## Plan

#### The United States federal government should lessen restrictions on natural gas production in the Environmental Protection Agency’s New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews.

## Manufacturing Advantage

### Internal Links

#### **Natural gas prices are low and stable---production is high---that spurs a renaissance in US manufacturing and chemical production**

Yergin 10-22 – Daniel is a Pulitzer Prize winning American author, speaker, and economic researcher. Yergin is the co-founder and chairman of Cambridge Energy Research Associates, an energy research consultancy that is now part of IHS Inc.. “Daniel Yergin: The Real Stimulus: Low-Cost Natural Gas,” 2012, http://online.wsj.com/article/SB10000872396390444734804578062331199029850.html

An unconventional oil and gas revolution is under way in the United States, but its full ramifications are only beginning to be understood. The basic facts are clear enough. Half a decade ago, it was assumed that the U.S. would become a large importer of liquefied natural gas; now **the domestic natural gas market is oversupplied, thanks to** the **ability to produce shale gas** through hydraulic fracturing and horizontal drilling technologies.¶ Shale gas alone is now 10% of the overall U.S. energy supply. And similar technologies to recover so-called tight oil trapped in rock formations are largely responsible for boosting U.S. oil production by 25% since 2008—the highest growth in oil output of any country in the world over that time period.¶ So far more than 1.7 million jobs are the result, according to a report titled "America's New Energy Future," released Tuesday by my research firm, IHS. These jobs include people working on rigs in Pennsylvania or North Dakota, manufacturing equipment in Ohio or Illinois, and providing information-technology services in California or legal services to royalty owners nationwide. The number of jobs could rise to three million by 2020. The energy revolution will add an estimated $62 billion to federal and state revenues this year.¶ But the energy revolution is having other effects that get less attention. The balance of payments is one. The increase in domestic oil production over the past five years will reduce our oil-import bill this year by about $75 billion. The growth of shale gas will save the U.S. from spending $100 billion a year on imported LNG, which was the likely prospect five years ago.¶ There is also a geopolitical dimension. The increase in U.S. oil production since 2008 is equivalent to almost 80% of what was Iran's export level before the imposition of sanctions on the Tehran regime. Without the additional oil coming from the surge in U.S. oil output, the Iranian oil sanctions could not have worked as well as they have.¶ Domestically, growing natural gas supplies provide a foundation for a manufacturing renaissance at least for industries for which energy is an important feedstock or where energy costs are significant. Chemical companies have been leaving the U.S. for years in the search for lower-cost countries in which to operate. Now they are planning to invest billions of dollars in new factories in this country **because of inexpensive and relatively stable natural gas prices.** The price of natural gas, which averaged $2.66 per thousand cubic feet in the first nine months of this year, is less than half of what it was five years ago.¶ This holds out a tantalizing prospect that **the U.S. could regain market share among the world's manufacturing exporters.** That prospect preoccupies companies around the world, from Europe to China. When I was in China recently I heard much talk about how China's historical advantage in cheap labor (which is becoming less cheap) could in the years ahead be offset by cheap energy in the U.S.

#### Low prices are stabilizing and key to long-term investment

CCES 12 – Center for Climate and Energy Solutions, May 2012, "Natural Gas in the Industrial Sector," [www.c2es.org/docUploads/natural-gas-industrial-sector.pdf](http://www.c2es.org/docUploads/natural-gas-industrial-sector.pdf)

Increased availability and low prices of natural gas have significant implications for domestic manufacturing, which has historically been concerned about supply availability and price volatility. Recently, abundant supply and low prices have led to an **increase in domestic manufacturing, creating new jobs and economic value.** Numerous companies have cited natural gas supply and price in announcing plans to open new facilities in the chemicals, plastics, steel, and other industries in the United States.18 In the past few years, the number of firms disclosing the **positive impact of new gas resources** for facility power generation and feedstock use to the Securities and Exchange Commission **has increased substantially**.19 In 2010, exports of basic chemicals and plastics increased 28 percent from the previous year, yielding a trade surplus of $16.4 billion.20 If the expectation that low prices will continue is correct, these economic benefits would be significant over the long term. A study by the American Chemistry Council, for instance, estimates that a 25 percent increase in ethane supplies would yield a $32.8 billion increase in U.S. chemical production.21 Industry, however, needs more than just abundance and low prices to maintain use of natural gas. Price stability is necessary to encourage long-term investments in industry, and **increased natural gas supplies** also have the potential to stabilize prices.22

#### **They’re key to manufacturing and the chemical industry**

PWC 11 – PwC's Industrial Products (IP) practice provides financial, operational, and strategic services to global organizations. December 2011, "Shale Gas - A Renaissance in US Manufacturing?"www.pwc.com/en\_US/us/industrial-products/assets/pwc-shale-gas-us-manufacturing-renaissance.pdf

The economic environment remains difficult for many US manufacturers, with soft demand and margin pressures making it harder to grow their domestic workforces. In this analysis, we present our point of view on how **shale gas** resources **can** help the sector **address these challenges** and create more jobs in the United States.¶ Executive summary¶ Shale, savings, growth, and jobs¶ During the last couple of years, increased commercialization of alternative energy has ushered in mounting debate on the impact – or lack of impact – that the deployment of new energy sources has on US job creation. Shale gas is one such alternative energy source that has drawn momentous investment and discussion as the country pursues a cleaner and more sustainable energy mix. Indeed, the shale gas industry has captured national attention, with even the names of reserves – Marcellus, Utica, Bakken, Barnett, and Eagle Ford – recognizable as national assets by even the casual observer… And for good reason. The amount of shale gas in these reserves and others potentially makes the United States one of the top producers of shale gas in the world.¶ While there has been a sharp focus cast upon shale gas – both on its potential promise and possible drawbacks – as a tenable energy source, there has been less focus on how shale gas impacts other industries. This led PsC to ask a simple but important question: “What could a growing shale gas industry mean for manufacturing job creation in the United States going forward?”¶ Potential opportunities¶ A PwC analysis finds that full-scale and robust shale gas development through 2025 would likely have a number of knock-on effects for other industries, particularly the manufacturing and chemical sectors. Given a scenario calling for high recovery of shale gas and low prices of natural gas, **the US manufacturing sector and the** **broader US economy** could stand to **benefit** in the following ways:¶ Energy affordability¶ Lower feedstock and energy costs could help US manufacturers reduce natural gas expenses by as much as $11.6 billion annually through 2025.¶ Demand growth¶ In 2011, 17 chemical, metal, and industrial manufacturers commented in SBC filings that shale gas developments drove demand for their products, compared to none in 2008.¶ More jobs¶ US manufacturing companies could employ approximately one million more workers by 2025 due to benefits from affordable energy and demand for products used to extract the gas.¶ This report demonstrates how shale gas can lead to each of these opportunities, based upon our analysis of trends in, and forecasts of, the domestic economy, manufacturing, and employment.¶ An increase in domestic investment¶ With shale gas resources more abundant than previously thought, US manufacturers can look forward to multiple new opportunities and a significant uptick in employment in the sector. Chemicals **and metals** companies are expected to gain the greatest benefit over the next several years. Chemicals companies can acquire affordable feedstock, meriting greater capital expenditures in the United States. For metals companies and some industrial manufacturers, opportunities abound to sell the equipment required for more robust drilling activity.¶ Many **companies have already announced new investment plans** geared to the development of shale gas. Our research on recent capex plans shows an increase in domestic investment going to support incremental gas production, along with more explicit communication to investors about shale-related growth opportunities. An underappreciated part of the shale gas story is the substantial cost benefit to manufacturers, based on estimates of future natural gas prices as more shale gas is recovered., Historically, there has been an indirect relationship between the level of energy prices, such as those for natural gas, and the level of domestic manufacturing employment, as manufacturers consume approximately one-third of all the energy produced in the United States. Consequentially, this relatively abundant domestic energy source has the potential to **drive an uptick in US manufacturing over the** long term **and create new jobs in the sector.**

### Hegemony/Competitiveness

#### **Manufacturing is key to the economy and competitiveness – massive multiplier effects**

Boushey 12 – Heather Boushey, Senior Economist, Center for American Progress Action Fund, July 19th, 2012, "Testimony before the U.S. House of Representatives Committee on Ways and Meanson Tax Reform and the U.S. Manufacturing Sector" waysandmeans.house.gov/uploadedfiles/boushey\_testimony.pdf

**Having a strong manufacturing industry in the United States should be at the top of our national economic agenda. Without a vibrant and innovative manufacturing base,** we will not be a global leader **for long. Moreover, as more of our energy** future will rely on high-tech manufacturing**, our** economic competitiveness will be even more closely aligned with our ability to be an innovator and producer of manufactured goods**.**¶ Further, this is an urgent national issue and one of those cases where success begets success. Economists have begun to study and show that the “industrial commons” matters for innovation and the extent to which we allow manufacturing processes to continue to go overseas, we only make it that much harder to regain our place as a global leader.11 As my colleagues Michael Ettlinger and Kate Gordon have put it, “the cross-fertilization and engagement of a community of experts in industry, academia, and government is vital to our nation’s economic competitiveness.”12¶ Manufacturing is not only a key part of our economy, but moving forward it will remain critical to our nation’s economic vitality¶ **The U.S. manufacturing sector is still a force internationally and an important part of our economy, despite employment losses and the relative rise in manufacturing in other countries over the past few decades**.13 **Last year, manufacturing contributed over** $1.8 trillion **to U.S.** g**ross** d**omestic** p**roduct, or about** 12 percent of the economy.14 Two years ago, manufacturing accounted for 60 percent of all U.S. exports.15 In 2008, the United States ranked first in the world in manufacturing value added, and it was the third largest exporter of manufactured goods to the world, behind only China and Germany and ahead of Japan and France.16 Between 1979 and 2010 manufacturing output per hour of labor in the United States increased by an average of 4 percent annually, and the United States has one of the world’s most productive workforces.17 Moreover, in 2009 there were 11.8 million direct jobs in manufacturing and 6.8 million additional jobs in related sectors.18 Put another way, one in six U.S. private-sector jobs is directly linked to manufacturing.19¶ Yet the industry suffered declines in the 2000s. The U.S. share of worldwide manufacturing value added dropped from 26 percent in 1998 to less than 20 percent in 2007, and we have gone from being a net exporter of manufactured goods in the 1960s to a net importer.20 Manufacturing as a share of U.S. GDP has declined from more than 15 percent in 1998 to 11 percent in 2009.21 And jobs in U.S. manufacturing declined from 17.6 million in January 1998 to 11.5 million in January 2010.22 And although the manufacturing sector has gained jobs in every month since then, for a total of 504,000 jobs as of June 2012, its share of total employment is down from 16.8 percent in 1998 to 10.8 percent today.23¶ These trends matter because the United States needs a strong manufacturing sector. **Manufacturing** provides good, middle-class jobs; **propels U.S. leadership in technology and innovation**, which is critical to our economic growth and vitality; and is important to balancing the trade deficit, as well as important for our nation’s long-term national security. The manufacturing sector has historically been a source of solid, middle-class jobs and it continues to be so today. **The average manufacturing worker earns a weekly wage that is 8.4 percent higher than non-manufacturing workers,** taking into account worker and job characteristics that influence wages, including unionization.24 **Economist Susan Helper and her colleagues conclude** that the economic evidence points to the fact that “the main reason why manufacturing wages and benefits are higher than those outside of manufacturing is that manufacturers need to pay higher wages to ensure that their workers are appropriately skilled and motivated.” 25 U.S.-based **manufacturing underpins a broad range of jobs in other industries,** including higher skill service jobs such as accountants, bankers, and lawyers, as well as a broad range of other jobs such as basic research and technology development, product and process engineering and design, operations and maintenance, transportation, testing, and lab work.26 Compared to jobs in other economic sectors, manufacturing jobs have the highest “multiplier effect**,” that is, the largest effect on the overall economy for each job created, relative to jobs in other industries.** To put this in perspective, each job in motor vehicle manufacturing creates 8.6 indirect jobs, each job in computer manufacturing creates 5.6 indirect jobs, and each job in steel product manufacturing creates 10.3 indirect jobs.27¶ Manufacturing is also important because it fuels the United States’ leadership in technology and innovation, which are critical to maintain for our future economic competitiveness.28 Manufacturing firms are more likely to innovate than firms in other industries: **Research from the National Science Foundation finds that 22 percent of manufacturing companies are active innovators compared to only 8 percent of nonmanufacturing companies.**29 This number is even higher for specific sectors within manufacturing. For example, in computer and electronic products manufacturing, 45 percent of companies are product innovators and 33 percent are process innovators.30 Manufacturing firms also **perform the vast majority of private research and development**: Despite comprising just 12 percent of the nation’s GDP in 2007, manufacturing companies contributed 70 percent of private research and development spending.31 ¶ In addition to what manufacturers spend on innovation, there is **increasingly strong empirical evidence showing a tight link between innovation and manufacturing production.** Economic research now shows that the United States will not likely be able to keep the highly skilled technical jobs if the production jobs go overseas. Harvard Business School professors Gary Pisano and Willy Shih have written about the decline of the “industrial commons” in the United States: the collective R&D, engineering, and manufacturing capabilities that mutually reinforce each other to sustain innovation.32 **For many types of manufacturing,** geographic proximity is key **to having a strong “commons,” and they point to evidence showing that there are few hightech industries where the feedback loop from the manufacturing process is not a factor in developing new products.**33 As they put it, “product and process innovation are intertwined.” Pisano and Shih point to the example of rechargeable batteries as a product where innovation followed manufacturing. Rechargeable battery manufacturing left the United States many years ago, leading to the migration of the batteries commons to Asia. Now new technology (batteries for hybrid and electric vehicles) are being designed in Asia where the commons are located. I’d draw your attention to a January New York Times article on China’s increasing investment in research and development, which asked, “**Our global competitiveness is based on being the origin of the newest, best ideas.** How will we fare if those ideas originate somewhere else?”34

#### US competitiveness solves hegemony and great power war

Baru 9 – Sanjaya Baru is a Professor at the Lee Kuan Yew School in Singapore Geopolitical Implications of the Current Global Financial Crisis, Strategic Analysis, Volume 33, Issue 2 March 2009 , pages 163 - 168

Hence, economic policies and performance do have strategic consequences.2 In the modern era, the idea that strong economic performance is the foundation of power was argued most persuasively by historian Paul Kennedy. 'Victory (in war)', Kennedy claimed, 'has repeatedly gone to the side with more flourishing productive base'.3 Drawing attention to the interrelationships between economic wealth, technological innovation, and the ability of states to efficiently mobilize economic and technological resources for power projection and national defence, Kennedy argued that nations that were able to better combine military and economic strength scored over others. 'The fact remains', Kennedy argued, 'that all of the major shifts in the world's military-power balance have followed alterations in the productive balances; and further, that the rising and falling of the various empires and states in the international system has been confirmed by the outcomes of the major Great Power wars, where victory has always gone to the side with the greatest material resources'.4 In Kennedy's view, the geopolitical consequences of an economic crisis, or even decline, would be transmitted through a nation's **inability to** find adequate financial resources to simultaneously **sustain** economic growth and **military power**, the classic 'guns versus butter' dilemma.

#### Domestic manufacturing is vital to US military tech innovation – dependence on foreign suppliers guts security

Ettlinger and Gordon 11 – Michael Ettlinger is the Vice President for Economic Policy at American Progress. Kate is a Senior Fellow at American Progress. “The Importance and Promise of American Manufacturing,” April, http://www.americanprogress.org/wp-content/uploads/issues/2011/04/pdf/manufacturing.pdf

Beyond innovation and competitiveness, basing manufacturing in the United States also is important to our overall national **and economic** security. The most clear-cut example of this, of course, is the importance of **being able to produce for the needs of our armed forces**. The importance of domestic capabilities in defense manufacturing is obvious—one doesn’t want to be dependent on foreign suppliers in a time of conflict. Equally obvious is the importance of **keeping innovations in military technology close to home**.

#### Military tech innovation is key to hegemony

Segal 4 – Maurice R. Greenberg Senior Fellow in China Studies at the Council on Foreign Relations. Foreign Affairs, November 2004 - December 2004, Is America Losing Its Edge?, Adam Segal, Pg. 2 Vol. 83 No. 6, Technology Enterprises in China.

The United States' **global primacy** **depends** in large part **on its ability to** develop new technologies and industries **faster than anyone else.** **For** the last five decades, **U.S. scientific innovation and** technological **entrepreneurship** **have** ensured the country'seconomic prosperity and military power. It was Americans who invented and commercialized the semiconductor, the personal computer, and the Internet; other countries merely followed the U.S. lead.¶ Today, however, **this technological edge**-so long taken for granted-may be slipping, and the most serious challenge is coming from Asia. Through competitive tax policies, increased investment in research and development (R&D), and preferential policies for science and technology (S&T) personnel, Asian governments are improving the quality of their science and ensuring the exploitation of future innovations. The percentage of patents issued to and science journal articles published by scientists in China, Singapore, South Korea, and Taiwan is rising. Indian companies are quickly becoming the second-largest producers of application services in the world, developing, supplying, and managing database and other types of software for clients around the world. South Korea has rapidly eaten away at the U.S. advantage in the manufacture of computer chips and telecommunications software. And even China has made impressive gains in advanced technologies such as lasers, biotechnology, and advanced materials used in semiconductors, aerospace, and many other types of manufacturing.¶ **Although the** United States' **technical dominance** remains solid**, the globalization** of research and development **is exerting** **considerable pressures on the American system**. Indeed, as the United States is learning, globalization cuts both ways: it is both a potent catalyst of U.S. technological innovation and a significant threat to it. **The** United States **will never be able to** prevent rivals from developing new technologies**; it can** remain dominant only **by** continuing to innovate faster **than everyone else.** But this won't be easy; to keep its privileged position in the world, **the** United States **must get better at** fostering technological entrepreneurship at home.

#### Heg decline causes nuclear war and extinction

Barnett 11 – Thomas P.M. Barnett is Former Senior Strategic Researcher and Professor in the Warfare Analysis & Research Department, Center for Naval Warfare Studies, U.S. Naval War College American military geostrategist and Chief Analyst at Wikistrat., worked as the Assistant for Strategic Futures in the Office of Force Transformation in the Department of Defense, March 7th, 2011, “The New Rules: Leadership Fatigue Puts U.S., and Globalization, at Crossroads,” http://www.worldpoliticsreview.com/articles/8099/the-new-rules-leadership-fatigue-puts-u-s-and-globalization-at-crossroads

It is worth first examining the larger picture: We live in a time of arguably **the greatest structural change in the global order yet endured**, with this historical moment's most amazing feature being its relative and absolute lack of mass violence. That is something to consider when Americans contemplate military intervention in Libya, because if we do take the step to prevent larger-scale killing by engaging in some killing of our own, we will not be adding to some fantastically imagined global death count stemming from the ongoing "megalomania" and "evil" of American "empire." We'll be engaging in the same sort of system-administering activity that has marked our stunningly successful stewardship of global order since World War II. Let me be more blunt: As the **guardian of globalization**, the U.S. military has been the greatest force for peace the world has ever known. Had America been removed from the global dynamics that governed the 20th century, the **mass murder never would have ended**. Indeed, it's entirely conceivable there would now be no identifiable human civilization left, once nuclear weapons entered **the killing equation.** But the world did not keep sliding down that **path of perpetual war**. Instead, America stepped up and changed everything by **ushering in our now-**perpetual great-power peace. We introduced the **international liberal trade order known as globalization** and played loyal Leviathan over its spread. What resulted was the collapse of empires, an explosion of **democracy,** the persistent spread of **human rights**, the liberation of women, the doubling of life expectancy, a roughly 10-fold increase in adjusted global GDP and a **profound** and persistent **reduction in** battle deaths from state-based **conflicts**. That is what American "hubris" actually delivered. Please remember that the next time some TV pundit sells you the image of "unbridled" American military power as the cause of global disorder instead of its cure. With self-deprecation bordering on self-loathing, we now imagine a post-American world that is anything but. Just watch who scatters and who steps up as the Facebook revolutions erupt across the Arab world. While we might imagine ourselves the status quo power, we remain the world's most vigorously revisionist force. ¶ As for the sheer "evil" that is our military-industrial complex, again, let's examine what the world looked like before that establishment reared its ugly head. The last great period of global structural change was the first half of the 20th century, a period that saw **a death toll of about 100 million across two world wars**. That comes to an average of 2 million deaths a year in a world of approximately 2 billion souls. Today, with far more comprehensive worldwide reporting, researchers report an average of less than 100,000 battle deaths annually in a world fast approaching 7 billion people. Though admittedly crude, these calculations suggest a 90 percent absolute drop and a 99 percent relative drop in deaths due to war. We are **clearly headed for a world order characterized by multipolarity**, something the American-birthed system was designed to both encourage and accommodate. But given how things turned out the last time we collectively faced such a fluid structure, we would do well to keep U.S. power, in all of its forms, deeply embedded in the geometry to come.

#### Perception of decline causes US lashout – triggers hegemonic wars

Goldstein 7 Professor of Global Politics and International Relations @ University of Pennsylvania “Power transitions, institutions, and China's rise in East Asia: Theoretical expectations and evidence,” Journal of Strategic Studies, Volume 30, Issue 4 & 5 August 2007, pages 639 – 682

Two closely related, though distinct, theoretical arguments focus explicitly on the consequences for international politics of a shift in power between a dominant state and a rising power. In War and Change in World Politics, Robert Gilpin suggested that peace prevails when a dominant state’s capabilities enable it to ‘govern’ an international order that it has shaped. Over time, however, as economic and technological diffusion proceeds during eras of peace and development, other states are empowered. Moreover, the burdens of international governance drain and distract the reigning hegemon, and challengers eventually emerge who seek to rewrite the rules of governance. As the power advantage of the erstwhile hegemon ebbs, **it may become desperate enough to resort to** the ultima ratio of international politics, **force,** to forestall the increasingly urgent demands of a rising challenger. Or as the power of the challenger rises, it may be tempted to press its case with threats to use force. It is the rise and fall of the great powers that creates the circumstances under which major wars, what Gilpin labels ‘hegemonic wars’, break out.13 Gilpin’s argument logically encourages pessimism about the implications of a rising China. It leads to the expectation that international trade, investment, and technology transfer will result in a steady diffusion of American economic power, benefiting the rapidly developing states of the world, including China. As the US simultaneously scurries to put out the many brushfires that threaten its far-flung global interests (i.e., the classic problem of overextension), it will be unable to devote sufficient resources to maintain or restore its former advantage over emerging competitors like China. While the erosion of the once clear American advantage plays itself out, the US will find it ever more difficult to preserve the order in Asia that it created during its era of preponderance. The expectation is an increase in the likelihood for the use of force – either by a Chinese challenger able to field a stronger military in support of its demands for greater influence over international arrangements in Asia, or by a besieged American hegemon desperate to head off further decline. Among the trends that alarm those who would look at Asia through the lens of Gilpin’s theory are China’s expanding share of world trade and wealth (much of it resulting from the gains made possible by the international economic order a dominant US established); its acquisition of technology in key sectors that have both civilian and military applications (e.g., information, communications, and electronics linked with to forestall, and the challenger becomes increasingly determined to realize the transition to a new international order whose contours it will define. the ‘revolution in military affairs’); and an expanding military burden for the US (as it copes with the challenges of its global war on terrorism and especially its struggle in Iraq) that limits the resources it can devote to preserving its interests in East Asia.14 Although similar to Gilpin’s work insofar as it emphasizes the importance of shifts in the capabilities of a dominant state and a rising challenger, the power-transition theory A. F. K. Organski and Jacek Kugler present in The War Ledger focuses more closely on the allegedly dangerous phenomenon of ‘crossover’– the point at which a dissatisfied challenger is about to overtake the established leading state.15 In such cases, when the power gap narrows, the dominant state becomes increasingly desperate. Though suggesting why a rising China may ultimately present grave dangers for international peace when its capabilities make it a peer competitor of America, Organski and Kugler’s power-transition theory is less clear about the dangers while a potential challenger still lags far behind and faces a difficult struggle to catch up. This clarification is important in thinking about the theory’s relevance to interpreting China’s rise because a broad consensus prevails among analysts that Chinese military capabilities are at a minimum two decades from putting it in a league with the US in Asia.16 Their theory, then, points with alarm to trends in China’s growing wealth and power relative to the United States, but especially looks ahead to what it sees as the period of maximum danger – that time when a dissatisfied China could be in a position to overtake the US on dimensions believed crucial for assessing power. Reports beginning in the mid-1990s that offered extrapolations suggesting China’s growth would give it the world’s largest gross domestic product (GDP aggregate, not per capita) sometime in the first few decades of the twentieth century fed these sorts of concerns about a potentially dangerous challenge to American leadership in Asia.17 The huge gap between Chinese and American military capabilities (especially in terms of technological sophistication) has so far discouraged prediction of comparably disquieting trends on this dimension, but inklings of similar concerns may be reflected in occasionally alarmist reports about purchases of advanced Russian air and naval equipment, as well as concern that Chinese espionage may have undermined the American advantage in nuclear and missile technology, and speculation about the potential military purposes of China’s manned space program.18 Moreover, because a dominant state may react to the prospect of a crossover and believe that it is wiser to embrace the logic of **preventive war** and act early to delay a transition while the task is more manageable, Organski and Kugler’s power-transition theory also provides grounds for concern about the period prior to the possible crossover.19 pg. 647-650

### Economy

#### The US is key to the global economy

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IN THE aftermath of the G-20 summit, most observers seem to have missed perhaps the most crucial statement of the entire event, made by United States President Barack Obama at his pre-conference meeting with British Prime Minister Gordon Brown: 'The world has become accustomed to the US being a voracious consumer market, **the engine that drives a lot of economic growth worldwide**,' he said. 'If there is going to be renewed growth, it just can't be the US as the engine.' ¶ While superficially sensible, this view is deeply problematic. To begin with, it ignores the fact that the global economy has in fact been 'America-centred' for more than 60 years. **Countries** - China, Japan, Canada, Brazil, Korea, Mexico and so on - **either sell to the US or they sell to countries that sell to the US.** To put it simply, Mr Obama doesn't seem to understand that there is no other engine for the world economy - and hasn't been for the last six decades. **If the US does not drive global economic growth, growth is not going to happen**. Thus, US policies to deal with the current crisis are critical not just domestically, but also to the entire world. ¶ This system has generally been advantageous for all concerned. America gained certain historically unprecedented benefits, but the system also enabled participating countries - first in Western Europe and Japan, and later, many in the Third World - to achieve undreamt-of prosperity. ¶ At the same time, this deep inter-connection between the US and the rest of the world also explains how the collapse of a relatively small sector of the US economy - 'sub-prime' housing, logarithmically exponentialised by Wall Street's ingenious chicanery - has cascaded into the worst global economic crisis since the Great Depression.

#### Economic decline leads to global nuclear war

Green and Schrage 9 – Senior Advisor and Japan Chair @ CSIS and Associate Professor @ Georgetown University AND CSIS School Chair in International Business and Former Senior Official with the US Trade Representative’s Office (Michael J. and Steven P., “It’s not just the economy,” State Department and Ways & Means Committee, Asia Times, 3/26, <http://www.atimes.com/atimes/asian_economy/kc26dk01.html>)

Facing the worst economic crisis since the Great Depression, analysts at the World Bank and the US Central Intelligence Agency are just beginning to contemplate the ramifications for international stability if there is not a recovery in the next year. For the most part, the focus has been on fragile states such as some in Eastern Europe.¶ However, the Great Depression taught us that a downward global economic spiral can even have jarring impacts on great powers. It is no mere coincidence that the last great global economic downturn was followed by the most destructive war in human history. ¶ In the 1930s, economic desperation helped fuel autocratic regimes and protectionism in a downward economic-security death spiral that engulfed the world in conflict. This spiral was aided by the preoccupation of the United States and other leading nations with economic troubles at home and insufficient attention to working with other powers to maintain stability abroad. Today's challenges are different, yet 1933's London Economic Conference, which failed to stop the drift toward deeper depression and world war, should be a cautionary tale for leaders heading to next month's London Group of 20 (G-20) meeting. ¶ There is no question the US must urgently act to address banking issues and to restart its economy. But the lessons of the past suggest that we will also have to keep an eye on those fragile threads in the international system that could begin to unravel if the financial crisis is not reversed early in the Barack Obama administration and realize that economics and security are intertwined in most of the critical challenges we face.¶ A disillusioned rising power? Four areas in Asia merit particular attention, although so far the current financial crisis has not changed Asia's fundamental strategic picture. China is not replacing the US as regional hegemon, since the leadership in Beijing is too nervous about the political implications of the financial crisis at home to actually play a leading role in solving it internationally.¶ Predictions that the US will be brought to its knees because China is the leading holder of US debt often miss key points. China's currency controls and full employment/export-oriented growth strategy give Beijing few choices other than buying US Treasury bills or harming its own economy. Rather than creating new rules or institutions in international finance, or reorienting the Chinese economy to generate greater long-term consumer demand at home, Chinese leaders are desperately clinging to the status quo (though Beijing deserves credit for short-term efforts to stimulate economic growth).¶ The greater danger with China is not an eclipsing of US leadership, but instead the kind of shift in strategic orientation that happened to Japan after the Great Depression. Japan was arguably not a revisionist power before 1932 and sought instead to converge with the global economy through open trade and adoption of the gold standard.¶ The worldwide depression and protectionism of the 1930s devastated the newly exposed Japanese economy and contributed directly to militaristic and autarkic policies in Asia as the Japanese people reacted against what counted for globalization at the time. China today is similarly converging with the global economy, and many experts believe China needs at least 8% annual growth to sustain social stability. Realistic growth predictions for 2009 are closer to 5%.¶ Veteran China hands were watching closely when millions of migrant workers returned to work after the Lunar New Year holiday last month to find factories closed and jobs gone. There were pockets of protests, but nationwide unrest seems unlikely this year, and Chinese leaders are working around the clock to ensure that it does not happen next year either. However, the economic slowdown has only just begun and nobody is certain how it will impact the social contract in China between the ruling communist party and the 1.3 billion Chinese who have come to see President Hu Jintao's call for "harmonious society" as inextricably linked to his promise of "peaceful development".¶ If the Japanese example is any precedent, a sustained economic slowdown has the potential to open a dangerous path from economic nationalism to strategic revisionism in China too.¶ Dangerous states¶ It is noteworthy that North Korea, Myanmar and Iran have all intensified their defiance in the wake of the financial crisis, which has distracted the world's leading nations, limited their moral authority and sown potential discord. With Beijing worried about the potential impact of North Korean belligerence or instability on Chinese internal stability, and leaders in Japan and South Korea under siege in parliament because of the collapse of their stock markets, leaders in the North Korean capital of Pyongyang have grown increasingly boisterous about their country's claims to great power status as a nuclear weapons state.¶ The junta in Myanmar has chosen this moment to arrest hundreds of political dissidents and thumb its nose at fellow members of the 10-country Association of Southeast Asian Nations. Iran continues its nuclear program while exploiting differences between the US, UK and France (or the P-3 group) and China and Russia - differences that could become more pronounced if economic friction with Beijing or Russia crowds out cooperation or if Western European governments grow nervous about sanctions as a tool of policy.¶ It is possible that the economic downturn will make these dangerous states more pliable because of falling fuel prices (Iran) and greater need for foreign aid (North Korea and Myanmar), but that may depend on the extent that authoritarian leaders care about the well-being of their people or face internal political pressures linked to the economy. So far, there is little evidence to suggest either and much evidence to suggest these dangerous states see an opportunity to advance their asymmetrical advantages against the international system.¶ Challenges to the democratic model¶ The trend in East Asia has been for developing economies to steadily embrace democracy and the rule of law in order to sustain their national success. But to thrive, new democracies also have to deliver basic economic growth. The economic crisis has hit democracies hard, with Japanese Prime Minister Aso Taro's approval collapsing to single digits in the polls and South Korea's Lee Myung-bak and Taiwan's Ma Ying Jeou doing only a little better (and the collapse in Taiwan's exports - particularly to China - is sure to undermine Ma's argument that a more accommodating stance toward Beijing will bring economic benefits to Taiwan). Thailand's new coalition government has an uncertain future after two years of post-coup drift and now economic crisis.¶ The string of old and new democracies in East Asia has helped to anchor US relations with China and to maintain what former secretary of state Condoleezza Rice once called a "balance of power that favors freedom". A reversal of the democratic expansion of the past two decades would not only impact the global balance of power but also increase the potential number of failed states, with all the attendant risk they bring from harboring terrorists to incubating pandemic diseases and trafficking in persons. It would also undermine the demonstration effect of liberal norms we are urging China to embrace at home.

#### 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.

### Economy---Asia Scenario

#### Economic collapse causes Asian instability and war – high probability

**Auslin 9** – resident scholar at AEI (Michael “Averting Disaster”, The Daily Standard, 2/6, http://www.aei.org/article/100044

As they deal with a collapsing world economy, policymakers in Washington and around the globe must not forget that when a depression strikes, war can follow. **Nowhere is this truer than in Asia**, the most heavily armed region on earth and riven with ancient hatreds and territorial rivalries. Collapsing trade flows can lead to political tension, nationalist outbursts, growing distrust, and ultimately, military miscalculation. The result would be disaster on top of an already dire situation. No one should think that Asia is on the verge of conflict. But it is also important to remember what has helped keep the peace in this region for so long. Phenomenal growth rates in Japan, South Korea, Hong Kong, Singapore, China and elsewhere since the 1960s have naturally turned national attention inward, to development and stability. This has gradually led to increased political confidence, diplomatic initiatives, and in many nations the move toward more democratic systems. America has directly benefited as well, and not merely from years of lower consumer prices, but also from the general conditions of peace in Asia. Yet policymakers need to remember that even during these decades of growth, moments of economic shock, such as the 1973 Oil Crisis, led to instability and bursts of terrorist activity in Japan, while the uneven pace of growth in China has led to tens of thousands of armed clashes in the poor interior of the country. Now imagine such instability multiplied region-wide. The economic collapse Japan is facing, and China's potential slowdown, dwarfs any previous economic troubles, including the 1998 Asian Currency Crisis. Newly urbanized workers rioting for jobs or living wages, conflict over natural resources, further saber-rattling from North Korea, all can take on lives of their own. This is the nightmare of governments in the region, and particularly of democracies from newer ones like Thailand and Mongolia to established states like Japan and South Korea. How will overburdened political leaders react to internal unrest? What happens if Chinese shopkeepers in Indonesia are attacked, or a Japanese naval ship collides with a Korean fishing vessel? Quite simply, Asia's political infrastructure may not be strong enough to resist the slide towards confrontation and conflict. This would be a political and humanitarian disaster turning the clock back decades in Asia. It would almost certainly drag America in at some point, as well. First of all, we have alliance responsibilities to Japan, South Korea, Australia, and the Philippines should any of them come under armed attack. Failure on our part to live up to those responsibilities could mean the end of America's credibility in Asia. Secondly, peace in Asia has been kept in good measure by the continued U.S. military presence since World War II. There have been terrible localized conflicts, of course, but nothing approaching a systemic conflagration like the 1940s. Today, such a conflict would be far more bloody, and it is unclear if the American military, already stretched too thin by wars in Afghanistan and Iraq, could contain the crisis. Nor is it clear that the American people, worn out from war and economic distress, would be willing to shed even more blood and treasure for lands across the ocean. The result could be a historic changing of the geopolitical map in the world's most populous region. Perhaps China would emerge as the undisputed hegemon. Possibly democracies like Japan and South Korea would link up to oppose any aggressor. India might decide it could move into the vacuum. All of this is guess-work, of course, but it has happened repeatedly throughout history. There is no reason to believe we are immune from the same types of miscalculation and greed that have destroyed international systems in the past.

#### Asia war outweighs – draws in great powers and destroys international stability

White 8 – Hugh White 8, Professor of Strategic Studies at Australian National University and Visiting Fellow, the Lowy Institute, June 4, 2008, “'Why War in Asia Remains Thinkable' ,” online: http://www.iiss.org/conferences/global-strategic-challenges-as-played-out-in-asia/asias-strategic-challenges-in-search-of-a-common-agenda/conference-papers/fifth-session-conflict-in-asia/why-war-in-asia-remains-thinkable-prof-hugh-white/

But while I agree that war in Asia is unlikely, it does seem to me to be ‘thinkable’. Moreover I will suggest that there is a real risk that war will become more thinkable in Asia over coming years and decades. And by ‘war’ I mean not just the kinds of small wars that have sadly always remained quite common in global and regional affairs. I mean big wars: wars between major powers that can kill millions, disrupt the lives of billions and wreck the international system. I mean the kind of wars that the founders of the IISS worried about fifty years ago when this great institution was founded, and which they and their successors have done so much to study, understand and prevent.

### China

#### Decline of US manufacturing triggers unchecked Chinese rise and South China Sea conflict

Mosher 6 Steven is the President of the Population Research Institute. “CHINESE INFLUENCE ON U.S. FOREIGN POLICY THROUGH U.S. EDUCATIONAL INSTITUTIONS, MULTILATERAL ORGANIZATIONS AND CORPORATE AMERICA: HEARING BEFORE THE SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS OF THE COMMITTEE ON INTERNATIONAL RELATIONS HOUSE OF REPRESENTATIVES,” Feb 14, http://commdocs.house.gov/committees/intlrel/hfa26076.000/hfa26076\_0f.htm

The ruthless mercantilism practiced by the CCP is thus a form of economic warfare. China's rulers seek to move as much of the world's manufacturing base to their country as possible, thus increasing the PRC's ''comprehensive national strength'' at the same time that **it undermines U.S. national security by hollowing out America's industrial base** in general and key defense-related sectors of the economy in particular. China will not lightly abandon this policy, which strengthens China as it weakens the U.S., and is an integral part of China's drive for Hegemony.¶ CHINA IS ACQUIRING THE MEANS TO PROJECT FORCE FAR BEYOND TAIWAN.¶ Many of China's military modernization efforts—supersonic anti-ship cruise missiles, stealthy submarines, theater based missiles with terminal guidance systems—are aimed specifically at U.S. forces and bases. By is acquiring weapons designed to exploit U.S. vulnerabilities, the PRC is clearly preparing for a contest with the United States.¶ Beijing is interested in deterring, delaying, or complicating U.S. assistance to Taiwan in the event of an invasion, so as to force a quick capitulation by the democratically elected Taiwan government. But while the near-term focus is Taiwan, many of China's new lethal capabilities are applicable to a wide range of potential operations beyond the Taiwan Strait. As the 2005 Report to Congress of the USCC report notes, ''China is in the midst of an extensive force modernization program aimed at increasing its force projection capabilities and confronting U.S. and allied forces in the region.''(see footnote 20)¶ The rapid growth in China's military power not only threatens Taiwan—and by implication the U.S.—but U.S. allies throughout the Asian Pacific region. China possesses regional, even global ambitions, and is building a first-rate military to realize those ambitions. It is naive to view the PRC's military build-up as ''merely'' part of the preparations for an invasion of Taiwan in which American military assets in the Asian-Pacific will have to be neutralized.¶ China's construction of naval bases in the Indian Ocean, and its aggressive pursuit of territorial claims in the East and South China Seas point to its wider ambitions.¶ Finally, even a cursory reading of China's 2004 Defense White Paper suggests that it views U.S. power and military presence throughout the world with a jaundiced eye, and that it seeks to become, over the mid-term, the dominant power in Asia. This goal necessarily brings it into **potential conflict with the U.S**. and its allies, chiefly Japan.¶ CHINA IS PURSUING TERRITORIAL CLAIMS OTHER THAN TAIWAN.¶ Additional evidence that China's territorial ambitions go well beyond Taiwan comes from its aggressive pursuit of territorial claims in the East China and South China seas.(see footnote 21)¶ Since the early 1970s, Beijing has claimed the Japanese-controlled Senkaku Islands (or Tiaoyutai in Chinese) and the continental shelf that extends into Japanese territorial waters. China's increasingly aggressive intrusions into Japanese airspace and Japanese territorial waters has raise d eyebrows in Tokyo and Washington. In November 2004, for example, the Japanese navy chased a Han-class nuclear submarine away from the waters off Okinawa.¶ China also orchestrated the removal of U.S. logistics forces from the Central Asian republics, demonstrating that its commitment to fighting terrorism was less important that its desire to reduce U.S. influence and presence in the region.

#### **Unchecked Chinese rise causes great power nuclear war**

Walton 7 – C. Dale Walton, Lecturer in International Relations and Strategic Studies at the University of Reading, 2007, Geopolitics and the Great Powers in the 21st Century, p. 49

Obviously, it is of vital importance to the United States that the PRC does not become the hegemon of Eastern Eurasia. As noted above, however, regardless of what Washington does, China's success in such an endeavor is not as easily attainable as pessimists might assume. The PRC appears to be on track to be a very great power indeed, but geopolitical conditions are not favorable for any Chinese effort to establish sole hegemony; a robust multipolar system should suffice to keep China in check, even with only minimal American intervention in local squabbles. The more worrisome danger is that Beijing will cooperate with a great power partner, establishing a very muscular axis. Such an entity would present a critical danger to the balance of power, thus both necessitating very **active American intervention** in Eastern Eurasia and **creating the** underlying **conditions for a massive**, and probably **nuclear, great power war**. Absent such a "super-threat," however, the demands on American leaders will be far more subtle: creating the conditions for Washington's gentle decline from playing the role of unipolar quasi-hegemon to being "merely" the greatest of the world's powers, while aiding in the creation of a healthy multipolar system that is not marked by close great power alliances.

#### South China Sea conflict goes nuclear

Wittner 11 (Lawrence S. Wittner, Emeritus Professor of History at the State University of New York/Albany, Wittner is the author of eight books, the editor or co-editor of another four, and the author of over 250 published articles and book reviews. From 1984 to 1987, he edited Peace & Change, a journal of peace research., 11/28/2011, "Is a Nuclear War With China Possible?", [www.huntingtonnews.net/14446](http://www.huntingtonnews.net/14446))

While nuclear weapons exist, there remains a danger that they will be used. After all, for centuries national conflicts have led to wars, with nations employing their deadliest weapons. The current deterioration of U.S. relations with China might end up providing us with yet another example of this phenomenon. The gathering tension between the United States and China is clear enough. Disturbed by China’s growing economic and military strength, the U.S. government recently challenged China’s claims in the South China Sea, increased the U.S. military presence in Australia, and deepened U.S. military ties with other nations in the Pacific region. According to Secretary of State Hillary Clinton, the United States was “asserting our own position as a Pacific power.” But need this lead to nuclear war? Not necessarily. And yet, there are signs that it could. After all, both the United States and China possess large numbers of nuclear weapons. The U.S. government threatened to attack China with nuclear weapons during the Korean War and, later, during the conflict over the future of China’s offshore islands, Quemoy and Matsu. In the midst of the latter confrontation, President Dwight Eisenhower declared publicly, and chillingly, that U.S. nuclear weapons would “be used just exactly as you would use a bullet or anything else.” Of course, China didn’t have nuclear weapons then. Now that it does, perhaps the behavior of national leaders will be more temperate. But the loose nuclear threats of U.S. and Soviet government officials during the Cold War, when both nations had vast nuclear arsenals, should convince us that, even as the military ante is raised, nuclear saber-rattling persists. Some pundits argue that nuclear weapons prevent wars between nuclear-armed nations; and, admittedly, there haven’t been very many—at least not yet. But the Kargil War of 1999, between nuclear-armed India and nuclear-armed Pakistan, should convince us that such wars can occur. Indeed, in that case, the conflict almost slipped into a nuclear war. Pakistan’s foreign secretary threatened that, if the war escalated, his country felt free to use “any weapon” in its arsenal. During the conflict, Pakistan did move nuclear weapons toward its border, while India, it is claimed, readied its own nuclear missiles for an attack on Pakistan. At the least, though, don’t nuclear weapons deter a nuclear attack? Do they? Obviously, NATO leaders didn’t feel deterred, for, throughout the Cold War, NATO’s strategy was to respond to a Soviet conventional military attack on Western Europe by launching a Western nuclear attack on the nuclear-armed Soviet Union. Furthermore, if U.S. government officials really believed that nuclear deterrence worked, they would not have resorted to championing “Star Wars” and its modern variant, national missile defense. Why are these vastly expensive—and probably unworkable—military defense systems needed if other nuclear powers are deterred from attacking by U.S. nuclear might? Of course, the bottom line for those Americans convinced that nuclear weapons safeguard them from a Chinese nuclear attack might be that the U.S. nuclear arsenal is far greater than its Chinese counterpart. Today, it is estimated that the U.S. government possesses over five thousand nuclear warheads, while the Chinese government has a total inventory of roughly three hundred. Moreover, only about forty of these Chinese nuclear weapons can reach the United States. Surely the United States would “win” any nuclear war with China. But what would that “victory” entail? A nuclear attack by China would immediately slaughter at least 10 million Americans in a great storm of blast and fire, while leaving many more dying horribly of sickness and radiation poisoning. The Chinese death toll in a nuclear war would be far higher. Both nations would be reduced to smoldering, radioactive wastelands. Also, radioactive debris sent aloft by the nuclear explosions would blot out the sun and bring on a “nuclear winter” around the globe—destroying agriculture, creating worldwide famine, and generating chaos and destruction. Moreover, in another decade the extent of this catastrophe would be far worse. The Chinese government is currently expanding its nuclear arsenal, and by the year 2020 it is expected to more than double its number of nuclear weapons that can hit the United States. The U.S. government, in turn, has plans to spend hundreds of billions of dollars “modernizing” its nuclear weapons and nuclear production facilities over the next decade. To avert the enormous disaster of a U.S.-China nuclear war, there are two obvious actions that can be taken. The first is to get rid of nuclear weapons, as the nuclear powers have agreed to do but thus far have resisted doing. The second, conducted while the nuclear disarmament process is occurring, is to improve U.S.-China relations. If the American and Chinese people are interested in ensuring their survival and that of the world, they should be working to encourage these policies.

### Chemical Industry---Generic

#### Low prices bring chemical innovation back to the US

Brady 12 – Jeff Brady, writer for NPR, February 13, 2012, "Natural Gas Boom Energizing The Chemical Industry" [www.npr.org/2012/02/13/146803953/natural-gas-boom-energizing-the-chemical-industry](http://www.npr.org/2012/02/13/146803953/natural-gas-boom-energizing-the-chemical-industry)

Just outside of West Virginia's capital city, Charleston, on the banks of the Kanawha River, sits the Institute Industrial Park. Chemical plants have operated here continuously since World War II, when the local factories cranked out synthetic rubber. Today there are industrial pipes, tanks and buildings stretching in just about every direction.¶ Soon, there could be more.¶ U.S. chemical companies are the latest beneficiaries of the nation's natural gas drilling boom. Long focused on cheap gas sources elsewhere in the world, companies are now looking to expand here. **A surplus of natural gas has pushed down prices, making it more attractive for chemical companies** that use lots of gas to reopen shuttered plants and build new ones.¶ Sleepy rural communities across the country are turning into industrial zones — and that worries people who live nearby. But the boom is good news for manufacturers that need cheap, plentiful supplies of natural gas.¶ The natural gas drilling boom near Charleston has local business boosters lobbying for a huge new chemical plant, called an ethane cracker, which could bring jobs to the state.¶ "It will take approximately 2,000 construction workers two years just to build the facility," says Matthew Ballard, president and chief executive officer of the Charleston Area Alliance. "Once up and running, there will be several hundred jobs at that cracking facility."¶ The plant would "crack" ethane — break it down at the molecular level — and turn it into ethylene. Kevin DiGregorio, executive director of the Chemical Alliance Zone in Charleston, says ethylene is used to produce all sorts of things, from the cushions we sit on to the clothes we wear.¶ "Everything that's not wood, or maybe brick, is made with chemicals, certainly. But probably 40 to 60 percent of it is made from ethylene," DiGregorio says. "It's very, very important to our daily lives."¶ States Compete For Plants, Jobs¶ The Marcellus Shale, from which nearby drillers are pulling natural gas, is particularly ethane-rich. Most natural gas contains anywhere from 2 to 8 percent of ethane, DiGregorio says, but "Marcellus natural gas contains as much as 14 to 16 percent" of ethane.¶ Bayer CropScience, the company that operates the industrial park near Charleston, is talking with companies interested in building ethane crackers in the region. No official announcement has been made, but business leaders here are keeping their fingers crossed.¶ The same is true elsewhere around northern Appalachia. Ohio, Pennsylvania and West Virginia are competing to lure a new ethane cracker that the oil company Shell plans to build. Firms in Canada also see opportunity in the Marcellus Shale.¶ Economy¶ Project's Promise Of Jobs Has Appalachia Seeing Stars¶ "We wouldn't have to go back very far — literally just seven or eight years — and the picture for the industry here in North America was pretty uncertain," says Randy Woelfel, CEO of NOVA Chemicals in Calgary, Alberta.¶ He says high oil prices sent a lot of petrochemical manufacturing overseas to the Middle East and Asia. But now, low natural gas prices and the ethane-rich Marcellus Shale have changed everything.¶ "That means ... that we'll be back in the hiring business, rather than the consolidation and survival/cost-cutting mode that NOVA was clearly in for much of the last decade," Woelfel says.

#### We’ve alternated between these two cards

#### The chemical industry is key to solve extinction

Baum 99 – Baum, Founder of Chemical and Engineering News Washington, 12-6-99 (Rudy, “MILLENNIUM SPECIAL REPORT,” C&EN Washington, Volume 77, Number 49, http://pubs.acs.org/cen/hotarticles/cenear/991206/7749spintro2.html)

Computers and the Internet are clearly one of the driving forces shaping all aspects of society at the turn of the millennium. But despite the stock market's insistence that "tech stocks" equal "computer stocks," we here at C&EN believe that chemistry in all its permutations remains a vital component of high technology. Which brings me to this "Millennium Special Report: Chemistry In The Service Of Humanity." The pace of change in today's world is truly incomprehensible. Science is advancing on all fronts, particularly chemistry and biology working together as they never have before to understand life in general and human beings in particular at a breathtaking pace. Technology ranging from computers and the Internet to medical devices to genetic engineering to nanotechnology is transforming our world and our existence in it. It is, in fact, a fool's mission to predict where science and technology will take us in the coming decade, let alone the coming century. We can say with finality only this: We don't know. We do know, however, that we face enormous challenges, we 6 billion humans who now inhabit Earth. In its 1998 revision of world population estimates and projections, the United Nations anticipates a world population in 2050 of 7.3 billion to 10.7 billion, with a "medium-fertility projection," considered the most likely, indicating a world population of 8.9 billion people in 2050. According to the UN, fertility now stands at 2.7 births per woman, down from 5 births per woman in the early 1950s. And fertility rates are declining in all regions of the world. That's good news. But people are living a lot longer. That is certainly good news for the individuals who are living longer, but it also poses challenges for health care and social services the world over. The 1998 UN report estimates for the first time the number of octogenarians, nonagenarians, and centenarians living today and projected for 2050. The numbers are startling. In 1998, 66 million people were aged 80 or older, about one of every 100 persons. That number is expected to increase sixfold by 2050 to reach 370 million people, or one in every 24 persons. By 2050, more than 2.2 million people will be 100 years old or older! Here is the fundamental challenge we face: The world's growing and aging population must be fed and clothed and housed and transported in ways that do not perpetuate the environmental devastation wrought by the first waves of industrialization of the 19th and 20th centuries. As we increase our output of goods and services, as we increase our consumption of energy, as we meet the imperative of raising the standard of living for the poorest among us, we must learn to carry out our economic activities sustainably. There are optimists out there, C&EN readers among them, who believe that the history of civilization is a long string of technological triumphs of humans over the limits of nature. In this view, the idea of a "carrying capacity" for Earth—a limit to the number of humans Earth's resources can support—is a fiction because technological advances will continuously obviate previously perceived limits. This view has historical merit. Dire predictions made in the 1960s about the exhaustion of resources ranging from petroleum to chromium to fresh water by the end of the 1980s or 1990s have proven utterly wrong. While I do not count myself as one of the technological pessimists who see technology as a mixed blessing at best and an unmitigated evil at worst, I do not count myself among the technological optimists either. There are environmental challenges of transcendent complexity that I fear may overcome us and our Earth before technological progress can come to our rescue. Global climate change, the accelerating destruction of terrestrial and oceanic habitats, the catastrophic loss of species across the plant and animal kingdoms—these are problems that are not obviously amenable to straightforward technological solutions. But I know this, too: Science and technology have brought us to where we are, and only science and technology, coupled with innovative social and economic thinking, can take us to where we need to be in the coming millennium. Chemists, chemistry, and the chemical industry—what we at C&EN call the chemical enterprise—will play central roles in addressing these challenges. The first section of this Special Report is a series called "Millennial Musings" in which a wide variety of representatives from the chemical enterprise share their thoughts about the future of our science and industry. The five essays that follow explore the contributions the chemical enterprise is making right now to ensure that we will successfully meet the challenges of the 21st century. The essays do not attempt to predict the future. Taken as a whole, they do not pretend to be a comprehensive examination of the efforts of our science and our industry to tackle the challenges I've outlined above. Rather, they paint, in broad brush strokes, a portrait of scientists, engineers, and business managers struggling to make a vital contribution to humanity's future. The first essay, by Senior Editor Marc S. Reisch, is a case study of the chemical industry's ongoing transformation to sustainable production. Although it is not well known to the general public, the chemical industry is at the forefront of corporate efforts to reduce waste from production streams to zero. Industry giants DuPont and Dow Chemical are taking major strides worldwide to manufacture chemicals while minimizing the environmental "footprint" of their facilities. This is an ethic that starts at the top of corporate structure. Indeed, Reisch quotes Dow President and Chief Executive Officer William S. Stavropolous: "We must integrate elements that historically have been seen as at odds with one another: the triple bottom line of sustainability—economic and social and environmental needs." DuPont Chairman and CEO Charles (Chad) O. Holliday envisions a future in which "biological processes use renewable resources as feedstocks, use solar energy to drive growth, absorb carbon dioxide from the atmosphere, use low-temperature and low-pressure processes, and produce waste that is less toxic." But sustainability is more than just a philosophy at these two chemical companies. Reisch describes ongoing Dow and DuPont initiatives that are making sustainability a reality at Dow facilities in Michigan and Germany and at DuPont's massive plant site near Richmond, Va. Another manifestation of the chemical industry's evolution is its embrace of life sciences. Genetic engineering is a revolutionary technology. In the 1970s, research advances fundamentally shifted our perception of DNA. While it had always been clear that deoxyribonucleic acid was a chemical, it was not a chemical that could be manipulated like other chemicals—clipped precisely, altered, stitched back together again into a functioning molecule. Recombinant DNA techniques began the transformation of DNA into just such a chemical, and the reverberations of that change are likely to be felt well into the next century. Genetic engineering has entered the fabric of modern science and technology. It is one of the basic tools chemists and biologists use to understand life at the molecular level. It provides new avenues to pharmaceuticals and new approaches to treat disease. It expands enormously agronomists' ability to introduce traits into crops, a capability seized on by numerous chemical companies. There is no doubt that this powerful new tool will play a major role in feeding the world's population in the coming century, but its adoption has hit some bumps in the road. In the second essay, Editor-at-Large Michael Heylin examines how the promise of agricultural biotechnology has gotten tangled up in real public fear of genetic manipulation and corporate control over food. The third essay, by Senior Editor Mairin B. Brennan, looks at chemists embarking on what is perhaps the greatest intellectual quest in the history of science—humans' attempt to understand the detailed chemistry of the human brain, and with it, human consciousness. While this quest is, at one level, basic research at its most pure, it also has enormous practical significance. Brennan focuses on one such practical aspect: the effort to understand neurodegenerative diseases like Alzheimer's disease and Parkinson's disease that predominantly plague older humans and are likely to become increasingly difficult public health problems among an aging population. Science and technology are always two-edged swords. They bestow the power to create and the power to destroy. In addition to its enormous potential for health and agriculture, genetic engineering conceivably could be used to create horrific biological warfare agents. In the fourth essay of this Millennium Special Report, Senior Correspondent Lois R. Ember examines the challenge of developing methods to counter the threat of such biological weapons. "Science and technology will eventually produce sensors able to detect the presence or release of biological agents, or devices that aid in forecasting, remediating, and ameliorating bioattacks," Ember writes. Finally, Contributing Editor Wil Lepkowski discusses the most mundane, the most marvelous, and the most essential molecule on Earth, H2O. Providing clean water to Earth's population is already difficult—and tragically, not always accomplished. Lepkowski looks in depth at the situation in Bangladesh—where a well-meaning UN program to deliver clean water from wells has poisoned millions with arsenic. Chemists are working to develop better ways to detect arsenic in drinking water at meaningful concentrations and ways to remove it that will work in a poor, developing country. And he explores the evolving water management philosophy, and the science that underpins it, that will be needed to provide adequate water for all its vital uses. In the past two centuries, our science has transformed the world. Chemistry is a wondrous tool that has allowed us to understand the structure of matter and gives us the ability to manipulate that structure to suit our own purposes. It allows us to dissect the molecules of life to see what makes them, and us, tick. It is providing a glimpse into workings of what may be the most complex structure in the universe, the human brain, and with it hints about what constitutes consciousness. In the coming decades, we will use chemistry to delve ever deeper into these mysteries and provide for humanity's basic and not-so-basic needs.

#### A competitive chemical industry is key to sustainability, and solves extinction

ICCA 2 – ICCA (International Council of Chemical Associations), June 20, 2002, “SUSTAINABLE DEVELOPMENT AND THE CHEMICAL INDUSTRY,” online: http://www.cefic.be/position/icca/pp\_ic010.htm

Sustainability in economic terms means the efficient management of scarce resources as well as a prospering industry and economy. Sustainability in the environmental sense means not placing an intolerable load on the ecosphere and maintaining the natural basis for life. Seen from society's viewpoint, sustainability means that human beings are the centre of concern. In view, particularly, of the population increase worldwide, there needs to be provided as large a measure of equal opportunities, freedom, social justice and security as possible. ¶ The chemical industry views Sustainable Development as a challenge put before all parts of society. In the advances made in its own operations, its improved performance and in the improvements to the human condition made through its products, the chemical industry sees cause for optimism and believes that Sustainable Development can be the intellectual framework around which the chemical industry, other industries and other sectors of society can reach consensus on how to improve living standards and the environment. ¶ The main challenges facing the world include:- ¶ \* Optimizing the benefits obtained from depleting resources¶ \* Assuring against excessive strains placed on the eco-system¶ \* The dynamic growth of the world population¶ \* Remedying social and economic inequalities¶ These are challenges on a global scale. It follows, therefore, that the attainment of Sustainable Development will call for action on the part of the people, governments, businesses and organisations around the world. The global chemical industry has realized this challenge. ¶ CONTRIBUTION OF THE CHEMICAL INDUSTRY TO SUSTAINABLE DEVELOPMENT¶ The chemical industry is a key industry. Its products and services are instrumental in meeting the needs of mankind. It is present in all areas of life, from food and clothing, housing, communications, transport - right through to leisure activities. In addition, it helps to solve the problems of other sectors of industry, such as the energy sector, information technologies, environmental industries and the waste disposal sector, as examples.¶ Due to its size, the chemical industry is an important supplier to a broad range of downstream industries and is, as well, a customer of a broad range of products and services from other industries. It follows, therefore, that the chemical industry plays a major role in providing/ supporting performance improvements, research and development progress and, last but not least, employment in other industries.¶ In itself, it is a large-scale provider of jobs and makes a significant contribution to wealth creation and, hence, to the financing of both public works and the exercise of public responsibilities. Since living standards are determined to a large degree by material considerations, it is clear that the chemical industry with its unique capabilities is in a position to make a decisive contribution to Sustainable Development.¶ Commitment by the world chemical industry to the concept of Sustainable Development requires words to be transposed into company-specific action programmes in order to provide a framework for all those working in the sector. Its "Responsible Care" initiative, self-monitoring systems and other voluntary programmes such as Sustainable Technology (SUSTECH), Education-Industry Partnerships, Energy Efficiency Programmes are also part of this framework. Thereby, companies are also confronted with new challenges and must act responsibly. They must take account of the consequences of their actions upon society and future generations.¶ The global chemical industry believes that the key to improving the performance of the industry is both its commitment to achieving environmentally sound Sustainable Development and improved performance and transparency. Under the concept ¶ environment, to seek continuous improvement in performance, to educate all staff and work with customers and communities regarding product use and overall operation. Through these efforts the industry is improving its efficiency, reducing risks to health and the environment and making better products which, in turn, help individual and industry customers.¶ THE CHEMICAL INDUSTRY's LEADERSHIP IN INNOVATION¶ The very notion of Sustainable Development will require new approaches in a number of areas. Innovation at all levels and in all fields of activity is the most effective instrument for ensuring that the economic, and environmental goals, as well as those of society, are being advanced.¶ The chemical industry's contribution is to continue innovation of new products that meet customer needs and manufacturing processes that reduce risks to health and the environment. This contribution is based upon the knowledge and experience the industry has acquired from applying innovation not only to making, handling and use of chemical compounds, but also to reprocessing, recycling and solving environmental problems. The challenge facing the chemical industry is to maximize innovation, which can contribute to society meeting its goals for Sustainable Development. ¶ The chemical industry is firmly convinced that leadership in innovation represents the best way of attaining Sustainable Development. For the individual company, this means:- ¶ \* a consistent orientation towards products, technologies and solutions which offer the greatest promise for the future¶ \* development of new integrated environmental technologies¶ \* a close cooperation with the customers of the chemical industry¶ \* adaptation to the conditions of global competition¶ \* bringing the most promising products quickly on the market¶ \* strengthening the R&D effort which requires resources which can only be financed from profitable earnings¶ \* actively contributing ideas and suggestions to the policy debates taking place in society¶ \* improving process yield (efficiency).¶ APPROACH TO THE ECONOMIC GOAL OF SUSTAINABLE DEVELOPMENT¶ The internationalization of the economy at large, in conjunction with a growing trend towards global competition, is becoming more and more apparent. This is being manifested by:- ¶ \* an increase of imports and exports of goods as well as services¶ \* growing outward and inward flows of direct investment¶ \* an ever increasing exchange of technology transfers¶ \* globalization of monetary and financial schemes. ¶ The inter-relation of economic systems is complex, with a variety of relationships among countries. Multi-national chemical companies apply common standards in spreading investment capital and stimulating markets around the globe, thus setting the scene for the world market. What they need, in order to play a constructive role in Sustainable Development, is, first and foremost, freedom and fairness in international trade. Trade as an engine of economic growth is essential for Sustainable Development. A climate needs to be fostered within which such growth may take place on the basis of a clear set of rules with predictable consequences, by which investors may be guided in their long-term decision-making process. This includes bringing to a halt the growing intervention by governments in industry and their ever increasing demands to raise income by taxation, thus imposing a disproportionate load on the business community.¶ Wealth creation and **profits are fundamental to Sustainable Development**. They sustain economies (not just the chemical industry), and contribute, via re-investment and R&D, to new technologies and environmental improvements. Profits are needed to create flexible company structures oriented towards economic, environmental and society-related requirements.¶ The chemical industry is a major industrial sector and an essential contributor to welfare and employment on a global scale. In order to maintain this position under the imperative of Sustainable Development, the long-term future of the industry must be rooted in a dynamic policy, whereby continual innovation and re-engineering of companies result in an increase of productivity and, thus, keeping up international competitiveness as a pre-requisite of sustainable job creation.

### Chemical Industry---Bioterror Scenario

#### The chemical industry is key to counter bioterrorism

Baum 99 – Baum, Founder of Chemical and Engineering News Washington, 12-6-99 (Rudy, “MILLENNIUM SPECIAL REPORT,” C&EN Washington, Volume 77, Number 49, http://pubs.acs.org/cen/hotarticles/cenear/991206/7749spintro2.html)

Computers and the Internet are clearly one of the driving forces shaping all aspects of society at the turn of the millennium. But despite the stock market's insistence that "tech stocks" equal "computer stocks," we here at C&EN believe that chemistry in all its permutations remains a vital component of high technology. Which brings me to this "Millennium Special Report: Chemistry In The Service Of Humanity." The pace of change in today's world is truly incomprehensible. Science is advancing on all fronts, particularly chemistry and biology working together as they never have before to understand life in general and human beings in particular at a breathtaking pace. Technology ranging from computers and the Internet to medical devices to genetic engineering to nanotechnology is transforming our world and our existence in it. It is, in fact, a fool's mission to predict where science and technology will take us in the coming decade, let alone the coming century. We can say with finality only this: We don't know. We do know, however, that we face enormous challenges, we 6 billion humans who now inhabit Earth. In its 1998 revision of world population estimates and projections, the United Nations anticipates a world population in 2050 of 7.3 billion to 10.7 billion, with a "medium-fertility projection," considered the most likely, indicating a world population of 8.9 billion people in 2050. According to the UN, fertility now stands at 2.7 births per woman, down from 5 births per woman in the early 1950s. And fertility rates are declining in all regions of the world. That's good news. But people are living a lot longer. That is certainly good news for the individuals who are living longer, but it also poses challenges for health care and social services the world over. The 1998 UN report estimates for the first time the number of octogenarians, nonagenarians, and centenarians living today and projected for 2050. The numbers are startling. In 1998, 66 million people were aged 80 or older, about one of every 100 persons. That number is expected to increase sixfold by 2050 to reach 370 million people, or one in every 24 persons. By 2050, more than 2.2 million people will be 100 years old or older! Here is the fundamental challenge we face: The world's growing and aging population must be fed and clothed and housed and transported in ways that do not perpetuate the environmental devastation wrought by the first waves of industrialization of the 19th and 20th centuries. As we increase our output of goods and services, as we increase our consumption of energy, as we meet the imperative of raising the standard of living for the poorest among us, we must learn to carry out our economic activities sustainably. There are optimists out there, C&EN readers among them, who believe that the history of civilization is a long string of technological triumphs of humans over the limits of nature. In this view, the idea of a "carrying capacity" for Earth—a limit to the number of humans Earth's resources can support—is a fiction because technological advances will continuously obviate previously perceived limits. This view has historical merit. Dire predictions made in the 1960s about the exhaustion of resources ranging from petroleum to chromium to fresh water by the end of the 1980s or 1990s have proven utterly wrong. While I do not count myself as one of the technological pessimists who see technology as a mixed blessing at best and an unmitigated evil at worst, I do not count myself among the technological optimists either. There are environmental challenges of transcendent complexity that I fear may overcome us and our Earth before technological progress can come to our rescue. Global climate change, the accelerating destruction of terrestrial and oceanic habitats, the catastrophic loss of species across the plant and animal kingdoms—these are problems that are not obviously amenable to straightforward technological solutions. But I know this, too: Science and technology have brought us to where we are, and only science and technology, coupled with innovative social and economic thinking, can take us to where we need to be in the coming millennium. Chemists, chemistry, and the chemical industry—what we at C&EN call the chemical enterprise—will play central roles in addressing these challenges. The first section of this Special Report is a series called "Millennial Musings" in which a wide variety of representatives from the chemical enterprise share their thoughts about the future of our science and industry. The five essays that follow explore the contributions the chemical enterprise is making right now to ensure that we will successfully meet the challenges of the 21st century. The essays do not attempt to predict the future. Taken as a whole, they do not pretend to be a comprehensive examination of the efforts of our science and our industry to tackle the challenges I've outlined above. Rather, they paint, in broad brush strokes, a portrait of scientists, engineers, and business managers struggling to make a vital contribution to humanity's future. The first essay, by Senior Editor Marc S. Reisch, is a case study of the chemical industry's ongoing transformation to sustainable production. Although it is not well known to the general public, the chemical industry is at the forefront of corporate efforts to reduce waste from production streams to zero. Industry giants DuPont and Dow Chemical are taking major strides worldwide to manufacture chemicals while minimizing the environmental "footprint" of their facilities. This is an ethic that starts at the top of corporate structure. Indeed, Reisch quotes Dow President and Chief Executive Officer William S. Stavropolous: "We must integrate elements that historically have been seen as at odds with one another: the triple bottom line of sustainability—economic and social and environmental needs." DuPont Chairman and CEO Charles (Chad) O. Holliday envisions a future in which "biological processes use renewable resources as feedstocks, use solar energy to drive growth, absorb carbon dioxide from the atmosphere, use low-temperature and low-pressure processes, and produce waste that is less toxic." But sustainability is more than just a philosophy at these two chemical companies. Reisch describes ongoing Dow and DuPont initiatives that are making sustainability a reality at Dow facilities in Michigan and Germany and at DuPont's massive plant site near Richmond, Va. Another manifestation of the chemical industry's evolution is its embrace of life sciences. Genetic engineering is a revolutionary technology. In the 1970s, research advances fundamentally shifted our perception of DNA. While it had always been clear that deoxyribonucleic acid was a chemical, it was not a chemical that could be manipulated like other chemicals—clipped precisely, altered, stitched back together again into a functioning molecule. Recombinant DNA techniques began the transformation of DNA into just such a chemical, and the reverberations of that change are likely to be felt well into the next century. Genetic engineering has entered the fabric of modern science and technology. It is one of the basic tools chemists and biologists use to understand life at the molecular level. It provides new avenues to pharmaceuticals and new approaches to treat disease. It expands enormously agronomists' ability to introduce traits into crops, a capability seized on by numerous chemical companies. There is no doubt that this powerful new tool will play a major role in feeding the world's population in the coming century, but its adoption has hit some bumps in the road. In the second essay, Editor-at-Large Michael Heylin examines how the promise of agricultural biotechnology has gotten tangled up in real public fear of genetic manipulation and corporate control over food. The third essay, by Senior Editor Mairin B. Brennan, looks at chemists embarking on what is perhaps the greatest intellectual quest in the history of science—humans' attempt to understand the detailed chemistry of the human brain, and with it, human consciousness. While this quest is, at one level, basic research at its most pure, it also has enormous practical significance. 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Finally, Contributing Editor Wil Lepkowski discusses the most mundane, the most marvelous, and the most essential molecule on Earth, H2O. Providing clean water to Earth's population is already difficult—and tragically, not always accomplished. Lepkowski looks in depth at the situation in Bangladesh—where a well-meaning UN program to deliver clean water from wells has poisoned millions with arsenic. Chemists are working to develop better ways to detect arsenic in drinking water at meaningful concentrations and ways to remove it that will work in a poor, developing country. And he explores the evolving water management philosophy, and the science that underpins it, that will be needed to provide adequate water for all its vital uses. In the past two centuries, our science has transformed the world. Chemistry is a wondrous tool that has allowed us to understand the structure of matter and gives us the ability to manipulate that structure to suit our own purposes. It allows us to dissect the molecules of life to see what makes them, and us, tick. It is providing a glimpse into workings of what may be the most complex structure in the universe, the human brain, and with it hints about what constitutes consciousness. In the coming decades, we will use chemistry to delve ever deeper into these mysteries and provide for humanity's basic and not-so-basic needs.

#### Extinction

Ochs 2[Richard, Naturalist – Grand Teton National park with Masters in Natural Resource Management – Rutgers, “Biological Weapons must be abolished immediately” 6-9, http://www.freefromterror.net/other\_articles/abolish.html]

Of all the weapons of mass destruction, the genetically engineered biological weapons, many without a known cure or vaccine, are an extreme danger to the continued survival of life on earth. Any perceived military value or deterrence pales in comparison to the great risk these weapons pose just sitting in vials in laboratories. While a "nuclear winter," resulting from a massive exchange of nuclear weapons, could also kill off most of life on earth and severely compromise the health of future generations, they are easier to control. Biological weapons, on the other hand, can get out of control very easily, as the recent anthrax attacks has demonstrated. There is no way to guarantee the security of these doomsday weapons because very tiny amounts can be stolen or accidentally released and then grow or be grown to horrendous proportions. The Black Death of the Middle Ages would be small in comparison to the potential damage bioweapons could cause. Abolition of chemical weapons is less of a priority because, while they can also kill millions of people outright, their persistence in the environment would be less than nuclear or biological agents or more localized. Hence, chemical weapons would have a lesser effect on future generations of innocent people and the natural environment. Like the Holocaust, once a localized chemical extermination is over, it is over. With nuclear and biological weapons, the killing will probably never end. Radioactive elements last tens of thousands of years and will keep causing cancers virtually forever. Potentially worse than that, bio-engineered agents by the hundreds with no known cure could wreck even greater calamity on the human race than could persistent radiation. AIDS and ebola viruses are just a small example of recently emerging plagues with no known cure or vaccine. Can we imagine hundreds of such plagues? HUMAN EXTINCTION IS NOW POSSIBLE.

### Chemical Industry---Aerospace Scenario

#### And it’s key to aerospace

Delpy and Pike 10 – Professor David Delpy FRS, chief executive at Oxford Economics, AND\*\*\* Dr. Richard Pike, Ph.D. in chemical sciences, September 2010, “The economic benefits of chemistry research to the UK,” http://www.rsc.org/images/Economic\_Benefits\_of\_Chemistry\_Sep\_2010\_tcm18-191337.pdf

Aerospace - The modern aerospace industry depends on high-performance products that are lightweight, yet strong enough to take harsh loading conditions, and it is indeed the fruits of chemistry research which have **given rise to advanced materials** such as the polymers and composite materials now used in tails, fuselages and propellers. Chemistry research also impacts this industry through the development of coatings (e.g. to inhibit corrosion) and fuel additives to enhance performance. The aerospace industry also relies on computational chemistry to better understand combustion and the impact of elevated temperatures on the stability of various components e.g. metal oxide surface coatings and catalysts. Finally, key to the continued success of the aerospace industry are the advances that chemistry research has provided in security in aviation. The devices which safeguard the security of passengers, workers and cargo in airports and during transit are heavily dependent upon chemistry research (i.e. metal detectors, x-ray systems, trace explosives and narcotics screening devices, and, more recently, biometric passports). The future of aerospace is based upon the ability of researchers to provide solutions which lessen the environmental impacts of aviation with examples including the continued development of lightweight materials. Such materials enable new wing designs aimed at **increasing efficiency** and reducing drag and thereby fuel consumption, which **would not be possible with traditional materials**. In addition, the role that functional coatings can have in helping to improve the performance maintainability of the aircraft should not be underestimated.

#### Aerospace solves cyberterrorism

Deloitte 12 | (Deloitte is a consulting and financial advisory service, Report Commissioned by the Aerospace Industries Association, " The Aerospace and Defense Industry in the U.S. A financial and economic impact study," March, http://www.aia-aerospace.org/assets/deloitte\_study\_2012.pdf)

The world continues to demonstrate how dangerous it is and how our civilization and way of life can be put in jeopardy quickly. The surprise attacks on Pearl Harbor and the tragic events surrounding the terrorist attacks of 9/11 have shown our nation how vulnerable it can be. Technology innovations and products developed in the aerospace and defense industry have made our nation safer, from sophisticated sensors that can “see” nefarious activities of our adversaries, to the bomb and metal detectors that have become ubiquitous at airports around the world, the industry continues to innovate to produce the necessary defenses used to increase our national security. Recent advances to counter the next generation national security threats include for example, sophisticated software to trace bank transactions of terrorists, advanced listening sensors to eavesdrop on communications of known terrorists, and sophisticated sensors to help discover threats at our airports, borders, and seaports. Of course, the unmanned aerial vehicle (UAV) has been extraordinarily successful in helping to see, then attack if necessary, our adversaries. Lastly, the specter of a potential cyber-attack on our nation’s water, power, transportation or communications infrastructure is cause for alarm, and the industry continues to develop the next generation technologies to address these and future threats.

#### Great power nuclear war

Fritz 9 | Researcher for International Commission on Nuclear Nonproliferation and Disarmament [Jason, researcher for International Commission on Nuclear Nonproliferation and Disarmament, former Army officer and consultant, and has a master of international relations at Bond University, “Hacking Nuclear Command and Control,” July, <http://www.icnnd.org/latest/research/Jason_Fritz_Hacking_NC2.pdf>]

This paper will analyse the threat of cyber terrorism in regard to nuclear weapons. Specifically, this research will use open source knowledge to identify the structure of nuclear command and control centres, how those structures might be compromised through computer network operations, and how doing so would fit within established cyber terrorists’ capabilities, strategies, and tactics. If access to command and control centres is obtained, terrorists could fake or actually cause one nuclear-armed state to attack another, thus provoking a nuclear response from another nuclear power. This may be an easier alternative for terrorist groups than building or acquiring a nuclear weapon or dirty bomb themselves. This would also act as a force equaliser, and provide terrorists with the asymmetric benefits of high speed, removal of geographical distance, and a relatively low cost. Continuing difficulties in developing computer tracking technologies which could trace the identity of intruders, and difficulties in establishing an internationally agreed upon legal framework to guide responses to computer network operations, point towards an inherent weakness in using computer networks to manage nuclear weaponry. This is particularly relevant to reducing the hair trigger posture of existing nuclear arsenals. All computers which are connected to the internet are susceptible to infiltration and remote control. Computers which operate on a closed network may also be compromised by various hacker methods, such as privilege escalation, roaming notebooks, wireless access points, embedded exploits in software and hardware, and maintenance entry points. For example, e-mail spoofing targeted at individuals who have access to a closed network, could lead to the installation of a virus on an open network. This virus could then be carelessly transported on removable data storage between the open and closed network. Information found on the internet may also reveal how to access these closed networks directly. Efforts by militaries to place increasing reliance on computer networks, including experimental technology such as autonomous systems, and their desire to have multiple launch options, such as nuclear triad capability, enables multiple entry points for terrorists. For example, if a terrestrial command centre is impenetrable, perhaps isolating one nuclear armed submarine would prove an easier task. There is evidence to suggest multiple attempts have been made by hackers to compromise the extremely low radio frequency once used by the US Navy to send nuclear launch approval to submerged submarines. Additionally, the alleged Soviet system known as Perimetr was designed to automatically launch nuclear weapons if it was unable to establish communications with Soviet leadership. This was intended as a retaliatory response in the event that nuclear weapons had decapitated Soviet leadership; however it did not account for the possibility of cyber terrorists blocking communications through computer network operations in an attempt to engage the system. Should a warhead be launched, damage could be further enhanced through additional computer network operations. By using proxies, multi-layered attacks could be engineered. Terrorists could remotely commandeer computers in China and use them to launch a US nuclear attack against Russia. Thus Russia would believe it was under attack from the US and the US would believe China was responsible. Further, emergency response communications could be disrupted, transportation could be shut down, and disinformation, such as misdirection, could be planted, thereby hindering the disaster relief effort and maximizing destruction. Disruptions in communication and the use of disinformation could also be used to provoke uninformed responses. For example, a nuclear strike between India and Pakistan could be coordinated with Distributed Denial of Service attacks against key networks, so they would have further difficulty in identifying what happened and be forced to respond quickly. Terrorists could also knock out communications between these states so they cannot discuss the situation. Alternatively, amidst the confusion of a traditional large-scale terrorist attack, claims of responsibility and declarations of war could be falsified in an attempt to instigate a hasty military response. These false claims could be posted directly on Presidential, military, and government websites. E-mails could also be sent to the media and foreign governments using the IP addresses and e-mail accounts of government officials. A sophisticated and all encompassing combination of traditional terrorism and cyber terrorism could be enough to launch nuclear weapons on its own, without the need for compromising command and control centres directly.

#### Aerospace is key to solve cruise missile prolif

Gardner 99 (Lt Col Igor J.P., School of Advanced Airpower Studies, “THEATER LAND ATTACK CRUISE MISSILE DEFENSE: GUARDING THE BACK DOOR”)

LACM = Land Attack Cruise Missile

While few likely regional adversaries currently possess an LACM capability, a serious threat could materialize in a relatively short period of time. LACMs provide an adversary with several important advantages over alternative delivery means. Their small size could provide a greater survivability, both before and after launch, than either theater ballistic missiles or manned aircraft. LACM flight characteristics make them well suited for WMD delivery, particularly for chemical and biological agents. The means to achieve a highly accurate LACM capability are rapidly becoming widely available, through the purchase or transfer of existing off-the-shelf technology and conversion of widely proliferated ASCMs and UAVs. While some uncertainties exist about how future LACM threats will evolve (quantities, ranges, types of payloads, degrees of low observable technology incorporated), even relatively “low tech” LACMs could present serious challenges to today’s defenses. WMD warheads, the 360-degree threat, combat identification and fratricide avoidance are major challenges that must be solved to effectively counter LACM threats. Theater missile defense (against both ballistic and cruise missiles) is a key aspect of counter air strategy, and the ability to effectively counter LACMs will be essential to achieving air superiority, much less air supremacy. As defense budgets continue to decline in search of the elusive peace dividend, the U.S. military will continue to face the problem of doing more with less. These resource reductions, combined with the likelihood that future adversaries will learn form their predecessors and attempt to counter U.S. strategy asymmetrically, make it all the more important that the services fight as an integrated and effective joint team. Currently, no single service has the resources required to defend a theater against a serious LACM threat. This will require a balanced, joint force trained to operate under common doctrine, with fully integrated command and control, and overlapping sensor and shooter system coverage. Defense against LACMs will require a mix of attack operations, active and passive defense, and C 4 I optimized for the particular theater. It will require a mix of surface, air and space systems to gain command of the air rapidly by destroying enemy cruise missiles and their support systems on the ground and in the air. Only through such concerted efforts will the joint force commander achieve freedom from attack in order to gain freedom to attack. To assure integration, cruise missile defense doctrine and capabilities require the same level of effort currently focused on theater ballistic missile defense in the areas of common doctrine, system modernization and integration, and joint training.

#### Global nuclear war

Telegraph 11

(Missile Technology Control Regime (MTCR) Reinforced Point Of Contact (RPOC) Meeting, April 10, 2008, Wikileaks Transcript Classified by ISN/MTR Director Pam Durham, February 2, 2011, pg online @ Telegraph)

21. (C) Additionally, many countries are pursuing cruise missile programs as alternatives or supplements to their ballistic missile capabilities. Like ballistic missiles, cruise missiles can be a platform for WMD delivery and provide a more effective vehicle for biological and chemical weapons distribution than ballistic missiles. These trends are especially evident in the key regions of tension, the Middle East and Persian Gulf, Northeast Asia, and South Asia. 22. (C) Ballistic and cruise missile programs in these regions are evolving in different ways. While nearly all ultimately seek to obtain indigenous production capabilities, some rely primarily on direct missile purchases from countries such as North Korea, while others solicit extensive foreign assistance in missile design, development, and/or production. In other cases, more limited, specialized assistance is sought from foreign sources to sustain domestic design efforts and overcome technological impediments that prevent self-sufficiency in a state's missile program. 23. (C) The procurement efforts required to support missile development are global in scope, utilizing the territories and economies of a wide range of countries as sources of equipment and technology, as re-export/transit cutouts, and as brokering and finance centers. Many of these countries, including MTCR Partner countries, are not aware that their entities are inadvertently assisting ballistic missile proliferation. 24. (C) In several cases, broad international consensus has been reached that certain national missile programs constitute a threat to international peace and security. With respect to Iran, UNSCRs including 1696, 1737, and 1747, and 1803, prohibit technological transfers and other assistance by all states to Iran's missile programs. UNSCRs 1695 and 1718 require similar actions regarding ballistic missile programs in North Korea. These UNSCRs reflect the fact that ongoing nuclear tensions in the Persian Gulf and Northeast Asia threaten the viability of the global nonproliferation and security system. These tensions are aggravated and made more real and widespread by the open development and testing of ballistic missiles capable of delivering WMD. 25. (S/REL MTCR) For example, Iran has publicly revealed it had conducted some tests related to solid-propellant missile technology and implied that it was working on a design for a two-stage, 2,000 km-range system. Iran has also worked to improve the capabilities of its liquid propellant missile systems, claiming that a variant of the Shahab-3 missile has a 2,000 km-range and improved accuracy. Not only would missile-delivered WMD in Northeast Asia or the Middle East have the potential to cripple the global economy, the development of longer-range ballistic missiles carries with it the ability to deliver WMD to other regions. 26. (C) There are similar implications related to missile proliferation in South Asia, where a nuclear and missile arms race has the direct potential to lead to nuclear war in the world's most densely populated area and a region of increasing global economic significance. As we have already seen in South Asia in the nuclear area, the possession and development of missile technology there also carries with it the risk that this technology will spread to other regions. 27. (C) In an increasingly interdependent world, missile programs for WMD delivery in regions of tension threaten stability -- not just in those regions, but globally. Moreover, the challenge posed by these programs is growing as they improve qualitatively and quantitatively, often by drawing on all of us for various forms of facilitation.

#### Aerospace is key to stability in Asia - the impact is nuclear and biological warfare

Khalilzad and Lesser 98 | Counselor @ CSIS, President of Khalilzad Associates, and Former US Ambassador to the UN AND PhD Senior Transatlantic Fellow @ the German Marshall Fund (Zalmay and Ian, "Sources of Conflict in the 21st Century," p.164-165)

The first key implication derived from the analysis of trends in Asia suggests that American air and space power will continue to remain critical for conventional and unconventional deterrence in Asia. This argument is justified by the fact that several sub-regions of the continent still harbor the potential for full-scale conventional war. This potential is most conspicuously on the Korean peninsula and to a lesser degree, in South Asia, the Persian Gulf, and the South China Sea. In some of these areas such as Korea and the Persian Gulf, the United States has clear treaty obligations and therefore has pre-planned the use of air power should contingencies arise. U.S. Air Force assets could also be called upon for operations in some of these other areas. In almost all these cases, US airpower would be at the forefront of an American politico-military response because (a) of the vast distances on the Asian continent; (b) the diverse range of operational platforms available to the U.S. Air Force, a capability unmatched by any other country or service, (c) the possible unavailability of naval assets in close proximity, particularly in the context of surprise contingencies; and (d) the heavy payload that can be carried by U.S. Air Force platforms. These platforms can exploit speed, reach, and high operating tempos to sustain continual operations until the political objectives are secured. The entire range of warfighting capability—fighters, bombers, electronic warfare (EW), suppression of enemy air defense (SEAD), combat support platforms such as AWACS and J-STARS and tankers—are relevant in the Asia-Pacific region, because many of the regional contingencies will involve large, fairly modern, conventional forces, most of which are built around large land armies, as is the case in Korea, China-Taiwan, India-Pakistan and the Persian Gulf. In addition to conventional combat, the demands of unconventional deterrence will increasingly confront the U.S. Air Force in Asia. The Korean peninsula, China, and the Indian subcontinent are already arenas of WMD proliferation. While emergent nuclear capabilities continue to receive the most public attention, chemical and biological warfare threats will progressively become future problems. The delivery systems in the region are increasing in range and diversity. China already targets the continental United States with ballistic missiles. North Korea can threaten northeast Asia with existing Scud-class theater ballistic missiles. India will acquire the capability to produce ICBM-class delivery vehicles, and both China and India will acquire long-range cruise missiles during the time frames examined in this report. The second key implication derived from the analysis of trends in Asia suggests that airand space power will function as a vital rapid reaction force in a breaking crisis. Current guidance tasks the Air Force to prepare for two major regional conflicts that could break out in the Persian Gulf and on the Korean peninsula. In other areas of Asia, however, such as the Indian subcontinent, the South China Sea, Southeast Asia, and Myanmar, the United States has no treaty obligations requiring it to commit the use of its military forces. But as past experience has shown, American policymakers have regularly displayed the disconcerting habit of discovering strategic interests in parts of the world previously neglected after conflicts have already broken out. Mindful of this trend, it would behoove U.S. Air Force planners to prudently plan for regional contingencies in nontraditional areas of interest, because naval and air power will of necessity be the primary instruments constituting the American response.

#### Bioweapons cause extinction

Ochs 2 | Past president of the Aberdeen Proving Ground Superfund Citizens Coalition, Member of the Depleted Uranium Task force of the Military Toxics Project, and M of the Chemical Weapons Working Group [Richard Ochs, , June 9, 2002, “Biological Weapons Must Be Abolished Immediately,” <http://www.freefromterror.net/other_articles/abolish.html>]

Of all the weapons of mass destruction, the genetically engineered biological weapons, many without a known cure or vaccine, are an extreme danger to the continued survival of life on earth. Any perceived military value or deterrence pales in comparison to the great risk these weapons pose just sitting in vials in laboratories. While a “nuclear winter,” resulting from a massive exchange of nuclear weapons, could also kill off most of life on earth and severely compromise the health of future generations, they are easier to control. Biological weapons, on the other hand, can get out of control very easily, as the recent anthrax attacks has demonstrated. There is no way to guarantee the security of these doomsday weapons because very tiny amounts can be stolen or accidentally released and then grow or be grown to horrendous proportions. The Black Death of the Middle Ages would be small in comparison to the potential damage bioweapons could cause. Abolition of chemical weapons is less of a priority because, while they can also kill millions of people outright, their persistence in the environment would be less than nuclear or biological agents or more localized. Hence, chemical weapons would have a lesser effect on future generations of innocent people and the natural environment. Like the Holocaust, once a localized chemical extermination is over, it is over. With nuclear and biological weapons, the killing will probably never end. Radioactive elements last tens of thousands of years and will keep causing cancers virtually forever. Potentially worse than that, bio-engineered agents by the hundreds with no known cure could wreck even greater calamity on the human race than could persistent radiation. AIDS and ebola viruses are just a small example of recently emerging plagues with no known cure or vaccine. Can we imagine hundreds of such plagues? HUMAN EXTINCTION IS NOW POSSIBLE. Ironically, the Bush administration has just changed the U.S. nuclear doctrine to allow nuclear retaliation against threats upon allies by conventional weapons. The past doctrine allowed such use only as a last resort when our nation’s survival was at stake. Will the new policy also allow easier use of US bioweapons? How slippery is this slope?

### Chemical Industry---Semi-Conductors Scenario

#### Key to the semiconductor industry

Delpy and Pike 10 – Professor David Delpy FRS, chief executive at Oxford Economics, AND\*\*\* Dr. Richard Pike, Ph.D. in chemical sciences, September 2010, “The economic benefits of chemistry research to the UK,” http://www.rsc.org/images/Economic\_Benefits\_of\_Chemistry\_Sep\_2010\_tcm18-191337.pdf

Electronics – Chemistry research has contributed towards many of the advances in the electronics industry, not least the development of semiconductor materials which are the foundation of modern electronics, including radio, computers and telephones. Consumers are looking for progressive miniaturisation and mobility of devices but at the same time demand faster processing speeds and denser storage capacity. UK-based chemistry research is enhancing the future of electronic technologies. Quantum dots, a particular class of semiconductors, are the result of fundamental ¶ research in the UK and have applicability in lighting, display technology, photovoltaics and biomedicine, and offer the advantage of extremely low energy use. The future of these devices lies in the ability of chemists who are able to manipulate molecules leading to the development of selfrepairing ‘molecular machines’ and nano-sized factories fuelled by chemical and light energy, offering for example the prospect of reaching past wireless communication to devices powered from the material used in their casings. Other aspects of chemistry research which have potential electronic applications in the future include chemical nanowires and carbon nanotubes, which are able to address many of the limitations (due to metals) which cause premature device failures in contemporary electronics. Chemistry-based advances will also reduce the dependence of electronics upon finite metal resources and precious metals, as well as increase the ability to recover and recycle metals from e-waste.

#### Semiconductors are key to US nuclear modernization

Chandratre et al. 7 – V.B. Chandratre et al 7, Menka Tewani, R.S. Shastrakar, V. Shedam,¶ S. K. Kataria and P. K. Mukhopadhyay¶ Electronics Division,¶ Bhabha Atomic Research Centre ¶ “AN APPROACH TO MODERNIZING NUCLEAR¶ INSTRUMENTATION: SILICON-BASED SENSORS,¶ ASIC AND HMC” October, http://www.barc.ernet.in/publications/nl/2007/200710-2.pdf

Modernization of nuclear instrumentation is pursued for realizing the goal of¶ compact portable nuclear instruments, detector mount electronics and related instrumentation that can be¶ designed, developed and manufactured, to mitigate contemporary instrumentation challenges.¶ The activity aims at indigenous design and development of crucial components of nuclear instrumentation.¶ Efforts are also undertaken to develop the critical microelectronics technologies¶ to fulfill the gaps in nuclear instruments “ end to end”. The activity’s objective has been¶ fulfilled by working in close collaboration with semiconductor foundries and¶ HMC (Hybrid Micro Circuits) facilities. Various ASIC, sensors, IP cores, HMC, display devices¶ and critical instrumentation modules developed, are discussed.¶ The design and development of nuclear instruments¶ require a variety of high performance components and¶ sensors. Till recently these components were available¶ and activity based on this approach has grown mature,¶ with good expertise in related areas but has availability¶ and obsolescence issues. As the technologies have moved¶ up, various competing devices, techniques and¶ technologies are available today. It’s important and as¶ well prudent to catch up with these cutting edge¶ developments, for a very strong reason that we have¶ not been able to catch up with previous technology¶ movements. Technology updates are difficult and have¶ higher lead times with steeper learning curve. The¶ Electronics Division has taken a modest initiative in¶ fulfilling the gap in this area. Care has been taken to¶ develop critical instrumentation by an approach of “mix¶ and match”, integrating the newer development in the¶ existing instrumentation on the basis of merit and¶ requirements. Nuclear instrumentation has been a strong driver for¶ technology developments worldwide. The low / medium¶ energy instrumentation requirements we meet fairly with¶ combination of NIM, CAMAC, FASTBUS and VME-based¶ instrumentation. With use of the sensors of higher¶ granularity, higher event rate, imaging and tracking¶ requirements coupled with complex trigger mechanism,¶ the approach has changed to low power detector mount¶ electronics or monolithic sensor with electronics. Rapid¶ developments in semiconductor technology have aided¶ in realizing this concept.

#### Loss of US nuclear primacy causes global nuclear war

Caves 10 – John P. Caves Jr., Senior Research Fellow in the Center for the Study of Weapons of Mass Destruction at the National Defense University, January 2010, “Avoiding a Crisis of Confidence in the U.S. Nuclear Deterrent,” Strategic Forum, No. 252

Perceptions of a compromised U.S. nuclear deterrent as described above would have profound policy implications, particularly if they emerge at a time when a nuclear-armed great power is pursuing a more aggressive strategy toward U.S. allies and partners in its region in a bid to enhance its regional and global clout. A dangerous period of vulnerability would open for the United States and those nations that depend on U.S. protection while the United States attempted to rectify the problems with its nuclear forces. As it would take more than a decade for the United States to produce new nuclear weapons, ensuing events could preclude a return to anything like the status quo ante. The assertive, nuclear-armed great power, and other major adversaries, could be willing to challenge U.S. interests more directly in the expectation that the U**nited** S**tates** would be less prepared to threaten or deliver a military response that could lead to direct conflict. They will want to keep the U**nited** S**tates** from reclaiming its earlier power position. Allies and partners who have relied upon explicit or implicit assurances of U.S. nuclear protection as a foundation of their security could lose faith in those assurances. They could compensate by accommodating U.S. rivals, especially in the short term, or acquiring their own nuclear deterrents, which in most cases could be accomplished only over the mid- to long term. A more nuclear world would likely ensue over a period of years. Important U.S. interests could be compromised or abandoned, or a major war could occur as adversaries and/or the U**nited** S**tates** miscalculate new boundaries of deterrence and provocation. At worst, war could lead to state-on-state employment of weapons of mass destruction (WMD) on a scale far more catastrophic than what nuclear-armed terrorists alone could inflict.

#### The U.S. will inevitably fight conventional wars – only nuclear primacy prevents escalation to nuclear war

Lieber & Press 9 - Keir A. Lieber, Assistant Professor of Political Science at the University of Notre Dame, and Daryl G. Press, Associate Professor of Political Science at the University of Pennsylvania, November-December 2009, “The Nukes We Need: Preserving the American Deterrent,” Foreign Affairs, p. 50-51

This second criticism has merit. Nevertheless, the benefits of maintaining effective counterforce capabilities trump the costs. Strong counterforce capabilities should make adversaries expect that escalating a conventional war will lead to a disarming attack, not a cease-fire. Beyond deterrence, these capabilities will provide a more humane means of protecting allies who are threatened by nuclear attack and give U.S. leaders the ability to pursue regime change if an adversary acts in a truly egregious fashion. Moreover, some danger of escalation is unavoidable because the style of U.S. conventional operations will inevitably blind, rattle, and confuse U.S. adversaries. If the United States has powerful counterforce tools, these may dissuade its enemies from escalating in desperate times, and U.S. leaders would have a much more acceptable option if deterrence fails. The nuclear forces the U**nited** S**tates** builds today must be able to act as a reliable deterrent, even in much darker times. Many of those who recommend a much smaller U.S. nuclear arsenal—and assign little importance to a nuclear counterforce option—fail to consider the great difficulties of maintaining deterrence during conventional wars. The U.S. nuclear arsenal should retain sufficient counterforce capabilities to make adversaries think very carefully before threatening to use, putting on alert, or actually using a nuclear weapon. Any nuclear arsenal should also give U.S. leaders options they can stomach employing in these high-risk crises. Without credible and effective options for responding to attacks on allies or U.S. forces, the United States will have difficulty deterring such attacks. Unless the U**nited** S**tates** maintains potent counterforce capabilities, U.S. adversaries may conclude—perhaps correctly—that the U**nited** S**tates’** strategic position abroad rests largely on a bluff.

#### Reviving semiconductors is key to stop EMP attacks

Spring 94 (Baker Spring, Researcher – Heritage Foundation, Backgrounder, http://www.heritage.org/Research/NationalSecurity/BG987.cfm)

In addition to ensuring the reliability of the existing stockpile, testing has other important and practical uses. Nuclear tests will be required to field new systems as previous generations of weapons become old and obsolete. No testing means no modernization, which means, ultimately, no nuclear stockpile. Moreover, testing is used to "harden" conventional weapons and non-nuclear defenses by exposing them to the effects of nuclear explosions. If these systems are not hardened, a regional adversary will be tempted to explode a nuclear weapon in the air in order to knock out these non-nuclear systems. (The U.S. ability to produce semiconductors that are hardened against the radiation emitted by nuclear weapons is weakening. For a discussion of this alarming problem, see: Lt. Col. Bill Swiderek, "Evaluating the Viability of Rad-Hard Fab Lines," Military & Aerospace Electronics, September 20, 1993, pp. 4, 14-15.)

#### An EMP attack is likely

Cooper and Pfaltzgraff 10 Henry F., Chairman of the Board of Directors of High Frontier and Chairman Emeritus of Applied Research Associates – Empact America, and Robert L., President – Institute for Foreign Policy Analysis and Shelby Cullom Davis Professor of International Security Studies – Tufts University, “A Dangerous Gap in Our Defenses?,” National Review Online, 12-14,<http://www.nationalreview.com/articles/255192/dangerous-gap-our-defenses-henry-f-cooper-brrobert-l-pfaltzgraff-jr>

The 2004 Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack observed that a single nuclear weapon exploded at high altitude above the United States will interact with the Earth’s atmosphere, ionosphere, and magnetic field and can produce a damaging electromagnetic pulse over hundreds of square miles. This could shut down, for an indefinite period, telecommunications and electrical-power grids, as well as the electronics-dependent transportation systems that support the “just-in-time” marketing, manufacturing, and delivery of essentially all commodities upon which we are dependent. It could cut off water and food supplies to urban areas and create chaos that would return the United States to 19th-century life, but without the life support then provided by an indigenous agricultural society. It could also hobble banking and related business transactions, which in turn could extend the catastrophic effects into the global economy. Disabling even one of our critical infrastructure elements would have severe consequences for others — effects from which advanced, technologically interdependent societies might not easily recover. This threat is not merely hypothetical. Several years ago, Iran tested a short-range ballistic missile in a way that indicated an interest in developing an EMP capability. Even terrorists might purchase such missiles, possibly armed with nuclear weapons. Furthermore, recent reports that Iran has agreed to install ballistic missiles in Venezuela suggest that we could face a threat via future pathways across the Caribbean. This could become a modern version of the Cuban Missile Crisis. Yet no national strategy addresses this threat or underwrites a serious program to counter its effects — though such a capability would be possible as an inexpensive adjunct to existing and planned missile-defense programs.

#### Extinction

Pry 10 (Peter Vincent, director of the U.S. Nuclear Strategy Forum, “What America Needs to Know About EMPs” http://wethearmed.com/index.php?topic=8450.0)

EMP is not just a threat to computers and electronic gadgets, but to all the critical infrastructures that depend on electronics and electricity -- communications, transportation, banking and finance, food and water -- and that sustain modern civilization and the lives of the American people. In 2008, the congressionally mandated Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack delivered its final report to Congress, the Defense Department, and the Department of Homeland Security. The commission concluded that terrorist groups, rogue states, China, and Russia are theoretically capable of launching a catastrophic EMP attack against the United States and either had contingency plans to do so or were actively pursuing the ability. Iran, North Korea, China, and Russia have scientific and military research programs dedicated to or supportive of EMP capability, and their military doctrinal writings explicitly describe EMP attacks against the United States. Based on eight years of research and analysis, 50 years of data from nuclear tests and EMP simulators, and never-before-attempted EMP tests, the commission found that any nuclear weapon, even a low-yield one, could potentially pose a catastrophic EMP threat to the United States, mainly because of the great fragility of the electric grid. One scenario of particular concern is a nuclear-armed Iran transferring a short- or medium-range nuclear missile to terrorist groups that could perform a ship-launched "anonymous" EMP attack against the United States. Iranian military strategists have written about EMP attacks against the United States, and Iran has successfully practiced launching a ballistic missile off a ship and flight-tested its Shahab-3 medium-range missile to detonate at high altitude, as if practicing an EMP attack. The commission also noted credible Russian claims that they had developed what the Russians call "super-EMP" weapons -- low-yield nuclear weapons specially designed to generate extraordinarily powerful EMP fields -- and that the Russian Duma had raised the prospect of a disabling EMP attack against the United States during NATO's bombing of Serbia in May 1999. The EMP Commission also, in the first such preview by any official body, warned that a "great" geomagnetic storm could be as catastrophic as a nuclear EMP attack -- and that this naturally occurring EMP event is inevitable. Normally, geomagnetic storms occur at high northern latitudes, not over the United States, and usually are not sufficiently powerful to cause catastrophic damage. But every hundred years or so, a "great" geomagnetic storm occurs that could cause catastrophic damage to electronics -- and the infrastructures that rely upon them -- over much of the Northern Hemisphere. The world has not experienced a great geomagnetic storm since the advent of the electronic age, not since the Carrington event of 1859 -- but many scientists think we are overdue. A great geomagnetic storm could generate an EMP covering the United States equivalent to the high-altitude detonation of a very powerful megaton-class nuclear weapon. Weinberger accuses the EMP Commission of deliberately "exaggerating the capabilities of a potential EMP attack." This is a serious allegation, as deliberately misrepresenting the facts about the EMP threat would constitute an ethical and legal violation. As evidence, Weinberger offers the opinion of Philip Coyle of the Center for Defense Information. Whatever Coyle's opinion may be, he is no authority on the commission's work and has participated in none of it. In any case, even he only accuses the EMP Commission of using "inflammatory language" but not of misrepresenting facts. As a member of the EMP Commission's staff, I can assure the public that the EMP commissioners adhered to the highest standards of professionalism and scientific objectivity. If the findings of the EMP Commission sound alarming, it is because they are. The EMP commissioners did their duty and followed the data. The EMP Commission's threat assessment and recommendations represent the best work so far produced by the United States on EMP and is the best-informed basis for national security policy. The EMP Commission's conclusions were also backed up by the findings of another congressional commission, this one chaired by former Defense Secretary William Perry. Their 2009 report independently concluded that terrorists, rogue states, China, and Russia could pose an EMP threat to the United States and advocated immediate implementation of the EMP Commission's recommendations.

### Steel Industry

#### Low prices are key to the steel industry

IHS 11 (IHS Global Insight - leading economic analysis and forecasting firm, December 2011, "The Economic and Employment Contributions of Shale Gas in the United States," anga.us/media/235626/shale-gas-economic-impact-dec-2011.pdf)

**Energy from** electricity or **natural gas makes up a high**er **proportion of the value of iron ore** processed¶ from taconite in the Great Lakes region. Given that the price for iron ore is essentially a global price, domestic¶ producers of iron **ore pellets** are benefitting from higher margins due to lower electricity and natural gas prices. With these incrementally higher margins, domestic iron ore pellet production is likely¶ higher than it would otherwise be.¶ The steel industry is **expected to be** reactivated with the improvement of auto manufacturing and an increase¶ in construction activity. Moreover, the development of shale gas has given a considerable boost¶ **to the steel industry** by increasing the demand for steel pipes. Used for drilling, production, transportation,¶ and distribution, steel pipes are essential to the natural gas industry, and the large infrastructure¶ investments already announced could have quite a significant impact on the steel industry.

#### That’s key to aircraft carriers and the navy

Gibson 11 – Thomas J. Gibson received his law degree from Georgetown University where he graduated magna cum laude. He holds a Master of Marine Affairs degree from the University of Rhode Island and a B.S. in Naval Architecture from the United States Naval Academy. Gibson served as Senior Vice President of Advocacy for the American Chemistry Council. Previously, Gibson served as the Senior Vice President, Government Affairs for the Portland Cement Association. Prior to joining PCA in 2004, Gibson served as Chief of Staff for the U.S. Environmental Protection Agency. 2011, "Profile of the American Iron and Steel Institute 2010-2011"www.steel.org/~/media/Files/AISI/About AISI/Profile Brochure F-singles\_CX.pdf

Military uses for steel are extensive. Thousands of skilled men and women of the American steel industry work to produce high-quality, cost-competitive products that are used by the military in various applications ranging from aircraft carriers and nuclear submarines to Patriot and Stinger missiles, armor plate for tanks and field artillery pieces, as well as every major military aircraft in production today. Some examples of steel use in defense applications are: 􀀩 The USS New York was built with 24 tons of scrap steel reclaimed and recycled from the World Trade Center. 􀀩 The USS George H.W. Bush, an aircraft carrier named after the 41st President, contains 47,000 tons of structural steel and serves as home to 6,000 Navy personnel. 􀀩 Steel is a strategic material needed to strengthen existing U.S. infrastructure and installations. All segments of the domestic steel industry contribute directly or indirectly to the defense industrial base. Whether it is missiles, jet aircraft, submarines, helicopters, Humvees® or munitions, American-made steels and specialty metals are crucial components of U.S. military strength. **Steel plate is used in the bodies and propulsion systems of the naval fleet**. The control cables on virtually all military aircraft, including fighter jets and military transport planes, are produced from steel wire rope. In addition, land-based vehicles such as the Bradley Fighting Vehicle, Abrams Tank and mine-resistant ambush-protected (MRAP) vehicles use significant amounts of steel.

#### Carriers prevent rogue generals from using Pakistani nuclear weapons

Gordon et al. 6 – John Gordon, Senior Policy Analyst At RAND Corporation, Ph.D. in public policy, George Mason University; M.A. in international relations, St. Mary's University; M.B.A., Marymount University; B.A. in history, The Citadel, May 9th, 2006, John Gordon IV, Peter A. Wilson, John Birkler, Steven Boraz, Gordon T. Lee, Leveraging America’s Aircraft Carrier Capabilities, http://www.rand.org/pubs/monographs/2006/RAND\_MG448.pdf

This vignette examined the possibility that a radical group within the Pakistani military attempts to overthrow the government in Islamabad. Although the coup attempt fails, the rebels seize one or more nuclear-weapons storage sites and a number of missile launchers. The Pakistani government asks the United States for assistance in the form of intelligence, surveillance, and reconnaissance (ISR), precision strike, and Special Operations Forces liaison personnel to assist in its attempts to quickly retake the storage facilities and prevent the launch or removal of nuclear weapons. Strike and reconnaissance aircraft or unmanned aerial vehicles (UAVs) from carriers operating in the Indian Ocean are a key U.S. capability that can assist the Pakistanis. The vignette highlights the need for the United States to quickly establish liaison with both Pakistani and Indian authorities. In this situation, U.S. forces would provide detailed, real-time, persistent, all-weather ISR support to Pakistani forces, as well as precision-strike assets that the Pakistani military would lack. It should be pointed out that support by current and projected long-endurance UAVs or manned ISR aircraft cannot be provided unless those systems operate below any cloud layers, which thus makes them subject to attack by man-portable air defense systems (MANPADS) and other air defenses.

#### Extinction

Caldicott 2 (Helen Caldicott, Founder, Physicians for Social Responsibility, THE NEW NUCLEAR DANGER, 2002, p. xii)

The use of Pakistani nuclear weapons could trigger a chain reaction. Nuclear-armed India, an ancient enemy, could respond in kind. China, India's hated foe, could react if India used her nuclear weapons, triggering a nuclear holocaust on the subcontinent. If any of either Russia or America's 2, 250 strategic weapons on hair-trigger alert were launched either accidentally or purposefully in response, nuclear winter would ensue, meaning the end of most life on earth.

#### Collapse of the navy causes great power wars

Conway et al. 7 [James T., General, U.S. Marine Corps, Gary Roughead, Admiral, U.S. Navy, Thad W. Allen, Admiral, U.S. Coast Guard, “A Cooperative Strategy for 21st Century Seapower,” October, http://www.navy.mil/maritime/MaritimeStrategy.pdf]

No other disruption is as potentially disastrous to global stability as war among major powers. Maintenance and extension of this Nation’s comparative seapower advantage is a key component of deterring major power war. While war with another great power strikes many as improbable, the near-certainty of its ruinous effects demands that it be actively deterred using all elements of national power. The expeditionary character of maritime forces—our lethality, global reach, speed, endurance, ability to overcome barriers to access, and operational agility—provide the joint commander with a range of deterrent options. We will pursue an approach to deterrence that includes a credible and scalable ability to retaliate against aggressors conventionally, unconventionally, and with nuclear forces. Win our Nation’s wars. In times of war, our ability to impose local sea control, overcome challenges to access, force entry, and project and sustain power ashore, makes our maritime forces an indispensable element of the joint or combined force. This expeditionary advantage must be maintained because it provides joint and combined force commanders with freedom of maneuver. Reinforced by a robust sealift capability that can concentrate and sustain forces, sea control and power projection enable extended campaigns ashore.

#### The navy solves piracy

Hilley 8 – Mass Communication Specialist 1st Class (Monique, “Coalition Forces Work To Deter Piracy In Gulf Of Aden”, The United States Department of the Navy, 1/17/09, Story Number: NNS090117-01, Online @ http://www.navy.mil/submit/display.asp?story\_id=41897)

USS SAN ANTONIO, At sea (NNS) -- Combined Task Force (CTF) 151 is working closely with international navies in the Gulf of Aden to conduct counterpiracy operations and ensure a lawful maritime order in the region. "We're out here as a force, with the coalition nations, to ensure commerce flows freely throughout the world," explained Rear Adm. Terry McKnight, commander, CTF 151. "We are working to achieve an objective of preventing piracy at sea. Over the past few years, we've learned from many combined operations that working with the coalition is key to our success throughout the world." The mission of CTF 151 is to prevent and deter piracy operations in the Gulf of Aden. The task force, which has assembled on board the amphibious transport dock ship USS San Antonio (LPD 17), has many capabilities which are enhanced by the ship's crew. The personnel currently embarked aboard San Antonio in support of CTF 151 counterpiracy operations include a helicopter squadron, fleet surgical team, boarding teams and several elements from the U.S. Marine Corps and U.S. Coast Guard. "This mission is very important for the maritime strategy of our nation and also to work with our coalition nations," said McKnight. "We are out here to demonstrate that the United States Navy will not allow criminal acts on the high seas and that we want, as best we can, to improve the open trade agreements throughout the world." Piracy acts spiked in the region in mid-August due to a very aggressive increase in activity by a clan on the north coast of Somalia. In response to the activity, Vice Adm. William Gortney, commander, Combined Maritime Forces, directed the establishment of the maritime security patrol area (MSPA), an area coalition ships and aircraft patrol to prevent destabilizing activity. "Because of the complexity of the operations, I determined it was necessary to establish CTF 151 to create a task force with a mission and a mandate from the United Nations to conduct counterpiracy operations throughout the area of responsibility," said Gortney during a press briefing at the Pentagon Jan. 15. Although the Combined Maritime Forces (CMF) do not have a mandate to conduct counterpiracy operations, combined task forces each have a particular mandate under which they operate. Any nation that does not yet have the authority to conduct counterpiracy operations will continue to work in Combined Task Force 150, while those that seek the authority to operate with CTF 151 will bring their collective capabilities together to deter, disrupt and eventually bring to justice the maritime criminals involved in the piracy events. "It's really a fascinating story to watch unfold as, at this point, 14 nations have sent their navies to work against the destabilizing activity," added Gortney. CTF 151, with the International Maritime Organization, created the maritime security patrol area as a place to channel the shipping so that they could concentrate naval activity. The task force includes three phases, which outline critical mission goals. The first phase is focused on bringing more international navies into the efforts to help solve this international problem. The second phase involves working with the shipping industry to develop and share practices that prevent pirates from successfully boarding their vessels. The third phase, once authorized, will allow the task force to deliver suspected pirates to court, where they will be held accountable for their actions. "We've had great effects on the first two," explained Gortney. "Fourteen nations are down there. The shipping industry is having the greatest impact. They're doing a terrific job of sharing best practices, speed, maneuver and non-kinetic defensive measures that will prevent pirates from getting aboard the vessel. We have had a great effect on that. In the last six weeks, there have only been four successful piracy attacks." CTF 151 is working very closely with the U.S. State Department to finalize an agreement with one of the nations in the area that will allow CTF 151 and coalition forces to disrupt, deter, capture and hold suspected pirates accountable for their actions. The task force expects that authority to be granted within the next week. "**We are going to aggressively go after the pirates** that are conducting pirate activity," said Gortney. "We have to make it unpleasant to be a pirate." CTF 151 is a multinational task force conducting counterpiracy operations to detect and deter piracy in and around the Gulf of Aden, Arabian Sea, Indian Ocean and Red Sea. It was established to create a lawful maritime order and develop security in the maritime environment.

#### Piracy causes oil spills---devastates marine life for decades

Middleton 8—Roger, consultant reseacher in the Africa Programme at the Chatham House, the Royal Institute of Economic Affairs, "Piracy in Somalia", October, <http://www.chathamhouse.org/sites/default/files/public/Research/Africa/1008piracysomalia.pdf>

Large oil tankers pass through the Gulf of Aden and the danger exists that a pirate attack could cause a major oil spill in what is a very sensitive and important ecosystem. During the attack on the Takayama the ship’s fuel tanks were penetrated and oil spilled into the sea. The consequences of a more sustained attack could be much worse. As pirates become bolder and use ever more powerful weaponry a tanker could be set on fire, sunk or forced ashore, any of **which could result in an environmental catastrophe** that would devastate marine and bird life for years to come. The pirates’ aim is to extort ransom payments and to date that has been their main focus; however, the possibility that they could destroy shipping is very real.

#### Ocean destruction causes extinction

Craig 3 (Robin, Professor of Law at Indiana, “Taking Steps,” 34 McGeorge Law Review. 155, Lexis)

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the **basic building blocks of living organisms**, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life. Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that more diverse ecosystems are more stable." Coral reef ecosystems are particularly dependent on their biodiversity. Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: **if we kill the ocean** we kill ourselves**, and we will take** most of the biosphere with us**.** The Black Sea is almost dead, its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." More importantly, the Black Sea is not necessarily unique. The Black Sea is a microcosm of what is happening to the ocean systems at large. The stresses piled up: overfishing, oil spills, industrial discharges, nutrient pollution, wetlands destruction, the introduction of an alien species. The sea weakened, slowly at first, then collapsed with shocking suddenness. The lessons of this tragedy should not be lost to the rest of us, because much of what happened here is being repeated all over the world. The ecological stresses imposed on the Black Sea were not unique to communism. Nor, sadly, was the failure of governments to respond to the emerging crisis. Oxygen-starved "dead zones" appear with increasing frequency off the coasts of major cities and major rivers, forcing marine animals to flee and killing all that cannot. Ethics as well as enlightened self-interest thus suggest that the United States should protect fully-functioning marine ecosystems wherever possible - even if a few fishers go out of business as a result.

## Energy Leverage Advantage---Russia

### Internal Links

#### **There’s a large natural gas supply now**

Buurma 10-25 – Christine Buurma, writer for Businessweek, October 25th, 2012, "Natural Gas Declines After Bigger-Than-Average Supply Increase" [www.businessweek.com/printer/articles/351414?type=bloomberg](http://www.businessweek.com/printer/articles/351414?type=bloomberg)

Natural gas futures dropped to a two-week low in New York after a government report showed U.S. stockpiles climbed by more than the five-year average last week.¶ Gas declined 0.5 percent after the Energy Department said inventories expanded by 67 billion cubic feet in the week ended Oct. 19 to 3.843 trillion cubic feet. Analyst estimates compiled by Bloomberg showed a gain of 67 billion. A survey of Bloomberg users predicted an increase of 66 billion. Supplies rose to a record 3.852 trillion cubic feet last year.¶ “The short story is that we’re not running out of gas,” said Tim Evans, an energy analyst at Citi Futures Perspective in New York. “We’re within 9 billion cubic feet of an all-time high storage level.”¶ Natural gas for November delivery fell 1.6 cents to $3.434 per million British thermal units on the New York Mercantile Exchange, the lowest settlement since Oct. 8. The futures have dropped 6.1 percent from a year ago.¶ November $3.50 calls were the most active gas options in electronic trading. They were 3 cents lower at 0.4 cent on volume of 1,115 contracts as of 3:46 p.m. Calls accounted for 56 percent of options volume.¶ The futures have created a bearish “double top” formation after failing to breach $3.65 per million Btu earlier this week and last week, said Aaron Calder, senior market analyst at Gelber & Associates in Houston. Prices may slip to $3.225 per million Btu, he said.¶ Stockpile Report¶ The stockpile increase was bigger than the five-year average gain for the week of 65 billion cubic feet, department data show. A surplus to the five-year average fell to 7 percent from 7.1 percent the previous week. Supplies were 4.1 percent above year-earlier levels, down from 5 percent a week earlier.¶ Inventories may climb to a record 3.903 trillion cubic feet by the end of this month, the Energy Department said Oct. 10 in its monthly Short-Term Energy Outlook.¶ U.S. natural gas production in 2012 will average an all- time high of 68.85 billion cubic feet a day, up 4 percent from last year, the department said.¶ **The number of rigs drilling for natural gas in the U.S. rose** by five to 427 last week, according to data released Oct. 19 by Baker Hughes Inc. in Houston. The rig count was down 47 percent this year.¶ Commodity Weather Group LLC in Bethesda, Maryland, predicted mostly warmer-than-normal weather on the East Coast through Oct. 29.¶ The low in New York on Oct. 27 may be 56 degrees Fahrenheit (13 Celsius), 9 above normal, according to AccuWeather Inc. in State College, Pennsylvania. The low in Boston may be 52 degrees, also 9 more than the usual reading.

#### **US gas supply is key to prevent Russian energy leverage over Europe**

Koven 12 – Colonel Alexander L. Koven, United States Air Force, United States Army War College, January 3rd, 2012, "Under the Yoke: Europe's Natural Gas Dependency on Russia," [www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA561551](http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA561551)

UNDER THE YOKE: EUROPE'S NATURAL GAS DEPENDENCY ON RUSSIA

**Rising shale gas supplies** have significantly reduced U.S. requirements for LNG, a move that has already had **geopolitical implications**. This shift has played a key role in weakening Russia's ability to wield an 'energy weapon'over its European customers by **offering European customers an alternative supply** in the form of LNG displaced from the U.S. market.80

#### The plan reduces US gas imports and frees up the global market – allows Europe to lessen its dependence on Russian gas

Jaffe & O’Sullivan 12 – Amy Myers Jaffe is the Wallace S. Wilson Fellow in Energy Studies at the James A. Baker III Institute for Public Policy at Rice University, and Meghan L. O'Sullivan is the Jeane Kirkpatrick Professor of the Practice of International Affairs at the John F. Kennedy School at Harvard University. “The Geopolitics of Natural Gas,” July, http://bakerinstitute.org/publications/EF-pub-HKSGeopoliticsOfNaturalGas-073012.pdf

Knowledge of the shale gas resource is not new. Geologists have known about the existence of¶ shale formations for years but accessing those resources was long held to be an issue of technology and cost. In the past decade, innovations have yielded substantial cost reductions,¶ making shale gas production a commercial reality. In fact, shale gas production in the United¶ States has increased from virtually nothing in 2000 to more than 10 billion cubic feet per day¶ (bcfd) in 2010. Rising North America shale gas supplies have **significantly reduced US requirements for imported LNG** and contributed to lower US domestic natural gas prices. The natural gas supply picture in North America will have a ripple effect around the globe that will¶ expand over time, **not only through** displacement of supplies in global trade **but also by fostering a growing interest in shale resource potential in other parts of the world**.¶ The importance of the commercialization of shale cannot be understated from a geopolitical,¶ environmental, or market development perspective. Given the assumption that known shale gas resources will be developed according to their commercial viability in North America and¶ elsewhere, the reference scenario projects shale gas production could **more than** quadruple over the next two decades, accounting for over 50 percent of total US natural gas production by the early 2030s. Still, the countries of the former Soviet Union will collectively be the largest¶ supplier of natural gas (conventional and unconventional) by 2040, with North America a close second. The reference case anticipates the strongest supply of shale gas will be in North America, where the recoverable shale resource comprises more than a quarter of the world’s 4,024 trillion cubic feet (Tct) and is rivaled in size only by the shale plays in Asia and Oceania.¶ These supply trends will have a significant impact on gas trade flows. Not only will the United¶ States be able to avoid growth in LNG imports for the next three decades, but the reference case projects that North America will export 720 million cubic feet per day of LNG by 2030. Australia will rival Qatar as the world’s largest LNG exporter by 2030. Qatar and Australia will remain the largest LNG exporters through 2040, collectively accounting for about 40 percent of global LNG exports.¶ LNG supplies whose development was anchored to the belief that the United States would be a¶ premium market will continue to be diverted. In the reference case, the US market remains the lowest priced major market region in the world throughout the model time horizon. Many US terminals once expected to be actively utilized will remain relatively empty. During the period from 2013 to 2015, US terminals see some growth as new volumes from Australian LNG development push African LNG cargoes to the US market—a trend exacerbated by growth in LNG supply from West Africa in the 2014-2015 period.¶ The reference case projects that **consumers in Europe will receive** a double benefit from the rise in global gas supply. Not only will Europe increasingly find **alternatives to Russian** pipeline¶ **supplies,** but these alternative supplies will exert pressure on the status quo of indexing gas sales to a premium marker determined by the price of petroleum products. In fact, Russia has already had to accept lower prices for its natural gas and is now allowing a portion of its sales in Europe to be indexed to spot natural gas markets, or regional market hubs, rather than oil prices. This change in pricing terms signals a major paradigm shift.¶ Yet as Europe moves to gas-on-gas pricing, global marker prices in the reference scenario fail to converge through 2040. Europe’s price premium will hover at more than $1 above Henry Hub prices, even as Europe develops its own shale resource and diversifies sources of supply.¶ Shale gas eventually makes up 20 percent of European market. European shale gas production¶ begins in earnest in 2020s, and approaches 20 percent of the total market by 2040. LNG import growth is the second fastest growing source of European supply. The availability of shale gas under the reference case means that Caspian flows will not make economic sense as a competing supply to Europe. The Nabucco pipeline project, for example, is not constructed until lower-cost Iraqi gas is able to flow into the line.

### Aggression/Terror

#### European gas independence from Russia solves Russian aggression, terrorism, and EU relations

Medlock et al. 11 – Dr. Kenneth B. Medlock, Ph.D. in economics, fellow in Energy and Resource Economics at the Baker Institute, and former advisor to the U.S. Department of Energy and the California Energy Commission, AND\*\*\* Amy Myers Jaffe, graduate from Princeton University, fellow of Energy Studies and director of the Energy Forum at the Baker Institute, and associate director of the Rice Energy Program, AND\*\*\* Dr. Peter R. Hartley, Ph.D in economics at Rice University, July 2011, "Shale Gas and U.S. National Security,” http://bakerinstitute.org/publications/EF-pub-DOEShaleGas-07192011.pdf

The dramatic lessening of Europe’s dependence on Russian gas will likely have considerable geopolitical implications in thwarting Russia’s ability **to exercise an** “energy” weapon or to unduly influence political outcomes on the Continent. **European buyers will have ample alternatives** to Russian supplies, thereby **reducing Moscow’s political leverage**. This outcome would also contribute positively to the balance of power between Russia and the EU, putting Europe in a stronger position to influence Russian foreign policy near Europe’s borders. To wit, **Europe’s high dependence** on Russian pipeline natural gas supplies **made it difficult for** certain European leaders to engage in diplomacy **objecting to** Russia’s invasion of Georgia in 2008 and weakened their support of the shaky election of pro-Western Ukrainian president Viktor Yushchenko, who was negatively targeted by Moscow for his anti-Russian stances.¶ A more diverse energy supply for Europe enhances U.S. interests by buttressing Europe’s abilities to resist Russian interference in European affairs and help border states in the Balkans and Eastern Europe assert greater foreign policy independence from Moscow. U.S. coalitions with European nations are an important element to U.S. national security, including efforts to combat international terrorism **and** prevent humanitarian crises. An energy-independent Europe will be better positioned to join with the United States in global peacekeeping **and other international initiatives** that might not have the full support of Russia.

#### Russian aggression causes nuclear war

Blank 9 – Dr. Stephen Blank is a Research Professor of National Security Affairs at the Strategic Studies Institute of the U.S. Army War College, March 2009, “Russia And Arms Control: Are There Opportunities For The Obama Administration?” http://www.strategicstudiesinstitute.army.mil/pdffiles/pub908.pdf

Proliferators or nuclear states like China and Russia can then deter regional or intercontinental attacks either by denial or by threat of retaliation.168 Given a multipolar world structure with little ideological rivalry among major powers, it is unlikely that they will go to war with each other. Rather, like Russia, they will strive for exclusive hegemony in their own “sphere of influence” and use nuclear instruments towards that end. However, wars may well break out between major powers and weaker “peripheral” states or between peripheral and semiperipheral states given their lack of domestic legitimacy, the absence of the means of crisis prevention, the visible absence of crisis management mechanisms, and their strategic calculation that asymmetric wars might give them the victory or respite they need.169 Simultaneously,¶ The states of periphery and semiperiphery have far more opportunities for political maneuvering. Since war remains a political option, these states may find it convenient to exercise their military power as a means for achieving political objectives. Thus international crises may increase in number. This has two important implications for the use of WMD**.** First, they may be used deliberately to offer a decisive victory (or in Russia’s case, to achieve “intra-war escalation control”—author170) to the striker, or for defensive purposes when imbalances in military capabilities are significant; and second, crises increase the possibilities of inadvertent or accidental wars involving WMD.171¶ Obviously nuclear proliferators or states that are expanding their nuclear arsenals like Russia can exercise a great influence upon world politics if they chose to defy the prevailing consensus and use their weapons not as defensive weapons, as has been commonly thought, but as offensive weapons to threaten other states and deter nuclear powers. Their decision to go either for cooperative security and strengthened international military-political norms of action, or for individual national “egotism” will critically affect world politics. For, as Roberts observes,¶ But if they drift away from those efforts [to bring about more cooperative security], the consequences could be profound. At the very least, the effective functioning of inherited mechanisms of world order, such as the special responsibility of the “great powers” in the management of the interstate system, especially problems of armed aggression, under the aegis of collective security, could be significantly impaired. Armed with the ability to defeat an intervention, or impose substantial costs in blood or money on an intervening force or the populaces of the nations marshaling that force, the newly empowered tier could bring an end to collective security operations, undermine the credibility of alliance commitments by the great powers, [undermine guarantees of extended deterrence by them to threatened nations and states] extend alliances of their own, and perhaps make wars of aggression on their neighbors or their own people.172

#### There’s a high risk of nuclear terrorism – causes extinction

Hellman 8 [Martin E. Hellman, emeritus prof of engineering @ Stanford, “Risk Analysis of Nuclear Deterrence” SPRING 2008 THE BENT OF TAU BETA PI, http://www.nuclearrisk.org/paper.pdf]

The threat of nuclear terrorism looms much larger in the public’s mind than the threat of a full-scale nuclear war, yet this article focuses primarily on the latter. An explanation is therefore in order before proceeding. A terrorist attack involving a nuclear weapon would be a catastrophe of immense proportions: “A 10-kiloton bomb detonated at Grand Central Station on a typical work day would likely kill some half a million people, and inflict over a trillion dollars in direct economic damage. America and its way of life would be changed forever.” [Bunn 2003, pages viii-ix]. **The likelihood of such an attack is also significant**. Former Secretary of Defense William Perry has estimated the chance of a nuclear terrorist incident within the next decade to be roughly 50 percent [Bunn 2007, page 15]. David Albright, a former weapons inspector in Iraq, estimates those odds at less than one percent, but notes, “We would never accept a situation where the chance of a major nuclear accident like Chernobyl would be anywhere near 1% .... A nuclear terrorism attack is a low-probability event, but we can’t live in a world where it’s anything but extremely low-probability.” [Hegland 2005]. In a survey of **85 national security experts**, Senator Richard Lugar **found** a median estimate of 20 percent for the “probability of **an attack involving a nuclear explosion occurring** somewhere in the world in the next 10 years,” with 79 percent of the respondents believing “it more likely to be carried out by terrorists” than by a government [Lugar 2005, pp. 14-15]. I support increased efforts to reduce the threat of nuclear terrorism, but that is not inconsistent with the approach of this article. Because terrorism is one of the potential trigger mechanisms for a full-scale nuclear war, the risk analyses proposed herein will include estimating the risk of nuclear terrorism as one component of the overall risk. If that risk, the overall risk, or both are found to be unacceptable, then the proposed remedies would be directed to reduce which- ever risk(s) warrant attention. Similar remarks apply to a number of other threats (e.g., nuclear war between the U.S. and China over Taiwan). his article would be incomplete if it only dealt with the threat of nuclear terrorism and neglected the threat of full- scale nuclear war. If both risks are unacceptable, an effort to reduce only the terrorist component would leave humanity in great peril. In fact, society’s almost total neglect of the threat of full-scale nuclear war makes studying that risk all the more important. The cosT of World War iii The danger associated with nuclear deterrence depends on both the cost of a failure and the failure rate.3 This section explores the cost of a failure of nuclear deterrence, and the next section is concerned with the failure rate. While other definitions are possible, this article defines a failure of deterrence to mean a full-scale exchange of all nuclear weapons available to the U.S. and Russia, an event that will be termed World War III. Approximately 20 million people died as a result of the first World War. World War II’s fatalities were double or triple that number—chaos prevented a more precise deter- mination. In both cases humanity recovered, and the world today bears few scars that attest to the horror of those two wars. Many people therefore implicitly believe that a third World War would be horrible but survivable, an extrapola- tion of the effects of the first two global wars. In that view, World War III, while horrible, is something that humanity may just have to face and from which it will then have to recover. In contrast, some of those most qualified to assess the situation hold a very different view. In a 1961 speech to a joint session of the Philippine Con- gress, General Douglas MacArthur, stated, “Global war has become a Frankenstein to destroy both sides. … If you lose, you are annihilated. If you win, you stand only to lose. No longer does it possess even the chance of the winner of a duel. It contains now only the germs of double suicide.” Former Secretary of Defense Robert McNamara ex- pressed a similar view: “If deterrence fails and conflict develops, the present U.S. and NATO strategy carries with it a high risk that Western civilization will be destroyed” [McNamara 1986, page 6]. More recently, George Shultz, William Perry, Henry Kissinger, and Sam Nunn4 echoed those concerns when they quoted President Reagan’s belief that nuclear weapons were “totally irrational, totally inhu- mane, good for nothing but killing, possibly destructive of life on earth and civilization.” [Shultz 2007] Official studies, while couched in less emotional terms, still convey the horrendous toll that World War III would exact: “The resulting deaths would be far beyond any precedent. Executive branch calculations show a range of U.S. deaths from 35 to 77 percent (i.e., 79-160 million dead) … a change in targeting could kill somewhere between 20 million and 30 million additional people on each side .... These calculations reflect only deaths during the first 30 days. Additional millions would be injured, and many would eventually die from lack of adequate medical care … millions of people might starve or freeze during the follow- ing winter, but it is not possible to estimate how many. … further millions … might eventually die of latent radiation effects.” [OTA 1979, page 8] This OTA report also noted the possibility of serious ecological damage [OTA 1979, page 9], a concern that as- sumed a new potentiality when the TTAPS report [TTAPS 1983] proposed that the ash and dust from so many nearly simultaneous **nuclear explosions** and their resultant fire- storms **could usher in a nuclear winter that might** erase homo sapiens from the face of the earth, much as many scientists now believe the K-T Extinction that wiped out the dinosaurs resulted from an impact winter caused by ash and dust from a large asteroid or comet striking Earth. The TTAPS report produced a heated debate, and there is still no scientific consensus on whether a nuclear winter would follow a full-scale nuclear war. Recent work [Robock 2007, Toon 2007] suggests that even a limited nuclear exchange or one between newer nuclear-weapon states, such as India and Pakistan, could have devastating long-lasting climatic consequences due to the large volumes of smoke that would be generated by fires in modern megacities. While it is uncertain how destructive World War III would be, prudence dictates that we apply the same engi- neering conservatism that saved the Golden Gate Bridge from collapsing on its 50th anniversary and assume that preventing World War III is a necessity—not an option.

### NATO

#### Energy dominance allows Russia to thwart NATO

Blank 9 Stephen - Strategic Studies Institute, US Army War College, September 2009, "Russia’s Energy Weapon and European Security.," www.acus.org/files/StephenBlank-RussiaEnergy.pdf

Similarly abundant evidence exists that **Moscow has used and continues to use energy as an instrument of dominance** in the CIS as a whole **and** of **leverage in Europe,** either by controlling pipelines from Eurasia to Russia and then Europe or by maximizing its control of gas supplies from Russia (including those Central Asian supplies) to Europe.

Moscow’s frequent resort to energy punishments to get its way testifies to its view of energy as a primary lever of policy. This use of punishment does not end at the CIS’ borders even though it is most frequently employed there. Indeed, **it has also regularly been employed against the Baltic States and in Central and Eastern Europe.**

For instance, in the summer of 2008 Moscow cut off gas to the Czech Republic because of its support for the US missile defense plan. So both history and overt Russian statements confirm that **Russia has used and will use energy as a weapon of foreign policy.** Moscow turns this weapon on or off as needed to suit its needs. Right now Moscow’s apparent main goal is to ensure that one of its favored candidates wins the upcoming Ukrainian presidential election in January 2010. Accordingly it is lending Ukraine $2 Billion and allowing it to slash purchases of Russian gas and pay only for what is actually used rather than for the full amount of contracted gas given its depleted treasury due to the current crisis.

 It is doing so to ensure that either Prime Minister Yulia Tymoshenko or opposition leader, Viktor Yanukovych, defeat President Viktor Yushchenko. But it will demand a quid pro quo for its support and that can be expected to be participation in the current EU-Ukraine plan to reform Ukraine’s gas infrastructure with a view to neutralize that program, or control over gas transmission distribution in Ukraine on pain of more shutdowns. And it is quite possible that a new Ukrainian 4 government that comes to power after those elections will not face an immediate crisis in gas supply as the gas company Naftohaz Ukrainy is practically bankrupt so Ukraine may not be able to pay for its gas by mid-winter 2010, leading to a contractually approved Russian shutdown or more coercion to take over its network. **Moscow may also demand an end or at least a very protracted slowdown to the campaign for** Ukrainian **membership in NATO and/or the EU.** Certainly it has made major threats against Ukraine even before President Medvedev sent a vitriolic blog and letter to Yushchenko on August 11, 2009 cataloguing Ukraine’s supposedly “anti-Russian” policies and essentially demanding a change of government in Kyiv.

9 In earlier statements the **Russia**n government **has** also **denied** that Ukraine is a truly sovereign state **and has threatened** it with missiles if it were to join **NATO**. Thus at the NATO summit of April, 2008 in Bucharest President Putin told President Bush, “But, George, don’t you understand that Ukraine is not a state?” Putin further claimed that most of its territory was a Russian gift in the 1950s. Moreover, while Western Ukraine belonged to Eastern Europe, Eastern Ukraine was “ours.” Furthermore, if Ukraine did enter NATO, Russia would then detach Eastern Ukraine (and the Crimea) and graft it onto Russia. Thus Ukraine would cease to exist as a state. 10

**Putin** also **said that Russia regards NATO enlargement as a threat**, so if Georgia received membership, **Moscow would “take adequate measures**” and recognize Abkhazia and South Ossetia to create a buffer between NATO and Russia. 11 So we cannot say that we have not been warned what Moscow wants and what it might do if it so chose.

#### NATO prevents global nuclear war

Zbigniew Brzezinski 9, former U.S. National Security Advisor, the Robert E. Osgood Professor of American Foreign Policy at Johns Hopkins University's School of Advanced International Studies, September/October 2009, “An Agenda for NATO,” Foreign Affairs

And yet, it is fair to ask: Is NATO living up to its extraordinary potential? NATO today is without a doubt the most powerful military and political alliance in the world. Its 28 members come from the globe’s two most productive, technologically advanced, socially modern, economically prosperous, and politically democratic regions. Its member states’ 900 million people account for only 13 percent of the world’s population but 45 percent of global GDP.

NATO’s potential is not primarily military. Although NATO is a collective-security alliance, its actual military power comes predominantly from the United States, and that reality is not likely to change anytime soon. NATO’s real power derives from the fact that it combines the United States’ military capabilities and economic power with Europe’s collective political and economic weight (and occasionally some limited European military forces). Together, that combination **makes NATO globally significant.** It must therefore remain sensitive to the importance of safeguarding the geopolitical bond between the United States and Europe as it addresses new tasks.

The basic challenge that NATO now confronts is that there are **historically unprecedented risks to global security**. Today’s world is threatened neither by the militant fanaticism of a territorially rapacious nationalist state nor by the coercive aspiration of a globally pretentious ideology embraced by an expansive imperial power. The paradox of our time is that the world, increasingly connected and economically interdependent for the first time in its entire history, is experiencing **intensifying popular unrest** made all the more menacing by the growing accessibility of weapons of mass destruction - not just to states but also, potentially, to extremist religious and political movements. Yet there is **no effective global security mechanism** for coping with the growing threat of violent political chaos stemming from humanity’s recent political awakening.

The three great political contests of the twentieth century (the two world wars and the Cold War) accelerated the political awakening of mankind, which was initially unleashed in Europe by the French Revolution. Within a century of that revolution, spontaneous populist political activism had spread from Europe to East Asia. On their return home after World Wars I and II, the South Asians and the North Africans who had been conscripted by the British and French imperial armies propagated a new awareness of anticolonial nationalist and religious political identity among hitherto passive and pliant populations. The spread of literacy during the twentieth century and the wide-ranging impact of radio, television, and the Internet accelerated and intensified this mass global political awakening.

In its early stages, such new political awareness tends to be expressed as a fanatical embrace of the most extreme ethnic or fundamentalist religious passions, with beliefs and resentments universalized in Manichaean categories. Unfortunately, in significant parts of the developing world, bitter memories of European colonialism and of more recent U.S. intrusion have given such newly aroused passions a distinctively anti-Western cast. Today, the most acute example of this phenomenon is found in an area that stretches from Egypt to India. This area, inhabited by more than 500 million politically and religiously aroused peoples, is where NATO is becoming more deeply embroiled.

Additionally complicating is the fact that the dramatic rise of China and India and the quick recovery of Japan within the last 50 years have signaled that the global center of political and economic gravity is shifting away from the North Atlantic toward Asia and the Pacific. And of the currently leading global powers—the United States, the EU, China, Japan, Russia, and India—at least two, or perhaps even **three, are revisionist** in their orientation. Whether they are “rising peacefully” (a self-confident China), truculently (an imperially nostalgic Russia) or boastfully (an assertive India, despite its internal multiethnic and religious vulnerabilities), they all desire a change in the global pecking order. The future conduct of and relationship among these three still relatively cautious revisionist powers will further **intensify** the **strategic uncertainty**.

Visible on the horizon but not as powerful are the emerging regional rebels, with some of them defiantly **reaching for nuclear weapons**. North Korea has openly flouted the international community by producing (apparently successfully) its own nuclear weapons - and also by profiting from their dissemination. At some point, its unpredictability could precipitate the first use of nuclear weapons in anger since 1945. Iran, in contrast, has proclaimed that its nuclear program is entirely for peaceful purposes but so far has been unwilling to consider consensual arrangements with the international community that would provide credible assurances regarding these intentions. In nuclear-armed Pakistan, an extremist anti-Western religious movement is threatening the country’s political stability.

### Authoritarianism

#### Natural gas props up Russian authoritarianism

Woehrel 9 Steven - Specialist in European Affairs, Congressional Research Service, September 2, 2009, "Russian Energy Policy Toward NeighboringCountries," [www.fas.org/sgp/crs/row/RL34261.pdf](http://www.fas.org/sgp/crs/row/RL34261.pdf)

Russian oil and natural gas industries have become key players in the global energy market, particularly in Europe and Eurasia. Another trend has been the concentration of these industries in the hands of the Russian government. This latter phenomenon has been accompanied by an authoritarian political system, in which former intelligence officers play key roles. Russian firms have tried to purchase a controlling stake in pipelines, ports, storage facilities, and other key energy assets of the countries of central and eastern Europe. They need these assets to transport energy supplies to lucrative western European markets, as well as to secure greater control over the domestic markets of the countries of the region. In several cases where assets were sold to non-Russian firms, Russian firms cut off energy supplies to the facilities. Russia has also tried to build new pipelines to circumvent infrastructure that it does not control. Another objective Russia has pursued has been to eliminate the energy subsidies former Soviet republics have received since the fall of the Soviet Union, including by raising the price these countries pay for natural gas to world market prices.

#### Global nuclear war

Goodby 2 (James E., Former Fellow – US Institute of Peace, and Piet Buwalda and Dmitriĭ Trenin, A Strategy for Stable Peace: Toward a Euroatlantic Security Community, p. 27-29)

A decade after the Cold war was solemnly buried; there is still no stable peace between Russia and the Western countries. Moreover, from the late 1990s the dynamic of the relationship has taken a negative direction. NATO’s expansion to the east, the Kosovo crisis, and the second Chechen war stand out as milestones of the gradual slide toward something alternately described as a “cold peace” and a “new cold war”. Frustration is **steadily building** on both sides. Mutual expectations have been drastically lowered. In the Western world and in North America in particular, public expectations for Russia and its affairs have plummeted. “Russia fatigue” is widespread in Europe as well. In Russia itself, Western, especially U.S. policies are often described as being aimed at keeping Russia weak and fragmented, with a purpose of subjugating it. It would appear, then, that today is anything but a propitious starting point for an effort to chart the road toward a security community centered on Europe that would include Russia. ¶ But such an effort is necessary and should not be delayed. At worst, a Russia that is not properly anchored in a common institutional framework with the West can turn into a **loose nuclear cannon.** If conflicts arise between Russia and its smaller neighbors, the West will not be able to sit them out. And a progressive alienation between Russia and the Western world would have a very negative impact on domestic developments in Russia. Now that the German problem has been solved, the Russian problem looms as potentially Europe’s largest. The United States will not be able to ignore Russia’s strategic nuclear arsenal, and the European Union can hardly envisage a modicum of stability along its eastern periphery unless it finds a formula to co-opt Russia as Europe’s reliable associate.¶ Russian Democratization¶ In the decade since the demise of the Soviet Union and the communist system, Russia has evolved into a genuinely pluralist society, although it is still a very incomplete democracy. To its credit, Russia has a constitution that proclaims separation of powers; it has a working parliament, and executive president, and a nominally independent judiciary. Between 1993 and 2000, three parliamentary and two presidential elections were held; for the first time in Russia’s long history, transfer of power at the very top occurred peacefully and in accordance with a democratic constitution. This is already becoming a pattern. Power has been decentralized vertically as well as horizontally. Power monopoly is a thing of the past. Russia’s regions have started to form distinct identities. The regional governors or presidents of republics, within Russia are popularly elected, as are city mayors and regional legislatures. The national economy has been largely privatized. The media, though not genuinely independent either of the authorities or of the various vested interests, are free in principle. There is a large degree of religious freedom, and ideological oppression nonexistent. Finally, Russians are free to travel abroad.¶ These achievements are significant, and most of them are irreversible. Yet Russia’s development is handicapped by major hurdles to speedier societal transformation, as is occurring in Poland or Estonia. One hurdle is poor governance, stemming from the irresponsibility of the elites as much as from sheer incompetence. Toward the end of the Yeltsin era, the state itself appeared privatized, with part of it serving the interests of various groups or strongmen. Corruption and crime are pervasive. Accustomed to living in an authoritarian state, many Russians began to associate democracy with chaos and thuggery. Another major problem is widespread poverty and the collapse of the social infrastructure, including health card. Too many Russians believe they have gained little or nothing from the economic and social changes of the past decade. Taken together, these factors work toward the restoration of some form of authoritarian and paternalistic rule.

## Energy Leverage Advantage---Iran

### Internal Links

#### US gas supply curbs Iranian gas leverage – contributes to international cooperation to prevent a nuclear Iran

Medlock et al. 11 - Dr. Kenneth B. Medlock, Ph.D. in economics, fellow in Energy and Resource Economics at the Baker Institute, and former advisor to the U.S. Department of Energy and the California Energy Commission, AND\*\*\* Amy Myers Jaffe, graduate from Princeton University, fellow of Energy Studies and director of the Energy Forum at the Baker Institute, and associate director of the Rice Energy Program, AND\*\*\* Dr. Peter R. Hartley, Ph.D in economics at Rice University, [July 2011, "Shale Gas and U.S. National Security,” http://bakerinstitute.org/publications/EF-pub-DOEShaleGas-07192011.pdf](file:///C%3A%5CUsers%5CPei%5CDesktop%5CROGERS%20HOUSE%5CJuly%202011%2C%20%22Shale%20Gas%20and%20U.S.%20National%20Security%2C)

At the present time, economic sanctions against Tehran have been inhibiting natural gas export project development in Iran. This includes both its previously planned South Pars LNG export projects and a proposed pipeline to Pakistan and India. With no signs of conflict resolution between Iran and the West in sight, it is assumed that the development of Iranian export projects could not begin until 2020 at the earliest.¶ Greater shale gas production in the United States, and eventually Europe, will also make it **more difficult for Iran to profit** from exporting natural gas. Since Iran is **currently hampered by Western sanctions against investment in its energy sector**, by the time it can get its natural gas ready for export, the marketing window to Europe will likely be closed by the availability of shale gas. This reality may give the United States and its allies more leverage over Iran for a longer period of time, helping to shape **outcomes in the Middle East more positive** for U.S. and allied interests.¶ Iran is more likely to become a much larger exporter in the case in which no new shale is developed (Scenario Two), primarily because of greater LNG demand from the United States. In the Reference Case, Iran only emerges as an LNG exporter in the late 2020s and its market position is more limited. However, in the constrained shale case (Scenario Two), Iranian LNG exports grow more quickly and, by 2040, they are about 75 percent higher than in the Reference Case. Thus, shale gas plays an instrumental role in delaying the opening for Iran to sell its natural gas, **thwarting** its ability **in the near term** to use natural gas exports as a means to develop bilateral relations with major gas consuming countries and limiting its opportunity to use energy diplomacy to strengthen its regional position29 or buttress its pursuit of nuclear weapons. ¶ Although there are many complex factors that influence Iran’s political leverage globally, the circumstance of lower requirements for Iranian natural gas could make it easier for the United States to achieve buy-in for continued economic sanctions against Iran. Lower interest in Iranian gas reduces the chances that Iran can use its energy resources to drive a wedge in the international coalition against it. By delaying the need for Iranian gas by over a decade, the United States buys time **to find a better solution to the Iranian nuclear problem** and leaves open the possibility that political change will take place in Iran before its influence as a major global natural gas supplier grows. In addition, the long delay in the commerciality of Iranian gas means that Tehran will have trouble getting Asian pipelines to India or Pakistan off the ground with mutually acceptable terms, thereby reducing—for at least the time being—a potential source of tension between the United States and India.30

### Iranian Aggression

#### An emboldened Iran increases the likelihood of nuclear war

Ben-Meir 7 – Alon Ben-Meir, professor of international relations at the Center for Global Affairs at NYU, UPI, February 6, 2007, “Realpolitik: Ending Iran's defiance”

That Iran stands today able to challenge or even defy the United States in every sphere of American influence in the Middle East attests to the dismal failure of the Bush administration's policy toward it during the last six years. Feeling **emboldened and unrestrained**, Tehran may, however, miscalculate the consequences of its own actions, which could **precipitate a catastrophic regional war**. The Bush administration has less than a year to rein in Iran's reckless behavior if it hopes to prevent such an ominous outcome and achieve, at least, a modicum of regional stability. By all assessments, Iran has reaped the greatest benefits from the Iraq war. The war's consequences and the American preoccupation with it have provided Iran with an historic opportunity to establish Shiite dominance in the region while aggressively pursuing a nuclear weapon program to deter any challenge to its strategy. Tehran is fully cognizant that the successful pursuit of its regional hegemony has now become intertwined with the clout that a nuclear program bestows. Therefore, it is most unlikely that Iran will give up its nuclear ambitions at this juncture, unless it concludes that the price will be too high to bear. That is, whereas before the Iraq war Washington could deal with Iran's nuclear program by itself, now the Bush administration must also disabuse Iran of the belief that it can achieve its regional objectives with impunity. Thus, while the administration attempts to stem the Sunni-Shiite violence in Iraq to prevent it from engulfing other states in the region, Washington must also take a clear stand in Lebanon. Under no circumstances should Iranian-backed Hezbollah be allowed to topple the secular Lebanese government. If this were to occur, it would trigger not only a devastating civil war in Lebanon but a wider Sunni-Shiite bloody conflict. The Arab Sunni states, especially, Saudi Arabia, Egypt and Jordan, are terrified of this possible outcome. For them Lebanon may well provide the litmus test of the administration's resolve to inhibit Tehran's adventurism but they must be prepared to directly support U.S. efforts. In this regard, the Bush administration must wean Syria from Iran. This move is of paramount importance because not only could Syria end its political and logistical support for Hezbollah, but it could return Syria, which is predominantly Sunni, to the Arab-Sunni fold. President Bush must realize that Damascus' strategic interests are not compatible with Tehran's and the Assad regime knows only too well its future political stability and economic prosperity depends on peace with Israel and normal relations with the United States. President Bashar Assad may talk tough and embrace militancy as a policy tool; he is, however, the same president who called, more than once, for unconditional resumption of peace negotiation with Israel and was rebuffed. The stakes for the United States and its allies in the region are too high to preclude testing Syria's real intentions which can be ascertained only through direct talks. It is high time for the administration to reassess its policy toward Syria and begin by abandoning its schemes of regime change in Damascus. Syria simply matters; the administration must end its efforts to marginalize a country that can play such a pivotal role in changing the political dynamic for the better throughout the region. Although ideally direct negotiations between the United States and Iran should be the first resort to resolve the nuclear issue, as long as Tehran does not feel seriously threatened, it seems unlikely that the clergy will at this stage end the nuclear program. In possession of nuclear weapons Iran will intimidate the larger Sunni Arab states in the region, bully smaller states into submission, threaten Israel's very existence, use oil as a political weapon to blackmail the West and instigate regional proliferation of nuclear weapons' programs. In short, if unchecked, **Iran could plunge the Middle East into a deliberate or inadvertent nuclear conflagration**. If we take the administration at its word that it would not tolerate a nuclear Iran and considering these regional implications, Washington is left with no choice but to warn Iran of the severe consequences of not halting its nuclear program.

### Iranian Prolif

#### International cooperation on sanctions is a key lever to preventing nuclearization – it’s effective now

Rubin 12 – Michael Rubin, Resident Scholar at the American Enterprise Institute, January 4, 2012, “The West should hand Iran's leadership a chalice of poison,” http://www.aei.org/article/foreign-and-defense-policy/the-west-should-hand-irans-leadership-a-chalice-of-poison/

**To relieve** economic and military **pressure on Iran would be** counterproductive. So long as Iran does not attain nuclear weapons, its threats to close the Strait of Hormuz remain simple bluster. If Iran is allowed to develop nuclear weapons, all bets are off. Tehran's ability to amplify its leverage over the international economy would increase exponentially.¶ Make no mistake: Iran cannot close the Strait of Hormuz for more than a day. When its navy mined the Persian Gulf in 1988, damaging a US vessel, president Ronald Reagan responded with Operation Praying Mantis, decimating the Iranian navy, a bloody nose that led Tehran to respect international waters for more than two decades.¶ Nor can Iran itself afford a closure of the strait. Not only does it need to export oil itself through the waterway, but, because of decades of financial mismanagement, it also depends on the strait for the import of refined petroleum products.¶ Without imported gasoline to fuel its car and factories, Iran's economy would grind to a halt. To close the strait even for a day would do far more economic damage to Iran than it would to Australia, east Asia or the West.¶ The leadership in Tehran knows better than anyone that every time Iran has experienced a fuel shortage, protesters have poured into the streets.¶ Despite bluster that sanctions have had no effect, Iranian behaviour suggests the opposite. Both the March 2007 Iranian attack on British sailors in the waters between Iraq and Iran, and the November 2011 attack on the British embassy in Tehran, came two days after the British government lent its support to new sanctions. Both attacks were overreactions that belied Tehran's insistence that sanctions are meaningless.¶ Even Iranian parliamentarians do not buy their government's rhetoric. Last month, 30 representatives called for a closed session of the parliament in order to dispense with polemic and to discuss sanctions truthfully. Abolghasem Mozaffari, the head of the Revolutionary Guards' economic wing, confessed that ''the sanctions have not been without impact''.¶ Iran's current provocations may have more to do with its own **desperation** than any real grievance. After the US Congress imposed unilateral sanctions on Iran last month, Iran's currency lost nearly half its value. Unemployment and inflation are both in double digits.

#### Iranian nuclearization is likely to result in rapid global proliferation, nuclear terrorism, and Middle East nuclear war

Lindsay 10 – James M. Lindsay 10, Senior Vice President, Director of Studies, and Maurice R. Greenberg Chair at the Council on Foreign Relations and Ray Takeyh is a Senior Fellow at the Council on Foreign Relations, After Iran Gets the Bomb, Foreign Affairs, Mar/Apr2010, Vol. 89, Issue 2

The dangers of Iran's entry into the nuclear club are well known: emboldened by this development, Tehran might multiply its attempts at subverting its neighbors and encouraging terrorism against the United States and Israel; the risk of both conventional and nuclear war in the Middle East would escalate; more states in the region might also want to become nuclear powers; the geopolitical balance in the Middle East would be reordered; and broader efforts to stop the spread of nuclear weapons would be undermined. The advent of a nuclear Iran--even one that is satisfied with having only the materials and infrastructure necessary to assemble a bomb on short notice rather than a nuclear arsenal--would be seen as a major diplomatic defeat for the United States. Friends and foes would openly question the U.S. government's power and resolve to shape events in the Middle East. Friends would respond by distancing themselves from Washington; foes would challenge U.S. policies more aggressively.

#### Proliferation is likely to be fast and destabilizing – making nuclear war likely

Evans and Kawaguchi 9 (Gareth, Chancellor of the Australian National University, an Honorary Professorial Fellow at the University of Melbourne and President Emeritus of the Brussels-based International Crisis Group, and Yoriko Kawaguchi, Member of the House of Councillors for the Liberal Democratic Party since 2005. She was Special Adviser to the Prime Minister of Japan, “Eliminating Nuclear Threats,” International Commission on Nuclear Non-Proliferation and Disarmament, <http://www.icnnd.org/reference/reports/ent/part-ii-3.html>)

3.1 Ensuring that no new states join the ranks of those already nuclear armed must continue to be one of the world’s top international security priorities. Every new nuclear-armed state will add significantly to the inherent risks – of accident or miscalculation as well as deliberate use – involved in any possession of these weapons, and potentially encourage more states to acquire nuclear weapons to avoid being left behind. Any scramble for nuclear capabilities is bound to generate **severe instability** in bilateral, regional and international relations. The carefully worked checks and balances of interstate relations will come under severe stress. There will be enhanced fears of nuclear blackmail, and of irresponsible and unpredictable leadership behaviour. 3.2 In conditions of inadequate command and control systems, absence of confidence building measures and multiple agencies in the nuclear weapons chain of authority, the possibility of an accidental or maverick usage of nuclear weapons will remain high. Unpredictable elements of risk and reward will impact on decision making processes. The dangers are compounded if the new and aspiring nuclear weapons states have, as is likely to be the case, ongoing inter-state disputes with ideological, territorial, historical – and for all those reasons, strongly emotive – dimensions. 3.3 The transitional period is likely to be most dangerous of all, with the arrival of nuclear weapons tending to be accompanied by sabre rattling and competitive nuclear chauvinism. For example, as between Pakistan and India a degree of stability might have now evolved, but 1998–2002 was a period of disturbingly fragile interstate relations. Command and control and risk management of nuclear weapons takes time to evolve. Military and political leadership in new nuclear-armed states need time to learn and implement credible safety and security systems. The risks of nuclear accidents and the possibility of nuclear action through inadequate crisis control mechanisms are very high in such circumstances. If this is coupled with political instability in such states, the risks escalate again. Where such countries are beset with internal stresses and fundamentalist groups with trans-national agendas, the risk of nuclear weapons or fissile material coming into possession of non‑state actors cannot be ignored. 3.4 The action–reaction cycle of nations on high alerts, of military deployments, threats and counter threats of military action, have all been witnessed in the Korean peninsula with unpredictable behavioural patterns driving interstate relations. The impact of a proliferation breakout in the Middle East would be much wider in scope and make stability management extraordinarily difficult. Whatever the chances of “stable deterrence” prevailing in a Cold War or India–Pakistan setting, the prospects are significantly less in a regional setting with multiple nuclear power centres divided by multiple and cross-cutting sources of conflict.

### Extra Prolif Impact Cards

#### We read this v. Trinity MR

#### Iran prolif increases risk of miscalculated nuke war which no defense assumes

Jeffrey Goldberg 1-23, Bloomberg View columnist and a national correspondent for the Atlantic, January 23, 2012, “How Iran Could Trigger Accidental Armageddon,” online: http://www.bloomberg.com/news/2012-01-24/how-iran-may-trigger-accidental-armageddon-commentary-by-jeffrey-goldberg.html

One of the arguments often made in favor of bombing Iran to cripple its nuclear program is this: The mullahs in Tehran are madmen who believe it is their consecrated duty to destroy the perfidious Zionist entity (which is to say, Israel) and so are building nuclear weapons to launch at Tel Aviv at the first favorable moment.

It’s beyond a doubt that the Iranian regime would like to bring about the destruction of Israel. However, the mullahs are also cynics and men determined, more than anything, to maintain their hold on absolute power.

Which is why it’s unlikely that they would immediately use their new weapons against Israel. An outright attack on Israel - - a country possessing as many as 200 nuclear weapons and sophisticated delivery systems -- would lead to the obliteration of Tehran, the deaths of millions, and the destruction of Iran’s military and industrial capabilities.

The mullahs know this. But here’s the problem: It may not matter. The threat of a deliberate nuclear attack pales in comparison with the chance that a nuclear-armed Iran could accidentally trigger a cataclysmic exchange with Israel.

Warp-Speed Escalation

The experts who study this depressing issue seem to agree that a Middle East in which Iran has four or five nuclear weapons would be dangerously unstable and prone to warp-speed escalation.

Here’s one possible scenario for the not-so-distant future: Hezbollah, Iran’s Lebanese proxy, launches a cross-border attack into Israel, or kills a sizable number of Israeli civilians with conventional rockets. Israel responds by invading southern Lebanon, and promises, as it has in the past, to destroy Hezbollah. Iran, coming to the defense of its proxy, warns Israel to cease hostilities, and leaves open the question of what it will do if Israel refuses to heed its demand.

Dennis Ross, who until recently served as President Barack Obama’s Iran point man on the National Security Council, notes Hezbollah’s political importance to Tehran. “The only place to which the Iranian government successfully exported the revolution is to Hezbollah in Lebanon,” Ross told me. “If it looks as if the Israelis are going to destroy Hezbollah, you can see Iran threatening Israel, and they begin to change the readiness of their forces. This could set in motion a chain of events that would be like ‘Guns of August’ on steroids.”

Imagine that Israel detects a mobilization of Iran’s rocket force or the sudden movement of mobile missile launchers. Does Israel assume the Iranians are bluffing, or that they are not? And would Israel have time to figure this out? Or imagine the opposite: Might Iran, which will have no second-strike capability for many years -- that is, no reserve of nuclear weapons to respond with in an exchange -- feel compelled to attack Israel first, knowing that it has no second chance?

Bruce Blair, the co-founder of the nuclear disarmament group Global Zero and an expert on nuclear strategy, told me that in a sudden crisis Iran and Israel might each abandon traditional peacetime safeguards, making an accidental exchange more likely.

“A confrontation that brings the two nuclear-armed states to a boiling point would likely lead them to raise the launch- readiness of their forces -- mating warheads to delivery vehicles and preparing to fire on short notice,” he said. “Missiles put on hair-trigger alert also obviously increase the danger of their launch and release on false warning of attack -- false indications that the other side has initiated an attack.”

Then comes the problem of misinterpreted data, Blair said. “Intelligence failures in the midst of a nuclear crisis could readily lead to a false impression that the other side has decided to attack, and induce the other side to launch a preemptive strike.”

‘Cognitive Bias’

Blair notes that in a crisis it isn’t irrational to expect an attack, and this expectation makes it more likely that a leader will read the worst into incomplete intelligence. “This predisposition is a cognitive bias that increases the danger that one side will jump the gun on the basis of incorrect information,” he said.

Ross told me that Iran’s relative proximity to Israel and the total absence of ties between the two countries -- the thought of Iran agreeing to maintain a hot line with a country whose existence it doesn’t recognize is far-fetched -- make the situation even more hazardous. “This is not the Cold War,” he said. “In this situation we don’t have any communications channels. Iran and Israel have zero communications. And even in the Cold War we nearly had a nuclear war. We were much closer than we realized.”

The answer to this predicament is to deny Iran nuclear weapons, but not through an attack on its nuclear facilities, at least not now. “The liabilities of preemptive attack on Iran’s nuclear program vastly outweigh the benefits,” Blair said. “But certainly Iran’s program must be stopped before it reaches fruition with a nuclear weapons delivery capability.”

Ross argues that the Obama administration’s approach -- the imposition of steadily more debilitating sanctions -- may yet work. There’s a chance, albeit slim, that he may be right: New sanctions are just beginning to bite and, combined with an intensified cyberwar and sabotage efforts, they might prove costly enough to deter Tehran.

#### Optimists ignore recent developments in IR theory

Matthew Kroenig 12, Assistant Professor of Government, Georgetown University and Stanton Nuclear Security Fellow, Council on Foreign Relations, “The History of Proliferation Optimism: Does It Have A Future?” Prepared for the Nonproliferation Policy Education Center, May 26, 2012, <http://www.npolicy.org/article.php?aid=1182&tid=30>

The proliferation optimist position, while having a distinguished pedigree, has several major problems. Many of these weaknesses have been chronicled in brilliant detail by Scott Sagan and other contemporary proliferation pessimists.[34] Rather than repeat these substantial efforts, I will use this section to offer some original critiques of the recent incarnations of proliferation optimism. ¶ First and foremost, proliferation optimists do not appear to understand contemporary deterrence theory. I do not say this lightly in an effort to marginalize or discredit my intellectual opponents. Rather, I make this claim with all due caution and with complete sincerity. A careful review of the contemporary proliferation optimism literature does not reflect an understanding of, or engagement with, the developments in academic deterrence theory in top scholarly journals such as the American Political Science Review and International Organization over the past few decades.[35] While early optimists like Viner and Brodie can be excused for not knowing better, the writings of contemporary proliferation optimists ignore the past fifty years of academic research on nuclear deterrence theory. ¶ In the 1940s, Viner, Brodie, and others argued that the advent of Mutually Assured Destruction (MAD) rendered war among major powers obsolete, but nuclear deterrence theory soon advanced beyond that simple understanding.[36] After all, great power political competition does not end with nuclear weapons. And nuclear-armed states still seek to threaten nuclear-armed adversaries. States cannot credibly threaten to launch a suicidal nuclear war, but they still want to coerce their adversaries. This leads to a credibility problem: how can states credibly threaten a nuclear-armed opponent? Since the 1960s academic nuclear deterrence theory has been devoted almost exclusively to answering this question.[37] And, unfortunately for proliferation optimists, the answers do not give us reasons to be optimistic.¶ Thomas Schelling was the first to devise a rational means by which states can threaten nuclear-armed opponents.[38] He argued that leaders cannot credibly threaten to intentionally launch a suicidal nuclear war, but they can make a “threat that leaves something to chance.”[39] They can engage in a process, the nuclear crisis, which increases the risk of nuclear war in an attempt to force a less resolved adversary to back down. As states escalate a nuclear crisis there is an increasing probability that the conflict will spiral out of control and result in an inadvertent or accidental nuclear exchange. As long as the benefit of winning the crisis is greater than the incremental increase in the risk of nuclear war, threats to escalate nuclear crises are inherently credible. In these games of nuclear brinkmanship, the state that is willing to run the greatest risk of nuclear war before back down will win the crisis as long as it does not end in catastrophe. It is for this reason that Thomas Schelling called great power politics in the nuclear era a “competition in risk taking.”[40] This does not mean that states eagerly bid up the risk of nuclear war. Rather, they face gut-wrenching decisions at each stage of the crisis. They can quit the crisis to avoid nuclear war, but only by ceding an important geopolitical issue to an opponent. Or they can the escalate the crisis in an attempt to prevail, but only at the risk of suffering a possible nuclear exchange.

#### Further proliferation leads to multipolar systems that are uniquely destabilizing

Heisbourg 12 – Francois Heisbourg is the chairman of the council of the Geneva Centre for Security Policy and of the London-based International Institute for Strategic Studies, adviser to the French Foreign Ministry Planning Staff and Member of the International Commission on the Balkans. March 4th, 2012, “NUCLEAR PROLIFERATION – LOOKING BACK, THINKING AHEAD: HOW BAD WOULD THE FURTHER SPREAD OF NUCLEAR WEAPONS BE?” http://www.npolicy.org/article\_file/Nuclear\_Proliferation\_-\_Looking\_Back\_Thinking\_Ahead\_How\_Bad\_Would\_the\_Further\_Spread\_of\_Nuclear\_Weapons\_Be.pdf

THE PAST IS NOT WHAT IT USED TO BE¶ The problem with this reassuring reading of the past is that it is not entirely true. Yes, the NPT had a major material effect by gradually making non nuclear the new normal. Yes again, defense guarantees by the US weaned Germany, Italy (13), South Korea, Taiwan and even neutral Sweden away from the nuclear road, followed by the US-French-British assurances to post-Soviet Ukraine. Yes too, various levels of coercion worked in Iraq, Libya and Syria. But no, the practice of even the most ‘classical’ bilateral deterrence was not nearly as reassuring as the mainstream narrative inherited from the Cold War would have it. Nor can we consider that our elements for empirical judgment as methodologically satisfactory in terms of their breadth and depth. These two negatives will be examined in turn.¶ Nuclear archives, as other sensitive governmental archives, open up usually after an interval of decades and even then with varying levels of culling and redaction. Even oral histories tend to follow this pattern, as ageing witnesses feel freer to speak up. Hence a paradox: when the Soviet- American nuclear confrontation was central to our lives and policies during the Cold War, we didn’t how bad things really where; now that we are beginning to know, there is little public interest given the disappearance of the East-West contest. Yet there are lessons of general interest which can be summarized as follows: 1) the Cuban missile crisis brought us much closer to the brink than the acute sense of danger which prevailed at the time, for reasons which are germane to the current situation: massive failures of intelligence on Soviet nuclear preparations and dispositions in Cuba, notably on tactical nukes and on the operational readiness of a number of IRBMs and their warheads; dysfunctional or imperfect command and control arrangements (notably vis à vis Soviet submarines), unintentionally mixed signals on each antagonist’s actions). These are effectively laid out in Michael Dobb’s book, “One Minute to Midnight”(14). 2) the safety and security of nuclear forces are subject to potentially calamitous procedural, technical or operational mishaps and miscalculations, somewhat along the lines of what applies to related endeavors (nuclear power and aerospace). Scott Sagan in his “Limits of Safety”(15) provides compelling research on the American Cold War experience. It would be interesting to have a similar treatment on the Soviet experience…Although it can be argued that today’s nuclear arsenals are much smaller and easier to manage reliable, and that the technology for their control has been vastly improved, several facts remain:¶ the US has continued to witness serious procedural lapses in the military nuclear arena (16); the de-emphasis of the importance of nuclear weapons in the US force structure is not conducive to treating them with the respect which is due to their destructive power; other nuclear powers do not necessarily benefit from the same technology and learning curves as the older nuclear states, and notably the US; cheek-to-jowl nuclear postures, which prevailed in the Cuban missile crisis and which help explain why World War III nearly occurred, and which characterize India and Pakistan today.¶ Despite the dearth of detail on Indian and Pakistani nuclear crisis management, we know that the stability of nuclear deterrence between India and Pakistan is by no means a given, with serious risks occurring on several occasions since the mid-1980s(17).¶ At another level of analysis, we have to recognize the limits of the database on which we ground our policies on nonproliferation. The nuclear age, in terms of operationally usable devices, began in 1945, less than seventy years, less than the age of an old man. The fact that there has been no accidental or deliberate nuclear use during that length of time is nearly twice as reassuring as the fact that it took more than thirty years (18) for a nuclear electricity generating plant to blow up, in the form of the Chernobyl disaster of 1986. But given the destructive potential of nuclear weapons, twice as much reassurance (in the form of no use of nuclear weapons for close to seventy years) is probably not good enough. Furthermore, the Chernobyl disaster involved the same sort of errors of judgment, procedural insufficiencies and crisis-mismanagement visible in Scott Sagan’s book, not only or even mainly, flawed design choices: inadvertence at work, in other words of the sort which could prevail in a time-sensitive, geographically constrained Indo- Pakistani or Middle Eastern conflict. Give it another seventy years to pass judgment?¶ The same empirical limits apply to the number of actors at play: we have simple bipolar (US-USSR/Russia or India/Pakistan) and complex bipolar (US/France/UK/NATO-Soviet Union/Russia) experience; we’ve had US-Soviet-Chinese or Sino- Indian-Pakistani tripolarity; and we’ve had a number of unipolar moments (one nuclear state vis à vis non-nuclear antagonists). But we mercifully have not had to deal with more complex strategic geometries –yet- in the Middle East or East Asia. We only know what we know, we don’t know what we don’t know.

## Energy LeverageAdvantage ---India

#### US gas supply prevents Iranian pipelines that would destroy US-India relations

Medlock et al. 11 - Dr. Kenneth B. Medlock, Ph.D. in economics, fellow in Energy and Resource Economics at the Baker Institute, and former advisor to the U.S. Department of Energy and the California Energy Commission, AND\*\*\* Amy Myers Jaffe, graduate from Princeton University, fellow of Energy Studies and director of the Energy Forum at the Baker Institute, and associate director of the Rice Energy Program, AND\*\*\* Dr. Peter R. Hartley, Ph.D in economics at Rice University, [July 2011, "Shale Gas and U.S. National Security,” http://bakerinstitute.org/publications/EF-pub-DOEShaleGas-07192011.pdf](file:///C%3A%5CUsers%5CPei%5CDesktop%5CROGERS%20HOUSE%5CJuly%202011%2C%20%22Shale%20Gas%20and%20U.S.%20National%20Security%2C)

¶ Although there are many complex factors that influence Iran’s political leverage globally, the circumstance of lower requirements for Iranian natural gas could make it easier for the United States to achieve buy-in for continued economic sanctions against Iran. Lower interest in Iranian gas reduces the chances that Iran can use its energy resources to drive a wedge in the international coalition against it. By delaying the need for Iranian gas by over a decade, the United States buys time **to find a better solution to the Iranian nuclear problem** and leaves open the possibility that political change will take place in Iran before its influence as a major global natural gas supplier grows. In addition, **the long delay in the commerciality of Iranian gas means that Tehran will have trouble getting** Asian **pipelines to India or Pakistan off the ground** with mutually acceptable terms, thereby reducing—for at least the time being—a potential source of tension between the United States and India.30

#### **That’s key to stability in Asia**

Burns 10 – R. Nicholas Burns, Professor of the Practice of Diplomacy and International Politics, Harvard Kennedy School. October 20th, 2010, "Natural Allies: A Blueprint for the Future of U.S.-India Relations,"belfercenter.ksg.harvard.edu/publication/20446/natural\_allies.html?breadcrumb=/

The U.S. relationship with India should be rooted in shared interests and values and should not be simply transactional or limited to occasional collaboration. India’s rise to global power is, we believe, in America’s strategic interest. As a result, the United States should not only seek a closer relationship with India, but actively assist its further emergence as a great power.¶ U.S. interests in a closer relationship with India include:¶ • Ensuring a stable Asian and global balance of power.¶ • Strengthening an open global trading system.¶ • Protecting and preserving access to the global commons (air, sea, space, and cyber realms).¶ • Countering terrorism and violent extremism.¶ • Ensuring access to secure global energy resources.¶ • Bolstering the international nonproliferation regime.¶ • Promoting democracy and human rights.¶ • **Fostering greater stability, security and economic prosperity in South Asia, including in Pakistan, Afghanistan, Nepal, Bangladesh and Sri Lanka.¶** **A strong U.S.-India strategic partnership will prove** indispensable to the region’s **continued** peace **and prosperity**. Both India and the United States have a vital interest in maintaining a stable balance of power in Asia. Neither seeks containment of China, but the likelihood of a peaceful Chinese rise increases if it ascends in a region where the great democratic powers are also strong. Growing U.S.-India strategic ties will **ensure that Asia will not have a vacuum of power and will make it easier for both Washington and New Delhi to have** productive relations with Beijing**.** In addition, a strengthened relationship with India, a natural democratic partner, will **signal that the** U**nited** S**tates remains committed to a strong and enduring presence in Asia.**

#### Global nuclear war – highest magnitude and probability

Landay 2k (Jonathon, National Security and Intelligence Correspondent with 15 Years of Experience for Knight Ridder, “Top administration officials warn stakes for US are high in Asian conflicts,” March 11th, Lexis)

Few if any experts think China and Taiwan, North Korea and South Korea, or India and Pakistan are spoiling to fight. But even a **minor miscalculation** by any of them could destabilize Asia, jolt the global economy and even start a nuclear war. India, Pakistan and China all have nuclear weapons, and North Korea may have a few, too. Asia lacks the kinds of organizations, negotiations and diplomatic relationships that helped keep an uneasy peace for five decades in Cold War Europe. "**Nowhere else on Earth are the stakes as high** and relationships so fragile," said Bates Gill, director of northeast Asian policy studies at the Brookings Institution, a Washington think tank. "We see the convergence of great power interest overlaid with lingering confrontations with no institutionalized security mechanism in place. **There are elements for** potential disaster."

## Coal Exports Advantage

#### **Low natural gas prices are key to declining coal demand in the US – newest studies prove EPA coal regulations have no effect**

Palmer 10-18 – Dr. Karen Palmer has a Ph.D. in economics from Boston College, and specializes in Environmental Regulation and Electricity Economics, is Research Director and Senior Fellow at Resources for the Future. October 18th, 2012, "Cheap Gas - Not EPA Regs - Driving Coal's Decline," thebreakthrough.org/index.php/programs/energy-and-climate/more-gas-less-coal-cheaper-power/

Brad Plumer at the Washington Post wrote this week that coal power generation in the U.S. is in sharp decline — but market forces, not environmental regulation, are driving the recent trend according to analysis in a new Brattle Group report. The primary reason is natural gas prices. RFF research generally bears this out — and indicates that it should lead to lower electricity prices and lower carbon emissions. There is one important difference: the Brattle report is primarily about how much coal generation is permanently retired, while this post on RFF’s work is mostly about dispatch — that is, how much different plants actually run and generate electricity. But the overall story is similar.¶ According to the US Energy Information Administration, in March of this year U.S. coal electricity generation dropped to 34 percent of net electricity supply, its lowest level since EIA started collecting monthly data on the mix of fuels used to produce electricity in January of 1973. While electricity demand has declined somewhat due to the recession and improved efficiency, **much of coal’s loss of market share has been made up by an increase in electricity production from natural gas.** Last month, EIA reported that estimated shipments of natural gas to power plants were up by 25 percent through mid-August of this year, compared to the same period in 2011.¶ What is driving the shift from coal to natural gas? The most important factor is the development of horizontal drilling and hydraulic fracturing technology that can extract natural gas from shale deposits. The expanded use of this technology has dramatically increased supplies of natural gas and reduced its price, both absolutely and relative to the price of coal. A lot of gas-fired generating capacity was built up in the 1990s in response to the advent of greater competition in electricity markets that previously operated at less than full capacity, and this excess gas generation capacity is now being ramped up while coal plants are running less.¶ Looking forward into the future, RFF researchers find in a recent paper that **reductions in expected future natural gas prices result in a ten percent reduction in electricity generation from coal through 2020.** Moreover, **this market-driven decline in coal** is 5 or 6 times greater **than the drop in coal use that is likely to be attributable to new EPA air regulations** such as the Mercury and Air Toxics Standard, also known as MATS (note that the Brattle study includes these regulations in its estimate).¶ Coal’s loss may be electricity consumers’ gain. While regions of the country, such as the Ohio Valley and parts of the Southeast, that rely to a large extent on coal have typically been those regions with lower than average electricity prices, **abundant natural gas is lowering electricity prices in other parts of the country and on average nationwide.** In a recent issue brief, RFF researchers find that under recent predictions of natural gas prices in 2020, (35 percent lower than similar predictions in 2009), national average electricity price in 2020 is expected to be roughly 5.7 percent lower than prior forecasts predicted. In those parts of the country where electricity markets have been deregulated, which also tend to be regions that have historically been less dependent on coal, the effect is even more dramatic, with electricity prices predicted to be 9.6 percent lower than forecasts based on supply assumptions from prior to the recent gas boom.¶ The switch from coal to natural gas is also **having beneficial effects on emissions of CO2 from the electric power industry that are expected to extend into the future**. RFF researchers recently found that downward revisions in expected natural gas prices over the past few years in combination with slower rates of anticipate electricity demand growth reduce expected emissions of CO2 from the electricity sector by roughly 9 percent in 2020 and by even greater percentages in later years.

#### Decreased US coal demand leads to exports

AP 12 (The Associated Press, Kevin Begos, 17 August 2012, “Coal-to-gas switch causes CO2 to drop,” http://shale.sites.post-gazette.com/index.php/news/155-business/24750-coal-to-gas-switch-causes-co2-to-drop)

"Coal is going to be here for a long time**. Our export markets are growing. Demand is going up around the world.** Even if we decide not to use it, everybody else wants it," Mr. Hayes said.¶ He also said **the industry expects new coal-fired power plants to be built as pollution-control technology advances: "The industry will meet the challenge"** of the EPA regulations.¶ UQ

#### Low natural gas is the strongest internal link to coal exports

AP 12 (Associated Press, “Exports of coal and fuels on track to set record” August 15, 2012, http://www.businessweek.com/ap/2012-08-15/exports-of-coal-and-fuels-on-track-to-set-record)

U.S. exports of coal and fuels such as gasoline and diesel continue to soar. Both categories are on track to set new annual records, according to government data.¶ **Coal shipments are rising because U.S. demand for coal is falling as electric utilities burn more natural gas,** which has plummeted in price, instead of coal. At the same time, demand for coal is rising in developing countries such as China and India as those countries work to bring electricity to millions who don't have it.¶ On Thursday Kentucky Gov. Steve Beshear announced a 25-year, $7 billion agreement between India's Abhijeet Group and Kentucky-based Booth Energy Group and River Trading Co. that could send 9 million tons of coal a year to India from West Virginia and Kentucky. That would represent 8 percent of last year's record 107 million tons.¶ Exports of gasoline, diesel and other fuels are rising because U.S. refiners are able to make the fuels cheaper than almost anywhere in the world. That's because they have been able to access some of the cheapest crude oil. North American crude supplies are rising thanks to booming oil production in Canada, North Dakota, Texas and elsewhere. Also refiners that burn natural gas to help cook the crude into gasoline, diesel, jet fuel and heating oil are enjoying some of the cheapest natural gas prices in the world.¶ Exports of petroleum products, which set an annual record last year and were the single biggest export by value, are up 11 percent compared with a year ago. Much of the fuels that are exported are made with imported oil, and the U.S. remains the world's biggest oil importer.¶ The Census Bureau reported last week that coal shipments set a record in June of 12.8 million tons. Through the first half of the year, shipments are 24 percent higher than a year ago. The share of U.S. electricity that comes from coal is lower than it has been since the government began collecting data in 1949. That's because electric utilities are instead burning natural gas, which earlier this year fell to a 10-year low as increasing domestic production and a historically warm winter led to a supply glut.¶ **Coal companies** were forced to close or idle mines and lay off workers, but **have vowed to look abroad for new markets.** The U.S. has the world's largest reserves of coal.

#### Coal exports are key to Asian and Brazilian economies and prevent deforestation

Quinn 12 – Hal P. Quinn 12, President of the National Mining Association, April 13, 2012, “WHAT SHOULD U.S. POLICY BE ON ENERGY EXPORTS?,” online: <http://www.nma.org/pdf/041312_quinn_nj_blog.pdf>

The United States has an unrivalled self-interest in serving international markets that urgently need coal to grow their economies and improve the livelihoods of their people. In fact, increasing our coal exports is an unusually clear example of how unfettered trade benefits both exporting and importing countries.¶ With the world’s largest coal reserves, the U.S. finds itself in the enviable position of having more of what the fastest-growing countries of the world need. China and India are lifting hundreds of millions of people out of poverty by building vast electricity grids that bring coal-generated power to homes and workplaces. Coal is the only fuel for electricity generation that is sufficiently affordable and abundant to literally bring this power to the people. It is also a vital ingredient **for the steelmaking plants in Asia and Brazil that are laying foundations for a 21 st century industrial revolution**. American metallurgical coal is a building block of this progress much as it is for our own industrial progress. ¶ The benefits of U.S. coal exports are reciprocal. The U.S. has a 265-year coal supply, more than enough to serve its domestic needs. Far from depriving Americans of opportunities, coal exports provide them –high-wage jobs in coal country from Appalachia to the Powder River Basin, in the rail industry that transports coal to ports and in export terminals that exist or are envisioned for the Gulf and both coasts. The $16 billion worth of U.S. coal exported last year also delivered revenue to hardpressed communities across the U.S. heartland.¶ Some critics are blinded by their wealthy lifestyles to the powerful evidence that coal-based generation has greatly improved the lives of millions abroad who are less fortunate. For the 1.4 billion people worldwide who have no access to electricity, efficient coal-based generation provides a healthier and better life. It often offsets the demands for heat and light that heretofore have been met with fuels derived from deforestation, animal wastes and uncontrolled in-home use of kerosene and other fuels.

#### Asian economic collapse causes nuclear war

Auslin 9 – resident scholar at AEI (Michael “Averting Disaster”, The Daily Standard, 2/6, http://www.aei.org/article/100044

As they deal with a collapsing world economy, policymakers in Washington and around the globe must not forget that when a depression strikes, war can follow. **Nowhere is this truer than in Asia**, the most heavily armed region on earth and riven with ancient hatreds and territorial rivalries. Collapsing trade flows can lead to political tension, nationalist outbursts, growing distrust, and ultimately, military miscalculation. The result would be disaster on top of an already dire situation. No one should think that Asia is on the verge of conflict. But it is also important to remember what has helped keep the peace in this region for so long. Phenomenal growth rates in Japan, South Korea, Hong Kong, Singapore, China and elsewhere since the 1960s have naturally turned national attention inward, to development and stability. This has gradually led to increased political confidence, diplomatic initiatives, and in many nations the move toward more democratic systems. America has directly benefited as well, and not merely from years of lower consumer prices, but also from the general conditions of peace in Asia. Yet policymakers need to remember that even during these decades of growth, moments of economic shock, such as the 1973 Oil Crisis, led to instability and bursts of terrorist activity in Japan, while the uneven pace of growth in China has led to tens of thousands of armed clashes in the poor interior of the country. Now imagine such instability multiplied region-wide. The economic collapse Japan is facing, and China's potential slowdown, dwarfs any previous economic troubles, including the 1998 Asian Currency Crisis. Newly urbanized workers rioting for jobs or living wages, conflict over natural resources, further saber-rattling from North Korea, all can take on lives of their own. This is the nightmare of governments in the region, and particularly of democracies from newer ones like Thailand and Mongolia to established states like Japan and South Korea. How will overburdened political leaders react to internal unrest? What happens if Chinese shopkeepers in Indonesia are attacked, or a Japanese naval ship collides with a Korean fishing vessel? Quite simply, Asia's political infrastructure may not be strong enough to resist the slide towards confrontation and conflict. This would be a political and humanitarian disaster turning the clock back decades in Asia. It would almost certainly drag America in at some point, as well. First of all, we have alliance responsibilities to Japan, South Korea, Australia, and the Philippines should any of them come under armed attack. Failure on our part to live up to those responsibilities could mean the end of America's credibility in Asia. Secondly, peace in Asia has been kept in good measure by the continued U.S. military presence since World War II. There have been terrible localized conflicts, of course, but nothing approaching a systemic conflagration like the 1940s. Today, such a conflict would be far more bloody, and it is unclear if the American military, already stretched too thin by wars in Afghanistan and Iraq, could contain the crisis. Nor is it clear that the American people, worn out from war and economic distress, would be willing to shed even more blood and treasure for lands across the ocean. The result could be a historic changing of the geopolitical map in the world's most populous region. Perhaps China would emerge as the undisputed hegemon. Possibly democracies like Japan and South Korea would link up to oppose any aggressor. India might decide it could move into the vacuum. All of this is guess-work, of course, but it has happened repeatedly throughout history. There is no reason to believe we are immune from the same types of miscalculation and greed that have destroyed international systems in the past.

#### Amazon deforestation causes extinction

Takacs 96—Takacs, David, 1996 Philosophies of Paradise, The Johns Hopkins Univ. Pr., Baltimore.

"Habitat destruction and conversion are eliminating species at such a frightening pace that extinction of many contemporary species and the systems they live in and support ... may lead to ecological disaster and severe alteration of the evolutionary process," Terry Erwin writes." And E. 0. Wilson notes: "The question I am asked most frequently about the diversity of life: if enough species are extinguished, will the ecosystem collapse, and will the extinction of most other species follow soon afterward? The only answer anyone can give is: possibly. By the time we find out, however, it might be too late. One planet, one experiment."" So biodiversity keeps the world running. It has value in and for itself, as well as for us. Raven, Erwin, and Wilson oblige us to think about the value of biodiversity for our own lives. The Ehrlichs' rivet-popper trope makes this same point; by eliminating rivets, we play Russian roulette with global ecology and human futures: "It is likely that destruction of the rich complex of species in the **Amazon basin could** trigger rapid changes in global climate patterns. Agriculture remains heavily dependent on **stable climate**, and human beings remain heavily dependent on food. By the end of the century the **extinction** of perhaps a million species in the Amazon basin could have entrained famines in which a billion human beings perished. And if our species is very unlucky, the famines could **lead to a** thermonuclear war, which could **extinguish civilization.""**

#### Deforestation causes disease spread – causes extinction

Butler 6--Rhett, BS from UCSD, founder of Mongabay.com, speaker at Stanford University, UC Berkeley, UCSC, participant in the US State Department Speakers Program in Indonesia, “LOSS OF SPECIES FOR FOREST REGENERATION,” rainforests.mongabay.com/0904.htm

The emergence of tropical diseases and outbreaks of new diseases, including nasty hemorrhagic fevers like ebola and lassa fever, are a subtle but serious impact of deforestation. With increased human presence in the rainforest, and exploiters pushing into deeper areas, man is encountering "new" microorganisms with behaviors unlike those previously known. As the primary hosts of these pathogens are eliminated or reduced through forest disturbance and degradation, disease can break out among humans. Although not unleashed yet, someday **one of these microscopic killers could lead to a** massive human die-off as deadly for our species as we have been for the species of the rainforest. Until then, local populations will continue to be menaced by mosquito-borne diseases like dengue fever, Rift Valley fever, and malaria, and water-borne diseases like cholera. Many emergent and resurgent diseases are directly linked to land alterations which bring humans in closer contact with such pathogens. For example, malaria and snailborne schistosomiasis have escalated because of the creation of artificial pools of water like dams, rice paddies, drainage ditches, irrigation canals, and puddles created by tractor treads. Malaria is a particular problem in deforested and degraded areas, though not in forested zones where there are few stagnant ground pools for mosquito breeding. These pools are most abundant in cleared regions and areas where tractors tear gashes in the earth. Malaria is already a major threat to indigenous peoples who have developed no resistance to the disease nor any access to antimalarial drugs. Malaria alone is cited as being responsible for killing an estimated 20 percent of the Yanomani in Brazil and Venezuela. Malaria—caused by unicelluar parasites transferred in the saliva of mosquitoes when they bite—is an especially frightening disease for its drug-resistant forms. Thanks to poor prescribing techniques on the part of doctors, there are now strains in Southeast Asia reputed to be resistant to more than 20 anti-malarial drugs. There is serious concern that global climate change will affect the distribution of malaria, which currently infects roughly 270 million people worldwide and kills 1-2 million a year— 430,000-680,000 children in sub-Saharan Africa alone.¶ The outbreak of disease in the tropics does not affect only the people of those countries, since virtually **any disease can be incubated for enough time to allow penetration into** the temperate **developed countries**. For example, any Central African doctor infected with the ebola virus from a patient can board a plane and land in London within 10 hours. The virus could quickly spread, especially if airborne, among the city's population of 8 million. Additionally, every person at the airport who is exposed can unknowingly carry the pathogen home to their native countries around the world.

## Solvency

### Normal Solvency Contention

#### **The EPA restrictions will crush the natural gas industry**

ARI 12 – Advanced Resources International Inc. report for the American Petroleum Institute, "Estimate of Impacts of EPA Proposals to Reduce Air Emissions from Hydraulic Fracturing Operations, February 2012, "www.api.org/~/media/Files/Policy/Hydraulic\_Fracturing/NSPS-OG-ARI-Impacts-of-EPA-Air-Rules-Final-Report.ashx

Depending on the REC-Set Use Rate scenario assumed, the following impacts from base case levels are projected in the first 4 years after the requirements go into effect (through 2015):¶ • Overall **well drilling** for unconventional resources producing natural gas over 2012 - 2015 would be **reduced by** 31% to 52%, amounting to reductions in drilling ranging from 12,700 to 21,400 wells.¶ • 5.8 to 7.0 quadrillion Btu (Quads) of otherwise economic unconventional natural gas would not be developed and produced by 2015, a 9% to **11% reduction**.¶ • 1.0 to 1.8 billion barrels of otherwise economic unconventional liquids would not be developed and produced by 2015, a 21% to 37% reduction.¶ • Federal royalties of $7.0 to $8.5 billion that would otherwise be collected would not be paid in the first 4 years after the requirements go into effect.¶ • State revenues from severance taxes amounting to $1.9 to $2.3 billion would be delayed beyond the first 4 years after the requirements go into effect.¶ Under either scenario of REC equipment availability, a significant slowdown in unconventional resource development **would occur, resulting in less reserve additions, less production, lower royalties to the Federal government and** private landowners, **and l**ower severance tax payments **to state governments**. The **delays in drilling results in delays in production, which result in the delays in** the **economic benefits** associated with that production. This analysis did not attempt to estimate lost jobs associated with reduced drilling, oil and gas supply services, and indirect employment.

#### **Even with the 2015 extension, producers do not have the technology to comply with the restrictions**

Davidson 12 – Mark Davidson is Editorial Director for Platts’ North American natural gas news coverage. Based in Washington, D.C., Mark also has served as Chief Editor of Gas Daily and Managing Editor of Inside FERC’s Gas Market Report. A graduate of the E.W. Scripps School of Journalism at Ohio University, Mark was a general assignment and local government reporter for daily newspapers in Ohio and Virginia for nearly a decade before joining Platts in November 1995. June 20th, 2012, "Flexibility urged on 'green completion' of wells" s3.amazonaws.com/cuttings/cuttingpdfs/18531/075d95107cdd5ed278a19f158843771f.pdf

Regulators from Western states urged the Environmental Protection Agency on Tuesday to remain flexible with its upcoming rule requiring that all new natural gas wells have “green completions” by 2015 while leaving the bulk of implementation to states.¶ Wyoming and Colorado often require green completions now, officials from those states testified to the US Senate Committee on Environment and Public Works’ clean air subcommittee. And they said the practice has reduced the amount of air pollution in gas production areas such as Colorado’s Wattenberg field and Wyoming’s Jonah-Pinedale field. Green completions take place during the clean-up stage after a well has been hydraulically fractured. During the process, gas is separated from the flowback water and piped away instead, of being flared or otherwise allowed to escape into the atmosphere.¶ Darren Smith, environmental manager for Oklahoma City-based Devon Energy, cautioned senators that EPA’s baseline estimate of how much natural gas is emitted during the completion process is two-thirds higher than indicated by actual experience.¶ That data is driving policy research in **the wrong direction**, Smith told the subcommittee.¶ “This overestimate has allowed EPA to justify the promulgation of new air standards for the natural gas industry,” Smith maintained. “More important, we continue to see new policy research being based on a foundation of this bad data — **guaranteeing that the wrong conclusions are reached.”** Smith singled out Cornell University’s oft-cited 2010 study, which claimed natural gas is as dirty as coal, as “absurd.”¶ Basically, EPA’s estimate is based on the amount of natural gas collected by operators over the first 10 days of a well’s life. In actual experience, Smith said, operators exit the flowback period — when the mixture coming back up the bore is more water than gas — in about 3.5 days.¶ Devon has data from eight other producers to buttress its claim, but EPA has ignored the company’s request to correct its 9,000 Mcf/well estimate of how much methane is escaping new wells, according to Smith.¶ “The error must be corrected now,” he pleaded. “**We have already seen its misuses to justify** air quality **rules for fracking. It will continue to fuel bad public policy** and research that overshadows the benefits of natural gas.” Wyoming Director of Environmental Quality John Corra said EPA’s New Source Performance Standards requiring all completions to be green is modeled after rules Wyoming put in place to combat air pollution problems in the state’s Sublette County.¶ But he cautioned that Wyoming’s rules are flexible and don’t have a onesize- fits-all approach, and he urged EPA to adopt that model.¶ “**Infrastructure and other factors are** not readily available **in order for green completions to be implemented statewide, and we simply require best management practices and flaring in those instances**,” Corra testified. “State regulatory schemes can take these factors into account more readily than a national-level rule.”

#### **And, the restrictions send a signal of uncertainty to investors**

Gerard 12 – Jack Gerard has a degree in political science and a juris doctor from George Washington University, and formerly worked with the U.S. Senate Energy and Natural Resources Committee, now he is the head of the American Petroleum Institute, June 19th, 2012, "Supporting Common-Sense Regulation"energy.nationaljournal.com/2012/06/epas-cleanair-rules-defend-del.php

That said, the oil and natural gas industry supports common-sense environmental regulation. EPA’s current incremental approach, which often **comes with a price tag that dwarfs estimated benefits**, needs to be replaced with one that’s not unnecessarily **burdensome or counter-productive**. EPA seems to have understood this principle in some cases recently. In others, it hasn’t.¶ For example, EPA and the administration appropriately recognized concerns raised by industry and others and pulled back a proposed new standard for ozone. By some estimates the proposal would’ve put 85 percent of the country in non-compliance. Millions of jobs might have been in jeopardy, and the economy could have faced $1 trillion a year in costs.¶ EPA also recognized concerns about a proposed rule on emissions resulting from oil and natural gas development, agreeing to allow companies until 2015 to develop the equipment needed for compliance and to train workers to use it.¶ But in other areas legitimate concern about the cost effectiveness of proposals seemingly has been dismissed. Our industry urged EPA to consider keeping the current standard on fine-particle soot that had lowered concentrations 27 percent between 2000 and 2010 – evidence that this pollution problem is being addressed, that air quality is improving. But the agency released a more stringent standard last week based, we believe, on faulty data and without sufficient correlating benefit. As written it could discourage investment in areas that fail to meet the standard, costing jobs and economic opportunity.¶ The scenario is similar when it comes to EPA’s push for E15 gasoline, which could damage the engines of millions of vehicles now on our roads, and its aggressive mandate to refiners on cellulosic biofuels, basically requiring them to use a fuel that doesn’t exist. In this context it’s not hard to understand why some are concerned about EPA’s forthcoming Utility MACT Rule on emissions from coal-fired power plants and industrial boilers.¶ The larger point is the signal **government is sending to industry and investors with the current approach:** inconsistency and uncertainty**.** Both profoundly **hinder economic activity and job creation.** Coupled with a sense that legitimate cost-benefit analysis isn’t being uniformly conducted, the seeming **disconnect between the regulators and the regulated** isn’t surprising.¶ Our industry supports environmental protection and is constantly striving to improve the safety and efficiency of its operations. But without a common-sense regulatory approach that sees the entire picture, America will continue to create problems for itself in terms of fostering economic growth, creating jobs and, in the case of our industry, generating the energy we need for better lives now and in the future.

#### This uncertainty causes shortages in future gas supply

Stevens August 2012 – Professor Paul Stevens is Senior Research Fellow for Energy at Chatham House and Emeritus Professor at Dundee University. He taught at the American University of Beirut in Lebanon (1973–79); the University of Surrey (1979–93); and as Professor of Petroleum Policy and Economics at CEPMLP, University of Dundee (1993–2008). He is also Consulting Professor at University College London (Australia), August 2012, "The 'Shale Gas Revolution': Developments and Changes,"www.chathamhouse.org/sites/default/files/public/Research/Energy, Environment and Development/bp0812\_stevens.pdf

There is a real danger that investor uncertainty will inhibit investment in future gas supplies. If the shale gas revolution can be continued and replicated this does not matter. Shale gas can provide abundant supplies of cheap natural gas. However, if it disappoints then, as the 2010 report notes, in five to ten years gas markets could **face** significant shortages **as a result of the very long lead times on upstream gas projects.**

#### And independently, the restrictions destroy independent producers, which are key to the industry

Banerjee 12 – Neela Banerjee, writer for the Los Angeles Times, April 18th, 2012, "New EPA rules target pollution at fracking sites" articles.latimes.com/2012/apr/18/business/la-fi-epa-drilling-20120419

The rules are expected to affect about 11,000 new wells annually that undergo fracking and an additional 1,200 that are re-fracked to boost production. The rules go into effect in 60 days, but the EPA gave the industry a three-year transition period to install technology to capture methane.¶ Most environmentalists welcomed the new rules, although some expressed disappointment over the three-year phase-in of the methane-capturing requirement.¶ "Obviously, this will be an improvement from the status quo," said Frank O'Donnell, president of Clean Air Watch. "But the delays mean a heck of a lot of smog-forming emissions during the next several years. Breathers will pay that price.¶ "Industry groups, however, complained that the rules were still too onerous, especially for smaller companies. They asserted that the EPA's data are faulty, a charge that the EPA denied, and could stunt the growth of natural gas development.¶ Barry Russell, chief executive of the Independent Petroleum Assn. of America, said the effect of the rules on independent oil and natural gas producers, which drill 95% of wells, as well as on the economy and the national security has the "potential to be profound."

#### The restrictions will be used to shut down all production if an accident happens

Cappiello 12 – Dina is an Associated Press writer. “EPA sets natural gas pollution standards,” April 21, <http://theadvocate.com/home/2607063-125/epa-sets-natural-gas-pollution>

Don Briggs, president of the Louisiana Oil and Gas Association, called the regulations an unnecessary intrusion.¶ “The industry already has in place so many of the different things they’re suggesting,” he said. “It’s a continuation of a great deal more control over the oil and gas industry.”¶ Briggs and other industry members fear federal oversight of hydraulic fracturing. The industry worries the EPA will use air quality regulations and the findings of an upcoming report on hydraulic fracturing to restrict the practice, which is what led to the huge increase in domestic natural gas and oil production.¶ “It will only take one accident or mishap for the EPA to step in and halt all hydraulic fracturing in the United States,” Briggs said in a column released Wednesday. “If this were to happen, 85 percent of all wells in the United States would be shut down.”

#### Status quo state regulations are sufficient – the EPA restrictions tank production and drive up costs

Loris 8-29 – Nicolas D. Loris is the Herbert and Joyce Morgan Fellow in the Thomas A. Roe Institute for Economic Policy Studies at The Heritage Foundation, August 29th, 2012, "Hydraulic Fracturing: Critical for Energy Production, Jobs, and Economic Growth," [www.thecuttingedgenews.com/index.php?article=75622&pageid=&pagename](http://www.thecuttingedgenews.com/index.php?article=75622&pageid=&pagename)=

One of the reasons why hydraulic fracturing has been so successful in promoting oil and gas development, while maintaining a strong environmental record, is the state regulatory regime. States in which fracturing takes place each have comprehensive regulation that ensures that oil and gas companies operate safely and in an environmentally sensible manner, and administer fines and implement punitive measures to correct any wrongdoing. In November 2011, the EPA’s Lisa Jackson acknowledged the states' role: “**States are stepping up and doing a good job. It doesn’t have to be EPA that regulates the 10,000 wells that might go in.”** But states are not just now stepping up—states have effectively regulated oil and gas production and hydraulic fracturing for decades. In Pennsylvania, fracking has been taking place since the 1960s with nearly 100,000 oil and gas wells fracked and no instances of contamination of groundwater. The same clean record is true for Ohio, where over 70,000 oil and gas wells have been fracked since the 1960s. The Interstate Oil and Gas Compact Commission has compiled statistics for all 50 states, each of which has a flawless record when it comes to fracking and groundwater protection. Detailed in the appendix of this paper is an overview of each state’s regulations regarding chemical disclosure, groundwater protection, and wastewater management, as well as links to each state’s statutes and regulations that pertain to oil and gas operations.¶ Despite the states' effectiveness in regulating hydraulic fracturing and despite Jackson’s comments, the EPA is pursuing **onerous and duplicative regulations with weak scientific support.** Many activities of oil and gas production are already subject to a number of major federal regulations, including the Clean Air Act (emissions), the Clean Water Act (surface water discharge), the Safe Drinking Water Act (wastewater management), the Emergency Planning and Community Right-to-Know Act (chemical disclosure for emergency responders), and the National Environmental Policy Act (production on federal lands), among others.¶ While many of these statutes are in need of serious reform, the White House’s recently proposed fracking rules are unneeded and duplicative. The Department of the Interior released a draft rule on public disclosure of chemicals on federal lands despite the fact that states have successfully managed chemical disclosure. Congress has also introduced legislation that would regulate fracking fluids under the Safe Drinking Water Act (SDWA) despite the fact that the 2005 Energy Policy Act codified that Congress never intended to regulate fracking (except when using diesel oil in the fracking process under SDWA). Hydraulic fracturing had been safely regulated for a quarter century before Congress even enacted SDWA in 1974.¶ In April 2012, the EPA announced its first air-emission rules for hydraulic fracturing. Rather than being aimed at fracking itself, this is a backdoor global warming regulation: The rule highlights the supposed environmental benefits of reducing emission of methane, a greenhouse gas. The EPA’s rule miserably fails the cost-benefit test; the agency’s own analysis projects $745 million in annual costs and just $11 million to $19 million in environmental benefits. Moreover, the EPA has grossly overestimated methane emissions from the wells. The rule also fails to quantify any benefits from reducing volatile organic compounds (VOC) and hazardous air pollutants (HAP). While the rule asserts that benefits exist, the draft also says that “with the data available, we [the EPA] are not able to provide credible health benefit estimates for the reduction in exposure to [hazardous air pollutants], ozone and [particulate matter] (2.5 microns and less) (PM2.5) for these rules.”¶ Congress: Prevent Federal Overreach on Fracking¶ The states' effective regulation underscores the need for Members of Congress to prevent **federal intervention** **that would** unnecessarily stall the oil and gas boom and drive up costs for producers (and thus consumers). The states with tremendous oil and natural gas reserves have the most to gain economically, and have the greatest incentive to protect their environments. States have qualified experts to handle the regulatory requirements surrounding hydraulic fracturing. To that end, Congress should:¶ Prevent any federal agency from adding new regulations to hydraulic fracturing. The proposed federal regulations are unnecessary and duplicative.¶ Prohibit federal regulators from using any statute to regulate greenhouse gas emissions. Greenhouse gas regulations would drive up the cost of energy for no meaningful change in the Earth’s temperature.¶ Reaffirm the states’ authority and effectiveness in regulating hydraulic fracturing. The states have effectively handled the disclosure of chemicals used in the fracking process and have effectively protected drinking water for decades.¶ Fracking: It’s Important¶ Hydraulic fracturing and horizontal drilling should be celebrated as important technological progress that has opened new opportunities for the safe development of affordable, reliable energy. The facts and history of hydraulic fracturing indicate that many of the fears associated with the process are **exaggerated or unsubstantiated**. Entrepreneurs created an energy boom and state regulators have been ensuring that energy production occurs in an environmentally sensible way. Congress should keep it that way.

### New Uncertainty Card

#### We replaced Gerard with this in doubles of the Shirley v. Georgetown

#### **The air emission rules create regulatory uncertainty and will lead to further regulation**

Mack et al. 12 – Joel Mack is a partner in Latham & Watkins' Houston office. Davon Collins is an associate in the firm's New York office. Sara Orr and Ben Lawless\* are associates in the Washington, D.C., office. May 11th, 2012, “A 1st for Fracking: EPA’s Air Emissions Regulations,” www.lw.com/thoughtLeadership/a-first-for-fracking

Notably, although the rule does not regulate methane directly, there are indications that methane — a potent greenhouse gas — may have been the true target of the new regulations. This might explain why the EPA **declined to grant any exemptions from green completion requirements for wells with demonstrated low or de minimis VOC emissions**.The EPA claimed that, given VOC variability among gas wells, such an exemption would be “inappropriate” due to implementation concerns.[34] In addition, the EPA has noted in its supporting comments for the rule that it intends “to continue to evaluate the appropriateness of regulating methane with an **eye toward taking additional steps if appropriate**.”[35] Thus, the rule is likely a harbinger of further greenhouse gas regulation of the upstream and midstream oil and gas industries. Additionally, the rule may reflect the EPA’s increasing scrutiny of hydraulic fracturing as the EPA assesses the scope of its statutory authority to regulate hydraulic fracturing under the Safe Drinking Water Act’s Underground Injection Control program.[36] Therefore, as the oil and gas industry begins to comply with this rule and the greenhouse gas reporting rule issued by the EPA in November 2010, **companies should closely evaluate** their greenhouse gas emissions and hydraulic fracturing **operations for likely regulatory targets and be prepared to engage in future rulemaking processes.**