# Politics

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#### Debt ceiling passing but PC’s key---the impact is economic collapse

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There is a narrative in American politics that goes something like this: The White House can’t negotiate. House Republicans can’t be reasoned with. And so the country is caught between pragmatists who can’t hold their ground and radicals who can’t compromise.¶ **The last few days complicate those narratives.** The White House didn’t hold firm on their promise to let the Bush tax cuts expire for all income over $250,000. They agreed to a $450,000 threshold instead. But at the same time, they pocketed more than $600 billion in revenue, $30 billion in extended unemployment benefits and five years of stimulus tax credits without giving up any real spending cuts. ¶ Speaker John Boehner, negotiating on behalf of House Republicans, rejected the White House’s offers for a bigger deal that included big spending cuts and watched his “plan B” die on the House floor. But, with the support of many of his members, he ended up shepherding the McConnell-Biden package towards final passage. Republicans realized they couldn’t be blamed for pushing the country over the cliff. ¶ The question of who “won” the fiscal cliff won’t be answered till we know what happens when Congress reaches the debt ceiling. The White House says that there’ll be no negotiations over the debt ceiling, and that if Republicans want further spending cuts, their only chance is to hand over more tax revenue. If they’re right and they do manage to enforce a 1:1 ratio of tax hikes to spending cuts in the next deal, they’re going to look like geniuses.¶ Republicans swear they are crazy enough to push the country into default, and they promise that the White House isn’t strong enough to stand by and let it happen. If they’re right, and the White House agrees to big spending cuts absent significant tax increases in order to avert default, then Republicans will have held taxes far lower than anyone thought possible.¶ But both Republicans and Democrats can’t be right. If we take the lessons of this negotiation, here’s what will happen: The White House will negotiate **over the debt ceiling**. They’ll say they’re not negotiating over the debt ceiling, and in the end, they may well refuse to be held hostage over the debt ceiling, but the debt ceiling will be part of the pressure Republicans use to force the next deal. The White House fears default, and in the end, they always negotiate.¶ That said, the Republicans aren’t quite as crazy as they’d like the Democrats to believe. They were scared to take the country over the fiscal cliff. They’re going to be terrified to force the country into default, as the economic consequences would be calamitous. They know they need to offer the White House a deal that the White House can actually take — or at least a deal that, if the White House doesn’t take it, doesn’t lead to Republicans shouldering the blame for crashing the global economy. That deal will have to include taxes, though the tax increases could come through reform rather than higher rates.¶ The Republicans also have a problem the White House doesn’t: The public broadly believes they’re less reasonable and willing to negotiate than the Democrats are. The White House has a reputation for, if anything, being too quick to fold. They have more room to avoid blame for a default than the Republicans do. In the end, **if the White House** holds its ground, **Republicans will likely compromise** — though only after the White House has done quite a bit of compromising, too. ¶ The final moments of the fiscal cliff offered evidence that both sides see how this is going to go. In his remarks tonight, President Obama signaled he would hold firm on the debt ceiling. “While I will negotiate over many things, I will not have another debate with this Congress over whether or not they should pay the bills they’ve already racked up through the laws they have passed,” he said. And Boehner signaled that he knows tax reform will have to be part of the next deal. The post-deal press release his office sent out had the headline, “2013 Must Be About Cutting Spending and Reforming the Tax Code.” That said, the final days of the fiscal cliff, in which the deal almost broke apart a half-dozen times for a hal-dozen reasons, is a reminder that these tense, deadline negotiations can easily go awry. And so there’s a third possibility, too: That the White House is wrong about the Republicans will compromise, that the Republicans are wrong that the White House will fold, and so we really will breach the debt ceiling, unleashing economic havoc.

#### It’s top of the docket, PC is key, and it’s Obama’s sole focus

John Feehery 1-2, President of Communications and Director of Government Affairs for Quinn Gillespie and Associates, 1/2/13, “The Clock,” <http://www.thefeeherytheory.com/2013/01/02/the-clock/>

The small tax agreement passed by the House last night makes it harder for Obama to do other things with his time in the White House. ¶ That is the inevitable truth that seems lost on conservatives who opposed a deal to make permanent 98% of the Bush tax cuts. ¶ Mitch McConnell is a master at clock management, and as minority leader, his job is to make it as hard as possible for the President to enact his left-wing agenda. ¶ As I wrote yesterday, McConnell was the master strategist who decided that the Congress would deal first with taxes and then with spending. ¶ Conservative leaders (well, the ones most desperate to raise money attacking Republicans) are professionally apoplectic. They can’t believe that Republicans didn’t get any spending cuts included in this deal, after they torpedoed John Boehner’s plan which included massive spending cuts and popular tax provisions. ¶ But Plan C wasn’t designed to include spending cuts, you blithering idiots. That comes later, in the fight over the debt limit. ¶ The President has already declared that the debt limit is off the table, but of course, we all know that **he is posturing. Nothing is off the table**, and the fact of the matter is that Republicans need to come up with substantial spending cuts if they are to gain the respect of their political base. ¶ After the fight on the debt limit will come a fight on sequester. After the fight on the sequester will come a fight on the 2013 Appropriations bills. ¶ All of these fights will take the time and attention of the President himself. All of these fights will take political capital and energy and promises. By focusing on the budget issues, Republicans make it harder for the President to focus on other things, like immigration and gun control, and whatever crazy left-wing agenda items he might want to add to the list. ¶ Imagine if last night, the grand bargain came together, and Republicans and Democrats cleared up everything in one vote. The President wouldn’t have high-fived the Speaker and said, “my job is done here.” ¶ He would have moved on to gun control. He can’t do that now. Now he has to talk exclusively about the debt limit. He has to burn up political capital on an issue that dove-tails quite nicely with out-of-control spending. ¶ The clock is running out on the Obama White House, and the more time we talk about fiscal issues, the less time he has to get his left-wing agenda through the Congress.

#### Thorium causes massive backlash

Niiler 12 Eric is a health and science writer at the Washington Post. “Nuclear power entrepreneurs push thorium as a fuel,” Feb 20, http://www.washingtonpost.com/national/health-science/nuclear-power-entrepreneurs-push-thorium-as-a-fuel/2011/12/15/gIQALTinPR\_story.html?wprss=rss\_national

Although the idea of thorium power has been around for decades — and some countries are planning to build thorium-powered plants — it has not caught on with the companies that design and build nuclear plants in the United States or with the national research labs charged with investigating future energy sources.¶ **“There are small boatloads of fanatics on thorium that don’t see the downsides**,” said Dan Ingersoll, senior project manager for nuclear technology at the Oak Ridge National Laboratory in Tennessee. For one thing, he said, it would betoo expensive to replace or convert the nuclear power plants already running in this country: “A thorium-based fuel cycle has some advantages, but **it’s not compelling for infrastructure and investments.”**¶ He also pointed out that thorium would still have some radioactive byproducts — just not as much as uranium and not as long-lived — and that there is no ready stockpile of thorium in the United States. It would have to be mined.¶ Overall, he says the benefits don’t outweigh the huge costs of switching technologies. “I’m looking for something compelling enough to trash **billions of dollars of infrastructure** that we have already and I don’t see that.”¶ Thorium advocates such as Kirk Sorensen, a former NASA engineer who is now chief executive of Huntsville, Ala.-based Flibe Energy, are not deterred.¶ “We recognize this is a new and different technology, and developing it is significantly different from the existing nuclear industry,” Sorensen said. “Part of **the problem is that nuclear only means one thing in the** public and **[U.S.] government’s mind.”**¶ Thorium exists in the ground as thorium oxide and is three to four times as abundant worldwide as uranium, according to a 2005 report from the International Atomic Energy Agency. Thorium is less radioactive than uranium, and it emits alpha particles, which are less biologically harmful than uranium’s gamma particles. That makes thorium easier to store safely.¶ With an extremely high melting point (over 6,000 degrees), thorium has been used in portable gas lanterns, high-temperature ceramic products and aerospace applications. But because of its radioactivity and the development of alternative materials, most uses of the element were phased out.¶ Once a working experiment¶ Half a century ago, however, the United States was taking a serious look at thorium as a nuclear fuel. It was used at a molten-salt reactor that government scientists built and ran from 1965 to 1969 at Oak Ridge.¶ But after India detonated a nuclear bomb in 1974 with plutonium extracted from a reactor designed for non-weapons use, fears of proliferation convinced successive U.S. administrations to cut back on experimental nuclear programs. The thorium-fuel project was mostly forgotten. Instead, all subsequent nuclear plants were designed to use uranium, the fuel that powers all 104 reactors operating in the United States today.¶ Almost all the U.S. plants are at least 25 years old; some are approaching 50. With the federal government unable to come up with a permanent waste disposal site, spent fuel rods — which remain radioactive for thousands of years — are piling up at each reactor site.¶ Nevertheless, utilities have been preparing to build 20 to 30 similar reactors to replace the older ones. (Earlier this month, the Nuclear Regulatory Commission approved Atlanta-based Southern Co.’s proposal to build two such reactors in Georgia. )¶ For the past few years, Sorensen has been trying to convince them to build LFTRs instead. He posts technical documents from the Oak Ridge thorium reactor on his blog, Energy from Thorium. Last year, he left his day job at Teledyne Brown Engineering to start Flibe, the name of which is derived from the mixture of fluoride, lithium and beryllium salts used in a LFTR.¶ “We can look back to Oak Ridge,” he says, to “rebuild the capability that existed in 1974.”¶ Sorensen says a LFTR using a mixture of thorium as a fuel plus either uranium or plutonium to kick-start the reaction could produce higher core temperatures at lower pressures than steam reactors, meaning it would not need as many safety and cooling systems.¶ Even better, he says, LFTRs could be configured to consume the spent fuel that is sitting around the country at nuclear sites.¶ Other entrepreneurs are taking a different tack. McLean-based Lightbridge wants to mix thorium and uranium to slightly boost the output of existing nuclear plants. Lightbridge is helping the Russian government build such a program, said Seth Grae, the company’s president and chief executive.¶ But most U.S. nuclear energy industry executives are wary of both approaches to thorium, saying that neither utilities nor investors are eager to gamble on an unfamiliar technology.

#### Global economic crisis causes nuclear war

Cesare Merlini 11, nonresident senior fellow at the Center on the United States and Europe and chairman of the Board of Trustees of the Italian Institute for International Affairs, May 2011, “A Post-Secular World?”, Survival, Vol. 53, No. 2

Two neatly opposed scenarios for the future of the world order illustrate the range of possibilities, albeit at the risk of oversimplification. The first scenario entails the premature crumbling of the post-Westphalian system. One or more of the acute tensions apparent today evolves into an open and traditional conflict between states, perhaps even involving the use of nuclear weapons. The crisis might be triggered by a collapse of the global economic and financial system, the vulnerability of which we have just experienced, and the prospect of a second Great Depression, with consequences for **peace and democracy** similar to those of the first. Whatever the trigger, the **unlimited exercise of national sovereignty,** exclusive **self-interest** and rejection of outside interference would self-interest and rejection of outside interference would likely be amplified, **empty**ing, perhaps entirely, the half-full glass of **multilateralism**, including the UN and the European Union. Many of the more likely conflicts, such as between Israel and Iran or India and Pakistan, have potential religious dimensions. Short of war, tensions such as those related to immigration might become unbearable. Familiar issues of creed and identity could be exacerbated. One way or another, the secular rational approach would be sidestepped by a return to theocratic absolutes, competing or converging with secular absolutes such as **unbridled nationalism.**

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#### Turns any short-term investment in the aff

Malone 9/26 Scott is a Reuters writer. “Analysis: Corporate America sweats as U.S. nears fiscal cliff,” 2012, http://www.reuters.com/article/2012/09/27/us-usa-economy-fiscalcliff-idUSBRE88P1PX20120927

Top U.S. executives have less confidence in the business outlook now than at any time in the past three years - and a key reason is fear of gridlock in Washington over the fiscal deficit and tax policy. The uncertainty, coupled with slowing demand in Asia and Europe, is forcing corporate leaders to postpone decisions on major investments and hiring, and hurting sales of everything from textbooks to telephone lines. "If we don't deal with the fiscal cliff and don't deal with predictability on taxes for both citizens and business, with the rest of the world in a struggling state, this is really bad for us," John Chambers, CEO of network equipment maker Cisco Systems Inc (CSCO.O), told Reuters on Tuesday. Some 34 percent of U.S. CEOs plan to cut jobs in the United States over the next six months, up from 20 percent a quarter ago, according to a Business Roundtable survey released on Wednesday. Only 30 percent plan to raise capital spending, compared with 43 percent previously. The group's index of CEO confidence fell to its lowest point since the third quarter of 2009, when the United States had just emerged from its worst recession in 80 years. The main culprit is the fiscal cliff -- Washington's self-imposed year-end deadline to agree on a plan to shrink the federal budget or trigger $600 billion in spending cuts and higher taxes that were put in place last summer. The sharpest pain would be felt by the defense and healthcare sectors, which face direct funding cuts. But any resulting slowdown could send shockwaves across the economy.

#### The best statistical support proves – economic decline causes war

Royal 10 – Jedediah Royal, Director of Cooperative Threat Reduction at the U.S. Department of Defense, 2010, “Economic Integration, Economic Signaling and the Problem of Economic Crises,” in Economics of War and Peace: Economic, Legal and Political Perspectives, ed. Goldsmith and Brauer, p. 213-215

Less intuitive is how periods of economic decline may increase the likelihood of external conflict. Political science literature has contributed a moderate degree of attention to the impact of economic decline and the security and defence behaviour of interdependent states. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow.¶ First, on the systemic level, Pollins (2008) advances Modelski and Thompson's (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power and the often bloody transition from one pre-eminent leader to the next. As such, exogenous shocks such as economic crises could usher in a redistribution of relative power (see also Gilpin. 1981) that leads to uncertainty about power balances, increasing the risk of miscalculation (Feaver, 1995). Alternatively, even a relatively certain redistribution of power could lead to a permissive environment for conflict as a rising power may seek to challenge a declining power (Werner. 1999). Separately, Pollins (1996) also shows that global economic cycles combined with parallel leadership cycles impact the likelihood of conflict among major, medium and small powers, although he suggests that the causes and connections between global economic conditions and security conditions remain unknown.¶ Second, on a dyadic level, Copeland's (1996, 2000) theory of trade expectations suggests that 'future expectation of trade' is a significant variable in understanding economic conditions and security behaviour of states. He argues that interdependent states are likely to gain pacific benefits from trade so long as they have an optimistic view of future trade relations. However, if the expectations of future trade decline, particularly for difficult to replace items such as energy resources, the likelihood for conflict increases, as states will be inclined to use force to gain access to those resources. Crises could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states.4¶ Third, others have considered the link between economic decline and external armed conflict at a national level. Blomberg and Hess (2002) find a strong correlation between internal conflict and external conflict, particularly during periods of economic downturn. They write:¶ The linkages between internal and external conflict and prosperity are strong and mutually reinforcing. Economic conflict tends to spawn internal conflict, which in turn returns the favour. Moreover, the presence of a recession tends to amplify the extent to which international and external conflicts self-reinforce each other. (Blomberg & Hess, 2002. p. 89)¶ Economic decline has also been linked with an increase in the likelihood of terrorism (Blomberg, Hess, & Weerapana, 2004), which has the capacity to spill across borders and lead to external tensions.¶ Furthermore, crises generally reduce the popularity of a sitting government. “Diversionary theory" suggests that, when facing unpopularity arising from economic decline, sitting governments have increased incentives to fabricate external military conflicts to create a 'rally around the flag' effect. Wang (1996), DeRouen (1995). and Blomberg, Hess, and Thacker (2006) find supporting evidence showing that economic decline and use of force are at least indirectly correlated. Gelpi (1997), Miller (1999), and Kisangani and Pickering (2009) suggest that the tendency towards diversionary tactics are greater for democratic states than autocratic states, due to the fact that democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States, and thus weak Presidential popularity, are statistically linked to an increase in the use of force.¶ In summary, recent economic scholarship positively correlates economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict at systemic, dyadic and national levels.5 This implied connection between integration, crises and armed conflict has not featured prominently in the economic-security debate and deserves more attention.¶ This observation is not contradictory to other perspectives that link economic interdependence with a decrease in the likelihood of external conflict, such as those mentioned in the first paragraph of this chapter. Those studies tend to focus on dyadic interdependence instead of global interdependence and do not specifically consider the occurrence of and conditions created by economic crises. As such, the view presented here should be considered ancillary to those views.

#### Obama will play hard-ball---PC resolves their uniqueness claims

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What can we expect going forward?¶ President Obama, **having discovered that toughness works** better than premature conciliation, took a very hard line last night on the issue of the debt ceiling. Coming into the White House briefing room shortly after the House vote, he declared, “While I will negotiate over many things, I will not have another debate with Congress over whether they should pay the bills they’ve already racked up … .”¶ This, presumably, means that Obama, if necessary, will invoke his authority under the Fourteenth Amendment, which declares that debts of the United States shall not be questioned. It was not until the World War I era that the ritual of approving a debt ceiling was even asserted by Congress. This is a position long urged on Obama by Bill Clinton.¶ Yet unless Obama continues to play hardball on all fronts, the risk is that he will consent to budget cuts as the price of the next deal, at a time when the economy needs more public spending, not less. He needs not only more spine; he needs to alter the terms of debate, rejecting not only the ideology of Republican right but the economic idiocy of the corporate center, which has persuaded elite opinion (including at the White House) that recovery requires debt reduction.¶ When I was a student, one movie that totally grabbed me was a classic by the absurdist director Luis Buñuel called The Exterminating Angel. In the film, people at a dinner party find, incomprehensibly, that they are unable to leave the room. They end up staying for days, gripped by some kind of mysterious social paralysis. The movie ends with several sheep invading the room, which I took to be Buñuel’s surreal comment on herd behavior.¶ The behavior of political elites on the subject of deficits, debts, and the economic recovery requires some combination of Buñuel and his contemporary John Maynard Keynes to do it justice. With the economy stuck at about $1.5 trillion below its potential and at least 15 million people unable to find full-time jobs, the debate is fixated on the question of how to cut the deficit instead of how to restore jobs, wages, and output. Until President Obama changes the subject to the real issue of economic recovery, he will be mired in an enervating form of retrench warfare where budget cuts are inevitable.¶ He needs to isolate Republicans on the issue of how to produce a recovery, just as he did on taxes. Here again, **public opinion is on his side** if he will lead. Cutting Social Security and Medicare are no more popular than raising taxes on the middle class.

#### Debt ceiling first

Flaherty 1/6 Anne is an AP writer. “Debt Ceiling Debate: Lawmakers Dig In Heels,” 2013, http://www.huffingtonpost.com/2013/01/06/debt-ceiling-debate\_n\_2421517.html

Lawmakers said debt talks will consume Congress in the coming weeks, likely delaying any consideration of an expected White House proposal on gun restrictions in the wake of the Connecticut school shooting.

#### Hagel won’t be a fight---DC press analysis doesn’t reflect reality

Josh Marshall 1-6, editor of Talking Points Memo, 1/6/13, “Crack Pipe,” http://talkingpointsmemo.com/archives/2013/01/crack\_pipe\_1.php

I’m watching a lot of neoconservative policy activists and a lot of people in the press telling me that it’s a very up in the air thing whether Chuck Hagel gets confirmed as Secretary of Defense. These folks should stop smoking crack. Because crack isn’t good for you.

Maybe I’m just out of the loop because I’m not reporting aggressively myself. Or maybe — I think much more likely — I’m not in the same crack den with the rest of these good people so the air I’m breathing is clear and I know what is happening in the real world.

Will Republicans uniformly oppose a former member of their own caucus when the issues at stake are complaints that look comical when held up to the light of day? One who was one of the top foreign policy Republicans in the Senate? I doubt it.

Will Democratic senators deny a reelected President Obama his choice for one of the top four cabinet positions when he is quite popular and the expansion of their caucus is due in significant measure to his popularity? Please. Chuck Schumer will oppose the President? Not likely.

So I look forward to Republican crocodile tears on gay rights — seemingly in large part over something Hagel said in the 90s in support of the Senate Republican caucus’s efforts to pillory an openly gay nominee. And yes, perhaps it really will pave the way for a LGBT upsurge of support for Richard Grinnell for President in 2016. But I doubt it.

Otherwise, assuming President Obama nominates him tomorrow, get ready for a Hagel Pentagon.

#### Appointments don’t drain PC---empirics

Hutchinson 12/2 Earl Ofari, "Rice Nomination Fight Won't Drain President Obama's Political Capital, 2012, www.eurweb.com/2012/12/rice-nomination-fight-wont-drain-president-obamas-political-capital/

It won’t hurt him. All presidents from time to time face some backlash from real or manufactured controversies by opponents over a potential nominee to the Supreme Court, a cabinet or diplomatic post. In 2008, Obama faced backlash when he nominated Eric Holder as Attorney General. A pack of GOP senators huffed and puffed at Holder for alleged transgressions involving presidential pardons he signed off on as Clinton’s Deputy Attorney General. In the end he was confirmed. The mild tiff over Holder didn’t dampen, diminish, or tarnish Obama in his hard pursuit of his major first term initiative, namely health care reform.¶ This was true three years earlier when then President Bush nominated Condoleezza Rice for Secretary of State. Rice was slammed hard by some Democratic senators for being up to her eyeballs in selling the phony, conniving Bush falsehood on Iraq’s weapons of mass destruction. The threat to delay Rice’s confirmation in the Senate quickly fizzled out, and she was confirmed. This did not distract or dampen Bush in his pursuit of his key initiatives. There was not the slightest inference that in nominating Rice, and standing behind her in the face of Democrats grumbles about her would threaten his push of his administration’s larger agenda items.¶ Susan Rice will continue to be a handy and cynical whipping person for the GOP to hector Obama. But the political reality is that the legislative business that Congress and the White House must do never has been shut down by any political squabble over a presidential appointee. The fiscal cliff is an issue that’s too critical to the fiscal and economic well-being of too many interest groups to think that Rice’s possible nomination will be any kind of impediment to an eventual deal brokered by the GOP and the White House.¶ The Rice flap won’t interfere in any way with other White House pursuits for another reason. By holding Rice hostage to a resolution of the fiscal cliff peril and other crucial legislative issues, the GOP would badly shoot itself in the foot. It would open the gate wide to the blatant politicizing of presidential appointments by subjecting every presidential appointment to a litmus test, not on the fitness of the nominee for the job, but on whether the appointee could be a bargaining chip to oppose a vital piece of legislation or a major White House initiative. This would hopelessly blur the legislative process and ultimately could be turned against a future GOP president. This is a slippery slope that Democrats and the GOP dare not risk going down.¶ Rice will not be Obama’s only appointment at the start of his second term. He will as all presidents see a small revolving door of some cabinet members and agency heads that will leave, and must be replaced. There almost certainly will be another Obama pick that will raise some eyebrows and draw inevitable fire from either the GOP or some interests groups. Just as other presidents, Obama will have to weigh carefully the political fall-out if any from his pick. But as is usually the case the likelihood of any lasting harm to the administration will be minimal to nonexistent.

#### All energy legislation will require PC to break gridlock

Whatley 10/30 Michael is the executive VP of the Consumer Energy Alliance. “Energy in the Next Four (Political) Years,” 2012, http://rigzone.com/iphone/article.asp?a\_id=121729

Should Republicans hold the House, and Democrats hold the Senate, **it will make it** exceedingly difficult **for any meaningful energy legislation to pass** in the next two years, regardless of who wins the Presidency. Smaller legislative measures, including requisite funding for federal agencies, are likely, but a bipartisan movement to pass a comprehensive energy package is unlikely.¶ For the Obama administration, partisan gridlock in Congress **would require the President to push his energy agenda through** regulation. Potential items of his docket include efforts to expand federal regulation over hydraulic fracturing and to create new incentives or mandates for alternative fuel consumption, such as a low carbon fuel standard.¶ For a Romney administration, any substantive changes to our current regulatory structure, especially as it relates to public lands, would require Congressional approval, something that a **bitterly divided Congress will be loath to provide**. Similarly, incentives for renewable energy programs and tax credits would be up to the discretion of the Congress and its budgeting process. However, a Romney administration would likely expand leasing opportunities in the federal offshore and public lands for oil and natural gas development.

#### No turns---nuclear lacks political constituency---support is small and opposition is huge

Skutnik 10/20 Steve is a nuclear physicist and Asst. Professor of Nuclear Engineering @ University of Tennessee. “Does nuclear lack a natural constituency?” 2012, Neutron Economy, <http://neutroneconomy.blogspot.com/2012/10/does-nuclear-lack-natural-constituency.html>

The superficial answer commonly given in response to this of course would be that fossil interests (and perhaps, by proxy, renewables, if one is the conspiratorial type) represent tremendous financial interests, and thus, political interests. But this explanation only goes so far - particularly when one looks to polling data as to how energy preferences break down within the public.¶ Rather, I am inclined to wonder if this is a case of where nuclear, unlike fossil and rewnewables, lacks a well-defined constituency - being relegated to a tepid, forgotten center (where it enjoys broad, **lukewarm support** by many **and** hot, focused opposition at the fringe). It is perhaps progress (and a keen awareness of the urgency brought on both by the need for action on climate change and developing abundant future energy resources) that nuclear is no longer seen as ideologically confined to the rightward end of the political spectrum; but instead I am forced to once again go back to the hypothesis that we are seeing energy as a marker for pre-existing cultural affinities.¶ To wit - for all of the talk by both Romney and Obama on developing coal resources, does either seriously expect to see any significant new developments in coal-fired electrical capacity? (A telling example of the direction of things to come is TVA's shuttering of the John Sevier coal plant, which was recently replaced by a combined-cycle natural gas facility. In a single year, TVA's coal portfolio has shifted down from around 50% to 30% - with the gap entirely being made up for by gas.) Even if one does believe new coal-fired generation will emerge, does either seriously believe this will emerge when projected costs for so-called "clean coal" outstrip the production costs of new nuclear?¶ Or, more importantly, if support for nuclear was more than token for both candidates, why is it exactly than in Romney's 21-page energy plan, the proposals for nuclear come down to a single bullet point: "Revitalize nuclear power by equipping the NRC to approve new designs and to license approved reactor designs on approved sites within two years." (How this will be accomplished is left as an exercise for the reader). Note the striking absence of any mention of small modular reactors and their potential to revitalize export-driven manufacturing in the U.S., or even such basic measures as reforming antiquated laws restricting vitally-needed foreign investment in new domestic nuclear capacity - nuclear, it would seem, is an afterthought. Nor is it any better with Obama, where his campaign's "issues" site for energy lists oil exploration and (inexplicably) clean coal (one gets the feeling we're actually back in the Bush years), but fails to even mention nuclear.¶ The very fact that the Romney campaign would speak effusively of renewables as an improbable part of a vague, "all-of-the-above" energy strategy while Obama bafflingly promotes both fossil exploration and dubious "clean coal" technology (see also, vaporware) point to an effort to reach voters not on the rational basis of carefully-considered energy policy, but rather, in a word, pandering. (Yes, quel surprise indeed coming from a political campaign).¶ So why is this? Because again, by and large for the public, I am largely convinced that support for particular energy sources comes not from their practical value but from what these represent. It is immaterial as to whether availability and diffusivity inherently limit the ability of renewables to produce electricity at the large, consistent scales required to power modern civilization - because these sources, at their core, represent aspirational goods which somehow magically disconnect environmental consequences from energy. Fossil resources represent abundance - an energy abundance which can be found here at home, supporting an economic fantasy of "energy independence" powered by domestic, low-cost energy sources (to which environmental concerns are ancillary).¶ What brings this charade crashing down is the dissonance with how each of these sides deals with the issue of nuclear. If the latter camp truly cared about abundance, nuclear would plausibly be of co-equal priority - uranium resources are relatively abundant in the U.S., and most of the uranium it imports are from friendly countries like our neighbors to the north. Further, nuclear is relatively cheap - particularly once plants are built - and those plants can supply energy for entire generations at tiny marginal costs. Thus, if it was simply about energy abundance, one would expect more than simple tepid support - one should see more folks like Lamar Alexander exhorting the country to double our current fleet by building a hundred new nuclear reactors. But they don't. Instead we are given platitudes extolling the virtues of abundant natural gas and coal - not uranium.¶ Meanwhile, as to the former crowd that values minimizing environmental impacts, it is immaterial as to what backs up intermittent sources (i.e., it's the same resources in which they claim they are attempting to displace). If the plausible goal were to eliminate CO2 and air pollution as much as possible, one would think that nuclear, given its high capacity and availability, would be at the vanguard of the movement. And yet it is shockingly absent - instead, once again, natural gas and ephemeral promises of "clean coal" (which, in fairness, is probably more about a cynical electoral sop to coal-producing states than it is a serious policy proposal) take the fore. Constantly we hear from these same people theoretically devoted to the cause of creating a clean energy future about the virtue and necessity of natural gas as a "bridge" fuel - as if carbon-free nuclear energy simply did not exist. (Or as if natural gas did not pose a far more substantial risk in terms of deaths per unit energy produced).¶ What nuclear seems to lack here is the existence of a natural constituency Again, look at what a rational examination of the expressed interests of our two major constituencies above should theoretically produce - nuclear, by all accounts, should be a hands-down consensus winner. Yet instead it is relegated to scarcely a mention in high-profile debates.¶ Again, it is far better for nuclear not to exist solely in the thrall of one ideological pole, given the ease at which it can be marginalized on a partisan basis. But perhaps the bigger issue now is that nuclear, enjoying a broad but shallow public consensus, finds itself politically homeless.

#### Obama’s Velcro---only blame sticks to him---means winners lose---healthcare proves

Nicholas & Hook 10 Peter and Janet, Staff Writers---LA Times, “Obama the Velcro president”, LA Times, 7-30, http://articles.latimes.com/2010/jul/30/nation/la-na-velcro-presidency-20100730/3

If Ronald Reagan was the classic Teflon president, Barack **Obama is made of Velcro**.¶ Through two terms, Reagan eluded much of the responsibility for recession and foreign policy scandal. In less than two years, Obama has become **ensnared in blame**.¶ Hoping to better insulate Obama, White House aides have sought to give other Cabinet officials a higher profile and additional public exposure. They are also crafting new ways to explain the president's policies to a skeptical public.¶ But Obama remains **the colossus of his administration** — to a point where trouble anywhere in the world is often his to solve.¶ The president is on the hook to repair the Gulf Coast oil spill disaster, stabilize Afghanistan, help fix Greece's ailing economy and do right by Shirley Sherrod, the Agriculture Department official fired as a result of a misleading fragment of videotape.¶ **What's not sticking to Obama is a legislative track record that his recent predecessors might envy. Political dividends from passage of a healthcare overhaul or a financial regulatory bill have been fleeting.¶** Instead, voters are measuring his presidency by a more immediate yardstick: Is he creating enough jobs? So far the verdict is no, and that has taken a toll on Obama's approval ratings. Only 46% approve of Obama's job performance, compared with 47% who disapprove, according to Gallup's daily tracking poll.¶ "I think the accomplishments are very significant, but I think most people would look at this and say, 'What was the plan for jobs?' " said Sen. Byron L. Dorgan (D-N.D.). "The agenda he's pushed here has been a very important agenda, but it hasn't translated into dinner table conversations."

#### Can’t win on energy

Eisler 12 Matthew is a Researcher @ the Chemical Heritage Foundation. “Science, Silver Buckshot, and ‘All of The Above’” April 2, http://scienceprogress.org/2012/04/science-silver-buckshot-and-%E2%80%9Call-of-the-above%E2%80%9D/

Conservatives take President Obama’s rhetoric at face value. Progressives see the president as disingenuous. No doubt White House planners regard delaying the trans-border section of the Keystone XL pipeline and approving the Gulf of Mexico portion as a stroke of savvy realpolitik, but one has to wonder whether Democratic-leaning voters really are as gullible as this scheme implies. And as for the president’s claims that gasoline prices are determined by forces beyond the government’s control (speculation and unrest in the Middle East), it is probably not beyond the capacity of even the mildly educated to understand that the administration has shown little appetite to reregulate Wall Street and has done its part to inflate the fear premium through confrontational policies in the Persian Gulf. Committed both to alternative energy (but not in a rational, comprehensive way) and cheap fossil fuels (but not in ways benefiting American motorists in an election year), President **Obama has accrued** no political capital

**from his energy policy from either the left or the right** by the end of his first term.¶ The president long ago lost the legislative capacity for bold action in practically every field, including energy, but because the GOP’s slate of presidential candidates is so extraordinarily weak in 2012, he may not need it to get re-elected. At least, that is the conventional wisdom in Democratic circles. Should President Obama win a second term, Congress is likely to be **even more hostile** than in his first term, as in the Clinton years. And as in the Clinton years, that will probably mean four more years of inaction and increased resort to cant.

#### New nuclear initiatives sap tons of PC---the link independently turns the case---reject ev from before 2011

Trembath 11 Alex Trembath is a policy associate in the Energy and Climate Program at Breakthrough. “Nuclear Power and the Future of Post-Partisan Energy Policy,” 2/4, Americans for Energy Leadership, <http://leadenergy.org/2011/02/the-nuclear-option-in-a-post-partisan-approach-on-energy/>

If there is one field of the energy sector for which certainty of political will and government policy is essential, **it is nuclear** power. High up front costs for the private industry, extreme regulatory oversight and public wariness necessitate a committed government partner for private firms investing in nuclear technology. In a new report on the potential for a “nuclear renaissance,” Third Way references the failed cap-and-trade bill, delaying tactics in the House vis-a-vis EPA regulations on CO₂, and the recent election results to emphasize the **difficult current political environment for advancing new nuclear policy.** The report, “The Future of Nuclear Energy,” makes the case for political certainty:¶ “It is difficult for energy producers and users to estimate the relative price for nuclear-generated energy compared to fossil fuel alternatives (e.g. natural gas)–an essential consideration in making the major capital investment decision necessary for new energy production that will be in place for decades.”¶ Are our politicians willing to match the level of certainty that the nuclear industry demands? Lacking a suitable price on carbon that may have been achieved by a cap-and-trade bill removes one primary policy instrument for making nuclear power more cost-competitive with fossil fuels. The impetus on Congress, therefore, will be to shift from demand-side “pull” energy policies (that increase demand for clean tech by raising the price of dirty energy) to supply-side “push” policies, or industrial and innovation policies. Fortunately, there are signals from political and thought leaders that a package of policies may emerge to incentivize alternative energy sources that include nuclear power.¶ One place to start is the recently deceased American Power Act, addressed above, authored originally by Senators Kerry, Graham and Lieberman. Before its final and disappointing incarnation, the bill included provisions to increase loan guarantees for nuclear power plant construction in addition to other tax incentives. Loan guarantees are probably the most important method of government involvement in new plant construction, given the high capital costs of development. One wonders what the fate of the bill, or a less ambitious set of its provisions, would have been had Republican Senator Graham not abdicated and removed any hope of Republican co-sponsorship.¶ Butthat was last year**. The** **changing of the guard in Congress makes this a** whole different game, and the once feasible support for nuclear technology on either side of the aisle must be reevaluated. A New York Times piece in the aftermath of the elections forecast **a difficult road ahead for nuclear energy policy**, but did note Republican support for programs like a waste disposal site and loan guarantees.¶ Republican support for nuclear energy has roots in the most significant recent energy legislation, the Energy Policy Act of 2005, which passed provisions for nuclear power with wide bipartisan support. Reaching out to Republicans on policies they have supported in the past should be a goal of Democrats who wish to form a foundational debate on moving the policy forward. There are also signals that key Republicans, notably Lindsey Graham and Richard Lugar, would throw their support behind a clean energy standard that includes nuclear and CCS.¶ Republicans in Congress will find intellectual support from a group that AEL’s Teryn Norris coined “innovation hawks,” among them Steven Hayward, David Brooks and George Will. Will has been particularly outspoken in support of nuclear energy, writing in 2010 that “it is a travesty that the nation that first harnessed nuclear energy has neglected it so long because fads about supposed ‘green energy’ and superstitions about nuclear power’s dangers.”¶ The **extreme reluctance of Republicans to cooperate with Democrats** over the last two years is only the first step, as any legislation will have to overcome Democrats’ traditional opposition to nuclear energy. However, here again there is reason for optimism. Barbara Boxer and John Kerry bucked their party’s long-time aversion to nuclear in a precursor bill to APA, and Kerry continued working on the issue during 2010. Jeff Bingaman, in a speech earlier this week, reversed his position on the issue by calling for the inclusion of nuclear energy provisions in a clean energy standard. The Huffington Post reports that “the White House reached out to his committee [Senate Energy] to help develop the clean energy plan through legislation.” This development in itself potentially mitigates two of the largest obstacle standing in the way of progress on comprehensive energy legislation: lack of a bill, and lack of high profile sponsors. Democrats can also direct Section 48C of the American Recovery and Reinvestment Act of 2009 towards nuclear technology, which provides a tax credit for companies that engage in clean tech manufacturing.¶ Democrats should not give up on their policy goals simply because they no longer enjoy broad majorities in both Houses, and Republicans should not spend all their time holding symbolic repeal votes on the Obama Administration’s accomplishments. The lame-duck votes in December on “Don’t Ask, Don’t Tell,” the tax cut deal and START indicate that at least a few Republicans are willing to work together with Democrats in a divided Congress, and that is precisely what **nuclear energy** needs moving forward. It **will require an aggressive push from the White House**, and a concerted effort from both parties’ leadership, but the road for forging bipartisan legislation is not an impassable one.

#### Debt ceiling’s before immigration

LA Times 12/31 Kathleen Hennessey and David Lauter. “Obama wins 'fiscal cliff' victory, but at high cost,” 2012, http://articles.latimes.com/2012/dec/31/nation/la-na-fiscal-cliff-analysis-20130101

The agreement to freeze income tax rates for most Americans while allowing them to rise for the wealthiest dealt only with the most pressing elements of the fiscal storm Congress and the president created last year. A newly elected Congress will begin work in a few days and immediately will need to start negotiating yet another deal. That next fight will be aimed at further reducing the long-term deficit and raising the debt ceiling before the government runs out of money to pay its bills — a deadline that will hit sometime in late February or March.¶ The persistent battle over spending, which already has consumed Washington for two years, threatens to block Obama's other major legislative priorities, including immigration reform and gun control.

## 2NR

#### If Obama bothers with it he’ll segment the debate to avoid trouble

Munro, 12/31 (2012, Neil, “Obama promises new immigration plan but keeps endgame close to his vest,” <http://dailycaller.com/2012/12/31/obama-promises-new-immigration-plan-but-keeps-endgame-close-to-his-vest/>

12/31/2012)

“A bunch of Democrats are not going to be supportive,” de Posada predicted. That rejection would damage Obama’s standing among Latinos in the 2014 race, he said, and help GOP outreach. De Posada said the GOP can win some sympathy among Latinos by pushing an ambitious bill that would welcome temporary migrant workers from across the United States’ southern border. In turn, that sympathy will ensure that Latinos actually listen to the GOP’s economic and social messages, he said. However, various right-of-center immigration reformers are already trying to win passage of small-scale measures that don’t include a pathway to citizenship for illegal immigrants, or invitations to new migrant workers. The small-scale bills can help American workers and high-tech employers, and also split the various ethnic, ideological and business groups now pushing for easier immigration, say the reform advocates. A comprehensive bill “will not pass, just as it didn’t last time around [and if Obama] were actually serious, he would agree to a piecemeal approach where each piece could garner sufficient support to pass,” said Rosemary Jenks, director of government relations at NumbersUSA, an immigration-reform group.

# EPSCoR CP

## 1NC

#### The State and Territorial Governments in the Department of Energy’s Experimental Program to Stimulate Competitive Research should establish a matching funds program to develop and build a Liquid Fluoride Thorium Nuclear Reactor in United States National Laboratories.

#### EPSCoR allows state collaboration with national labs on energy research

DOE, 3-16-2011, “Experimental Program to Stimulate Competitive Research,” EPSCoR, http://science.energy.gov/bes/epscor/about/

Overview: DOE EPSCoR is located in the Office of Science and assists the Office by supporting basic and applied research and development across a wide range of interdisciplinary program areas including but not limited to: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics and Nuclear Physics. It also supports research that is relevant to other DOE Program Offices, including but not limited to: the Office of Civilian Radioactive Waste Management; the Office of Electricity Delivery and Energy Reliability; the Office of Energy Efficiency & Renewable Energy; the Office of Environmental Management; the Office of Fossil Energy; the Office of Legacy Management; and, the Office of Nuclear Energy. The participation of these other programs is critical to the success of EPSCoR applications and developing understanding of these programs should be long-term objective of all EPSCoR applicants. Goals of DOE EPSCoR: a) improve the capability of designated states and territories to conduct sustainable and nationally competitive energy-related research; b) jumpstart infrastructure development in designated states and territories through increased human and technical resources, training scientists and engineers in energy-related areas; and c) build beneficial relationships between scientists and engineers in the designated states and territories with the 10 world-class laboratories managed by the Office of Science, leverage DOE national user facilities, and take advantage of opportunities for intellectual collaboration across the DOE system. Through broadened participation DOE EPSCoR seeks to provide the most comprehensive network of energy-related research across the nation. DOE EPSCoR requests an annual budget of approximately $8 million per year and posts Funding Opportunity Announcements (FOAs) every one to two years. Program Priorities: DOE EPSCoR is a science-driven, merit-based program that supports basic and applied research activities spanning the broad range of science and technology programs within DOE. In addition, the program places high priority on increasing the number of scientists and engineers in energy-related areas. The program places particular emphasis and importance of collaboration with young faculty, postdoctoral associates, graduate and undergraduate students with scientists from the DOE national laboratories where unique scientific and technical capabilities are present. The program supports the most meritorious proposals based on merit and peer review. To maximize the effectiveness of the program, the development of the science and engineering resources component is closely coupled with the research part of the program.

## 2NC

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

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

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

#### DOE EPSCoR allows states to work with national labs

Timothy Fitzsimmons, PhD, 2012, “Department of Energy,” EPSCoR/IDEA Foundation, http://www.epscorideafoundation.org/about/agency/doe/

The Department of Energy’s Experimental Program to Stimulate Competitive Research (DOE EPSCoR) was established by Section 2203 of the Energy Policy Act of 1992 (P.L. 102-486). DOE EPSCoR enhances the capability of 25 eligible states and Puerto Rico to conduct sustainable and nationally competitive energy-related research, increase the number of competitive scientists and engineers in energy-related areas, and build beneficial relationships between designated states and territories and the 10 world-class laboratories managed by the Office of Science, leveraging DOE national user facilities and intellectual collaboration. The DOE EPSCoR effort to develop science and engineering research infrastructure and human resources enables the states to contribute to the current and future energy-related needs.

#### Yucca is safe --- extensive natural and engineered barriers

Jay Lehr 9, Ph.D., science director of The Heartland Institute, “Yucca Mountain, Though on Hold, Would Be Very Safe, May, 2009, <http://news.heartland.org/newspaper-article/2009/05/01/yucca-mountain-though-hold-would-be-very-safe>

President Barack Obama has proposed a budget that would eliminate funding for the nearly completed **Yucca** Mountain storage facility for spent nuclear fuel. Proponents vow not to abandon the plan, and they have strong scientific reasons to support it.¶ Yucca Mountain was selected as the nation’s first repository for high-level nuclear waste because of its **many natural barriers** preventing the escape of radioactive particles. These include the mountain’s surface soils, its overall physical shape, the thick rock layers above and below the levels used for storage, and the very impermeable materials located below the area’s deep water table.¶ In addition to these natural barriers, many redundant systems would be engineered into the storage facility to ensure individuals living near the site—**which is 11 miles from the nearest residence**—would receive no more than **an insignificant** one additional millirem of radiation per year

.¶ Negligible Radiation Addition¶ A millirem is a measurement of radiation dose absorbed by the human body. The average American receives 360 millirems per year from a variety of natural sources, such as rocks and soil, radon gas emitted from the Earth’s crust, and cosmic rays from outer space. Some locations in the United States yield twice that annual dose to residents.¶ Manmade sources such as medical and dental procedures, television sets, and computer screens also transmit radiation. A typical chest x-ray results in 10 millirems of radiation, and three hours of watching television each day amounts to one millirem per year. Smoking one-and-a-half packs of cigarettes a day results in an additional 1,300 millirem each year.¶ Engineered Safety¶ To keep the radiation contribution from Yucca Mountain to a paltry single millirem per year, scientists and engineers have devised the engineered barrier system. It includes **containment tunnels 1,000 feet below Yucca** Mountain**’s** surface and titanium drip shields to prevent rock or water from falling on the highly fortified waste containers. The **containers are double-shelled and corrosion-resistant to eliminate the possibility of rupture.**¶ **The waste itself is solid, making the escape of radioactive particles into the natural environment even more unlikely**. The robust waste packages, which are to be partly surrounded by crushed volcanic rock, are expected to resist corrosion in the environment inside Yucca Mountain **for hundreds of thousands of years because of these combined natural and manmade barriers.**¶ Projected Future¶ When designing systems intended to last longer than recorded human history, scientists and engineers must consider the possibility that one or more barriers, natural or engineered, may not perform as expected, which is why the facility will contain many redundant features. Projecting what will happen to this first-of-a-kind facility over thousands of years is indeed a daunting task—one that already has consumed 30 years of planning and experimentation.¶ The Nuclear Regulatory Commission requires the U.S. Department of Energy to use a computer model—the Total System Performance Assessment—to project how the Yucca Mountain repository will perform over time under normal conditions and during special events such as earthquakes and volcanic eruptions. Using huge amounts of data and computer power, scientists believe they can calculate how well and how long the repository can keep the nuclear materials isolated from the environment while the radiation levels of the waste naturally decline over hundreds of thousands of years.¶ **The scientists predict exposure will not exceed one millirem per year as far out as 720,000 years**, which is certainly a comfort to us all.

#### Scientific consensus

Jay Lehr 9, Ph.D., science director of The Heartland Institute, “Yucca Mountain Site Ideal for Spent Nuclear Fuel,” April, 2009, <http://news.heartland.org/newspaper-article/2009/04/01/yucca-mountain-site-ideal-spent-nuclear-fuel>

Spent nuclear fuel and high-level radioactive waste have been accumulating in the United States for nearly 60 years, when nuclear materials were first used to produce electricity and to develop nuclear weapons. Waste that was planned for disposal at the Yucca Mountain storage facility in Nevada resides instead in temporary storage at 121 sites in 39 states.¶ **After decades of scientific study, it is clear no legitimate safety issues preclude opening Yucca** Mountain for the storage of spent nuclear fuel.¶ Broad Yucca Mountain Support¶ Congress in 1987 directed the U.S. Department of Energy (DOE) to study Yucca Mountain, Nevada for the feasibility of constructing a deep underground geologic repository for nuclear waste. DOE made favorable findings regarding the proposed site, and Congress in 2002 approved construction of a permanent nuclear waste repository under Yucca Mountain.¶ In June 2008 DOE submitted an application to the U.S. Nuclear Regulatory Commission for a license to construct a repository at Yucca Mountain. With this application the DOE’s Office of Civilian Radioactive Waste Management moved forward in meeting its congressionally mandated directive to develop, build, and operate a deep underground facility that will safely isolate spent nuclear fuel and high-level radioactive waste for hundreds of thousands of years to come.¶ The license application is the **culmination of more than two decades of expert scientific research and engineering by more than 2,000 scientists and engineers** working at government and university laboratories.

# SMR CP

## 1NC

#### TEXT: The United States Federal Government should reduce restrictions on the development and licensing of and provide financial incentives for the development of small modular light-water reactors.

#### The CP jumpstarts US SMRs

Freed et al 10 Josh, Director of the Third Way Clean Energy Program, Elizabeth Horwitz, Policy Advisor at Third Way’s Clean Energy Program, and Jeremy Ershow, formerly a Policy Advisor at Third Way, September, "Thinking Small On Nuclear Power", content.thirdway.org/publications/340/Third\_Way\_Idea\_Brief\_-\_Thinking\_Small\_On\_Nuclear\_Power.pdf

THE PROBLEM¶ We don’t have sufficient clean energy technologies to meet our baseload electricity and manufacturing energy needs. Currently, 50% of electricity in the United States comes from coal,3 with few clean alternatives for baseload energy. Moreover, almost 100% of the heat that drives manufacturing processes is supplied by fossil fuels,4 and no clean energy option currently exists. Unless new, clean technologies are brought on-line to supply small-scale baseload electricity and industrial process heat, we won’t be able to achieve a comprehensive shift to clean energy.¶ Our baseload clean power options are one-size-fits-all.¶ Nuclear power is the sole carbon-free electricity source that is both scalable and capable of meeting baseload power needs. But the only reactors now on the market are large enough to generate power for 750,000-1.2 million households.5 These reactors work very well for the larger electric utilities that own them, as well as for the small utilities and coops that partner with them, and they enable producers to benefit from the distribution of large amounts of power across the grid.¶ Large reactors are a critical clean energy solution for much of the nation, which is densely populated and has heavy and growing demand for electricity. They are not always the best option for smaller power producers, which provide electricity to over 41 million consumers in the United States, and each serves only several thousand customers.6 Small utilities and military bases do not always have the demand for electricity, the capital, the access to water, or the available land to build a new nuclear power plant. Without another baseload electricity option, these utilities or other electricity producers have little choice but to rely on fossil fuels.¶ We have no clean energy source to supply manufacturing process heat. Manufacturing is a heat-intensive process requiring a lot of generated energy; consider the image of the smelting process used in the steel industry.7 Similar quantities of heat are needed for the production of plastics or other chemical manufacturing, or the forging of molten metal into component parts of automobiles, building structures, and windmills.¶ Yet despite the ubiquity of energy-intensive industries, we currently have no clean energy source deployed that can supply direct heat for industrial processes.¶ Instead, manufacturers are left to choose among fossil fuels which generate high emissions and air pollution and are susceptible to commodity price fluctuations. Such price fluctuations not only deny industry stable or predictable energy costs, they also raise the danger of domestic companies being undercut by foreign competitors whose governments subsidize fossil fuels.¶ THE SOLUTION¶ Help bring small, modular nuclear reactors to market.¶ The imperative of creating more diverse clean energy applications has spawned the design of several small reactor technologies which will enable a wide range of new clean energy uses. Known as SMRs, they vary between 1/20th and 1/4th the size of large reactors.8 There are two streams of development on SMRs—those based on the same concept as existing large light water reactors, and advanced reactors of varying design intended to provide new kinds of capabilities.¶ Light water SMRs have the scale and flexibility to provide a range of amounts of baseload power. They can incrementally expand capacity at an existing power plant or add new capacity at U.S. military installations that need independence from the grid.9 SMRs are financially viable for many utilities, with costs in the hundreds-of-millions of dollars per reactor.10 Because of the power conversion system of these reactors, they can be cost-effectively cooled by air rather than water. As a result, SMRs can supply cheaper baseload clean energy to arid cities in the West, like Denver or Las Vegas.11 And because they can fit into a small structure and be sized to match the capacity of existing electrical infrastructure, SMRs provide a viable path to retrofitting old power plants with clean energy.12 Advanced reactors could open the door to intriguing new possibilities. Some advanced SMRs are being designed to supply heat directly to industrial users, as well as electricity.13 This would enable large manufacturers across industries to replace fossil fuels with clean energy. Micro-reactors could be used in remote locations or under circumstances where a self-sufficient energy source is needed for a limited period of time. Others could convert existing nuclear waste into electricity, dramatically reducing problems of waste storage.14¶ Support commercialization of SMRs near ready for deployment.¶ Several U.S. companies are in the advanced stages of developing small reactors that adapt existing technology to produce smaller amounts of baseload electricity.15 These technologies are nearly ready for deployment. Final decisions about design, siting, and regulatory approval could be made within the next five years.16 The federal government can take several steps to help make this possible.¶ First, economic barriers to entry must be lowered. For first movers, costs of licensing, design and regulatory approval will be comparable to those of the larger reactors because existing regulations have not yet been tailored to suit new designs. As the Nuclear Regulatory Commission (NRC) gains expertise in evaluating SMRs, and as economies of scale develop, these costs will decrease. Until this happens, the Department of Energy’s new cost-sharing program for near-term licensing and deployment of light water SMRs will help reduce some of the financial impact.17[i] The NRC also needs to continue its commitment to allocate sufficient resources and build the expertise necessary to evaluate and license SMRs in a timely fashion.¶ The Department of Energy (DOE) and Department of Defense (DOD) can also prime the market pump by serving as a buyer of first-of-a-kind technologies. This could include deploying SMRs on DOE-owned sites, many of which are already zoned to support nuclear power plants,18 and appropriate DOD facilities in the United States. DOD, the largest single energy consumer in the U.S., comprises 78% of federal energy use, and is the most significant energy consumer in several metropolitan areas.19 DOE should also work closely with the private sector to develop standardized designs, with the goal of achieving demonstration and licensing within a decade.20¶ The potential market for SMRs is global. As we note in “Getting Our Share of Clean Energy Trade,” whichever country emerges as the market leader could dominate a good part of the $6 trillion global energy market.21 The U.S. could seize that mantle and all the jobs and exports that come with it. American reactors could be deployed within a decade domestically22 and go global soon after.

## 2NC

#### US market dominance of SMRs is key to stop unsafe reactors from reaching the market.

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)

The United States and several other countries have considerable experience in building and operating small and medium power reactors. The U.S. Navy, for example, has used small power reactors since the 1950s to provide propulsion and electrical power for submarines, aircraft carriers, and some other surface warships. China, France, Russia, and the United Kingdom have also developed nuclear powered naval vessels that use small reactors. Notably, Russia has deployed its KLT-40S and similarly designed small power reactors on icebreakers and has in recent years proposed building and selling barges that would carry these types of reactors for use in sea-side communities throughout the world. China has already exported small and medium power reactors. In 1991, China began building a reactor in Pakistan and started constructing a second reactor there in 2005. In the wake of the U.S.-India nuclear deal, Beijing has recently reached agreement with Islamabad to build two additional reactors rated at 650 MWe.2¶ One of the unintended consequences of more than 30 years of sanctions on India’s nuclear program is that India had concentrated its domestic nuclear industry on building small and medium power reactors based on Canadian pressurized heavy water technology, or Candu-type reactors. Pressurized heavy water reactors (PHWRs) pose proliferation concerns because they can be readily operated in a mode optimal for producing weapons-grade plutonium and can be refueled during power operations. Online refueling makes it exceedingly difficult to determine when refueling is occurring based solely on outside observations, for example, through satellite monitoring of the plant’s operations. Thus, the chances for potential diversion of fissile material increase. This scenario for misuse underscores the need for more frequent inspections of these facilities. But the limited resources of the International Atomic Energy Agency have resulted in a rate of inspections that are too infrequent to detect a diversion of a weapon’s worth of material. 3¶ The opening of the international nuclear market to India may lead to further spread of PHWR technologies to more states. For example, last year, the Nuclear Power Corporation of India, Ltd. (NPCIL) expressed interest in selling PHWRs to Malaysia. 4 NPCIL is the only global manufacturer of 220 MWe PHWRs. New Delhi favors Southto-South cooperation; consequently developing states in Southeast Asia, sub-Saharan Africa, and South America could become recipients of these technologies in the coming years to next few decades. 5 Many of these countries would opt for small and medium power reactors because their electrical grids do not presently have the capacity to support large power reactors and they would likely not have the financial ability to purchase large reactors. ¶ What are the implications for the United States of Chinese and Indian efforts to sell small and medium power reactors? Because China and India already have the manufacturing and marketing capability for these reactors, the United States faces an economically competitive disadvantage. Because the United States has yet to license such reactors for domestic use, it has placed itself at an additional market disadvantage. By the time the United States has licensed such reactors, China and India as well as other competitors may have established a strong hold on this emerging market. ¶ The U.S. Nuclear Regulatory Commission cautioned on December 15, 2008 that the “licensing of new, small modular reactors is not just around the corner. The NRC’s attention and resources now are focused on the large-scale reactors being proposed to serve millions of Americans, rather than smaller devices with both limited power production and possible industrial process applications.” The NRC’s statement further underscored that “examining proposals for radically different technology will likely require an exhaustive review” … before “such time as there is a formal proposal, the NRC will, as directed by Congress, continue to devote the majority of its resources to addressing the current technology base.” 6 Earlier this year, the NRC devoted consideration to presentations on small modular reactors from the Nuclear Energy Institute, the Department of Energy, and the Rural Electric Cooperative Association among other stakeholders. 7 At least seven vendors have proposed that their designs receive attention from the NRC. 8¶ 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.”

#### Nuclear inevitable globally but won’t solve warming until the US develops SMR’s

Shellenberger 9/11 – et al and Ted Nordhaus—co-founders of American Environics and the Breakthrough Institute a think tank that works on energy and climate change – AND – Jesse Jenkins-Director of Energy and Climate Policy, the Breakthrough Institute (Michael, Why We Need Radical Innovation to Make New Nuclear Energy Cheap, 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, useless 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.

#### No uranium shortage---best studies prove their ev is bogus

Hoffman 10 Doug L, The Resilient Earth, "MIT Report Disputes Uranium Shortage Fallacy", October 22, www.theresilientearth.com/?q=content/mit-report-disputes-uranium-shortage-fallacy

One of the arguments used by critics of nuclear power is that there is not enough uranium to power a nuclear world for an extended time. The energy hungry world would just be trading looming oil shortages for uranium shortages, they claim. As with most anti-nuclear scare-mongering these charges are totally bogus. MIT has just released a major report on the nuclear fuel cycle that finds uranium supplies will not limit the expansion of nuclear power in the US or around the world for the foreseeable future. It suggests that nuclear power, even using today’s reactor technology with the wasteful once-through fuel cycle, can play a significant part in satisfying the world's future energy needs.¶ The MIT Energy Initiative (MITEI) report focuses on what is known as the “nuclear fuel cycle”—a concept that encompasses both the kind of fuel used to power a reactor and what happens to the fuel after it has been used. Currently, most of the world’s reactors run on newly mined uranium that has been enriched, though a few run on plutonium. After the fuel has been used it is either stored on site or disposed of underground—the “once-through” fuel cycle adopted during the Carter administration. It is possible to reprocess spent fuel, creating new reactor fuel from what would otherwise be waste.¶ The new study suggests an alternative fuel cycle utilizing an enriched uranium-initiated breeder reactor in which additional natural or depleted uranium is added to the reactor core at the same rate nuclear materials are consumed. This much simpler and more efficient self-sustaining fuel cycle produces no excess nuclear materials. Such reactors can also recover 50 times as much energy per kilogram of mined uranium as a conventional light water reactor. For more on future reactor designs see The Energy Gap.¶ The report—the latest in a series of broad-based MITEI studies of different aspects of energy—was produced by 10 faculty members, three contributing authors, and eight student research assistants, with guidance from a 13-member expert advisory panel from industry, academia, and nonprofit organizations. A summary report of the study was released on September 16. The full report, including all the appendices, will be released later this year.¶ Ernest J. Moniz, director of the MIT Energy Initiative and co-chair of the new study, says the report’s conclusion that uranium supplies will not limit growth of the industry runs contrary to the view that had prevailed for decades—one that guided decisions about which technologies were viable. “The failure to understand the extent of the uranium resource was a very big deal” for determining which fuel cycles were developed and the schedule of their development, he says.¶ “There has been very little research on the fuel cycle for about 30 years,” says Charles Forsberg, MIT research scientist in nuclear engineering and executive director of the study. “People hadn’t gone back and looked at the underlying assumptions.” What the researchers found was that, at any reasonable expected growth of nuclear power over this century, the availability of uranium will not be a constraint.

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#### US won’t cave on South Korea ENR now

Lee Byong Chul, senior fellow @ Inst. For Peace and Coop., 10-8-2012, “South Korea eschews enrichment of uranium,” Japan Times, http://www.japantimes.co.jp/text/eo20121008a4.html

South Korean officials have recently realized that the United States is likely to try to forbid them from enriching uranium and expanding their country's missile range, rather than leave these issues on the diplomatic back burner. Indeed, recent discreet talks, in which the U.S. has disregarded South Korean efforts to supplement the controversial U.S.-South Korea Nuclear Cooperation Agreement, which expires in March 2014, suggest that there are reasons to be deeply worried about the alliance's future. American negotiators — the reluctant midwives of South Korea's increasing responsibility in the field of atomic energy — remain steadfast in their opposition to South Korea's drive for improved defensive capabilities and a more advanced energy policy, despite the potential strategic benefits. U.S. nonproliferation experts do not anticipate progress on South Korea's efforts to win support for its preferred policies until the U.S. gains more leverage. Such a stalemate is not new. Nuclear talks between the two countries have often been characterized by poor communication and a lack of understanding. While South Korean officials rarely say in public what they really think, it is widely believed that U.S. policymakers have little motivation to reconcile with South Korea's government right now — they would prefer to stifle South Korea's increasingly loud demands. In the U.S.-South Korea relationship's heyday, American politicians considered the country an "extended arm of America." Such condescension may have been defensible when South Korea's military dictatorship needed America's political protection and security guarantee, but now the country is a beacon of democracy in East Asia. So, while South Koreans understand the need for compromise and cooperation, they believe that the time is right for a more balanced partnership. This belief does not imply South Korean cynicism about nonproliferation. Rather, it reflects concern about a nuclear North Korea, compounded by anxiety over the recent U.S.-Japan missile-defense accord. Given that the U.S. and South Korea have the same assessment of the intelligence regarding North Korea's nuclear progress, not to mention South Korea's vulnerability, their failure to reach a practical agreement is troubling. Former Deputy Foreign Minister Chun Yung Woo warned an American official in 2010 that revising the Nuclear Cooperation Agreement could soon become a "defining issue" in South Korea-U.S. relations, and that it was already attracting "significant amounts of negative press attention." Given South Korea's status as one of the world's top five nuclear-power producers, Chun argued, the South Korean public would not tolerate the perception that Japan was receiving preferential treatment. Indeed, rightwing leaders like Rep. Chung Mong Joon of the governing Saenuri Party have been vocal in expressing their doubts about South Korea's current denuclearization policy, suggesting that a nuclear weapons program could prevent a second war on the peninsula. The conservatives seem to believe that American nuclear protection for South Korea is a thing of the past. Despite their hawkish approach to North Korea's nuclear threats, South Korean officials know that uranium enrichment and spent-fuel reprocessing remains only a distant possibility. As a result, they are approaching negotiations skeptically, rather than emphasizing the sense of mutual obligation that should characterize the alliance. Their pessimism is hardly groundless, given that the United Arab Emirates has already signed a similar agreement with the U.S. declaring that it would not produce nuclear fuel. Indeed, South Korean negotiators appear convinced that they will not be able to make any headway with the U.S. on the issue. (To be sure, this failure may not matter much, given South Korean scientists' past declaration that they will not contribute to any nuclear program that could be used for military purposes.)

#### Failure to maintain a hardline on domestic reprocessing shatters the norm against ENR and makes credible US diplomatic pressure impossible – ensures South Korean ENR

Scott Sagan, poly sci prof @ Stanford, co-chair Global Nuclear Future Initiative, 4-18-2011, “The International Security Implications of U.S. Domestic Nuclear Power Decisions,” http://cybercemetery.unt.edu/archive/brc/20120621005012/http://brc.gov/sites/default/files/documents/sagan\_brc\_paper\_final.pdf

A similar phenomenon occurs when policy makers and scholars underestimate the international effect of the U.S. decision to abandon plutonium reprocessing in the 1970s. Skeptics claim that the fact that France and Japan, especially, went forward with their ambitious plutonium reprocessing efforts somehow demonstrates that U.S. efforts to constrain the global growth were a failure. But a more appropriate standard (but again more difficult to measure) for assessing our influence would estimate the number of states that would have developed plutonium reprocessing capabilities if the U.S. had not actively discouraged such fuel cycle activities after Jimmy Carter’s April 1997 order to cancel construction of commercial breeder reactors that employed a closed fuel cycle with plutonium reprocessing. The primary motivation behind the decision to postpone the development of this technology was a concern for the proliferation implications of the U.S. use of a closed fuel cycle. 17 The Carter administration reasoned that the decision to end reprocessing in the U.S. would have two effects: first, the U.S. could no longer act as an exporter of related technologies, limiting their availability; and second, it would create a normative change that would redefine the behavior of a responsible nuclear power state. Because we are estimating a counterfactual condition, it is not possible to measure definitively the effects of the Carter policy on the actual spread of reprocessing facilities around the world. Of the twenty-one countries that at some point in their history pursued plutonium reprocessing, ten have finished large-scale facilities and use them today: U.S., China, Israel, France, UK, India, Japan, Pakistan, Russia, and North Korea. 18 Algeria and the Czech Republic have a pilot-scale reprocessing plants, but have not moved towards further industrial development. 19 Nine countries abandoned their reprocessing programs: South Korea, Taiwan, Germany, Iraq, Italy, Argentina, Brazil, Belgium, and Yugoslavia. 20 The causes of these reversal decisions were complex, but in many of the cases U.S. diplomatic pressure was an important factor and that pressure was made more credible and acceptable because the U.S had given up its own civilian plutonium reprocessing programs. This “credibility” factor continues to be important today. South Korea is lobbying to renegotiate its agreements with the U.S. to be able to develop “pyro-processing,” a form of spent fuel reprocessing that supporters claim poses fewer proliferation risks than standard PUREX acqueous reprocessing. While this appears a challenge to the claim that the U.S. policy has had a positive influence, the very fact that the South Koreans are actively arguing that pyro-processing – unlike the PUREX process – does not separate out plutonium shows their awareness of the power of the norm against developing such technologies. While the U.S. government initially cooperated with South Korea on pyroprocessing research, Richard Stratford (Director of the Office of Nuclear Energy Affairs in the Bureau of Nonproliferation, U. S. Department of State) recently stated that the technology “moved to the point that the product is dangerous from a proliferation point of view,” and that the DOE now “states frankly and positively that pyro-processing is reprocessing.” The U.S. government position against pyro-processing in South Korea today is made more credible by the fact that the U.S. does not reprocess spend fuel for commercial purposes. 21

#### South Korean ENR causes South Korean prolif and undermines US nonprolif efforts with Iran, North Korea, and Southeast Asia

Zachary Keck 12, Assistant Editor of The Diplomat, “Rough Waters? The State of the ROK-U.S. Alliance,” The Diplomat, 8-22-12, http://thediplomat.com/flashpoints-blog/2012/08/22/rough-waters-the-state-of-the-rok-u-s-alliance/

Washington’s concerns over South Korean’s nuclear ambitions have only been heightened by Seoul’s latest campaign to acquire indigenous enrichment and reprocessing facilities, which it is proscribed from doing under a nuclear pact it signed with Washington in 1974. In contrast, the U.S. has signed agreements recognizing Japan’s reprocessing and enrichment rights as well as India’s de facto reprocessing capability. Now, with the U.S. and South Korea renegotiating the 1974 nuclear pact that will expire in 2014, South Korea has demanded that Washington acquiesce to Seoul building enrichment and processing facilities. South Korea’s immediate interest in acquiring these capabilities is not nuclear weapons but rather further expanding its nuclear energy industry at home and abroad. Nonetheless, the U.S. has rejected South Korea’s request thus far, with President Obama’s top proliferation adviser, Garry Samore, telling South Korean reporters last month, “There is no danger that Korean industry will not be able to get access to low enriched uranium," Washington has a number of reasons to oppose South Korea’s request, many of which have nothing to do with Seoul. For instance, a key component of President Obama’s nuclear security agenda is the goal of securing all nuclear materials worldwide within four years. Allowing South Korea to begin producing its own fissile materials would run counter to this goal and undercut the administration’s important successes in reducing the number of countries that possess and produce these materials. Allowing South Korea to build these facilities would also undermine the current U.S.-led campaign to persuade Iran to abandon its own enrichment facilities. It would also adversely affect a number of U.S. objectives in the Asia-Pacific, including persuading Pyongyang to surrender its own nuclear program, according Japan a heightened status among U.S. allies, and keeping Southeast Asia’s budding nuclear energy programs on their current peaceful trajectories. Under the surface, however, Washington’s opposition is likely due in part to its uncertainty over South Korea’s long-term nuclear intentions. As noted above, South Korea already has a history of covertly seeking nuclear arms. That this took place before Seoul became a democracy is cold comfort to the U.S given that South Koreans have at times been overwhelming in favor of their country acquiring nuclear weapons. In other words, at a time when the region is undergoing sweeping changes, the U.S. is increasingly less confident that South Korea will continue to rely on Washington for its security indefinitely. Indeed, there are already a number of signs that Seoul is seeking greater autonomy. These come at a time when the U.S. will need South Korea more than ever in order to properly rebalance its forces in the region.

#### New Asian prolif ensures widespread nuclear conflict --- asymmetries

Lyon 9 (December, Program Director, Strategy and International, with Australian Strategic Policy Institute, previously a Senior Lecturer in International Relations at the University of Queensland, “A delicate issue, Asia’s nuclear future”)

Deterrence relationships in Asia won’t look like East–West deterrence. They won’t be relationships of mutual assured destruction (MAD), and there will be many asymmetries among them. Regional nuclear-weapon states will articulate a spectrum of strategies ranging from existential deterrence to minimum deterrence to assured retaliation; and sometimes doctrinal statements will outrun capabilities. The smaller arsenals of Asia and the absence of severe confrontations will help to keep doctrines at the level of generalised deterrence. Extended nuclear deterrence will continue to be important to US allies in East Asia, although it is hard to imagine other Asian nuclear weapon states ‘extending’ deterrence to their clients or allies. Alagappa’s propositions contain a ‘picture’ of what a more proliferated Asia might look like. It could well remain a region where deterrence dominates, and where arsenals are typically constrained: an Asia, in fact, that falls some way short of a ‘nuclear chaos’ model of unrestrained proliferation and mushrooming nuclear dangers. An order in flux? Notwithstanding Alagappa’s more reassuring view, we shouldn’t understate the extent of the looming change from a nuclear relationship based on bipolar symmetry to a set of relationships based on multiplayer asymmetries. As one observer has noted, when you add to that change the relatively constrained size of nuclear arsenals in Asia, the likelihood of further nuclear reductions by the US and Russia, and ballistic missile defences of uncertain effectiveness, the world is about to enter uncharted territory (Ford 2009:125). Some factors certainly act as stabilising influences on the current nuclear order, not least that nuclear weapons (here as elsewhere) typically induce caution, that the regional great powers tend to get along reasonably well with each other and that the region enters its era of nuclear pre-eminence inheriting a strong set of robust norms and regimes from the earlier nuclear era. But other factors imply a period of looming change: geopolitical dynamism is rearranging strategic relationships; the number of risk-tolerant adversaries seems to be increasing; most nuclear weapons states are modernising their arsenals; the American arsenal is ageing; and the US’s position of primacy is increasingly contested in Asia. Indeed, it may be that dynamism which could most seriously undermine the Solingen model of East Asian nonproliferation. Solingen, after all, has not attempted to produce a general theory about proliferation; she has attempted to explain only proliferation in the post-NPT age (see Solingen 2007:3), when the P-5 of the UN Security Council already had nuclear weapons. In essence, though, it’s exactly that broader geopolitical order that might be shifting. It isn’t yet clear how the Asian nuclear order will evolve. It’s one of those uncertainties that define Australia’s shifting strategic environment. It’s not too hard to imagine an order that’s more competitive than the one we see now. The ‘managed system of deterrence’ The second approach to thinking about the Asian nuclear order is to attempt to superimpose upon it William Walker’s two key mechanisms of the first nuclear age: the ‘managed system of deterrence’ and the ‘managed system of abstinence’. What might those ‘systems’ look like in Asia? In Walker’s model, the managed system of deterrence included: the deployment of military hardware under increasingly sophisticated command and control; the development of strategic doctrines to ensure mutual vulnerability and restraint; and the establishment of arms control processes through which policy elites engaged in dialogue and negotiated binding agreements. (Walker 2007:436) It isn’t obvious that those core aspects of the ‘managed’ system are all central features of Asian nuclear relationships. Perhaps most importantly, it isn’t obvious that the world even has a good model for how deterrence works in asymmetric relationships. Within the US, there’s been something of a revival of interest in matters nuclear as strategic analysts attempt to reconceptualise how nuclear relationships might work in the future. Recent work on the problems of exercising deterrence across asymmetrical strategic contests, for example, suggests a number of problems: ‘In asymmetric conflict situations, deterrence may not only be unable to prevent violence but may also help foment it’ (Adler 2009:103). Some of the problems arise precisely because weaker players seem increasingly likely to ‘test’ stronger players’ threats—as part of a pattern of conflict that has emerged over recent centuries, in which weaker players have often prevailed against stronger opponents.3 If we were to look at the case study of the India–Pakistan nuclear relationship—which is grounded in an enduring strategic rivalry, and therefore not ‘typical’ of the broader nuclear relationships in Asia—it’s a moot point whether Pakistani behaviour has been much altered by the ‘deterrence’ policies of India. Indeed, the case seems to show that Pakistan doesn’t even accept a long-term condition of strategic asymmetry with India, and that it intends to use its nuclear weapons as an ‘equaliser’ against India’s larger conventional forces by building a nuclear arsenal larger than the Indian arsenal arrayed against it. That would imply, more broadly, that increasing strategic rivalries across Asia could be accompanied by efforts to minimise asymmetrical disadvantages between a much wider range of players. In short, in a more competitive Asian strategic environment, nuclear asymmetries that are tolerable now might well become less tolerable. Furthermore, we need to think about how we might ‘codify’ deterrence in Asia. In the Cold War days, the MAD doctrine tended to be reflected in arms control accords that limited wasteful spending and corralled the competition. As Walker acknowledges, the agreements were important ‘stabilisers’ of the broader nuclear relationship, but to what extent can they be replicated in conditions of asymmetry? It might be possible to codify crisis management procedures, but designing (and verifying) limitations on weapons numbers would seem to be much more difficult when the arsenals are of uneven size, and when the weaker party (perhaps both parties) would probably be relying on secrecy about the numbers and locations of weapons to minimise the vulnerability of their arsenals.

#### Extinction

Hayes 10 Peter Hayes, \*Executive Director of the Nautilus Institute for Security and Sustainable Development, AND, Michael Hamel-Green, \*\* Executive Dean of the Faculty of Arts, Education and Human Development act Victoria University (1/5/10, Executive Dean at Victoria, “The Path Not Taken, the Way Still Open: Denuclearizing the Korean Peninsula and Northeast Asia,” http://www.nautilus.org/fora/security/10001HayesHamalGreen.pdf

But the catastrophe within the region would not be the only outcome. New research indicates that even a limited nuclear war in the region would rearrange our global climate far more quickly than global warming. Westberg draws attention to new studies modelling the effects of even a limited nuclear exchange involving approximately 100 Hiroshima-sized 15 kt bombs2 (by comparison it should be noted that the United States currently deploys warheads in the range 100 to 477 kt, that is, individual warheads equivalent in yield to a range of 6 to 32 Hiroshimas).The studies indicate that the soot from the fires produced would lead to a decrease in global temperature by 1.25 degrees Celsius for a period of 6-8 years.3 In Westberg’s view:  That is not global winter, but the nuclear darkness will cause a deeper drop in temperature than at any time during the last 1000 years. The temperature over the continents would decrease substantially more than the global average. A decrease in rainfall over the continents would also follow…The period of nuclear darkness will cause much greater decrease in grain production than 5% and it will continue for many years...hundreds of millions of people will die from hunger…To make matters even worse, such amounts of smoke injected into the stratosphere would cause a huge reduction in the Earth’s protective ozone.4 These, of course, are not the only consequences. Reactors might also be targeted, causing further mayhem and downwind radiation effects, superimposed on a smoking, radiating ruin left by nuclear next-use. Millions of refugees would flee the affected regions. The direct impacts, and the follow-on impacts on the global economy via ecological and food insecurity, could make the present global financial crisis pale by comparison. How the great powers, especially the nuclear weapons states respond to such a crisis, and in particular, whether nuclear weapons are used in response to nuclear first-use, could make or break the global non proliferation and disarmament regimes. There could be many unanticipated impacts on regional and global security relationships5, with subsequent nuclear breakout and geopolitical turbulence, including possible loss-of-control over fissile material or warheads in the chaos of nuclear war, and aftermath chain-reaction affects involving other potential proliferant states. The Korean nuclear proliferation issue is not just a regional threat but a global one that warrants priority consideration from the international community.

#### A nuclear Iran causes massive proliferation and nuclear war

Kroenig 12 – Matthew Kroenig is Assistant Professor of Government at Georgetown University and a Stanton Nuclear Fellow at the Council on Foreign Relations. February 22nd, 2012, "What Will Iran Do If It Gets a Nuclear Bomb?" [www.theatlantic.com/international/archive/2012/02/what-will-iran-do-if-it-gets-a-nuclear-bomb/253430/](http://www.theatlantic.com/international/archive/2012/02/what-will-iran-do-if-it-gets-a-nuclear-bomb/253430/)

A nuclear-armed Iran would pose a grave threat to international peace and security. It would lead to further nuclear proliferation as other countries in the region sought nuclear weapons in response. As I discuss in Exporting the Bomb, a nuclear Iran would likely become a nuclear supplier and transfer uranium enrichment technology--the basis for dangerous nuclear programs--to U.S. enemies in regions around the world.¶ Iran currently restrains its foreign policy for fear of U.S. military retaliation, but with a nuclear counter-deterrent it would be emboldened to push harder, stepping up support for terrorist groups, brandishing nuclear weapons for coercive purposes, and adopting a more aggressive foreign policy. A nuclear Iran could constrain U.S. freedom of action in the Middle East by threatening nuclear war in response to major U.S. initiatives in the region.¶ A more aggressive Iran would lead to an even more crisis-prone region, and any crisis involving a nuclear-armed Iran could spiral out of control and result in a nuclear war against Israel or even, once Iran has developed the requisite delivery vehicles, the U.S. homeland.¶ In sum, a nuclear-armed Iran would pose a severe threat that Washington would have to live with as long as Iran exists as a state and has nuclear weapons, which could be decades or even longer.

## 1NR

#### Thorium requires reprocessing and doesn’t prevent proliferation.

Carlson 9—John Carlson, Director General, Australian Safeguards and Non-Proliferation Office, Introduction to the Concept of Proliferation Resistance, Excerpt from: ICNND Research Paper No. 8, Revised, 3 June 2009, http://foe.org.au/anti-nuclear/issues/nfc/power-weapons/thorium

In principle, another route for avoiding the need for enrichment is the thorium fuel cycle, but as will be discussed in section 5.C, a thorium reactor requires enriched uranium or plutonium for the initial operating cycles, and current thorium reactor types also require reprocessing. Although reprocessing is for recovery of uranium-233 rather than plutonium, U-233 can also be used in nuclear weapons. A liquid fuel reactor concept is being considered which would avoid the need for U-233 separation.¶ 5.C Thorium fuel cycle¶ The thorium fuel cycle has similarities to the fast neutron fuel cycle – it depends on breeding fissile material (U-233) in the reactor, and reprocessing to recover this fissile material for recycle.¶ Thorium is not a fissile material, so cannot be used as reactor fuel. The basis of the thorium fuel cycle is irradiation of the fertile thorium isotope, Th-232, to produce the fissile material U-233 through neutron capture (rather like production of plutonium from U‑238). The thorium fuel cycle requires separation – i.e. reprocessing – of U-233 produced in the fuel, and the recycle of U‑233 as fresh fuel.¶ Proponents argue that the thorium fuel cycle is proliferation resistant because it does not produce plutonium. Proponents claim that it is not practicable to use U-233 for nuclear weapons.¶ There is no doubt that use of U-233 for nuclear weapons would present significant technical difficulties, due to the high gamma radiation and heat output arising from decay of U-232 which is unavoidably produced with U-233. Heat levels would become excessive within a few weeks, degrading the high explosive and electronic components of a weapon and making use of U‑233 impracticable for stockpiled weapons. However, it would be possible to develop strategies to deal with these drawbacks, e.g. designing weapons where the fissile “pit” (the core of the nuclear nuclear weapon) is not inserted until required, and where ongoing production and treatment of U-233 allows for pits to be continually replaced. This might not be practical for a large arsenal, but could certainly be done on a small scale.¶In addition, there are other considerations. A thorium reactor requires initial core fuel – LEU or plutonium – until it reaches the point where it is producing sufficient U-233 for self-sustainability, so the cycle is not entirely free of issues applying to the uranium fuel cycle (i.e. requirement for enrichment or reprocessing). Further, while the thorium cycle can be self-sustaining on produced U‑233, it is much more efficient if the U-233 is supplemented by additional “driver” fuel, such as LEU or plutonium. For example, India, which has spent some decades developing a comprehensive thorium fuel cycle concept, is proposing production of weapons grade plutonium in fast breeder reactors specifically for use as driver fuel for thorium reactors. This approach has obvious problems in terms of proliferation and terrorism risks.

#### Thorium reactor would give countries a rationale to continue ENR or create plutonium – can’t control how the technology is used

FOE Australia, 2012, “Thorium and WMD proliferation risks,” http://foe.org.au/anti-nuclear/issues/nfc/power-weapons/thorium

Thorium fuel cycles are promoted on the grounds that they pose less of a proliferation risk compared to conventional reactors. However, whether there is any significant non-proliferation advantage depends on the design of the various thorium-based systems. No thorium system would negate proliferation risks altogether. Neutron bombardment of thorium (indirectly) produces uranium-233, a fissile material which can be used in nuclear weapons (1 Significant Quantity of U-233 = 8kg). The USA has successfully tested weapon/s using uranium-233 cores. India may be interested in the military potential of thorium/uranium-233 in addition to civil applications. India is refusing to allow safeguards to apply to its entire 'advanced' thorium/plutonium fuel cycle, stongly suggesting a military dimension. The possible use of highly enriched uranium (HEU) or plutonium to initiate a thorium-232/uranium-233 reaction, or proposed systems using thorium in conjunction with HEU or plutonium as fuel, present risks of diversion of HEU or plutonium for weapons production as well as providing a rationale for the ongoing operation of dual-use enrichment and reprocessing plants. Thorium fuelled reactors could also be used to irradiate uranium to produce weapon grade plutonium. Kang and von Hippel conclude that "the proliferation resistance of thorium fuel cycles depends very much upon how they are implemented". For example, the co-production of uranium-232 complicates weapons production but, as Kang and von Hippel note, "just as it is possible to produce weapon-grade plutonium in low-burnup fuel, it is also practical to use heavy-water reactors to produce U-233 containing only a few ppm of U-232 if the thorium is segregated in "target" channels and discharged a few times more frequently than the natural-uranium "driver" fuel." (Kang, Jungmin, and Frank N. von Hippel, 2001, "U-232 and the Proliferation-Resistance of U-233 in Spent Fuel", Science & Global Security, Volume 9, pp 1-32, <www.princeton.edu/~globsec/publications/pdf/9\_1kang.pdf>.)

#### Spillover – Even if they win their tech is prolif resistant, it still links – any perception of support for reprocessing will spillover to other tech, undermines US credibility, and builds international expertise that causes prolif

Thomas B. Cochran, dir. Nuclear Program @ Nat. Resources Defense Council, 3-26-2004, “Critique of “The Future of Nuclear Power: An Interdisciplinary MIT Study””, http://www.c2es.org/docUploads/10-50\_Cochran.pdf

In addition, the MIT Study recognizes that the closed fuel cycle represents a serious proliferation threat when undertaken in any number of non-weapon states, e.g., Iraq, Iran, North Korea, and even Russia. Despite the acknowledgement of poor economic prospects, no significant waste management advantages and high proliferation risks associated with closed fuel cycles, the MIT Study unfortunately leaves the door open to develop new reprocessing technologies. On the other hand, we [the MIT Study group] support modest laboratory scale research and analysis on new separation methods with the objective to learn about separation methods that are less costly and more proliferation resistant. There has been little exploration in the United States of alternatives to PUREX and pyro-processing since their invention decades ago with entirely different purposes in mind: obtaining weapons usable material and reprocessing metal fuel, respectively. We note however that there is considerable skepticism for even this modest approach, because some see any U.S. work on reprocessing sending the wrong signal to other nations about the credibility of our expressed attitude toward the proliferation risks of reprocessing, and the concern that DOE will move from analysis and research to development before the technical basis for such action has been developed. We propose that this program begin at a modest scale, reaching $10 million per year in about five years. (MIT Study, p. 92) Instead of curbing DOE’s appetite for promoting technologies that are both dangerous and uneconomical, this MIT Study recommendation likely will be used by DOE to justify its Advanced Fuel Cycle Initiative (AFCI). The DOE FY 2004 budget for the AFCI is $63 million—over six times what the MIT recommends be spent in five years. The AFCI is coordinated with DOE’s Generation IV program to develop new reactor concepts for possible introduction in the 2030 to 2050 time period. Last year DOE organized the Generation-IV International Forum, an effort by 10 countries to jointly develop six nuclear energy systems, including several fast reactor concepts that require closed fuel cycles. The countries included five non-weapon states that formerly had clandestine nuclear weapon programs, namely, South Africa, Argentina, Brazil, South Korea and Switzerland. Although the MIT Study recommends that “[t]he DOE R&D program should be realigned to focus on the open, once-through fuel cycle” (MIT Study, p. x), I fear the recommendation to engage in modest R&D on closed fuel cycles will be used to bolster the DOE AFCI effort. This will promote in non-weapon states, including states that in the past had clandestine nuclear weapon programs, the construction of hot cells for reprocessing R&D and training of cadres of experts in plutonium chemistry and metallurgy. This DOE effort is clearly a threat to U.S. national security. Because closed fuel cycles are so uneconomical, U.S. government sponsored research on closed fuel cycles is not likely to lead to their adoption. Consequently, in the next fifty years I believe U.S. nuclear plants will stick with the open fuel cycle.

#### Economics – Even if LFTRs are prolif-resistant, reprocessing gives other countries a justification to pursue OTHER reprocessing tech---it’s more likely the developing world would choose the easier and cheaper tech

Acton ’09 – senior associate in the Nuclear Policy Program at the Carnegie Endowment, co-chairs the Next Generation Working Group on U.S.-Russia arms control and is the joint UK member of the International Panel on Fissile Materials, Ph.D. in theoretical physics, Cambridge University (James M., “The myth of proliferation-resistant technology,” November 19, The Bulletin of Atomic Scientists, <http://cybercemetery.unt.edu/archive/brc/20120621022618/http://brc.gov/sites/default/files/meetings/presentations/james_m_acton-the_myth_of_proliferation-resistant_technology.pdf>)

Worse still, a decision by the United States to develop reprocessing could encourage other states to do likewise.18 Even if the United States and other advanced nuclear states were to avoid separating pure plutonium, others seeking to close the fuel cycle wouldn’t necessarily select an identical separation technology. After all, PUREX technology, which was originally designed to produce pure plutonium for the Manhattan Project, is relatively simple, widely documented, and entirely legal, and therefore, a more attractive choice than, say, UREX+ for less advanced states looking to start reprocessing. Moreover, it is unlikely that all the advanced nuclear states would agree to use only advanced reprocessing technologies. Japan, for example, has only recently finished construction of the Rokkasho Reprocessing Plant, which is based on slightly modified PUREX technology. Given that the plant is expected to operate until at least 2045 and that it cost $20 billion to build, the Japanese are unlikely to abandon it and switch to an alternative technology.19

#### Political Cover – Thorium gives countries a rationale to continue ENR or create plutonium – can’t control how the technology is used

FOE Australia, 2012, “Thorium and WMD proliferation risks,” http://foe.org.au/anti-nuclear/issues/nfc/power-weapons/thorium

Thorium fuel cycles are promoted on the grounds that they pose less of a proliferation risk compared to conventional reactors. However, whether there is any significant non-proliferation advantage depends on the design of the various thorium-based systems. No thorium system would negate proliferation risks altogether. Neutron bombardment of thorium (indirectly) produces uranium-233, a fissile material which can be used in nuclear weapons (1 Significant Quantity of U-233 = 8kg). The USA has successfully tested weapon/s using uranium-233 cores. India may be interested in the military potential of thorium/uranium-233 in addition to civil applications. India is refusing to allow safeguards to apply to its entire 'advanced' thorium/plutonium fuel cycle, stongly suggesting a military dimension. The possible use of highly enriched uranium (HEU) or plutonium to initiate a thorium-232/uranium-233 reaction, or proposed systems using thorium in conjunction with HEU or plutonium as fuel, present risks of diversion of HEU or plutonium for weapons production as well as providing a rationale for the ongoing operation of dual-use enrichment and reprocessing plants. Thorium fuelled reactors could also be used to irradiate uranium to produce weapon grade plutonium. Kang and von Hippel conclude that "the proliferation resistance of thorium fuel cycles depends very much upon how they are implemented". For example, the co-production of uranium-232 complicates weapons production but, as Kang and von Hippel note, "just as it is possible to produce weapon-grade plutonium in low-burnup fuel, it is also practical to use heavy-water reactors to produce U-233 containing only a few ppm of U-232 if the thorium is segregated in "target" channels and discharged a few times more frequently than the natural-uranium "driver" fuel." (Kang, Jungmin, and Frank N. von Hippel, 2001, "U-232 and the Proliferation-Resistance of U-233 in Spent Fuel", Science & Global Security, Volume 9, pp 1-32, <www.princeton.edu/~globsec/publications/pdf/9\_1kang.pdf>.)

# T

#### R&D isn’t T

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

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

3. SUBSIDIES THROUGH THE FUEL CYCLE

Because no two fuel cycles are exactly the same, examining subsidies through the context of a generic fuel cycle is instructive in providing an overall framework from which to understand how common subsidization policies work. Subsidies are grouped into preproduction (e.g., R&D, resource location), production (e.g., extraction, conversion/generation, distribution, accident risks), consumption, postproduction (e.g., decommissioning, reclamation), and externalities (e.g., energy security, environmental, health and safety).

3.1 Preproduction

Preproduction activities include research into new technologies, improving existing technologies, and market assessments to identify the location and quality of energy resources.

3.1.1 Research and Development

R&D subsidies to energy are common worldwide, generally through government-funded research or tax breaks. Proponents of R&D subsidies argue that because a portion of the financial returns from successful innovations cannot be captured by the innovator, the private sector will spend less than is appropriate given the aggregate returns to society. Empirical data assembled by Margolis and Kammen supported this claim, suggesting average social returns on R&D of 50% versus private returns of only 20 to 30%.

However, the general concept masks several potential concerns regarding energy R&D. First, ideas near commercialization have much lower spillover than does basic research, making subsidies harder to justify. Second, politics is often an important factor in R&D choices, especially regarding how the research plans are structured and the support for follow-on funding for existing projects.

Allocation bias is also a concern. Historical data on energy R&D (Table III) demonstrate that R&D spending has heavily favored nuclear and fossil energy across many countries. Although efficiency, renewables, and conservation have captured a higher share of public funds during recent years, the overall support remains skewed to a degree that may well have influenced the relative competitiveness of energy technologies. Extensive public support for energy R&D may also reduce the incentive for firms to invest themselves. U.S. company spending on R&D for the petroleum refining and extraction sector was roughly one-third the multi-industry average during the 1956-1998 period based on survey data from the U.S. National Science Foundation. For the electric, gas, and sanitary services sector, the value was one-twentieth, albeit during the more limited 1995-1998 period.

3.1.2 Resource Location

Governments frequently conduct surveys to identify the location and composition of energy resources. Although these have addressed wind or geothermal resources on occasion, they most often involve oil and gas. Plant siting is another area where public funds are used, primarily to assess risks from natural disasters such as earthquakes for large hydroelectric or nuclear installations. Survey information can be important to evaluate energy security risks and to support mineral leasing auctions, especially when bidders do not operate competitively. However, costs should be offset from lease sale revenues when evaluating the public return on these sales. Similarly, the costs of siting studies should be recovered from the beneficiary industries.

3.2 Production

Energy production includes all stages from the point of resource location through distribution to the final consumers. Specific items examined here include resource extraction, resource conversion (including electricity), the various distribution links to bring the energy resource to the point of final use, and accident risks.

#### Violates incentives---they have to provide money to the private sector---r&D is distinct

CCES 9 Center for Climate and Energy Solutions (also called c2es) “Buildings and Emissions: Making the Connection” No specific date dated, most recent citation from 2009 www.c2es.org/technology/overview/buildings

Policy Options to Promote Climate-Friendly Buildings

The mosaic of current policies affecting the building sector is complex and dynamic involving voluntary and mandatory programs implemented at all levels of government, from local to federal. Government efforts to reduce the overall environmental impact of buildings have resulted in numerous innovative policies at the state and local levels. Non-governmental organizations, utilities, and other private actors also play a role in shaping GHG emissions from buildings through third-party “green building” certification, energy efficiency programs, and other efforts.

Various taxonomies have been used to describe the policy instruments that govern buildings, typically distinguishing between regulations, financial incentives, information and education, management of government energy use, and subsidies for research and development (R&D). Each of these is broadly described below.

-Standards and codes

Regulatory policies include building and zoning codes, appliance energy efficiency standards, clean energy portfolio standards, and electricity interconnection standards for distributed generation equipment. Building codes can require a minimum level of energy efficiency for new buildings, thus mandating reductions at the construction stage, where there is the most opportunity to integrate efficiency measures. Zoning codes can provide incentives to developers to achieve higher performance. Because of regional differences in such factors as climatic conditions and building practices, and because building and zoning codes are implemented by states and localities, the codes vary considerably across the country. While substantial progress has been made over the past decade, opportunities to strengthen code requirements and compliance remain.

Appliance and equipment standards require minimum efficiencies to be met by all regulated products sold; they thereby eliminate the least efficient products from the market. Federal standards exist for many residential and commercial appliances, and several states have implemented standards for appliances not covered by federal standards (see Appliance Efficiency Standards).

-Financial incentives

Financial incentives can best induce energy-efficient behavior where relatively few barriers limit information and decision-making opportunities (e.g., in owner-occupied buildings). Financial incentives include tax credits, rebates, low-interest loans, energy-efficient mortgages, and innovative financing, all of which address the barrier of first costs. Many utilities also offer individual incentive programs, because reducing demand, especially peak demand, can enhance the utility’s system-wide performance.

-Information and education

While many businesses and homeowners express interest in making energy-efficiency improvements for their own buildings and homes, they often do not know which products or services to ask for, who supplies them in their areas, or whether the energy savings realized will live up to claims. Requiring providers to furnish good information to consumers on the performance of appliances, equipment and even entire buildings is a powerful tool for promoting energy efficiency by enabling intelligent consumer choices.

-Lead-by-example programs

A variety of mechanisms are available to ensure that government agencies lead by example in the effort to build and manage more energy-efficient buildings and reduce GHG emissions. For example, several cities and states, and federal agencies (including the General Services Administration), have mandated LEED or LEED-equivalent certification for public buildings, and the Energy Independence and Security Act of 2007 includes provisions for reduced energy use and energy efficiency improvements in federal buildings.

-Research and development (R&D)

In the long run, the opportunities for a low-greenhouse gas energy future depend critically on new and emerging technologies. Some technological improvements are incremental and have a high probability of commercial introduction over the next decade (such as low-cost compact fluorescents). Other technology advances will require considerable R&D before they can become commercially feasible (such as solid-state lighting). The fragmented and highly competitive market structure of the building sector and the small size of most building companies discourage private R&D, on both individual components and the interactive performance of components in whole buildings.

Building Technologies Center. The Oak Ridge National Laboratory’s Buildings Technology Center was established by the U.S. Department of Energy (DOE) and performs research into issues including heating and cooling equipment, thermal engineering, weatherization, building design and performance, envelope systems and materials, and power systems.

Emerging Technologies. This U.S. DOE-sponsored program develops technology that would reduce energy use in residential and commercial buildings by 60-70 percent. Technologies are in fields including solid-state lighting, space conditioning and refrigeration, building envelopes, and analysis tools and design strategies that would facilitate the development of energy efficient buildings through software and computer-based building analysis.

#### At best they’re indirect which means they’re FX---this cards draws a predictable limit and brightline

GSWH 11 Global Solar Water Heating Market Transformation and Strengthening Initiative, This publication is the result of a joint effort from the following contributors: The European Solar ThermalIndustry Federation (ESTIF), the United Nations Environment Program (UNEP) through its Division ofTechnology, Industry and Economics (DTIE) and the Global Environment Fund (GEF). "Guidelines for policy and framework conditions" No Specific Date Cited, Most Recent Citations From 2011 www.solarthermalworld.org/files/policy\_framework.pdf?download

8 Non financial incentives for solar thermal

Non Financial Incentives include all public policies that support the creation of public good, even when providing an indirect financial advantage to the solar thermal market. For instance: an awareness raising campaign financed from public money or a programme to subsidise craftsmen training or R&D, etc. Obviously, all these instruments create an indirect financial advantage for companies involved in the market and this benefit is then passed on to the users.

8.1 Solar thermal obligations

• What is a Solar Thermal Obligation (STO)?

STO are legal provisions making mandatory the installation of solar thermal systems in buildings. The obligation mainly applies to new buildings and those undergoing major refurbishment. The owner must then install a solar thermal system meeting legal requirements. Most of the existing STOs are connected to national or regional energy laws and implemented through the municipal building codes. A growing number of European municipalities, regions and countries have adopted solar thermal obligations. Already today, more than 150 million people live in regions covered by a STO.

• Benefits

A major benefit of solar thermal ordinances is their effectiveness combined with low costs and limited administrative overheads for public authorities. As part of the building permit process, the inspection with regard to the renewable energy requirement is simple and thus does not strain public finances.

The introduction of a solar thermal ordinance prevents market fluctuation caused by inconsistent incentive programmes. It provides a stable planning environment for market actors and investors, encouraging local economic growth and creating new jobs in this sector.

• Unwanted effects and flanking measures

Solar obligations have a profound effect on the solar thermal market's structure. Therefore, to maximise their benefits, they require flanking measures.

In a market where solar thermal becomes mandatory, promoters and customers will tend to question the solar systems' operation and react more negatively than in a voluntary market.

Ends users and the construction sector will often go for the cheapest possible solution, while building owners will try to circumvent the obligation through exemptions. The real impact of any regulation strongly depends on its technical parameters and control procedures.

It is vital, therefore, that the regulations adopted ensure state-of-the-art quality assurance, products, planning, installation and maintenance of the system, guaranteeing the same high level of customer satisfaction as in the current voluntary market. Poor performance of "mandatory" systems would not only undermine public acceptance of the obligation, but also, possibly, of the solar thermal technology in general.

Israel, 30 years of experience with solar thermal ordinances

Thirty years ago, Israel was the first country to pass legislation on solar thermal installations. With the second oil crisis at the end of the 1970s, members of parliament examined ways to make their country less dependent on imported energy. The result was a law, which made solar water heaters mandatory in new buildings such as residential housing, hotels, guest houses and old people's homes up to 27 metres high. The legislation entered into force in 1980.

Nowadays over 80% of Israel's households get their domestic hot water from solar rooftop heaters. A typical domestic unit consists of a 150 litre insulated storage tank and a 2 m2 collector. These hot water heaters save the country the need to import about 4% of its energy needs, and replace about 9% of the electricity production.

The law has now become redundant. More than 90% of the solar systems are installed on a voluntary basis, i.e. they are installed in existing buildings, or the systems are larger than required by the obligation.

Source: PROSTO project

8.2 Quality, standards and certification policy

The need and methods to ensure quality in the market are so important for solar thermal, that a complete guide is dedicated to this topic in the framework of the GSWH project.

Why do we need standards?

The objective of standardisation and quality assurance is to guarantee product safety and quality, as well as lower prices. At every stage of market development, the capacity of solar thermal systems to deliver the expected level of performance is a key factor. In the early stage of the market, quality issues have had long lasting devastating effects. The existence of standards is the cornerstone of quality assurance.

The actors of standards and certification

Standardisation and quality for solar thermal should be the result of a joint effort from public authorities (market regulation), the industry, the technical community and, when they are adequately organised, the end users.

• Public authorities have a key role to play in imposing stringent quality requirements and in initiating, facilitating and controlling the standardisation process.

• The industry must provide product and technical expertise. It must understand the benefits

of ensuring standardised level of quality. Public authorities should guarantee that the standards are neutral and do not favour certain products or companies.

• I t is essential to be able to rely on independent testing facilities and certification bodies. If the private initiative is not adequate, then public authorities should actively support the creation of such structures.

• Consumer organisations can bring a useful contribution to the process. Quality installation for quality products

Solar thermal products usually need to be installed. This operation can be simple to the extent that it might not require the intervention of a specialist, e.g. some termosiphons systems, but on average it should be undertaken by a professional. To guarantee performance, the quality of the installation is as important as the quality of the system. Minimum requirements in terms of training and qualification of installers should be implemented in parallel with product requirements. Public authorities should regulate in the absence of initiatives from trade and industry.

Performance and quality for a sustainable market

Performance and quality measures do not constitute flanking or accompanying measures. Framework and regulations should be developed, and relevant bodies involved from the beginning, even if this has to be imposed to the market to some extent.

The market tends to be shortsighted; industry will naturally prefer to avoid costs and regulations. The benefits of high quality regulations and market surveillance will emerge eventually and guarantee a sustainable market. Public authorities should ensure that incentives and promotion endorse quality.

8.3 Research and development, demonstration projects (definition, importance, recommendations, examples)

Solar thermal is a simple and mature technology; however, research and development are necessary to guarantee that performance will continue to improve and costs to decrease. Research and development can also contribute to adapt the technical features of products to local needs, e.g. improve water tightness in tropical areas, resistance to frost in mountainous regions. Research and development cannot proceed only from public initiative but, through public universities and public research centres, public authorities have a leading role to play.

Building up centres of technical excellence

Applied research, engineering education, development, product innovation, standardisation, testing are closely linked and there are a lot of synergies between those fields. Most of the time, the same persons will be likely to teach, test and lead research projects. A sustainable market will always require relying on a high level engineering community. Public authorities should encourage the creation of multi disciplinary technical facilities for solar thermal engineering and encourage or even impose on the industry to participate in this effort.

Importance of demonstration projects

For both promotion and technical (experimental) reasons demonstrations projects are extremely useful. Projects implementing technologies that are not market ready, but which have an important potential, will allow testing and improving the solution, gather data, monitor functioning and finally demonstrate the feasibility to the general public and the industry in order to prepare the introduction on the market.

9 Financial incentives (direct, indirect, tax incentives, low interest loans): definition, importance, recommendations, examples

Financial Incentives include any public policy giving a financial advantage to those who install a solar thermal system or that use solar thermal energy.

#### Voting issue for limits and ground---creates an unmanageable topic of new speculative tech via government research that doesn’t interact with the market

**Dyson et al, 3** - International Union for Conservation of Nature and Natural Resources (Megan, Flow: The Essentials of Environmental Flows, p. 67-68)

Understanding of the term ‘incentives’ varies and economists have produced numerous typologies. A brief characterization of incentives is therefore warranted. First, the term is understood by economists as incorporating both positive and negative aspects, for example a tax that leads a consumer to give up an activity that is an incentive, not a disincentive or negative incentive. Second, although incentives are also construed purely in economic terms, incentives refer to more than just financial rewards and penalties. They are the “positive and negative changes in outcomes that individuals perceive as likely to result from particular actions taken within a set of rules in a particular physical and social context.”80 Third, it is possible to distinguish between direct and indirect incentives, with direct incentives referring to **financial** or other inducements and indirect incentives referring to both variable and **enabling incentives**.81 Finally, incentives of any kind may be called ‘perverse’ where they work against their purported aims or have significant adverse side effects. ¶ Direct incentives lead people, groups and organisations to take particular action or inaction. In the case of environmental flows these are the same as the net gains and losses that different stakeholders experience. The key challenge is to ensure that the incentives are consistent with the achievement of environmental flows. This implies the need to compensate those that incur additional costs by providing them with the appropriate payment or other compensation. Thus, farmers asked to give up irrigation water to which they have an established property or use right are likely to require a payment for ceding this right. The question, of course, is how to obtain the financing necessary to cover the costs of developing such transactions and the transaction itself. ¶ Variable incentives are policy instruments that affect the relative costs and benefits of different economic activities. As such, they can be manipulated to affect the behaviour of the producer or consumer. For example, a government subsidy on farm inputs will increase the relative profitability of agricultural products, hence probably increasing the demand for irrigation water. Variable incentives therefore have the ability to greatly increase or reduce the demand for out-of-stream, as well as in-stream, uses of water. The number of these incentives within the realm of economic and fiscal policy is practically **limitless.**

# Uranium Prices

#### Uranium prices will increase now

David Sadowski 12, mining research analyst with a background in geological science, 8-24-2012, “Uranium prices set to spike in 2013,” Mine Web, http://www.mineweb.com/mineweb/view/mineweb/en/page72103?oid=157609&sn=Detail&pid=102055

DS: We're definitely bullish on the outlook for uranium. Although prices have softened in recent months, we have a very strong conviction that this trend is soon to reverse and investors should be exposed to uranium today. Beyond the high incentive prices for new supply that we just touched on, there are three primary reasons for our view. The first one is compelling supply/demand fundamentals. Next, there is the seasonality of uranium prices. And, most importantly, there are industry catalysts. Shall we take a look at each one? TER: Please, go right ahead. DS: After the Fukushima Daiichi accident last year, the nuclear industry has done some soul searching and decided to take a slower, more cautious pace in the construction of new reactors globally. But what many people don't realize is that according to World Nuclear Association (WNA) data, there are nine more reactors in the planned and proposed category today than there were before the accident. Demand for nuclear power has remained resilient with ramping electricity requirements around the world, volatility in fossil fuel prices, energy supply security concerns and a global preference for carbon-neutral sources. The majority of this demand is from Asia. In fact, we estimate 82% of new capacity through 2020 will be built in only four countries-China, India, Russia and South Korea. Part of the reason for that is that state-owned utilities don't face the same problems associated with other regions, like high upfront construction costs, widespread antinuclear public sentiment and lengthy regulatory timelines. So, this continued growth should support commensurate levels of demand for uranium for decades to come. All of this demand begs the question, where is this uranium going to come from? Well, we don't think supply is going to be able to keep up. Due to recent soft prices, many major projects have been delayed or shelved. We are projecting a three-year supply shortfall starting in 2014, and that certainly paints a very rosy supply/demand picture for investors. Seasonality also favors uranium exposure today. Over the last 10 years, uranium spot prices have dropped on average $4/lb during the third quarter (Q3) but have rebounded by at least that amount in Q4, which is the strongest quarter of the year. This is often correlated with the annual WNA symposium, where many market participants sit down and hammer out new supply agreements. This year's conference is going to be held September 12-14 in London. Last but not least, there are several near-term catalysts that we think will start the price upswing. In Japan, all but two reactors are now offline, and there's significant uncertainty and government debate about how many will eventually restart. As the world's third-largest nuclear fleet, it has obvious implications for future uranium demand. For a variety of economic, political and environmental reasons, we think Japan will restart most of its reactors by 2017 with the first batch of reactors likely starting early in 2013. As more units start to return to service, it will provide additional confidence that the nuclear utilities in Japan are unlikely to dump their inventories into the market, which should support prices in the near-term. Meanwhile in China, the government paused construction approvals for new reactors immediately after last year's Fukushima accident. But with these safety reviews now successfully completed, they're poised to start re-permitting new projects, and this should undoubtedly support increased uranium contracting. Let's not forget that China will be far-and-away the largest source of nuclear demand growth for the foreseeable future. We expect a six-fold increase in installed nuclear capacity by the end of this decade. The final major catalyst is the expiry of the Russian Highly Enriched Uranium (HEU) agreement to down-blend material from nuclear warheads into reactor fuel. This agreement has supplied the Western World for two decades but is due to conclude at the end of 2013. The Russians have repeatedly stated they're not interested in extending this agreement, and we expect this to remove about 24 Mlbs/year or 13% from the global supply. That's equivalent to shutting down the world's largest mine, McArthur River, as well as all six operating mines in the U.S. That's a massive impact. So, for these reasons we think prices are poised to turn here. We forecast prices to average above $60/lb in 2013 and north of $70/lb in 2014 and 2015 before settling to $70/lb in the long-term.

#### Plan immediately reduces prices by 25%

Aaron L. Szabo 10, J.D., George Washington University Law School; Financial Analyst, United States Nuclear Regulatory Commission, Fall 2010, “ARTICLE: Reprocessing: The Future Of Nuclear Waste,” Temple Journal of Science, Technology & Environmental Law, 29 Temp. J. Sci. Tech. & Envtl. L. 231, p. lexis

The third economic analysis determines the cost of reprocessing relative to the cost of mining more uranium (assuming an unlimited supply of uranium). Reprocessing fuel decreases the need to mine further uranium. Currently, reprocessing allows for 25 percent more energy to be obtained from the original mined uranium. n116 Therefore, with the current price of uranium at around $ 45/lb, a saving of $ 11.25/lb would be realized, saving the United States alone $ 573.75 million/year. n117

#### Wrecks Kazakhstan’s industry

McDermott 11 (Roger, Senior Fellow, Foreign Military Studies Office, Fort Leavenworth, “Kazakhstan: Countering nuclear proliferation, Action to develop a nuclear and terrorist-free world,” in Kazakhstan 2011: Twenty Years of Peace and Creation, *First: The Forum for Global Decision Makers*, 2011, <http://www.firstmagazine.com/Publishing/SpecialReportsDetail.aspx?RegionId=4&SpecialReportId=96>)

Kazakhstan’s ambitions are likely to be realized if uranium prices stay high and Kazatomprom is successful in further expanding its international partnerships. Kazatomprom’s most immediate task is to secure customers for its final nuclear fuel product--fuel assemblies, an extra fuel fabrication stage which Kazatomprom plans to start carrying out domestically. Having a nearly complete nuclear fuel cycle, save for enrichment, will ensure a stable cash flow for Kazatomprom and limit its dependence on the fluctuating market price of raw uranium. In the meantime, increased uranium sales will help alleviate the country’s overdependence on oil exports and help modernize its nuclear sector. If Kazakhstan does become the world’s leading uranium and nuclear fuel supplier, the ramifications for the country both in terms of increased gross domestic product and status on the world stage will be profound.

#### -- Prevents diversification of Kazakhstan’s economy

Pleitgen 12 (Frederick, CNN, “Kazakhstan hopes uranium, oil and gas will fuel its future,” 7-18-12,

<http://articles.cnn.com/2012-07-18/asia/world_asia_kazakhstan-natural-resources-economy_1_vladimir-shkolnik-kazakhstan-uranium>)

Kazakhstan's mineral wealth will be a major source of income for decades to come, but it won't last forever. The country is trying to use it wisely to transition to a broader economic base while developing the natural resources industries to the maximum. Last year Kazakhstan was the world's top producer of uranium, accounting for over a third of global production. The industry's rapid expansion, plus the good quality of the uranium and the comparatively cheap method of mining it have combined to give Kazakhstan an advantage over other big exporters like Australia and Canada. With continued investment, Vladimir Shkolnik, the head of Kazakhstan's national atomic energy company, Kazatomprom, is keen to maintain that position. "We are hoping to keep our leadership position in the uranium field," he says. "We have dozens of facilities and hundreds of mines and we think we will remain a world leader in the uranium sector." Kazakhstan's government is also trying to encourage more foreign investment. Since independence in 1991, around $150 billion of foreign investment has flowed into the country; $18 billion dollars last year alone, according to the government. Companies like GE and Eurocopter have been attracted to the country, entering partnerships with national companies that have helped bring training and new skills to the local workforce. While money is flowing from the country's natural resources industry, the government is using some of its revenue to boost other sectors, like IT and engineering. The aim is to make the economy more resilient when commodities prices fall and better prepared for the day when the gush of oil and gas reduce to a trickle. "Of course revenues from raw materials are still by far the largest share of the country's budget," says energy analyst, Murat Karymsakov. "But in recent years the president (of Kazakhstan) has announced and put into place a plan for industrial and technological development to diversify the economy."

#### -- Destroys stability

Hamm 12 (Nathan, founder and Principal Analyst for Registan, MA in Central Asian Studies from the University of Washington, “Kazakhstan’s Stability, Central Asia’s Stability,” 1-31-12, <http://registan.net/2012/01/31/kazakhstans-stability-central-asias-stability/>)

I’m paraphrasing, but on the first two items, Dr. Roberts argues that the thoroughly Soviet education and background of Kazakhstan’s leadership leaves it out of touch and unable to adequately respond to the public. The government’s response to labor strikes, including the violence in Zhanaozen, he says, show that the government was not prepared to deal with dissatisfaction over unmet economic expectations. Dr. Roberts says that these challenges are not extreme nor likely to cause widespread unrest in the near term, but that the stagnancy of the political system means that the government lacks mechanisms to deal with large socio-economic changes. [Note: Alima wrote about the crisis of unmet expectations at length recently.] This is good, succinct analysis of the situation that puts risks to Kazakhstan’s stability in good context. The risks are there, the government is ill-prepared to deal with them at present, but it’s unlikely that it will be overwhelmed by them soon. These risks, however, aren’t present only in Kazakhstan. They exist in similar forms and combinations throughout Central Asia. Growing segments of society throughout the region are bringing (or attempting to…) Islam into the public square, where it is responded to with shock and terror by secular officials. National economies are failing to meet the expectations, and in many areas, even the basic needs, of the public. And though nationalism is not so clearly a problem the way it is Kazakhstan and Kyrgyzstan in the rest of Central Asia, there are small signs that society is challenging the state’s monopoly on defining what it means to be Uzbek, Tajik, Kyrgyz, etc. In talking about risks to stability, there is often a tendency to focus on presidential succession, the specter of fundamentalism and political Islam, and a more recent tendency to talk about replication of the Arab Spring. Recent history should make it abundantly clear though, that analysts, experts, and observers are taken by surprise in the region. Game-planning what happens after Karimov dies or a resurgence of the IMU activity in Tajikistan and Kyrgyzstan might be worthless because they assume state and society lack the mechanisms to respond to and manage succession or terrorist groups. The greatest risks to stability throughout the region are medium- to long-term risks arising from the three aforementioned factors and the oppositional relationship between state and society. Devising a list of indicators and warnings based on the three factors Dr. Roberts identifies — rising public religiosity, increasing nationalism, and under-performance in the economy — are more likely not only to lead to better anticipation of the trajectory of stability in Central Asia but also to provide a better idea of when serious risks to stability are likely to arise.

#### -- Spreads throughout the region

Assenova 8 (Margarita Assenova, IND Director; 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,” 2008, CSIS-IND Taskforce Policy Brief team, European Dialogue, <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.

#### -- Nuclear war

Ahrari 1 (M. Ehsan, Professor of National Security and Strategy of the Joint and Combined Warfighting School at the Armed Forces Staff College, August 2001, “Jihadi Groups, Nuclear Pakistan and the New Great Game,” http://www.strategicstudiesinstitute.army.mil/pdffiles/pub112.pdf)

South and Central Asia constitute a part of the world where a well-designed American strategy might well help avoid crises or catastrophe. The U.S. military would provide only one component of such a strategy, and a secondary one at that, but has an important role to play through engagement activities and regional confidence building. Insecurity has led the states of the region to seek weapons of mass destruction, missiles and conventional arms. It has also led them toward policies which undercut the security of their neighbors. If such activities continue, the result could be increased terrorism, humanitarian disasters, continued low-level conflict and potentially even major regional war or a thermonuclear exchange. A shift away from this pattern could allow the states of the region to become solid economic and political partners for the United States, thus representing a gain for all concerned.

# Prolif Adv

## 1NC

#### Claims of proliferation resistance are false—thorium reactors produce U-233 which can be used for nukes – trust the IAEA not industry hacks.

NNL 12—National Nuclear Laboratory (UK), Comparison of thorium and uranium fuel cycles, NNL (11) 11593 Issue 5, A report prepared for and on behalf of Department of Energy and Climate Change, http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/nuclear/6300-comparison-fuel-cycles.pdf

The absence of plutonium is in the thorium fuel cycle is claimed to reduce the risk of nuclear weapons proliferation, though Reference [1] questions whether is this is completely valid, given that there were a number of U-233 nuclear tests (the “Teapot tests”) in the US in the 1950s. U-233 is in many respects very well suited for weapons use, because it has a low critical mass, a low spontaneous neutron source and low heat output. It has been stated [eg Wikipedia entry on U-233] that because U-233 has a higher spontaneous neutron source than Pu-239, then this makes it more of a technical challenge. However, this is erroneous, because even in weapons grade plutonium the main neutron source is from Pu-240. A further consideration is that the U-233 produced in thorium fuel is isotopically very pure, with only trace quantities of U-232 and U-234 produced. Although the U-232 presents problems with radiological protection during fuel fabrication, the fissile quality does not degrade with irradiation. Therefore, if it is accepted that U-233 is weapons useable, this remains the case at all burnups and there is no degradation in weapons attractiveness with burnup, unlike the U-Pu cycle.¶ The presence of trace amounts of U-232 is beneficial in that it provides a significant gamma dose field that would complicate weapons fabrication and this has been claimed to make U-233 proliferation resistant. However, there are mitigating strategies can be conceived and the U-232 dose rate cannot be regarded as a completely effective barrier to proliferation. As such, U-233 should be considered weapons usable in the same way as HEU and plutonium. This is also the position taken by the IAEA, which under the Convention on the Physical Protection of Nuclear Materials [16] categorises U-233 in the same way as plutonium. Under the IAEA classification, 2 kg or more of U-233 or plutonium are designated as Category I Nuclear Material and as such are subject to appropriate controls. By way of comparison, the mass of U-235 for Category I material is 5 kg. Attempts to lower the fissile content of uranium by adding U-238 are considered to offer only weak protection, as the U-233 could be separated relatively easily in a centrifuge cascade in the same way that U-235 is separated from U-238 in the standard uranium fuel cycle.¶ The overall conclusion is that while there may be some justification for the thorium fuel cycle posing a reduced proliferation risk, the justification is not very strong and, as noted in Section 3.5, this is not a major factor for utilities. Regardless of the details, those safeguards and security measures in place for the U-Pu cycle will have to remain in place for the thorium fuel cycle and there is no overall benefit.

#### U.S. reprocessing opens the floodgates for global prolif

UCS 11 – Union of Concerned Scientists, 4/5/11, “Nuclear Reprocessing: Dangerous, Dirty, and Expensive,” <http://www.ucsusa.org/nuclear_power/nuclear_power_risk/nuclear_proliferation_and_terrorism/nuclear-reprocessing.html>

Reprocessing would increase the ease of nuclear proliferation.

U.S. reprocessing would undermine the U.S. goal of halting the spread of fuel cycle technologies that are permitted under the Nuclear Non-Proliferation Treaty but can be used to make nuclear weapons materials. The United States cannot credibly persuade other countries to forgo a technology it has newly embraced for its own use. Although some reprocessing advocates claim that new reprocessing technologies under development will be "proliferation resistant," they would actually be more difficult for international inspectors to safeguard because it would be harder to make precise measurements of the weapon-usable materials during and after processing. Moreover, all reprocessing technologies are far more proliferation-prone than direct disposal.

#### Prolif-resistance isn’t offense---the U.S. doing prolif-resistant reprocessing causes other countries to do prolif-vulnerable reprocessing

James M. Acton 9, associate in the Nonproliferation Program at the Carnegie Endowment for International Peace, February 2009, “Nuclear Power, Disarmament and Technological Restraint,” Survival, Vol. 51, No. 4, p. 101-126

The problem of indigenous development is undoubtedly most acute for reprocessing. Extensive information on the PUREX process (developed by the United States to produce plutonium for the Manhattan Project) is in the public domain, meaning the most important barriers to its development are political rather than technical. Given that a strategy of develop and deny lowers the political barriers, it is unrealistic to expect that, over the long term, this kind of discriminatory approach can be effective.

The problems of develop and deny would remain even if, as proponents of reprocessing have recently advocated, advanced nuclear states switched from PUREX to newer technologies that do not involve the separation of pure plutonium. Even apart from the over-selling of their claimed non-proliferation benefits,37 the adoption of these technologies would still send the message that the recycling of spent fuel has an important role to play in the development of nuclear energy. Because PUREX is the simplest process, it is the one to which other states are most likely to turn, especially if they are also seeking a nuclear-weapons hedging option. Indeed, a state wishing to develop PUREX could make its case even stronger, at least in the eyes of many developing states, by first asking for help with the development of advanced reprocessing, with the knowledge that the request would be refused.38

#### Nuclear leadership fails---U.S. won’t exercise it, agency competition constrains it, and it doesn’t cause other states to change behavior

Richard Cleary 12, Research Assistant at the American Enterprise Institute, 8/13/12, “Persuading Countries to Forgo Nuclear Fuel-Making: What History Suggests,” http://npolicy.org/article.php?aid=1192&tid=30

In recent years, there has been a resurgence of proposals designed to limit the spread of nuclear fuel-making facilities, with the understanding that ostensibly peaceful technology can allow for the production of the fissile material required for a nuclear weapon. With U.S. proposals ranging from the Global Nuclear Energy Partnership (GNEP) to a revamped, “Gold Standard” bilateral nuclear cooperation agreement, a wider array of tools has been put at the disposal of American policy makers. Prominent members of the international community have become agitated about the prospect of the proliferation of fuel-making technology as well, with numerous proposals of fuel assurances put forward by such disparate figures as Vladimir Putin and Mohamed ElBaradei. But renewed enthusiasm for nonproliferation begs questions about how novel the instruments proposed are, and, moreover, how effective they are likely to be, particularly for the country historically at the head of nonproliferation efforts, the United States. A review of this historical record suggests that optimism about the U.S. ability to dissuade countries from this path is misplaced.

This essay considers supply side proposals of fuel assurance, multilateral fuel-making, as well as specific interventions on both the supply and demand sides, consulting particular cases in Iran (1974-1978), West Germany-Brazil (1975-1977), South Korea (1974-1976) and Pakistan (1972-1980) to draw lessons about the effectiveness of U.S. practices under differing circumstances. The record these cases give is mixed, due to two principal causes. The first is the failure of the U.S. to consistently prioritize nonproliferation efforts given Washington’s global and competing interests, interests that tend to be embraced by different factions in the federal government apparatus but whose ultimate arbiter is the president (along with his close advisors). The second is the tendency of decisions about nuclear fuel-making by the state in question to be influenced more by fundamental trends or factors than diplomatic maneuvering from Washington; diplomacy is most effective when it has the political, economic and military backing to implicate these issues. The most important factor in U.S. efforts has tended to be the bilateral relationship between Washington and the country at hand. Decision-makers who consider their country’s relationship with the U.S. to be strategically vital—and believe that fuel-making would threaten this relationship—are most likely to forgo enrichment and reprocessing (ENR) technology. This calculus can be informed by a range of dynamics, some beyond U.S. control, such as security concerns, issues of prestige, and commercial and industrial interests. Domestic politics and public opinion, both in the United States and in the country considering fuel-making, can be influential.

#### Global nuclear renaissance won’t cause prolif---not even latent capabilities

Shahriman Lockman 12, Senior Analyst in the Foreign Policy and Security Studies programme, Institute of Strategic and International Studies, Malaysia, 4/12/12, “An exaggerated risk, yet a real one,” http://www.thebulletin.org/web-edition/roundtables/nuclear-option-the-developing-world-weighs-energy-needs-and-security-risks

As more and more countries in the developing world consider adopting nuclear power, Western governments and the nonproliferation community all too often exaggerate the attendant risks of weapons proliferation. So should concerns about the security implications of new nuclear power programs therefore be abandoned? My answer is no -- not when the resources, institutions, and attitudes needed to ensure nuclear security and safety remain in short supply in the developing world.

In his first essay for this Roundtable, P. R. Kumaraswamy asserted that few countries with nuclear energy programs have sought to develop nuclear weapons. He is correct. Indeed, nonproliferation scholar Matthew Fuhrmann recently analyzed 129 countries, some of which showed interest in nuclear power and some of which did not, between 1965 and 2000. He found little support for the notion that nations pursue nuclear energy in order to lay the foundation for future nuclear weapons programs. In other words, countries do not generally engage in nuclear hedging.

Thus, officials from developing countries are justifiably puzzled by the alarm with which their counterparts in the developed world view nuclear proliferation. The United States, in particular, often regards remote security threats -- including those stemming from nuclear proliferation and nuclear terrorism -- as if they were certainties, despite the fact that the world is arguably less dangerous today than ever before (particularly for the United States). Further, security expert Tom Sauer argues that Europe's nonproliferation policy since 9/11 has increasingly come to resemble that of the United States.

#### No missing nukes – they would have been used already

Associated Press 12 – Vladimir Isachenkov, reporter for the Associated Press, January 9, 2012, "How Threat of Loose Soviet Nukes Was Avoided," http://www.military.com/news/article/how-threat-of-loose-soviet-nukes-was-avoided.html

There have been gnawing fears that a few Soviet nukes still might have gone missing, but experts with inside knowledge say that if it were true, the world would already know. "If somebody or a terrorist group got hold of a nuclear weapon, they would probably use it as quickly as possible," said Steven Pifer, who served as U.S. ambassador to Ukraine, held other senior State Department posts and is now director of the Brookings Institute's Arms Control Initiative. "So the fact that you haven't seen a nuclear detonation ... reflects the fact that the nuclear weapons have been maintained in a secure way."

#### No terror threat

Stephen M. Walt 12, Robert and Renée Belfer professor of international relations at Harvard University, "'America the brittle?'" September 10, Foreign Policy, http://walt.foreignpolicy.com/posts/2012/09/09/inflating\_the\_terrorist\_threat\_again

According to yesterday's New York Times, assorted "senior American officials" are upset that adversaries like al Qaeda, the Taliban, or the Somali pirates are not simply rolling over and dying. Instead, these foes are proving to be "resilient," "adaptable," and "flexible." These same U.S. officials are also worried that the United States isn't demonstrating the same grit, as supposedly revealed by high military suicide rates, increased reports of PTSD, etc. According to Times reporters Thom Shanker and Eric Schmitt, these developments¶ "raise concerns that the United States is losing ground in the New Darwinism of security threats, in which an agile enemy evolves in new ways to blunt America's vast technological prowess with clever homemade bombs and anti-American propaganda that helps supply a steady stream of fighters."¶ Or as Shanker and Schmitt put it (cue the scary music): "Have we become America the brittle?"¶ This sort of pop sociology is not very illuminating, especially when there's no evidence presented to support the various officials' gloomy pronouncements. In fact, the glass looks more than half-full. Let's start by remembering that the Somali pirates and al Qaeda have been doing pretty badly of late. Piracy in the Gulf of Aden is down sharply, Osama bin Laden is dead, and his movement's popularity is lower than ever. Whatever silly dreams he might have had about restoring the caliphate have proven to be just hollow fantasies. And as John Mueller and Mark Stewart showed in an article I linked to a few weeks ago, the actual record of post-9/11 plots against the United States suggests that these supposedly "agile" and "resilient" conspirators are mostly bumbling incompetents. In fact, Lehman Bros. might be the only major world organization that had a worse decade than al Qaeda did.

## 2NC

#### Thorium requires reprocessing and doesn’t prevent proliferation.

Carlson 9—John Carlson, Director General, Australian Safeguards and Non-Proliferation Office, Introduction to the Concept of Proliferation Resistance, Excerpt from: ICNND Research Paper No. 8, Revised, 3 June 2009, http://foe.org.au/anti-nuclear/issues/nfc/power-weapons/thorium

In principle, another route for avoiding the need for enrichment is the thorium fuel cycle, but as will be discussed in section 5.C, a thorium reactor requires enriched uranium or plutonium for the initial operating cycles, and current thorium reactor types also require reprocessing. Although reprocessing is for recovery of uranium-233 rather than plutonium, U-233 can also be used in nuclear weapons. A liquid fuel reactor concept is being considered which would avoid the need for U-233 separation.¶ 5.C Thorium fuel cycle¶ The thorium fuel cycle has similarities to the fast neutron fuel cycle – it depends on breeding fissile material (U-233) in the reactor, and reprocessing to recover this fissile material for recycle.¶ Thorium is not a fissile material, so cannot be used as reactor fuel. The basis of the thorium fuel cycle is irradiation of the fertile thorium isotope, Th-232, to produce the fissile material U-233 through neutron capture (rather like production of plutonium from U‑238). The thorium fuel cycle requires separation – i.e. reprocessing – of U-233 produced in the fuel, and the recycle of U‑233 as fresh fuel.¶ Proponents argue that the thorium fuel cycle is proliferation resistant because it does not produce plutonium. Proponents claim that it is not practicable to use U-233 for nuclear weapons.¶ There is no doubt that use of U-233 for nuclear weapons would present significant technical difficulties, due to the high gamma radiation and heat output arising from decay of U-232 which is unavoidably produced with U-233. Heat levels would become excessive within a few weeks, degrading the high explosive and electronic components of a weapon and making use of U‑233 impracticable for stockpiled weapons. However, it would be possible to develop strategies to deal with these drawbacks, e.g. designing weapons where the fissile “pit” (the core of the nuclear nuclear weapon) is not inserted until required, and where ongoing production and treatment of U-233 allows for pits to be continually replaced. This might not be practical for a large arsenal, but could certainly be done on a small scale.¶In addition, there are other considerations. A thorium reactor requires initial core fuel – LEU or plutonium – until it reaches the point where it is producing sufficient U-233 for self-sustainability, so the cycle is not entirely free of issues applying to the uranium fuel cycle (i.e. requirement for enrichment or reprocessing). Further, while the thorium cycle can be self-sustaining on produced U‑233, it is much more efficient if the U-233 is supplemented by additional “driver” fuel, such as LEU or plutonium. For example, India, which has spent some decades developing a comprehensive thorium fuel cycle concept, is proposing production of weapons grade plutonium in fast breeder reactors specifically for use as driver fuel for thorium reactors. This approach has obvious problems in terms of proliferation and terrorism risks.

#### No theft and no impact

Gray 9—Associate Note and Comment Editor, Arizona State Law Journal. J.D. Candidate, Sandra Day O'Connor College of Law at Arizona State University, 2009; B.S. Political Science, Arizona State University, 2005 (John, Comment: Choosing the Nuclear Option: The Case for a Strong Regulatory Response to Encourage Nuclear Energy Development, Spring 2009, 41 Ariz. St. L.J. 315, Lexis)

Nuclear power's opponents also warn that nuclear energy may be a terrorist target, both at nuclear plants themselves and during nuclear waste transportation and storage. 115 Such doomsday scenarios of terrorists blowing up a nuclear plant or stealing waste to create weapons may ring strongly in a post-9/11 world. However, these concerns are also misplaced. Just as the nuclear industry utilizes extreme tests and safeguards to prevent accidents, it also protects nuclear plants against terrorist attacks. 116 Terrorist attack by fire, explosion, or even crashing airplanes compares in strength to natural disasters such as earthquakes, tornadoes, floods, or hurricanes. 117 Studies suggest nuclear power plants' steel and cement shells have the strength to withstand any of these natural disasters or even large-scale terrorist attacks. 118 Thus, even if an attack occurred, the damage would be largely contained, minimizing any public health or environmental concerns. 119 Furthermore, nuclear power has both natural and artificial safeguards against terrorism involving nuclear waste. The natural safeguards may actually be the most effective. First, nuclear waste is radioactive, meaning that even an advanced group of individuals would have difficulty simply picking up or hijacking the material.

Not only does the material's [\*335] radioactivity prevent theft, but also its chemical composition provides little help to anyone who manages to steal the material. Once uranium has been processed through a nuclear power plant, it is not in a proper form to create nuclear weapons; in essence, a terrorist theft attempt would result only in some unusable nuclear fuel. 120 In addition to the natural safeguards, nuclear-waste-shipping containers are strong enough to withstand transportation safety concerns and to prevent nuclear waste from going to unintended people or areas. 121 These safeguards combine to prevent nuclear terrorism, at least in the energy context, from becoming a reality. Finally, because most radiation types would not cause widespread destruction, and because spent fuel is not weapons grade, a terrorist attack from stolen radiation would not be as dangerous as some fear. 122

#### Threat of international response deters nuclear terror

Umana 11 – Felipe Umana is a contributor to Foreign Policy In Focus, from the Institute for Policy Studies. August 17, 2011, "Loose Nukes: Real Threat?" http://www.fpif.org/articles/loose\_nukes\_real\_threat

The threat of military, political, and economic repercussions from foreign actors provides another viable deterrent. For example, the existence of a nuclear weapon or the confirmed knowledge that a belligerent non-state actor has developed a feasible nuclear weapon can goad major world governments to join forces and unleash a rapid and strong military operation on the region where these non-state actors. Atomic weapons in the hands of terrorist organizations are likely to remain immobile (seeing as the proper resources to move and handle it carefully are likely absent or of low quality), so an allied military procedure from the world’s most powerful militaries could then aim to neutralize an entire organization. The complete annihilation of a group’s membership and hideouts is an extremely unattractive measure from the perspective of any terrorist organization. The country that hosts these organizations, deliberately or inadvertently, would face severe opprobrium if it did not deal with radicals within its own borders. Diplomatic and economic sanctions could similarly be used to dissuade these states from potentially aiding the belligerent non-state actors, while also restricting corruption tactics from diverting financial flows to radical groups. Even more importantly, sanctions could serve as punishment or discouragement against states seeking nuclear capabilities for an offensive atomic program. Iran, for instance, has faced a long history of economic sanctions, partly because of its nuclear program.

# Warming Adv

## 1NC

#### Need to invest in mature technology, not reprocessing to solve climate change.

Cochran 9 (Thomas, Senior Scientist, Nuclear Program, Natural Resources Defense Council, “Senate Energy and Natural Resources Committee Hearing; To receive testimony on nuclear energy development; Testimony by Thomas Cochran, Senior Scientist, Nuclear Program, Natural Resources Defense Council” March 18, 2009, Congressional Documents and Publications)

B. Spent Fuel Reprocessing. The federal government should not encourage or support commercial spent fuel reprocessing. Putting aside for the moment the serious proliferation and security concerns involved in any future global shift toward reprocessing, it's clear that combating climate change is an urgent task that requires near term investments yielding huge decarbonization dividends on a 5 to 20 year timescale. For thermal reactors, the closed fuel cycle (spent fuel reprocessing and recycling plutonium) is unlikely ever to be less costly than the once-through fuel cycle, even assuming significant carbon controls. But setting aside such near-term cost barriers, commercial viability for a closed fuel cycle employing fast reactors is an even longer-term proposition. So even fervent advocates of nuclear power need to put the reprocessing agenda aside for a few decades, and focus on swiftly deploying and improving the low-carbon energy solutions. Think about it. In pursuit of closing the fuel cycle, the U.S. government could easily spend on the order of $ 150 billion over 15 years just to get to the starting line of large-scale commercialization. But all that spending will not yield one additional megawatt of low-carbon electricitybeyond what could be obtained by sticking with the current once-through cycle, much less by investing that $150 billion in renewable and efficient energy technologies. Spent-fuel reprocessing, plutonium recycle, and fast reactor waste transmutation are currently uneconomical, higher-risk, 100-year answers to an urgent climate question that now requires low-risk 5 to 20 year solutions. For now, Congress and the new Administration should terminate funding for the Global Nuclear Energy Partnership (GNEP) and its associated efforts to close the nuclear fuel cycle and introduce fast burner reactors in the United States. At any point along the way, Mr. Chairman, we can revisit this issue to assess whether there may be truly disruptive innovations in nuclear technology that would alter this negative assessment, and induce us to view closing the fuel cycle as a more costeffective pathway to decarbonization than the host of cheaper alternatives we have available to us today.

#### No impact---mitigation and adaptation will solve

Robert O. Mendelsohn 9, the Edwin Weyerhaeuser Davis Professor, Yale School of Forestry and Environmental Studies, Yale University, June 2009, “Climate Change and Economic Growth,” online: http://www.growthcommission.org/storage/cgdev/documents/gcwp060web.pdf

These statements are largely alarmist and misleading. Although climate change is a serious problem that deserves attention, society’s immediate behavior has an extremely low probability of leading to catastrophic consequences. The science and economics of climate change is quite clear that emissions over the next few decades will lead to only mild consequences. The severe impacts predicted by alarmists require a century (or two in the case of Stern 2006) of no mitigation. Many of the predicted impacts assume there will be no or little adaptation. The net economic impacts from climate change over the next 50 years will be small regardless. Most of the more severe impacts will take more than a century or even a millennium to unfold and many of these “potential” impacts will never occur because people will adapt. It is not at all apparent that immediate and dramatic policies need to be developed to thwart long‐range climate risks. What is needed are long‐run balanced responses.

#### Existing Co2 triggers impact

Hillman 7 Mayer, Senior Fellow at the Policy Studies Institute, “The Suicidal Planet: How To Prevent Global Climate Catastrophe”, p. 25-6

The effects of climate change cannot quickly be reversed by reducing or even eliminating future emissions of greenhouse gases. There are two reasons for this. First, greenhouse gases released into the atmosphere linger for decades (in the case of relatively short-lived gases like methane), or hundreds of years (for carbon dioxide), or even thousands of years (for the long-lived gases like per-fluorocarbons). Carbon dioxide and methane concentrations in the atmosphere are respectively one-third and more than twice as high as those at any time over the last 650,000 years. Even if no additional carbon dioxide were emitted from now on, atmospheric concentrations would take centuries to decline to pre-Industrial Revolution levels. While elevated levels of greenhouse gases remain in the atmosphere, additional warming will occur.

## 2NC

Can’t solve – already passed the tipping point

Fred Guterl 9, Executive Editor of Scientific American, Will Climate Go Over The Edge?, 2009 http://www.newsweek.com/id/185822

There is something compelling, in a ghoulish sort of way, about the notion that earth's climate may be headed toward a tipping point. The idea gained broad currency in 2007, when a panel of scientists, including Harvard environmental expert John Holdren—now the White House science adviser—warned that the planet is approaching a threshold beyond which damage to the environment would be irreversible. As policymakers work toward a climate treaty in Copenhagen in December that will include new limits on emissions, the question in the back of everyone's mind is whether an agreement can halt the warming trend, or at least stave off the worst consequences. Or is it already too late? A definitive answer isn't forthcoming, but the signs in recent months have been gloomy.

The truth is shrouded by a big scientific unknown: how quickly does climate respond to changes in carbon levels? After 30 years of research, the link between the two is still imprecise. That's why temperature trends are expressed within wide confidence intervals. The Intergovernmental Panel on Climate Change, the U.N. group, puts the odds at two in three that a doubling of carbon levels in the atmosphere from pre-industrial levels would raise average temperatures anywhere from 2 degrees C to 4.5 degrees C. The difference between the top and bottom of this range, according to the 2007 report, spells the difference between bad and catastrophic. (Some scientists believe, for instance, that crop yields decline 10 percent for each degree rise in temperature.) Where future generations wind up on the scale—or even if they fall on the scale at all—is still a roll of the dice.

Empirical evidence is worrying, but not particularly enlightening. Melting glaciers, changing bird-migration patterns and other observations suggest that warming is proceeding at a pace that may exceed past estimates—in other words, we may be heading toward the top of the IPCC forecast. But they don't tell us much about natural variability. Arctic sea ice, for instance, is clearly shrinking faster than the climate-change computers predicted. How much is due to carbon and how much would the ice have retreated anyway? There's too little data to know—comprehensive records on Arctic sea ice go back only to 1979. "The most likely bet is that the acceleration is due to greenhouse warming," says David Battisti, an atmospheric scientist at the University of Washington in Seattle. "But I'd be nervous about making that bet. To know for certain we'd want a couple hundred years of data. We have 30 years of really good data."

Since the real world is so messy, climate scientists Gerard Roe and Marcia Baker turned for insight to the distinctly neater world of mathematics. Last year, they published an analysis in the journal Science arguing that climate models were skewed in the direction of underestimating the warming effect of carbon. The report reasoned that carbon emissions have the potential to trigger many changes that amplify the warming effect—water absorbs more sunlight than ice, humidity traps more heat, and so on—but few that would mitigate it. The odds, they figure, are about one in three that temperatures will rise by 4.5 degrees C (the top of the IPCC's range), but there's little chance at all that they'll rise by less than 2 degrees C. "We've had a hard time eliminating the possibility of very large climate changes," says Roe. The answer is still couched in probabilities, but they've shifted in a worrying direction.

What can be done? Can a diplomatic miracle in Copenhagen save the planet from the dreaded tipping point? Sea ice in the Antarctic was supposed to last for 5,000 years until scientists found that the melting was proceeding at a faster pace than expected. Now it will all be gone in a mere 850 years. Bringing it back would require something like 10,000 years of cooler temperatures. Is there any way to halt the process before it goes too far?

No, says Susan Solomon, a climate scientist at the National Oceanic and Atmospheric Administration in Boulder, Colorado. In a recent study in the Proceedings of the National Academies of Science, she found that most of the carbon we've already released into the atmosphere will hang around for another 1,000 years. Even if world leaders somehow managed to persuade everybody to stop driving cars and heating their homes—bringing carbon emissions down to zero immediately—the Earth would continue to warm for centuries. The effect of rising temperatures on rainfall patterns is also irreversible, says Solomon. Parts of the world that tend to be dry (Mexico, north Africa, southern Europe and the western parts of Australia and the United States) will continue to get drier, while wet areas (the South Pacific islands, the horn of Africa) will keep getting wetter. "You have to think of it as being like a dial that can only turn one way," she says. "We've cranked up the dial, and we don't get to crank it back." The point of a climate treaty, then, isn't so much to roll things back as to keep them from getting a whole lot worse—a worthy and important goal, if not a particularly inspiring one.

#### Too late---we’ve already passed irreversible tipping points

Michael McCarthy, Environment Editor of The Independent, Global warming: passing the 'tipping point', 2006 http://www.independent.co.uk/environment/global-warming-passing-the-tipping-point-466187.html

A crucial global warming "tipping point" for the Earth, highlighted only last week by the British Government, has already been passed, with devastating consequences.

Research commissioned by The Independent reveals that the accumulation of greenhouse gases in the atmosphere has now crossed a threshold, set down by scientists from around the world at a conference in Britain last year, beyond which really dangerous climate change is likely to be unstoppable.

The implication is that some of global warming's worst predicted effects, from destruction of ecosystems to increased hunger and water shortages for billions of people, cannot now be avoided, whatever we do. It gives considerable

force to the contention by the green guru Professor James Lovelock, put forward last month in The Independent, that climate change is now past the point of no return.

The danger point we are now firmly on course for is a rise in global mean temperatures to 2 degrees above the level before the Industrial Revolution in the late 18th century.

At the moment, global mean temperatures have risen to about 0.6 degrees above the pre-industrial era - and worrying signs of climate change, such as the rapid melting of the Arctic ice in summer, are already increasingly evident. But a rise to 2 degrees would be far more serious.

By that point it is likely that the Greenland ice sheet will already have begun irreversible melting, threatening the world with a sea-level rise of several metres. Agricultural yields will have started to fall, not only in Africa but also in Europe, the US and Russia, putting up to 200 million more people at risk from hunger, and up to 2.8 billion additional people at risk of water shortages for both drinking and irrigation. The Government's conference on Avoiding Dangerous Climate Change, held at the UK Met Office in Exeter a year ago, highlighted a clear threshold in the accumulation of greenhouse gases such as carbon dioxide (CO2) in the atmosphere, which should not be surpassed if the 2 degree point was to be avoided with "relatively high certainty".

This was for the concentration of CO2 and other gases such as methane and nitrous oxide, taken together in their global warming effect, to stay below 400ppm (parts per million) in CO2 terms - or in the jargon, the "equivalent concentration" of CO2 should remain below that level.

The warning was highlighted in the official report of the Exeter conference, published last week. However, an investigation by The Independent has established that the CO2 equivalent concentration, largely unnoticed by the scientific and political communities, has now risen beyond this threshold.

This number is not a familiar one even among climate researchers, and is not readily available. For example, when we put the question to a very senior climate scientist, he said: "I would think it's definitely over 400 - probably about 420." So we asked one of the world's leading experts on the effects of greenhouse gases on climate, Professor Keith Shine, head of the meteorology department at the University of Reading, to calculate it precisely. Using the latest available figures (for 2004), his calculations show the equivalent concentration of C02, taking in the effects of methane and nitrous oxide at 2004 levels, is now 425ppm. This is made up of CO2 itself, at 379ppm; the global warming effect of the methane in the atmosphere, equivalent to another 40ppm of CO2; and the effect of nitrous oxide, equivalent to another 6ppm of CO2.

The tipping point warned about last week by the Government is already behind us.

#### Tech and adaptive advances prevent all climate impacts---warming won’t cause war

Dr. S. Fred Singer et al 11, Research Fellow at The Independent Institute, Professor Emeritus of Environmental Sciences at the University of Virginia, President of the Science and Environmental Policy Project, a Fellow of the American Association for the Advancement of Science, and a Member of the International Academy of Astronautics; Robert M. Carter, Research Professor at James Cook University (Queensland) and the University of Adelaide (South Australia), palaeontologist, stratigrapher, marine geologist and environmental scientist with more than thirty years professional experience; and Craig D. Idso, founder and chairman of the board of the Center for the Study of Carbon Dioxide and Global Change, member of the American Association for the Advancement of Science, American Geophysical Union, American Meteorological Society, Arizona-Nevada Academy of Sciences, and Association of American Geographers, et al, 2011, “Climate Change Reconsidered: 2011 Interim Report,” online: <http://www.nipccreport.org/reports/2011/pdf/FrontMatter.pdf>

Decades-long empirical trends of climate-sensitive measures of human well-being, including the percent of developing world population suffering from chronic hunger, poverty rates, and deaths due to extreme weather events, reveal dramatic improvement during the twentieth century, notwithstanding the historic increase in atmospheric CO2 concentrations.

The magnitude of the impacts of climate change on human well-being depends on society's adaptability (adaptive capacity), which is determined by, among other things, the wealth and human resources society can access in order to obtain, install, operate, and maintain technologies necessary to cope with or take advantage of climate change impacts. The IPCC systematically underestimates adaptive capacity by failing to take into account the greater wealth and technological advances that will be present at the time for which impacts are to be estimated.

Even accepting the IPCC's and Stern Review's worst-case scenarios, and assuming a compounded annual growth rate of per-capita GDP of only 0.7 percent, reveals that net GDP per capita in developing countries in 2100 would be double the 2006 level of the U.S. and triple that level in 2200. Thus, even developing countries' future ability to cope with climate change would be much better than that of the U.S. today.

The IPCC's embrace of biofuels as a way to reduce greenhouse gas emissions was premature, as many researchers have found "even the best biofuels have the potential to damage the poor, the climate, and biodiversity" (Delucchi, 2010). Biofuel production consumes nearly as much energy as it generates, competes with food crops and wildlife for land, and is unlikely to ever meet more than a small fraction of the world's demand for fuels.

The notion that global warming might cause war and social unrest is not only wrong, but even backwards - that is, global cooling has led to wars and social unrest in the past, whereas global warming has coincided with periods of peace, prosperity, and social stability.

#### Nuclear war turns warming

Duncan Clark 9, editorial environmental consultant to the London Guardian, co-director of GreenProfile, January 2, 2009, “The carbon footprint of nuclear war,” online: http://www.guardian.co.uk/environment/blog/2009/jan/02/nuclear-war-emissions

Almost 700m [million] tonnes of CO2 would be released into the Earth's atmosphere by even the smallest nuclear conflict, according to a US study that compares the environmental costs of developing various power sources

Just when you might have thought it was ethically sound to unleash a nuclear attack on a nearby city, along comes a pesky scientist and points out that atomic warfare is bad for the climate. According to a new paper in the journal Energy & Environmental Science, even a very limited nuclear exchange, using just a thousandth of the weaponry of a full-scale nuclear war, would cause up to 690m tonnes of CO2 to enter the atmosphere – more than UK's annual total.

The upside (kind of) is that the conflict would also generate as much as 313m tonnes of soot. This would stop a great deal of sunlight reaching the earth, creating a significant regional cooling effect in the short and medium terms – just like when a major volcano erupts. Ultimately, though, the CO2 would win out and crank up global temperatures an extra few notches.

The paper's author, Mark Z Jacobson, a professor of civil and environmental engineering at Stanford University, calculated the emissions of such a conflict by totting up the burn rate and carbon content of the fabric of our cities. "Materials have the following carbon contents: plastics, 38–92%; tyres and other rubbers, 59–91%; synthetic fibres, 63–86%; woody biomass, 41–45%; charcoal, 71%; asphalt, 80%; steel, 0.05–2%. We approximate roughly the carbon content of all combustible material in a city as 40–60%."

But why would a Stanford engineer bother calculating such a thing? Given that the nuclear exchange would also kill up to 17 million people, who's going to be thinking about the impact on global warming?

The purpose of the paper is to compare the total human and environmental costs of a wide range of different power sources, from solar and wind to nuclear and biofuels. One of the side-effects of nuclear power, the report argues, is an increased risk of nuclear war: "Because the production of nuclear weapons material is occurring only in countries that have developed civilian nuclear energy programs, the risk of a limited nuclear exchange between countries or the detonation of a nuclear device by terrorists has increased due to the dissemination of nuclear energy facilities worldwide."

"As such," Jacobson continues, "it is a valid exercise to estimate the potential number of immediate deaths and carbon emissions due to the burning of buildings and infrastructure associated with the proliferation of nuclear energy facilities and the resulting proliferation of nuclear weapons … Although concern at the time of an explosion will be the deaths and not carbon emissions, policy makers today must weigh all the potential future risks of mortality and carbon emissions when comparing energy sources."

#### Nuke war outweighs warming

Harrell 9 quoting Robock, Rutgers professor who uses NASA data 1/22, Eben, Time, “Regional nuclear war and the environment”,http://www.time.com/time/health/article/0,8599,1873164,00.html

Some scientists, most notably Freeman Dyson of The Institute for Advanced Study in Princeton, have stirred controversy by arguing that nuclear weapons are a more urgent environmental threat than global warming. Do you agree? Yes. If India and Pakistan engaged in nuclear war, they would use about 0.3% of the global nuclear stockpile. And still the effects on the climate would be dramatic. Our calculations on nuclear winter from the early 1980s have been confirmed by modern climate models. And fundamentally the situation hasn't changed — even with reduced stockpiles there still exists enough weapons to cause nuclear winter. That's something that maybe people don't realize. I think we have to solve the problem of the existence of all these weapons before we have the luxury of worrying about global warming.

# Solvency

## 1NC

#### All the benefits of thorium are far off and hypothetical—there’s a reason the industry isn’t investing.

NNL 12—National Nuclear Laboratory (UK), Comparison of thorium and uranium fuel cycles, NNL (11) 11593 Issue 5, A report prepared for and on behalf of Department of Energy and Climate Change, http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/nuclear/6300-comparison-fuel-cycles.pdf

Thorium fuel cycle R&D has a long history dating back to the very beginning of the nuclear industry. Though there are potential advantages, with the exception of India, it has failed to become established in commercial reactors for the reasons that have been explained in this report. Even in India, utilisation of thorium fuels still remains at relatively small scale. In recent years the thorium fuel cycle has been promoted by many research groups and technical companies such as Lightbridge and Thor Energy.¶ While the thorium fuel cycle has some benefits compared with the uranium-plutonium fuel cycle, these have yet to be demonstrated or substantiated, particularly in a commercial or regulatory environment. The U-Pu fuel cycle has the advantage of being fully mature and of having used in three generations of reactor designs. In contrast, the thorium fuel cycle is disadvantaged because all the supporting infrastructure would have to be established from scratch.¶ This is very relevant to the UK, especially at the present time in view of plans to start a new build programme in the UK based on LWRs. It could be argued that the main priority for the UK is to ensure the momentum that the new build programme currently has built up is maintained, in order that the new build plants will be available in good time to meet the projected shortfalls of low carbon electrical capacity. This only permits existing reactor designs with the uranium-plutonium fuel cycle. Innovative thorium fuelled reactors will not be a viable alternative for at least 20 to 30 years and definitely cannot meet the new build timescales. A limited role for thorium fuels in new build LWRs might be possible at a later date, with perhaps a partial transition to thorium-U233 fuels later in their lifetimes and any major shift towards the thorium fuel cycle would only be realistic in a follow-on programme of reactor construction.¶ Thorium fuelled reactors have already been advocated as being inherently safer than LWRs [18], but the basis of these claims is not sufficiently substantiated and will not be for many years, if at all. Suggesting that the UK should consider thorium reactors as a safer alternative to LWRs is not a viable option at this time as the UK energy shortfall and demand is on much shorzter timescales than thorium fuelled reactors could respond to. Furthermore, since the energy market is driven by private investment and with none of the utility companies investing or currently developing either thorium fuels or thorium fuelled reactor concepts, it is clear that there is little appetite or belief in the safety or performance claims.

## 2NC

#### Thorium supporters are conspiratorial and distort the truth.

Shahan 12—Zachary Shahan, Director of CleanTechnica, 9/11/12, <http://cleantechnica.com/2012/09/11/why-thorium-nuclear-isnt-featured-on-cleantechnica/>

I had a reader email me recently asking why we don’t feature thorium nuclear technology on CleanTechnica. To many good-intentioned folks, thorium is an energy panacea that seems perfect. People I respect have asked me the same thing in the past year or so. But thorium is far from perfect. In fact, it’s pretty darn lame, as I think you will see below (if you read this with an open mind).¶ Now, before I get into the details of why thorium is anything but awesome, I want to say a few things about the culture that surrounds the “thorium will solve all our problems!” idea. Thorium enthusiasts are often willing to make claims like, “if it weren’t for the government, we would have switched to thorium nuclear energy decades ago.” Or, “thorium nuclear will solve all our problems, but it’s been suppressed by big government for decades.”¶ I have to admit that I’ve gotten into far too many discussions with conspiracy theorists in the past several years (mostly regarding the topic of global warming). Two things I’ve learned are that 1) they think nearly everything wrong in the world is due to governmental conspiracy; 2) you cannot expect to have a logical conversation with them — presenting facts does not matter at all.¶Believe me, I understand that most if not all governments have a lot of corrupt politicians and leaders in them, that rich, entrenched energy industries have far too much control, and do suppress new technologies that could threaten their livelihood. That said, everything is not a conspiracy, and there are legitimate reasons why wind and solar energy are blowing up in use and popularity but thorium is not. There’s a good reason (or many good reasons) why wind turbines and solar panels are in place all over the world, but there isn’t a single commercial thorium reactor in operation. It’s not because every government in the world is suppressing thorium. It’s most likely because thorium simply isn’t what its proponents say it is.¶Now, many or most of the commenters and bloggers who are into thorium come into the discussion in a very conspiratorial way, from my experience, which immediately throws up a yellow flag (note: not a red flag, but a yellow one). As I said, I’ve spent way too much time unsuccessfully trying to bring science and logic into discussions with conspiracy theorists.¶ Conspiracy theorists aren’t the only ones getting behind thorium, though. I know some very intelligent people not obsessed with conspiracy who think it could be awesome. But the thing is, nuclear technology and science is very technical. While hearing a handful of nice things about thorium in what sounds like technical or scientific language might get some people excited, it really shouldn’t. Unless you have a ton of time on your hands to very scientifically study the matter (not read blogs about the topic), you should probably defer to independent experts who have studied the matter, and have carefully studied the claims of the thorium fan club.¶ You might also consider that some governments (i.e. India) have been trying to get thorium off the ground for decades, with apparently no success, and many others have researched it (including world-leading countries such as Germany, Japan, the UK, Russia, and the US). Do you really think that every government that looks into the matter doesn’t want cheap, safe energy?

#### Thorium doesn’t solve—multiple reasons

Rees ’11 – the Ecologist's acting Green Living Editor (Eifion, “Don't believe the spin on thorium being a ‘greener’ nuclear option,” June 23, The Ecologist, <http://www.theecologist.org/News/news_analysis/952238/dont_believe_the_spin_on_thorium_being_a_greener_nuclear_option.html>

And yet the nuclear industry itself is also sceptical, with none of the big players backing what should be – in PR terms and in a post-Fukushima world – its radioactive holy grail: safe reactors producing more energy for less and cheaper fuel.  ¶ In fact, a 2010 National Nuclear Laboratory (NNL) report concluded the thorium fuel cycle ‘does not currently have a role to play in the UK context [and] is likely to have only a limited role internationally for some years ahead’ – in short, it concluded, the claims for thorium were ‘overstated’.¶ Proponents counter that the NNL paper fails to address the question of MSR technology, evidence of its bias towards an industry wedded to PWRs. Reliant on diverse uranium/plutonium revenue streams – fuel packages and fuel reprocessing, for example – the nuclear energy giants will never give thorium a fair hearing, they say.¶ But even were its commercial viability established, given 2010’s soaring greenhouse gas levels, thorium is one magic bullet that is years off target. Those who support renewables say they will have come so far in cost and efficiency terms by the time the technology is perfected and upscaled that thorium reactors will already be uneconomic. Indeed, if renewables had a fraction of nuclear’s current subsidies they could already be light years ahead.   ¶ Extra radioactive waste¶ All other issues aside, thorium is still nuclear energy, say environmentalists, its reactors disgorging the same toxic byproducts and fissile waste with the same millennial half-lives. Oliver Tickell, author of Kyoto2, says the fission materials produced from thorium are of a different spectrum to those from uranium-235, but ‘include many dangerous-to-health alpha and beta emitters’.¶ Tickell says thorium reactors would not reduce the volume of waste from uranium reactors. ‘It will create a whole new volume of radioactive waste, on top of the waste from uranium reactors. Looked at in these terms, it’s a way of multiplying the volume of radioactive waste humanity can create several times over.’¶ Putative waste benefits – such as the impressive claims made by former Nasa scientist Kirk Sorensen, one of thorium’s staunchest advocates – have the potential to be outweighed by a proliferating number of MSRs. There are already 442 traditional reactors already in operation globally, according to the International Atomic Energy Agency. The by-products of thousands of smaller, ostensibly less wasteful reactors would soon add up.¶ Anti-nuclear campaigner Peter Karamoskos goes further, dismissing a ‘dishonest fantasy’ perpetuated by the pro-nuclear lobby.¶ Thorium cannot in itself power a reactor; unlike natural uranium, it does not contain enough fissile material to initiate a nuclear chain reaction. As a result it must first be bombarded with neutrons to produce the highly radioactive isotope uranium-233 – ‘so these are really U-233 reactors,’ says Karamoskos.   ¶ This isotope is more hazardous than the U-235 used in conventional reactors, he adds, because it produces U-232 as a side effect (half life: 160,000 years), on top of familiar fission by-products such as technetium-99 (half life: up to 300,000 years) and iodine-129 (half life: 15.7 million years).  Add in actinides such as protactinium-231 (half life: 33,000 years) and it soon becomes apparent that thorium’s superficial cleanliness will still depend on digging some pretty deep holes to bury the highly radioactive waste. ¶ Thorium for the UK?¶ With billions of pounds already spent on nuclear research, reactor construction and decommissioning costs – dwarfing commitments to renewables – and proposed reform of the UK electricity markets apparently hiding subsidies to the nuclear industry, the thorium dream is considered by many to be a dangerous diversion.¶ Energy consultant and former Friends of the Earth anti-nuclear campaigner Neil Crumpton says the government would be better deferring all decisions about its new nuclear building plans and fuel reprocessing until the early 2020s: ‘By that time much more will be known about Generation IV technologies including LFTRs and their waste-consuming capability.’¶ In the meantime, says Jean McSorley, senior consultant for Greenpeace’s nuclear campaign, the pressing issue is to reduce energy demand and implement a major renewables programme in the UK and internationally – after all, even conventional nuclear reactors will not deliver what the world needs in terms of safe, affordable electricity, let alone a whole raft of new ones.¶ ‘Even if thorium technology does progress to the point where it might be commercially viable, it will face the same problems as conventional nuclear: it is not renewable or sustainable and cannot effectively connect to smart grids. The technology is not tried and tested, and none of the main players is interested. Thorium reactors are no more than a distraction.’