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#### Immigration will pass.

CT POST 3/28/13 Connecticut Post http://www.ctpost.com/local/article/Immigration-reform-gaining-support-in-Congress-4393187.php

A Republican Party in desperate search for relevance to Latino voters. An expanded Democratic advantage in the Senate. A second-term President with his legacy on the line.

Does all that add up to enough to break decades of impasse and produce comprehensive immigration reform? As expectations -- and tensions -- rise, the answer won't be long in coming.

A bipartisan bill could be filed in the Senate as early as next week, followed in relatively short order by a House bill, also crafted by a bipartisan group, aiming at a compromise on the key issue of citizenship.

The efforts are being applauded by President Barack Obama, who is using every ounce of his political clout to try to get comprehensive reform.

Obama said the time has come "to work up the political courage to do what's required to be done."

"I expect a bill to be put forward. I expect a debate to begin next month. I want to sign that bill into law as soon as possible," Obama said at a White House naturalization ceremony.

In addition to the issue of eventual citizenship for 11 million undocumented immigrants, Congress is expected to address the need for temporary or guest worker programs.

Congress last passed comprehensive bipartisan reform legislation in 1986, when President Ronald Reagan signed a law that granted citizenship to several million undocumented immigrants and created a guest worker program.

Up until now, Republicans have opposed citizenship programs as an "amnesty" for lawbreakers who entered the country illegally, and labor has chafed at guest worker programs.

But Republican losses in the 2012 elections and increased public support for reform have many in the GOP talking compromise.

"If there is one issue that the two parties could produce something meaningful on in this Congress, it would be immigration," said Stephen Hess, a political expert at The Brookings Institution.

Hess said an eventual bill "will have lots of provisos, and it will go back and forth, but it would be hard not to produce something given the general feeling that something has to be produced."

More and more Republicans are moving toward immigration-reform measures as the party seeks to reach out to Latinos, the nation's largest -- and growing -- minority voting bloc.

Public opinion is behind them.

A recent poll showed 63 percent of Americans supported a path to citizenship for undocumented workers provided they meet certain requirements, according to a survey by the Public Religion Research Institute.

Notable Republicans who have recently spoken in favor of compromise on citizenship proposals include Sen. Rand Paul, R-Ky.; former Mississippi Gov. Haley Barbour; and Rep. Paul Ryan, R-Wis.

And a March report by the National Republican Committee, considered a "post mortem" on the 2012 elections, recommended the GOP embrace comprehensive immigration reform to shore up its shaky standing with minorities -- Latinos, in particular.

Roy Beck, executive director of Numbers USA, which advocates lower numerical numbers on immigration, predicted a majority of Republican senators would oppose citizenship.

Groups like Numbers USA are working to hold GOP senators in line. They sent 13,000 emails to Kentucky voters that claimed Paul's position was "more radical and pro-immigration than anything proposed by President Obama."

The group has targeted Sen. Lindsey Graham, R-S.C., one of the "Gang of Eight" senators writing the Senate bipartisan bill, as a lawmaker who favors foreign workers over unemployed South Carolinians.

Democrats from conservative-leaning states could also feel political heat.

Beck said if five to 10 Democrats in the Senate oppose a bill, proponents would need 10 to 15 Republicans to reach the 60 votes needed to cut off debate and vote on legislation.

"You do the math," Beck said.

In 2007, an effort to cut off debate on a Senate immigration reform bill died on a 46-53 vote.

But immigrant reform proponents, such as America's Voice, say there is a "tectonic shift" in the GOP, and the Democrats also have expanded their Senate majority to 53-45, plus two independents who caucus with them. They predict the Senate will muster the votes necessary to pass a reform bill.

Still, it won't be easy.

"We will have not only a few potholes, but a few near-death experiences along the way," said Frank Sharry, America's Voice executive director.

#### PC key.

The Atlantic 2/21/13 [There's Reason to Be Optimistic About Congress—Seriously, http://www.theatlantic.com/politics/archive/2013/02/theres-reason-to-be-optimistic-about-congress-seriously/273393/]

Nevertheless, this is a new congressional session, and Boren's pessimism might possibly be proved wrong. For the first time in a decade, if not longer, conditions are aligned for bipartisan deal-making, raising hopes that Congress might actually do something and satisfy the wishes of millions of Americans hungry for action. "I am pleased with the signs I see in Congress today to try to make deals," said Lee Hamilton, who was a veteran Democratic House member from Indiana. "There are threads of it -- it's not a fabric yet -- but there are threads, and that's encouraging."

In today's context, defining success is important -- and requires a healthy dose of both skepticism and pragmatism. There's little hope that this Congress can reverse the -- exacerbated by, among other things, powerful special interests and partisan media -- that has gripped Washington. The forces that drove Rep. Boren out of Congress remain potent, and the legislative atmosphere on Capitol Hill is still toxic.

Instead of a long-term course correction, the question is whether Republican leaders in the House, President Obama, and Senate Democrats can facilitate a reprieve -- if only to show the public that the institution is still functional. Cutting a deal with the broad backing of both parties isn't a question so much of relieving those pressures as of learning to pass laws in spite of them.

Favorable Conditions

The makeup of the 113th Congress and the occupant of the White House make conditions riper for bipartisan legislation than at any time since President George W. Bush's first years in office. Since then, Washington has been in the grip of one of two dynamics: Either one party has held Congress and the presidency, or one party, possessing limited power, has had little interest in passing consequential legislation.

The latter was the case last session, when Republicans controlled only the House. In most cases, they used this chamber to approve legislation, such as Rep. Paul Ryan's eponymous budget, that helped define the party's agenda but had no chance of gaining approval in the Senate (much less withstanding a veto from the White House). They were trying to wait out a president whom they believed would be sent packing in 2013.

Democrats were in a similar position from 2007 to 2009, when they controlled Congress but wanted to wait out Bush's tenure. The lack of bipartisanship, of course, didn't prevent major legislation from becoming law over the past 10 years. But when Democrats controlled Washington and passed the Affordable Care Act in 2010, or similarly empowered Republicans approved Medicare Part D in 2003, they didn't need the backing of the other party -- and by and large didn't get it.

This session is different. Neither party has unilateral control, and yet there is an appetite, in the first year of Obama's second term, to make a serious attempt to legislate. The last time Capitol Hill saw something similar came in 2001 and 2002. Republicans suddenly lost the Senate when Sen. Jim Jeffords of Vermont defected from the GOP in the early summer, but Congress still overwhelmingly approved the No Child Left Behind Act months later (although the first round of Bush's tax cuts passed with only a dozen or so Democrats on board in each chamber). Later, the parties worked together to approve a slew of national security issues after the Sept. 11 terrorist attacks.

But drawing comparisons to that period is difficult because of 9/11; and, besides, most of Bush's term is hardly associated with bipartisan comity. The better parallel -- and the experience current optimists point to -- is 1996 and 1997, which bridges the end of President Clinton's first term and the beginning of his second. That two-year span saw agreements on a series of important issues, ranging from two big-ticket items (welfare reform and a balanced-budget agreement) to lesser-known achievements (such as raising the minimum wage).

The similarity between that period and now extends beyond the split control of government. Only a year earlier, Republicans had ridden the "revolution" of 1994 into control of Congress, when they promised to push their agenda whether Clinton approved or not. But the party ultimately dealt with political setbacks, none more damaging than the government shutdown of 1996. The public blamed Republicans, and afterward Clinton never again trailed GOP presidential nominee Bob Dole (who was Senate majority leader at the time of the shutdown) in a head-to-head matchup, according to preelection polls.

Boehner's Challenge

Public opinion might once again be pulling against Republicans, burnt as they were by Obama's reelection and their unexpected losses in the Senate. In a January poll by The Wall Street Journal and NBC News, 49 percent of adults disapproved of the GOP -- and only 26 percent approved. It was the worst rating for Republicans since 2008. Just as the Republicans in Clinton's time decided their political survival depended on coming to the table, the GOP of today might do the same. "Republicans overplayed the government shutdown, and President Clinton won that battle," said Dan Glickman, a former House member who was Clinton's Agriculture secretary. "And, with that, he effectively used the bully pulpit to control the agenda. He gave a lot of cover for people to vote for him. It's not the only factor, but members of Congress are much [more] likely to support a president when the people at home are inclined to support the president."

How much Obama's broad popularity matters to most GOP House members is debatable. With many of the president's supporters packed into heavily Democratic urban districts, most Republicans represent safely red districts. (In November, Mitt Romney won 227 congressional districts, a majority, despite losing by 4 percentage points in the national vote.)

But Obama's standing could weigh more heavily on House Speaker John Boehner and Majority Leader Eric Cantor than on their followers; Cantor has recently attempted to rebrand the party with a softer image. While their charges' interests are more parochial, they have the national party's image to worry about. Popular opinion could prod the two leaders to reach agreements with Obama, especially on emotional issues such as gun control and immigration. Or, at the very least, public pressure could work to ease the disagreements that make even basic government action difficult -- a factor that might have been at work when House Republicans engineered a three-month delay of the debt ceiling. "They're hearing the message outside the Beltway that 'we elected you people to make things work,'" said John Breaux, the former longtime Democratic senator from Louisiana.

The onus falls particularly hard on Boehner, whose struggles to control his conference are well documented. More than any other player in Washington, he will determine whether anything gets done this year. How he decides to proceed could rest on how frequently he's willing to leave conservative colleagues out in the cold and, consequently, how far he's willing to risk his speakership.

The good of the party, and not his seat of power, propelled Boehner's decision to bring the superstorm Sandy relief bill to a vote earlier this year, when it passed with just a minority of support from Republicans. That combination -- Democrats and the moderate wing of the House GOP -- is the pathway to enacting a sweeping set of bipartisan agreements.

A week after the storm vote, a large bipartisan majority passed a three-month extension of the debt ceiling. "It is hard to see this Congress being viewed as a bipartisan one, but we have seen a glimmer of light on the recent bipartisan vote to extend the debt ceiling," said Ron Bonjean, a onetime aide to the Republican leadership.

Obama's Duty

Maintaining that momentum in the House won't be easy, and it could require Obama's personal leadership. Getting Boehner to take such a perilous route could depend in large part on successful cajoling from the president. And on this subject -- the relationships among Washington's top leaders -- discussion of a deal being cut becomes sharply pessimistic.

#### IFR’s cause a huge fight.

Elias 8—San Diego Tribune Staff, Political Commentator [Thomas D. Elias, Why isn't this energy solution even on the table?, http://www.sddt.com/commentary/article.cfm?Commentary\_ID=109&SourceCode=20081010tza]

Remarkably, while proposals for renewed offshore oil drilling, new atomic power plants, expanded carbon trading and other proposed tactics abound in this year's presidential campaign, no one mentions the single most promising technique.

This may be because its name contains the word "reactor." Combined with the fact that it depends on a sophisticated form of nuclear technology, that appears to make the notion of power plants using the Integral Fast Reactor anathema to today's politicians.

But it shouldn't. For this technology is demonstrably safer than any existing nuclear power plant, depends almost completely on recycling for its fuel and would make virtually no contribution to worldwide climate change.

Yes, there are serious problems with today's version of nuclear power. The most difficult to solve is waste disposal, with almost no one wanting his or her backyard to be a dumping ground for spent radioactive fuel rods that will stay "hot" for eons. There are longstanding worries about effects of nuclear plants or their waste on water tables and ocean water temperatures. There are terrorism concerns. And there's the possibility -- slim, but still present -- of a meltdown or explosion loosing clouds of radioactivity into the air for many miles around. This has never happened in an American-designed atomic plant, but that doesn't stop people or politicians from worrying.

Meanwhile, no such concerns apply to the Integral Fast Reactor (IFR), designed at the Argonne National Laboratory in Illinois and its Idaho satellite facility during the 1980s and '90s at a cost of more than 1 billion taxpayer dollars.

The design was shelved and a small prototype essentially deep-sixed in 1994, ostensibly because of concerns that it might lead to proliferation of nuclear weapons.

Here are some of the advantages of the IFR, as listed by Steve Kirsch, a multimillionaire Silicon Valley software entrepreneur who has pushed the concept for several years:

These reactors can be fueled entirely with today's used nuclear fuel, consuming virtually all of the long-lived radio-isotopes that make storage of spent fuel rods such a problem. It would take IFRs centuries to use up the supplies of uranium that have already been mined, in part because this design is about 100 times more efficient in milking energy from uranium than those in use today.

IFRs require no enrichment of uranium, can be fueled with plutonium waste from other nuclear plants and emit almost no greenhouse gases. Such reactors would be cooled with liquid sodium, so they would not require massive water supplies and therefore can be located almost anywhere (read: isolated, desolate areas far from the large populations that might use the energy they produce).

The main disadvantage -- the one that killed the idea back in the mid-'90s -- is the fear that it would lead to proliferation of weapons-grade uranium because it is a form of "breeder" reactor that could theoretically produce more fissionable material than it uses.

But that's a matter of choice, making the breeder issue a red herring, an objection raised even though it has little merit only because it will alarm large numbers of people. For IFRs can be designed to use just as much fuel as they create, or more. In fact, it is today's thermal reactors that are large producers of ultra-dangerous plutonium.

The other problem with IFRs -- this one legitimate -- is that the liquid sodium cooling them could catch fire. But the scientists who developed the IFR design insisted that adding an extra cooling loop to each reactor would likely prevent this.

Kirsch maintains the IFR project was killed because it threatened oil companies, uranium mines, coal mines and natural gas companies. Which it would.

But George Stanford, a Ph.D. nuclear physicist who helped create the IFR design at Argonne, believes the main reason was fear of proliferation. "Well-meaning but ill-informed people claiming to be experts confused the issue and convinced many administrators and legislators the IFR was a threat," he said in a remarkable 2001 essay that can be accessed at nationalcenter.org/NPA378.html.

There is no doubt that American ingenuity has solved innumerable problems and won several wars. That same creativity also produced a power plant idea that could solve many of today's energy problems while doing little or no harm to citizens or the environment.

#### Key to competiveness.

Bloomberg, 10/23/2012. “Blame Politics for the U.S. Engineer Shortage,” http://www.bloomberg.com/news/2012-10-23/blame-politics-for-the-u-s-engineer-shortage.html.

Given the tepid economic recovery, it’s sad that Congress cannot enact a pro-growth immigration policy. Giving citizenship or permanent residency to more high-skilled immigrants is perhaps the [single-easiest way](http://www.theatlantic.com/business/archive/2012/06/give-us-your-geniuses-why-seeking-smart-immigrants-is-a-no-brainer/258451/) to grow the American economy. Science and technology companies face labor shortages in their industries, preventing expansion, and the students themselves want to stay here and make valuable contributions to research and business. All we have to do is let these people stay here and let American companies hire them.

The cost of failing to do so is large, as the American technology industry is deeply dependent on the talent of high-skilled immigrants. More than [20 percent](http://www.census.gov/prod/2011pubs/acsbr10-06.pdf) of all Americans with degrees in science and engineering are foreign-born, meaning that immigrants are [two-times overrepresented](http://research.stlouisfed.org/fred2/graph/?g=c0e) in these fields. It's even more concentrated in computer science and engineering: Immigrants make up almost a third of all degree holders in these sectors, both of which currently face severe shortages of talent.

The best economic research on high-skilled immigration, recently assembled [here](http://www.growthology.org/growthology/2012/10/high-skill-immigration-a-resource-part-2.html) by the Kauffman Foundation, suggests extensive economic gains from growing America’s stock of human capital. For just one example, a disproportionate fraction of American startups and patents -- and that means jobs, too -- come from the entrepreneurship and ingenuity of our immigrants.

A new STEM visa program would be good, but it would be better to simply expand the number of green cards issued based on "[employment-based preferences](http://travel.state.gov/visa/immigrants/types/types_1323.html)." These visas go to immigrants who come here to do work with outstanding qualifications in their fields. They are scientists of "sustained national or international acclaim and recognition." They are the world's best teachers and researchers, who want to work in our universities. They are holders of advanced degrees with five years or more of professional experience or have at least two years' worth of training in specialized fields.

And yet, we only admit about [140,000](http://www.dhs.gov/sites/default/files/publications/immigration-statistics/yearbook/2011/ois_yb_2011.pdf) of them a year. That's just [13 percent](http://www.dhs.gov/sites/default/files/publications/immigration-statistics/yearbook/2011/ois_yb_2011.pdf) of the total number of permanent-residency visas granted in 2011. Why on Earth do we not want this talent? The world's brightest want to bring their human capital to the U.S., and we turn them away. All we have to do is open the door: These employment immigration visa programs are [routinely oversubscribed](http://www.travel.state.gov/visa/bulletin/bulletin_5664.html), and the number of visas available has [not grown in ten years](https://explore.data.gov/Other/Persons-Obtaining-Legal-Permanent-Resident-Status-/h4td-dyxk), as shown by the accompanying graph.

Let's hope we don't realize the magnitude of our error only when we stop winning Nobel prizes in science, or when the next tech breakthrough comes from a graduate of an American university who we've forced to live and work abroad. If the U.S. wants to lead the world in research and innovation, we have to let the innovators come here and work.

#### Their 1AC.

### 1NC DA 2

#### Nuclear power demand increasing now and will buoy uranium prices, but gains could be reversed if other energy sources undercut nuclear.

Brett Arends, 1/18/2013. “Uranium: Mining a Contrarian Play With Big Potential,” Wall Street Journal, http://online.wsj.com/article/SB10001424127887323783704578245791855437054.html.

Investors looking for a bold contrarian bet should consider the stocks of companies exposed to uranium, the fuel used in nuclear reactors. Uranium prices have been in a slump since the reactor meltdown in Fukushima, Japan, in March 2011—yet there are reasons to believe the slump may be temporary.

"World demand is growing, and supplies aren't growing fast enough," says Adam Schatzker, an analyst at RBC Capital Markets in Toronto. Today's low prices aren't sustainable, he says, and are likely to recover in the next few years. "It's just a matter of when," he says.

The world-wide nuclear-power industry was thrown into turmoil by Fukushima. Japan, the world's third-largest nuclear-power producer at the time, mothballed its other reactors. Other countries have closed plants and put plans for expansion under review. Some might exit nuclear power altogether.

Yet while the reaction to Fukushima might slow the growth of nuclear power, it won't reverse it. Many countries, particularly emerging-market nations such as China, India, Russia and South Korea, are bringing many more reactors online to meet their rising energy needs. Currently 62 new reactors are being built around the world, and many more are planned.

The International Atomic Energy Agency predicts nuclear-power production will rise between 35% and 100% over the next 20 years. The World Nuclear Association, a trade group, estimates total demand for uranium will rise by about 60% over that time.

China, which faces growing pollution problems from fossil fuels, recently resumed permitting new reactors, ending a hiatus that followed Fukushima. It already has approved four new reactors in a matter of months, on top of the 28 that were already under construction, notes Jonathan Hinze, an analyst at uranium-research firm Ux Consulting. The new reactors will use a more modern and safer design, developed after the 40-year-old Fukushima plant was built.

In Japan, which has few domestic sources of energy, new Prime Minister Shinzo Abe has publicly reversed his predecessor's antinuclear stance. Mr. Abe says he wants to bring many of the country's reactors back online and recently talked about building new, safer reactors. Japan has few domestic sources of energy and is heavily dependent on oil imports.

Meanwhile, a 20-year agreement to decommission old Soviet warheads and convert the uranium for use in reactors is due to expire this year. Analysts don't expect it to be renewed. This could put upward pressure on prices, because the agreement currently supplies one-eighth of world uranium needs.

The World Nuclear Association warns that world-wide uranium demand might exceed supply next year.

Meanwhile, this past week, a Russian state-controlled entity struck a $2.6 billion deal to secure future supplies by taking control of global mining company Uranium One SXRZF -0.63% .

All this spells a bullish case for uranium. According to the International Atomic Energy Agency, less than half the world's uranium reserves can be mined profitably at current levels. Mining costs are rising quickly. Mr. Schatzker at RBC says the industry needs prices at $75 or $80 a pound for future mine production to be profitable; it currently trades at $42.25.

Just before Fukushima the price was about $70. Mr. Schatzker thinks prices might get back there within three years. In 2008, just before the financial crisis, uranium hit $135.

There are risks to investing in uranium, of course. Another disaster might spell doom for the industry. Nuclear programs remain subject to political pressure. The world's energy needs might grow more slowly than forecast, reducing the need for nuclear power. Other energy supplies, such as natural gas or solar power, might prove cheaper or more abundant than expected.

#### IFR’s eliminate all uranium mining – their 1AC

Blees et al 11 (Charles Archambeau , Randolph Ware, Cooperative Institute for Research in Environmental Sciences, Tom Blees, National Center for Atmospheric Research, Barry Brook, Yoon Chang, University of Colorado, Jerry Peterson, Argonne National Laboratory, Robert Serafin Joseph Shuster Tom Wigley, “IFR: An optimized approach to meeting global energy needs (Part I)” 2/1/11) http://bravenewclimate.com/2011/02/01/ifr-optimized-source-for-global-energy-needs-part-i/)

Fossil fuels currently supply about 80% of humankind’s primary energy. Given the imperatives of climate change, pollution, energy security and dwindling supplies, and enormous technical, logistical and economic challenges of scaling up coal or gas power plants with carbon capture and storage to sequester all that carbon, we are faced with the necessity of a nearly complete transformation of the world’s energy systems. Objective analyses of the inherent constraints on wind, solar, and other less-mature renewable energy technologies inevitably demonstrate that they will fall far short of meeting today’s energy demands, let alone the certain increased demands of the future. Nuclear power, however, is capable of providing all the carbon-free energy that mankind requires, although the prospect of such a massive deployment raises questions of uranium shortages, increased energy and environmental impacts from mining and fuel enrichment, and so on. These potential roadblocks can all be dispensed with, however, through the use of fast neutron reactors and fuel recycling. The Integral Fast Reactor (IFR), developed at U.S. national laboratories in the latter years of the last century, can economically and cleanly supply all the energy the world needs without any further mining or enrichment of uranium. Instead of utilizing a mere 0.6% of the potential energy in uranium, IFRs capture all of it.

#### Perception alone collapses prices.

The Fiscal Times, 1/12/2011. “Nuclear Power Demands Send Uranium Prices Sky High,” http://www.thefiscaltimes.com/Articles/2011/01/12/Uranium-Price-Spike-Sign-of-Confidence-for-Nuclear-Power.aspx#page1.

That global confidence is pushing up the cost of uranium, whose oscillations have historically have had **as much to do with government signals of enthusiasm as they do a classic supply-and-demand ratio**. The U.S. still is the world’s largest consumer of the radioactive element, but its recent effect on the price needle has been minimal. For worldwide energy brokers, the nation is a sleeping giant.

#### Destroys Kazakh economic modernization.

Gregory Gleason, 12/14/2011. Professor at the University of New Mexico and the George C. Marshall European Center for Security Studies. “KAZATOMPROM LOOKS EAST,” Central Asia Caucasus Institute Analyst, http://cacianalyst.org/?q=node/5683/print.

BACKGROUND: **Kazakhstan’s uranium industry is a key part of the country’s diversification and modernization strategy**. Kazakhstan played an important role in the Soviet nuclear industry with major mining, processing, fabricating and industrial facilities. Kazakhstan was the home of the Soviet Union’s major experimenting and testing facilities. The end of the Soviet Union brought the Soviet-era nuclear complex to a standstill. The first decree signed by Nursultan Nazarbayev, Kazakhstan’s first president, was to immediately close the Soviet nuclear weapons test range. Kazakhstan’s government moved quickly to eliminate the Soviet-era nuclear weapons and weapons facilities, and the country signed on to the basic principles of the Nuclear Non-proliferation treaty by rejecting nuclear armaments while endorsing peaceful use of the atom. Due to Kazakhstan’s large uranium mineral reserves, the development of the uranium industry for peaceful uses became **one of Kazakhstan’s economic policy priorities**. Kazakhstan’s industrial privatization program in the mid-1990s gave rise to numerous industrial enterprises but the uranium industry, because of its dual role as a commercial as well as a strategic resource, was retained under government control. In 1997, the Kazakhstani government formed Kazatomprom, a state-run mineral and industrial complex with direct responsibility for the uranium industry as well as for some other specialized industrial metals such as beryllium and tantalum. In a very short period of time Kazatomprom brilliantly succeeded in cobbling together Kazakhstan’s remnants of the Soviet-era uranium complex to build an industrial juggernaut in the uranium business. Kazatomprom surpassed its competitors in 2009 by emerging as the world’s largest producer of uranium ore. Kazatomprom’s success was achieved through a business model which linked Kazakhstan’s upstream mineral extraction with the downstream industrial facilities located elsewhere. Kazatomprom turned first to the Russian uranium industry, drawing on long-standing relations with Russia’s state-run nuclear complex under the control of Rosatom and with Russia’s related nuclear industry commercial firms. Later Kazatomprom moved outside the connections of the former Soviet space to forge business connections with foreign partners, forming joint ventures with leading technological partners such as France’s Areva and Canada’s Cameco. But Russia’s nuclear industry remained the locomotive driving Kazakhstan’s nuclear sector as it moved from the role of primary commodity supplier to the role of an integrated transnational industrial enterprise. Working in parallel, driven by state-financed enterprises and focused on jointly gaining a position to capture the expanding nuclear services market, Russia’s Rosatom and Kazakhstan’s Kazatomprom made major investments in a coordinated effort to corner the future nuclear reactor fuel supply market in Asia, focusing on China, India, Japan and Korea.

#### Kazakh economic development is a key model for Central Asia—instability would spread and trigger Central Asian conflict.

Margarita Assenova et al, 2008. Director of Institute for New Democracies @ CSIS; with Natalie Zajicova, Program Officer (IND); Janusz Bugajski, CSIS NEDP Director; Ilona Teleki, Deputy Director and Fellow (CSIS); Besian Bocka, Program Coordinator and Research Assistant (CSIS). “Kazakhstan’s Strategic Significance,” CSIS Institute for New Democracies, http://eurodialogue.org/Kazakhstan-Strategic-Significance.

The decision by the Organization for Security and Cooperation in Europe (OSCE) to award Kazakhstan the chairmanship of the organization for 2010 underscores a growing recognition of the country’s regional and continental importance. Kazakhstan is a strategic linchpin in the vast Central Asian-Caspian Basin zone, a region rich in energy resources and a potential gateway for commerce and communications between Europe and Asia.

However, it is also an area that faces an assortment of troubling security challenges. Ensuring a stable and secure Central Asia is important for the international interests of the United States and its European allies for several prescient reasons:

• Asian Security: Because of its proximity to Russia, China, Iran, and the South Asian sub-continent, **Kazakhstan’s security and stability is an increasingly vital interest to all major powers**. Kazakhstan’s tenure as chair of the OSCE will become an opportunity for greater multilateral cooperation in achieving this objective while strengthening the role and prestige of the OSCE throughout Central Asia.

• Afghanistan: Central Asia is a key staging area for U.S. and NATO military operations in Afghanistan against Taliban insurgents and Al Qaeda militants. Central Asia is a crucial conduit for U.S. and NATO troops and supplies into Afghanistan. U.S. offi cials recently reached new agreements with Russia, Kazakhstan, and other Central Asian countries to allow Afghanbound non-military supplies through their territories.

• Trans-National Terrorism: The Taliban resurgence in Afghanistan stimulates cross-border terrorism that may endanger the stability of several Central Asian neighbors and undermine Western interests. Central Asian states have been the victims of Afghanistan-based transnational terrorism. These states, including Kazakhstan, can support international efforts to counter regional terrorist networks.

• Organized Crime and Drug Traffi cking: Central Asia is an important transit region for narcotics traffi cking between Afghanistan and the countries of Europe and Asia. Joint initiatives that will enable the Kazakh government to control and monitor borders more effectively, intercept smuggling operations, and eradicate criminal networks will buttress international security and curtail funding to cross-border terrorist groups.

• Energy Security: Central Asia has the potential to be a vital energy source for Europe. The region contains a vast storehouse of oil and natural gas, which Europe urgently needs in order to lessen its reliance on Russian and Middle Eastern energy supplies. Disputes between Russia and several energy transit states, such as Ukraine, have increased Europe’s interest in developing direct supply lines between Europe and the Caspian countries.
Challenges to International Interests

Despite the strategic significance of Central Asia and the Caspian Basin, in recent years Western countries have not paid sufficient attention to the region. This is due to a combination of factors, including the absence of a shared strategic framework for helping to stabilize and develop the heartland of Asia; insufficient focus on consolidating close political ties with key countries in the region through ustained high-level engagement; and opposition on the part of other major powers competing for influence in Central Asia.

Many Western experts conclude that Russia’s leaders have sought to use multi-national organizations, Moscow’s political connections and its economic leverage to assert greater control over ex-Soviet neighbors. There are reports that the Central Asian governments were pressured to curtail Western security interests, including limiting its military presence in the region by, for example, urging Uzbekistan and Kyrgyzstan to evict the U.S. military from bases on their territory.

Kazakh leaders are supportive of a more effective American and European role in Central Asia to help promote the region’s security and development, but without undermining Astana’s cordial relations with Russia. Kazakhstan’s independent foreign policy helps provide Western access to the region and enhances its position as a vital transport corridor. **Kazakhstan is** also **a stabilizing factor in the geopolitical competition of the regional powers for access and influence across Central Asia**. With its reinvigorated commitment to securing Afghanistan and stabilizing the wider region, the Obama administration has an ideal opportunity to reach out to key partners such as Kazakhstan and to enhance Astana’s role as a regional stabilizer.
Kazakhstan as a Regional Stabilizer

Despite having the largest territory and economy in Central Asia, Kazakhstan is not a source of insecurity or threat to any of its neighbors. It does not employ territorial, ethnic, economic, or energy instruments to target and undermine any government in the region. On the contrary, Astana has sought to establish a system of collective security in Eurasia that would avert the emergence of a single dominant power. Kazakhstan’s “multi-vector” foreign policy, which seeks to pursue cooperative relations with all major powers, leads Astana to resist any hegemonic ambitions by larger countries that would undercut Kazakhstan’s political or economic independence.

While it is a member of the Commonwealth of Independent States (CIS), the Collective Security Treaty Organization (CSTO), and the Shanghai Cooperation Organization (SCO), Kazakhstan has sought to diversify its security relations and keep its freedom to establish and maintain international partnerships. Indeed, Astana has developed productive contacts with NATO by participating in NATO’s Euro-Atlantic Partnership Council (EAPC) and its Partnership for Peace (PfP) program. It was the only Central Asian government to negotiate an Individual Partnership Action Plan (IPAP) with NATO in January 2006.

NATO’s June 2004 summit affirmed the growing importance of Central Asia by designating the region as an area of “special focus” and stationing a liaison officer in the Kazakh capital of Astana in order to develop NATO assistance programs to modernize national military structures. A NATO Secretary General Special Representative for the Caucasus and Central Asia was also appointed.

Astana has underscored that neither the CSTO nor the SCO should become exclusive military alliances or anti-Western blocs that would challenge NATO’s mission in the wider region. Kazakhstan supports NATO operations in Afghanistan and grants overflight rights to U.S. and other NATO warplanes transporting non-lethal cargo to Afghanistan, as well as emergency landing rights for U.S. military aircraft in the Kazakh city of Almaty. The Kazakh authorities are also developing a Peacekeeping Battalion (KAZBAT), which is slated to become fully operational by 2011 and potentially available for international peace stability missions.

Kazakhstan is the only Central Asian country to have an Action Plan to assist in the reconstruction process in Afghanistan, including granting more than $3 million in the 2007-2008 fiscal year for social and infrastructure projects, humanitarian aid, and training for Afghan law enforcement and border patrol officers. For 2009-2011, Kazakhstan has committed an additional $5 million to improve the water supply and distribution infrastructure for shipments of grain and other commodities.

Kazakhstan also provides funding to support U.S. objectives in the region. Astana is the only regional donor giving significant aid to Kyrgyzstan, Tajikistan, and Afghanistan. According to the U.S. State Department’s Background note on Kazakhstan, “in 2006, Kazakhstan became the first country to share directly in the cost of a U.S. Government’s foreign assistance program. Through 2009, the Government of Kazakhstan will contribute over $15 million of a $40 million USAID economic development project aimed at strengthening Kazakhstan’s capacity to achieve its development goals.”

Kazakhstan has initiated and championed the Conference on Interaction and Confidence-Building in Asia (CICA). Modeled after the OSCE, the CICA process aims to promote peace and security throughout Eurasia through confidence-building measures and other means. The first CICA summit, held in June 2002, was attended by leaders from 16 states who signed the “Almaty Act,” as well as a declaration to eliminate terrorism and promote inter-cultural dialogue. The second CICA summit (hosted by Kazakhstan in June 2006) adopted the Catalogue of Confidence Building Measures (CBM)—a road map for implementing the CBM on a bilateral and multilateral basis. At the last CICA working meeting in India in February 2009, the participating states selected Turkey to chair the conference and host the third CICA summit in 2010. The Turkish chairmanship will expand CICA geographically and move it closer to Europe.
Multi-National Counter-Terrorism

Kazakhstan has been combating several potential threats to its own stability and that of its neighbors, including terrorism, drug smuggling, and organized crime. Although Kazakhstan is generally not a source of these maladies, it is a transit country for such illicit activities. Kazakh leaders have been especially concerned about possible terrorist strikes against their country’s energy infrastructure that could affect exports to European and other consumers. To counter terrorist threats, the Kazakh government has supported multilateral efforts in key multilateral organizations to make counter-terrorism an essential ingredient of their security focus. Astana has also assigned troops to the Central Asian Rapid Reaction Force (CARRF), which is designed to defend each country against major terrorist threats.
Regional Non-Proliferation

KazakhstanwasthefirstformerSovietrepublictoabandon its nuclear arsenal. It closed the largest nuclear weapons test site and has spearheaded regional denuclearization. Kazakh leaders have also made major progress in downgrading nearly all of the country’s highly enriched uranium, thus lessening the opportunities for such material to fall into the hands of foreign governments or terrorist groups. Astana’s non-proliferation initiatives have earned it praise from a number of international leaders.

With impetus from Kazakhstan, the Central Asian states have agreed to coordinate their nonproliferation and export control policies, especially to prevent the smuggling of Weapons of Mass Destruction (WMD) and related materials from the former Soviet Union. In September 2006 in Semipalatinsk, a former Soviet nuclear testing site in Kazakhstan, representatives of the five Central Asian states signed a treaty to create a Central Asian Nuclear Weapon Free Zone, which entered into force on March 21, 2009. The signatories pledged not to develop, manufacture, or otherwise acquire nuclear devices or to assist third parties in developing nuclear weapons programs. The treaty further addressed environmental protection as each of the five states share common problems of environmental damage resulting from the production and testing of Soviet nuclear weapons.
Counter-Narcotics Trafficking

Countering the trafficking of narcotics from Afghanistan through Central Asia is a major security challenge for all countries in the region, as well as an issue of concern for European and Asian states seeking to stabilize Afghanistan. Proceeds from large-scale smuggling finance organized crime and cross-border terrorism. Central Asian states, including Kazakhstan, have been active in joint operations to intercept drug shipments from Afghanistan and are expanding their counter-narcotics agencies to deal more effectively with the threat. The Central Asian Regional Information and Coordination Centre (CARICC), established in Almaty under UN auspices, serves as the main regional communication center for analysis and exchange of information on transnational crime and the coordination of joint operations. The OSCE, which Kazakhstan will chair in 2010, has established the priority of curbing drug and arms smuggling, strengthening border controls to curtail illegal migration, and countering the financing of terrorist and criminal organizations.
Energy Security

Kazakhstan is a major producer and exporter of crude oil, projected to export three million barrels of oil per day, or 150 million tons per year, by 2015. Kazakhstan also possesses substantial natural gas reserves and some of the world’s largest reserves of uranium.

The three energy-rich states of Central Asia (Kazakhstan, Uzbekistan, and Turkmenistan) understand that their political independence and energy security requires diversifying their energy customers and avoiding reliance on any single power or transit route. Currently, Russia is the main transit route for energy exports from Central Asia. Kazakhstan supports building oil and gas pipelines that would channel its energy resources directly to Europe and China. The Kazakh energy industry favors a direct energy connection with Azerbaijan across the Caspian Sea that would help supply the European market.

Astana is seeking to diversify its economy and avoid over-dependence on natural resources and energy exports. Until recently, oil and gas revenues have been aggressively used to develop a stronger economic foundation for expansion into new markets. Kazakhstan seeks to attract advanced technologies and modern management practices into its priority economic sectors, including high technology, financial services, and agriculture. However, the current global financial crisis poses considerable challenges to this agenda, not least because of the weaknesses it has exposed in Kazakhstan’s banking and financial services sector.
Economic Development

Sustained economic development is a **major determinant of long-term regional stability**. Kazakhstan has **emerged as a successful model of economic development in Central Asia** and the secular Muslim world. It has the largest economy in Central Asia with a Gross Domestic Product (GDP) exceeding the combined total of its four Central Asian neighbors. The government is in the process of negotiating its entry into the World Trade Organization (WTO) and is a leading proponent of deepening economic cooperation in Central Asia and the Caspian region.

Kazakh leaders have focused on developing the Euro-Asian Economic Community (EurAsEC), an organization that also involves Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan. More generally, Kazakhstan has strongly supported **deeper economic integration** among these states. Nonetheless, Astana opposes over-reliance on any single country because this would undermine Kazakhstan’s independence and integration into the global economy.

In positioning Kazakhstan as a **potential economic hub and the core of a “Eurasian transport corridor**,” President Nursultan Nazarbayev has proposed creating a regional organization, styled as the Eurasian Economic Union (EEU), to harness and intensify trans-border cooperation in such areas as water resource management, transportation infrastructure, crisis-response, environmental protection, and region-wide economic development. Such a process, even without the support of all Central Asian countries, could be the first steps toward lowering barriers to trade, harmonizing customs, and building closer economic associations. Kazakh officials contend that closer economic integration would reduce regional tensions, attract greater levels of foreign direct investment, and increase the region’s leverage and competitiveness in the international arena. Integration has also been fostered by tangible investments and capital flows as Kazakhstan has played a major role in exporting capital to its neighbors.

#### US-Russia war.

Roger McDermott, 12/6/2011. Honorary senior fellow, department of politics and international relations, university of Kent at Canterbury and senior fellow in Eurasian military studies, Jamestown Foundation. “General Makarov Highlights the “Risk” of Nuclear Conflict,” Eurasia Daily Monitor, http://www.jamestown.org/programs/edm/single/?tx\_ttnews%5Btt\_news%5D=38748&tx\_ttnews%5BbackPid%5D=27&cHash=dfb6e8da90b34a10f50382157e9bc117.

In the current election season the Russian media has speculated that the Defense Minister Anatoliy Serdyukov may be replaced, possibly by Dmitry Rogozin, Russia’s Ambassador to NATO, which masks deeper anxiety about the future direction of the Armed Forces. The latest rumors also partly reflect uncertainty surrounding how the switch in the ruling tandem may reshuffle the pack in the various ministries, as well as concern about managing complex processes in Russian defense planning. On November 17, Russia’s Chief of the General Staff, Army-General Nikolai Makarov, offered widely reported comments on the potential for nuclear conflict erupting close to the country’s borders. His key observation was controversial, based on estimating that the potential for armed conflict along the entire Russian periphery had grown dramatically over the past twenty years (Profil, December 1; Moskovskiy Komsomolets, November 28; Interfax, November 17). During his speech to the Defense Ministry’s Public Council on the progress and challenges facing the effort to reform and modernize Russia’s conventional Armed Forces, Makarov linked the potential for local or regional conflict to escalate into large-scale warfare “possibly even with nuclear weapons.” Many Russian commentators were bewildered by this seemingly “alarmist” perspective. However, they appear to have misconstrued the general’s intention, since he was actually discussing conflict escalation (Interfax, ITAR-TASS, November 17; Moskovskiy Komsomolets, Krasnaya Zvezda, November 18). Makarov’s remarks, particularly in relation to the possible use of nuclear weapons in war, were quickly misinterpreted. Three specific aspects of the context in which Russia’s most senior military officer addressed the issue of a potential risk of nuclear conflict may serve to necessitate wider dialogue about the dangers of escalation. There is little in his actual assertion about the role of nuclear weapons in Russian security policy that would suggest Moscow has revised this; in fact, Makarov stated that this policy is outlined in the 2010 Military Doctrine, though he understandably made no mention of its classified addendum on nuclear issues (Kommersant, November 18). Russian media coverage was largely dismissive of Makarov’s observations, focusing on the idea that he may have represented the country as being surrounded by enemies. According to Kommersant, claiming to have seen the materials used during his presentation, armed confrontation with the West could occur partly based on the “anti-Russian policy” pursued by the Baltic States and Georgia, which may equally undermine Moscow’s future relations with NATO. Military conflict may erupt in Central Asia, caused by instability in Afghanistan or Pakistan; or western intervention against a nuclear Iran or North Korea; energy competition in the Arctic or foreign inspired “color revolutions” similar to the Arab Spring and the creation of a European Ballistic Missile Defense (BMD) system that could undermine Russia’s strategic nuclear deterrence also featured in this assessment of the strategic environment (Kommersant, November 18). Since the reform of Russia’s conventional Armed Forces began in late 2008, Makarov has consistently promoted adopting network-centric capabilities to facilitate the transformation of the military and develop modern approaches to warfare. Keen to displace traditional Russian approaches to warfare, and harness military assets in a fully integrated network, Makarov possibly more than any senior Russian officer appreciates that the means and methods of modern warfare have changed and are continuing to change (Zavtra, November 23; Interfax, November 17). The contours of this evolving and unpredictable strategic environment, with the distinctions between war and peace often blurred, interface precisely in the general’s expression of concern about nuclear conflict: highlighting the risk of escalation. However, such potential escalation is linked to the reduced time involved in other actors deciding to intervene in a local crisis as well as the presence of network-centric approaches among western militaries and being developed by China and Russia. From Moscow’s perspective, NATO “out of area operations” from Kosovo to Libya blur the traditional red lines in escalation; further complicated if any power wishes to pursue intervention in complex cases such as Syria. Potential escalation resulting from local conflict, following a series of unpredictable second and third order consequences, makes Makarov’s comments seem more understandable; it is not so much a portrayal of Russia surrounded by “enemies,” as a recognition that, with weak conventional Armed Forces, in certain crises Moscow may have few options at its disposal (Interfax, November 17). There is also the added complication of a possibly messy aftermath of the US and NATO drawdown from Afghanistan and signs that the Russian General Staff takes Central Asian security much more seriously in this regard. The General Staff cannot know whether the threat environment in the region may suddenly change. Makarov knows the rather limited conventional military power Russia currently possesses, which may compel early nuclear first use likely involving sub-strategic weapons, in an effort to “de-escalate” an escalating conflict close to Russia’s borders. Moscow no longer primarily fears a theoretical threat of facing large armies on its western or eastern strategic axes; instead the information-era reality is that smaller-scale intervention in areas vital to its strategic interests may bring the country face-to-face with a network-centric adversary capable of rapidly exploiting its conventional weaknesses. As Russia plays catch-up in this technological and revolutionary shift in modern warfare capabilities, the age-old problem confronts the General Staff: the fastest to act is the victor (See EDM, December 1). Consequently, Makarov once again criticized the domestic defense industry for offering the military inferior quality weapons systems. Yet, as speed and harnessing C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) become increasingly decisive factors in modern warfare, the risks for conflict escalation demand careful attention—especially when the disparate actors possess varied capabilities. Unlike other nuclear powers, Russia has to consider the proximity of several nuclear actors close to its borders. In the coming decade and beyond, Moscow may pursue dialogue with other nuclear actors on the nature of conflict escalation and de-escalation. However, with a multitude of variables at play ranging from BMD, US Global Strike capabilities, uncertainty surrounding the “reset” and the emergence of an expanded nuclear club, and several potential sources of instability and conflict, any dialogue must consider escalation in its widest possible context. Makarov’s message during his presentation, as far as the nuclear issue is concerned, was therefore a much tougher bone than the old dogs of the Cold War would wish to chew on.

### 1NC CP 1

#### Text: The United States federal government should establish a nitrogen fertilizer tax of 16 cents per pound of nitrogen, and use the revenue from that tax to provide loan guarantees for farmers to procure biocharcoal technology. The United States federal government should adopt a policy that declares that the United States solely maintains nuclear weapons to deter and, if necessary, respond to nuclear attacks against ourselves, our forces, or our friends and allies.

#### Solves proliferation and leadership.

Blair et al. 8—Former professor of security studies @ Yale and Princeton University. Expert on U.S. and Russian security policies, nuclear forces and command-and-control systems [Bruce G. Blair (President of the World Security Institute), Thomas B. Cochran (Chair for nuclear policy @ Natural Resources Defense Council and senior scientist and director of its Nuclear Program), Jonathan Dean (Advisor on global security issues @ Union of Concerned Scientists), Steve Fetter (Dean of the School of Public Affairs @ University of Maryland), Richard L. Garwin (IBM fellow emeritus at the Thomas J. Watson Research Center w/ Ph.D. in physics from the University of Chicago), Kurt Gottfried (Emeritus professor of physics @ Cornell University), Lisbeth Gronlund (Senior scientist and codirector of the Global Security Program @ Union of Concerned Scientists and a research affiliate in the MIT Program in Science, Technology, and Society), Henry Kelly (President of the Federation of American Scientists and served as assistant director for technology in the White House Office of Science and Technology from 1993 to 2000), Hans M. Kristensen (Director of the Nuclear Information Project @ Federation of American Scientists), Robert Nelson (senior scientist in the Global Security Program at the Union of Concerned Scientists), Robert S. Norris (senior research associate @ Natural Resources Defense Council), Ivan Oelrich (Vice president for strategic security programs @ Federation of American Scientists and professor in the Security Studies @ Georgetown University), Christopher Paine (Director of the Nuclear Program at the Natural Resources Defense Council), Frank N. von Hippel (nuclear physicist and professor of public and international affairs @ Princeton University), David Wright (co-director and senior scientist of the Global Security Program @ Union of Concerned Scientists and a research affiliate of the MIT Program in Science, Technology, and Society, and Stephen Young (Washington representative and senior analyst in the Global Security Program @ Union of Concerned Scientists), Toward True Security: Ten Steps the Next President Should Take to Transform U.S. Nuclear Weapons Policy, February 2008]

1. The United States should declare that the sole purpose of U.S. nuclear weapons is to deter and, if necessary, respond to the use of nuclear weapons by another country.

Current U.S. policy is to retain the option of using nuclear weapons for military purposes other than deterring nuclear attack, including:

• Deterring, responding to, and even preempting conventional, chemical, or biological attacks

• Destroying chemical or biological agents

• Deterring or responding to other unspecified threats to U.S. vital interests

However, giving nuclear weapons roles beyond deterring nuclear attack is both unnecessary and counterproductive. Those roles add little or nothing to the deterrence of non-nuclear attacks provided by U.S. conventional forces or to the U.S. ability to counter or respond to such attacks. Moreover, **maintaining and strengthening the firebreak against the use and proliferation of nuclear weapons is paramount to U.S. security**. If U.S. policy treats nuclear weapons as a multipurpose arsenal, then other states will be more inclined to seek nuclear weapons. If the United States, with its unquestioned conventional superiority, acts as if it must rely on nuclear weapons to protect and defend its vital interests, then weaker states—particularly those not covered by U.S. security guarantees—will perceive a far greater need for such weapons. Indeed, implicit or explicit U.S. threats to use nuclear weapons may motivate nations to acquire nuclear weapons to deter the United States.33 These added roles for U.S. nuclear weapons also negate the nonproliferation benefits of U.S. “negative security assurances” that the United States will not use nuclear weapons against non-nuclear signatories of the NPT.

Some believe that the consequences of attack from chemical and especially biological weapons could be so great that it is unwise to forgo the “sharp deterrence” provided by explicit threats to use nuclear weapons in response. Rather than promising never to use nuclear weapons first, these proponents advocate that the United States pledge not to initiate the use of “weapons of mass destruction,” by which they mean chemical, biological, and nuclear weapons.

However, chemical weapons do not belong in this category—their destructive capacity pales compared with that of nuclear weapons. Thus, it would be irresponsible for the United States to use nuclear weapons in response to an attack by chemical weapons. Biological weapons, in contrast, could, over time, kill as many people as nuclear weapons—if they are contagious and delivered effectively. However, the threat of a U.S. conventional response is likely to be as effective in deterring such attacks as an explicit U.S. nuclear threat. In any event, any marginal gain in deterrence against a biological attack would be offset by the incentive such a policy would provide hostile nations to acquire nuclear weapons.

Advocates of an explicit U.S. nuclear threat often claim that such a threat deterred Iraq’s use of chemical and biological weapons during the first Gulf War. However, President George H.W. Bush’s threat of “the strongest possible response” if Iraq used its chemical or biological weapons applied equally to the destruction of Kuwait’s oil fields, which Iraq did with impunity.34

U.S. officials threatened privately to escalate the war in ways that did not involve nuclear weapons if Iraq used chemical or biological weapons. Secretary of State James Baker warned the Iraqi foreign minister that the use of such weapons would lead the United States to seek to topple the Hussein regime.35 These threats were almost certainly an equally, if not more, potent deterrent compared with the nuclear threat. There is also evidence that U.S. air attacks impaired Iraq’s ability to deploy and use chemical and biological weapons. We do not know why Iraq did not use chemical or biological weapons in that war. However, the balance of evidence does not support the conclusion that veiled U.S. threats to use nuclear weapons were the determining factor.

Nuclear threats are also unnecessary to deter non-nuclear attacks because U.S. conventional military strength far exceeds that of all potential adversaries, and will do so for the foreseeable future. The United States and its allies can rely on their combined conventional military strength to counter any non-nuclear threat to their security. Finally, practical political reasons preclude the use of nuclear weapons **in response to non-nuclear attacks**. Although **one can imagine cases where domestic pressure for nuclear revenge might be strong**, or where the use of nuclear weapons might reduce U.S. casualties and end a war more quickly, wise leaders would weigh these considerations against the grave damage that nuclear first use would do to U.S. security. In the short term, nuclear attacks could turn world opinion against the United States and render a collective response against an offender difficult or impossible. The long-term effects would be even more profound. Nuclear strikes would deal a **fatal blow to U.S. leadership and alliances, wreck the nonproliferation regime, and spur other states to acquire nuclear weapons**. While the United States has considered using nuclear weapons numerous times since the bombings of Hiroshima and Nagasaki, it has not done so, in part because of just such considerations.

Threatening to use nuclear weapons in response to non-nuclear attacks could also increase the **pressure on the U**nited States to follow through, even if that would be counter to U.S. interests, for two reasons. First, if the United States retains its first-use option, the **military** will maintain detailed contingency plans and standard operating procedures for such use, which could dominate thinking about how to respond in a crisis. Second, once **policy makers** threaten a nuclear response, they might worry about undermining U.S. credibility and resolve if they did not follow through, even if they believed that doing so would be unnecessary or imprudent.

The bottom line is that the marginal value of explicit threats to use nuclear weapons to respond to non-nuclear attacks is small, the wisdom of carrying out such threats is dubious, and the potential long-term security costs of making such threats is great. The United States should make clear that the sole purpose of its nuclear weapons is to deter and, if necessary, respond to nuclear attacks.

#### Gets modeled.

Civiak 9—Consultant in Nuclear Weapons Policy w/ Ph.D. in physics from the University of Pittsburgh [Robert L. Civiak (Former Specialist in Energy Technology in the Science Policy Division of the Congressional Research Service (10 years) & Former Program and Budget Examiner with the Office of Management and Budget, primary responsible for oversight of the Department of Energy’s stewardship of the nuclear weapons stockpile (11 years)), Transforming the U.S. Strategic Posture and Weapons Complex: for Transition to a Nuclear Weapons-Free World, Prepared by the Nuclear Weapons Complex Consolidation (NWCC) Policy Network, April 2009]

In the near term, it is unlikely that we can eliminate the risk that more nations will acquire nuclear weapons. However, the assertive use of nuclear threats—as was the policy of the Bush Administration—is the wrong way to go about preventing the emergence of new nuclear weapons states. The existence of a huge U.S. nuclear arsenal has not deterred any potentially hostile nation from acquiring nuclear weapons. Threats of preemptive or preventive nuclear strikes on smaller opponents stoke fears of political coercion and conventional military attack under the cover of a nuclear umbrella. These fears feed, rather than quench, the desire for national nuclear deterrents. A world free of nuclear weapons offers the greatest hope of reducing nuclear insecurity and achieving the coordinated international action that is necessary to prevent other nations from acquiring nuclear weapons. Until that can be achieved, it is in the interest of the United States to reduce the rhetoric and change the doctrine regarding potential first use of nuclear weapons.

The nuclear security politics of the Cold War consisted of attempting to “reassure” friends and foes alike that the U.S. would resort to the use of nuclear weapons to defend its allies from all forms of aggression. Now, to halt the global spread of nuclear weapons, the U.S. and other nuclear weapons states must do the opposite. They must work together to convince all nations, regardless of their ideological hue, that they will never become targets of nuclear attack if they adhere faithfully to the requirements of the Non-Proliferation Treaty (NPT) and refrain from acquiring nuclear weapons or assisting others to do so.

**The U**nited **S**tates **should eliminate nuclear threats** completely from its global military posture and forego integrating the potential use of nuclear weapons with strategies for use of conventional force. The United States must live up to its democratic ideals, defending its interests primarily by engaging other nations through negotiation and reciprocal accommodation, without invoking a nuclear “ace-in-the-hole.”

The United States must pursue a nuclear weapons policy directed at preventing the proliferation of nuclear weapons and weapons-usable material. **We must lead** **in creating a global norm** in which no new nation feels a need for its own nuclear deterrent and nations already possessing nuclear weapons join us in radical stockpile reductions and deemphasizing the strategic importance of nuclear weapons. Furthermore, the U.S. must respect the principles of the UN Charter and its constraints on the permissible uses of unilateral military force. This policy must reject any notion of an “exceptional” U.S. privilege, beyond the inherent right to self-defense enshrined in the Charter, to engage in the unilateral use of military force to further its interests or extinguish perceived threats anywhere on the globe.

Other than the use of nuclear weapons by others, the United States is not confronted by any credible threat to its security, or to that of its allies, which might require a threat of nuclear escalation to counter it. Therefore, the President and the Congress should declare, **without qualification**, that the United States will not be the first nation to use nuclear weapons in any future conflict. This “no first use” policy should be reflected in our nuclear force structure and readiness posture. U.S. nuclear forces should neither be structured nor postured for preemptive attacks against another nation’s nuclear forces. It should be the declared policy of the United States that its nuclear forces are only for the purpose of deterring a nuclear attack. Since many fewer nuclear weapons are needed for such a “minimum deterrence” strategy, President Obama should begin to implement large reductions in U.S. nuclear forces. Furthermore, the U.S. by its actions, as well as its words, must seek to devalue nuclear weapons as instruments of national security, while fostering the establishment of global and regional security arrangements to facilitate their complete elimination. The nuclear weapons posture of the United States **exerts a significant influence on nuclear weapons programs in other countries**. For example, we know from the history of nuclear weapons espionage and proliferation that **foreign nuclear establishments closely follow technical and policy developments regarding U.S. nuclear weapons** and the U.S. nuclear weapons complex. This is yet another reason for adopting the new paradigm for sustaining the U.S. nuclear deterrent outlined in this report, which limits changes to nuclear weapons.

Proliferation is also driven by regional anxieties and conflicts that are not directly linked to U.S. nuclear or conventional military capabilities. Regional tensions are a significant driver of nuclear weapons development in **South Asia**, the **Middle East**, and on the **Korea**n Peninsula. Resolving tension in those regions must be seen as an important aspect of the strategic posture and nuclear weapons strategy of our nation. This requires **adherence to** a set of **principles that will detach nuclear** forces and threats of **preemption from the process of resolving political and territorial disputes**. Only then can negotiations reach beyond issues of national survival and attempt to reconcile the specific conflicting objectives that are causing tension. Regional military imbalances should be dealt with through cooperative security negotiations and arrangements to reduce such threats, or if necessary by adjustments in our own and allied conventional forces, not by the threatened use of nuclear forces or strategies for preemptive or preventive nuclear attacks.

In an ideal world, the question, “what are nuclear weapons for?” would be moot. There would be no nuclear weapons. As we move toward that vision, the United States should view its nuclear weapons for one purpose and one purpose only—to deter the use of nuclear weapons by others. The Department of Defense and the National Nuclear Security Administration (NNSA) should structure U.S. nuclear forces and the weapons complex accordingly. Pg. 24-25

#### Solves warming.

Technology Review, 4/26/2007. “The Case for Burying Charcoal,” published by MIT, http://www.technologyreview.com/news/407754/the-case-for-burying-charcoal/.

Several states in this country and a number of Scandinavian countries are trying to supplant some coal-burning by burning biomass such as wood pellets and agricultural residue. Unlike coal, biomass is carbon-neutral, releasing only the carbon dioxide that the plants had absorbed in the first place. But a new research [paper](http://dx.doi.org/10.1016/j.biombioe.2007.01.012) published online in the journal Biomass and Bioenergy argues that the battle against global warming may be better served by instead heating the biomass in an oxygen-starved process called pyrolysis, extracting methane, hydrogen, and other byproducts for combustion, and burying the resulting carbon-rich char. **Even if this approach would mean burning more coal**--which emits more carbon dioxide than other fossil-fuel sources--**it would yield a net reduction in carbon emissions**, according to the analysis by [Malcolm Fowles](http://technology.open.ac.uk/tm/mf.htm), a professor of technology management at the Open University, in the United Kingdom. Burning one ton of wood pellets emits 357 kilograms less carbon than burning coal with the same energy content. But turning those wood pellets into char would save 372 kilograms of carbon emissions. That is because 300 kilograms of carbon could be buried as char, and the burning of byproducts would produce 72 kilograms less carbon emissions than burning an equivalent amount of coal. ¶ Such an approach could carry an extra benefit. Burying char--known as black-carbon sequestration--enhances soils, helping future crops and trees grow even faster, thus absorbing more carbon dioxide in the future. Researchers believe that the char, an inert and highly porous material, plays a key role in helping soil retain water and nutrients, and in sustaining microorganisms that maintain soil fertility. ¶ Johannes Lehmann, an associate professor of crops and soil sciences at Cornell University and an expert on char sequestration, agrees in principle with Fowles's analysis but believes that much more research in this relatively new area of study is needed. "It heads in the right direction," he says.¶ Interest in the approach is gathering momentum. On April 29, more than 100 corporate and academic researchers will gather in New South Wales, Australia, to attend the first international conference on black-carbon sequestration and the role pyrolysis can play to offset greenhouse-gas emissions. Lehmann **estimates that as much as 9.5 billion tons of carbon--more than currently emitted globally through the burning of fossil fuels--could be sequestered annually by the end of this century through the sequestration of char**. "Bioenergy through pyrolysis in combination with biochar sequestration is a technology to obtain energy and improve the environment in multiple ways at the same time," writes Lehmann in a research paper to be published soon in [Frontiers in Ecology and the Environment](http://www.frontiersinecology.org/). Fowles says that there would be an incentive for farmers, logging communities, and small towns to convert their own dedicated crops, agricultural and forest residues, and municipal biowaste into char if a high enough price emerged for the sale of carbon offsets. "Every community at any scale could pyrolyse its biowaste ... motivated by doing their bit against global warming," he says. Fowles believes that storing black carbon in soil carries less risk, would be quicker to implement, and could be done at much lower cost than burying carbon dioxide in old oil fields or aquifers. And he says the secondary benefits to agriculture could be substantial: "Biochar reduces the soil's requirement for irrigation and fertilizer, both of which emit carbon." Fowles adds that it has also been shown to reduce emissions of greenhouse gases from decay processes in soil. This would include nitrous oxide, a potent greenhouse gas. "Biochar has been observed to reduce nitrous-oxide emissions from cultivated soil by 40 percent."

### 1NC CP 2

#### The Department of Defense should acquire small modular reactors for its domestic military bases. The United States federal government should remove restrictions on the licensing of small modular reactors.

#### SMRs solve US leadership, market share, and cradle to grave.

**Mandel 9** (Jenny – Scientific American, Environment & Energy Publishing, LLC, “Less Is More for Designers of "Right-Sized" Nuclear Reactors” September 9, 2009, http://www.scientificamerican.com/article.cfm?id=small-nuclear-power-plant-station-mini-reactor)

Tom Sanders, president of the American Nuclear Society and manager of Sandia National Laboratories' Global Nuclear Futures Initiative, has been stumping for small rectors for more than a decade. American-made small reactors, Sanders insists, can play **a central role** in global nonproliferation efforts. "Our role at Sandia is the national security-driven notion that it's in the interests of the U.S. to be one of the dominant nuclear suppliers," Sanders said. While U.S. companies have been exiting the industry over the past decades as government and popular support for new construction has waned, Sanders maintains that strong U.S. participation in the nuclear energy marketplace would **give diplomats a new tool** to use with would-be nuclear powers. "It's hard to tell Iran what to do if you don't have anything Iran wants," he explained. Sanders said mini-reactors are **ideal** to sell to developing countries that want to boost their manufacturing might and that would otherwise look to other countries for nuclear technologies. If the United States is not participating in that market, he said, it becomes hard to steer buyers away from technologies that pose greater proliferation risks. Sanders been promoting this view since the 1990s, he said, when he realized "we were no longer selling nuclear goods and services, so we could no longer write the rules." The domestic nuclear industry had basically shut down, with no new construction in decades and a flight of talent and ideas overseas. There is a silver lining in that brain drain, though, he believes, in that U.S. companies getting back into the game now are less tied to the traditional, giant plants and are freer to innovate. A feature that several of the new product designs share is that the power plants could be mass-produced in a factory to minimize cost, using robots to ensure consistency. Also, with less design work for each installation, the time to complete an order would be shortened and some of the capital and other costs associated with long lead times avoided, Sanders said. Another feature he favors is building the plants with a lifetime supply of fuel sealed inside. Shipped loaded with fuel, such reactors could power a small city for 20 years without the host country ever handling it. Once depleted, the entire plant would be packed back up and shipped back to the United States, he said, with the sensitive spent fuel still sealed away inside. Sanders is working on a reactor design hatched by the lab with an undisclosed private partner. He believes it is feasible to build a prototype modular reactor -- including demonstration factory components and a mockup of the reactor itself -- as early as 2014, for less than a billion dollars. A mini-reactor could ring up at less than $200 million, he said, or at $300 million to $400 million with 20 years of fuel. At $3,000 to $4,000 per kilowatt, he said, that would amount to significant savings over estimates of $4,000 to $6,000 per kilowatt for construction alone with traditional plant designs. To get a design ready to build, Sanders is urging a partnership between the government and the private sector**.** "If it's totally a government research program, labs can take 20 to 30 years" to finish such projects, he said. "If it becomes a research science project, it could go on forever." New approach, old debates So far, there is no sign that the government's nuclear gatekeeper, NRC, is wowed by the small-reactor designs. NRC's Office of New Reactors warned Babcock & Wilcox in June that the agency "will need to limit interactions with the designers of small power reactors to occasional meetings or other nonresource-intensive activities" over the next two years because of a crowded schedule of work on other proposals. Meanwhile, opponents of nuclear technologies are not convinced that small reactors are an improvement over traditional designs. Arjun Makhijani, who heads the Institute for Energy and Environmental Research, a think tank that advocates against nuclear power, sees disseminating the technology as incompatible with controlling it. "A lot of the proliferation issue is not linked to having or not having plutonium or highly enriched uranium, but who has the expertise to have or make bombs," Makhijani said. "In order to spread nuclear technologies, you have to have the people who have the expertise in nuclear engineering, who know about nuclear materials and chain reactions and things like that -- the same expertise for nuclear bombs. That doesn't suffice for you to make a bomb, but then if you clandestinely acquire the materials, then you can make a bomb." Peter Wilk, acting program director for safe energy with Physicians for Social Responsibility, an anti-nuclear group, argues that expanding nuclear power use runs counter to the goal of nonproliferation. "The whole proposition presupposes an ... international economy in which more and more fuel is produced and more and more waste must be dealt with, which only makes those problems that are still unsolved larger," he said. "It may or may not do a better job of preventing the host country from literally getting their hands on it, but it doesn't reduce the amount of fuel in the world or the amount of waste in the world," Wilk added. And then there is the issue of public opinion. "Imagine that Americans would agree to take the waste that is generated in other countries and deal with it here," Makhijani said. "At the present moment, it should be confined to the level of the fantastic, or even the surreal. If [the technology's backers] could come up with a plan for the waste, then we could talk about export." Makhijani pointed to a widely touted French process for recycling nuclear waste as a red herring (ClimateWire, May 18). "It's a mythology that it ameliorates the waste problem," he said. According to Makhijani's calculations, the French recycling process generates far more radioactive waste than it cleans up. One category of highly radioactive material, which ends up stored in glass "logs" for burial, is reduced, he said. But in processing the waste, about six times the original volume of waste is produced, he said. Much of that must be buried deep underground, and the discharge of contaminated wastewater used in recycling has angered neighboring countries, he said. Operational risk, of course, is another major concern. "One has reduced the amount of unnecessary risk," Wilke said, "but it's still unnecessary risk." He added, "I get the theory that smaller, newer, ought to be safer. The question is: Why pursue this when there are so many better alternatives?" To Sandia's Sanders, Wilke is asking the wrong question. With the governments of major economies like China, Russia and Japan putting support and cash into nuclear technologies, the power plants are here to stay, he believes. "There's going to be a thousand reactors built over the next 50 years," he said. "The question is: Are we building them, or are we just importing them?**"**

### 1NC—Solvency

#### IFRs are only blueprints and won’t be competitive—empirics prove high costs.

Wauchope 12—Noel Wauchope works as a Division 1 registered nurse. Noel has been an anti-nuclear campaigner for many years and used to write for the now defunct Nation Review on the subject, as well as being the spokesperson for Women’s Electoral Lobby on nuclear issues. [July 5, 2012, “In dispraise of Integral Fast Nuclear Reactors,” http://www.independentaustralia.net/2012/environment/in-dispraise-of-integral-fast-nuclear-reactors/]

For instance, they ignore the fact that IFRs need plutonium or enriched uranium as fuel. So, to have fast reactors, Australia would need to import these, or set up nuclear reprocessing or uranium enrichment here. This would also involve issues such as cost, politics, public opinion, issues concerning our growing renewable energy systems, radioactive waste storage — just to mention some of the more obvious of the considerable obstacles to Australia ever getting fast reactors. Nuclear lobbyists seem naively oblivious to the importance of these factors in the minds of the general public.

In Australia, the high priest now is Barry Brook. He and his acolytes proselytise the case for Australia to get IFRs. This latest enthusiasm seems to have been inspired by Britain’s present crisis of nuclear waste.

Britain had, and still has, nearly 100 metric tonnes of weapons grade plutonium, to deal with. So, they set up the Thermal Oxide Reprocessing Plant (THORP) at Sellafield in Cumbria, which began operating in 1997. It was supposed to make money by recycling plutonium from spent fuel to make mixed oxide fuel (MOX) and then sell it overseas. Trouble was, it was a commercial disaster — costing $2.3 billion to build, and $750 million each year to run. It was closed in August 2011. So, what to do with the radioactive wastes? The cheapest and least dangerous solution was deep burial and the UK government is trying to persuade Cumbria to host an underground radioactive mausoleum — but, for some reason, the Cumbrians are not very keen on the idea…

So, along come the nuclear entrepreneur whiz kids.

Why not have another try at turning toxic wastes into a profitable export, they say. Sell them off overseas to other countries — we will design a gadget to use these, and sell the gadget, too! Enter the Integral Fast Reactors. The Brits are considering starting with one type of these, the Power Reactor Innovative Small Module — General Electric’s PRISM fast reactor. This reactor “consumes” weapons grade plutonium, producing electricity, and turning the plutonium into other radioactive wastes that are not quite as useful for making bombs. General Electric Hitachi proposes to “burn” the UK’s stockpile of plutonium in GEH’s Prism fast reactors”. It’s a complicated process.

Now, doesn’t that sound good?

It would get rid of Britain’s massive amount of plutonium wastes, make it (almost) unsuitable for weapons, make money for UK, and give cheap electricity to the colonials, hmm… say, in Australia! Yep, Barry Brook and his crew think that this is a great idea for Australia.

What’s wrong with this?

Lots.

First of all, I always think “follow the money”. Because of various factors, these reactors will be hugely expensive to build. The construction materials have to be especially tough and durable because of obvious – and non-obvious – safety concerns. The PRISM reactor is cooled by liquid sodium, which can very readily catch fire. They are kept as small reactors, to make it easier to maintain safety features.

Apart from the high costs of building these reactors, because they are small, they would not be economic to sell except in large numbers; they need to be pretty well mass produced to make them viable for export. Bearing in mind that they still exist only as blueprints — it will be a very long stretch until somebody (in Australia?) places an order for them in large numbers.

The Integral Fast Reactor is, after all, just another type of nuclear reactor — it runs on radioactive fuel, provides heat to make electricity and produces radioactive waste. It also uses reprocessed nuclear wastes for its fuel, therefore nuclear reprocessing plants would be needed. So far, all existing nuclear reprocessing has proved to be an expensive failure. For instance, the USA’s MOX reprocessing fuel plant is still under construction — it has cost billions of dollars, is over budget and also behind schedule. In Japan, the super expensive Monju prototype fast breeder reactor is costing 1,000 times more than conventional reactors to run.

Beyond all that, there is the safety factor, mentioned briefly before. The metal fuel gets hot and, unlike oxide based fuels, when it heats, it swells. If the fuel expands too much, it can crack the surrounding cladding — and that presents a big problem.

And just as safety impinges on costs, so does security. These small nuclear reactors have to be guarded, and so does the plutonium and enriched uranium fuel being transported to the reactor. And so do the eventual radioactive wastes produced by the IFRs. Security alone would be a huge expense — and more so because it would involve guarding not just a few big reactors, but a large number of small ones.

### 1NC—China

#### Egypt won't nuclearize

Coleman 12 [Colonel Matthew, "Iran Goes Nuclear: Predictive Responses to a Wicked Problem," 3-22, http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA561094]

Although Egypt views a nuclear-armed Iran as an existential threat, it is unlikely that Egypt will pursue nuclear proliferation to balance this threat for five reasons. First, Egypt is in turmoil and is focused on internal stability to safeguard its citizens and reestablishing its, honor, prestige, and national identity. This process of change may take Egypt well into the next decade before they are willing and able to regain their regional status. Second, Egypt would have to experience the same intense pressure that Iran experienced in regards to political and economic sanctions. Third, Egypt too will be subjected to an Israeli preemptive strike against their nuclear facilities. Although, Egypt and Israel have maintained a reasonably good relationship over the years, there is no reason to expect that Israel would be willing to give Egypt a reprieve, and no reason that Egypt would not already know that. 52 Fourth, similar to Turkey and Saudi Arabia, Egypt would have to abandon its strong advocacy of denuclearizing the Middle East. Case in point, in February 2006, Egypt made it clear that it opposed Iran‘s nuclear program by voting to transfer the Iranian crisis from the International Atomic Energy Agency Board of Governors to the United Nations Security Council. 53 Fifth, Egypt would risk damaging its strategic alliance with the United States, a critical partner in negotiating a peaceful settlement in the Middle East. Egypt has played a central role in the Middle East inspiring Arab nationalism and becoming a vital player in the Middle East peace process. Mahmoud Ahmadinejad‘s inflammatory rhetorical attack towards Israel tends not only to undermine Egypt‘s influence but complicates the Egyptian government‘s pursuit of a generally constructive policy towards Israel. 54 Egypt‘s government would likely have no response to a nuclear-armed Iran based on their current geo-political challenges. Domestic issues and re-establishment of the Egyptian government will likely take center stage for the remainder of this decade. It is important to note prior to the ousting of the Egyptian President Mubarak, the Egyptian Brotherhood had encouraged its government to develop a nuclear capability not to deter Iran but rather to terrify Israel. 55 Since the Muslim Brotherhood is likely to have a major influence in the new Egyptian government, nuclear ambition will not be totally abandoned for the foreseeable future. Prior to the loss of power by Egyptian President Mubarak, research indicated that Egypt was the most likely of the three Arab countries addressed in this report to develop its own nuclear weapon. Now, only history will tell if the Egyptians are resilient enough to regain their prominence in the world and continue their quest toward peace in the Middle East.

#### No impact to cyber attack

Green 2 [Joshua, Editor, Washington Monthly, “The Myth of Cyberterrorism”, November, http://www.washingtonmonthly.com/features/2001/0211.green.html]

When ordinary people imagine cyberterrorism, they tend to think along Hollywood plot lines, doomsday scenarios in which terrorists hijack nuclear weapons, airliners, or military computers from halfway around the world. Given the colorful history of federal boondoggles--billion-dollar weapons systems that misfire, $600 toilet seats--that's an understandable concern. But, with few exceptions, it's not one that applies to preparedness for a cyberattack. "The government is miles ahead of the private sector when it comes to cybersecurity," says Michael Cheek, director of intelligence for iDefense, a Virginia-based computer security company with government and private-sector clients. "Particularly the most sensitive military systems." Serious effort and plain good fortune have combined to bring this about. Take nuclear weapons. The biggest fallacy about their vulnerability, promoted in action thrillers like WarGames, is that they're designed for remote operation. "[The movie] is premised on the assumption that there's a modem bank hanging on the side of the computer that controls the missiles," says Martin Libicki, a defense analyst at the RAND Corporation. "I assure you, there isn't." Rather, nuclear weapons and other sensitive military systems enjoy the most basic form of Internet security: they're "air-gapped," meaning that they're not physically connected to the Internet and are therefore inaccessible to outside hackers. (Nuclear weapons also contain "permissive action links," mechanisms to prevent weapons from being armed without inputting codes carried by the president.) A retired military official was somewhat indignant at the mere suggestion: "As a general principle, we've been looking at this thing for 20 years. What cave have you been living in if you haven't considered this [threat]?" When it comes to cyberthreats, the Defense Department has been particularly vigilant to protect key systems by isolating them from the Net and even from the Pentagon's internal network. All new software must be submitted to the National Security Agency for security testing. "Terrorists could not gain control of our spacecraft, nuclear weapons, or any other type of high-consequence asset," says Air Force Chief Information Officer John Gilligan. For more than a year, Pentagon CIO John Stenbit has enforced a moratorium on new wireless networks, which are often easy to hack into, as well as common wireless devices such as PDAs, BlackBerrys, and even wireless or infrared copiers and faxes.

#### No resource wars.

Salehyan 8—Professor of Political Science at North Texas [Idean, *Journal of Peace Research*, “From Climate Change to Conflict? No Consensus Yet” 45:3, Sage, DOI: 10.1177/0022343308088812]

A few caveats are in order here. It is important to note, again, that the most severe effects of climate change are likely to be felt in the future, and the future is inherently uncertain.4 While fundamental shifts in the environment are not inconceivable, our best bet for predicting what is to come is to look at what has transpired in the past. Since it is frequently argued that climate change will lead to resource scarcities and exacerbate inequality, it is possible to draw upon past evidence regarding these factors to develop a sense of how conflicts might unfold given changes in the Earth’s atmosphere. Additionally, I do not take issue with the claim that climate change will present considerable challenges for human societies and ecosystems more generally. Humanitarian crises stemming, in part, from climate change have the potential to be severe, and steps must be taken quickly to attenuate such contingencies. Rather, my purpose here is to underscore the point that environmental processes, by themselves, cannot explain why, where, and when fighting will occur; rather, the interaction between environmental and political systems is critical for understanding organized armed violence. First, the deterministic view has poor predictive power as to where and when conflicts will break out. For every potential example of an environmental catastrophe or resource shortfall that leads to violence, there are many more counter-examples in which conflict never occurs. But popular accounts typically do not look at the dogs that do not bark. Darfur is frequently cited as a case where desertification led to food scarcity, water scarcity, and famine, in turn leading to civil war and ethnic cleansing.5 Yet, food scarcity and hunger are problems endemic to many countries—particularly in sub-Saharan Africa—but similar problems elsewhere have not led to large-scale violence. According to the Food and Agriculture Organization of the United Nations, food shortages and malnutrition affect more than a third of the population in Malawi, Zambia, the Comoros, North Korea, and Tanzania,6 although none of these countries have experienced fullblown civil war and state failure. Hurricanes, coastal flooding, and droughts—which are all likely to intensify as the climate warms—are frequent occurrences which rarely lead to violence. The Asian Tsunami of 2004, although caused by an oceanic earthquake, led to severe loss of life and property, flooding, population displacement, and resource scarcity, but it did not trigger new wars in Southeast Asia. Large-scale migration has the potential to provoke conflict in receiving areas (see Reuveny, 2007; Salehyan & Gleditsch, 2006), yet most migration flows do not lead to conflict, and, in this regard, social integration and citizenship policies are particularly important (Gleditsch, Nordås & Salehyan, 2007). In short, resource scarcity, natural disasters, and long-term climatic shifts are ubiquitous, while armed conflict is rare; therefore, environmental conditions, by themselves, cannot predict violent outbreaks. Second, even if local skirmishes over access to resources arise, these do not always escalate to open warfare and state collapse. While interpersonal violence is more or less common and may intensify under resource pressures, sustained armed conflict on a massive scale is difficult to conduct. Meier, Bond & Bond (2007) show that, under certain circumstances, environmental conditions have led to cattle raiding among pastoralists in East Africa, but these conflicts rarely escalate to sustained violence. Martin (2005) presents evidence from Ethiopia that, while a large refugee influx and population pressures led to localized conflict over natural resources, effective resource management regimes were able to ameliorate these tensions. Both of these studies emphasize the role of local dispute-resolution regimes and institutions—not just the response of central governments—in preventing resource conflicts from spinning out of control. Martin’s analysis also points to the importance of international organizations, notably the UN High Commissioner for Refugees, in implementing effective policies governing refugee camps. Therefore, local hostilities need not escalate to serious armed conflict and can be managed if there is the political will to do so.

#### War in the SCS is inevitable—the issue is nationalism—not energy security

Logan 2/20/13—Justin Logan is director of foreign policy studies at the Cato Institute [February 20, 2013, “War over the Senkaku/Diaoyu Islands,” http://www.cato.org/publications/commentary/war-over-senkakudiaoyu-islands?utm\_source=feedburner&utm\_medium=feed&utm\_campaign=Feed%3A+CatoRecentOpeds+%28Cato+Recent+Op-eds%29]

Washington is deeply entangled in the dispute between China and Japan over the Senkaku/Diaoyu Islands. But the most basic question has hardly been examined: Would America really fight a war with China over the islands?

As with so many issues in East Asia, Washington clearly wishes the dispute would just go away—or at least away from American officials’ desks. Further complicating matters, however, is the fact that the United States has apparently contradictory legal obligations as regards the islands. In short, even a modestly liberal reading of American commitments lends fuel to the Chinese and Japanese fires both.

It is simple to understand why Beijing and Tokyo are so exercised about the uninhabited islands. If sovereignty over the islands were settled, the victor would gain not just the fishing and (potential) energy resources that lay in the surrounding waters, but recognized territorial waters that implicate naval rights. Further, a virulent and irrational nationalism has captured both countries’ citizens, constraining policymakers’ room for negotiation.

#### No proliferation impact.

Creehan 12**—**Senior Editor of the SAIS Review of International Affairs [Sean Creehan, “Assessing the Risks of Conflict in the South China Sea,” SAIS Review, Volume 32, Number 1, Winter-Spring 2012, pp. 125-128

Regarding Secretary Clinton’s first requirement, the risk of actual closure of the South China Sea remains remote, as instability in the region would affect the entire global economy, raising the price of various goods and commodities. According to some estimates, for example, as much as 50 percent of global oil tanker shipments pass through the South China Sea— that represents more than three times the tanker traffic through the Suez Canal and over five times the tanker traffic through the Panama Canal.4 It is in no country’s interest to see instability there, least of all China’s, given the central economic importance of Chinese exports originating from the country’s major southern ports and energy imports coming through the South China Sea (annual U.S. trade passing through the Sea amounts to $1.2 trillion).5 Invoking the language of nuclear deterrence theory, disruption in these sea lanes implies mutually assured economic destruction, and that possibility should moderate the behavior of all participants. Furthermore, with the United States continuing to operate from a position of naval strength (or at least managing a broader alliance that collectively balances China’s naval presence in the future), the sea lanes will remain open. While small military disputes within such a balance of power are, of course, possible, the economic risks of extended conflict are so great that significant changes to the status quo are unlikely. Pg. 126

### 1NC Proliferation

#### IFRs cause a net increase in prolif. Prefer our ev—it indicts all their authors.

Green 9—Jim Green, B. Med. Sci. (Hons.), PhD in science and technology studies for his analysis of the Lucas Heights research reactor debates, National nuclear campaigner - Friends of the Earth, Australia [August 1, 2009, “Nuclear Weapons and 'Fourth Generation' Nuclear Power,” http://www.energybulletin.net/49949]

The second major problem with the nuclear 'solution' to climate change is that all nuclear power concepts (including 'fourth generation' concepts) fail to address the single greatest problem with nuclear power − its repeatedly-demonstrated connection to the proliferation of Weapons of Mass Destruction (WMD). Not just any old WMDs but nuclear weapons − the most destructive, indiscriminate and immoral of all weapons.

Integral fast reactors

Integral fast reactors (IFRs) are reactors proposed to be fuelled with a metallic alloy of uranium and plutonium, with liquid sodium as the coolant. 'Fast' because they would use unmoderated neutrons as with other plutonium-fuelled fast neutron reactors (e.g. breeders). 'Integral' because they would operate in conjunction with on-site 'pyroprocessing' to separate plutonium and other long-lived radioisotopes and to re-irradiate (both as an additional energy source and to convert long-lived waste products into shorter-lived, less problematic wastes).

IFRs would breed their own fuel (plutonium-239) from uranium-238 contained in abundant stockpiles of depleted uranium. Thus there would be less global demand for uranium mining with its attendant problems, and less demand for uranium enrichment plants which can be used to produce low-enriched uranium for power reactors or highly enriched uranium for weapons. Drawing down depleted uranium stockpiles would be welcome because of the public health and environmental problems they pose and because one of the few alternative uses for depleted uranium − hardening munitions − is objectionable.

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.

IFRs and nuclear weapons

George Stanford, who worked on an IFR R&D program in the US, notes that proliferators "could do [with IFRs] what they could do with any other reactor − operate it on a special cycle to produce good quality weapons material."

As with conventional reactors, IFRs can be used to produce weapon grade plutonium in the fuel (using a shorter-than-usual irradiation time) or by irradiating a uranium or depleted uranium 'blanket' or targets. Conventional PUREX reprocessing can be used to separate the plutonium. Another option is to separate reactor grade plutonium from IFR fuel and to use that in weapons instead of weapon grade plutonium.

The debate isn't helped by the muddle-headed inaccuracies of some IFR advocates, including some who should know better. For example, Prof. Barry Brook from Adelaide University says: "IFRs cannot produce weapons-grade plutonium. The integral fast reactor is a systems design with a sodium-cooled reactor with metal fuels and pyroprocessing on-site. To produce weapons-grade plutonium you would have to build an IFR+HSHVHSORF (highly specialised, highly visible, heavily shielded off-site reprocessing facility). You would also need to run your IFR on a short cycle." Or to paraphrase: IFRs can't produce weapon grade plutonium, IFRs can produce weapon grade plutonium. Go figure.

Presumably Brook's point is that IFR-produced plutonium cannot be separated on-site from irradiated materials (fuel/blanket/targets); it would need to be separated from irradiated materials at a separate reprocessing plant. If so, it is a banal point which also applies to conventional reactors, and it remains the case that IFRs can certainly produce weapon grade plutonium.

Brooks' HSHVHSORFs are conventional PUREX plants − technology which is well within the reach of most or all nation states. Existing reprocessing plants would suffice for low-burn-up IFR-irradiated materials while more elaborate shielding might be required to safely process materials irradiated for a longer period. IFR advocate Tom Blees notes that: "IFRs are certainly not the panacea that removes all threat of proliferation, and extracting plutonium from it would require the same sort of techniques as extracting it from spent fuel from light water reactors."

IFR advocates propose using them to draw down global stockpiles of fissile material, whether derived from nuclear research, power or WMD programs. However, IFRs have no need for outside sources of fissile material beyond their initial fuel load. Whether they are used to irradiate outside sources of fissile material to any significant extent would depend on a confluence of commercial, political and military interests. History shows that non-proliferation objectives receive low priority. Conventional reprocessing with the use of separated plutonium as fuel (in breeders or MOX reactors) has the same potential to drawn down fissile material stockpiles, but has increased rather than decreased proliferation risks. Very little plutonium has been used as reactor fuel in breeders or MOX reactors. But the separation of plutonium from spent fuel continues and stockpiles of separated 'civil' plutonium − which can be used directly in weapons − are increasing by about five tonnes annually and amount to over 270 tonnes, enough for 27,000 nuclear weapons.

#### IFRs makes nuclear terrorism inevitable

Gallucci, President of the MacArthur Foundation, 11—president of the John D. and Catherine T. MacArthur Foundation, previously, served as Dean of Georgetown University’s Edmund A. Walsh School of Foreign Service, served for 21 years with the U.S. Department of State as Ambassador at Large [June 9, 2011, Robert Gallucci, “Leadership and the Future of Nuclear Energy,” http://www.macfound.org/site/c.lkLXJ8MQKrH/b.4462613/apps/s/content.asp?ct=10875785]

Terrorism, on the other hand, poses a different kind of threat. The disaster at Fukushima could just as well have been the result of a deliberate attack. An attacker would only have needed to know the weaknesses in facility design and operation in order to put the fuel and reactor cores at risk. This logic also applies to theft and diversion.

For more than a decade, American presidents have said that the greatest threat confronting our country is that a terrorist will detonate a nuclear device in one of our cities.

Some say this is farfetched. I am convinced it is perfectly feasible, a risk low in probability but high in consequence.

Terrorists would have a hard time getting their hands on a ready-made nuclear weapon and would therefore more likely aim to build an improvised nuclear device (or IND). It would probably be a “gun-type device,” like the one dropped on Hiroshima. Making a plutonium bomb, like that dropped on Nagasaki, is far harder. But it would be a mistake to assume that terrorists would be unable to build a plutonium bomb – imperfect or inefficient as it might be by the standards of the designers at Livermore or Los Alamos.

The consequences of either device would be catastrophic. A bomb on the scale of Hiroshima could kill a quarter of a million people in a major city. A smaller device could kill tens of thousands over several weeks. The economic and political costs would be incalculable.

The biggest impediment to making a nuclear weapon is getting the fissile material, either highly enriched uranium or plutonium.

So our objective in addressing the security risks of nuclear power is simple: make sure that terrorists cannot get their hands on fissile material from the nuclear fuel cycle.

I would argue that we need to carefully control enrichment technology, because it can be used to produce HEU; and we need to stop the spread of reprocessing technology because it does produce plutonium.

There is a debate over whether spent fuel reprocessing is a prudent or irrational way to manage radioactive waste and conserve uranium, from both economic and technical points of view. I take the latter view.

My reasoning (I have discovered that foundations call this a "logic model"):

The more fissile material there is available, the more likely it is that an IND will be manufactured and an act of nuclear terrorism will occur.

If energy producers choose to recycle plutonium in thermal reactors, it will be impossible adequately to account for plutonium in the nuclear fuel cycle. The risk of theft or diversion would rise.

The introduction of mixed oxide (MOX) fuel into any country's nuclear fuel cycle increases the risk that plutonium will be acquired by a would-be nuclear terrorist.

So any nation thinking about recycling plutonium needs to be aware of, and take account of, the additional risk of nuclear terrorism.

In my view, there is nothing to be won by the introduction of plutonium fuels into the nuclear fuel cycle that is not substantially off-set by an increased risk to security.

If we eliminate the possibility of terrorists obtaining fissile material, we eliminate most of the risk of a nuclear terrorist attack.

So, as we think about the security risks and begin to assess how to minimize them going forward, our priority should be to end the recycle of plutonium and the use of mixed oxide fuel. If separated plutonium exists, it can be stolen from a storage or fuel-fabrication facility, a nuclear reactor, or in transport.

In my opinion there is no acceptable reprocessing technology – not COEX, not UREX+, not pyroprocessing. If a mixed oxide fuel can be used in a thermal reactor, it can also be used directly to make an improvised nuclear device, or be purified by a determined terrorist sufficiently to be used in such a device.

So I do not buy the arguments made for plutonium recycle in the U.S., China, India, the Republic of Korea, and beyond. The claim is that recycle would facilitate radioactive waste management, save uranium and SWUs, and prepare the way for fast reactors.

American proponents even argue it would help the U.S. regain technical credibility and international leadership in nuclear energy.

It is not at all clear that recycle will ease radioactive waste management. Indeed, it may well exacerbate the challenge. Moreover, safe spent-fuel storage is at hand in dry storage – local or off-site – good, arguably, for hundreds of years.

The economic arguments for recycle, which depend on the price of uranium and the cost of enrichment and reprocessing, are weak and have gotten weaker over time.

And the large scale adoption of fast reactors is hardly inevitable – or even likely for a very long time.

I have told the Blue Ribbon Commission, a U.S. panel investigating storage options for nuclear waste, that it is folly to argue for a recycle approach. It is politically risky, economically unwise, and technically unnecessary. The only remaining argument is that the U.S. needs to be an industry leader. But it is a poor leader that persuades others to go in precisely the wrong direction.

Instead, the U.S. should argue that the risks of plutonium recycle in thermal reactors are simply too great, and that no country, no matter how advanced, should follow that course. This is where the question of leadership comes in: it is vital that the U.S. get its policy right. If we do, we can credibly influence the rest of the world. If not, we have no credibility, and reduced leverage, in persuading China, Korea, Japan, and others not to recycle.

#### No widespread prolif

Hymans 12—Jacques E. C. Hymans is Associate Professor of IR at USC [April 16, 2012, “North Korea's Lessons for (Not) Building an Atomic Bomb,” *Foreign Affairs*, http://www.foreignaffairs.com/articles/137408/jacques-e-c-hymans/north-koreas-lessons-for-not-building-an-atomic-bomb?page=show]

Washington's miscalculation is not just a product of the difficulties of seeing inside the Hermit Kingdom. It is also a result of the broader tendency to overestimate the pace of global proliferation. For decades, Very Serious People have predicted that strategic weapons are about to spread to every corner of the earth. Such warnings have routinely proved wrong -- for instance, the intelligence assessments that led to the 2003 invasion of Iraq -- but they continue to be issued. In reality, despite the diffusion of the relevant technology and the knowledge for building nuclear weapons, the world has been experiencing a great proliferation slowdown. Nuclear weapons programs around the world are taking much longer to get off the ground -- and their failure rate is much higher -- than they did during the first 25 years of the nuclear age.

As I explain in my article "Botching the Bomb" in the upcoming issue of Foreign Affairs, the key reason for the great proliferation slowdown is the absence of strong cultures of scientific professionalism in most of the recent crop of would-be nuclear states, which in turn is a consequence of their poorly built political institutions. In such dysfunctional states, the quality of technical workmanship is low, there is little coordination across different technical teams, and technical mistakes lead not to productive learning but instead to finger-pointing and recrimination. These problems are debilitating, and they cannot be fixed simply by bringing in more imported parts through illicit supply networks. In short, as a struggling proliferator, North Korea has a lot of company.

#### No Israel strikes—Netanyahu and Barak have toned down the rhetoric and pressure from the US and Israeli elections prevents action.

NYT 13—New York Times [January 26, 2013, “Israeli Official Hints Pentagon Plans May Make Lone Strike on Iran Unnecessary,” http://www.nytimes.com/2013/01/27/world/middleeast/defense-official-hints-that-israel-is-stepping-back-from-plans-to-unilaterally-attack-iran.html?\_r=0]

Israel’s departing defense minister, Ehud Barak, said that the Pentagon had prepared sophisticated blueprints for a surgical operation to set back Iran’s nuclear program should the United States decide to attack — a statement that was a possible indication that Israel might have shelved any plans for a unilateral strike, at least for now.

In an interview conducted at the World Economic Forum in Davos, Switzerland, and published by The Daily Beast on Friday, Mr. Barak was asked if there was any way Israel could go to war with Iran over what many in the West believe is a nuclear weapons program without dragging in the United States.

Mr. Barak replied that there were more than just the two options — of full-scale war or allowing Iran to obtain nuclear weapons capability — in the event that sanctions and diplomacy failed.

“What we basically say is that if worse comes to worst, there should be a readiness and an ability to launch a surgical operation that will delay them by a significant time frame and probably convince them that it won’t work because the world is determined to block them,” he said.

Under orders from the White House, “the Pentagon prepared quite sophisticated, fine, extremely fine, scalpels,” Mr. Barak added, referring to the ability to carry out pinpoint strikes.

Herbert Krosney, an American-Israeli analyst and the author of a book about the arming of Iran and Iraq, said Mr. Barak’s statement now “indicates that there is close cooperation” between Israel and the United States following months of tension between the country’s leaders (though military and intelligence services continued to work together closely).

“I think there is a realization in Israel that it would be extremely difficult for Israel to operate alone,” he said.

Last year, Prime Minister Benjamin Netanyahu of Israel was pushing hard for the Obama administration to set clear “red lines” on Iran’s nuclear progress that would prompt the United States to undertake a military strike, infuriating the administration. And Mr. Barak repeatedly warned that because of Israel’s more limited military capabilities, its own window of opportunity to carry out an effective strike was closing.

It has appeared that Mr. Barak has drifted away from Mr. Netanyahu in recent months, sounding more conciliatory toward the Obama administration, but even the prime minister has become less antagonistic.

The Pentagon declined to comment on The Daily Beast report, but a senior defense official said, “The U.S. military constantly plans for a range of contingencies we might face around the world, and our planning is often quite detailed.” The official added, “That shouldn’t come as a surprise to anyone.”

In recent years, Mr. Barak and Mr. Netanyahu had become increasingly alarmed as Iran moved forward with a nuclear program that it says is solely for peaceful purposes, but that Israel, the United States and others believe is geared toward producing a bomb. The two men consistently emphasized Israel’s doctrine of self-reliance for such existential issues.

But faced with tough opposition from Washington and public criticism from a string of former Israeli security chiefs, the prospect of an imminent unilateral Israeli strike receded in recent months.

In the past few weeks Mr. Netanyahu campaigned for re-election in Israel as a strong leader who, among other things, had managed to persuade the world to deal with the Iranian threat.

Mr. Netanyahu and his conservative Likud Party emerged weakened from the elections, with much of the Israeli electorate more focused on domestic issues. In a speech after the voting, he said, “The first challenge was and still is to prevent Iran from acquiring nuclear weapons.” But he did not again threaten to go it alone.

#### No terrorist threat to the US – death of bin Laden shifted attack priorities

**Mahadevan 3-22** [Prem, senior researcher at the Center for Security Studies, “The Glocalisation of Al Qaedaism,” http://www.isn.ethz.ch/isn/Digital-Library/Articles/Special-Feature/Detail/?lng=en&id=161729&contextid774=161729&contextid775=161659&tabid=1454211886]

This leads to the second develop­ment which has boosted Al Qaeda’s ideology locally: the death of Osama Bin Laden in May 2011. Documents captured by US forces in Afghani­stan and Pakistan during 2001 – 11 reveal that Al Qaeda was not mono­lithic; it was a tightly-knit coalition of different regional jihadist fac­tions. Bin Laden spent much of his time managing conflicting priorities between these factions: Some wanted to overthrow apostate Arab gov­ernments (the ‘near enemy’) while others wanted to attack the United States (the ‘far enemy’). Bin Laden himself was opposed to internecine warfare between Muslims and thus advocated long-distance attacks on Western homelands. His deputy and eventual successor, Ayman Al-Zawa­hiri, was on the other hand more interested in regional jihad. With Bin Laden gone, Zawahiri’s empha­sis on attacking the ‘near enemy’ has gained impetus.

### 1NC Warming

#### IFRs too slow to solve warming—development time and sodium fires.

Clarke 10—Renfrey Clarke is an Australian writer, a climate change activist, and member of the Socialist Alliance in Adelaide, South Australia [April 8, 2010, “Why James Hansen is wrong on nuclear power,” International Journal of Socialist Renewal, http://links.org.au/node/1607]

When a technology is immature – as is the case with third-generation nuclear power generation – the time needed to make it fully operational is always an important question. And when the task is to replace fossil-fuelled energy generation, the timeframes for perfecting the new equipment and building it out are critically short.

Just how short emerges from work performed by James Hansen himself. If a basically recognisable natural world is to survive, the US climatologist has concluded, atmospheric carbon dioxide must be cut by the end of the century to a level below 350 parts per million (ppm). This will require ending net human-induced CO2 emissions by 2050.

How much CO2 can be emitted during this period, if the eventual concentration of 350 ppm is to be achieved? Other scientists have calculated the allowable “carbon budget” for the years until 2050 at a total of 420 gigatonnes (billion tonnes) of CO2, with other greenhouse gases in proportion. At present emission rates, this budget will be exhausted around 2021.

How might third- and fourth-generation nuclear plants fit these requirements? Highly complex, and still unproven, third-generation plants would not be operating in significant numbers before 2020, and probably for rather longer. This is indicated by experience with the plant now being built at Olkiluoto in Finland. Construction at the site is at least three and a half years behind schedule, and is plagued by cost overruns of some 60 per cent.

Compared to earlier installations, the projected fourth-generation plants – specifically, the “integral fast reactor” (IFR) designs that have drawn most attention – promise important advantages. Passive safety features would make the chance of core meltdown ultra-remote. Unlike most reactor designs, IFRs would use “fast” or high-energy neutrons, allowing them to create more fissile material – in this case, plutonium – than they consume. This would be achieved through the irradiating of depleted uranium, of which large stockpiles exist. Fresh mining of uranium would not be needed for hundreds of years.

Along with plutonium, the reactor products from IFRs would contain highly radioactive isotopes of minor transuranic elements. The “integral” reactor complexes would include facilities for extracting the plutonium from the reactor products for use as fuel, with long half-life transuranics also removed and included in the fuel mix. In this form, the fuel would be unsuitable for nuclear bomb-making without elaborate and easily detected reprocessing. Its attractiveness as a basis for weapons proliferation would arguably be slight.

High-level wastes from other reactors could also be incorporated into the IFR fuel, to be “burned” and transmuted into relatively manageable materials. The wastes left behind after the fuel extraction would initially be dangerous – and quite usable for dirty bombs – but within 200 years would be no more radioactive than natural uranium ores.

Energy bonanza?

Through the use of IFRs, proponents like Hansen maintain, huge quantities of energy could be created without major emissions of greenhouse gases. Meanwhile, the costs and dangers of uranium mining and enrichment would be avoided. With plutonium and highly radioactive wastes never leaving the reactor sites, security would be easier to manage. From being a massive obstacle, end-product waste storage would become quite feasible.

Unfortunately, IFRs do not offer a solution to global warming. The catch, above all, is in the time lines. There is simply no way that IFRs can be designed, brought to practical operating status and built in massive numbers during the few years – barely a decade, if something like today’s natural world is to survive – that the greenhouse emissions budget allows us.

Developing workable IFRs would not be straightforward or quick, even if massive resources were assigned to the task. Since the 1950s nuclear engineers have acquired considerable experience of fast-neutron reactors. Mostly, this experience has been with so-called “fast breeder” reactors, designed to maximise plutonium output for bomb making and reactor fuel, rather than with “burner” reactors like IFRs. But the message is the same for both types: fast-neutron reactors are particularly complex, have a high rate of accidents and breakdowns, and are fiendishly difficult and time consuming to service and repair.

Needing to maintain high neutron energy levels, fast reactors cannot use water as a coolant, since this would slow the neutrons down. The coolant of choice is molten sodium metal. Sodium is highly reactive, burning readily in air and exploding on contact with water. If leaks are not to result in sodium-air fires, the reactor vessel and coolant pipes must be surrounded with inert argon gas, adding to complexity////

 and costs. At a certain point, the sodium coolant must be used for steam generation; here, it is separated from high-pressure water by only a thin barrier of pipe metal, any flaw in which can have drastic consequences.

The sodium that passes through the reactor core becomes highly radioactive. This means that an extra coolant loop must be incorporated, isolating the reactor coolant from the steam-generating equipment so that an explosion cannot disperse radioactive sodium; again, the additional complexity raises capital costs. For various repair and maintenance procedures, the sodium must be drained and the pipes flushed. This has to be done with regard for the radioactivity, while taking care to prevent fires. Even minor malfunctions can result in months of down time.

Sodium fires

Between 1980 and 1997, Russia’s BN-600 fast reactor experienced 27 leaks, 14 of which resulted in sodium fires. Japan’s Monju reactor suffered a major sodium-air fire in 1995, and was still out of action at the end of 2009. The only attempt so far at a commercial-scale fast reactor, the French Superphénix plant, was shut down after a decade in 1996; it had a lifetime capacity factor – that is, actual as compared to designed output – of just 7 per cent.

The development of IFRs, if it goes ahead, will be expensive, difficult and prolonged. Wikipedia predicts a commercialisation date for fourth-generation nuclear plants of 2030. But we cannot wait that long before drastically curtailing greenhouse emissions.

## \*\*\* 2NC

### 2NC Overview

#### A robust SMR industry is necessary for US nonproliferation leadership.

**Domenici 12** (Pete – U.S. Senator, Dr. Warren F. “Pete” Miller – Co-Chair, Nuclear Initiative; Former DOE Assistant Secretary for Nuclear Energy, Private consultant, Part time Research Professor at Texas A & M University, Responsible for oversight of the DOE-owned Idaho National Laboratory, Served as associate director of the Nuclear Security Science and Policy Institute at Texas A & M University as well as adjunct professor, Co-leader of the small team that successfully proposed establishing the Institute to the TAMU Board of Regents, *Maintaining U.S. Leadership in Global Nuclear Energy Markets*, A Report of the Bipartisan Policy Center’s Nuclear Initiative, July 2012)

Strategic Goal: Continued strong U.S. leadership in global nuclear security matters is central to protecting our national security interests. In particular, U.S. leadership in nuclear technology and operations can strengthen U.S. influence with respect to other countries’ nuclear programs and the evolution of the international nonproliferation regime, while also supporting U.S. competitiveness in a major export market.

Nuclear power technologies are distinct from other potential exports in energy or in other sectors where America’s competitive advantage may also be declining. Because of the potential link between commercial technology and weapons development, nuclear power is directly linked to national security concerns, including the threat of proliferation. Although reactors themselves do not pose significant proliferation risks, both uranium-enrichment and spent fuel–processing technologies can be misused for military purposes. If U.S. nuclear energy leadership continues to diminish, our nation will be facing a situation in which decisions about the technological capabilities and location of fuel-cycle facilities throughout the world will be made without significant U.S. participation. Leadership is important in both commercial and diplomatic arenas, and it requires a vibrant domestic industry; an effective, independent regulator; access to competitive and innovative technologies and services; and the ability to offer practical solutions to safety, security, and nonproliferation challenges (an international fuel bank, for example, could help address concerns about the proliferation of uranium-enrichment capabilities).

COMMERCIAL NUCLEAR OPERATIONS

As the world’s largest commercial nuclear operator and dominant weapons state, the United States has traditionally been the clear leader on international nuclear issues. Today, the United States still accounts for approximately one-quarter of commercial nuclear reactors in operation around the world and one-third of global nuclear generation.33 *This position is likely to shift* in coming decades, as new nuclear investments go forward in other parts of the world while slowing or halting in the United States . In past decades, the United States was also a significant exporter of nuclear materials and technologies, but this dominance too has slowly declined.

At present, however, the U.S. safety and security infrastructure and regulatory framework remain without peer and U.S. expertise and guidance on operational and regulatory issues continues to be sought around the world. The domestic nuclear industry established the INPO in the wake of the Three Mile Island accident in 1979 in a collective effort to hold all industry players accountable to the highest standards for safe and reliable commercial operations. Similarly, the NRC is seen as the gold standard for commercial nuclear regulation. As long as other countries seek to learn from the experience and expertise of U.S. firms and regulators, the United States will enjoy greater access to international nuclear programs. A substantial reduction in domestic nuclear energy activities could erode U.S. international standing.

COMPETITIVE COMMERCIAL NUCLEAR EXPORTS

As an active participant in commercial markets, the United States has considerable leverage internationally through the 123 Agreements (in reference to Section 123 of the Atomic Energy Act) and Consent Rights on nuclear technologies exported by the U.S. nuclear industry. These mechanisms provide a direct and effective source of leverage over other countries’ fuel-cycle decisions. U.S. diplomatic influence is also important, but absent an active role in commercial markets*,* it **may not be sufficient** to project U.S. influence and interests with respect to nuclear nonproliferation around the world. At an October 2011 Nuclear Initiative workshop on “Effective Approaches for U.S. Participation in a More Secure Global Nuclear Market,” Deputy Secretary of Energy Daniel B. Poneman framed commerce and security not as competing objectives but as “inextricably intertwined.”34 He also highlighted several ways in which a robust domestic nuclear energy industry can further our country’s nonproliferation goals. Deputy Secretary Poneman emphasized the importance of U.S. leadership not only in the commercial marketplace but in international nonproliferation organizations like the International Atomic Energy Agency (IAEA) as well.

In addition, BPC’s Nuclear Initiative recognizes that a nuclear accident is a low-probability event that would have high consequences regionally or globally. Many countries that have expressed interest in, or the intention to, develop domestic nuclear power lack important infrastructure, education, and regulatory institutions. We believe that, if these programs move forward, the United States has a critical commercial and advisory role to play.

However, domestic exporters of U.S. nuclear technology, fuels, and services face a truly global and highly competitive market. Commercial nuclear technology is now available from a variety of suppliers, and there are many more companies, several of which have the direct backing of their country’s government, competing with U.S. firms. Industry and other stakeholders believe that U.S. nuclear technology companies are at a competitive disadvantage in international markets due to complex and overlapping federal regulations. Several presenters at the BPC Nuclear Initiative event noted that multiple federal agencies, including the Department of Commerce, DOE, and the Department of State have jurisdiction over commercial nuclear trade, global safety and security, and nonproliferation.

In an attempt to ameliorate current competitive disadvantages, the Obama administration recently created a new position within the National Security Council to coordinate civilian nuclear policy. We support the creation of this new position to improve coordination of executive branch policy for nuclear energy policy and international affairs. We believe continued efforts to improve coordination between government and industry stakeholders and to more efficiently apply federal export regulations will allow U.S. companies to compete more effectively in the global nuclear marketplace.

LEADERSHIP ON INTERNATIONAL ISSUES RELATED TO THE NUCLEAR FUEL CYCLE

Leadership in technological and policy developments related to the management of the nuclear fuel cycle is another important component of U.S. leadership on nuclear issues more broadly. As discussed above, several countries have expressed interest in, or the intent to become, new entrants in the use of commercial nuclear power. The spread of nuclear technologies and knowledge presents inherent proliferation risks, and technologies and expertise related to fuel enrichment and reprocessing are especially sensitive. We believe that existing domestic and international policies to discourage the spread of fuel-cycle technologies are sound and we support efforts to maintain and expand these policies.

We also believe that international fuel assurances and spent fuel take-back capabilities would give new-entrant countries a powerful incentive to forgo their own enrichment and reprocessing activities. This is particularly true given the fact that most current and proposed national nuclear energy programs are too small to justify indigenous fuel-cycle programs, at least in economic terms.35

For many years, the United States and other countries and organizations, including the IAEA, have explored options for providing an assured nuclear fuel supply to countries that choose not to develop their own enrichment capacities. We strongly support continued U.S. leadership to establish multinational fuel-cycle facilities that would allow new-entrant countries to reliably develop domestic nuclear industries without increasing proliferation risks. In addition, the ability to offer full fuel-cycle services would enhance the competitiveness of U.S.-based nuclear energy firms as new entrants look for more comprehensive service packages beyond reactor design and construction.

In particular, the ability to take advantage of spent fuel take-back services may provide a strong incentive for countries to participate in multinational fuel arrangements and could allow for more secure, long-term stewardship of spent fuel. Of course, to offer this service, the United States and its partners would have to develop effective spent fuel management and disposal capabilities of their own.

Strategic Goal: Historically, the United States has been a leader in nuclear technology research and commercialization. To extend this tradition and assure further innovation, the United States must continue to support research and development efforts within the nuclear industry, the national labs, and U.S. universities.

We believe that progress currently underway in a **few technical areas** will be especially helpful in allowing the United States to maintain its leadership role in nuclear technology and operations. In particular, we believe that **SMRs** represent an exciting frontier for nuclear technology and a promising opportunity to demonstrate U.S.-based scientific capability and manufacturing potential.36 As part of our event series, the Nuclear Initiative convened a diverse group of expert stakeholders to discuss the technical potential and commercial risks associated with SMRs. Assistant Secretary for Nuclear Energy Lyons discussed the SMR Licensing Technical Support Program, a five-year industry cost-sharing effort to achieve design certification for two SMR designs and to support early stages of deployment.37 DOE’s projected budget for this program, which has received considerable bipartisan support in Congress, is $452 million over five years. These funds will be leveraged to raise additional contributions from industry.38 We believe the SMR program **offers the best opportunity**, building on the successful Nuclear Power 2010 program, to commercialize innovative nuclear technologies, and we strongly encourage continued support for it and related research, development, and deployment (RD&D) programs.

Beginning in 2002, DOE actively supported the development of advanced passive reactors through the Nuclear Power 2010

program, a government and industry cost-sharing effort that focused on overcoming major technical and regulatory barriers to the deployment of new nuclear power plants. The program supported design certification and first-of-a-kind engineering for two Generation III+ reactor designs (the AP1000 and the Economic Simplified Boiling-Water Reactor), as well as three early site permits and two COLs.

In December 2011, the NRC unanimously certified the first Generation III+ reactor design, the Westinghouse AP1000. This approval and the subsequent decision to build two new reactors using the AP1000 design at Southern Company’s Vogtle site sets an important precedent for additional nuclear plant construction in the United States and internationally.

Four AP1000 reactors are currently under construction in China and several U.S. utilities are pursuing licenses to build more reactors of this type. Besides the Westinghouse AP1000 reactor, three additional passive reactor designs are under review by the NRC: GE Hitachi’s Economic Simplified Boiling-Water Reactor, AREVA Nuclear Power’s U.S. Evolutionary Power Reactor, and Mitsubishi Heavy Industries’ U.S. Advanced Pressurized-Water Reactor.39 Demand for advanced passive designs may grow further in light of the Fukushima accident. Countries that are planning to build new reactors, including China, may choose to build additional advanced passive reactors rather than conventional Generation II or III reactors.

Continued leadership in the development of advanced nuclear technologies presents an important export opportunity for the U.S. nuclear industry and for our nation’s economy. The Commerce Department estimates that the international market for nuclear equipment and services will grow to $500–$740 billion over the next ten years.40 Perhaps more importantly, as previously discussed, U.S. commercial strength in this area provides substantial co-benefits in terms of national security.

Beyond the near-term opportunities described above, we believe it is critical to sustain federal support for advanced nuclear R&D at our national laboratories and universities. The international status of the United States in nuclear technology development remains strong and is built on a foundation of research conducted at such institutions. Most federal resources invested in advanced research at national laboratories, most notably at the lead nuclear energy laboratory, Idaho National Laboratory, as well as at a number of universities. Given the strategic importance of U.S. leadership in nuclear technology, we believe that nuclear energy must remain a priority area for federal energy investment.

Several prominent recent studies, including the BRC report discussed previously and the Massachusetts Institute of Technology’s “Future of Nuclear Power” report, have also emphasized the **critical role** of nuclear energy .41 We agree with the BRC’s recommendations that federal funding should be balanced between opportunities for near-term and long-term technology improvements and that the NRC should continue efforts to develop a **regulatory framework** to accommodate the licensing of advanced nuclear energy systems.42 We also believe that our national labs must develop more streamlined and cost-effective ways to maintain and improve existing infrastructure so that ongoing research investments are as productive as possible. As previously emphasized, fees currently being collected from nuclear utilities for the express purpose of managing and disposing of spent fuel must be made available for this intended function so that rising costs for spent fuel management are not taken from a stagnant overall nuclear energy allocation. Finally, the federal government should continue to provide support for graduate students in nuclear energy research programs as an investment in the human capital and technical expertise needed to sustain a leadership role in the future.

Conclusion

Over the course of the last year, BPC’s Nuclear Initiative event series has sparked many productive public conversations regarding nuclear energy in the United States. These discussions have reaffirmed the strategic importance of nuclear energy for our domestic energy sector and our national security interests, but they have also highlighted the many challenges facing the nuclear energy industry in the United States. Our hope is that a clear- eyed understanding of these opportunities and challenges will help policy makers identify and pursue effective actions to support continued U.S. leadership in nuclear energy.

As a starting point, policy makers and the public must understand the important role that nuclear energy currently plays in our electric power sector as well as the significant and perhaps vital option value it holds as part of a reliable, affordable, clean, and low-carbon energy future. For nuclear power to play this role, the industry and key regulatory agencies like the NRC must continue to improve nuclear plant safety and security and work to incorporate lessons learned—both from daily operations and from extreme events like Fukushima. Similarly, demonstrable progress must be made toward implementing an effective strategy for managing and disposing of spent nuclear fuel and high-level waste.

In addition, policy makers and the public must understand the clear linkages that exist between a strong domestic industry and competitive U.S. nuclear suppliers on the one hand and U.S. leadership in international nuclear markets and nonproliferation issues on the other hand. America’s history of global leadership in this technology area was built on many different factors, including the domestic industry’s extensive operating experience, the influence of the highly-respected NRC, technology advances achieved through domestic research and development programs, and a sustained commitment to nonproliferation principles. Maintaining excellence in each of these areas is the only way to assure continued U.S. leadership—both technologically and diplomatically—on nuclear issues of vital interest to our long-term energy and national security.

#### Leadership prevents nuclear terrorism.

**Sagan 11** (Scott D., Caroline S.G. Munro Professor of Political Science Co-Director, Center for International Security and Cooperation Stanford University Co-Chair, Global Nuclear Future Initiative American Academy of Arts and Sciences, *The International Security Implications Of U.S. Domestic Nuclear Power Decisions*, Prepared for the Blue Ribbon Commission on America’s Nuclear Future, April 18th, http://brc.gov/sites/default/files/documents/sagan\_brc\_paper\_final.pdf)

Promoting multinational ownership in the U.S. – and advertising this to others – can help set new standards for the spread of civilian nuclear technology. A second set of policy issues in which the U.S. can provide more leadership concerns efforts to promote strong physical protection against **nuclear terrorism**. The U.S. nuclear security standards are widely considered to be the “gold standard” for physical protection around the globe. We have not been as effective as we could be, however, in promoting these standards for us in other countries. While the Obama Administration’s 2010 Nuclear Security Summit, by asking foreign leaders to review and improve their national programs to secure nuclear materials, was certainly a positive step, there is much that the U.S. could do to promote further global physical security improvements. First, UN Security Council Resolution 1540 calls for all states to have “appropriate effective” physical protection systems, but the U.S. has never defined what that means nor, with partners, set up minimum standards to meet that requirement.32 Second, the U.S. has a rich experience in “trial and error” learning regarding adjustments made to our security procedures and design basis threats (DBT) after vulnerabilities were exposed after a terrorist attack or in response to a security violation. The U.S. government has not declassified a detailed history of terrorist plots or attacks against U.S weapons facilities or power facilities. It would be a major step toward greater transparency, and would help other governments understand the seriousness of the threat, if the U.S. government produced and published such a detailed history of terrorist threats and responses. Efforts at increased transparency in the U.S. also should remind the leaders of other governments that even the U.S. system is not perfect, and would encourage them to maintain continual vigilance about their own regulatory systems and nuclear protection measures. How has the US DOE and NRC reacted to the growing threat of terrorism? After the September 11 attacks, security at nuclear facilities throughout the U.S. was stepped up to address the growing threat of terrorists attack. According to the NRC, this included “increasing the number of security forces onsite,” “requiring greater training,” “strengthening the design basis threat,” integrating response training with federal, state, and local agencies,” and improving “emergency preparedness programs.”33 Nevertheless, the case of Sharif Mobley – a former employee of six different nuclear plants arrested in March 2010 in Yemen on terrorism charges – highlights continued concerns about the security of U.S. nuclear power plants. An NRC investigation following Mobley’s arrest found that no reports were filed suggesting that he had become radicalized during his time working in nuclear power plants, from 2002 to 2008. However, some of his co-workers reported suspicious statements, including: “We are brothers in the union but if a Holy War comes, look out.” 34 He also made comments expressing his belief that non- Muslims were “infidels,” and perused “unusual” websites, including one displaying an image of a mushroom cloud.35 The NRC review of the case recommended allowing the NRC direct access to background information on nuclear power plant employees; frequently checking employees to the terrorist watch list; improving the culture of security; and require disclosure of all foreign travel.36 My point in raising this case is not to criticize the NRC. It is to call attention to the need for the U.S. government and the NRC to be more transparent in explaining U.S. physical security challenges, improvements over time, and procedures for evaluation and exercises to foreign governments, to encourage them to adopt similar procedures and make similar changes as new threats emerge. U.S. support for influential non-governmental organizations – such as WINS – and U.N. organizations – such as the IAEA – can further enhance their ability to promote strong global standards and the implementation of physical protection of nuclear facilities and materials in transport and storage. Current standards for physical protection of nuclear facilities vary widely around the world, and are often overly reactive. Through active support and participation in WINS, U.S. companies and the U.S. government can help identify and promote global best practices for the use of Design Basis Threat methodologies, for training guard forces and emergency management teams, and for assessing risks to facilities. The IAEA safeguards inspections discussed above also have a less direct, but nonetheless important, role in promoting physical security. IAEA oversight and the promise of visits encourage vigilance and watchfulness. The U.S. government could further improve nuclear security by increasing its funding to the Nuclear Security Fund (NSF), an IAEA body established to support activities related to the prevention, detection, and response to nuclear terrorism. Funded entirely by voluntary contributions from member states, the NSF has an annual operating budget of approximately $33 million.37 U.S. contributions to the Nuclear Security Fund have already risen by 59% from 2007 to 2010.38 However, though the Obama Administration is currently seeking to raise its total voluntary contributions to the IAEA from $65 million in 2010 to $85 million in 2011 and to $107 million in 2012, disputes in Congress over the FY 2011 budget may upend this plan.39 The Blue Ribbon Commission could usefully weigh in on this issue, encouraging Congress to support increases in voluntary funding for the IAEA, recognizing the importance to national security of improving global standards for the control of nuclear material. The BRC should recommend that the operators of all new U.S. facilities join WINS, in order to share best practices and learn from the experiences of others. Furthermore, the Congress should be urged by the BRC to pass the necessary legislation, including explicit criminalization of acts not currently covered by U.S. code, to bring U.S. laws into compliance with the International Convention for the Suppression of Acts of Nuclear Terrorism and the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material, so that the U.S. may submit the instruments of ratification to the IAEA.40 On April 13, 2011, the Obama administration submitted to Congress the legislation required to bring U.S. law into accordance with the provisions of the treaty, stating: “We call on Congress to pass these bills as swiftly as possible so that the United States can fully ratify these treaties and continue to lead the global effort to prevent the world’s most deadly weapons from falling into the hands of terrorists.”41 Working towards entry into force of these agreements represents an important step in standardizing global nuclear security measures. While this paper has focused on nuclear safeguards and physical security, in the wake of the Fukushima-Daiichi accident in Japan, it is important to mention one way in which improved nuclear safety and improved nuclear security are connected. The Fukushima Daiichi nuclear reactor crisis should highlight the fact that fuel rods kept in spent fuel ponds inherently create a higher risk of producing an environmental catastrophe – whether caused by natural disaster or a terrorist attack – than are nuclear materials placed in interim dry cask storage.42 Currently 63,000 tons of spent fuel sit in U.S. nuclear fuel facilities, and can remain on-site for 60 years beyond the licensed life of any reactor.43 The U.S. Nuclear Regulatory Commission added extra safety and security measures and spent fuel panels after September 11, but it was only after the March 2011 crisis in Japan that the NRC was transparent about “having utilities prepare to use fire hoses to pump in extra water in the event ordinary cooling systems are knocked out” in the wake of a natural disaster or attack.44 The NRC has not, however, provided detailed assessments of alternative measures, such as the use of long-lived batteries for back up power sources, to prevent loss of water circulation. Moreover, the Fukushima accident should lead to consideration of more fundamental changes. The U.S. should accelerate the use of dry cask storage, but not only because it would reduce risks of terrorist attacks or natural disasters in the U.S., but also because it would model better practices for the many other nations that keep their spent fuel for very long periods of time in, often overcrowded, fuel ponds. Conclusions: Specific nuclear energy policy proposals, and how best to evaluate trade-offs between competing objectives, can and should be debated in the United States. In these debates, however, it is important to recognize that American nuclear policies play an important role in shaping – if not **fully determining** – the decisions made in other capitals regarding nuclear power, the nuclear fuel cycle, and nuclear security. The U.S. has an opportunity to promote a safer and more secure global nuclear future by adopting policies that encourage other countries to restrict the spread of sensitive fuel cycle facilities and to adopt higher standards for nuclear safety, security and safeguards. The Blue Ribbon Commission should encourage the U.S. government to place nuclear non-proliferation and nuclear terrorism prevention very high on its priority list of objectives as it makes domestic nuclear energy decisions and should support steps that better contribute to global nuclear non-proliferation and global nuclear security.

#### US development solves and gets modeled

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, Testimony before the House Committee on Science and Technology for the hearing on Charting the Course for American Nuclear Technology: Evaluating the Department of Energy’s Nuclear Energy Research and Development Roadmap, http://gop.science.house.gov/Media/hearings/full10/may19/Ferguson.pdf)

Given the differences in design philosophy among these vendors and the fact that none of these designs have penetrated the commercial market, it is too soon to tell which, if any, will emerge as market champions. Nonetheless, because of the early stage in development, the United States has an opportunity to state clearly the criteria for successful use of SMRs. But because of the head start of China and India, the United States should not procrastinate and should take a leadership role in setting the standards for safe, secure, and proliferation-resistant SMRs that can compete in the market. ¶ Several years ago, the United States sponsored assessments to determine these criteria. 9 While the Platonic ideal for small modular reactors will likely not be realized, it is worth specifying what such an SMR would be. N. W. Brown and J. A. Hasberger of the Lawrence Livermore National Laboratory assessed that reactors in developing countries must: ¶ “achieve reliably safe operation with a minimum of maintenance and supporting infrastructure; ¶ offer economic competitiveness with alternative energy sources available to the candidate sites; ¶ demonstrate significant improvements in proliferation resistance relative to existing reactor systems.”10¶ Pointing to the available technologies at that time from Argentina, China, and Russia, they determined that “these countries tend to focus on the development of the reactor without integrated considerations of the overall fuel cycle, proliferation, or waste issues.” They emphasized that what is required for successful development of an SMR is “a comprehensive systems approach that considers all aspects of manufacturing, transportation, operation, and ultimate disposal.”

### Solves Warming

**SMRs are the only solution that addresses the magnitude of warming before it’s too late.**

**Palley 11 (**Reese Palley, The London School of Economics, 2011, The Answer: Why Only Inherently Safe, Mini Nuclear Power Plans Can Save Our World, p. 186-90)

The central investigation of this book has been directed at the scale of the nuclear industry. The book has argued that all anthropogenic challenges that put in question **continued human existence** on Earth are a **matter of scale**. It was nature’s unanticipated success with her human experiment, the evolutionary choice of brains over brawn, setting in motion the underlying scale problems that opened our Pandora’s box of calamities. The history of man on Earth can best be viewed as a race between population and resources in which, for some millennia, population expansion leads and the Earth’s resources have been straining to catch up. When population bloomed from 100 million brainy humans to a billion, the problems of scale emerged as the price we had to pay for success as a species. The conversion of forests to agriculture, responding to the need to feed a burgeoning population, initiated the emerging problem of scale. The elimination of oxygen-emitting forests was mitigated to a large measure in the beginning of our population growth by the slow rate of change of the deforestation, which allowed an absorbable increase of CO2 in the atmosphere. Natural processes, such as the ability of the oceans to take up CO2, tamped down global warming. But as the scale of the release of warming gases exploded a few hundred years ago, our remaining forests and our seas, our first line of defense against CO2 imbalance, could not cope and the level of CO2 has risen alarmingly each year since 1800. When human population climbed from a billion to six billion and these six billion reveled in the enormous energy content of coal, the scenario for **disaster on a global scale** came into play. The impact of the loss of forest paled in comparison to the havoc that the use of fossil fuels represented. In a world that was hungry for energy and, not incidentally, living on a Malthusian edge of food supply, coal burst upon us as manna from heaven. Coal was everywhere, easy to mine, and in enormous, almost unending supply It generated the cheap heat needed to run the engines of early industrialization. An unintended Faustian bargain was struck. The immediate cost of coal in the cities, dirt and pollution, were not out of sync with what urban man had lived with for centuries. It was beyond the science and the understanding of the time that burning vast millennial coal deposits would do little more than discommode the proximate few and benefit many. Again it was not the burning, it was **the scale** of the burning that dumped billions of tons of CO2 into the atmosphere. We are now presented with a horrendous invoice that must be paid if we are to **survive** in anywhere near the comfort to which we have become accustomed. It has been the intent of this book to argue that the **scale of the warming catastrophe** must be viewed primarily in terms of the continuing flow of CO2 into the atmosphere. Every possible source of CO2, no matter how small, must be identified and interdicted, since every fourth molecule of the gas will remain with us as a climate moderator for thousands of years. What we find is that all of the sources of energy including so-called green energy are CO2-culpable and that each, in spite of claims to the contrary, adds its tiny mite or enormous mass to the climate changes looming in man’s future. The book argues that the scale of the consumption of fossil fuels is clearly unsustainable and, more to the point, that the feeble attempts to restrict CO2 production are little more than a glossing over of the problem. Capping but not ending production of greenhouse gases only magnifies the unthinkable future costs of bringing the level of CO2 and other greenhouse gases back into balance. Logic dictates that merely limiting greenhouse gases pushes possible solutions farther and farther into the future and does little to mitigate the difficulties that will arise in the near future. Logic dictates that our reasonably comfortable survival depends on the immediate and total cessation of increases to parts per million of CO2 in the air. Logic dictates that if we are to continue to enjoy the level of comfort, wealth, and ease afforded us since the beginning of the twentieth century we must not only halt the increase but commence the actual decrease of warming gases at work in the atmosphere. That conclusion brings the book to the problems and the solutions inherent in nuclear power, the **only energy source** that can guarantee us a reasonable future that might be resistant to CO2 warming. Here the argument returns once again to the problem of scale of nuclear reactors, especially as the size of these reactors is related to the brief time left to us to get a grip on calamitous climate changes. The beginnings of nuclear energy lay in the demands of war. The battle between good and evil characterized by the Second World War gave hurried birth to a discovery that had the inherent power to both destroy and salvage. The power to destroy required plutonium on an enormous scale, which was projected forward into the postwar development of civilian reactors. The demand for scarce plutonium for the bombs of the cold war defined the type of reactors that were being developed. These were the breeder reactors, which spewed out plutonium measured in tons that had previously been available only in ounces, and would continue to do so when the wartime need was far behind us. What was once precious, rare, and desirable has become dangerous nuclear waste, and the imperfectly perceived scale of the waste problem has seriously inhibited the logical growth and development of nuclear power. By some unthinkable universal coincidence, nuclear power became available to man for war at the same time that it could prove to be the solution to man’s greatest peacetime challenge. But the gigawatt nuclear power plants that emerged from the war had within them the seeds of their own severe limitation. The scale of the risks, real and imagined, grew exponentially as the scale of energy output grew only linearly. These risks, some merely perceived, some dangerously real and some financial, have conspired to restrict the enormous expansion of nuclear power that is needed to quickly replace our present consumption of energy from fossil fuels. The present rate of replacement of fossil with nuclear sources is at a pace that will have little impact on ultimately dealing with the CO2 imbalance. This slow rate of change is compounded of public fears, bureaucratic regulatory mechanisms resistant to novel solutions, and a private capital market that is unable to conjure with the imagined and real risks of the huge gigawatt reactors that dominate the industry. It is a Gordian knot that cannot be unraveled but which can only be cut by a political sword that, alas, still lacks the edge to do the job. By another rare act of cosmic fortuity, there is a parallel existing nuclear technology that, barring political interference, is capable of addressing the scale problems inherent in gigawatt reactors. From the beginning of the nuclear era, researchers such as Weinberg and Wigner and Teller developed small, inherently safe nuclear reactors that did not breed plutonium. This was reason enough for the military, balancing urgent demands on research and development budgets, to consign the concept of “smaller and safer is better” to dusty shelves in our national science attic. This book has argued that small reactors, that produce a tenth of the energy of the giants also generate inordinately less of the risk that inhibits growth of the industry. Construction of small reactors is a fraction of the cost of construction of gigawatt reactors. Thus the number of years that scarce capital is tied up and at risk is substantially reduced. The book argues that a 100 MWe reactor88 is a much bigger hardware bargain than a gigawatt reactor, which, from start to output, can cost $15 billion. It is not only the hardware costs that contribute to the devilish details of risk. The problem is the inability of the market to accurately or even approximately estimate the real cost of the capital that would be tied up for over a decade in a project that, through technological advancements, could be obsolete before it ever joins the grid.

**All alternatives to SMRs are insufficient in scope—plus safety concerns are all hype.**

**Nordhaus 12** (Michael Shellenberger, Jessica Lovering, Founder of the Breakthrough Institute, graduate of Earlham College and holds a masters degree in cultural anthropology from the University of California, Santa Cruz, "New Nukes: Why We Need Radical Innovation to Make New Nuclear Energy Cheap", September 11, http://thebreakthrough.org/index.php/programs/energy-and-climate/new-nukes/)

Arguably, the biggest impact of Fukushima on the nuclear debate, ironically, has been to force a growing number of pro-nuclear environmentalists out of the closet, including us. The reaction to the accident by anti-nuclear campaigners and many Western publics put a fine point on the gross misperception of risk that informs so much anti-nuclear fear. Nuclear remains the only proven technology capable of reliably generating zero-carbon energy at a scale that can have any impact on global warming. Climate change -- and, for that matter, the enormous present-day health risks associated with burning coal, oil, and gas -- simply dwarf any legitimate risk associated with the operation of nuclear power plants. About 100,000 people die every year due to exposure to air pollutants from the burning of coal. By contrast, about 4,000 people have died from nuclear energy -- ever -- almost entirely due to Chernobyl. But rather than simply lecturing our fellow environmentalists about their misplaced priorities, and how profoundly inadequate present-day renewables are as substitutes for fossil energy, we would do better to take seriously the real obstacles standing in the way of a serious nuclear renaissance. Many of these obstacles have nothing to do with the fear-mongering of the anti-nuclear movement or, for that matter, the regulatory hurdles imposed by the U.S. Nuclear Regulatory Commission and similar agencies around the world. As long as nuclear technology is characterized by enormous upfront capital costs, it is likely to remain just a hedge against overdependence on lower-cost coal and gas, not the wholesale replacement it needs to be to make a serious dent in climate change. Developing countries need large plants capable of bringing large amounts of new power to their fast-growing economies. But they also need power to be cheap. So long as coal remains the cheapest source of electricity in the developing world, it is likely to remain king. The most worrying threat to the future of nuclear isn't the political fallout from Fukushima -- it's economic reality. Even as new nuclear plants are built in the developing world, old plants are being retired in the developed world. For example, Germany's plan to phase-out nuclear simply relies on allowing existing plants to be shut down when they reach the ends of their lifetime. Given the size and cost of new conventional plants today, those plants are unlikely to be replaced with new ones. As such, the combined political and economic constraints associated with current nuclear energy technologies mean that nuclear energy's share of global energy generation is unlikely to grow in the coming decades, as global energy demand is likely to increase faster than new plants can be deployed. To move the needle on nuclear energy to the point that it might actually be capable of displacing fossil fuels, we'll need new nuclear technologies that are cheaper and smaller. Today, there are a range of nascent, smaller nuclear power plant designs, some of them modifications of the current light-water reactor technologies used on submarines, and others, like thorium fuel and fast breeder reactors, which are based on entirely different nuclear fission technologies. Smaller, modular reactors can be built much faster and cheaper than traditional large-scale nuclear power plants. Next-generation nuclear reactors are designed to be incapable of melting down, produce drastically less radioactive waste, make it very difficult or impossible to produce weapons grade material, use less water, and require less maintenance. Most of these designs still face substantial technical hurdles before they will be ready for commercial demonstration. That means a great deal of research and innovation will be necessary to make these next generation plants viable and capable of displacing coal and gas. The United States could be a leader on developing these technologies, but unfortunately U.S. nuclear policy remains mostly stuck in the past. Rather than creating new solutions, efforts to restart the U.S. nuclear industry have mostly focused on encouraging utilities to build the next generation of large, light-water reactors with loan guarantees and various other subsidies and regulatory fixes. With a few exceptions, this is largely true elsewhere around the world as well. Nuclear has enjoyed bipartisan support in Congress for more than 60 years, but the enthusiasm is running out. The Obama administration deserves credit for authorizing funding for two small modular reactors, which will be built at the Savannah River site in South Carolina. But a much more sweeping reform of U.S. nuclear energy policy is required. At present, the Nuclear Regulatory Commission has little institutional knowledge of anything other than light-water reactors and virtually no capability to review or regulate alternative designs. This affects nuclear innovation in other countries as well, since the NRC remains, despite its many critics, the global gold standard for thorough regulation of nuclear energy. Most other countries follow the NRC's lead when it comes to establishing new technical and operational standards for the design, construction, and operation of nuclear plants. What's needed now is a new national commitment to the development, testing, demonstration, and early stage commercialization of a broad range of new nuclear technologies -- from much smaller light-water reactors to next generation ones -- in search of a few designs that can be mass produced and deployed at a significantly lower cost than current designs. This will require both greater public support for nuclear innovation and an entirely different regulatory framework to review and approve new commercial designs. In the meantime, developing countries will continue to build traditional, large nuclear power plants. But time is of the essence. With the lion's share of future carbon emissions coming from those emerging economic powerhouses, the need to develop smaller and cheaper designs that can scale faster is all the more important. A true nuclear renaissance can't happen overnight. And it won't happen so long as large and expensive light-water reactors remain our only option. But in the end, **there is no credible path to mitigating climate change without a massive global expansion of nuclear energy**. If you care about climate change, nothing is more important than developing the nuclear technologies we will need to get that job done.

### DoD Solves

#### DOD action overcomes market failures that otherwise prevent SMR commercialization in the private marketplace

**Andres 11** (\*Richard B. – Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University, \*\*Hanna L. Breetz – Doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, *Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications*, Strategic Forum, National Defense University, Institute for National Strategic Studies, February 2011, http://www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf)

DoD as first Mover

Thus far, this paper has reviewed two of DOD’s most pressing energy vulnerabilities—grid insecurity and fuel convoys—and explored how they could be addressed by small reactors. We acknowledge that there are many un- certainties and risks associated with these reactors. On the other hand, failing to pursue these technologies raises its own set of risks for DOD, which we review in this section: first, small reactors may fail to be commercialized in the United States; second, the designs that get locked in by the private market may not be optimal for DOD’s needs; and third, expertise on small reactors may become concentrated in foreign countries. By taking an early “first mover” role in the small reactor market, DOD could mitigate these risks and secure the long-term availability and appropriateness of these technologies for U.S. military applications.

The “Valley of Death.” Given the promise that small reactors hold for military installations and mo- bility, DOD has a compelling interest in ensuring that they make the leap from paper to production. How- ever, if DOD does not provide an initial demonstration and market, there is a chance that the U.S. small reactor industry may never get off the ground. The leap from the laboratory to the marketplace is so difficult to bridge that it is widely referred to as the “Valley of Death.” Many promising technologies are never commercialized due to a **variety of market failures**— including technical and financial uncertainties, information asymmetries, capital market imperfections, transaction costs, and environmental and security externalities—that impede financing and early adoption and can lock innovative technologies **out of the marketplace**.28 In such cases, the Government can help a worthy technology to bridge the Valley of Death by accepting the first mover costs and demonstrating the technology’s scientific and economic viability.29

Historically, nuclear power has been “the **most clear-cut example** . . . of an important general-purpose technology that in the absence of military and defense-related procurement would not have been developed at all.”30 Government involvement is likely to be **crucial** for innovative, next-generation nuclear technology as well. Despite the widespread revival of interest in nu- clear energy, Daniel Ingersoll has argued that radically innovative designs face an uphill battle, as “the high capital cost of nuclear plants and the painful lessons learned during the first nuclear era have created a prevailing fear of first-of-a-kind designs.”31 In addition, **M**assachusetts **I**nstitute of **T**echnology reports on the Future of Nuclear Power called for the Government to provide modest “first mover” assistance to the private sector due to several barriers that have hindered the nu- clear renaissance, such as securing high up-front costs of site-banking, gaining NRC certification for new technologies, and demonstrating technical viability.32

It is possible, of course, that small reactors will achieve commercialization without DOD assistance. As discussed above, they have garnered increasing attention in the energy community. Several analysts have even ar- gued that small reactors could play a key role in the sec- ond nuclear era, given that they may be the only reactors within the means of many U.S. utilities and developing countries.33 However, given the tremendous regulatory hurdles and technical and financial uncertainties, it appears far from certain that the U.S. small reactor industry will take off. If DOD wants to ensure that small reactors are available in the future, then it should **pursue a leadership** role now.

Technological Lock-in. A second risk is that if small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including dem- onstration effects, technological interdependence, net- work and learning effects, and economies of scale), the designs that are initially developed can become “locked in.”34 Competing designs—even if they are superior in some respects or better for certain market segments— can face barriers to entry that lock them out of the mar- ket. If DOD wants to ensure that its preferred designs are **not locked out**, then it should take a first mover role on small reactors.

It is far too early to gauge whether the private market and DOD have aligned interests in reactor de- signs. On one hand, Matthew Bunn and Martin Ma- lin argue that what the world needs is cheaper, safer, more secure, and more proliferation-resistant nuclear reactors; presumably, many of the same broad qualities would be favored by DOD.35 There are many varied market niches that could be filled by small reactors, because there are many different applications and set- tings in which they can be used, and it is quite pos- sible that some of those niches will be compatible with DOD’s interests.36

On the other hand, DOD may have specific needs (transportability, for instance) that would not be a high priority for any other market segment. Moreover, while DOD has unique technical and **organizational capabilities** that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will focus its initial small reactor deployment efforts on LWR designs.37

If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now. Taking a first mover role does not necessarily mean that DOD would be “**picking a winner**” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD leadership would likely have a profound effect on the industry’s timeline and trajectory. Domestic Nuclear Expertise.

### 2NC—No Commercialization

#### Default neg—overwhelming empirics and the world’s leading nuclear tech developers vote neg.

Lovins 9—Amory B. Lovins is a physicist and Cofounder, Chairman, and Chief Scientist of Rocky Mountain Institute and Cofounder and Chairman Emeritus of Fiberforge, Inc. Published in 29 books and hundreds of papers. He has consulted for more than three decades for major firms and governments (including the U.S. DoE and DOD) on advanced energy and resource efficiency in ~50 countries. [March 21, 2009, ““New” nuclear reactors, same old story,” Rocky Mountain Institute, http://www.rmi.org/Knowledge-Center/Library/2009-07\_NuclearSameOldStory]

IFRs might in principle offer some safety advantages over today’s light-water reactors, but create different safety concerns, including the sodium coolant’s chemical reactivity and radioactivity. Over the past half-century, the world’s leading nuclear technologists have built about three dozen sodium-cooled fast reactors, 11 of them Naval. Of the 22 whose histories are mostly reported, over half had sodium leaks, four suffered fuel damage (including two partial meltdowns), several others had serious accidents, most were prematurely closed, and only six succeeded. Admiral Rickover canceled sodium-cooled propulsion for USS Seawolf in 1956 as “expensive to build, complex to operate, susceptible to prolonged shutdown as a result of even minor malfunctions, and difficult and time-consuming to repair.” Little has changed. As Dr. Tom Cochran of NRDC notes, fast reactor programs were tried in the US, UK, France, Germany, Italy, Japan, the USSR, and the US and Soviet Navies. All failed. After a half-century and tens of billions of dollars, the world has one operational commercial-sized fast reactor (Russia’s BN600) out of 438 commercial power reactors, and it’s not fueled with plutonium.

### Cyber

#### Cyberwar is hype

Rid 12—reader in war studies at King's College London, is author of "Cyber War Will Not Take Place" and co-author of "Cyber-Weapons." [March/April, 2012, Thomas Rid, “Think Again: Cyberwar,” http://www.foreignpolicy.com/articles/2012/02/27/cyberwar?page=full]

"Cyberwar Is Already Upon Us."

No way. "Cyberwar is coming!" John Arquilla and David Ronfeldt predicted in a celebrated Rand paper back in 1993. Since then, it seems to have arrived -- at least by the account of the U.S. military establishment, which is busy competing over who should get what share of the fight. Cyberspace is "a domain in which the Air Force flies and fights," Air Force Secretary Michael Wynne claimed in 2006. By 2012, William J. Lynn III, the deputy defense secretary at the time, was writing that cyberwar is "just as critical to military operations as land, sea, air, and space." In January, the Defense Department vowed to equip the U.S. armed forces for "conducting a combined arms campaign across all domains -- land, air, maritime, space, and cyberspace." Meanwhile, growing piles of books and articles explore the threats of cyberwarfare, cyberterrorism, and how to survive them.

Time for a reality check: Cyberwar is still more hype than hazard. Consider the definition of an act of war: It has to be potentially violent, it has to be purposeful, and it has to be political. The cyberattacks we've seen so far, from Estonia to the Stuxnet virus, simply don't meet these criteria.

### AT: Safeguards

#### IFR advocates don’t advocate tangible safeguards

Green 9—Jim Green, B. Med. Sci. (Hons.), PhD in science and technology studies for his analysis of the Lucas Heights research reactor debates, National nuclear campaigner - Friends of the Earth, Australia [August 1, 2009, “Nuclear Weapons and 'Fourth Generation' Nuclear Power,” http://www.energybulletin.net/49949]

Some IFR advocates downplay the proliferation risks by arguing that fissile material is more easily produced in research reactors. But producing fissile material for weapons in IFRs would not be difficult. Extracting irradiated material from an IFR may be challenging though not from those IFRs which have been designed to produce the initial fuel load for other IFRs (and are thus designed to facilitate the insertion and extraction of uranium targets).

The main challenge would be to circumvent safeguards. Proponents of IFR acknowledge the need for a rigorous safeguards system to detect and deter the use of IFRs to produce fissile material for weapons. And they generally accept that the existing safeguards system is inadequate − so much so that the former Director General of the International Atomic Energy Agency, Dr. Mohamed El Baradei, has noted that the IAEA's basic rights of inspection are "fairly limited", that the safeguards system suffers from "vulnerabilities" and "clearly needs reinforcement", that efforts to improve the system have been "half-hearted", and that the safeguards system operates on a "shoestring budget ... comparable to that of a local police department".

Blees argues for a radically strengthened safeguards system including the establishment of an international strike force on full standby to attend promptly to any detected attempts to misuse IFRs or to divert nuclear materials. But there's no evidence of IFR advocates getting off their backsides to engage in the laborious work of trying to bring about improvements in safeguards. Evidently they do not accept the argument that proponents of dual-use technology have a responsibility to engage in that laborious work. Nor do they see strengthened safeguards as a prerequisite for the widespread deployment of IFRs. Yet, when pressed, IFR advocates point to safeguards which exist only in their imaginations: we needn't worry about IFRs and WMD proliferation, for example, because Blees' international strike force will take care of that. Such arguments are circular and disingenuous.

### 1NC Warming

#### IFRs too slow to solve warming—development time and sodium fires.

Clarke 10—Renfrey Clarke is an Australian writer, a climate change activist, and member of the Socialist Alliance in Adelaide, South Australia [April 8, 2010, “Why James Hansen is wrong on nuclear power,” International Journal of Socialist Renewal, http://links.org.au/node/1607]

 and costs. At a certain point, the sodium coolant must be used for steam generation; here, it is separated from high-pressure water by only a thin barrier of pipe metal, any flaw in which can have drastic consequences.

The sodium that passes through the reactor core becomes highly radioactive. This means that an extra coolant loop must be incorporated, isolating the reactor coolant from the steam-generating equipment so that an explosion cannot disperse radioactive sodium; again, the additional complexity raises capital costs. For various repair and maintenance procedures, the sodium must be drained and the pipes flushed. This has to be done with regard for the radioactivity, while taking care to prevent fires. Even minor malfunctions can result in months of down time.

Sodium fires

Between 1980 and 1997, Russia’s BN-600 fast reactor experienced 27 leaks, 14 of which resulted in sodium fires. Japan’s Monju reactor suffered a major sodium-air fire in 1995, and was still out of action at the end of 2009. The only attempt so far at a commercial-scale fast reactor, the French Superphénix plant, was shut down after a decade in 1996; it had a lifetime capacity factor – that is, actual as compared to designed output – of just 7 per cent.

The development of IFRs, if it goes ahead, will be expensive, difficult and prolonged. Wikipedia predicts a commercialisation date for fourth-generation nuclear plants of 2030. But we cannot wait that long before drastically curtailing greenhouse emissions.

### Yes Inevitable

#### Warming is irreversible – consensus of most qualified scientists

Romm 3-18 [Joe, PhD in Physics from MIT, Senior Fellow at American Progress, editor of Climate Progress, former acting assistant secretary of energy for energy efficiency and renewable energy in 1997, “The Dangerous Myth that Climate Change is Reversible,” http://theenergycollective.com/josephromm/199981/dangerous-myth-climate-change-reversible]

The CMO (Chief Misinformation Officer) of the climate ignorati, Joe Nocera, has a new piece, “A Real Carbon Solution.” The biggest of its many errors comes in this line:¶ A reduction of carbon emissions from Chinese power plants would do far more to help reverse climate change than — dare I say it? — blocking the Keystone XL oil pipeline.¶ Memo to Nocera: As a NOAA-led paper explained 4 years ago, climate change is “largely irreversible for 1000 years,” with permanent Dust Bowls in Southwest and around the globe (if we don’t slash emissions ASAP).¶ This notion that we can reverse climate change by cutting emissions is one of the most commonly held myths — and one of the most dangerous, as explained in this 2007 MIT study, “Understanding Public Complacency About Climate Change: Adults’ mental models of climate change violate conservation of matter.”¶ The fact is that, as RealClimate has explained, we would need “an immediate cut of around 60 to 70% globally and continued further cuts over time” merely to stabilize atmospheric concentrations of CO2 – and that would still leave us with a radiative imbalance that would lead to “an additional 0.3 to 0.8ºC warming over the 21st Century.” And that assumes no major carbon cycle feedbacks kick in, which seems highly unlikely.¶ We’d have to drop total global emissions to zero now and for the rest of the century just to lower concentrations enough to stop temperatures from rising. Again, even in this implausible scenario, we still aren’t talking about reversing climate change///

, just stopping it — or, more technically, stopping the temperature rise. The great ice sheets might well continue to disintegrate, albeit slowly.¶ This doesn’t mean climate change is unstoppable — only that we are stuck with whatever climate change we cause before we get desperate and go all WWII on emissions. That’s why delay is so dangerous and immoral. I’ll discuss this further below the jump.¶ First, though, Nocera’s piece has many other pieces of misinformation. He leaves people with the impression that coal with carbon capture and storage (CCS) is a practical, affordable means of reducing emissions from existing power plants that will be available soon. In fact, most demonstration projects around the world have been shut down, the technology Nocera focuses on would not work on the vast majority of existing coal plants, and CCS is going to be incredibly expensive compared to other low-carbon technologies — see Harvard stunner: “Realistic” first-generation CCS costs a whopping $150 per ton of CO2 (20 cents per kWh)! And that’s in the unlikely event it proves to be practical, permanent, and verifiable (see “Feasibility, Permanence and Safety Issues Remain Unresolved”).¶ Heck, guy who debated me on The Economist‘s website conceded things are going so slowly, writing “The idea is that CCS then becomes a commercial reality and begins to make deep cuts in emissions during the 2030s.” And he’s a CCS advocate!!¶ Of course, we simply don’t have until the 2030s to wait for deep cuts in emissions. No wonder people who misunderstand the irreversible nature of climate change, like Nocera, tend to be far more complacent about emissions reductions than those who understand climate science.¶ The point of Nocera’s piece seems to be to mock Bill McKibben for opposing the idea of using captured carbon for enhanced oil recovery (EOR): “his answer suggests that his crusade has blinded him to the real problem.”¶ It is Nocera who has been blinded. He explains in the piece:¶ Using carbon emissions to recover previously ungettable oil has the potential to unlock vast untapped American reserves. Last year, ExxonMobil reportedthat enhanced oil recovery would allow it to extend the life of a single oil field in West Texas by 20 years.¶ McKibben’s effort to stop the Keystone XL pipeline is based on the fact that we have believe the vast majority of carbon in the ground. Sure, it wouldn’t matter if you built one coal CCS plant and used that for EOR. But we need a staggering amount of CCS, as Vaclav Smil explained in “Energy at the Crossroads“:¶ “Sequestering a mere 1/10 of today’s global CO2 emissions (less than 3 Gt CO2) would thus call for putting in place an industry that would have to force underground every year the volume of compressed gas larger than or (with higher compression) equal to the volume of crude oil extracted globally by [the] petroleum industry whose infrastructures and capacities have been put in place over a century of development. Needless to say, such a technical feat could not be accomplished within a single generation.”¶ D’oh! What precisely would be the point of “sequestering” all that CO2 to extract previously “ungettable oil” whose emissions, when burned, would just about equal the CO2 that you supposedly sequestered?¶ Remember, we have to get total global emissions of CO2 to near zero just to stop temperatures from continuing their inexorable march toward humanity’s self-destruction. And yes, this ain’t easy. But it is impossible if we don’t start slashing emissions soon and stop opening up vast new sources of carbon.¶ For those who are confused on this point, I recommend reading the entire MIT study, whose lead author is John Sterman. Here is the abstract:¶ ¶ Public attitudes about climate change reveal a contradiction. Surveys show most Americans believe climate change poses serious risks but also that reductions in greenhouse gas (GHG) emissions sufficient to stabilize atmospheric GHG concentrations or net radiative forcing can be deferred until there is greater evidence that climate change is harmful. US policymakers likewise argue it is prudent to wait and see whether climate change will cause substantial economic harm before undertaking policies to reduce emissions. Such wait-and-see policies erroneously presume climate change can be reversed quickly should harm become evident, underestimating substantial delays in the climate’s response to anthropogenic forcing. We report experiments with highly educated adults–graduate students at MIT–showing widespread misunderstanding of the fundamental stock and flow relationships, including mass balance principles, that lead to long response delays. GHG emissions are now about twice the rate of GHG removal from the atmosphere. GHG concentrations will therefore continue to rise even if emissions fall, stabilizing only when emissions equal removal. In contrast, results show most subjects believe atmospheric GHG concentrations can be stabilized while emissions into the atmosphere continuously exceed the removal of GHGs from it. These beliefs-analogous to arguing a bathtub filled faster than it drains will never overflow-support wait-and-see policies but violate conservation of matter. Low public support for mitigation policies may be based more on misconceptions of climate dynamics than high discount rates or uncertainty about the risks of harmful climate change.

## \*\*\* 1NR

**1NR Overview**

**b. Magnitude—U.S.-Russia conflict is the only existential risk.**

Nick **Bostrom**, **2002**. Gannon Award winner, Professor of philosophy at Oxford University. http://www.nickbostrom.com/existential/risks.html.

A much greater existential risk emerged with the build-up of nuclear arsenals in the US and the USSR. An all-out nuclear war was a possibility with both a substantial probability and with consequences that might have been persistent enough to qualify as global and terminal.There was a real worry among those best acquainted with the information available at the time that a nuclear Armageddon would occur and that it might annihilate our species or permanently destroy human civilization.[4]  Russia and the US retain large nuclear arsenals that could be used in a future confrontation, either accidentally or deliberately**.** There is also a risk that other states may one day build up large nuclear arsenals. Note however that a smaller nuclear exchange, between India and Pakistan for instance, is not an existential risk, since it would not destroy or thwart humankind’s potential permanently. Such a war might however be a local terminal risk for the cities most likely to be targeted. Unfortunately, we shall see that nuclear Armageddon and comet or asteroid strikes are mere preludes to the existential risks that we will encounter in the 21st century.

**c. Turns proliferation.**

Togzhan **Kassenova**, 4/28/**2008**. Senior research associate at the University of Georgia's Center for International Trade and Security in Washington, D.C. Her expertise is in WMD proliferation issues in Central Asia. “Kazakhstan's nuclear ambitions,” Bulletin of the Atomic Scientists, http://www.thebulletin.org/web-edition/features/kazakhstans-nuclear-ambitions.

Together with Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, Kazakhstan established a nuclear-weapon-free zone in Central Asia PDF in September 2006, which prohibits it from possessing or attempting to possess nuclear weapons and from assisting or encouraging other nations to acquire them. Its enthusiasm for the nuclear-weapon-free zone makes it extremely unlikely Kazakhstan will use its nuclear know-how to pursue nuclear weapons or to help another country develop them.

Other reasons to support the country's nuclear plans:

 \* As revenue generated by the uranium industry increases, money can be invested back into further improving the physical protection of domestic plants, internal control measures, the safeguarding of radioactive material, and the training of nuclear industry workers in the ethics of nonproliferation. Since the Soviet collapse, significant improvements have been achieved in all aspects of nuclear safety and security at Kazakh nuclear sites and facilities, mostly with the help of U.S.-funded nonproliferation assistance programs. Due to cooperation with the IAEA, the most sensitive facility--the Ulba Metallurgical Plant at Ust-Kamenogorsk--has the highest level of safeguards in Central Asia, which brings it close to Western standards. Although according to analysts, more resources should be channeled into nuclear security culture and nonproliferation education.

 \* By participating in the Nuclear Threat Initiative's (NTI) proposed international fuel bank, the IUEC, and the U.S.-sponsored Global Nuclear Energy Partnership (GNEP), **Kazakhstan can contribute to limiting proliferation of full fuel-cycle technologies**. Laura Holgate, NTI's vice president for Russia/newly independent states programs, has suggested that Kazakhstan could become a site for such a bank because of its nuclear infrastructure, strong nonproliferation record, and large Muslim population, making Kazakhstan perhaps a more appealing host from the perspective of non-Western countries.10 Russia's IUEC is complimentary to GNEP, which seeks to expand the use of nuclear energy while decreasing the risk of proliferation and addressing the challenge of nuclear waste disposal.

**1NR—Link**

#### IFR’s trigger the link

#### 1) Their 1AC author says they eliminate all uranium mining.

**Blees et al 11** (Charles Archambeau , Randolph Ware, Cooperative Institute for Research in Environmental Sciences, Tom Blees, National Center for Atmospheric Research, Barry Brook, Yoon Chang, University of Colorado, Jerry Peterson, Argonne National Laboratory, Robert Serafin Joseph Shuster Tom Wigley, “IFR: An optimized approach to meeting global energy needs (Part I)” 2/1/11) http://bravenewclimate.com/2011/02/01/ifr-optimized-source-for-global-energy-needs-part-i/)

Fossil fuels currently supply about 80% of humankind’s primary energy. Given the imperatives of climate change, pollution, energy security and dwindling supplies, and enormous technical, logistical and economic challenges of scaling up coal or gas power plants with carbon capture and storage to sequester all that carbon, we are faced with the necessity of a nearly complete transformation of the world’s energy systems. Objective analyses of the inherent constraints on wind, solar, and other less-mature renewable energy technologies inevitably demonstrate that they will fall far short of meeting today’s energy demands, let alone the certain increased demands of the future. Nuclear power, however, is capable of providing all the carbon-free energy that mankind requires, although the prospect of such a massive deployment raises questions of uranium shortages, increased energy and environmental impacts from mining and fuel enrichment, and so on. These potential roadblocks can all be dispensed with, however, through the use of fast neutron reactors and fuel recycling. The Integral Fast Reactor (IFR), developed at U.S. national laboratories in the latter years of the last century, can economically and cleanly supply all the energy the world needs without any further mining or enrichment of uranium. Instead of utilizing a mere 0.6% of the potential energy in uranium, IFRs capture all of it.

#### Perception – pushing a new IFR changes INVESTOR activity away from uranium

PAULOS 7 Editor/Publisher of Freebuck.com, a website devoted to wealth preservation and enhancement using alternative investing approaches including precious metals. He is also Associate Editor of The Gold Letter, a newsletter covering junior mining and natural resource stocks [George J. Paulos, Perspectives on Uranium: Part 2, <http://www.safehaven.com/article/6870/perspectives-on-uranium-part-2>]

It is apparent that investor activity is likely responsible for the lion's share of recent gains in uranium. Without investment buying, the spot market would be relatively weak compared to past years. This will not be without consequences in the nuclear industry. The sudden and aggressive inflow of investors into the once sedate uranium market has undoubtedly caused some serious re-evaluation of future nuclear plant operating policies and procedures.

Uranium Opportunities and Risks

Opportunities

Persistent deficit - A study by the IAEA (International Atomic Energy Agency) shows a significant deficit in production vs. reactor requirements through the year 2020.

New plant construction - China and India are leading in the construction of new nuclear power plants and these plants will require fuel. More nuclear installations will be built within the next decade than decommissioned.

Mine development cycle- New mines can take as much as a decade to become operational, delaying the potential for new mine supply to ease the deficit. (Note that the construction cycle for power plants is similar in duration.)

Global warming initiatives - Nuclear power does not generate greenhouse gases. Should major energy consuming countries adopt aggressive global warming initiatives, nuclear power would be an obvious beneficiary.

New mining opportunities - Persistently high uranium prices will open up new mining and extraction opportunities for investors.

Investor participation - Although energy and natural resource investors have bought heavily into uranium, it is still not widely held by the broad investment community. There is still a lot of room for expansion.

Risks

Technological risk - New technologies such as the Integral Fast Reactor could turn the uranium supply/demand equation upside down. The construction of high-efficiency breeder or CANDU reactors could create a permanent supply surplus.

#### That devastates the market.

BROOK 10/23Brave New Climate [Barry Brook, The Case for Near-term Commercial Demonstration of the Integral Fast Reactor, <http://bravenewclimate.com/2012/10/23/the-case-for-near-term-commercial-demonstration-of-the-integral-fast-reactor/>]

Next-generation nuclear energy, as exemplified by the IFR design, offers a means to produce vast quantities of zero-carbon and reliable electricity and process heat. By taking advantage of the superior physical properties of plutonium in a fast neutron spectrum for converting essentially all of the mined uranium into useful fissile material, the IFR can change in a fundamental way the outlook for global energy on the necessary massive scale [13]. These resource extension properties multiply the amount of usable fuel by a factor of over a hundred, allowing demand to be met for many centuries with fuel already at hand, by a technology that is known today, and whose properties are largely established. All that is required now is to complete the final steps in a prototype demonstration to give confidence for a large-

**Fiscal times says speculation based on government signals has as much to do with the market as government demand.**

**Market scholarship confirms.**

Kevin **Smith**, 2/14/**2006**. Director, Nuclear Fuel Markets for Evolution Markets. “Nuclear Fuel Prices Up 300%. Are you hedged?” Evolution Markets Executive Brief, http://www.evomarkets.com/pdf\_documents/Nuclear%20Fuel%20Prices%20Up%20300%25.%20Are%20you%20hedged\_.pdf.

What’s the attraction for speculative players like hedge funds? The same factor that creates an urgent need for risk management: Volatility. For really the first time in the market’s history, nuclear fuel prices have experienced a major shift that has set what could be a new era for price fluctuations. Spot price for uranium is up more than 300% in the last 18 months after a prolonged glut. The price has gone from $11/lb to $37/lb of U3O8—and market consensus is that the price looks to continue to climb. For decades the price of uranium, which largely dictates the ultimate price of plant fuel, was bought and sold in a tight range of $8-11/lb of U3O8. The break from this range occurred in dramatic and definitive fashion. A combination of factors contributed: 4New Plants New nuclear plant development has increased significantly in emerging economies like China, India and Russia. The onslaught of new nuclear power capacity is creating new demand for limited fuel supplies and creating a shortage. 4Weapons Program Winds Down Post-Cold War agreements between the U.S. and former Soviet republics encouraged de- commissioned nuclear weapons to be blended down into fuel for nuclear power plants. The program brought abundant cheap supplies of uranium to the market throughout the 1990s and early in this decade. The glut in enriched uranium has abated as fuel derived from stockpiled decommissioned nuclear weapons is consumed. 4Speculation Speculators and hedge funds have entered the uranium market in force and have been responsible for a significant portion of the market activity. These new market entrants who do not have a natural position (i.e. supplier/producer or end user) but seek to take advantage of major price swings. In this case, many speculative players anticipate a continued increase in price volatility. 4Bull Market Attracts Producers High uranium prices are naturally attracting attention from producers, which are considering ramping up production. New mining production is being developed to meet this demand creating a shifting supply/demand forecast. A new group of junior producers has added to this heated atmosphere.

**This is empirically prove.**

Edward D. **Kee**, December **2007**. Vice President at CRA International, Inc. He is a specialist in the electricity industry, with a focus on nuclear power, industry restructuring, and electricity markets. He was a consultant at McKinsey & Company, Charles River Associates, Putnam, Hayes & Bartlett, and PA Consulting Group before returning to CRA in 2006. “Nuclear Fuel: A New Market Dynamic,” The Electricity Journal 20.10, Elsevier.

As in the mid-1970s, low prices in the uranium market between 1985 and 2003 have led to expectations that uranium prices will be low and stable in the future. These expectations were upset by the third uranium price spike that began in late 2003. Uranium spot prices moved from below $20/lb. in 2004 to an all-time-high price (even compared to historical prices adjusted for inﬂation) of $138/lb. in July 2007. Nuclear industry plant operators and nuclear fuel buyers have referred to this recent uranium price increase as unsustainable, have characterized recent high prices as the result of speculation with little connection to market fundamentals, and have generally predicted a quick return to lower and more stable uranium prices. Uranium spot prices are likely to remain at levels well above 2004 levels as uranium demand continues to grow, even though uranium spot prices had dropped to $75/lb. by the end of September 2007.

**UQ**

**Demand increasing and supply declining.**

Melissa **Pistilli**, **3/14**/2013. Analyst for Uranium Investing News. “Uranium’s Comeback Year Hasn’t Jumped the Track Yet,” Uranium Investing News, http://uraniuminvestingnews.com/13909/uranium-comeback-rob-chang-jeb-handwerger-outlook-2013-japan-china-nuclear-reactors-mergers-acquisitions.html.

During the last few months of 2012, analysts were predicting that 2013 would be a turnaround year for the uranium market. Now, the lackluster spot market activity of the past few months is leading impatient investors to wonder if those forecasts will come true. Encouragingly, most of the analysts and industry players that Uranium Investing News (UIN) has spoken with in recent weeks are still confident that the uranium sector is long overdue for a rally in not only the spot market, but also the junior mining sector.

Rob Chang, metals and mining equity analyst at Cantor Fitzgerald, told UIN by phone on Tuesday that he “expect[s] spot prices to pick up near the back of the year,” averaging about $55 a pound for 2013.

Bottom of Form

Speaking to UIN, Gold Stock Trades editor and longtime uranium buff Jeb Handwerger said a look at the technical chart for the price of uranium is already “showing that the two-year downtrend is breaking to the upside after bouncing off of three-year lows.”

A self-proclaimed long-term contrarian, Handwerger targets undervalued sectors with great long-term growth potential — of which the uranium market is a prime example. While other commodities have made significant gains following the 2008 financial crisis, uranium prices are down about 70 percent from their 2007 highs — a situation brought on by a natural disaster, not poor fundamentals.

“Uranium is one of the few commodities still heavily discounted compared to other commodities. The mispricing of the sector can largely be attributed to a lack of understanding — on the part of many investors — of the overall global fundamentals that are involved in the uranium sector,” said Handwerger. He believes governments, utilities and big-money investors are beginning to come around to the reality that nuclear power will be a part of the modern, global, industry-based economy, especially in Asia.

That global wake up is already having an impact on the junior uranium mining sector, as is evidenced by Alpha Minerals‘ (TSXV:AMW) stock performance — in November, February and most recently this week — following announcements of significant drill results from its Patterson Lake joint venture property in the Athabasca Basin.

Key catalysts will determine market direction

UIN asked both Chang and Handwerger to name the key catalysts that will affect the market in the next two years. Topping the list were: nuclear restarts in Japan, increased uranium buying and reactor builds in China, the end of the HEU agreement and new production coming online.

**K2 Mod**

**Uranium is only growing in importance for modernization.**

Abrahm **Lustgarten**, 3/27/**2008**. Former staff writer and contributor for Fortune, and has written for Salon, Esquire, the Washington Post and the New York Times. “Nuclear power's white-hot metal,” CNN Money, http://money.cnn.com/2008/03/26/news/international/uranium\_kazakhstan.fortune/index.htm.

In Kazakhstan, where the family of President Nursultan Nazarbayev controls much of the country's abundant resources, Dzhakishev, 44 years old, is a rare breed: a Moscow-educated entrepreneur who took over a floundering mining industry - and the world's largest uranium deposit outside Australia - when the Soviets broke camp here. Now, after three years of skyrocketing uranium prices, he has found himself at the forefront of a global uranium boom that is fast making him one of the most powerful men in the country - and increasingly influential beyond it. Kazakhstan's ascendancy is far from assured, but Dzhakishev, described by colleagues as Kasparov-sharp and poker-faced, makes it sound as if he already has it all wrapped up. His confidence might be laughable if his arguments weren't so damn convincing. As Dzhakishev sees it, a widespread nuclear renaissance is not only inevitable but well underway. And he's probably right. Global warming is weighing heavily on the international conscience, and with it comes a newfound sense of urgency to dispense with coal and other carbon fuels. No alternative is more developed, economically viable, and emission-free than nuclear energy. Since world electricity use is expected to double in the next few decades, nearly every industrialized country is considering a fresh buildout of nuclear power. Worldwide, 34 new reactors are under construction, and 280 are being planned or proposed. China alone has broken ground on five reactors to feed that nation's insatiable need for power. That has raised questions about whether uranium producers can find enough of the element to fuel this long-term growth. In 2006 producers met only 62% of demand. (The rest was recycled from a diminishing supply of decommissioned warheads or taken from dwindling Cold War stockpiles.) The World Nuclear Association says uranium mining could need to increase by almost 300% in the next two decades. Talk of such a crunch has brought the market to fever pitch. Spot prices for uranium jumped from about $7 a pound in late 2000 to a record high of $136 in June. Prices today hover at $74. More than 400 uranium companies are listed publicly, hedge funds buy warehouses of the stuff, and old U.S. mines are grinding back to life. Applications for new mines in Colorado and Utah have risen more than 200% since 2003. Internationally, the world's largest uranium suppliers - Canada's Cameco, France's Areva, and Australia's BHP Billiton (BHP) and Rio Tinto (RTP) - are scouring for pay dirt at a pace rivaled only by Big Oil. And though existing mines are being expanded in Canada, Australia, and Africa, what producers really want is access to the deposits in Kazakhstan. "Kazakhstan needs to deliver," says Nick Carter, an analyst at Ux Consulting, a U.S. research firm. The boom has put Dzhakishev in an enviable position. First, he made an audacious promise to more than quintuple production by 2015, to 27,000 metric tons a year, which could quench the market's thirst. Now he wants the world to rely on Kazakhstan for all things nuclear - not just the metal for fuel. Uranium, which today accounts for a fraction of the nation's GDP, **would become as important for its economy as the $35 billion Kazakh oil industry is currently**. In the past few months Dzhakishev has gone on a high-profile international deal-signing tear, landing agreements aimed at transforming Kazatomprom from an obscure Third World mining group to a full-fledged, integrated nuclear energy powerhouse. Last summer he locked up contracts to ship half of China's uranium imports, agreed to buy 10% of U.S. reactor maker Westinghouse (owned by Japan's Toshiba), and scored a deal with Cameco (CCJ) to build a conversion facility, a technologically advanced link in the nuclear fuel cycle. "It's been honeymoon, honeymoon, honeymoon," he gloats. But the game is far from over. Dzhakishev's production forecasts are wildly optimistic, requiring the skilled labor, improved infrastructure, and materials to run 16 new mines. That would be tough to execute in any business environment; Kazakhstan is an especially rough-and-tumble place. It is an emerging market with an autocratic government and a rap sheet for bribery that ranked it near the bottom of Transparency International's global corruption index last year. And Dzhakishev's plan **could be laid waste** by the kind of volatility to which metals commodities are prone. When fresh supply flooded the market, the price of uranium plunged last July, sending futures contracts down with it. "I don't know if they have the resources to do it," says Benoit de Galbert, project manager for Katco, Dzhakishev's joint venture with Areva, who believes a top-to-bottom modernization is needed. "Dzhakishev is pushing, but sometimes you have the impression he is alone." An atypical mine To get to Kazakhstan's uranium fields, you hop a short flight west from Almaty along the foothills of the Tian Shan mountains and land on a grass field in Shymkent that's strewn with Soviet-era planes. Three hours north by car, where caravans of camels roam an arid steppe, you come upon a series of ten-story windowless boxes. It doesn't look like a typical mine. The boxes are processing facilities that treat a slurry of uranium, sulfuric acid, and water. The acid loosens the uranium from its bond with the rock below - a process called in situ leach - and the liquid is sucked out through a giant straw, no digging required. Production costs as little as $10 a pound, a fifth the cost of open-pit mining. That low cost is part of what has made Kazakhstan's uranium so attractive. Raw uranium is found on almost every continent. Its biggest producers come from the most bountiful regions, like Canada, where literally any backyard might contain a pound of it. Cameco produces a fifth of the world's uranium and runs three large mines there. But in the past year its Cigar Lake mine, which it operates with Areva, has been hobbled by flooding and natural disasters, setting production back perhaps to 2011. Australia has the most reserves, about a third of the world's uranium, but the ore is of poor quality. The U.S. has mines and fresh exploration but ranks low among world suppliers. Much of the growth in the industry is coming from Africa, where environmentally destructive open-pit mines continue to be developed, and in Kazakhstan. Last year Kazatomprom leaped over Rio Tinto and Areva to become the world's second-largest production company behind Cameco, providing about 5,000 pounds, or 12% of global supply.

### Impact

**Tensions are increasing now.**

Joshua **Kucera**, **3/27**/2013. Totally awesome freelance journalist based in Washington, D.C. He is a regular contributor to U.S. News and World Report, Slate and EurasiaNet. “Great Game in Central Asia After Afghanistan,” The Diplomat, http://thediplomat.com/2013/03/27/the-great-game-in-central-asia-after-afghanistan/2/.

This regional tension has sharpened in recent years, and the added element of superpower rivalry raises the stakes and could possibly bring unpredictable consequences. Karimov has long mistrusted Russia and sees his partnership with the U.S. as a means of gaining superpower backing as he tries to extricate his country from its Soviet-legacy connections to Russia. In the summer of 2012, Uzbekistan formally left the CSTO after years of effectively refusing to participate in its activities.

Russia has looked with alarm at America's growing closeness with Uzbekistan, and has framed its moves in the region as a response. “Aware of America's efforts to settle in Uzbekistan, Russia is strengthening and advancing military-technical cooperation with Kyrgyzstan and Tajikistan,” wrote Russian newspaper Kommersant in November. “Moscow hopes to prevent the Americans from strengthening their positions in Central Asia,” an unnamed Russian government source told the newspaper. “It was only recently after all that Bishkek and Dushanbe flirted with Washington in the hope to lay hands on the weapons and military hardware withdrawn from Afghanistan. It would have meant American instructors and technicians. American influence with the region would have grown.” Russia has also recently revived interest in establishing some sort of military base in Osh, in southern Kyrgyzstan, aimed in part at keeping an eye on nearby Uzbekistan.

The concern from Uzbekistan's neighbors is real, but it is also being stoked by a Russia alarmed by Uzbekistan's moves to distance itself from Moscow. In particular, Uzbekistan's exit from the CSTO has Moscow panicked; it is a black eye to the nascent organization and calls into question its ability to carry out a region-wide security policy.

Russia also is motivated by a desire to weaken U.S. influence in the region. Moscow has genuine security interests in Central Asia: it legitimately fears the flow of drugs and Islamist extremism northward from Afghanistan through Central Asia into Russia. But its actions via CSTO have an ulterior motive, as well, in reestablishing the control of Central Asia that Moscow once held – at the expense of Washington’s influence. That mix of motives leads to at times contradictory approaches toward the America’s policy in the region: Russia generally supports the U.S. and NATO mission in Afghanistan, allows NATO and U.S. cargo to transit its territory, and agreed to establish a NATO logistics center in the city of Ulyanovsk in support of the mission in Afghanistan. But it opposes the U.S. military presence in Central Asia itself, consistently maneuvering to remove the U.S. air base in Kyrgyzstan, and more recently trying to counter Washington's growing ties with Tashkent.

Although Uzbekistan is throwing its lot in entirely with the U.S., Washington's position in the region is more balanced: while its ties with Uzbekistan are strengthening, it still maintains strong security-based relationships with other countries in the region too. In addition to the air base in Kyrgyzstan, the U.S. also trains and equips Kyrgyzstani and Tajikistani Special Forces. It has said that not only Uzbekistan will benefit from the leftover equipment from Afghanistan, but Kyrgyzstan and Tajikistan, as well.

**There’s a great game.**

Petar **Kurecic**, **2010**. University College of International Relations and Diplomacy, Zagreb, Croatia. “The New Great Game: Rivalry of Geostrategies and Geoeconomies in Central Asia,” HRVATSKI GEOGRAFSKI GLASNIK 72/1, 21 – 48, http://home.aubg.bg/students/DNH110/AUBG%20Classes/Spring%202012/Research%20Methods/The%20New%20Great%20Game%20over%20CA.pdf.

The paper studies rivalry of geostrategies and geoeconomies in Central Asia and the Caspian Sea region. These regions have strategic value, particularly considering oil and gas reserves, which also represent a peril to the regional security. After centuries of Russian dominance, Central Asia became a region with five independent states. The Russian influence declined in the 1990s, only to return gradually, but its rivals have shown up. The USA and China started a quest for Central Asian and Caspian Sea oil and gas. The US presence in Iraq, the US and NATO’s presence in Afghanistan, US military bases, Russian presence and military bases, China’s rising influence, Iran’s and Turkey’s proximity to the region, and military and economic alliances, show that Central Asia is an arena of great power rivalry. The balance of power, instability and struggle for control over oil and gas reserves mean that the new Great Game has started.