# 1

**Interpretation – Financial incentives must be positively linked to rewards – they cannot be negative**

Harris, 89 – professor of law at the University of Illinois (Fred, 49 La. L. Rev. 1315 (1988-1989) “Automobile Emissions Control Inspection and Maintenance Program: Making It More Palatable to Coerced Participants”, Hein Online)

53. The term "incentives," for purposes of this Article, means those devices that induce one into doing something because of the prospect of reward and, therefore, engender a positive feeling within the actor. An example of incentives in this sense would be tax incentives like credits and/or deductions. But it appears that Congress, some courts and a few commentators have taken a broader view of incentives and have categorized items such as extensions to compliance deadlines and, most notably, sanctions in the Act-denials of federal grants and bans on construction in the event of noncompliance-as incentives to compliance. To be sure, these latter items may induce compliance but surely not because of the extension of a "carrot." Instead, they epitomize the "stick" or "disincentive" approach to behavioral modification.

**Violation – the aff mechanism imposes requirements that result in a financial incentive**

**That’s a voter**

**Limits – makes the topic bidirectional – allows imposition of requirements on one energy source in order to incentivize another – explodes research because the list of negative incentives is massive**

**Ground – predictable negative offense is limited to direct incentives for each energy source – allowing negative incentives arbitrarily give the aff unpredictable spin on core generics like politics and energy trade off disads.**

# 2

#### Oil prices will stabilize now – prices will stick above OPEC break-even levels without significant changes

Irina Rogovaya August 2012; writer for Oil and Gas Eurasia, Oil Price Changes: Everyone Wants Stability <http://www.oilandgaseurasia.com/articles/p/164/article/1875/>

According to the current base forecast for the Eurozone prepared by Oxford Economics, within the next two years oil prices will continue to drift lower, but not beyond the bounds of the “green” corridor for the world economy – $80-100 per barrel. This forecast coincides with the expectations of the World Bank (see Fig. 4). Meanwhile, S&P analysts presented three scenarios for the energy market in June. In the base scenario, oil will remain at $100 per barrel. S&P calculates that the likelihood of a stressful scenario in which the price of oil drops below $60 per barrel (the bottom in 2009) is 1:3. Analysts believe that given today’s state of economic and geopolitical affairs, strong political will would be needed to force the price of oil below $70-80 (the current level of effective production). So far, that will is nowhere to be seen. Recent events have shown that nobody is interested in the Eurozone breaking apart. And nobody wants a war in the Persian Gulf. Furthermore, nobody today intends to force the production of less valuable oil. At least that is what OPEC leaders promised during the recent summit. “Stability on the market should be at the center of our attention,” General Secretary Abdalla El-Badri said. Even Saudi Arabia, which consistently violates OPEC discipline in over-producing its quotas, announced at the beginning of July that it would review its margins to determine a higher price for Saudi supplies ordered on August contracts. Analysts noted that the average price of oil supplied to Europe and Asia had jumped (by $0.85 and $0.66 per barrel respectively), a fact which could be seen as proof that the collective members of the cartel will not let prices fall under $100 per barrel.

**Wind power expansion would shift natural gas to transportation and massively reduce oil demand**

**TGCO** 20**10**; Texas Gulf Coast Online, Wind Power Plan Could Solve Oil Crisis http://www.texasgulfcoastonline.com/News/tabid/86/ctl/ArticleView/mid/466/articleId/106/Wind-Power-Plan-Could-Solve-Oil-Crisis.aspx

**If the United States takes advantage of the so-called "wind corridor**," stretching from the Canadian border to West Texas, **energy from wind turbines built there could supply 20 percent or more of the nation's power**. **Power from thousands of wind turbines that would line the corridor could be distributed throughout the country via electric power transmission lines and could fuel power plants in large population hubs. Fueling these plants with wind power would then free up the natural gas historically used to power them, and would mean that natural gas could replace foreign oil as fuel for motor vehicles**. **Using natural gas for transportation needs could replace one-third of the United States' imported oil** and would save more than $230 billion a year. As imports grow and world prices rise, the amount of money we send to foreign nations every year is soaring. At current oil prices, we will send $700 billion dollars out of the country this year alone. Projected over the next 10 years the cost will be $10 trillion. America uses a lot of oil, every day 85 million barrels of oil are produced around the world and 21 million of those are used here in the United States. That's 25% of the world's oil demand used by just 4% of the world's population. World oil production peaked in 2005. Despite growing demand and an unprecedented increase in prices, oil production has fallen over the last three years. Oil is getting more expensive to produce, harder to find and there just isn't enough of it to keep up with demand. The simple truth is that cheap and easy oil is gone. A 2005 Stanford University study found that **there is enough wind power worldwide to satisfy global demand 7 times over, even if only 20% of wind power could be captured**. Building wind facilities in the corridor that stretches from the Texas panhandle to North Dakota could produce 20% of the electricity for the United States at a cost of $1 trillion. It would take another $200 billion to build the capacity to transmit that energy to cities and towns. It's a one-time cost and compared to the $700 billion we spend on foreign oil every year, it's a bargain. **Building new wind generation facilities** and better utilizing our natural gas resources **can replace more than one-third of our foreign oil imports in 10 years**. The benefits for the Texas economy and real estate values on the coast are enormous - and the entire country will benefit from lower gas prices.

**High prices are key to the Russian economy and domestic stability**

Michael **Schuman** 7-5-20**12** ; writes about Asia and global economic issues as a correspondent for TIME in Hong Kong. B.A. in Asian history and political science from the University of Pennsylvania and a master of international affairs from Columbia; “Why Vladimir Putin Needs Higher Oil Prices” http://business.time.com/2012/07/05/why-vladimir-putin-needs-higher-oil-prices/

But Vladimir Putin is not one of them. **The economy that the Russian President has built not only runs on oil, but runs on oil priced extremely high. Falling oil prices means rising problems for Russia – both for the strength of its economic performance, and possibly, the strength of Putin himself.** Despite the fact that Russia has been labeled one of the world’s most promising emerging markets, often mentioned in the same breath as China and India, the Russian economy is actually quite different from the others. While India gains growth benefits from an expanding population, Russia, like much of Europe, is aging; while economists fret over China’s excessive dependence on investment, Russia badly needs more of it. Most of all, **Russia is little more than an oil state in disguise**. **The country is the largest producer of oil in the world** (yes, bigger even than Saudi Arabia), **and Russia’s dependence on crude has been increasing**. **About a decade ago, oil and gas accounted for less than half of Russia’s exports; in recent years, that share has risen to two-thirds**. **Most of all, oil provides more than half of the federal government’s revenues. What’s more, the economic model Putin has designed in Russia relies heavily not just on oil, but high oil prices**. **Oil lubricates the Russian economy by making possible the increases in government largesse that have fueled Russian consumption**. Budget spending reached 23.6% of GDP in the first quarter of 2012, up from 15.2% four years earlier. What that means is Putin requires a higher oil price to meet his spending requirements today than he did just a few years ago. Research firm Capital Economics figures that the government budget balanced at an oil price of $55 a barrel in 2008, but that now it balances at close to $120. Oil prices today have fallen far below that, with Brent near $100 and U.S. crude less than $90. **The farther oil prices fall, the more pressure is placed on Putin’s budget, and the harder it is for him to keep spreading oil wealth to the greater population through the government**. **With a large swath of the populace angered by his re-election to the nation’s presidency in March, and protests erupting on the streets of Moscow, Putin can ill-afford a significant blow to the economy, or his ability to use government resources to firm up his popularity.** That’s why **Putin hasn’t been scaling back even as oil prices fall**. His government is earmarking $40 billion to support the economy, if necessary, over the next two years. He does have financial wiggle room, even with oil prices falling. Moscow has wisely stashed away petrodollars into a rainy day fund it can tap to fill its budget needs. But **Putin doesn’t have the flexibility he used to have. The fund has shrunk**, from almost 8% of GDP in 2008 to a touch more than 3% today. **The package**, says Capital Economics, **simply highlights the weaknesses of Russia’s economy:** This cuts to the heart of a problem we have highlighted before – namely that Russia is now much more dependent on high and rising oil prices than in the past… The fact that the share of ‘permanent’ spending (e.g. on salaries and pensions) has increased…creates additional problems should oil prices drop back (and is also a concern from the perspective of medium-term growth)…The present growth model looks unsustainable unless oil prices remain at or above $120pb.

**Russian economic collapse causes global nuclear war**

Steven **David**, January/February 19**99**;Professor of International Relations and Associate Dean of Academic Affairs at the Johns Hopkins University, FOREIGN AFFAIRS, **,** http://www.foreignaffairs.org/19990101faessay955/steven-r-david/saving-america-from-the-coming-civilwars.html

**I**f internal war does strike Russia, economic deterioration will be a prime cause. From 1989 to the present, the GDP has fallen by 50 percent. In a society where, ten years ago, unemployment scarcely existed, it reached 9.5 percent in 1997 with many economists declaring the true figure to be much higher. Twenty-two percent of Russians live below the official poverty line (earning less than $ 70 a month). Modern Russia can neither collect taxes (it gathers only half the revenue it is due) nor significantly cut spending. Reformers tout privatization as the country's cure-all, but in a land without well-defined property rights or contract law and where subsidies remain a way of life, the prospects for transition to an American-style capitalist economy look remote at best. As the massive devaluation of the ruble and the current political crisis show, Russia's condition is even worse than most analysts feared. If conditions get worse, even the stoic Russian people will soon run out of patience.  A future conflict would quickly draw in Russia's military. In the Soviet days civilian rule kept the powerful armed forces in check. But with the Communist Party out of office, what little civilian control remains relies on an exceedingly fragile foundation -- personal friendships between government leaders and military commanders. Meanwhile, the morale of Russian soldiers has fallen to a dangerous low. Drastic cuts in spending mean inadequate pay, housing, and medical care. A new emphasis on domestic missions has created an ideological split between the old and new guard in the military leadership, increasing the risk that disgruntled generals may enter the political fray and feeding the resentment of soldiers who dislike being used as a national police force. Newly enhanced ties between military units and local authorities pose another danger. Soldiers grow ever more dependent on local governments for housing, food, and wages. Draftees serve closer to home, and new laws have increased local control over the armed forces. Were a conflict to emerge between a regional power and Moscow, it is not at all clear which side the military would support.  Divining the military's allegiance is crucial, however, since the structure of the Russian Federation makes it virtually certain that regional conflicts will continue to erupt. Russia's 89 republics, krais, and oblasts grow ever more independent in a system that does little to keep them together. As the central government finds itself unable to force its will beyond Moscow (if even that far), power devolves to the periphery. With the economy collapsing, republics feel less and less incentive to pay taxes to Moscow when they receive so little in return. Three-quarters of them already have their own constitutions, nearly all of which make some claim to sovereignty. Strong ethnic bonds promoted by shortsighted Soviet policies may motivate non-Russians to secede from the Federation. Chechnya's successful revolt against Russian control inspired similar movements for autonomy and independence throughout the country. If these rebellions spread and Moscow responds with force, **civil war is likely**.  Should Russia succumb to internal war, the consequences for the United States and Europe will be severe. **A major power** like Russia -- even though in decline -- **does not suffer civil war quietly or alone**. An embattled **Russia**n Federation might provoke **opportunistic attacks from enemies such as China.** Massive flows of refugees would pour into central and western Europe. Armed struggles in Russia could easily spill into its neighbors. Damage from the fighting, particularly attacks on nuclear plants, would poison the environment of much of Europe and Asia. Within Russia, the consequences would be even worse. Just as the sheer brutality of the last Russian civil war laid the basis for the privations of Soviet communism, a second civil war might produce another horrific regime.

**High prices are key to Russian military modernization**

John T. **Bennett**, 4-3-20**12**; covers national security and foreign policy for U.S. News & World Report“Oil Prices Fueling Russia's Disruption of U.S. Foreign Policy

Russia's burgeoning oil and natural gas exports are underwriting Russian efforts to regain status as a world superpower” http://www.usnews.com/news/articles/2012/04/03/oil-prices-fueling-russias-disruption-of-us-foreign-policy

U.S.-Russian relations returned to the front pages last week after Obama urged outgoing Russian President Dmitry Medvedev to "give me space" on several issues, including a European missile defense shield that Moscow opposes. Likely GOP presidential nominee Mitt Romney soon after called Russia America's "top geopolitical enemy."¶ "**Putin still aspires for Russia to be a superpower**," says Steven Pifer, a former U.S. ambassador to Ukraine. "**There are only two ways for Russia to achieve that: nuclear weapons, and oil and natural gas sales."¶** The price of a barrel of oil was nearly $105 at midday Tuesday, steadily climbing from a 52-week low of $76.35 per barrel in October. Oil prices began to rise in late 2010, peaking at $113 per barrel in May 2011, before dipping last summer and then rising again.¶ [Whose Russia Comment Was More Damaging: Obama's or Romney's?]¶ **Russia is the world's second-largest oil exporter** at 5 million barrels a day, and its the ninth-leading natural gas exporter at 38.2 billion cubic meters a year, according to the CIA World Factbook. Russia rakes in nearly $500 billion annually in exports, with the CIA listing petroleum and natural gas as its top two commodities.¶ Frances Burwell, vice president of the Atlantic Council, says **Russia's oil revenues "give it a comfort zone" from which its leaders feel they have** the **global cache** to make things tough for Washington.¶ Burwell says she "places more weight" for Russia's recent global muscularity on "Putin's re-emergence." **The Russian once-and-soon-again president "clearly sees playing the national card as the strong guy internationally benefits him**," she says.¶ But, make no mistake, **bloated national coffers from high oil and gas prices underwrite Putin's muscle-flexing**, experts say.¶ [Who is Joe Biden to Slam Mitt Romney on Russia Policy?]¶ **Putin made a number of big domestic promises during the presidential race, including plans to usher in sweeping pension and wage hikes. He also put forth "a rather ambitious military modernization program**," Pifer says.¶ "**If oil prices remain high, he might be able to do all of those things**," Pifer says. "If prices come down, however, Putin will have some very tough decisions to make at home ... between guns versus butter."¶ **Should oil and gas prices tumble, experts say Putin would likely pick butter.¶** "**In 2007 when oil was doing well, Putin [as president] could have modernized the Russian military**," says Pifer. **Instead, Putin made a number of economic moves, such as the creation of a rainy day fund that was used during the recent global financial crisis**," Pifer notes.¶ What's more, Putin returns to power with his sharp eyes locked on his opposition, which is composed of the country's urban, middle-class populations.¶ Experts agree that Putin would be hard-pressed to break his pension and wage promises in favor of a few more missiles. But even an economically weaker Russia would likely pick its spots to block Washington's desires.¶ "**They have a very sovereigntist, non-interventionalist view of world affairs**," Burwell says. That means **Moscow fundamentally opposes Western efforts to boss around the world's strongmen,** with which Russian leaders have much in common.¶ "The Russian also have real hard-core, national, commercial and other interests in both Iran and Syria that cannot simply be ignored," Burwell says.

**Modernization is key to maintain the nuclear threshold – prevents miscalc and escalation**

Bettina **Renz and** Rod **Thornton** January 20**12**; lecturers on international security in the Faculty of Social Sciences, University of Nottingham “Russian Military Modernization Cause, Course, and Consequences” Problems of Post-Communism Volume 59, Number 1 / January / February 2012 p 44 - 54

The perceived weakness of this triad means that the Kremlin was pleased with **the START agreement** of March 2010. The **treaty limits favor Moscow in that it does not have to cut any of its own nuclear warheads** or delivery systems—the numbers of ICBMs and warheads in its own triad are actually below the negotiated caps. Only the United States has had to bring its numbers down.58 Normally, in the arranging of such international security treaties, negotiating from a position of military weakness—as Russia was—is not conducive to the ability to drive a hard bargain. Moscow has been lucky, however, in that Washington seems not to be too interested in the shape of Russia’s current and future nuclear arsenal. Rather, in terms of perceived security threats, Washington has its eye more on the terrorist ball than on the Russian one. Additionally, **under STA RT, Russia does not have to reduce the number of its tactical nuclear weapons. It has more of these than the United States. These are prized and important assets to Moscow, and they have become even more prized and important as Russia’s conventional military has become weaker. They are seen more and more as the fallback option if Russia one day faces some sort of defeat in a conventional conflict—against the likes of Georgia or China. In the largest Russian military exercise held since the end of the cold war—conducted recently in the Russian Far East—tactical nuclear weapons (i.e., mines) were notionally “exploded” as part of the exercise play.59 This fact alone seems to confirm that Russia’s conventional military weakness has led to a reduction in its nuclear-use threshold.** Conclusion The current modernization in the Russian military is long overdue. Because it is long overdue, it has to be completed in a rushed, haphazard fashion and against a backdrop of a military–industrial complex unable to fulfill its role in the process. Traditionally, military modernization is not achieved lightly, given the bureaucratic inertia and cultural norms that are always present. When, as in the current situation in Russia, such barriers to change are aided and abetted by any number of additional problems (not to mention the rampant corruption that is endemic across all levels of Russian state institutions, including the military), then it must be expected that Russia’s armed forces will be striving for some time to become truly “modern.”60 In essence, what should have been accomplished as an evolution over many years, and should have begun during the Yeltsin era, is now being attempted as a revolution in the post–Georgian war era. As with any revolutionary change, a good deal of disruption and disaffection has been created. Moreover, **the current Russian military is a weakened military. The psychology of the tsarist/Soviet/Russian military has always been that numbers counted, that mass would prevail. Numbers inspired confidence, and numbers could deter. But the current Russian military is losing numbers** while not making up for them by creating smaller, more professional forces equipped with the requisite technologies. Quality is not replacing quantity. **The military is in a state of flux. Russian politicians and military figures both now lack a genuine confidence in the armed forces’ ability to deter**. This can have two consequences. Either Russia takes large steps to avoid the possibility of military confrontation by stressing diplomatic solutions to possible threat scenarios (as the tsarist government did in 1914), or it goes the opposite way**, fearing that if any state is threatening military action against Russia then the hair trigger comes into operation** (Israeli-style). That is, **the mentality of the first, preemptive strike becomes paramount—taking advantage of surprise—and using what assets Russia now has. The alternative is to take the risk of waiting to be attacked and maybe “losing**.” What is clear is that, with its armed forces currently weakened by the process of change, the **sense of vulnerability generated has led Russia, in classic confirmation of the security dilemma concept, to magnify the threats it faces, or thinks it faces.** Conscious of its vulnerability to threats, real or imagined, **Moscow may begin to look more and more toward the inflexible tool of its tactical nuclear weapons as its principal defense mechanism**. While no one really supposes that such weapons will be used in any confrontation with the West, the same cannot be said of any possible conflict with the Chinese. Ironically, **Beijing’s military still relies on mass. The best modern military counter to mass is to employ either PGMs or tactical nuclear weapons. The Russian military has hardly any of the former but plenty of the latter. Hair triggers and tactical nuclear weapons are not comfortable bedfellows.**

# 3

#### Obama is winning but it will be close and it’s reversible – popularity is key

**Brownstein, 9/21/12** - a two-time finalist for the Pulitzer Prize for his coverage of presidential campaigns, is National Journal Group's Editorial Director, in charge of long-term editorial strategy.(Ronald, National Journal, “Heartland Monitor Poll: Obama Leads 50 Percent to 43 Percent” <http://www.nationaljournal.com/2012-presidential-campaign/heartland-monitor-poll-obama-leads-50-percent-to-43-percent-20120921?page=1>)

President Obama has opened a solid lead over Mitt Romney by largely reassembling the “coalition of the ascendant” that powered the Democrat to his landmark 2008 victory, the latest Allstate/National Journal Heartland Monitor Poll has found.

The survey found Obama leading Romney by 50 percent to 43 percent among likely voters, with key groups in the president’s coalition such as minorities, young people, and upscale white women providing him support comparable to their levels in 2008.

The survey, conducted by Ed Reilly and Jeremy Ruch of FTI Communications, a communications and strategic consulting firm, surveyed 1,055 likely voters by landline and cell phone from Sept. 15-19. It has a margin of error of plus or minus 3 percentage points. Full results from the survey, including a detailed look at Americans’ attitudes about opportunity and upward mobility, will be released in the Sept. 22 National Journal.

The Heartland Monitor’s results are in line with most other national surveys in recent days showing Obama establishing a measurable lead, including this week’s new Pew Research Center and NBC/Wall Street Journal polls. The saving grace for Republicans is that even as these surveys show Obama opening a consistent advantage, the president has not been able to push his support much past the critical 50 percent level, even after several difficult weeks for Romney that began with a poorly reviewed GOP convention. That suggests the president faces continued skepticism from many voters that could allow Romney to draw a second wind if he can stabilize his tempest-tossed campaign.

The poll found Obama benefiting from a small increase in optimism about the country’s direction. Among likely voters, 37 percent said the country was moving in the right direction. Even looking at all adults, the "right track" number now stands at 35 percent, its best showing since the April 2010 Heartland Monitor.

Obama’s approval rating in the new survey also ticked up to 50 percent, with 46 percent disapproving. That’s a slight improvement from May, when the survey of all adults found 47 percent approving and 48 percent disapproving. Among all adults, Obama’s rating improved to 49 percent approving and 45 percent disapproving, also one of his best showings since January 2010.

Those gains are critical, because as always with an incumbent president, attitudes toward Obama’s performance powerfully shape the race. Among likely voters who approve of Obama’s job performance, he leads Romney in the ballot test by 93 percent to 3 percent; those who disapprove prefer Romney by 87 percent to 5 percent.

#### Solar power is unpopular - not seen as cost competitive and perceived as trading off with other sources

**Lifsher, 5 -** LA Times Staff Writer

(Marc, June 27, “Governor's Solar Plan Is Generating Opposition,” <http://articles.latimes.com/2005/jun/27/business/fi-solar27>, d/a 7-20-12

Gov. Arnold Schwarzenegger's plan to spend billions of dollars to put electricity-producing [solar panels](http://articles.latimes.com/2005/jun/27/business/fi-solar27) on a million California rooftops could be running into stormy weather. For the second year running, the governor is sponsoring legislation that would put photovoltaic solar systems at the head of the line for the bulk of state alternative energy [funding](http://articles.latimes.com/2005/jun/27/business/fi-solar27). For Schwarzenegger and his backers in the environmental community and the solar industry, a massive push to use abundant "free power" from the sun is an easy call. "Today, in California, where we are famous for the sun, we are going to put the positive benefits of that sun to good use," Schwarzenegger said in February, announcing his personal support for SB 1, the solar power bill. Schwarzenegger is thinking big: He wants to increase the state's total solar output from about 101 megawatts to 3,000 megawatts by 2018. That's enough nonpolluting power to run about 2.25 million homes and eliminate the need to build six large natural gas-fired generating plants. The governor isn't the only Hollywood star backing sun power. Actors Edward Norton and Ed Begley Jr., both well-known environmental activists, spoke at a recent media event in South Central Los Angeles in support of SB 1. But the bill, despite such high-profile backing and a bipartisan 30-5 vote in the state Senate, is facing potential difficulties in the Assembly. Opposition from business lobbies, utilities, unions and even consumer groups is setting the stage for what could be a close vote. The first hint of how the bill will fare in the Assembly is expected to come today when it faces its first hearing in the Assembly Utilities and Commerce Committee. Most of the complaints about the governor's solar program center on its estimated 10-year, $2-billion-to-$3-billion price tag. Much of that would be paid by power users in the form of surcharges imposed by the California Public Utilities Commission. Proponents estimate that the annual rate hike would be about $15 per residential customer. But business groups -- usually among Schwarzenegger's staunchest supporters -- complain that increases for large power users such as big-box retailers and industrial operations would be much higher -- a key point in a state that already has the highest electricity rates in the continental United States. The governor's solar plan is "so expensive that it's not cost-effective," said Joseph Lyons, an energy lobbyist for the California Manufacturers and Technology Assn. "Our members need rate relief, and this goes in the other direction," Lyons said. Southern California Edison Co., the state's second-largest investor-owned utility, is also skeptical, saying the governor's bill favors rooftop solar systems over what it says are more cost-effective centralized solar generating stations. Even fans of solar power -- who view photovoltaic panels as a crucial part of the state's alternative energy mix -- question the wisdom of earmarking the bulk of funding for one source, to the detriment of less-glamorous energy efficiency and conservation programs. "Solar is not even close to competitive," said Severin Borenstein, director of the University of California Energy Institute in Berkeley. He noted that solar power's long-run, average production cost of 25 cents to 30 cents per kilowatt hour, not including government subsidies or tax [credits](http://articles.latimes.com/2005/jun/27/business/fi-solar27), is much higher than the 5 cents to 9 cents for wind power and 6 cents to 7 cents for modern, natural-gas-fired generation plants. Even a leading energy consumer advocate, the Utility Reform Network, is critical of the governor's solar dream, contending it would drive up utility bills for some lower-income residential ratepayers. "It singles out one technology ... it's not giving us the biggest bang for the buck," said Michael Florio, an attorney for the group. Meanwhile, enthusiasm among home builders is lukewarm at best. They fear that a requirement that solar be offered as an option on most new homes beginning in 2010 would be unpopular with buyers.

**Obama election defeat and Mitt Romney presidency will trigger a trade war with China**

**Associated Press, 10-5-11,** p. http://www.boston.com/news/local/massachusetts/articles/2011/10/05/in\_gop\_campaign\_foreign\_policy\_becomes\_economic/?page=1

The Senate moved forward Monday with a bipartisan bill to punish China over its currency, but the legislation faces considerable hurdles before it becomes law. The Obama White House, while agreeing that the yuan is undervalued, has been wary of unilateral sanctions against Beijing. Major U.S. business groups share that concern and House GOP leaders have shown no interest in bringing the bill to a vote.

Three years ago, candidate Obama said the U.S. should "never hesitate" to confront China on issues such as copyright infringement and currency manipulation, yet his administration has largely limited itself to narrowly defined trade cases against Beijing and a series of threats aimed at pressuring China to revalue its money. Like President George W. Bush before him, Obama can cite small successes if not an overall solution to the problem.

Yet Romney's -- and the Senate's -- alternative path could risk a trade war between the U.S., the world's top importer, and China, the largest exporter and a holder of more than $1 trillion in U.S. debt. Its ability to retaliate against the United States could hamper U.S. exports, and mean even more lost American jobs.

**A trade war kills the global economy and escalates to a shooting/hot war**

**Droke, 10** – Editor of the Momentum Strategies Report (3/29/10, Green Faucet, “America and the Next Major War,” <http://www.greenfaucet.com/technical-analysis/america-and-the-next-major-war/79314>)

In the current phase of relative peace and stability we now enjoy, many are questioning when the next major war may occur and speculation is rampant as to major participants involved. Our concern here is strictly of a financial nature, however, and a discussion of the geopolitical and military variables involved in the escalation of war is beyond the scope of this commentary. But what we can divine from financial history is that "hot" wars in a military sense often emerge from trade wars. As we shall see, the elements for what could prove to be a trade war of epic proportions are already in place and the key figures are easily identifiable.

Last Wednesday the lead headline in the Wall Street Journal stated, "Business Sours on China." It seems, according to WSJ, that Beijing is "reassessing China's long-standing emphasis on opening its economy to foreign business....and tilting toward promoting dominant state companies." Then there is Internet search giant Google's threat to pull out of China over concerns of censorship of its Internet search results in that country.

The trouble started a few weeks ago Google announced that it no longer supports China's censoring of searches that take place on the Google platform. China has defended its extensive censorship after Google threatened to withdraw from the country.

Additionally, the Obama Administration announced that it backs Google's decision to protest China's censorship efforts. In a Reuters report, Obama responded to a question as to whether the issue would cloud U.S.-China relations by saying that the human rights would not be "carved out" for certain countries. This marks at least the second time this year that the White House has taken a stand against China (the first conflict occurring over tire imports).

Adding yet further fuel to the controversy, the U.S. Treasury Department is expected to issue a report in April that may formally label China as a "currency manipulator," according to the latest issue of Barron's. This would do nothing to ease tensions between the two nations and would probably lead one step closer to a trade war between China and the U.S.

 Then there was last week's Wall Street Journal report concerning authorities in a wealthy province near Shanghai criticizing the quality of luxury clothing brands from the West, including Hermes, Tommy Hilfiger and Versace. This represents quite a change from years past when the long-standing complaint from the U.S. over the inferior quality of Chinese made merchandise.

On Monday the WSJ ran an article under the headline, "American Firms Feel Shut Out In China." The paper observed that so far there's little evidence that American companies are pulling out of China but adds a growing number of multinational firms are "starting to rethink their strategy." According to a poll conducted by the American Chamber of Commerce in China, 38% of U.S. companies reported feeling unwelcome in China compared to 26% in 2009 and 23% in 2008.

As if to add insult to injury, the high profile trial of four Rio Tinto executives in China is another example of the tables being turned on the West. The executives are by Chinese authorities of stealing trade secrets and taking bribes. There's a touch of irony to this charge considering that much of China's technology was stolen from Western manufacturing firms which set up shop in that country.

It seems China is flexing its economic and political muscle against the West in a show of bravado. Yet one can't help thinking that this is exactly the sort of arrogance that typically precedes a major downfall. As the Bible states, "Pride goeth before destruction, and an haughty spirit before a fall."

In his book, "Jubilee on Wall Street," author David Knox Barker devotes a chapter to how trade wars tend to be common occurrences in the long wave economic cycle of developed nations. Barker explains his belief that the industrial nations of Brazil, Russia, India and China will play a major role in pulling the world of the long wave deflationary decline as their domestic economies begin to develop and grow. "The are and will demand more foreign goods produced in the United States and other markets," he writes. Barker believes this will help the U.S. rebalance from an over weighted consumption-oriented economy to a high-end producer economy.

Barker adds a caveat, however: if protectionist policies are allowed to gain force in Washington, trade wars will almost certainly erupt and. If this happens, says Barker, "all bets are off." He adds, "The impact on global trade of increased protectionism and trade wars would be catastrophic, and what could prove to be a mild long wave [economic] winter season this time around could plunge into a global depression."

Barker also observes that the storm clouds of trade wars are already forming on the horizon as we have moved further into the long wave economic "winter season." Writes Barker, "If trade wars are allowed to get under way in these final years of a long wave winter, this decline will be **far deeper and darker** than necessary, just as the Great Depression was far deeper and lengthier than it should have been, due to growing international trade isolationism.

He further cautions that protectionism in Washington will certainly bring retaliation from the nations that bear the brunt of punitive U.S. trade policies. He observes that the reaction from one nation against the protectionist policies of another is typically far worse than the original action. He cites as an example the restriction by the U.S. of $55 million worth of cotton blouses from China in the 1980s. China retaliated by cancelling $500 million worth of orders for American rain. "As one nation blocks trade, the nation that is hurt will surely retaliate and the entire world will suffer," writes Barker.

**Impact is extinction
Johnson, 1** (5/14/01, The Nation, “Time to Bring the Troops Home,” <http://www.thenation.com/article/time-bring-troops-home>)

In East Asia, the United States maintains massive and expensive military forces poised to engage in everything from nuclear war to sabotage of governments that Washington finds inconvenient (for example, the government of former President Suharto in Indonesia, which in May 1998 the US government helped to bring down via troops its Special Forces had trained). At the beginning of the twenty-first century, the United States still deploys some 100,000 military personnel and close to an equal number of civilian workers and dependents in Japan and South Korea. These forces include the Third Marine Expeditionary Force in Okinawa and Japan; the Second Infantry Division in South Korea; numerous Air Force squadrons in both countries (Kadena Air Force Base in Okinawa is the largest US military installation outside the United States); the Seventh Fleet, with its headquarters in Yokosuka, Japan, patrolling the China coast and anywhere else that it wants to go; and innumerable submarine pens (for example, White Beach, Okinawa), support facilities, clandestine eavesdropping and intelligence-collecting units, Special Forces and staff and headquarters installations all over the Pacific.

From approximately 1950 to 1990, the US government invoked the cold war to justify these so-called forward deployments--actually, in less euphemistic language, imperialist outposts. During the late 1940s, when it became apparent that the Chinese Communist Party was going to win the Chinese civil war, the United States reversed its policy of attempting to democratize occupied Japan and devoted itself to making Japan Washington's leading satellite in East Asia. The United States entered into an informal economic bargain with Japan: In return for Japan's willingness to tolerate the indefinite deployment of US weapons and troops on its soil, the United States would give it preferential access to the American market and would tolerate its protectionism and mercantilism. These were advantages the United States did not extend to its European allies or Latin American neighbors in the cold war.

Oddly enough, this policy is still in effect some fifty-four years after it was first implemented. In return for hosting 40,000 US troops and an equal number of dependents in ninety-one US-controlled bases, Japan still has privileged access to the US economy and still maintains protectionist barriers against US sales and investment in the Japanese market. The overall results of this policy became apparent in the 1970s and led to acute problems for the US economy in the 1980s--namely, huge excess manufacturing capacity in Japan and the hollowing out of US manufacturing industries. The costs for the United States have been astronomical. During the year 2000 alone, it recorded its largest trade deficit ever, of which $81 billion was with Japan. During the mid-1980s, Japan became the world's largest creditor nation and the United States became the world's largest debtor nation, thereby turning upside down the original assumptions on which US economic policies toward Japan were based. But neither the United States nor Japan made any changes in its old trade-for-bases deal, despite occasional and futile protests by US business interests.

Meanwhile, from the point of view of US elites committed to maintaining hegemony on a global basis, the sudden and unpredicted collapse of the Soviet Union in the period 1989 to 1991 was a disaster. They had to find some new justifications for their overseas presence, particularly in East Asia, where Japan's inherent power and the emergence of a commercially oriented China offered implicit challenges to the old American order. Among these justifications, one of the cleverest was the so-called two-war strategy, which requires the US military establishment to be able to fight two large wars on opposite sides of the globe at the same time. The beauty of this formulation is that it avoids specifying which nations might conceivably want to go to war with the United States and ignores the historical fact that in America's most recent wars--Korea, Vietnam, the Persian Gulf and Yugoslavia--no second nation (on the other side of the globe or nearby) challenged it.

More concretely, Pentagon strategists have tried to find replacement enemies for the former USSR by demonizing North Korea and muttering ominously about China's successful transition from a Leninist command economy to a state-guided market system resembling the other successful capitalist countries of East Asia. Until June 2000, North Korea was routinely described as an extremely threatening "rogue state." Then, on the initiative of the South Korean president, the two Koreas began to negotiate their own reconciliation without asking for US permission. The possibility that North and South Korea might achieve some form of peaceful coexistence totally undercuts the main US rationale for a "national missile defense" and a "theater missile defense."

Regardless of which ventriloquist is in charge of him on any given day, George W. Bush shows no sign of comprehending these matters. In March, when South Korean President Kim Dae Jung, last year's winner of the Nobel Peace Prize, visited Washington to ask for help in pursuing his country's rapprochement with the North, the newly designated "leader of the free world" rudely brushed him off. Korea policy has become a plaything of Congressional Republican mastodons, and the Bush White House seems much more interested in pleasing them than in the situation in East Asia. It is easy for the United States to attempt to bully both the North and South Koreas; it has been doing so since 1945.

China is another matter. No sane figure in the Pentagon wants a war with China, and all serious US militarists know that China's minuscule nuclear capacity is not offensive but a deterrent against the overwhelming US power arrayed against it (twenty archaic Chinese warheads versus more than 7,000 US warheads). Taiwan, whose status constitutes the still incomplete last act of the Chinese civil war, remains the most dangerous place on earth. Much as the 1914 assassination of the Austrian crown prince in Sarajevo led to a war that no one wanted, a misstep in Taiwan by any side could bring the United States and China into a conflict that neither wants. Such a war would bankrupt the United States, deeply divide Japan and probably end in a Chinese victory, given that China is the world's most populous country and would be defending itself against a foreign aggressor. More seriously, it could **easily escalate into a nuclear holocaust**.

# 4

The 50 state governments and relevant subnational actors should establish energy financing banks to establish a feed-in tariff that creates long-term purchase contracts for new qualifying facilities that use wind and/or solar power for energy production to ensure a reasonable rate of return.

#### States should establish energy finance banks to do the plan – solves all the case and doesn’t require new spending

**Muro and Berlin, 9/12**/12 – \*senior fellow and policy director of the Metropolitan Policy Program at Brookings AND \*\* Senior Vice President for Policy and Planning, and General Counsel at the Coalition for Green Capital (Mark and Ken, “State Clean Energy Finance Banks: New Investment Facilities for Clean Energy Deployment”, <http://www.brookings.edu/~/media/research/files/papers/2012/9/12%20state%20energy%20investment%20muro/12%20state%20energy%20investment%20muro>)

Given these challenges, states that want to realize the benefits of clean energy deployment should consider a new approach to funding clean energy programs. Specifically, they should investigate the possibility of developing state clean energy finance banks that use limited public dollars and leverage private capital to provide a combination of low-interest rate funding that makes clean energy projects competitive and low-cost 100-percent up-front loans for energy efficiency projects.

Such an approach would address the deployment and diffusion challenges faced by clean energy

technologies while recognizing that federal and state appropriations, tax credits, and other incentives

and subsidies will be sharply diminished in the years ahead because of the budget crisis at all levels of

government. Likewise, the development of such finance entities would address the need for states to

develop a new paradigm for financing strong clean energy and energy efficiency projects as part of a

push to develop strong regional industries.

So-called “clean energy finance banks” or “green banks” are ideally suited to solve the present

problems because they offer a practical way for states to make available leveraged, low-cost financing

for project developers in their states. First, they can be developed out of existing state programs while

bringing into the enterprise the equivalent of substantial new resources given their ability to leverage

funds. Likewise, because the banks would provide debt financing, they would be repaid on their loans,

putting them in the position to borrow funds and to establish revolving loan funds that would provide

funds that could be reinvested without new sources of financing. Furthermore, clean energy finance

banks, if established as independent institutions, would be able to issue revenue bonds without the full

faith and credit of the state and without the restrictions facing states, which have limited borrowing

capacity. Finally, clean energy finance banks could efficiently seek large investors with patient, longterm capital who are seeking a long-term, conservative rate of return, such as pension fund investors.

#### It’s legitimate and politics is a net benefit

**Harvard Law Review, 6** – the author isn’t named but the qualifications are: John M. Olin Fellow in Law, Economics, and Business at Harvard Law School (119 Harv. L. Rev. 1855, “STATE COLLECTIVE ACTION\*”, April, lexis)

Consider now the reasons why states may act collectively. In the simplest terms, collective action may be more desirable than individual state action because it opens a panoply of otherwise unavailable policy choices and may be more desirable than federal action because it allocates power to a better-positioned actor. n12 These advantages may exist **[\*1859]** because regional organizations have better information, are better positioned to act on that information, or avoid duplicative costs or coordination problems. n13 Also, collective action may be desirable politically because it may make certain programs either more or less politically salient. n14 Similarly, political actors may want to act collectively because doing so spreads or diversifies political risk. n15 Lastly, collective action may provide opportunities for economies of scale or rent-seeking behavior that states cannot achieve independently. n16

Some brief examples of how states may act collectively illustrate the importance of the topic. n17 As in the stylized examples, states may act collectively to reduce pollution. Groups of states also could develop plans to use common reserves of natural resources, including oil fields or aquifers that cross state lines, or plans to allocate the use of rivers, lakes, forests, or other natural resources. They may also regulate wildlife that lives in multiple states, either to protect that wildlife or to use it for commercial purposes. States may take similar action to regulate or allocate energy or to develop interstate transit infrastructure, such as highways, rail lines, or regional airports. States may regulate the production or distribution of goods or create economic development organizations organized either geographically or by some other trait, such as agricultural or oil and gas production. They also may wish to regulate certain industries or set labor standards in common ways or may wish to regulate products commonly by adopting similar production standards or tort rules. As a final example - although one can imagine many other motivations for state collective action - states may collectivize to provide better social welfare or governmental insurance programs.

# 5

#### The United States federal government should implement a policy mandating a shift from Portland cement to magnesium carbonate-based cement in 80% of total cement use. The United States federal government should fully fund the construction of 250,000 synthetic trees designed for the capture of carbon dioxide.

#### Eco-cement solves global warming

**New Scientist July 13, 2002** (Green Foundations; It's Time To Make The Concrete Jungle Emulate The Real Thing, Fred Pearce. <http://www.laleva.cc/environment/rainforest.html>)

The Kyoto Protocol was a good effort", says Harrison " but it got things wrong when it assumed that trees were the only things that could absorb carbon from the air." Instead, he wants to replace the ubiquitous Portland cement with a substance that he calls 'eco-cement'. "This magnesium based material," he says,"could be cheaper to manufacture than Portland cement, more durable and soaks up CO2 as well," and, cIaims Harrison, "if the building industry listens, cities and their suburbs could turn into sinks for C02, as effective as, for example, the naturaI grass and woodland they replaced". Our modern world is largely built of Portland cement, invented almost 180 years ago by a Yorksbire stonemason called Joseph Aspdin. In 1824, he obtained a patent for "an improvement in the modes of producing artificial stone" that involved roasting chalk and clay in a kiln, grinding the resulting 'clinker' into a fine powder containing mainly calcium silicates and mixing it with water. This starts a complex chemical reaction that forms crystals of calcium silicate hydrate, for example, which hardens the mix. The 19th century was a time when the great cities of Britain were under construction, and many other inventors were working on artificial stone. But Aspdin cracked the problem by subjecting the ingredients to the ultra-high temperatures of a glassmaker's kiln in his home town of Hunslet. He called the product Portland cement because of its resemblance to the most popular natural stone of the day, from the Isle of Portland in Dorset. Portland cement proved cheap to make and immensely versatile, and soon became the basic ingredient of both cement and mortar, the building blocks of every city on the planet. Every year, some 1.7 billion tonnes of Portland cement are now produced worldwide, a staggering quarter of a tonne for every 6 person on Earth. But there's a problem. The manufacture of Portland cement produces massive amounts of CO2. This is partly because of the huge amounts of energy required to raise temperatures inside cement kilns to the 1450 0 C needed to roast the calcium carbonate (from chalk or limestone. And it's also because the process of conversion itself creates CO2. For every tonne of Portland cement emerging from the kilns, roughly a tonne of CO2 gas escapes into the atmosphere. Cement manufacture is responsible for around 7 percent of total man-made CO2 emissions worldwide, a figure that rises above 10 percent in fast-developing countries such as China, which currently manufactures one in every three tonnes of cement made around the world. If we mean to control global warming this situation can't go on. And, says Harrison, it need not.

#### One synthetic tree solves the carbon emission equivalent of 15,000 cars

**BBC News 3** [February 21, 2003, “Synthetic trees could purify air”]

|  |
| --- |
|  |

A scientist has invented an artificial tree designed to do the job of plants. But the synthetic tree proposed by Dr Klaus Lackner does not much resemble the leafy variety. "It looks like a goal post with Venetian blinds," said the Columbia University physicist, referring to his sketch at the annual meeting of the American Association for the Advancement of Science in Denver, Colorado. But the synthetic tree would do the job of a real tree, he said. It would draw carbon dioxide out of the air, as plants do during photosynthesis, but retain the carbon and not release oxygen. If built to scale, according to Dr Lackner, synthetic trees could help clean up an atmosphere grown heavy with carbon dioxide, the most abundant gas produced by humans and implicated in climate warming. He predicts that one synthetic tree could remove 90,000 tonnes of CO2 in a year - the emissions equivalent of 15,000 cars. "You can be a thousand times better than a living tree," he said

# 6

**Text: The President of the Unites States of America should require that the White House Office of Science and Technology Policy develop and coordinate a comprehensive strategy to prepare for a solar storm that includes: expanding funding and accelerate research and development of next-generation power conversion technologies, and investments in smart grid technologies, automated protective mechanisms and voltage stabilization systems.**

**The smart grid, automated responses, and voltage stabilization solve response time, response effectiveness, and recovery from a solar storm**

**Sovacool** **11** (May 2011, Benjamin K. Sovacool, prof of Public Policy, PhD in Science and Technology Studies, and Christopher Cooper, Prof of Political Science and Public Affairs, Ph.D in Political Science, Director of the Public Policy Institute, The Electricity Journal, Volume 24, Issue 4, Pages 47-61 “Not Your Father's Y2K: Preparing the North American Power Grid for the Perfect Solar Storm,” http://www.sciencedirect.com/science/article/pii/S1040619011000972#sec0040)

D. Use smarter grid technologies to improve situational awareness As the bulk transmission system expands in size and complexity, system operators face conditions that are more difficult to anticipate, model, and counter. While many utilities have spent substantial amounts installing phasor measurement units (PMU) and collecting real-time data on system status, this torrent of data can overwhelm many operators. As more data is produced and disseminated, it creates a challenge for operators to find the bits that they need and process them quickly enough to make prudent decisions.48 And once they have formulated a plan of action, most operators are limited to using conventional power flow controls employing mechanical switches that are slow, inflexible, and vulnerable to wear.49 Improving situational awareness would allow system operators to react more quickly to threats from solar storms and other geomagnetic disturbances. The more rapidly system operators can intervene, the more likely that they can avert a blackout.50 Under some emergency situations, even the most seasoned system operator has limits. Researchers at Carnegie Mellon University have built models that reveal that advanced automatic control systems that communicate with one another independent of the operator can respond more effectively.51 Quick response may be critical in preventing a minor outage from becoming a major blackout. An improved ability to respond more quickly using more complex system information significantly increases system resiliency and could substantially mitigate the impacts of a severe solar storm.52 E. Expand automatic protective mechanisms Currently, special operational schemes designed to protect the grid lack the ability to adapt as a solar event is affecting different parts of the system.53 A smarter grid is capable of data analysis and near-real-time coordination of control actions that could provide greater protection during a massive geomagnetic disturbance, especially if organized on a regional or national scale. For some time, grid operators have employed a triage approach to widespread system failure, including removing or sacrificing small portions of the system to save the whole.54 Some regional system operators, for example, have turned to emergency load shedding as a mechanism to protect networks from system disturbances. Selective load shedding is a utility's method of reducing demand on the transmission system by temporarily switching off the distribution of electricity to specific customers. The utility pays customers that are willing to have their service interrupted during a grid emergency. Facing rolling blackouts in 2007, ERCOT, for example, developed an Emergency Interruptible Load Shedding (EILS) program that pays qualified customers to power down during an emergency that threatens the ERCOT grid.55 Still, participation in contracted load shedding schemes is limited, typically representing less than 5 percent of a system's peak load.56 Additionally, most emergency load shedding still relies on a relatively slow process, with system operators conferring to decide whether to deploy emergency interruptible loads and calling qualified customers, who then have a set period of time from receiving the call to contact relevant personnel with instructions to power down.57 This process is inherently slow, unreliable and dependent on communications systems that are themselves at risk during a major solar storm. Recently, utilities have experimented with smart grid components like intelligent feeder switches and real-time protective devices that can isolate faults and switch to on-site electrical storage devices or distributed generation units without needing to wait for supervisory control and data acquisition (SCADA) commands from network control centers. This technique, known as dynamic islanding, generally has been used in areas with frequent electrical outages, where load centers are fed by older lines and aging infrastructure or areas where dense vegetation can come into contact with electrical lines and cause transmission interruptions.58 But the expansion of advanced metering infrastructure (AMI) could make dynamic islanding a more practical method for reacting to system-wide disturbances by automating the process of remotely managing customer loads. Given sufficient development and deployment of AMI, utilities will be able to create islands at will. Thus, critical loads such as hospitals, police stations, water treatment facilities, transportation fuel distribution nodes, and control centers themselves can maintain power while the system strategically reduces power flows to less critical load centers.59 Improved automation that allows more strategic dynamic islanding is especially critical in preventing secondary impacts to interdependent systems.60 Dynamic islanding of critical infrastructure minimizes the time needed to restore the system, mitigates secondary effects, and increases survivability.61 Early deployment of smart grid components and prepositioning of distributed generation, if planned carefully, also can benefit utilities beyond safeguarding critical infrastructure. Dynamic islanding can provide an immediate fix for a problematic network or short-term extension of a portion of an aging network, allowing utilities to defer capital investments until they are more convenient or fiscally imperative.62 A smarter grid provides utilities and system operators with a better way to implement emergency load shedding and dynamic islanding in response to severe solar storms. It would harness modern communication and IT infrastructures to provide instantaneous bi-directional communication among control centers and grid components. A smarter grid can process vast numbers of data transactions and deliver sub-second responses to system components designed to implement emergency load shedding more quickly and strategically.63 When alerted to an approaching solar storm, control rooms could launch computer models that simulate the path of induced currents under specific conditions. These simulations can help system operators identify the most vulnerable assets and determine a strategic load shedding scheme to protect them. The smart grid can then communicate automatically to begin powering down interruptible loads and commanding connected assets to take protective measures. By facilitating an automated and dynamic response, a smarter grid could react more quickly to protect only vulnerable assets while maintaining optimal service (under the circumstances) to critical load centers. This faster and more dynamic response ensures less service interruption during a severe solar storm and far less recovery after one. F. Automate voltage stabilization Voltage stability is critical to preventing transformer losses from triggering cascading voltage collapse that risks bringing down large portions of the bulk power grid. Typically, operators regulate voltage control devices with locally available measurements of voltage and current. On lines with multiple voltage regulation and VAR compensation devices, each device is controlled independently without regard for the resulting consequences of action taken by other control devices. This can lead to problems when trying to regulate large voltage fluctuations within a geographically broad area.64 Smart grid applications allow voltage and VAR control devices to share information and evaluate comprehensive control strategies automatically to optimize voltage stabilization during a crisis. Accelerated adoption of substation and feeder automation technology, coupled with the widespread deployment of AMI, would lay the groundwork for automated control systems to optimize voltage control in real time. Recent innovations in contingency modeling in complex networks holds the promise of rapidly identifying optimal voltage and VAR operation strategies from millions, if not billions, of operational possibilities.65 G. Invest in domestic manufacturing of system components As part of this comprehensive strategy to prepare for a severe solar storm, the federal government should pursue efforts to bring more of the supply chain and manufacturing base for critical system components like transformers, shunt capacitors, and static VAR compensators back to the United States. In addition, the government should expand funding and accelerate research and development of next-generation power conversion technologies like gallium nitride transformers that can increase efficiency while providing greater capacity to withstand large DC currents induced by solar storms.66 This research not only would help to jump-start a domestic component industry, it would ensure that spare parts and key system technologies are more available in the event of a severe solar storm. H. Coordinate policy action The SWPC is the only governmental entity charged with coordinating space weather forecasting. But there is no single agency responsible for coordinating space weather information across agencies, reporting actionable alerts to affected industries, and overseeing a system-wide emergency response. Responsibility for various aspects of CME preparedness is scattered throughout the U.S. federal government. Consequently, affected industries rely on data haphazardly gleaned from multiple government offices, foreign governments, international agencies, and the private sector.67 The SWPC should be charged with developing, in consultation with public and private sector stakeholders, an action plan to deliver by 2012 accurate near-real-time alerts and short- and long-term space weather forecasts. However, to ensure that all of these recommendations are adopted as part of a comprehensive strategy to prepare the North American bulk power system for a severe solar storm, we propose that Congress or the President require the White House Office of Science and Technology Policy (OSTP) to develop a plan for coordinating accurate, sustainable operational measurements of solar activity through a central office with operational authority to issue comprehensive forecasts and alerts and to coordinate emergency response across affected utilities and the multiple jurisdictions and government agencies already charged with regulating critical infrastructure. The SWPC operates with a very small and unpredictable annual budget of less than $6 million (and modest additional funding from the United States Air Force for data preparation associated with selected operations). The National Research Council has characterized this insubstantial appropriation as “more reflective of a research and development (R&D) enterprise than an operational enterprise with real-time national space weather prediction responsibility.”68 Despite benefiting directly from SWPC's modeling and forecasting reports, the other six agencies that participate in the National Space Weather Program (NSWP) – NASA, the Department of Commerce, the National Science Foundation, the Department of the Interior, the Department of Energy, and the Department of State – currently do not contribute to SWPC's operating budget. Congress should fully fund SWPC either through a dedicated appropriation or annual permanent funding from each of the participating agencies, or both. This funding should reflect the important role the Center will assume in preparing the nation for a potential electrical catastrophe. V. Conclusion President Jimmy Carter once wrote that the United States either could develop a national energy policy in an “intuitive and planned way,” or reactively when “forced to” by “chaos” and the “laws of nature.”69 Given the likelihood that the nation (indeed the planet) will face a severe solar storm with potentially devastating consequences,70 his comments suggest that we have a rare opportunity to avoid, or at least mitigate, impending disaster through careful planning and preparation. The history of past solar storms—events inducing telegraphs to catch fire in 1859 and causing the Canadian grid to collapse in 1989—should be enough to convince readers of the vulnerability of our transmission lines, transformers, and voltage controls to solar activity. Rather than react, however, planners and system operators can respond proactively by strengthening NERC reliability standards to incorporate the probability of solar storms and by making investments in more reliable near-term space weather forecasts. An active solar storm early warning and alert system would help warn system operators before an event and coordinate responses after it. Perhaps most significantly, investments in smart grid technologies, automated protective mechanisms and voltage stabilization systems (and their domestic manufacture) simultaneously would improve grid resiliency and efficiency. Institutionally, the Space Weather Prediction Center should be better funded and the White House Office of Science and Technology Policy should develop an action plan for handling a serious solar storm. While it may be difficult during this time of fiscal austerity to imagine devoting substantial funds to a threat that we have never had to face, a comprehensive plan to prepare for a severe solar storm will cost far less now than will addressing the catastrophic impacts to the North American electricity grid when the perfect solar storm finally arrives.

# 1nc warming

#### Turn – plan causes emissions and air pollution

Zycher 11 – visiting scholar at AEI (Benjamin, April 20, 2011, “The Folly of Renewable Electricity,” AEI, <http://www.aei.org/article/energy-and-the-environment/alternative-energy/the-folly-of-renewable-electricity/>)

These are among the reasons that the EIA estimates that wind and solar power cost 100-300 percent more than conventional power. This is consistent with a recent finding by Professor Constant Tra that each percentage-point increase in a renewable requirement raises commercial and residential rates by 4-10 percent. The proponents' claim that the 33 percent requirement will increase costs by only 7 percent is a pipe dream.¶ A cleaner environment is worth it, you say? Not so fast. As counterintuitive as it may seem, increased reliance on wind and solar power will hurt the environment, not because of such phony issues as endangered cockroaches, used by the environmental left as a tool with which to obstruct the renewable energy projects that they claim to support. Instead, this damage will be real, in the form of greater air pollution. The conventional generators needed to back up the unreliable wind and solar production will have to be cycled up and down because the system operators will be required to take wind and solar generation when it is available. This means greater operating inefficiency and more emissions. That is precisely what a recent engineering study of the effects of renewables requirements found for Colorado and Texas.

#### Solar power development destroys the environment – causes warming and kills biodiversity

**Pizzo 11** – JD from the University of Colorado, attorney for the National Wildlife Federation (“When Saving the Environment Hurts the Environment: Balancing Solar Energy Development with Land and Wildlife Conservation in Warming Climate,” HeinOnline legal search engine)

Land Use and Ecosystem/Habitat Disturbance¶ Development of large-scale solar projects transforms the lands on which they are constructed and precludes most other uses.69 When used to generate electricity on a commercial scale, solar energy facilities require large tracts of land.70 The land requirements for CSP systems are approximately ﬁve to ten acres of land per megawatt of capacity." Thus, a single utility-scale solar plant may occupy up to forty-ﬁve square miles, or nearly 29,000 acres." To prepare land for construction of asolar facility, the ground is scraped and, when necessary, re-contoured to produce a level building site void of all vegetation. In addition, many existing utility-scale facilities have a regular program of herbicide application to keep the area under the collection devices tree of any growth that may block sunlight from reaching the mirrors.”¶ Furthermore, due to the size of utility-scale solar project areas and the extent of landscape disturbance, restoration and reclamation of the project site may not be feasible with current technology."¶ Construction, maintenance, and operation of utility-scale solar plants can have severe impacts on wildlife through direct habitat destruction and habitat fragmentation. Habitat destruction begins when the land within the solar collection ﬁeld is scraped in preparation for construction. The site remains unsuitable for wildlife for the life of the project because the large ﬁelds of solar collectors interfere with natural sunlight, rainfall, and drainage at the facility, causing microclimate alteration." For example, mirrors shield the ground from sunlight and wind, which reduces temperature and decreases wind speed and evapotranspiration beneath the reﬂecting mirrors." As one botanist has noted, “nothing will live under the mirrors?” Construction and maintenance activities also alter the composition, structure, and microclirnate of the land adjacent to the facility." In addition, the reﬂected light in solar-collecting ﬁelds may be increased from thirty percent to ﬁfty-six percent, super-heating the air above and around solar facilities.” These effects are compounded at large facilities due to the number of mirrors that cover and cool the ground while simultaneously reﬂecting light and heating the air. These habitat alterations have direct and indirect effects on wildlife, which may cause shifts in various plant and animal populations.”¶ Ecosystem disturbance and destruction are especially signiﬁcant to local organisms that rely on a limited area for sustenance." “Such species often have access to a particular resource in only one area and unless they abandon historical breeding or wintering grounds, [they are] unlikely to ﬁnd a replacement for the resource?” In addition, construction of solar facilities, roads, and transmission corridors causes habitat fragmentation, which forces wildlife to live on ever-shrinking islands of habitat where it is more difficult for them to ﬁnd food, water, shelter, mates, and protection from predators." Solar development may also affect migratory populations by cutting off migration corridors and eliminating staging grounds.“ Habitat fragmentation and migration disruption combine to limit genetic diversity by decreasing available mates and encouraging inbreeding. As a result, wildlife populations become more susceptible to extinction in the event of catastrophic events such as wildﬁre and disease. Thus, habitat fragmentation inevitably leads to smaller populations of wildlife, and threatens biodiversity by increasing the possibility of extinction for entire populations or species.”

#### Warming’s irreversible

**Solomon et al ‘10** Susan Solomon et. Al, Chemical Sciences Division, Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Ph.D. in Climotology University of California, Berkeley, Nobel Peace Prize Winner, Chairman of the IPCC, Gian-Kasper Plattner, Deputy Head, Director of Science, Technical Support Unit Working Group I, Intergovernmental Panel on Climate Change Affiliated Scientist, Climate and Environmental Physics, Physics Institute, University of Bern, Switzerland, John S. Daniel, research scientist at the National Oceanic and Atmospheric Administration (NOAA), Ph.D. in physics from the University of Michigan, Ann Arbor, Todd J. Sanford, Cooperative Institute for Research in Environmental Science, University of Colorado Daniel M. Murphy, Chemical Sciences Division, Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder Gian-Kasper Plattner, Deputy Head, Director of Science, Technical Support Unit Working Group I, Intergovernmental Panel on Climate Change, Affiliated Scientist, Climate and Environmental Physics, Physics Institute, University of Bern, Switzerland Reto Knutti, Institute for Atmospheric and Climate Science, Eidgenössiche Technische Hochschule Zurich and Pierre Friedlingstein, Chair, Mathematical Modelling of Climate Systems, member of the Science Steering Committee of the Analysis Integration and Modeling of the Earth System (AIMES) programme of IGBP and of the Global Carbon Project (GCP) of the Earth System Science Partnership (ESSP) (Proceedings of the National Academy of the Sciences of the United States of America, "Persistence of climate changes due to a range of greenhouse gases", October 26, 2010 Vol 107.43: 18354-18359)

Carbon dioxide, methane, nitrous oxide, and other greenhouse gases increased over the course of the 20th century due to human activities. The human-caused increases in these gases are the primary forcing that accounts for much of the global warming of the past fifty years, with carbon dioxide being the most important single radiative forcing agent (1). Recent studies have shown that the human-caused warming linked to carbon dioxide is nearly irreversible for more than 1,000 y, even if emissions of the gas were to cease entirely (2–5). The importance of the ocean in taking up heat and slowing the response of the climate system to radiative forcing changes has been noted in many studies (e.g., refs. 6 and 7). The key role of the ocean’s thermal lag has also been highlighted by recent approaches to proposed metrics for comparing the warming of different greenhouse gases (8, 9). Among the observations attesting to the importance of these effects are those showing that climate changes caused by transient volcanic aerosol loading persist for more than 5 y (7, 10), and a portion can be expected to last more than a century in the ocean (11–13); clearly these signals persist far longer than the radiative forcing decay timescale of about 12–18 mo for the volcanic aerosol (14, 15). Thus the observed climate response to volcanic events suggests that some persistence of climate change should be expected even for quite short-lived radiative forcing perturbations. It follows that the climate changes induced by short-lived anthropogenic greenhouse gases such as methane or hydrofluorocarbons (HFCs) may not decrease in concert with decreases in concentration if the anthropogenic emissions of those gases were to be eliminated. In this paper, our primary goal is to show how different processes and timescales contribute to determining how long the climate changes due to various greenhouse gases could be expected to remain if anthropogenic emissions were to cease. Advances in modeling have led to improved AtmosphereOcean General Circulation Models (AOGCMs) as well as to Earth Models of Intermediate Complexity (EMICs). Although a detailed representation of the climate system changes on regional scales can only be provided by AOGCMs, the simpler EMICs have been shown to be useful, particularly to examine phenomena on a global average basis. In this work, we use the Bern 2.5CC EMIC (see Materials and Methods and SI Text), which has been extensively intercompared to other EMICs and to complex AOGCMs (3, 4). It should be noted that, although the Bern 2.5CC EMIC includes a representation of the surface and deep ocean, it does not include processes such as ice sheet losses or changes in the Earth’s albedo linked to evolution of vegetation. However, it is noteworthy that this EMIC, although parameterized and simplified, includes 14 levels in the ocean; further, its global ocean heat uptake and climate sensitivity are near the mean of available complex models, and its computed timescales for uptake of tracers into the ocean have been shown to compare well to observations (16). A recent study (17) explored the response of one AOGCM to a sudden stop of all forcing, and the Bern 2.5CC EMIC shows broad similarities in computed warming to that study (see Fig. S1), although there are also differences in detail. The climate sensitivity (which characterizes the long-term absolute warming response to a doubling of atmospheric carbon dioxide concentrations) is 3 °C for the model used here. Our results should be considered illustrative and exploratory rather than fully quantitative given the limitations of the EMIC and the uncertainties in climate sensitivity. Results One Illustrative Scenario to 2050. In the absence of mitigation policy, concentrations of the three major greenhouse gases, carbon dioxide, methane, and nitrous oxide can be expected to increase in this century. If emissions were to cease, anthropogenic CO2 would be removed from the atmosphere by a series of processes operating at different timescales (18). Over timescales of decades, both the land and upper ocean are important sinks. Over centuries to millennia, deep oceanic processes become dominant and are controlled by relatively well-understood physics and chemistry that provide broad consistency across models (see, for example, Fig. S2 showing how the removal of a pulse of carbon compares across a range of models). About 20% of the emitted anthropogenic carbon **remains in the atmosphere for** many **thousands of years** (with a range across models including the Bern 2.5CC model being about 19 4% at year 1000 after a pulse emission; see ref. 19), until much slower weathering processes affect the carbonate balance in the ocean (e.g., ref. 18). Models with stronger carbon/climate feedbacks than the one considered here could display larger and more persistent warmings due to both CO2 and non-CO2 greenhouse gases, through reduced land and ocean uptake of carbon in a warmer world. Here our focus is not on the strength of carbon/climate feedbacks that can lead to differences in the carbon concentration decay, but rather on the factors that control the climate response to a given decay. The removal processes of other anthropogenic gases including methane and nitrous oxide are much more simply described by exponential decay constants of about 10 and 114 y, respectively (1), due mainly to known chemical reactions in the atmosphere. In this illustrative study, we do not include the feedback of changes in methane upon its own lifetime (20). We also do not account for potential interactions between CO2 and other gases, such as the production of carbon dioxide from methane oxidation (21), or changes to the carbon cycle through, e.g., methane/ozone chemistry (22). Fig. 1 shows the computed future global warming contributions for carbon dioxide, methane, and nitrous oxide for a midrange scenario (23) of projected future anthropogenic emissions of these gases to 2050. Radiative forcings for all three of these gases, and their spectral overlaps, are represented in this work using the expressions assessed in ref. 24. In 2050, the anthropogenic emissions are stopped entirely for illustration purposes. The figure shows nearly irreversible warming for at least 1,000 y due to the imposed carbon dioxide increases, as in previous work. **All published studies to date**, which use multiple EMICs and one AOGCM, show largely irreversible warming due to future carbon dioxide increases (to within about 0.5 °C) on a timescale of at least 1,000 y (3–5, 25, 26). Fig. 1 shows that the calculated future warmings due to anthropogenic CH4 and N2O also persist notably longer than the lifetimes of these gases. The figure illustrates that emissions of key non-CO2 greenhouse gases such as CH4 or N2O could lead to warming that both temporarily exceeds a given stabilization target (e.g., 2 °C as proposed by the G8 group of nations and in the Copenhagen goals) and remains present longer than the gas lifetimes even if emissions were to cease. A number of recent studies have underscored the important point that reductions of non-CO2 greenhouse gas emissions are an approach that can indeed reverse some past climate changes (e.g., ref. 27). Understanding how quickly such reversal could happen and why is an important policy and science question. Fig. 1 implies that the use of policy measures to reduce emissions of short-lived gases will be less effective as a rapid climate mitigation strategy than would be thought if based only upon the gas lifetime. Fig. 2 illustrates the factors influencing the warming contributions of each gas for the test case in Fig. 1 in more detail, by showing normalized values (relative to one at their peaks) of the warming along with the radiative forcings and concentrations of CO2 , N2O, and CH4 . For example, about two-thirds of the calculated warming due to N2O is still present 114 y (one atmospheric lifetime) after emissions are halted, despite the fact that its excess concentration and associated radiative forcing at that time has dropped to about one-third of the peak value.

#### No extinction – empirically denied

**Carter 11–** Robert, PhD, Adjuct Research Fellow, James Cook University, Craig Idso, PhD, Chairman at the Center for the Study of Carbon Dioxide and Global Change, Fred Singer, PhD, President of the Science and Environmental Policy Project, Susan Crockford, evolutionary biologist with a specialty in skeletal taxonomy , paleozoology and vertebrate evolution, Joseph D’Aleo, 30 years of experience in professional meteorology, former college professor of Meteorology at Lyndon State College, Indur Goklany, independent scholar, author, and co-editor of the Electronic Journal of Sustainable Development, Sherwood Idso, President of the Center for the Study of Carbon Dioxide and Global Change, Research Physicist with the US Department of Agriculture, Adjunct Professor in the Departments of Geology, Botany, and Microbiology at Arizona State University, Bachelor of Physics, Master of Science, and Doctor of Philosophy, all from the University of Minnesota, Madhav Khandekar, former research scientist from Environment Canada and is an expert reviewer for the IPCC 2007 Climate Change Panel, Anthony Lupo, Department Chair and Professor of Atmospheric Science at the University of Missouri, Willie Soon, astrophysicist at the Solar and Stellar Physics Division of the Harvard-Smithsonian Center for Astrophysics, Mitch Taylor (Canada) (March 8th, “[Surviving](file:///C%3A%5CUsers%5CMarc%5CDesktop%5CSurviving) the Unpreceented Climate Change of the IPCC” <http://www.nipccreport.org/articles/2011/mar/8mar2011a5.html>) Jacome

On the other hand, they indicate that some biologists and climatologists have pointed out that "many of the predicted increases in climate have happened before, in terms of both magnitude and rate of change (e.g. Royer, 2008; Zachos *et al*., 2008), and yet biotic communities have remained remarkably resilient (Mayle and Power, 2008) and in some cases thrived (Svenning and Condit, 2008)." But they report that those who mention these things are often "placed in the 'climate-change denier' category," although the purpose for pointing out these facts is simply to present "a sound scientific basis for understanding biotic responses to the magnitudes and rates of climate change predicted for the future through using the vast data resource that we can exploit in fossil records." Going on to do just that, Willis *et al*. focus on "intervals in time in the fossil record when atmospheric CO2 concentrations increased up to 1200 ppm, temperatures in mid- to high-latitudes increased by greater than 4°C within 60 years, and sea levels rose by up to 3 m higher than present," describing studies of past biotic responses that indicate "the scale and impact of the magnitude and rate of such climate changes on biodiversity." And what emerges from those studies, as they describe it, "is evidence for rapid community turnover, migrations, development of novel ecosystems and thresholds from one stable ecosystem state to another." And, most importantly in this regard, they report "there is very little evidence for broad-scale extinctions due to a warming world." In concluding, the Norwegian, Swedish and UK researchers say that "based on such evidence we urge some caution in assuming broad-scale extinctions of species will occur due solely to climate changes of the magnitude and rate predicted for the next century," reiterating that "the fossil record indicates remarkable biotic resilience to wide amplitude fluctuations in climate.

**No mechanisms for release and no impact
Archer, 5** (David, Dept. Geophysical Sciences @ U. Chicago, ?Methane hydrates and anthropogenic climate change?, http://geosci.uchicago.edu/~archer/reprints/archer.ms.hydrate\_rev.pdf)

We have defined a catastrophic methane release as one which occurs on a time scale that is short relative to the atmospheric lifetime of methane, about a decade, generating a spike in atmospheric methane concentration that lasts about a decade. Methane has a stronger impact on the radiative balance of the earth, per molecule, than CO2, because of its lower concentration. The nightmare scenario would be the catastrophic release of a large fraction of the thousands of Gton C in the ocean hydrate reservoir. No one has proposed a mechanism by which such a nightmare catastrophe could take place. The largest landslide in the sea floor record appears to be the Storegga slide deposits off the coast of Norway. This slide could have released about 1 Gton C of methane. Perhaps half of the methane in sediments exists as bubbles, the other half as hydrate [Davie and Buffett, 2001]. Bubbles have a small chance of escaping to the atmosphere, unless they are released in shallow water, as for example in the Siberian margin [Shakhova et al., 2005]. Even if 1 Gton C of methane reached the atmosphere catastrophically, the climate impact of this would be relatively small.

**Resource wars won’t escalate to great power conflict**

**Dombrowski 4** – associate professor, US Naval War College's Strategic Research Department (Peter, Naval War College Review, http://findarticles.com/p/articles/mi\_m0JIW/is\_1\_57/ai\_113755359/print)

Unfortunately, Klare barely pauses to consider the possibility that diplomatic, economic, and political developments might ease potential resource conflicts before they escalate into armed conflicts. After all, countries fighting over access to water or oil could simply negotiate arrangements or allow market forces to dictate outcomes; the author himself notes examples and cases where diplomatic solutions have succeeded in the past. In fact, the absence of economic reasoning in this book is startling. After all, economists from cranks to countless mainstream professionals have demonstrated how market forces can help manage the worst aspects of resource shortages. Thus energy shortages that lead to price increases in turn encourage consumers to conserve; consumption is reduced, as well as overall dependence. Hence, despite tremendous economic growth, Western Europe, Japan, and even the United States have become much more energy efficient since the oil shock of the 1970s. Substitution effects are also possible, although perhaps not for a resource as fundamental and elemental as water.

#### Natural gas solves global food insecurity

Stan Cox (senior scientist at the Land Institute in Salina, Kansas and a member of the Institute's Prairie Writers Circle) October 2005 “Hunger For Natural Gas” http://www.alternet.org/story/26703/hunger\_for\_natural\_gas?page=0%2C1&paging=off

A chronic gap between supply and demand would mean plenty of hardship in the United States and Europe, which have come to rely on natural gas not only for heat, but increasingly for electricity generation and manufacturing. But the future looks even more grim in the global South, where the maintenance of human life itself has come to depend on the steady and reliable supply of natural gas that's needed to synthesize nitrogen fertilizer for food production. Turn off the gas, and a lot of American families would have a hard time cooking dinner -- but a lot of families in places like Nepal and Guatemala would have nothing to cook. Nitrogen and human existence Crop plants assemble carbon, hydrogen, oxygen and nitrogen into proteins that are essential both to plant growth and to the diets of humans and other animals. Of those four elements, nitrogen is the one that's too often in short supply. If you see yellowish, stunted crops, whether they're in an Indiana cornfield or an Indonesian rice paddy, it's likely that you can blame it on a lack of nitrogen. A world of 6.4 billion people, on the way to 9 billion or more, needs more protein than the planet's croplands can generate from biologically provided nitrogen. Our species has become as physically dependent on industrially produced nitrogen fertilizer as it is on soil, sunshine and water. And that means we're hooked on natural gas. Vaclav Smil, distinguished professor at the University of Manitoba and author of the 2004 book Enriching the Earth: Fritz Haber, Carl Bosch and the Transformation of World Food Production, has demonstrated the global food system's startling degree of dependence on nitrogen fertilization. Using simple math -- the kind you can do in your head if there's no calculator handy -- Smil showed that 40 percent of the protein in human bodies, planet-wide, would not exist without the application of synthetic nitrogen to crops during most of the 20th century. That means that without the use of industrially produced nitrogen fertilizer, about 2.5 billion people out of today's world population of 6.2 billion simply could never have existed. If farming depended solely on naturally occurring and recycled nitrogen fertility, the planet's cropped acreage could feed only about 50 percent of the human population at today's improved nutrition levels, according to Smil. But absolute dependence on synthetic nitrogen is geographically lopsided -- it's largely in countries with a high human-cropland ratio that survival hinges on nitrogen fertilizer. This includes India, Indonesia, and China, where four in 10 human beings on Earth reside. In contrast, those countries lucky enough to have ample cropland and relatively low population density could survive on far less synthetic nitrogen than they currently use. The nation that ranks as the world's third biggest nitrogen fertilizer consumer could, conceivably, get by without the stuff. If that country, the United States, were to moderate its meat consumption, raise all livestock on pasture and rangeland instead of nitrogen-wasting grains, rely more on legume crops (plants like beans and alfalfa that obtain nitrogen from the air with the help of bacteria), curb waste and cut food exports, it could maintain its food supply without using any synthetic nitrogen at all, according to Smil's calculations. The momentum of past population growth is expected to add two to four billion people to the world's population by 2050, even with concerted efforts to rein in growth. Almost all of the increase will occur in Africa, Asia, Latin America and the Middle East. That will double the demand for nitrogen fertilizer in those regions, and by that time, says Smil, 60 percent of their inhabitants will depend existentially (in the literal sense, not the philosophical one) on natural gas-derived nitrogen fertilizer. Danger: Flammable Ironically, in that vast volume between the earth's surface and the atmosphere's upper limits, nitrogen is the most abundant element. We're continuously bathed in nitrogen gas, which makes up 78 percent of the air we breathe. But in the air, nitrogen atoms are paired up, each atom linked to another by an extremely tight molecular bond. Those molecules can't be used by living organisms unless that bond is broken, and only a small number of single-celled species have developed a means to do that biologically. To pry nitrogen atoms apart chemically requires intense energy; it happens, for example, around a bolt of lightning. So it was not until 1909 that humans developed an industrial-scale method, called the Haber-Bosch process after its German inventors, to reassemble nitrogen atoms into another molecule, ammonia, that is usable by crop plants. The two essential inputs to the Haber-Bosch process are air, which is free, and natural gas, which is expensive and becoming more so. Therefore, to extend Vaclav Smil's reasoning, 40 percent (soon to be 60 percent) of the Earth's inhabitants owe their survival to natural gas, a non-renewable fossil fuel. And if Julian Darley is right, a species that can't survive without natural gas is a species in big trouble. Darley is author of the 2004 book, "High Noon for Natural Gas," in which he argues that the era of cheap and plentiful gas, like that of cheap oil, is coming to a close. Humans began tapping the Earth's deposits of oil and natural gas a little over a century ago. We've been exhausting the planet's oil reserves more quickly than gas reserves, because oil is easier to pump, transport and use. The planet's gas endowment will last longer, but the world is now using more each year than is being discovered -- an ominous sign. Accelerated consumption across the globe, says Darley, will continue to drive up natural gas prices, deplete reserves, and trigger chronic shortages. In a world where growing energy demand has begun to run up against environmental limits, gas is almost too good to be true, and, it seems, too good to leave in the ground. For instance: Countries trying to meet the greenhouse emissions limits set by the Kyoto Protocol are rapidly building natural gas-fired power plants, which emit much less carbon dioxide than do coal plants. Even in the United States, the world's number-one Kyoto deadbeat, most newly built power plants are gas-fueled, even as our domestic gas reserves dwindle. In response to criticism of its heavy coal burning, China intends to triple or quadruple its use of natural gas for power generation in the coming decade. The petroleum industry is pushing hard to build large numbers of liquefied natural gas (LNG) tankers, along with the requisite high-tech port facilities in the major producing and consuming nations. That will make it easier for a big energy-using nation like the U.S. to suck not only from gas pipelines on its own continent but from wells almost anywhere on the planet, as we currently do to feed our oil habit. Building and operating a global LNG system will require vast amounts of energy -- much of it supplied by gas, of course. To produce the power required to haul liquefied gas across oceans while keeping it cooled to about -260 degrees Fahrenheit, LNG tankers draw on their own cargo. And an explosion at a LNG terminal could produce a fireball a mile wide -- qualifying LNG as a potential WMD. The process of extracting oil from sands in the Canadian province of Alberta -- often looked to as a key new resource in a "safe" part of the world -- requires natural gas, and a lot of it. Darley predicts that if the oil sands are to satisfy even one-eighth of North America's demand, they will have to absorb a quarter to a half of Canada's natural gas production! Hydrogen is often hailed as a fuel of the future, but today, most hydrogen is manufactured from -- what else? -- natural gas. Hydrogen could be generated by, say, using solar energy to split water molecules, but don't count that happening on a large scale as long as gas is available. President Bush's well-hyped 2003 FreedomCar initiative relied mostly on gas-derived hydrogen. Not everyone is as pessimistic about natural gas as is Darley. The U.S. Department of Energy, as usual, paints a much rosier picture of potential gas reserves. Vaclav Smil appears to expect future gas availability to end up somewhere between what Darley and the DOE predict. But on one point there seems to be universal agreement: Consumption of the world's natural gas will continue to accelerate, and in the rush, gas could prove even more volatile than oil, politically and economically as well as chemically. The timetable for peak gas or plateauing natural gas production and an eventual decline is much harder to forecast it is for oil. But a perfect storm of long-term forces appears to be blowing demand in only one direction -- up -- and the greatest access to such a hard-to-transport, hard-to-store resource will likely go to those players with the most money and the strongest armies. Why armies? Because the world's remaining natural gas reserves lie mostly in the Mideast, Central Asia and Russia, almost guaranteeing that a century of conflict and chaos lies ahead. The World's Natural Gas Reserves Natural gas reserves of the top 10 countries. The slice of the pie labeled "Rest of World" includes a number of small countries, many of them in Africa. Their gas reserves could sponsor decades of domestic fertilizer production. But, as people from Kirkuk to Caracas to the Niger Delta can tell you, fossil fuel reserves also can attract a lot of unwelcome attention from more powerful, energy-hungry nations. Empty Stomachs, Full Jacuzzis As natural gas becomes both more portable and more essential to food production in much of the world, impoverished farmers in Bangladesh and Egypt will find themselves bidding for it against Kansas farmers, homeowners from sweltering Phoenix or frigid Buffalo, and appliance-makers from Shanghai. Ask someone whose children's lives depend on getting nitrogen out of the air and into food crops, and she'll probably tell you there's no higher use for natural gas. But in affluent societies that take food for granted, gas ("one of the cleanest, safest and most useful of all energy sources") can provide a lot of options that, after a while, start looking like necessities: keeping the house cool in August, cooking a corn-fed pot roast, driving to the store when you're out of organic milk, or relaxing in a hot tub. Fertilizer production currently uses only about 5 percent of the world's natural gas production, and nonagricultural uses are already asserting greater dominance over tightening gas supplies on this continent. The escalation of gas prices in recent years has made fertilizer production far less profitable; as a result, the U.S. has lost 30 percent of its nitrogen fertilizer production capacity. American farmers now obtain more than half of their nitrogen fertilizer from abroad, making them the world's biggest importers of the product. Mainstream economists, as always, predict an easy resolution: as the price of natural gas goes up, they say, people and nations will get more serious about conservation. But natural gas, latched onto increasingly as a somewhat more benign substitute for other fossil fuels, is playing the role of methadone in humanity's vain attempt to ease its withdrawal from coal and oil. And market forces tend to go haywire when dealing with addictive substances. Without a right to food, people have no rights at all. So when there's a worldwide rush on a mineral resource essential to the production of adequate food -- when the market is the problem, not the solution -- non-market measures are needed to ensure that farmers are free to raise essential food crops. The Food and Agriculture Organization (FAO) of the United Nations has nonbinding "Right to Food" guidelines stating in part that, States should consider specific national policies, legal instruments, and supporting mechanisms to protect ecological stability and the carrying capacity of ecosystems, to insure the possibility for sustained, increased food production in present and future generations, prevent water pollution, protect the fertility of the soil, and promote the sustainable management of fisheries and forestry. A firm legal basis for ensuring that all people have access to the means of food production is the UN's 1976 International Covenant on Economic, Social and Cultural Rights, which recognizes "the right of everyone to be free from hunger." The treaty has been ratified by more than 150 nations. The United States is not among them. Americans cannot expect to support a universal right to food by the roundabout and inadequate practice of importing natural gas and fertilizer, using them to produce surplus grain, and then exporting the grain to countries with food deficits. Every nation must have the means to grow its own food sustainably, with efficient recycling of crop, livestock and human wastes. And when those nutrients aren't sufficient, farmers need guaranteed access to fossil fuels and fertilizers as well. Nitrogen fertilizer made it possible for us to overpopulate the Earth, and now we're hooked. Someday, as reserves of fossil fuels dwindle, our descendents will come to inhabit a less crowded planet, on crops fed entirely by sunlight and natural fertility. Whether that future population decline happens humanely through planning and restraint or cruelly through catastrophe depends largely on how we manage nonrenewable resources, especially natural gas.

**Scarcity is decreasing—food is abundant**

**Richman 95** (Sheldon, Senior Editor, Cato Institute, July 20, The International Population Stabilization and Reproductive Health Act (S. 1029), http://www.cato.org/testimony/ct-ps720.html)

Food is abundant. Since 1948, according to the UN Food and Agriculture Organization and the U.S. Department of Agriculture, annual world food production has outpaced the increase in population. Today, per capita production and per-acre yields are at all-time highs. Prices of agricultural products have been falling for over 100 years. The average inflation-adjusted price of those products, indexed to wages, fell by more than 74 percent between 1950 and 1990. While Lester Brown of the Worldwatch Institute and the noted butterfly expert Paul Ehrlich predict higher food prices and increasing scarcity, food is becoming cheaper and more plentiful. That good news is due largely to technological advances (the "green revolution") that have provided better seeds, fertilizers, pesticides, and methods of farming. The only obstacles to agricultural progress are the impediments created by governments. Imagine what the world would be like today if the fertile farmland of the former Soviet Union or China or India had been in productive private hands operating in free markets for the past several decades. Since permitting market incentives in agriculture, India has been come a net food exporter and agricultural production in China has boomed.

Catastrophists argue that the bright past does not imply a bright future; they arbitrarily assert that mankind has crossed some fateful threshold. But the earth is capable of feeding many more people than are now alive. The late Roger Revelle of Harvard University (whom Gore claims as a mentor) estimated that Africa, Asia, and Latin America alone, simply by using water more efficiently, could feed 35 to 40 billion people--seven to eight times the current world population. And that assumes no change in technology--a groundless assumption, to be sure.

Those who annually predict imminent famine (while urging readers to subscribe to next year's publications) seize on any change as evidence that man's alleged strain on the biosphere is finally beginning to show. Thus, if the price of seafood rises, they announce that the seas are nearing exhaustion. They never consider the myriad other possibilities, such as the shift in diet from meat to fish, the decline of the Russian fishing industry during the dissolution of the Soviet Union, or the "tragedy of the commons" associated with the lack of property rights in the oceans and lakes.

**No impact—last recession proves econ doesn’t determine conflict or instability**

**Barnett 2009** – senior managing director of Enterra Solutions LLC and a contributing editor/online columnist for Esquire magazine, columnist for World Politics Review (8/25, Thomas P.M. “The New Rules: Security Remains Stable Amid Financial Crisis,” World Politics Review, <http://www.aprodex.com/the-new-rules--security-remains-stable-amid-financial-crisis-398-bl.aspx>, WEA)

When the global financial crisis struck roughly a year ago, the blogosphere was ablaze with all sorts of scary predictions of, and commentary regarding, ensuing conflict and wars -- a rerun of the Great Depression leading to world war, as it were. Now, as global economic news brightens and recovery -- surprisingly led by China and emerging markets -- is the talk of the day, it's interesting to look back over the past year and realize how globalization's first truly worldwide recession has had virtually no impact whatsoever on the international security landscape.

None of the more than three-dozen ongoing conflicts listed by GlobalSecurity.org can be clearly attributed to the global recession. Indeed, the last new entry (civil conflict between Hamas and Fatah in the Palestine) predates the economic crisis by a year, and three quarters of the chronic struggles began in the last century. Ditto for the 15 low-intensity conflicts listed by Wikipedia (where the latest entry is the Mexican "drug war" begun in 2006). Certainly, the Russia-Georgia conflict last August was specifically timed, but by most accounts the opening ceremony of the Beijing Olympics was the most important external trigger (followed by the U.S. presidential campaign) for that sudden spike in an almost two-decade long struggle between Georgia and its two breakaway regions.

Looking over the various databases, then, we see a most familiar picture: the usual mix of civil conflicts, insurgencies, and liberation-themed terrorist movements. Besides the recent Russia-Georgia dust-up, the only two potential state-on-state wars (North v. South Korea, Israel v. Iran) are both tied to one side acquiring a nuclear weapon capacity -- a process wholly unrelated to global economic trends.

And with the United States effectively tied down by its two ongoing major interventions (Iraq and Afghanistan-bleeding-into-Pakistan), our involvement elsewhere around the planet has been quite modest, both leading up to and following the onset of the economic crisis: e.g., the usual counter-drug efforts in Latin America, the usual military exercises with allies across Asia, mixing it up with pirates off Somalia's coast). Everywhere else we find serious instability we pretty much let it burn, occasionally pressing the Chinese -- unsuccessfully -- to do something. Our new Africa Command, for example, hasn't led us to anything beyond advising and training local forces.

So, to sum up:

No significant uptick in mass violence or unrest (remember the smattering of urban riots last year in places like Greece, Moldova and Latvia?);

The usual frequency maintained in civil conflicts (in all the usual places);

Not a single state-on-state war directly caused (and no great-power-on-great-power crises even triggered);

No great improvement or disruption in great-power cooperation regarding the emergence of new nuclear powers (despite all that diplomacy);

A modest scaling back of international policing efforts by the system's acknowledged Leviathan power (inevitable given the strain); and

No serious efforts by any rising great power to challenge that Leviathan or supplant its role. (The worst things we can cite are Moscow's occasional deployments of strategic assets to the Western hemisphere and its weak efforts to outbid the United States on basing rights in Kyrgyzstan; but the best include China and India stepping up their aid and investments in Afghanistan and Iraq.)

Sure, we've finally seen global defense spending surpass the previous world record set in the late 1980s, but even that's likely to wane given the stress on public budgets created by all this unprecedented "stimulus" spending. If anything, the friendly cooperation on such stimulus packaging was the most notable great-power dynamic caused by the crisis.

Can we say that the world has suffered a distinct shift to political radicalism as a result of the economic crisis?

Indeed, no. The world's major economies remain governed by center-left or center-right political factions that remain decidedly friendly to both markets and trade. In the short run, there were attempts across the board to insulate economies from immediate damage (in effect, as much protectionism as allowed under current trade rules), but there was no great slide into "trade wars." Instead, the World Trade Organization is functioning as it was designed to function, and regional efforts toward free-trade agreements have not slowed.

Can we say Islamic radicalism was inflamed by the economic crisis?

If it was, that shift was clearly overwhelmed by the Islamic world's growing disenchantment with the brutality displayed by violent extremist groups such as al-Qaida. And looking forward, austere economic times are just as likely to breed connecting evangelicalism as disconnecting fundamentalism.

At the end of the day, the economic crisis did not prove to be sufficiently frightening to provoke major economies into establishing global regulatory schemes, even as it has sparked a spirited -- and much needed, as I argued last week -- discussion of the continuing viability of the U.S. dollar as the world's primary reserve currency. Naturally, plenty of experts and pundits have attached great significance to this debate, seeing in it the beginning of "economic warfare" and the like between "fading" America and "rising" China. And yet, in a world of globally integrated production chains and interconnected financial markets, such "diverging interests" hardly constitute signposts for wars up ahead. Frankly, I don't welcome a world in which America's fiscal profligacy goes undisciplined, so bring it on -- please!

Add it all up and it's fair to say that this global financial crisis has proven the great resilience of America's post-World War II international liberal trade order.

Do I expect to read any analyses along those lines in the blogosphere any time soon?

Absolutely not. I expect the fantastic fear-mongering to proceed apace. That's what the Internet is for.

#### There are multiple Feedbacks:

#### First is N Screw – nitrogen from emissions checks warming – their models don’t assume this

**Carter 10–** Robert, PhD, Adjuct Research Fellow, James Cook University, Craig Idso, PhD, Chairman at the Center for the Study of Carbon Dioxide and Global Change, Fred Singer, PhD, President of the Science and Environmental Policy Project, Susan Crockford, evolutionary biologist with a specialty in skeletal taxonomy , paleozoology and vertebrate evolution, Joseph D’Aleo, 30 years of experience in professional meteorology, former college professor of Meteorology at Lyndon State College, Indur Goklany, independent scholar, author, and co-editor of the Electronic Journal of Sustainable Development, Sherwood Idso, President of the Center for the Study of Carbon Dioxide and Global Change, Research Physicist with the US Department of Agriculture, Adjunct Professor in the Departments of Geology, Botany, and Microbiology at Arizona State University, Bachelor of Physics, Master of Science, and Doctor of Philosophy, all from the University of Minnesota, Madhav Khandekar, former research scientist from Environment Canada and is an expert reviewer for the IPCC 2007 Climate Change Panel, Anthony Lupo, Department Chair and Professor of Atmospheric Science at the University of Missouri, Willie Soon, astrophysicist at the Solar and Stellar Physics Division of the Harvard-Smithsonian Center for Astrophysics, Mitch Taylor (Canada) (October 6th 2010, “[The Effect of Nitrogen Deposition on Forest Soil Respiration](http://www.nipccreport.org/articles/2010/oct/06oct2010a4.html)” <http://www.nipccreport.org/articles/2010/oct/06oct2010a4.html>) Jacome

Janssens et al. (2010) write that "atmospheric deposition of reactive nitrogen, originating mainly from fossil-fuel burning and artificial fertilizer applications, has increased three- to five-fold over the past century," and they say that "in many areas of the globe, nitrogen deposition is expected to increase further." This phenomenon stimulates plant growth and the uptake of carbon from the atmosphere, contributing to climate change mitigation; and they state that Magnani et al. (2007) demonstrated nitrogen deposition to be "the dominant driver of carbon sequestration in forest ecosystems," although there has been what they describe as "intense debate" about the magnitude and sustainability of the phenomenon and its underlying mechanisms.

In an effort designed to further explore the subject, Janssens et al. conducted "a meta-analysis of measurements in nitrogen-addition experiments, and a comparison of study sites exposed to elevated or background atmospheric nitrogen deposition."

The work of the fifteen scientists revealed, in their words, that "nitrogen deposition impedes organic matter decomposition, and thus stimulates carbon sequestration, in temperate forest soils where nitrogen is not limiting microbial growth." What is more, they find that "the concomitant reduction in soil carbon emissions is substantial," being "equivalent in magnitude to the amount of carbon taken up by trees owing to nitrogen fertilization."

For those worried about the (highly unlikely) prospect of CO2-induced global warming, these findings should be good news; for in the concluding sentence of their paper, Janssens et al. state that "the size of the nitrogen-induced inhibition of below-ground respiration is of the same order of magnitude as the forest carbon sink." And they state in the concluding sentence of their paper's introduction that "**this effect has not been included in current carbon-cycle models**," suggesting that when it is included, it will contribute much to "climate change mitigation."

#### Second is M screw – co2 solves methane emissions which cause warming

**Carter 1-10 –** Robert, PhD, Adjuct Research Fellow, James Cook University, Craig Idso, PhD, Chairman at the Center for the Study of Carbon Dioxide and Global Change, Fred Singer, PhD, President of the Science and Environmental Policy Project, Susan Crockford, evolutionary biologist with a specialty in skeletal taxonomy , paleozoology and vertebrate evolution, Joseph D’Aleo, 30 years of experience in professional meteorology, former college professor of Meteorology at Lyndon State College, Indur Goklany, independent scholar, author, and co-editor of the Electronic Journal of Sustainable Development, Sherwood Idso, President of the Center for the Study of Carbon Dioxide and Global Change, Research Physicist with the US Department of Agriculture, Adjunct Professor in the Departments of Geology, Botany, and Microbiology at Arizona State University, Bachelor of Physics, Master of Science, and Doctor of Philosophy, all from the University of Minnesota, Madhav Khandekar, former research scientist from Environment Canada and is an expert reviewer for the IPCC 2007 Climate Change Panel, Anthony Lupo, Department Chair and Professor of Atmospheric Science at the University of Missouri, Willie Soon, astrophysicist at the Solar and Stellar Physics Division of the Harvard-Smithsonian Center for Astrophysics, Mitch Taylor (Canada) (January 2012, “Environmental Stresses and Plant Methane Emissions”http://www.nipccreport.org/articles/2012/jan/10jan2012a4.html) Jacome

Concluding from a review of the scientific literature that "aerobic CH4 [methane] emissions from plants may be affected by O2 stress or any other stress leading to ROS [reactive oxygen species] production," authors Wang *et al*. (2009) sought to determine whether physical injury would also affect CH4 emissions from plants. Their work revealed that "physical injury (cutting) stimulated CH4 emissions from fresh twigs of *Artemisia* species under aerobic conditions," and that "more cutting resulted in more CH4 emissions," as did hypoxia in both cut and uncut *Artemisia frigida* twigs.

In discussing their findings, and those of previous studies that suggest, in their words, "that a variety of environmental stresses stimulate CH4 emission from a wide variety of plant species," Wang *et al*. concluded that "global change processes, including climate change, depletion of stratospheric ozone, increasing ground-level ozone, spread of plant pests, and land-use changes, could cause more stress in plants on a global scale, potentially stimulating more CH4 emission globally," while further concluding that "the role of stress in plant CH4 production in the global CH4 cycle could be important in a changing world."

Several things "could" be important in this regard, but the ongoing rise in the air's CO2 content is hard at work *countering* stress-induced CH4 emissions. Environmental stresses of all types do indeed generate highly-reactive oxygenated compounds that damage plants, but atmospheric CO2 enrichment typically boosts the production of antioxidant enzymes that *scavenge* and *detoxify* those highly-reactive oxygenated compounds. Thus, it can be appreciated that the historical rise in the air's CO2 content should have gradually been *alleviating* the level of stress experienced by Earth's plants; and this phenomenon should have been gradually *reducing* the rate at which the planet's vegetation releases CH4 to the atmosphere. In addition, it should have been doing it at *an accelerating rate* commensurate with the accelerating rate of the upward trend in the air's CO2 content.

Wang *et al*.'s way of thinking therefore suggests that the air's CH4 concentration should be *rising ever faster*, as "global change processes" lead to more plant stress, more ROS production in plants, and more CH4 emissions from Earth's vegetation, whereas a conflicting hypothesis suggests that the air's CH4 concentration should be *rising ever slower*, as higher concentrations of atmospheric CO2 lead to less plant stress, more antioxidants that scavenge and detoxify ROS in plants, and less CH4 emissions from Earth's vegetation.

So which view is winning? A quick glance at the atmosphere's recent methane history - shown below - provides the answer.

*Figure 1. Trace gas mole fractions of methane (CH4) as measured at Mauna Loa, Hawaii. Adapted from Schnell and Dlugokencky (2008).*

As can be seen from this figure, the rate of increase in atmospheric methane abundance has steadily declined since the late 1980s, with near-zero increase from 1999 through the end of the record. Is the ongoing rise in the air's CO2 content responsible for knocking its biggest greenhouse-gas competitor (other than water vapor) entirely out of the picture with respect to *future* global warming? Or, will further increases in CO2 emissions actually cause the atmosphere's methane concentration to *decline* and thereby begin to counteract its (CO2's) *own* warming effect. Only time will tell.

#### Third are Natural Aerosols

**Carter 11**, Robert, PhD, Adjuct Research Fellow, James Cook University, Craig Idso, PhD, Chairman at the Center for the Study of Carbon Dioxide and Global Change, Fred Singer, PhD, President of the Science and Environmental Policy Project, Susan Crockford, evolutionary biologist with a specialty in skeletal taxonomy , paleozoology and vertebrate evolution, Joseph D’Aleo, 30 years of experience in professional meteorology, former college professor of Meteorology at Lyndon State College, Indur Goklany, independent scholar, author, and co-editor of the Electronic Journal of Sustainable Development, Sherwood Idso, President of the Center for the Study of Carbon Dioxide and Global Change, Research Physicist with the US Department of Agriculture, Adjunct Professor in the Departments of Geology, Botany, and Microbiology at Arizona State University, Bachelor of Physics, Master of Science, and Doctor of Philosophy, all from the University of Minnesota, Madhav Khandekar, former research scientist from Environment Canada and is an expert reviewer for the IPCC 2007 Climate Change Panel, Anthony Lupo, Department Chair and Professor of Atmospheric Science at the University of Missouri, Willie Soon, astrophysicist at the Solar and Stellar Physics Division of the Harvard-Smithsonian Center for Astrophysics, Mitch Taylor (Canada) [“Climate Change Reconsidered 2011 Interim Report,” September, Science and Environmental Policy Project, Center for the Study of Carbon Dioxide and Global Change, Published by The Heartland Institute]

In a contemporaneous study of aerosols, Carslaw et al. (2010) write, ―the natural environment is a major source of atmospheric aerosols, including dust, secondary organic material from terrestrial biogenic emissions, carbonaceous particles from wildfires, and sulphate from marine phytoplankton dimethyl sulphide emissions.‖ These aerosols ―have a significant effect on many components of the Earth system, such as the atmospheric radiative balance and photosynthetically available radiation entering the biosphere, the supply of nutrients to the ocean, and the albedo of snow and ice. With this background in mind, the authors reviewed ―the impact of these natural systems on atmospheric aerosols based on observations and models, including the potential for long term changes in emissions and feedbacks on climate.‖ Based on their review, the seven scientists report, ―the number of drivers of change is very large and the various systems are strongly coupled,‖ noting ―there have therefore been very few studies that integrate the various effects to estimate climate feedback factors.‖ However, they add, ―available observations and model studies suggest that the regional radiative perturbations are potentially several watts per square meter due to changes in these natural aerosol emissions in a future climate,‖ which is **equivalent to the magnitude of climate forcing projected** to result from increases in greenhouse gases but typically of the opposite sign.

**Feedbacks happen:**

#### Feedbacks are the only thing that matter – co2’s effect itself is small – negative feedbacks outweigh

**De Freitas 11** – associate professor in the school of environment at the University of Auckland, (Chris, 1-4 http://www.nzherald.co.nz/nz/news/article.cfm?c\_id=1&objectid=10697845)

The degree of warming directly caused by the extra carbon dioxide is, by itself, relatively small. This is not controversial. What is controversial is whether this initial change will trigger further climate changes that would be large or damaging. Debate focuses on climate feedbacks that may or may not suppress, perpetuate or amplify an initial change caused by increasing concentrations of greenhouse gases. A doubling of carbon dioxide, by itself, adds only about one degree Celsius to greenhouse warming. Computer climate models project more warming because the modellers build in feedbacks from water vapour and clouds that amplify the initial change. These are the so called positive feedbacks. For example, higher temperature would mean more evaporation globally, which in turn means more heat-trapping water vapour is put into the atmosphere leading to even higher temperatures. On the other hand, negative feedbacks might prevail. For example, more water vapour in the atmosphere could lead to greater cloud cover. Clouds reflect the heat from the Sun and cool the Earth, offsetting the initial rise in global temperature. The role of negative feedback processes are played down by global warming alarmists, whereas sceptics point to the four-billion-year-old global climate record that shows runaway global cooling or warming has never occurred because negative feedbacks regulate the global climate system. It is important to consider the above in the proper context. Change is a constant feature of climate, even through recent human history. During the Medieval Warm Period, from 900 to 1200AD, the Vikings sailed in Arctic waters that by 1700 had turned to permanent sea ice, and farmed in Greenland soil in a climate that soon became too cold for agriculture. The Medieval Warm Period was followed by the Little Ice Age which ended around 1850. It in turn was followed by another warm period. The hottest year since 1850 was 1998. In the nine years since 2002 average annual global temperature has not risen. Most people are surprised to hear that no one has uncovered any empirical real-world evidence that humans are causing dangerous global warming. Finding this evidence is crucial, since scientific issues are resolved by observations that support a theory or hypothesis. They are not resolved by ballot.

**Feedbacks are negative**

**Happer, Ph.D. in Physics, 11**—Chairman of the Board of Directors (GMI); Cyrus Fogg Brackett Professor of Physics, Princeton University, Ph.D. in Physics from Princeton (William, 23 May 2011, The Truth About Greenhouse Gases, http://www.marshall.org/article.php?id=953, RBatra)

The frightening warnings that alarmists offer about the effects of doubling CO2 are based on computer models that assume that the direct warming effect of CO2 is multiplied by a large “feedback factor” from CO2-induced changes in water vapor and clouds, which supposedly contribute much more to the greenhouse warming of the earth than CO2. But **there is observational evidence that the feedback factor is small and may even be negative. The models are not in good agreement with observations**—even if they appear to fit the temperature rise over the last 150 years very well.

# 1nc grid

**Cyber-terrorism is literally impossible. This isn’t WarGames**

**Green 2** – editor of The Washington Monthly (Joshua, 11/11, The Myth of Cyberterrorism, http://www.washingtonmonthly.com/features/2001/0211.green.html)

There's just one problem: There is no such thing as cyberterrorism--no instance of anyone ever having been killed by a terrorist (or anyone else) using a computer. Nor is there compelling evidence that al Qaeda or any other terrorist organization has resorted to computers for any sort of serious destructive activity. What's more, outside of a Tom Clancy novel, computer security specialists believe it is virtually impossible to use the Internet to inflict death on a large scale, and many scoff at the notion that terrorists would bother trying. "I don't lie awake at night worrying about cyberattacks ruining my life," says Dorothy Denning, a computer science professor at Georgetown University and one of the country's foremost cybersecurity experts. "Not only does [cyberterrorism] not rank alongside chemical, biological, or nuclear weapons, but it is not anywhere near as serious as other potential physical threats like car bombs or suicide bombers."

Which is not to say that cybersecurity isn't a serious problem--it's just not one that involves terrorists. Interviews with terrorism and computer security experts, and current and former government and military officials, yielded near unanimous agreement that the real danger is from the criminals and other hackers who did $15 billion in damage to the global economy last year using viruses, worms, and other readily available tools. That figure is sure to balloon if more isn't done to protect vulnerable computer systems, the vast majority of which are in the private sector. Yet when it comes to imposing the tough measures on business necessary to protect against the real cyberthreats, the Bush administration has balked.

Crushing BlackBerrys

When ordinary people imagine cyberterrorism, they tend to think along Hollywood plot lines, doomsday scenarios in which terrorists hijack nuclear weapons, airliners, or military computers from halfway around the world. Given the colorful history of federal boondoggles--billion-dollar weapons systems that misfire, $600 toilet seats--that's an understandable concern. But, with few exceptions, it's not one that applies to preparedness for a cyberattack. "The government is miles ahead of the private sector when it comes to cybersecurity," says Michael Cheek, director of intelligence for iDefense, a Virginia-based computer security company with government and private-sector clients. "Particularly the most sensitive military systems."

Serious effort and plain good fortune have combined to bring this about. Take nuclear weapons. The biggest fallacy about their vulnerability, promoted in action thrillers like WarGames, is that they're designed for remote operation. "[The movie] is premised on the assumption that there's a modem bank hanging on the side of the computer that controls the missiles," says Martin Libicki, a defense analyst at the RAND Corporation. "I assure you, there isn't." Rather, nuclear weapons and other sensitive military systems enjoy the most basic form of Internet security: they're "air-gapped," meaning that they're not physically connected to the Internet and are therefore inaccessible to outside hackers. (Nuclear weapons also contain "permissive action links," mechanisms to prevent weapons from being armed without inputting codes carried by the president.) A retired military official was somewhat indignant at the mere suggestion: "As a general principle, we've been looking at this thing for 20 years. What cave have you been living in if you haven't considered this [threat]?"

When it comes to cyberthreats, the Defense Department has been particularly vigilant to protect key systems by isolating them from the Net and even from the Pentagon's internal network. All new software must be submitted to the National Security Agency for security testing. "Terrorists could not gain control of our spacecraft, nuclear weapons, or any other type of high-consequence asset," says Air Force Chief Information Officer John Gilligan. For more than a year, Pentagon CIO John Stenbit has enforced a moratorium on new wireless networks, which are often easy to hack into, as well as common wireless devices such as PDAs, BlackBerrys, and even wireless or infrared copiers and faxes.

The September 11 hijackings led to an outcry that airliners are particularly susceptible to cyberterrorism. Earlier this year, for instance, Sen. Charles Schumer (D-N.Y.) described "the absolute havoc and devastation that would result if cyberterrorists suddenly shut down our air traffic control system, with thousands of planes in mid-flight." In fact, cybersecurity experts give some of their highest marks to the FAA, which reasonably separates its administrative and air traffic control systems and strictly air-gaps the latter. And there's a reason the 9/11 hijackers used box-cutters instead of keyboards: It's impossible to hijack a plane remotely, which eliminates the possibility of a high-tech 9/11 scenario in which planes are used as weapons.

**No solvency–massive bureaucracy overhaul’s a prerequisite.**

**Kohlmann 6** (Evan F. Kohlmann, Foreign Affairs, “The Real Online Terrorist Threat” http://www.foreignaffairs.org/20060901faessay85510/evan-f-kohlmann/the-real-online-terrorist-threat.html)

To counter terrorists, the U.S. government must learn how to monitor their activity online, in the same way that it keeps tabs on terrorists in the real world. Doing so will require a realignment of U.S. intelligence and law enforcement agencies, which lag behind terrorist organizations in adopting information technologies. At present, unfortunately, senior counterterrorism officials refuse even to pay lip service to the need for such reforms. That must change -- and fast.

**countries rely on the internet too much to attack it**

**Kohlmann 06** (Evan F. Kohlmann, Foreign Affairs, “The Real Online Terrorist Threat” http://www.foreignaffairs.org/20060901faessay85510/evan-f-kohlmann/the-real-online-terrorist-threat.html)

In truth, although catastrophic computer attacks are not entirely inconceivable, the prospect that militants will be able to execute them anytime soon has been overblown. Fears of such science-fiction scenarios, moreover, have led policymakers to overlook the fact that terrorists currently use the Internet as a cheap and efficient way of communicating and organizing. These militants are now dedicated to waging an innovative, low-intensity military campaign against the United States. Jihadists are typically organized in small, widely dispersed units and coordinate their activities online, obviating the need for a central command. Al Qaeda and similar groups rely on the Internet to contact potential recruits and donors, sway public opinion, instruct would-be terrorists, pool tactics and knowledge, and organize attacks. The RAND Corporation's David Ronfeldt and John Arquilla have called this phenomenon "netwar," which they define as a form of conflict marked by the use of "network forms of organization and related doctrines, strategies, and technologies." In many ways, such groups use the Internet in the same way that peaceful political organizations do; what makes terrorists' activity threatening is their intent.

**Countries are boosting cooperation and establishing an international center to solve cyber terrorism**

**IHT, 8** (Associated Press, International Herald Tribune, “Countries worldwide need closer cooperation to curb cyber terrorism threat, officials say,” 5-20-2008, http://www.iht.com/bin/printfriendly.php?id=13040821)

KUALA LUMPUR, Malaysia: The world's countries must cooperate more to fight the threat of cyberterrorism attacks, which could threaten facilities such as nuclear power plants, officials said Tuesday at an international conference. Government authorities and technology experts from more than 30 nations made the call at the opening of the meeting in Kuala Lumpur, Malaysia. Information technology has "changed the dynamics of terrorism," said Hamadoun Toure, secretary general of the International Telecommunication Union, the U.N.'s leading information technology agency. "The harsh reality is that (information technology) has become a tool for cybercrime and cyberterrorism," Toure said in a speech. "Cybersecurity must become a cornerstone of every aspect of keeping ourselves, our countries and our world safe." Delegates came from countries including Australia, Canada, France, India, Japan, Mexico, Saudi Arabia, Singapore, Sweden, Thailand and the United States. Malaysian Prime Minister Abdullah Ahmad Badawi said cyberattacks could trigger "truly catastrophic consequences" by disrupting systems that control telecommunications networks, emergency services, nuclear power plants or major dams. "Cyberthreats are not something that modern societies and their governments can ignore," the prime minister said. "It is necessary for governments and countries throughout the world to work in concert." Malaysia will be home to a new center to be run by the International Multilateral Partnership Against Cyber Terrorism, a project involving both the public and private sectors. The center is expected to open by the end of year and will serve as emergency response, training and resource center to counter cyberthreats. "The bottom line is the threat is real," said Howard Schmidt, a former U.S. adviser to the White House on cybersecurity. "It'll be from criminals, it'll be from state-sponsored activity, it'll be from organized crime, so the idea of this is to reduce the vulnerability" of countries.

**Grid resilience means no impact and no attempt**

**Kaplan 07** (Eben–Associated Editor at the Council of Foreign Relations, “America’s Vulnerable Energy Grid,” 4-27-2007, http://www.cfr.org/publication/13153/americas\_vulnerable\_energy\_grid.html)

Attacks on infrastructure are an almost daily fact of life in Iraq. Experts caution the war in that country will produce a whole generation of terrorists who have honed their skills sabotaging infrastructure. In his recent book, The Edge of Disaster, CFR security expert Stephen E. Flynn cautions, “The terrorist skills acquired are being catalogued and shared in Internet chat rooms.” But when it comes to Iraq’s electrical grid, RAND economist Keith W. Crane says terrorists are not the main cause of disruptions: “Most of the destruction of the control equipment was looting,” he says.

Either way, Clark W. Gellings, vice president of the Electric Power Research Institute, an industry research organization, thinks the U.S. grid is an unlikely target. “It’s not terribly sensational,” he explains, “The system could overcome an attack in hours, or at worst, days.” That said, attacks on electricity infrastructure could become common in future warfare: The U.S. military has designed and entire class of weapons designed to disable power grids.