarmism/>)

NASA satellite data from the years 2000 through 2011 show the Earth’s atmosphere is allowing far more heat to be released into space than alarmist computer models have predicted, reports a new study in the peer-reviewed science journal Remote Sensing. The study indicates far less future global warming will occur than United Nations computer models have predicted, and supports prior studies indicating increases in atmospheric carbon dioxide trap far less heat than alarmists have claimed. Study co-author Dr. Roy Spencer, a principal research scientist at the University of Alabama in Huntsville and U.S. Science Team Leader for the Advanced Microwave Scanning Radiometer flying on NASA’s Aqua satellite, reports that real-world data from NASA’s Terra satellite contradict multiple assumptions fed into alarmist computer models. “The satellite observations suggest there is much more energy lost to space during and after warming than the climate models show,” Spencer said in a July 26 University of Alabama press release. “There is a huge discrepancy between the data and the forecasts that is especially big over the oceans.” In addition to finding that far less heat is being trapped than alarmist computer models have predicted, the NASA satellite data show the atmosphere begins shedding heat into space long before United Nations computer models predicted. The new findings are extremely important and should dramatically alter the global warming debate. Scientists on all sides of the global warming debate are in general agreement about how much heat is being directly trapped by human emissions of carbon dioxide (the answer is “not much”). However, the single most important issue in the global warming debate is whether carbon dioxide emissions will indirectly trap far more heat by causing large increases in atmospheric humidity and cirrus clouds. Alarmist computer models assume human carbon dioxide emissions indirectly cause substantial increases in atmospheric humidity and cirrus clouds (each of which are very effective at trapping heat), but real-world data have long shown that carbon dioxide emissions are not causing as much atmospheric humidity and cirrus clouds as the alarmist computer models have predicted. The new NASA Terra satellite data are consistent with long-term NOAA and NASA data indicating atmospheric humidity and cirrus clouds are not increasing in the manner predicted by alarmist computer models. The Terra satellite data also support data collected by NASA’s ERBS satellite showing far more longwave radiation (and thus, heat) escaped into space between 1985 and 1999 than alarmist computer models had predicted. Together, the NASA ERBS and Terra satellite data show that for 25 years and counting, carbon dioxide emissions have directly and indirectly trapped far less heat than alarmist computer models have predicted. In short, the central premise of alarmist global warming theory is that carbon dioxide emissions should be directly and indirectly trapping a certain amount of heat in the earth’s atmosphere and preventing it from escaping into space. Real-world measurements, however, show far less heat is being trapped in the earth’s atmosphere than the alarmist computer models predict, and far more heat is escaping into space than the alarmist computer models predict.

Experts agree

Hsu 10 (Jeremy, Live Science Staff, July 19, pg. <http://www.livescience.com/culture/can-humans-survive-extinction-doomsday-100719.html>)

His views deviate sharply from those of most experts, who don't view climate change as the end for humans. Even the worst-case scenarios discussed by the Intergovernmental Panel on Climate Change don't foresee human extinction. "The scenarios that the mainstream climate community are advancing are not end-of-humanity, catastrophic scenarios," said Roger Pielke Jr., a climate policy analyst at the University of Colorado at Boulder. Humans have the technological tools to begin tackling climate change, if not quite enough yet to solve the problem, Pielke said. He added that doom-mongering did little to encourage people to take action. "My view of politics is that the long-term, high-risk scenarios are really difficult to use to motivate short-term, incremental action," Pielke explained. "The rhetoric of fear and alarm that some people tend toward is counterproductive." Searching for solutions One technological solution to climate change already exists through carbon capture and storage, according to Wallace Broecker, a geochemist and renowned climate scientist at Columbia University's Lamont-Doherty Earth Observatory in New York City. But Broecker remained skeptical that governments or industry would commit the resources needed to slow the rise of carbon dioxide (CO2) levels, and predicted that more drastic geoengineering might become necessary to stabilize the planet. "The rise in CO2 isn't going to kill many people, and it's not going to kill humanity," Broecker said. "But it's going to change the entire wild ecology of the planet, melt a lot of ice, acidify the ocean, change the availability of water and change crop yields, so we're essentially doing an experiment whose result remains uncertain."

### EXT-Squo solves

Increased EPA emission authority will displace fossil fuels in favor of renewable energy, that gives the US climate credibility to stop warming with diplomacy and does so by decreasing emissions, that’s Baltimore sun.

And, a new department of the interior ruling is favoring renewables over fossil fuels now

Casey 11/12/12 (Tina is a career public information specialist and former Deputy Director of Public Affairs of the New York City Department of Environmental Protection, and author of books and articles on recycling and other conservation themes. “November Surprise? Obama Resets “All of the Above” Energy Policy” http://www.triplepundit.com/2012/11/november-surprise-obama-resets-all-above-energy-policy/)

Over the past four years, President Obama has delivered on his all-of-the-above energy policy with a healthy dose of clean energy initiatives alongside staunch support for fossil fuels. In fact, the President’s support for fossil fuels has been quite a bit more emphatic than clean energy advocates would desire. His first term saw a natural gas boom and a renewal of offshore oil leases along with new federal funding for “clean coal” technology. However, just three days after winning re-election, there’s an indication that the President is heading off in a new direction: Last Friday, the Department of the Interior proposed a steep cutback on the amount of federal land available for oil shale development. The move comes on the heels of several other initiatives that clear the way for increased clean energy production on public property, and it could set up an epic showdown with certain members of Congress when the next legislative session begins. *Putting the squeeze* on fossil fuels According to Zack Colman of thehill.com, last Friday the Department of the Interior finalized a proposal to shut oil shale development out from 1.6 million acres of federal land in several western states. The land is part of a larger area that had been previously slated for oil shale by the Bush Administration. It’s important to note that oil shale is not the same thing as shale oil. As we explained in an earlier article, oil shale refers to a type of rock that contains a significant amount of organic material called kerogen. Basically, kerogen rock is a form of low-grade fuel. When subjected to high heat, it produces a vapor that can be cooled and then reduced to oil. That’s entirely different from shale oil. Shale oil refers to oil that can be extracted from shale formations by the drilling method called fracking or hydraulic fracturing. Fracking is also used to extract natural gas from shale formations.There is another important difference. Putting aside environmental issues for the moment, fracking is a cost-effective technology that has proven itself in the marketplace. In contrast, oil shale processing is still in the experimental phase and there are significant operational obstacles to surmount before it’s ready for prime time. In addition to ripping up virgin landscapes, the production of oil shale involves copious amounts of water, a scarce commodity in the western U.S. these days. As matter of rational public policy for the use of federal property, oil shale faces steep competition from other new energy technologies, namely wind, solar and other renewable forms of energy. Opening the door for clean energy The Obama Administration’s recent energy moves weren’t all bad news for fossil fuels. For example, on October 25, the administration announced a continuation of last year’s offshore oil leases in the Gulf of Mexico. However, on balance, the last few weeks saw a flurry of activity in favor of alternative energy. On October 23, the administration announced an initiative that will open 96,000 acres of waters off the coast of Delaware for commercial alternative energy development. On October 12, the administration announced that it had put the finishing touches on an environmental impact statement for utility-scale solar energy development on public land in Arizona, California, Colorado, Nevada, New Mexico and Utah, complete with access to existing or planned transmission lines. Just a few days earlier, on October 9, the administration announced that it had approved public lands for wind power development consisting of the Chokecherry and Sierra Madre Wind Energy Project in Wyoming. That complex alone has the potential for up to 3,000 megawatts. Pushing the timeline back a couple of months, in August the Departments of the Interior and Defense signed a memorandum of understanding that makes 13 million acres of public land available as potential sites for clean energy development. The land had previously been set aside for military use, including training. Aside from reserving more public land for alternative energy, the first term of the Obama Administration was marked by a series of initiatives aimed at leveraging private dollars and public resources for alternative energy. Last year, the Department of Defense launched the Energy Initiatives Task Force, to streamline the process for private companies to build utility-scale alternative energy installations on military property. Another recent initiative is the Re-Powering America’s Land program, which aims to reclaim Superfund sites, brownfields and other classified lands for wind and solar production. In the summer of 2011, the administration also launched an initiative that marries rural economic development with a full-bore advanced biofuels program, including research and development as well as support for building refineries and growing biofuel crops. The initiative is supported by a memorandum of understanding between the Departments of Agriculture and Energy. The Navy is a partner in the effort, serving as a large-scale customer to help kickstart the commercial market for new biofuel products.

Renewable energy is competitive now---will be 80 per cent of our energy by 2050

Cunningham 8/27/12 (Nicholas Cunningham “U.S. Has Potential for 80% Renewables by 2050” http://americansecurityproject.org/blog/2012/u-s-has-potential-for-80-renewables-by-2050/)

A June report from the National Renewable Energy Laboratory (NREL) estimated that renewable energy could provide 80% of the nation’s electricity demand by 2050 (Check out this really cool animated map that shows how our electricity mix changes over time under this scenario). In July, NREL put out another report that looked at the renewable potential state by state. The results were interesting in that all states have large potential for renewable energy. Even the Southeast, where many politicians believe renewable energy is more difficult to pull off, has large potential. A mix of solar, offshore wind and biomass could provide a big chunk of electricity demand for states in the Southeast. Although a theoretical exercise, the report highlights an important point. Some politicians dismiss renewable energy as a niche market, but the upside is huge. Costs are rapidly coming down for solar and wind power. The average price for solar has dropped by nearly 50% since the beginning of 2011, for example. The rate of solar and wind installations are strong in 2012. The solar industry installed over 500 megawatts (MW) in the first quarter of this year, its second highest quarter on record. The wind industry installed 2,896 MW in the first half of 2012, a 34% increase from the year before. (It should be noted, however, that despite this progress, the wind industry faces an uncertain future with the expiration of the production tax credit, a key policy incentive, looming over the industry). Renewable energy critics point to the fact that many renewable energy technologies are not ready to compete with coal and natural gas. It is true that low natural gas prices are making it extremely difficult for the renewable energy industry. However, natural gas prices have historically been quite volatile. If natural gas prices rise, renewable energy will suddenly look very attractive. Bloomberg New Energy Finance predicts that the average wind farm will reach grid-parity by 2016. Fang Peng, an executive at JA Solar, a large Chinese solar manufacturer, predicts that solar will be cost-competitive with fossil fuels in most places by 2015. He said this will lead to a “second wave of growth.”

## \*\*\*1NR

### \*\*\*China DA

### 1NR Impact Overview

Give China the global nuclear export market, its critical to their energy transitions and their soft power.

Chinese soft power is key to address all international conflicts and works to solve the root cause of terrorism, western intervention doesn’t solve because it creates a clash of civilizations, that’s zhang the impact is extinction

Robert Ayson, Professor of Strategic Studies and Director of the Centre for Strategic Studies: New Zealand at the Victoria University of Wellington, 2010 (“After a Terrorist Nuclear Attack: Envisaging Catalytic Effects,” Studies in Conflict & Terrorism, Volume 33, Issue 7, July, Available Online to Subscribing Institutions via InformaWorld)

**Washington’s early response to a terrorist nuclear attack** on its own soil **might** also **raise the possibility of an unwanted (and nuclear aided) confrontation with Russia and/or China**. For example, **in the noise and confusion during the immediate aftermath** of the terrorist nuclear attack, **the U.S. president might be expected to place the country’s armed forces, including its nuclear arsenal, on a higher stage of alert. In such a tense environment**, when careful planning runs up against the friction of reality, **it is just possible that Moscow and/or China might mistakenly read this as a sign of U.S. intentions to use force (and possibly nuclear force) against them. In that situation, the temptations to preempt such actions might grow**, although it must be admitted that **any preemption would probably still meet with a devastating response**. **As part of its initial response** to the act of nuclear terrorism (as discussed earlier) **Washington might decide to order a significant conventional (or nuclear) retaliatory or disarming attack against the leadership of the terrorist group and/or states seen to support that group**. Depending on the identity and especially the location of these targets, **Russia and/or China might interpret such action as being far too close for their comfort, and potentially as an infringement on their spheres of influence and even on their sovereignty**. One far-fetched but perhaps not impossible scenario might stem from a judgment in Washington that some of the main aiders and abetters of the terrorist action resided somewhere such as Chechnya, perhaps in connection with what Allison claims is the “Chechen insurgents’ … long-standing interest in all things nuclear.”42 American pressure on that part of the world would almost certainly raise alarms in Moscow that might require a degree of advanced consultation from Washington that the latter found itself unable or unwilling to provide. **There is also the question of how other nuclear-armed states respond to the act of nuclear terrorism on another member of that special club**. It could reasonably be expected that following a nuclear terrorist attack on the United States, both Russia and China would extend immediate sympathy and support to Washington and would work alongside the United States in the Security Council. But there is just a chance, albeit a slim one, where the support of Russia and/or China is less automatic in some cases than in others. For example, what would happen if the United States wished to discuss its right to retaliate against groups based in their territory? If, for some reason, Washington found the responses of Russia and China deeply underwhelming, (neither “for us or against us”) might it also suspect that they secretly were in cahoots with the group, increasing (again perhaps ever so slightly) the chances of a major exchange. If the terrorist group had some connections to groups in Russia and China, or existed in areas of the world over which Russia and China held sway, and if Washington felt that Moscow or Beijing were placing a curiously modest level of pressure on them, what conclusions might it then draw about their culpability? If Washington decided to use, or decided to threaten the use of, nuclear weapons, the responses of Russia and China would be crucial to the chances of avoiding a more serious nuclear exchange. They might surmise, for example, that while the act of nuclear terrorism was especially heinous and demanded a strong response, the response simply had to remain below the nuclear threshold. It would be one thing for a non-state actor to have broken the nuclear use taboo, but an entirely different thing for a state actor, and indeed the leading state in the international system, to do so. If Russia and China felt sufficiently strongly about that prospect, there is then the question of what options would lie open to them to dissuade the United States from such action: and as has been seen over the last several decades, the central dissuader of the use of nuclear weapons by states has been the threat of nuclear retaliation. **If some** readers **find this simply too fanciful**, and perhaps even offensive to contemplate, **it may be informative to reverse the tables. Russia**, which possesses an arsenal of thousands of nuclear warheads and that has been one of the two most important trustees of the non-use taboo, **is subjected to an attack of nuclear terrorism. In response, Moscow places its nuclear forces very visibly on a higher state of alert and declares that it is considering the use of nuclear retaliation against the group and any of its state supporters. How would Washington view such a possibility?** Would it really be keen to support Russia’s use of nuclear weapons, including outside Russia’s traditional sphere of influence? And if not, which seems quite plausible, what options would Washington have to communicate that displeasure? **If China had been the victim of the nuclear terrorism and seemed likely to retaliate in kind, would the United States and Russia be happy to sit back and let this occur? In the charged atmosphere immediately after a nuclear terrorist attack, how would the attacked country respond to pressure from other major nuclear powers not to respond in kind? The phrase “how dare they tell us what to do” immediately springs to mind. Some might even go so far as to interpret this concern as a tacit form of sympathy or support for the terrorists. This might not help the chances of nuclear restraint.**

#### Nuclear power leadership is key to weaning china off of their coal addiction, that’s boey, the impact is massive pollution and political instability

Schneider 11 (Keith, senior editor for Circle of Blue-a nonprofit focusing on resource shortages founded in 2000, Choke Point: China—Confronting Water Scarcity and Energy Demand in the World’s Largest Country, Feb 15, http://www.circleofblue.org/waternews/2011/world/choke-point-china%E2%80%94confronting-water-scarcity-and-energy-demand-in-the-world%E2%80%99s-largest-country/)

By any measure, conventional and otherwise, China’s tireless advance to international economic prominence has been nothing less than astonishing. Over the last decade alone, 70 million new jobs emerged from an economy that this year, according to the World Bank and other authorities, generated the world’s largest markets for cars, steel, cement, glass, housing, energy, power plants, wind turbines, solar panels, highways, high-speed rail systems, airports, and other basic supplies and civic equipment to support a modern economy. Yet, like a tectonic fault line, underlying China’s new standing in the world is an increasingly fierce competition between energy and water that threatens to upend China’s progress. Simply put, according to Chinese authorities and government reports, China’s demand for energy, particularly for coal, is outpacing its freshwater supply. Students of Chinese history and geography, of course, understand that tight supplies of fresh water are nothing new in a nation where 80 percent of the rainfall and snowmelt occurs in the south, while just 20 percent of the moisture occurs in the mostly desert regions of the north and west. What’s new is that China’s surging economic growth is prompting the expanding industrial sector, which consumes 70 percent of the nation’s energy, to call on the government to tap new energy supplies, particularly the enormous reserves of coal in the dry north. The problem, say government officials, is that there is not enough water to mine, process, and consume those reserves, and still develop the modern cities and manufacturing centers that China envisions for the region. “Water shortage is the most important challenge to China right now, the biggest problem for future growth,” said Wang Yahua, deputy director of the Center for China Study at Tsinghua University in Beijing. “It’s a puzzle that the country has to solve.” The consequences of diminishing water reserves and rising energy demand have been a special focus of Circle of Blue’s attention for more than a year. In 2010, in our Choke Point: U.S. series, Circle of Blue found that rising energy demand and diminishing freshwater reserves are two trends moving in opposing direction across America. Moreover, the speed and force of the confrontation is occurring in the places where growth is highest and water resources are under the most stress—California, the Southwest, the Rocky Mountain West, and the Southeast. Modernization vs. Water Resources In December, we expanded our reporting to China. Circle of Blue—in collaboration with the China Environment Forum (CEF) at the Washington-based Woodrow Wilson International Center for Scholars—dispatched four teams of researchers and photographers to 10 Chinese provinces. Their assignment: to report on how the world’s largest nation and second-largest economy is achieving its swift modernization, despite scarce and declining reserves of clean fresh water. In essence, Circle of Blue and CEF completed a national tour of the extensive water circulatory system and vast energy production musculature that makes China go. The result of our reporting is Choke Point: China. In a dozen chapters—starting today and posted weekly online through April—Choke Point: China will report in text, photographs, and interactive graphics the powerful evidence of a potentially ruinous confrontation between growth, water, and fuel that is already visible across China and is virtually certain to grow more dire over the next decade. Choke Point: China, though, is not a narrative of doom. Rather, our journalists and photographers found a powerful narrative in two parts and never before told. The first important finding—left largely unsaid in and outside China—is how effectively the national and provincial governments enacted and enforced a range of water conservation and efficiency measures. Circle of Blue met the engineers, plant managers, and workers who operate China’s robust and often state-of-the-art energy and water installations. We interviewed the academics and government executives who oversee the globally significant water conservation policies and practices that have been essential to China’s new prosperity. Those policies, we found, sharply reduced waste, shifted water from agriculture to industry, and slowed the growth in national water consumption. Though China’s economy has grown almost eight-fold since the mid-1990s, water consumption has increased 15 percent, or 1 percent annually. China’s major cities, including Beijing, are retrofitting their sewage treatment systems to recycle wastewater for use in washing clothes, flushing toilets, and other grey-water applications. Here in Baotou, a desert city of 1.5 million in Inner Mongolia, the giant Baotou Iron and Steel Company plant, one of the world’s largest, produces 10 million metric tons of steel annually in a region that receives mere inches of rainfall a year. The plant—which is 49 square kilometers and employs 50,000 workers—recycles 98 percent of its water, a requirement of a 1997 law that prompted owners of industrial plants to conserve water. Three Trends Converging We also discovered a second vital narrative that most industrial executives and government authorities we interviewed were either not fully aware of or were reluctant to acknowledge: the tightening choke point between rising energy demand and declining freshwater reserves that forms the central story line of the next era of China’s unfolding development. Stripped to its essence, China’s globally significant choke point is caused by three converging trends:Production of coal has tripled since 2000 to 3.15 billion metric tons a year. Government analysts project that China’s energy companies will need to produce an additional billion metric tons of coal annually by 2020, representing a 30 percent increase. Fresh water needed for mining, processing, and consuming coal accounts for the largest share of industrial water use in China, or roughly 120 billion cubic meters a year, a fifth of all the water consumed nationally. Though national conservation policies have helped to limit increases, water consumption nevertheless has climbed to a record 599 billion cubic meters annually, which is 50 billion cubic meters (13 trillion gallons) more than in 2000. Over the next decade, according to government projections, China’s water consumption, driven in large part by increasing coal-fired power production, may reach 670 billion cubic meters annually — 71 billion cubic meters a year more than today. China’s total water resource, according to the National Bureau of Statistics, has dropped 13 percent since the start of the century. In other words China’s water supply is 350 billion cubic meters (93 trillion gallons) less than it was at the start of the century. That’s as much water lost to China each year as flows through the mouth of the Mississippi River in nine months. Chinese climatologists and hydrologists attribute much of the drop to climate change, which is disrupting patterns of rain and snowfall. “It’s just impossible, if you haven’t lived it or experienced it, to understand change in China over the past 25 years, and especially since 1992,” said Kang Wu, a senior fellow and China energy scholar at East-West Center in Hawaii. “It’s a new world. It’s a new country. The worry in China and in the rest of the world is can they sustain it? They want to double the size of the economy again in 10 years. How can they do that? It’s a paradox from an economic point of view. They need a resource balance to meet demand, short-term and long-term. If you look out 10, 20, 30 years, it just looks like it’s not possible.” Rapid GDP Growth Will Continue In interviews, national and provincial government leaders, as well as energy industry executives, said China has every intention of continuing its 10 percent annual economic growth. “We believe that this is possible and we can do this with new technology, new ways to use water and energy,” said Xiangkun Ren, who oversees the coal-to-liquids program for Shenhua Group, the largest coal company in the world. Xiangkun acknowledged that avoiding the looming choke point will not be easy. The tightening loop is already visible in the jammed rail lines, huge coal truck traffic jams, and buckling roads that Circle of Blue encountered in Inner Mongolia—the country’s largest coal producer—and which are responsible for transporting billions of tons of coal from existing mines to market. Energy prices are steadily rising, putting new inflationary pressure on the economy. Even as China has launched enormous new programs of solar, wind, hydro, and seawater-cooled nuclear power, all of which use much less fresh water, energy market conditions will get worse without new supplies of coal, the source of 70 percent of the nation’s energy. China’s economy and the new social contract with its citizens, who have come to expect rising incomes and improving opportunities, is at risk, say some authorities.

#### And, Chinese pollution causes nuclear war with Russia

Nankivell 05 (Nathan, Senior Researcher @ Office of the Special Advisor Policy, Maritime Forces Pacific Headquarters, Canadian Department of National Defence, China's Pollution and the Threat to Domestic and Regional Stability, China Brief Vol: 5 Issue: 22, http://www.jamestown.org/programs/chinabrief/single/?tx\_ttnews%5Btt\_news%5D=3904&tx\_ttnews%5BbackPid%5D=195&no\_cache=1)

In addition to the concerns already mentioned, pollution, if linked to a specific issue like water shortage, could have important geopolitical ramifications. China’s northern plains, home to hundreds of millions, face acute water shortages. Growing demand, a decade of drought, inefficient delivery methods, and increasing water pollution have reduced per capita water holdings to critical levels. Although Beijing hopes to relieve some of the pressures via the North-South Water Diversion project, it requires tens of billions of dollars and its completion is, at best, still several years away and, at worst, impossible. Yet just to the north lies one of the most under-populated areas in Asia, the Russian Far East. While there is little agreement among scholars about whether resource shortages lead to greater cooperation or conflict, either scenario encompasses security considerations. Russian politicians already allege possible Chinese territorial designs on the region. They note Russia’s falling population in the Far East, currently estimated at some 6 to 7 million, and argue that the growing Chinese population along the border, more than 80 million, may soon take over. While these concerns smack of inflated nationalism and scare tactics, there could be some truth to them. The method by which China might annex the territory can only be speculated upon, but would surely result in full-scale war between two powerful, nuclear-equipped nations.

China expansion solves US nuclear transition---can export technology, makes this debate a question of starting points

Kadak-Prof Nuclear Science, MIT-6

<http://web.mit.edu/pebble-bed/papers1_files/Made%20in%20China.pdf>

Nuclear Power: “Made in China”

Summary China is emerging not only as a super economic power but also as the leader in the deployment and development of new nuclear energy plants. China’s energy needs are enormous, and its path forward in terms of providing sufficient electricity calls for a dramatic expansion of the use of nuclear energy. The Chinese government has determined that, based on its experience and ongoing concern with the environmental consequences of burning coal and other fossil fuels, China needs to aggressively deploy more than 50 plants in the next several decades. Of concern is whether the Chinese can manage this expansion with the quality needed to assure that plants are operated safely, with personnel trained in the proper safety culture. Based on observations to date, 15the Chinese appear to understand the challenges and are addressing them in order to assure the safe operation of the plants. As the United States and other nations have learned, such a task requires vigilance and a dedication to safe operations. With such rapid growth, it has yet to be seen whether or not the safety culture can be transferred to the next generation of operators and engineers. In terms of proliferation of nuclear weapons technology, the choice is one of foreign policy rather than technology. The development of China’s commercial nuclear industry can be done without fear of proliferation of nuclear weapons, provided China does not transfer the weapons sensitive technologies (enrichment and reprocessing) to less-than-trustworthy countries. As in all nations operating nuclear plants and defense facilities, the issue of nuclear waste disposal will be resolved on a country-by-country basis. It is fortunate that China has large areas (such as the Gobi Desert) where waste can be safely disposed of in geological formations. As China aggressively deploys its light water reactors, develops pebble bed reactors for electricity, and processes heat applications, we in the United States are still waiting for our nuclear “renaissance” to occur. It is not inconceivable that as we wait and watch, we may, in the future, be buying reactors “Made in China”

#### China will produce safe nuclear and nanotechnology – they have a culture of safety

Yun Zhou-Belfer Center for Science and International Affairs, Harvard-10

Why is China going nuclear?

http://www.cissm.umd.edu/papers/files/why\_is\_china\_going\_nuclear\_\_final.pdf

Still the government knows that a single nuclear safety accident could adversely affect 442 public opinion. China’s record of nuclear power operation is relatively clean, and keeping it that 443 way is a priority for Chinese officials. By building on its existing safety culture and the new 444 passive safety features of Generation III reactors, China hopes to maintain its safety record. 445 Significant human resources will be needed to support the implementation of China’s aggressive 446 nuclear energy policy

### 2AC #1 – Plan = Cooperation

#### Their lyons evidence doesn’t say that China and the U.S. will cooperate – it makes a descriptive policy statement that China and the U.S. SHOULD cooperate – therefore the current policy is that they’re not cooperating over the dissemination of nuclear technology now and it’s negative evidence

#### I’ll do the link analysis here – 3 of them out of the 1NC

#### A. Export market – China is developing nuclear power technology in order to gain access to key export markets, the U.S. becoming a leader first decimates their economic incentive to create scalable nuclear energy – that’s Ferguson and Hall

#### B. Competiveness incentive – China will have no political motivation to create next generation nuclear power if the U.S. has already overtaken them

#### C. Coal dumping – displacing U.S. coal use means it gets exported to China – makes nuclear non-competitive in Chinese markets and triggers the internal link to our impacts

Thomas M. Power 12, Research Professor and Professor Emeritus, Department of Economics, University of Montana; Principal, Power Consulting; February 2012, “The Greenhouse Gas Impact of Exporting Coal from the West Coast: An Economic Analysis,” <http://www.sightline.org/wp-content/uploads/downloads/2012/02/Coal-Power-White-Paper.pdf>

The cumulative impact of these coal port proposals on coal consumption in Asia could be much larger than even that implied by the two pending proposals. If Arch, Peabody, and other western U.S. coal producers’ projections of the competitiveness of western coal in Asia are correct, facilitating the opening of the development of West Coast coal ports could have a very large impact on the supply of coal to China and the rest of Asia.

6.4 The Long-term Implications of Fueling Additional Coal-Fired Electric Generation

Although the economic life of coal-fired generators is often given as 30 or 35 years, a permitted, operating, electric generator is kept on line a lot longer than that, as long as 50 or more years through ongoing renovations and upgrades. Because of that long operating life, the impact of the lower Asian coal prices and costs triggered by PRB coal competing with other coal sources cannot be measured by the number of tons of coal exported each year. Those lower coal costs will lead to commitments to more coal being burned for a half-century going forward.

That time-frame is very important. During exactly this time frame, the next half-century, the nations of the world will have to get their greenhouse gas emission stabilized and then reduced or the concentrations of greenhouse gases in the atmosphere may pass a point that will make it very difficult to avoid massive, ongoing, negative climate impacts. Taking actions now that encourage fifty-years of more coal consumption around the world is not a minor matter. Put more positively, allowing coal prices to rise (and more closely approximate their full cost, including “external” costs) will encourage extensive investments in improving the efficiency with which coal is used and the shift to cleaner sources of energy. This will lead to long-term reductions in greenhouse gas emissions that will also last well into the next half-century. 57

#### And the plan gives the U.S. comparative trading advantage –

#### A. manufacturing

Scott 1AC Author 10

Michael Scott, former senior advisor at the Department of Treasury and partner and managing director at Miller Buckfire %26 Co as well as head of the firm’s U.S. Government Advisory practice, 4-20-2010, "Statement of Michael D. Scott" Testimony before the Subcommittee on Domestic Policy of the Committee on Oversight and Government Reform in the House of Representatives, http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg65123/pdf/CHRG-111hhrg65123.pdf

Title XVII can drive economic growth due to the development¶ of clean-energy infrastructure projects that are built and fully¶ paid for by the private sector; provide significant short-term and¶ long-term construction and manufacturing jobs; provide long-term¶ operating jobs; promote the development of new U.S.-based manufacturing,¶

#### **B. US export capability – crowds out other players**

Kirsch 1AC Author 9 [Steve; an American serial entrepreneur who has started six companies: Mouse Systems, Frame Technology Corp., Infoseek, Propel, Abaca, and OneID. Bachelor of Science and a Master of Science in electrical engineering and computer science from the Massachusetts Institute of Technology. November 25, http://skirsch.wordpress.com/]

The unique reprocessing technology used in the IFR does not create a proliferation risk because it cannot be used to separate out plutonium. However, even if you still believe there is a proliferation risk and restricted the IFR to only those countries which already have nuclear power, you’d be hitting 93% of global carbon emissions which is more than sufficient. Creates an opportunity to become the world leader in clean energy. Obama said at MIT that he wants the US to be a world leader in clean power. Nuclear is the largest clean energy source and the IFR was determined to be the best nuclear power technology in the most extensive comparative nuclear study ever done. That means the IFR is, in the objective opinion of international energy experts, our single best clean power source. But we aren’t exploiting it. We are investing nothing in it today. One of the IFR scientists, an Argonne Distinguished Fellow, went to DOE recently and to ask for funds to at least start the IFR planning. He got nothing. Not even a dime. How do we expect to be a leader in clean energy by leaving our best technology sitting on the shelf? Nobody has been able to answer that. Creates enormous economic value. Because they use our existing nuclear waste as fuel, fast reactors turn our existing nuclear waste stockpile into an asset worth over $30 trillion dollars. That is an amazing return on investment for a one-time $3B investment to jump-start the technology. Nothing else provides such an enormous return on investment (ROI). Plus, the ROI is guaranteed: we know the technology works since we ran it for 30 years and we also know it is practical since the Russians are exporting commercial fast reactors to China. Unlimited clean power. The IFR allows us to power the entire US electricity needs for the next 1,500 years without doing any additional mining of uranium; using just the “waste” we have on-hand that nobody wants. The power is carbon free.

#### **US Exports kill the Chinese market and soft power**

Loudermilk 10 (Micah, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University*, Losing Its Edge? The U.S. and Nuclear Cooperation Deals,* http://inssblog.wordpress.com/2010/08/19/losing-its-edge-the-u-s-and-nuclear-cooperation-deals/)

During the last year of the George W. Bush administration, the United States pursued a number of civilian nuclear cooperation deals with countries around the world including, among others, the United Arab Emirates (UAE), Jordan, and Vietnam. President Barack Obama, since taking office in 2009, has largely followed in the footsteps of his predecessor on this subject – concluding significant nuclear deals with both the UAE and India – whose civil nuclear cooperation agreement with the U.S. has been in the works since 2005.

Both of these **agreements are important** for their own reasons. On the Indian front, the civilian nuclear agreement puts the two countries on the **path to full cooperation** in exchange for India placing its civil nuclear facilities under International Atomic Energy Agency (IAEA) safeguards. In regards to the UAE, President Obama signed a nuclear energy deal with the country in May 2009, opening the door for U.S. reactor builders in the UAE and closing the door on proliferation fears – as the UAE renounced uranium enrichment and spent fuel reprocessing. Additionally, agreements are currently being pursued with Vietnam and Jordan as well.

The UAE’s nuclear deal set the so-called “gold standard” for nuclear cooperation agreements as the nation foreswore both uranium enrichment and fuel reprocessing. This agreement is of paramount importance as it demonstrates the necessity of having the United States involved in the international nuclear fuel and energy markets. By using technology, equipment, and a fuel supply as **bargaining chips**, the government possesses the ability to **heavily influence** the open nuclear market. In doing so, the U.S. not only helps itself economically but, more importantly, can help to promote the safe and peaceful use of nuclear energy while minimizing or even eliminating the risks of proliferation inherent in the production of nuclear energy.

However, how long can this continue? With the U.S. nuclear energy industry dead domestically for over thirty years, much of the knowledge, technology, and expertise in the field has departed overseas. As time passes, the ability of the United States to control and influence such issues as reactor safety, fuel supply, safeguards, and IAEA monitoring of programs is waning rapidly. If the nuclear power industry remains dormant domestically, how much longer can the U.S. continue to **exert power and influence** on the industry globally while working to promote nonproliferation objectives? Nuclear power expansion at home may be extinct, but the creation of civilian nuclear energy programs internationally is expanding rapidly. Without advances in the field, the need for other countries to strike civilian nuclear agreements with the U.S. will **begin to diminish** and the global leader in nonproliferation efforts will eventually be **forced into a backseat**.

#### **C. Human capital – diversion of human capital into U.S. labs kills China’s nuclear scientist capability**

Jin-Stark Neurosciences Research Institute-3

The China-U.S. Relationship in Science and Technology

<http://china-us.uoregon.edu/pdf/China-US%20relationship%20in%20Science%20and%20Technology.pdf>

Moreover, China is learning to harness Chinese intellect outside its borders and turn it into

a competitive advantage. This has already contributed to remarkable progress in S&T fields

such as superconductivity, nanotechnology, opto-electronics, and sequencing of the rice

genome. While no one has attempted to measure the overseas brain trust that China can tap

into, it is clearly sizable. Chinese scholars educated abroad over the last decade reportedly

make up more than half of the top scientific researchers now working on key national

research projects and receiving priority in conducting research in China. As China’s

economic reforms continue and older researchers retire, there will be more opportunities for

China’s younger, U.S.-trained scientists and engineers. As a result, high-tech firms in the

United States and the government of China are finding themselves competing in some cases

today for the services of these same talented individuals.

#### No human resources causes accidents which kills China’s nuclear transition

Yun Zhou-Belfer Center for Science and International Affairs, Harvard-10

Why is China going nuclear?

http://www.cissm.umd.edu/papers/files/why\_is\_china\_going\_nuclear\_\_final.pdf

Building enough new nuclear power plants and operating them long enough to make a 421 significant contribution to China’s growing energy needs will require greater acceptance from 422 the Chinese public. Public opposition has been a major impediment to nuclear development in 423 the West, but as a consequence of China’s relatively centralized government and government424 driven economy, the Chinese public is typically informed of nuclear decisions only after they are 425 made. Chinese authorities are taking steps to increase public involvement in nuclear energy 426 decisions. The State Environmental Protection Administration, China’s top environmental body, 427 recently initiated limited public involvement in the nation’s environmental impact assessment 428 process. Local governments are now required to release environmental impact assessment reports 429 and allow public feedback during a public comment period before starting construction of large- scale projects. This system has so far been ineffective and inefficient. Gradually, public 431 participation on nuclear projects should improve because of improved regulatory transparency. 432 In general, the Chinese public seems willing to accept and embrace nuclear technologies 433 and the role they will play in the country’s continued development. Further nuclear development, 434 for instance, is likely to provide thousands of jobs in local communities, which has set off a 435 scramble among local governments eager to have nuclear power plants built in their regions. In 436 contrast to Japan, for example, where local officials have fought to keep nuclear facilities out of 437 their regions, local Chinese officials believe that nuclear power can positively impact the local 438 economy, increase the local tax base, and resolve electricity shortfalls and have aggressively 439 initiated cooperation with nuclear investment corporations, such as the China National Nuclear 440 Group. 441 Still the government knows that a single nuclear safety accident could adversely affect 442 public opinion. China’s record of nuclear power operation is relatively clean, and keeping it that 443 way is a priority for Chinese officials. By building on its existing safety culture and the new 444 passive safety features of Generation III reactors, China hopes to maintain its safety record. 445 Significant human resources will be needed to support the implementation of China’s aggressive 446 nuclear energy policy. As part of its military-related nuclear program in the 1950s, China had a strong 447 nuclear technology workforce made up of technocrats, engineers, designers, and researchers. China’s 448 modest nuclear energy industry, however, couldn’t sustain interest in the field. Low student demand 449 forced many universities that had trained the initial nuclear workforce to cancel their nuclear 450 engineering programs. Today, only a few Chinese universities have nuclear engineering programs. The 451 Chinese nuclear industry is well aware of these problems and is attempting to ensure the necessary workforce for future nuclear energy development. 3 452 Universities are pitching in by launching new 453 nuclear engineering programs. Some of these programs matriculate junior students from other 454 engineering majors and offer one-year professional training programs focused on nuclear science and 455 engineering. These students are often offered work in nuclear power plants directly after they graduate. 456 Nuclear power plants pay competitive wages and offer excellent benefits in order to keep talent, yet it 457 remains to be seen whether personnel who undergo such a short training program will be able to 458 maintain current quality standards. These recruitment programs do not address the need for high-level 459 research and development personnel to work on core areas, such as nuclear reactor design. One 460 significant potential barrier to the impact of new nuclear power plants is the time it will take for these 461 plants to come online. Three nuclear expansion scenarios present themselves as possibilities. The first 462 scenario is the reference case and is based on China’s current long-term nuclear power plan, which 463 anticipates that nuclear power will have a 20-percent share (the current world nuclear share) of the 464 total national installed capacity by 2050. The second scenario is a high-growth scenario, which 465 anticipates continuous nuclear expansion and nuclear to have a 30-percent share of installed capacity 466 by 2050. The third scenario is the low-growth scenario, which anticipates a 10-percent nuclear share 467 by 2050. These scenarios assume that the nuclear growth will take the form of additional 1 GWe 468 pressurized water reactors and that Generation IV reactors will be developed to the point that they are 469 commercially deployable by 2040.

### 2AC #2 – A2: China picks up tech

#### No they won’t – they’ll use coal because the United States will dump it in their domestic coal markets

### 2AC #3 – A2: Coal Link N/U

#### Reject their IWR evidence – it’s in the context of U.S. spot markets that are insulated from the pricing mechanisms of the east Asian market

#### And the link is linear – even if coal prices are low now in China, they dump even more coal which makes nuclear power comparatively more uncompetitive – we have uniqueness evidence from December that indicates China is taking the lead on nuclear power, which disproves their uniqueness press.

#### U.S. coal exports to China are low, but downward pressure on domestic demand expands them massively

Bryan Walsh 12, Senior Editor at TIME, May 31, 2012, “Drawing Battle Lines Over American Coal Exports to Asia,” online: http://science.time.com/2012/05/31/drawing-battle-lines-over-american-coal-exports-to-asia/

But across the Pacific Ocean, the demand for coal has never been hotter, with China burning 4.1 billion tons in 2010 alone, far more than any other country in the world. That insatiable demand forced China in 2009 to become a net coal importer for the first time, in part because congested rail infrastructure raised the cost of transporting coal from the mines of the country’s northwest to its booming southern cities. In April, Chinese coal imports nearly doubled from a year earlier. Right now Australia and Indonesia supply much of China’s foreign coal. U.S. coal from the Powder River Basin could be a perfect addition to the Chinese market. Montana and Wyoming are just short train trips to ports on the Pacific Northwest coast, and from there it’s a container ship away from Asian megacities where coal doesn’t have to compete with cheap natural gas and air-pollution regulations are far weaker than in the U.S. To a wounded Big Coal, China is a potential savior.¶ As I write in the new edition of TIME, there’s just one problem: right now, ports on the West Coast lack the infrastructure needed to transfer coal from railcars into container ships. (Just 7 million of the 107 million tons of U.S.-exported coal left the country via Pacific Ocean ports last year.) That’s why coal companies like Peabody and Ambre Energy are ready to spend millions to build coal-export facilities at a handful of ports in Washington and Oregon. If all those plans go forward, as much as 150 million tons of coal could be exported from the Northwest annually—-nearly all of it coming from the Powder -River -Basin and headed to Asia. Even if the U.S. kept burning less and less coal at home, it would have a reason to keep mining it.

#### Uniqueness is goldilocks---U.S. coal demand will grow slowly now---but declines cause a shift to production for export markets

Anthony Fensom 10-23, experienced business writer and communication consultant with more than a decade's experience in the financial and media industries of Australia and Asia, 10/23/12, “Don’t Write the Obituary Just Yet: ‘King Coal’ Still Reigns,” The Diplomat, http://thediplomat.com/pacific-money/2012/10/23/despite-short-term-pain-king-coal-still-reigns/

Yet despite softer demand, strong production rates in Australia, Indonesia and the United States along with the emerging coal producer of Mongolia have lifted supply. Broker UBS expects top-grade thermal coal prices to drop from U.S.$105-110 per ton in 2012 to US$90 per ton in 2015/16, with coking coal prices also to decline.

As the world’s largest exporter of coking coal and second-largest exporter of thermal coal, Australia’s industry has suffered disproportionately from the slowdown, with low prices and high costs sparking a wave of layoffs.

Among recent retrenchments, Xstrata Coal has cut 600 jobs, Ensham 350 and BHP Billiton Mitsubishi Alliance (BMA) 300, with a number of coal projects either wound back or deferred.

Queensland’s coal industry has also been hit with increased royalties from a cash-strapped state government, prompting warnings by the Queensland Resources Council that more industry cost-cutting was likely.

Coal reporter Lou Caruana, editor of International Longwall News, told The Diplomat that additional cutbacks might be in the pipeline should prices fall further.

“Mining companies have been crunching the numbers on their operations, taking into account the lower coal prices and rising costs such as labor, transport and new government charges.

"Margins are being squeezed so mine management teams are taking a worst case scenario. If there were to be further softening of prices then you would expect further cutbacks in the future,” he said.

According to Caruana, the fall in prices was attributed to both slowing growth in the eurozone and China, along with the entry of the United States and Indonesia into the coal export market.

“U.S. coal producers have sought out export markets such as China and India because their domestic market has slowed down and it has been switching to gas for power generation. Indonesia has ramped up coal production and exports of thermal coal to supply the Chinese market over the last few years,” he said.

While demand in the region having lagged due to “sub-optimal” growth, new supply was still preparing to enter the market.

“For example, in Queensland there are major new projects slated for the Surat and Galilee basins, and in New South Wales [state] the Gunnedah basin. Added to this are the new coal mining developments in Mongolia,” he said.

While Chinese officials are now forecasting a recovery, Caruana said a rebound in prices would also require a significant pick up in the U.S. economy or the eurozone.

“Once the global economic outlook stabilizes, there will be growing demand for coal as a safe and affordable power source for newly emerging economies,” he said.

Despite environmental concerns, coal still accounts for 40 percent of global electricity needs and absolute consumption is expected to double over the next two decades due to demand from industrializing nations such as China and India.

“For all the talk about natural gas and renewables, coal unquestionably won the energy race in the first decade of the 21st century,” reported the International Energy Association (IEA).

Should such growth continue, reports of the death of “King Coal” appear to have been greatly exaggerated, at least for now.

#### No U.S. coal exports now---but they’d have a massive impact on Asian coal consumption if they increased

Thomas M. Power 12, Research Professor and Professor Emeritus, Department of Economics, University of Montana; Principal, Power Consulting; February 2012, “The Greenhouse Gas Impact of Exporting Coal from the West Coast: An Economic Analysis,” <http://www.sightline.org/wp-content/uploads/downloads/2012/02/Coal-Power-White-Paper.pdf>

In evaluating the impact of coal exports on Asian coal consumption, the region will not only be considering the two pending coal export plans—there are very likely to be others. In Oregon, Ambre Energy, through its subsidiary Coyote Island Terminal LLC, has entered into a one year lease option agreement with the Port of Morrow for potential coal handling. 56 Other Wyoming and Montana coal mines are exploring coal exports Oregon, Washington and British Columbia. Two Washington ports that have been approached by coal exporters, Tacoma and Kalama, have decided, for now, not to open their ports to coal exports. To the extent that Washington ports begin competing with each other for coal exports, Tacoma and Kalama may reconsider. There is also evidence that other ports and counties are actively negotiating with coal exporters, including St. Helens, OR, Coos Bay, OR, and Everett, WA.

The cumulative impact of these coal port proposals on coal consumption in Asia could be much larger than even that implied by the two pending proposals. If Arch, Peabody, and other western U.S. coal producers’ projections of the competitiveness of western coal in Asia are correct, facilitating the opening of the development of West Coast coal ports could have a very large impact on the supply of coal to China and the rest of Asia.

### 2AC #4 1NR A2: Russia

#### Doesn’t say why Russia is critical to take out the DA – no warrant means you don’t evaluate this as a link uniqueness takeout

#### Their 1AC evidence also says China is taking the lead in international export markets, we’ll concede that and it subsumes Russia because China has more capital investment

#### Chinese nuclear leadership high

Boey-Research Analyst at the Energy Studies Institute, National University of Singapore-2/27/12

<http://www.japanfocus.org/-Augustin-Boey/3698>

Nuclear Power and China’s Energy Future: Limited Options

Nuclear power in China’s electricity generation mix

China’s first nuclear power reactor was connected to the grid in 1991. Since 1993, nuclear generation has grown rapidly, especially since 2001. By 2004, ten commercial power reactors were on the grid and in 2009, 70,134 gigawatt hours of electricity were produced from nuclear power.15 China’s nuclear expansion is continuing apace. The 25 reactors currently being constructed represent around half of all current worldwide new build projects. According to the International Energy Agency (IEA), 89 percent of China’s electricity in 2009 was produced from coal, with hydropower producing six percent or the second highest amount.16 Nuclear power produced a comparatively paltry 2 percent of the electricity generation portfolio in the same year. As highlighted above, however, China’s nuclear capacity is projected to increase substantially due to exploding energy demands. The IEA predicts that China’s energy demand will more than double from 920 Mtoe in 2009 to 1,867 in 2030.17 This represents a Compound Annual Growth Rate (CAGR) of 3.43 percent, which outstrips the predicted global increase in energy demand in the same period by a CAGR of 1.85 percent. Over the period 2009 to 2035, the IEA predicts that the share of coal power in total electricity production will be reduced by 25 percent, with a projected 64 percent of electricity in China coming from coal in 2035.18 This reduced role of coal in China accords with the predicted worldwide trend of decreasing reliance upon coal for power generation. The share of nuclear power, on the other hand, is expected to increase in China from its current 2 percent to 12 percent in 2035. This represents a CAGR of 12.68 percent. The IEA’s projections roughly correspond with the United States Energy Information Administration’s reference case projections in the 2011 edition of its International Energy Outlook, which states that China’s nuclear energy consumption will increase by 10.3 percent from 2008 to 2035, while the worldwide and the United States growth rate figures are 2.4 percent and 0.3 percent, respectively.19 China’s carbon emissions from power generation are expected to increase at a CAGR of 2.15 percent from 3,324 Mt in 2009 to 5,200 Mt in 2030, while worldwide emissions are expected to increase at a CAGR of 1.02 percent from 11,760 Mt to 14,556 Mt over the same period.20 It is important to note that this growth in nuclear power will not occur in isolation from growth in renewable power. Renewables are projected to increase from 56 Mtoe in 2009 to 264 Mtoe in 2030, growing with a CAGR of 7.66 percent in that period. This is a rapid projected growth rate by global standards, but it accompanies, not replaces, substantial growth in nuclear power. Chinese government plans call for having 20 percent of electricity produced by renewable power sources by 2020.21

#### They’re developing next-gen reactors

China Energy Weekly 8/31/12

Fuqing Nuclear Power Plant to come on-line next year lexis

Fuqing Nuclear Power Plant in south China's Fujian Province will begin generating power in November 2013, the facility's builder and operator CNNC Fujian Nuclear Power Co. Ltd., a unit of China National Nuclear Corp. (CNNC), confirmed with Interfax on Thursday. The first phase of the RMB 100 billion ($15.80 billion) plant will utilize a single one gigawatt (GW) CPR-1000 pressurized water reactor that will come on-line as scheduled in November 2013. An additional five reactors will be added by 2018. The CPR-1000 is manufactured by China Guangdong Nuclear Power Group and is based on an earlier design by Euronext Paris-listed Areva SA. CNNC and power producer China Huadian Corp., both state-owned, have stakes of 51 percent and 39 percent in the plant, respectively. Fujian Investment and Development Co. Ltd., the infrastructure investment vehicle of the Fujian provincial government, holds a 10 percent stake. Construction of nuclear projects has resumed slowly this year following a suspension in activity in the aftermath of the Fukushima nuclear disaster in Japan in March 2011. CNNC announced on Aug. 3 that the company's nuclear plant in Hainan Province would go on-line in 2014 as scheduled. China currently has 15 nuclear reactors in operation with total installed capacity of 12.57 GW. The central government may also resume the approval process for new nuclear power plants before the end of this year, Yu Zusheng, a senior adviser to State Nuclear Power Technology Corp., said on Aug. 29 at an industry forum in Beijing, the state-run Xinhua news agency reported. "China cannot afford to give up nuclear power considering as it is one of the cheapest and most stable energy resources out there, if safety is guaranteed," nuclear power researcher Xiong Weiping told Interfax on Thursday. "Developing nuclear power is a must for China's energy strategy as clean energy cannot satisfy domestic power demand." China has set a target of 80 GW of installed nuclear power capacity by 2020. Nuclear power output in the first seven months of the year rose 15.3 year-on-year to 55 terawatt hours, representing two percent of total output, according to the State Electricity Regulatory Commission.

China will fill in for US exports---solves global expansion

Goncharuk-Research Fellow, National Research Nuclear University, Russia-11

Chinese Nuclear Expansion: Are We Growing a New Rival?

<http://www.ensec.org/index.php?option=com_content&view=article&id=333:chinese-nuclear-expansion-are-we-growing-a-new-rival&catid=121:contentenergysecurity1111&Itemid=386>

In attempting to answer the question broached in the title of this article "Is China a competitor on the nuclear market?" there is no simple answer. At present Westinghouse, AREVA, Rosatom, TVEL, Tenex are the big serious players on the nuclear technologies market. They are hugely experienced; they provide the highest standards and are true brand names. We are incapable of saying the same about the Chinese. Their companies still have a long way to go. Currently we are witnessing many clashes of interest between the Chinese Atomic Energy Agency and other nuclear exporting countries and corporations. China is developing rapidly and will soon catch up with the world’s top nuclear exporting powers. The situation will get tougher within 10 years as China gains operational experience with its new technologies. Market will see new nuclear offers coming forward from this nation. China is not satisfied to stand still; the rest of the world should take note.

### 2AC #5 – A2: Global Warming Turns

#### Chinese nuclear power leadership is the only way to solve warming----

#### A. Targets, Strong nuclear power leadership in china is key to emission reductions, that turns the aff, Paltsev, the lead author of an influence climate study from MIT, calculates without china we will miss temp targets by a whole degree celcious, makes warming irreversible and runaway

#### B. Modeling, developing countries most critical to emission reductions ONLY look to china as a model for environmental policy due to profound economic similarities, Chinese soft power from nuclear export leadership is critical to give them leverage to build coalitions, that’s zhang.

#### This is net offense, even though there is warming in the SQ china offers the best method to stop it, only their leadership is sufficient because it forces action from the rest of the world.

#### Chinese emissions are sufficient to cause extinction---makes this an external impact

John Copeland Nagle 11, the John N. Matthews Professor, Notre Dame Law School, Spring 2011, “How Much Should China Pollute?,” Vermont Journal of Environmental Law, 12 Vt. J. Envtl. L. 591

Third, the rest of the world suffers because of the inability of China and the United States to agree on a method for reducing their greenhouse gas emissions. Even if the rest of the world were to reach such an agreement, the failure to include China and the United States would doom the project from the start. Together, China and the United States account for forty-one percent of the world's greenhouse gas emissions. [FN19] Left unchecked, China's emissions alone could result in many of the harms associated with climate change. [FN20] That is why many observers believe that “[t]he decisions taken in Beijing, more than anywhere else, [will] determine whether humanity thrive[s] or perishe[s].”

Turn-Compulsory licensing

A. China pushes compulsory licensing for clean technology-the US is against

Financial Times 11/23/09

China, India push for 'patent free' green tech

<http://www.euractiv.com/innovation-enterprise/china-india-push-patent-free-gre-news-223054>

As world leaders prepare for climate talks in Copenhagen next month, developing nations have tabled a controversial proposal which would effectively end patent protection for clean technologies. China and India have floated the idea of making new green technology subject to 'compulsory licensing', which critics say amounts to waiving intellectual property rights. The idea of adapting or liberalising patent rules for crucial new inventions which can help reduce carbon emissions is not new, but the EU and US are unhappy with compulsory licensing, fearing it would dramatically reduce the incentive for businesses to innovate and stifle green job creation. Compulsory licensing has to date only been used in emergency situations where patent-protected pharmaceuticals were seen as prohibitively expensive. The Thai government used the mechanism to allow local medicines factories produce HIV drugs at a fraction of the cost. Now, the group of 77 developing nations, led de facto by China, wants to apply the same logic to the climate crisis.

B. Turns the case-key to global dissemination of clean technology

Caprotti-assistant professor in human geography at University College-7/30/09

<http://seedmagazine.com/content/article/intellectual_property_who_owns_green_tech/>

CATALYST / BY VERONIQUE GREENWOOD /FIVE EXPERTS DISCUSS HOW INTELLECTUAL PROPERTY CAN BE ADAPTED TO SPREAD GREEN TECH, WHAT WE CAN LEARN FROM PASTEUR, AND HOW TO INSPIRE

The rationale behind patenting technology is clear: Patents and IP rights protect a corporation responsible for innovation, allowing it to invest in R&D without fearing that another company will steal its innovation and bring it to market without bearing any of the development costs. Proponents of “green and clean IP” rightly point to the fact that more than 70 percent of global R&D in green tech is spent by private companies that want to protect their investments. That is why, for example, Toyota has patented more than 1,000 systems and components on its third-generation Prius hybrid car. The situation is clear when all we’re talking about is a car. Or a hybrid engine. Or the gearing components of a wind turbine. However, it is far less clear when the issue is about climate change and sustainability, not about specific components, technologies, and firms. The pressing issue of climate change forces us to start thinking past our own borders and past the narrow concerns of individual companies. In short, we have to start thinking past the private good in order to achieve the public good. It may be worthwhile to think of some of the greatest technological breakthroughs which have benefited humanity—and which happened without the benefits of patenting and IP. When Louis Pasteur developed the first vaccine against rabies—a disease which still kills upwards of 50,000 people a year—he did not patent his discovery, nor work for profit, but disseminated his knowledge for the public good. Indeed, in the case of the environment, rarely has the market unequivocally “worked” in eliminating the negative impacts—or “externalities”—of fossil fuel use, pollution, and environmental inequalities. It would be naive to suggest that all green technologies should be free. However, a recent high-profile report by University College London suggests that climate change is the biggest threat to global health in the 21st century. Developing a broader green IP framework is therefore crucial to the success of international climate treaties and emissions reductions standards. It is also crucial for developing countries, which are set to bear the brunt of the projected increased incidence and spread of diseases, extreme weather events, and warming. One promising avenue is the establishment of an international licensing mechanism focused on green tech and clean tech. This would enable companies and governments in the developing world to use established technologies for a fee, while protecting innovator firms. This already happens in the case of various technologies, from engine components to airliners. However, if the common good and the issue of climate change are to be kept in mind, the licensing of green tech needs to include a fee mechanism. This will enable economies at different stages of development—such as the US, China, and Bangladesh—to afford to use the same licensed technologies to promote sustainability and cleaner production. Ideally, this fee mechanism should account for the fact that several green technologies—from wind turbines to solar film—are manufactured in developing countries, taking advantage of low labor costs and incentives derived from those governments that the Green IP lobby is active in criticizing. At the same time, the new “green licensing” scheme should focus on established, not cutting-edge or proof-of-concept technologies. This is because it is crucial for countries to start reducing emissions now—not in 20 years. Parallel to this, international agreements should increasingly encourage the joint development of green tech by firms from developed and developing economies. Examples of this already exist: Vestas, the world’s largest wind turbine manufacturer, sources 90 percent of the components for its new turbine from Chinese companies (see pdf). In turn, the turbine is manufactured in China’s Inner Mongolia Autonomous Region so that it can easily reach the Chinese market. A licensing mechanism which allows for the spread of established green tech today will help developing countries to act on national environmental strategies, while allowing for the protection of innovators and investors in advanced economies.

C. Key internal link for warming

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<http://gspp.berkeley.edu/IPR/whoowns.pdf>

Who Owns the Clean Tech Revolution? Intellectual Property Rights and

International Cooperation in the U.N. Climate Negotiations

The outcome of the IPR dispute will determine the future of the global clean tech revolution. Without the rapid diffusion and adoption of emissions-reducing, energy saving technologies across the planet, especially in poorer nations, there will be little hope of halting or significantly slowing the advance of climate change.

#### And remember – solving global warming will require a short transitory period – U.S. restrictions on intellectual property will prevent solvency and China is critical to faster global commercialization –

First, centralized market structure brings costs down

Buijs-Clingendael International Energy Programme-3/12

China and the Future of New Energy Technologies

<http://www.clingendael.nl/publications/2012/201203_ciep_paper_buijs_china_future_new_energy_technologies.pdf>

Among nuclear industry leaders and analysts, there is little doubt that China will emerge as a major competitor. It is more a question of when, rather than if, China will start exporting domestically developed reactors. 172 As the agreement with Westinghouse indicates, the Chinese nuclear industry firms are certainly interested in becoming global players in the nuclear power industry. There could be significant potential for the export of Chinese nuclear power plants if the Chinese firms can combine high quality and safety levels with cost‐effectiveness in construction, although this will naturally depend on how other countries’ policies towards nuclear power develop. In fact, China already exported a nuclear reactor to Pakistan back in the early 1990s based on its first indigenously designed 300 MW Qinshan‐I reactor. Construction started at the site in Chasma in 1993 and the reactor was completed in 2000. The reactor was an exact replica of the Qinshan‐ I: a two‐loop pressurized water reactor, supplied by the China National Nuclear Corporation (CNNC) and designed by the Shanghai Nuclear Engineering Research and Design Institute (SNERDI). The first reactor was followed up by a second one that was constructed between 2005 and 2011. 173 China has also expressed an interest in exporting nuclear power plants to Southeast‐ Asian neighbours, such as Vietnam, Thailand and Malaysia. 174 Future exports to OECD countries with their own nuclear industry, such as the United States, Europe or Japan, seem less probable, however. First of all, nuclear expansion plans are very limited in these markets for the medium term. Second, the requirements regarding safety, quality and reliability for new reactors are extremely high. Third, national preferences might very influence the choice of technology. Hence, such a scenario can only be envisaged if done in collaboration with established players and if it would entail significant cost reductions. Another route might be the supply of components for the AP1000 reactor. 175 A major challenge for China will be to build up a record of excellence regarding safety management of nuclear reactors, especially those that are domestically designed and manufactured. There are also some who question how the Chinese government would deal with any nuclear incident. Although no serious problems have been encountered so far, there was a minor incident in May 2010 when a slight amount of radiation was released at the Daya Bay nuclear power plant. However, this incident was only admitted by local officials after the first news reports on the radiation finding were published outside of China. 176 Some parallels with the Wenzhou high‐speed rail accident are clear, and in fact domestic concerns over nuclear safety – although muted as of yet – might increase in future. Officials have been criticized because of restricted media reporting and an initial lack of transparency in the wake of the high‐speed rail accident. Most certainly the Fukushima disaster has led to a larger public debate about nuclear safety, and the general public is sometimes willing and able to protest its concerns about environmental safety, as illustrated by the public protests against chemical factories in Xiamen (in 2007) and in Dalian (in 2011). Yet there are few signs that public opposition might impact upon China’s domestic expansion plans for nuclear power. The recent bidding rounds in the Middle East, in which a consortium led by the Korean power company Kepco won the bid (mostly because of its competitive prices), can be seen as a signal that there might be good prospects for future Chinese exports of nuclear technology if it can combine quality with advantageous prices. 177 South Korea has shown that is has been capable of developing its indigenous nuclear industry in the course of 30 years or so; its APR1400 reactor (indigenously developed but based on a Westinghouse design) now competes with Western industry conglomerates. 178 From other nuclear power expansion plans, such as in Vietnam, Lithuania and Turkey, it can be inferred that cost‐competitiveness plays a major role in the consideration of the final bids. In fact, the emerging nuclear industry in China has certain advantages compared to traditional players like Areva and Westinghouse: 179 • An assured market, as government‐owned utilities are providing early orders – as opposed to Western vendors; • National commitment to build up a nuclear industry, complete with investments in human resources and the whole industry supply chain. The experience with building and operating a large fleet of reactors will be essential for its success in gaining overseas orders; • Financial resources that can be used for sales offers, e.g. to finance, build, own and operate nuclear power plants overseas; • Being able to offer an integrated centralized nuclear power plant supply chain; • Chinese utilities have fewer problems investing in nuclear power for base‐load power, whereas liberalization policies in Western power markets has made it more difficult for companies to invest in nuclear power as it requires enormous high upfront capital costs against very low operating costs; and • Government support and public opinion are less of an issue in China for nuclear power. Finally, in the longer term, if China were to be successful in commercializing new nuclear technologies such as the pebble‐bed reactor and fast breeder reactor this could give it another advantage in the global nuclear power market. 180 China has a high chance of success, as it is nearly impossible to successfully develop such novel technologies without a home market to deploy it. Ultimately, for players in the nuclear industry with new technologies, to be successful it is critical to construct as many units as possible and bring them into operation on schedule: this allows a company to gain experience and bring down costs while proving reliability and cost‐ effectiveness to customers.

Second, trusted more in the developing world

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The Nonproliferation Review, Harvard-10

THE SECURITY IMPLICATIONS OF CHINA'S NUCLEAR ENERGY EXPANSION

<http://www.cissm.umd.edu/papers/files/the_security_implications_of_chinas_nuclear_energy_expansion.pdf>

Although China has been an active nuclear supplier, it has also been an active participant in the international nuclear nonproliferation regime since the 1980s, joining the IAEA, the NPT, the Zangger Committee, and most recently, the Nuclear Suppliers Group (NSG). 29 China agreed to limited-scope safeguards over its nuclear exports rather than full-scope safeguards when it joined the IAEA, and it maintained this level of obligation when it signed the NPT, allowing it to continue nuclear trade with Pakistan and Iran. China’s ascension to the NSG required it to apply formal full-scope safeguards as a condition for supplying items on NSG control lists to non-nuclear weapon states, further committing itself to nonproliferation. However, China’s nuclear expansion ambitions are likely to lead to the export of its own nuclear technologies. Potential recipients of these exports include non-nuclear countries\*especially countries that cannot afford to buy the technologies directly from Western countries or are prohibited from purchasing items for political reasons. These countries are likely to view China as less rigid than Western countries, and China has an interest in maintaining its leadership among developing countries and representing their rights to build peaceful nuclear programs.

Third, first mover advantage

Buijs-Clingendael International Energy Programme-3/12

China and the Future of New Energy Technologies

<http://www.clingendael.nl/publications/2012/201203_ciep_paper_buijs_china_future_new_energy_technologies.pdf>

The importance of China as one of very few major expansion centres for the nuclear power industry can hardly be overstated. Out of all 63 reactors that are under construction worldwide, 27 reactors (43%) are located in China, and the country accounts for about one‐third of all nuclear power plants that are in planning or proposal stages globally. 150 Especially in the wake of the Fukushima disaster in Japan in March 2011, the perspectives on renewed growth for nuclear power have diminished in quite a number of places. 151 Even though it is not sure whether this reaction to the incident will be long‐lasting or just temporary, the outlook for a ‘nuclear renaissance’ has dimmed. China halted the approval of new nuclear power plants after the Fukushima incident and issued comprehensive safety checks on reactors in operation and those under construction to re‐ evaluate safety conditions. Resumption of approvals has been suspended until a new nuclear safety plan comes into force. However, the general expectation is that the ambitious targets that have been issued for nuclear power will remain in place, as they are an essential element for China to meet its carbon‐intensity and non‐fossil‐fuel‐share goals. 152 The China’s plans for nuclear power are ambitious indeed. As of 2011, it has 14 reactors in operation, together accounting for 11.3 GW of power generating capacity. The plans are to increase its nuclear capacity to 40 GW by 2015 and to 75‐80 GW by 2020: by then it would have the second largest nuclear power fleet after the US (101 GW), surpassing France (63 GW) and Japan (49 GW). 153 This should then raise the share of nuclear power in China’s electricity mix to 5 percent. For the nuclear industry the message is clear: the choice is between being active in China and risking the loss of a lot of business. One of the consequences of the limited growth in nuclear power worldwide since the 1980s has been a trend towards consolidation. Only a limited number of firms are active as global players in the nuclear power industry, including Areva (France), Toshiba‐Westinghouse (Japan‐US), GE‐Hitachi (US‐Japan) and Atomstroyexport (Russia). 154 There is, however, the strong expectation that China will emerge as a major player in the nuclear industry, increasing global competition. 155

#### And China will not lashout to acquire resources – that will eliminate their economic sovereignty because they’re economically interlinked with the U.S. – that’s Ross – Chinese political leaders will not want to reproduct declines in legitimacy due to conflict fatigue and destruction of growth.