## Plan

#### The United States Federal Government should reduce restrictions on airborne wind energy systems in the United States.

## Advantage 1: Heg

#### Hegemony precludes multiple scenarios for nuclear war – decline causes violent transitions

Brooks, Ikenberry, and Wohlforth ’13 (Stephen, Associate Professor of Government at Dartmouth College, John Ikenberry is the Albert G. Milbank Professor of Politics and International Affairs at Princeton University in the Department of Politics and the Woodrow Wilson School of Public and International Affairs, William C. Wohlforth is the Daniel Webster Professor in the Department of Government at Dartmouth College “Don’t Come Home America: The Case Against Retrenchment,” International Security, Vol. 37, No. 3 (Winter 2012/13), pp. 7–51)

A core premise of deep engagement is that it prevents the emergence of a far more dangerous global security environment. For one thing, as noted above, the United States’ overseas presence gives it the leverage to restrain partners from taking provocative action. Perhaps more important, its core alliance commitments also deter states with aspirations to regional hegemony from contemplating expansion and make its partners more secure, reducing their incentive to adopt solutions to their security problems that threaten others and thus stoke security dilemmas. The contention that engaged U.S. power dampens the baleful effects of anarchy is consistent with influential variants of realist theory. Indeed, arguably the scariest portrayal of the war-prone world that would emerge absent the “American Pacifier” is provided in the works of John Mearsheimer, who forecasts dangerous multipolar regions replete with security competition, arms races, nuclear proliferation and associated preventive war temptations, regional rivalries, and even runs at regional hegemony and full-scale great power war. 72 How do retrenchment advocates, the bulk of whom are realists, discount this benefit? Their arguments are complicated, but two capture most of the variation: (1) U.S. security guarantees are not necessary to prevent dangerous rivalries and conflict in Eurasia; or (2) prevention of rivalry and conflict in Eurasia is not a U.S. interest. Each response is connected to a different theory or set of theories, which makes sense given that the whole debate hinges on a complex future counterfactual (what would happen to Eurasia’s security setting if the United States truly disengaged?). Although a certain answer is impossible, each of these responses is nonetheless a weaker argument for retrenchment than advocates acknowledge. The first response flows from defensive realism as well as other international relations theories that discount the conflict-generating potential of anarchy under contemporary conditions. 73 Defensive realists maintain that the high expected costs of territorial conquest, defense dominance, and an array of policies and practices that can be used credibly to signal benign intent, mean that Eurasia’s major states could manage regional multipolarity peacefully without the American pacifier. Retrenchment would be a bet on this scholarship, particularly in regions where the kinds of stabilizers that nonrealist theories point to—such as democratic governance or dense institutional linkages—are either absent or weakly present. There are three other major bodies of scholarship, however, that might give decisionmakers pause before making this bet. First is regional expertise. Needless to say, there is no consensus on the net security effects of U.S. withdrawal. Regarding each region, there are optimists and pessimists. Few experts expect a return of intense great power competition in a post-American Europe, but many doubt European governments will pay the political costs of increased EU defense cooperation and the budgetary costs of increasing military outlays. 74 The result might be a Europe that is incapable of securing itself from various threats that could be destabilizing within the region and beyond (e.g., a regional conflict akin to the 1990s Balkan wars), lacks capacity for global security missions in which U.S. leaders might want European participation, and is vulnerable to the influence of outside rising powers. What about the other parts of Eurasia where the United States has a substantial military presence? Regarding the Middle East, the balance begins to swing toward pessimists concerned that states currently backed by Washington— notably Israel, Egypt, and Saudi Arabia—might take actions upon U.S. retrenchment that would intensify security dilemmas. And concerning East Asia, pessimism regarding the region’s prospects without the American pacifier is pronounced. Arguably the principal concern expressed by area experts is that Japan and South Korea are likely to obtain a nuclear capacity and increase their military commitments, which could stoke a destabilizing reaction from China. It is notable that during the Cold War, both South Korea and Taiwan moved to obtain a nuclear weapons capacity and were only constrained from doing so by a still-engaged United States. 75 The second body of scholarship casting doubt on the bet on defensive realism’s sanguine portrayal is all of the research that undermines its conception of state preferences. Defensive realism’s optimism about what would happen if the United States retrenched is very much dependent on its particular—and highly restrictive—assumption about state preferences; once we relax this assumption, then much of its basis for optimism vanishes. Specifically, the prediction of post-American tranquility throughout Eurasia rests on the assumption that security is the only relevant state preference, with security defined narrowly in terms of protection from violent external attacks on the homeland. Under that assumption, the security problem is largely solved as soon as offense and defense are clearly distinguishable, and offense is extremely expensive relative to defense. Burgeoning research across the social and other sciences, however, undermines that core assumption: states have preferences not only for security but also for prestige, status, and other aims, and they engage in trade-offs among the various objectives. 76 In addition, they define security not just in terms of territorial protection but in view of many and varied milieu goals. It follows that even states that are relatively secure may nevertheless engage in highly competitive behavior. Empirical studies show that this is indeed sometimes the case. 77 In sum, a bet on a benign postretrenchment Eurasia is a bet that leaders of major countries will never allow these nonsecurity preferences to influence their strategic choices. To the degree that these bodies of scholarly knowledge have predictive leverage, U.S. retrenchment would result in a significant deterioration in the security environment in at least some of the world’s key regions. We have already mentioned the third, even more alarming body of scholarship. Offensive realism predicts that the withdrawal of the American pacifier will yield either a competitive regional multipolarity complete with associated insecurity, arms racing, crisis instability, nuclear proliferation, and the like, or bids for regional hegemony, which may be beyond the capacity of local great powers to contain (and which in any case would generate intensely competitive behavior, possibly including regional great power war). Hence it is unsurprising that retrenchment advocates are prone to focus on the second argument noted above: that avoiding wars and security dilemmas in the world’s core regions is not a U.S. national interest. Few doubt that the United States could survive the return of insecurity and conflict among Eurasian powers, but at what cost? Much of the work in this area has focused on the economic externalities of a renewed threat of insecurity and war, which we discuss below. Focusing on the pure security ramifications, there are two main reasons why decisionmakers may be rationally reluctant to run the retrenchment experiment. First, overall higher levels of conflict make the world a more dangerous place. Were Eurasia to return to higher levels of interstate military competition, one would see overall higher levels of military spending and innovation and a higher likelihood of competitive regional proxy wars and arming of client states—all of which would be concerning, in part because it would promote a faster diffusion of military power away from the United States. Greater regional insecurity could well feed proliferation cascades, as states such as Egypt, Japan, South Korea, Taiwan, and Saudi Arabia all might choose to create nuclear forces. 78 It is unlikely that proliferation decisions by any of these actors would be the end of the game: they would likely generate pressure locally for more proliferation. Following Kenneth Waltz, many retrenchment advocates are proliferation optimists, assuming that nuclear deterrence solves the security problem. 79 Usually carried out in dyadic terms, the debate over the stability of proliferation changes as the numbers go up. Proliferation optimism rests on assumptions of rationality and narrow security preferences. In social science, however, such assumptions are inevitably probabilistic. Optimists assume that most states are led by rational leaders, most will overcome organizational problems and resist the temptation to preempt before feared neighbors nuclearize, and most pursue only security and are risk averse. Confidence in such probabilistic assumptions declines if the world were to move from nine to twenty, thirty, or forty nuclear states. In addition, many of the other dangers noted by analysts who are concerned about the destabilizing effects of nuclear proliferation—including the risk of accidents and the prospects that some new nuclear powers will not have truly survivable forces—seem prone to go up as the number of nuclear powers grows. 80 Moreover, the risk of “unforeseen crisis dynamics” that could spin out of control is also higher as the number of nuclear powers increases. Finally, add to these concerns the enhanced danger of nuclear leakage, and a world with overall higher levels of security competition becomes yet more worrisome. The argument that maintaining Eurasian peace is not a U.S. interest faces a second problem. On widely accepted realist assumptions, acknowledging that U.S. engagement preserves peace dramatically narrows the difference between retrenchment and deep engagement. For many supporters of retrenchment, the optimal strategy for a power such as the United States, which has attained regional hegemony and is separated from other great powers by oceans, is offshore balancing: stay over the horizon and “pass the buck” to local powers to do the dangerous work of counterbalancing any local rising power. The United States should commit to onshore balancing only when local balancing is likely to fail and a great power appears to be a credible contender for regional hegemony, as in the cases of Germany, Japan, and the Soviet Union in the midtwentieth century. The problem is that China’s rise puts the possibility of its attaining regional hegemony on the table, at least in the medium to long term. As Mearsheimer notes, “The United States will have to play a key role in countering China, because its Asian neighbors are not strong enough to do it by themselves.” 81 Therefore, unless China’s rise stalls, “the United States is likely to act toward China similar to the way it behaved toward the Soviet Union during the Cold War.” 82 It follows that the United States should take no action that would compromise its capacity to move to onshore balancing in the future. It will need to maintain key alliance relationships in Asia as well as the formidably expensive military capacity to intervene there. The implication is to get out of Iraq and Afghanistan, reduce the presence in Europe, and pivot to Asia— just what the United States is doing. 83 In sum, the argument that U.S. **security** commitments are unnecessary **for peace** is countered by a lot of scholarship, including highly influential realist scholarship. In addition, the argument that Eurasian peace is unnecessary for U.S. security is weakened by the potential for a large number of nasty security consequences as well as the need to retain a latent onshore balancing capacity that dramatically reduces the savings retrenchment might bring. Moreover, switching between offshore and onshore balancing could well be difªcult. Bringing together the thrust of many of the arguments discussed so far underlines the degree to which the case for retrenchment misses the underlying logic of the deep engagement strategy. By supplying reassurance, deterrence, and active management, the United States lowers security competition in the world’s key regions, thereby preventing the emergence of a hothouse atmosphere for growing new military capabilities. Alliance ties dissuade partners from ramping up and also provide leverage to prevent military transfers to potential rivals. On top of all this, the United States’ formidable military machine may deter entry by potential rivals. Current great power military expenditures as a percentage of GDP are at historical lows, and thus far other major powers have shied away from seeking to match top-end U.S. military capabilities. In addition, they have so far been careful to avoid attracting the “focused enmity” of the United States. 84 All of the world’s most modern militaries are U.S. allies (America’s alliance system of more than sixty countries now accounts for some 80 percent of global military spending), and the gap between the U.S. military capability and that of potential rivals is by many measures growing rather than shrinking. 85

**Social science proves unipolarity generates stability**

Wohlforth 9 (Professor of government at Dartmouth (William, “Unipolarity, Status Competition, and Great Power War,” World Affairs, January, project muse)

The upshot is a near scholarly consensus that unpolarity’s consequences for great power conﬂict are indeterminate and that a power shift resulting in a return to bipolarity or multipolarity will not raise the specter of great power war. This article questions the consensus on two counts. First, I show that it depends crucially on a **dubious** assumption about human motivation. Prominent theories of war are based on the assumption that people are mainly motivated by the instrumental pursuit of tangible ends such as physical security and material prosperity. This is why such theories seem irrelevant to interactions among great powers in an international environment that diminishes the utility of war for the pursuit of such ends. Yet we know that people are motivated by a great many noninstrumental motives, not least by concerns regarding their social status. 3 As John Harsanyi noted, “Apart from economic payoffs, social status (social rank) seems to be the most important incentive and motivating force of social behavior.” 4 This proposition rests on much ﬁrmer scientiﬁc ground now than when Harsanyi expressed it a generation ago, as cumulating research shows that humans appear to be hardwired for sensitivity to status and that relative standing is a powerful and independent motivator of behavior. 5 Second, I question the dominant view that status quo evaluations are relatively independent of the distribution of capabilities. If the status of states depends in some measure on their relative capabilities, and if states derive utility from status, then different distributions of capabilities may affect levels of satisfaction, just as different income distributions may affect levels of status competition in domestic settings. 6 Building on research in psychology and sociology, I argue that even capabilities distributions among major powers foster **ambiguous status hierarchies**, which generate more dissatisfaction and clashes over the status quo. And the more stratiﬁed the distribution of capabilities, the less likely such status competition is. **Unipolarity** thus **generates far fewer incentives** than either bipolarity or multipolarity for direct great power positional competition over status. Elites in the other major powers continue to prefer higher status, but in a unipolar system they face comparatively weak incentives to translate that preference into costly action. And the absence of such incentives matters because social status is a positional good—something whose value depends on how much one has in relation to others. 7 “If everyone has high status,” Randall Schweller notes, “no one does.” 8 While one actor might increase its status, all cannot simultaneously do so. High status is thus inherently scarce, and competitions for status tend to be zero sum. 9 I begin by describing the puzzles facing predominant theories that status competition might solve. Building on recent research on social identity and status seeking, I then show that under certain conditions the ways decision makers identify with the states they represent may prompt them to frame issues as positional disputes over status in a social hierarchy. I develop hypotheses that tailor this scholarship to the domain of great power politics, showing how the probability of status competition is likely to be linked to polarity. The rest of the article investigates whether there is sufﬁcient evidence for these hypotheses to warrant further reﬁnement and testing. I pursue this in three ways: by showing that the theory advanced here is consistent with what we know about large-scale patterns of great power conﬂict through history; by demonstrating that the causal mechanisms it identiﬁes did drive relatively secure major powers to military conﬂict in the past (and therefore that they might do so again if the world were bipolar or multipolar); and by showing that observable evidence concerning the major powers’ identity politics and grand strategies under unipolarity are consistent with the theory’s expectations.

**The threat of cyber warfare is real – countries are increasing attacks against the US risking great power war
Habiger ‘10** (Eugene, Retired Air Force General, “ CYBERWARFARE AND CYBERTERRORISM: THE NEED FOR A NEW U.S. STRATEGIC APPROACH,” The Cyber Security Institute, February 1)

However, there are reasons to believe that what is going on now amounts to a fundamental shift as opposed to business as usual. Today’s network exploitation or information operation trespasses possess a number of characteristics that suggest that the line between espionage and conflict has been, or is close to being, crossed. (What that suggests for the proper response is a different matter.) First, the number of cyberattacks we are facing is growing significantly. Andrew Palowitch, a former CIA official now consulting with the US Strategic Command (STRATCOM), which oversees the Defense Department’s Joint Task Force‐Global Network Operations, recently told a meeting of experts that the Defense Department has experienced almost 80,000 computer attacks, and some number of these assaults have actually “reduced” the military’s “operational capabilities.”20 Second, the nature of these attacks is starting to shift from penetration attempts aimed at gathering intelligence (cyber spying) to offensive efforts aimed at taking down systems (cyberattacks). Palowitch put this in stark terms last November, “We are currently in a cyberwar and war is going on today.”21 Third, these recent attacks need to be taken in a broader strategic context. Both Russia and China have stepped up their offensive efforts and taken a much more aggressive cyberwarfare posture. The Chinese have developed an openly discussed cyberwar strategy aimed at achieving electronic dominance over the U.S. and its allies by 2050. In 2007 the Department of Defense reported that for the first time China has developed first strike viruses, marking a major shift from prior investments in defensive measures.22 And in the intervening period China has launched a series of offensive cyber operations against U.S. government and private sector networks and infrastructure. In 2007, Gen. James Cartwright, the former head of STRATCOM and now the Vice Chairman of the Joint Chiefs of Staff, told the US‐China Economic and Security Review Commission that China’s ability to launch “denial of service” attacks to overwhelm an IT system is of particular concern. 23 Russia also has already begun to wage offensive cyberwar. At the outset of the recent hostilities with Georgia, Russian assets launched a series of cyberattacks against the Georgian government and its critical infrastructure systems, including media, banking and transportation sites.24 In 2007, cyberattacks that many experts attribute, directly or indirectly, to Russia shut down the Estonia government’s IT systems. Fourth, the current geopolitical context must also be factored into any effort to gauge the degree of threat of cyberwar. The start of the new Obama Administration has begun to help reduce tensions between the United States and other nations. And, the new administration has taken initial steps to improve bilateral relations specifically with both China and Russia. However, it must be said that over the last few years the posture of both the Chinese and Russian governments toward America has clearly become more assertive, and at times even aggressive. Some commentators have talked about the prospects of a cyber Pearl Harbor, and the pattern of Chinese and Russian behavior to date gives reason for concern along these lines: both nations have offensive cyberwarfare strategies in place; both nations have taken the cyber equivalent of building up their forces; both nations now regularly probe our cyber defenses looking for gaps to be exploited; both nations have begun taking actions that cross the line from cyberespionage to cyberaggression; and, our bilateral relations with both nations are increasingly fractious and complicated by areas of marked, direct competition. Clearly, there a sharp differences between current U.S. relations with these two nations and relations between the US and Japan just prior to World War II. However, from a strategic defense perspective, there are enough warning signs to warrant preparation. In addition to the threat of cyberwar, the limited resources required to carry out even a large scale cyberattack also makes likely the potential for a significant cyberterror attack against the United States. However, the lack of a long list of specific incidences of cyberterrorism should provide no comfort. There is strong evidence to suggest that al Qaeda has the ability to conduct cyberterror attacks against the United States and its allies. Al Qaeda and other terrorist organizations are extremely active in cyberspace, using these technologies to communicate among themselves and others, carry out logistics, recruit members, and wage information warfare. For example, al Qaeda leaders used email to communicate with the 9‐11 terrorists and the 9‐11 terrorists used the Internet to make travel plans and book flights. Osama bin Laden and other al Qaeda members routinely post videos and other messages to online sites to communicate. Moreover, there is evidence of efforts that al Qaeda and other terrorist organizations are actively developing cyberterrorism capabilities and seeking to carry out cyberterrorist attacks. For example, the Washington Post has reported that “U.S. investigators have found evidence in the logs that mark a browser's path through the Internet that al Qaeda operators spent time on sites that offer software and programming instructions for the digital switches that run power, water, transport and communications grids. In some interrogations . . . al Qaeda prisoners have described intentions, in general terms, to use those tools.”25 Similarly, a 2002 CIA report on the cyberterror threat to a member of the Senate stated that al Qaeda and Hezbollah have become "more adept at using the internet and computer technologies.”26 The FBI has issued bulletins stating that, “U. S. law enforcement and intelligence agencies have received indications that Al Qaeda members have sought information on Supervisory Control And Data Acquisition (SCADA) systems available on multiple SCADA‐related web sites.”27 In addition a number of jihadist websites, such as 7hj.7hj.com, teach computer attack and hacking skills in the service of Islam.28 While al Qaeda may lack the cyber‐attack capability of nations like Russia and China, there is every reason to believe its operatives, and those of its ilk, are as capable as the cyber criminals and hackers who routinely effect great harm on the world’s digital infrastructure generally and American assets specifically. In fact, perhaps, the most troubling indication of the level of the cyberterrorist threat is the countless, serious non‐terrorist cyberattacks routinely carried out by criminals, hackers, disgruntled insiders, crime syndicates and the like. If run‐of‐the‐mill criminals and hackers can threaten powergrids, hack vital military networks, steal vast sums of money, take down a city’s of traffic lights, compromise the Federal Aviation Administration’s air traffic control systems, among other attacks, it is overwhelmingly likely that terrorists can carry out similar, if not more malicious attacks. Moreover, even if the world’s terrorists are unable to breed these skills, they can certainly buy them. There are untold numbers of cybermercenaries around the world—sophisticated hackers with advanced training who would be willing to offer their services for the right price. Finally, given the nature of our understanding of cyber threats, there is always the possibility that we have already been the victim or a cyberterrorist attack, or such an attack has already been set but not yet effectuated, and we don’t know it yet. Instead, a well‐designed cyberattack has the capacity cause widespread chaos, sow societal unrest, undermine national governments, spread paralyzing fear and anxiety, and create a state of utter turmoil, all without taking a single life. A sophisticated cyberattack could throw a nation’s banking and finance system into chaos causing markets to crash, prompting runs on banks, degrading confidence in markets, perhaps even putting the nation’s currency in play and making the government look helpless and hapless. In today’s difficult economy, imagine how Americans would react if vast sums of money were taken from their accounts and their supporting financial records were destroyed. A truly nefarious cyberattacker could carry out an attack in such a way (akin to Robin Hood) as to engender populist support and deepen rifts within our society, thereby making efforts to restore the system all the more difficult. A modestly advanced enemy could use a cyberattack to shut down (if not physically damage) one or more regional power grids. An entire region could be cast into total darkness, power‐dependent systems could be shutdown. An attack on one or more regional power grids could also cause cascading effects that could jeopardize our entire national grid. When word leaks that the blackout was caused by a cyberattack, the specter of a foreign enemy capable of sending the entire nation into darkness would only increase the fear, turmoil and unrest. While the finance and energy sectors are considered prime targets for a cyberattack, an attack on any of the 17 delineated critical infrastructure sectors could have a major impact on the United States. For example, our healthcare system is already technologically driven and the Obama Administration’s e‐health efforts will only increase that dependency. A cyberattack on the U.S. e‐health infrastructure could send our healthcare system into chaos and put countless of lives at risk. Imagine if emergency room physicians and surgeons were suddenly no longer able to access vital patient information. A cyberattack on our nation’s water systems could likewise cause widespread disruption. An attack on the control systems for one or more dams could put entire communities at risk of being inundated, and could create ripple effects across the water, agriculture, and energy sectors. Similar water control system attacks could be used to at least temporarily deny water to otherwise arid regions, impacting everything from the quality of life in these areas to agriculture. In 2007, the U.S. Cyber Consequences Unit determined that the destruction from a single wave of cyberattacks on critical infrastructures could exceed $700 billion, which would be the rough equivalent of 50 Katrina‐esque hurricanes hitting the United States all at the same time.29 Similarly, one IT security source has estimated that the impact of a single day cyberwar attack that focused on and disrupted U.S. credit and debit card transactions would be approximately $35 billion.30 Another way to gauge the potential for harm is in comparison to other similar noncyberattack infrastructure failures. For example, the August 2003 regional power grid blackout is estimated to have cost the U.S. economy up to $10 billion, or roughly .1 percent of the nation’s GDP. 31 That said, a cyberattack of the exact same magnitude would most certainly have a much larger impact. The origin of the 2003 blackout was almost immediately disclosed as an atypical system failure having nothing to do with terrorism. This made the event both less threatening and likely a single time occurrence. Had it been disclosed that the event was the result of an attack that could readily be repeated the impacts would likely have grown substantially, if not exponentially. Additionally, a cyberattack could also be used to disrupt our nation’s defenses or distract our national leaders in advance of a more traditional conventional or strategic attack. Many military leaders actually believe that such a disruptive cyber pre‐offensive is the most effective use of offensive cyber capabilities. This is, in fact, the way Russia utilized cyberattackers—whether government assets, governmentdirected/ coordinated assets, or allied cyber irregulars—in advance of the invasion of Georgia. Widespread distributed denial of service (DDOS) attacks were launched on the Georgian governments IT systems. Roughly a day later Russian armor rolled into Georgian territory. The cyberattacks were used to prepare the battlefield; they denied the Georgian government a critical communications tool isolating it from its citizens and degrading its command and control capabilities precisely at the time of attack. In this way, these attacks were the functional equivalent of conventional air and/or missile strikes on a nation’s communications infrastructure.32 One interesting element of the Georgian cyberattacks has been generally overlooked: On July 20th, weeks before the August cyberattack, the website of Georgian President Mikheil Saakashvili was overwhelmed by a more narrowly focused, but technologically similar DDOS attack.33 This should be particularly chilling to American national security experts as our systems undergo the same sorts of focused, probing attacks on a constant basis. The ability of an enemy to use a cyberattack to counter our offensive capabilities or soften our defenses for a wider offensive against the United States is much more than mere speculation. In fact, in Iraq it is already happening. Iraq insurgents are now using off‐the‐shelf software (costing just $26) to hack U.S. drones (costing $4.5 million each), allowing them to intercept the video feed from these drones.34 By hacking these drones the insurgents have succeeded in greatly reducing one of our most valuable sources of real‐time intelligence and situational awareness. If our enemies in Iraq are capable of such an effective cyberattack against one of our more sophisticated systems, consider what a more technologically advanced enemy could do. At the strategic level, in 2008, as the United States Central Command was leading wars in both Iraq and Afghanistan, a cyber intruder compromised the security of the Command and sat within its IT systems, monitoring everything the Command was doing. 35 This time the attacker simply gathered vast amounts of intelligence. However, it is clear that the attacker could have used this access to wage cyberwar—altering information, disrupting the flow of information, destroying information, taking down systems—against the United States forces already at war. Similarly, during 2003 as the United States prepared for and began the War in Iraq, the IT networks of the Department of Defense were hacked 294 times.36 By August of 2004, with America at war, these ongoing attacks compelled then‐Deputy Secretary of Defense Paul Wolfowitz to write in a memo that, "Recent exploits have reduced operational capabilities on our networks."37 This wasn’t the first time that our national security IT infrastructure was penetrated immediately in advance of a U.S. military option.38 In February of 1998 the Solar Sunrise attacks systematically compromised a series of Department of Defense networks. What is often overlooked is that these attacks occurred during the ramp up period ahead of potential military action against Iraq. The attackers were able to obtain vast amounts of sensitive information—information that would have certainly been of value to an enemy’s military leaders. There is no way to prove that these actions were purposefully launched with the specific intent to distract American military assets or degrade our capabilities. However, such ambiguities—the inability to specifically attribute actions and motives to actors—are the very nature of cyberspace. Perhaps, these repeated patterns of behavior were mere coincidence, or perhaps they weren’t. The potential that an enemy might use a cyberattack to soften physical defenses, increase the gravity of harms from kinetic attacks, or both, significantly increases the potential harms from a cyberattack. Consider the gravity of the threat and risk if an enemy, rightly or wrongly, believed that it could use a cyberattack to degrade our strategic weapons capabilities. Such an enemy might be convinced that it could win a war—conventional or even nuclear—against the United States. The effect of this would be to undermine our deterrence‐based defenses, making us significantly more at risk of a **major** **war**.

#### Two Internal links – First,

#### Grid collapse is inevitable – qualified studies indicate multiple credible threats

Slavo ’12 (Mac Slavo, SHTFplan.com, quoting qualified people, “Report: Chance of a Catastrophic Solar Storm Is 1 in 8; Would Take Down Power Grid, Food Transportation, Water Utilities, Financial Systems”, <http://www.shtfplan.com/headline-news/report-chance-of-a-catastrophic-solar-storm-is-1-in-8-would-take-down-power-grid-food-transportation-water-utilities-financial-systems_03062012>, March 6, 2012)

According to a recent study published by Space Weather: The International Journal of Research and Applications, we have roughly a 12% chance of getting hit with a solar storm so powerful that it could take down the national power grid and yield catastrophic consequences for the general population. Pete Riley, a senior scientist at Predictive Science in San Diego, is the author of the study which looks at the probability of the occurrence of extreme weather events: Via: On the probability of occurrence of extreme space weather events Key Points Probability of a Carrington event occurring over next decade is ~12% Space physics datasets often display a power-law distribution Power-law distribution can be exploited to predict extreme events By virtue of their rarity, extreme space weather events, such as the Carrington event of 1859, are difficult to study, their rates of occurrence are difficult to estimate, and prediction of a specific future event is virtually impossible. Additionally, events may be extreme relative to one parameter but normal relative to others. In this study, we analyze several measures of the severity of space weather events (flare intensity, coronal mass ejection speeds)… … By showing that the frequency of occurrence scales as an inverse power of the severity of the event, and assuming that this relationship holds at higher magnitudes, we are able to estimate the probability that an event larger than some criteria will occur within a certain interval of time in the future. For example, the probability of another Carrington event occurring within the next decade is ∼12%. The 1859 Carrington Event, as described by Wired Science, may have been a marvel to observers and caused some setbacks in the developing telegraph infrastructure at the time, but a similar occurrence today could be a global game changer: At the time of the Carrington Event, telegraph stations caught on fire, their networks experienced major outages and magnetic observatories recorded disturbances in the Earth’s field that were literally off the scale. In today’s electrically dependent modern world, a similar scale solar storm could have catastrophic consequences. Auroras damage electrical power grids and may contribute to the erosion of oil and gas pipelines. They can disrupt GPS satellites and disturb or even completely black out radio communication on Earth. During a geomagnetic storm in 1989, for instance, Canada’s Hydro-Quebec power grid collapsed within 90 seconds, leaving millions without power for up to nine hours. The potential collateral damage in the U.S. of a Carrington-type solar storm might be between $1 trillion and $2 trillion in the first year alone, with full recovery taking an estimated four to 10 years, according to a 2008 report from the National Research Council. The post-storm effects of such an event are underestimated by the majority of the world’s population, including our political leadership. Like an electro magentic pulse attack, according to the National Research Council a massive enough solar storm could have long term effects that ”would likely include, for example, disruption of the transportation, communication, banking, and finance systems, and government services; the breakdown of the distribution of potable water owing to pump failure; and the loss of perishable foods and medications because of lack of refrigeration.” The worst case scenario has been outlined by the Center for Security Policy, which suggests that an EMP, or a solar storm that results in similar magnetic discharge across the United States, could potentially leave 90% of Americans dead within the first year: “Within a year of that attack, nine out of 10 Americans would be dead, because we can’t support a population of the present size in urban centers and the like without electricity,” said Frank Gaffney, president of the Center for Security Policy. “And that is exactly what I believe the Iranians are working towards.” In the documentary Urban Danger, Congressman Roscoe Bartlett warns of the threat posed by a downed power grid and urges his fellow citizens to take action to protect themselves for the inevitable results that would follow: We could have events in the future where the power grid will go down and it’s not, in any reasonable time, coming back up. For instance, if when the power grid went down some of our large transformers were destroyed, damaged beyond use, we don’t make any of those in this country. They’re made overseas and you order one and 18 months to two years later they will deliver it. Our power grid is very vulnerable. It’s very much on edge. Our military knows that. … There are a number of events that could create a situation in the cities where civil unrest would be a very high probability. And, I think that those who can, and those who understand, need to take advantage of the opportunity when these winds of strife are not blowing to move their families out of the city. Source: Congressman Warns: “Those Who Can, Should Move Their Families Out Of the City” For many, a 1 in 8 chance of a catastrophic event occurring in a decade’s time may be nothing to worry about. For the emergency, disaster and preparedness minded individual, however, a massive solar storm with the potential to take out our modern day power grid and utility infrastructure is just one in a variety of potentially catastrophic natural and man-made scenarios that could lead to the collapse of life in America as we know it today. Though any given event on its own may have a low probability of occurrence, when combined with other potentialities like economic collapse, currency collapse, global or regional military conflict, Super EMP, political destabilization, massive earthquakes (such as on the New Madrid fault), Tsunamis, asteroids, pandemic, and cyber attacks the odds of a game changing paradigm shift in our lifetime’s rise significantly.

#### Cyber-attacks against the grid are uniquely likely

Reed ‘12 (John, FP contributor on cyber war and military technology, "U.S. energy companies victims of potentially destructive cyber intrusions", 10/11/12, killerapps.foreignpolicy.com/posts/2012/10/11/us\_energy\_companies\_victims\_of\_potentially\_destructive\_cyber\_attacks)

Foreign actors are probing the networks of key American companies in an attempt to gain control of industrial facilities and transportation systems, Defense Secretary Leon Panetta revealed tonight.¶ "We know that foreign cyber actors are probing America's critical infrastructure networks," said Panetta, disclosing previously classified information during a speech in New York laying out the Pentagon's role in protecting the U.S. from cyber attacks. "They are targeting the computer control systems that operate chemical, electricity and water plants, and those that guide transportation thorough the country."¶ He went on to say that the U.S. government knows of "specific instances where intruders have gained access" to these systems -- frequently known as Supervisory Control and Data Acquisition (or SCADA) systems -- and that "they are seeking to create advanced tools to attack these systems and cause panic, destruction and even the loss of life," according to an advance copy of his prepared remarks.¶ The secretary said that a coordinated attack on enough critical infrastructure could be a "cyber Pearl Harbor" that would "cause physical destruction and loss of life, paralyze and shock the nation, and create a profound new sense of vulnerability."¶ While there have been reports of criminals using 'spear phishing' email attacks aimed at stealing information about American utilties, Panetta's remarks seemed to suggest more sophisticated, nation-state backed attempts to actually gain control of and damage power-generating equipment. ¶ Panetta's comments regarding the penetration of American utilities echo those of a private sector cyber security expert Killer Apps spoke with last week who said that the networks of American electric companies were penetrated, perhaps in preparation for a Stuxnet-style attack.¶ Stuxnet is the famous cyber weapon that infected Iran's uranium-enrichment centrifuges in 2009 and 2010. Stuxnet is believed to have caused some of the machines to spin erratically, thereby destroying them.¶ "There is hard evidence that there has been penetration of our power companies, and given Stuxnet, that is a staging step before destruction" of electricity-generating equipment, the expert told Killer Apps. Because uranium centrifuges and power turbines are both spinning machines, "the attack is identical -- the one to take out the centrifuges and the one to take out our power systems is the same attack."¶ "If a centrifuge running at the wrong speed can blow apart" so can a power generator, said the expert. "If you do, in fact, spin them at the wrong speeds, you can blow up any rotating device."¶ Cyber security expert Eugene Kaspersky said two weeks ago that one of his greatest fears is someone reverse-engineering a sophisticated cyber weapon like Stuxnet -- a relatively easy task -- and he noted that Stuxnet itself passed through power plants on its way to Iran. "Stuxnet infected thousands of computer systems all around the globe, I know there were power plants infected by Stuxnet very far away from Iran," Kaspersky said.

#### That shuts down US military operations

Stockton ’11 (Paul, assistant secretary of defense for Homeland Defense and Americas’ Security Affairs, “Ten Years After 9/11: Challenges for the Decade to Come”, <http://www.hsaj.org/?fullarticle=7.2.11>)

The cyber threat to the DIB is only part of a much larger challenge to DoD. Potential adversaries are seeking asymmetric means to cripple our force projection, warfighting, and sustainment capabilities, by targeting the critical civilian and defense supporting assets (within the United States and abroad) on which our forces depend. This challenge is not limited to man-made threats; DoD must also execute its mission-essential functions in the face of disruptions caused by naturally occurring hazards.20 Threats and hazards to DoD mission execution include incidents such as earthquakes, naturally occurring pandemics, solar weather events, and industrial accidents, as well as kinetic or virtual attacks by state or non-state actors. Threats can also emanate from insiders with ties to foreign counterintelligence organizations, homegrown terrorists, or individuals with a malicious agenda. From a DoD perspective, this global convergence of unprecedented threats and hazards, and vulnerabilities and consequences, is a particularly problematic reality of the post-Cold War world. Successfully deploying and sustaining our military forces are increasingly a function of interdependent supply chains and privately owned infrastructure within the United States and abroad, including transportation networks, cyber systems, commercial corridors, communications pathways, and energy grids. This infrastructure largely falls outside DoD direct control. Adversary actions to destroy, disrupt, or manipulate this highly vulnerable homeland- and foreign-based infrastructure may be relatively easy to achieve and extremely tough to counter. Attacking such “soft,” diffuse infrastructure systems could significantly affect our military forces globally – potentially blinding them, neutering their command and control, degrading their mobility, and isolating them from their principal sources of logistics support. The Defense Critical Infrastructure Program (DCIP) under Mission Assurance seeks to improve execution of DoD assigned missions to make them more resilient. This is accomplished through the assessment of the supporting commercial infrastructure relied upon by key nodes during execution. By building resilience into the system and ensuring this support is well maintained, DoD aims to ensure it can "take a punch as well as deliver one."21 It also provides the department the means to prioritize investments across all DoD components and assigned missions to the most critical issues faced by the department through the use of risk decision packages (RDP).22 The commercial power supply on which DoD depends exemplifies both the novel challenges we face and the great progress we are making with other federal agencies and the private sector. Today’s commercial electric power grid has a great deal of resilience against the sort of disruptive events that have traditionally been factored into the grid’s design. Yet, the grid will increasingly confront threats beyond that traditional design basis. This complex risk environment includes: disruptive or deliberate attacks, either physical or cyber in nature; severe natural hazards such as geomagnetic storms and natural disasters with cascading regional and national impacts (as in NLE 11); long supply chain lead times for key replacement electric power equipment; transition to automated control systems and other smart grid technologies without robust security; and more frequent interruptions in fuel supplies to electricity-generating plants. These risks are magnified by globalization, urbanization, and the highly interconnected nature of people, economies, information, and infrastructure systems. The department is highly dependent on commercial power grids and energy sources. As the largest consumer of energy in the United States, DoD is dependent on commercial electricity sources outside its ownership and control for secure, uninterrupted power to support critical missions. In fact, approximately 99 percent of the electricity consumed by DoD facilities originates offsite, while approximately 85 percent of critical electricity infrastructure itself is commercially owned. This situation only underscores the importance of our partnership with DHS and its work to protect the nation’s critical infrastructure – a mission that serves not only the national defense but also the larger national purpose of sustaining our economic health and competitiveness. DoD has traditionally assumed that the commercial grid will be subject only to infrequent, weather-related, and short-term disruptions, and that available backup power is sufficient to meet critical mission needs. As noted in the February 2008 Report of the Defense Science Board Task Force on DoD Energy Strategy, “In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage.”23 Similarly, a 2009 GAO Report on Actions Needed to Improve the Identification and Management of Electrical Power Risks and Vulnerabilities to DoD Critical Assets stated that DoD mission-critical assets rely primarily on commercial electric power and are vulnerable to disruptions in electric power supplies.24 Moreover, these vulnerabilities may cascade into other critical infrastructure that uses the grid – communications, water, transportation, and pipelines – that, in turn, is needed for the normal operation of the grid, as well as its quick recovery in emergency situations. To remedy this situation, the Defense Science Board (DSB) Task Force recommended that DoD take a broad-based approach, including a focused analysis of critical functions and supporting assets, a more realistic assessment of electricity outage cause and duration, and an integrated approach to risk management that includes greater efficiency, renewable resources, distributed generation, and increased reliability. DoD Mission Assurance is designed to carry forward the DSB recommendations. Yet, for a variety of reasons – technical, financial, regulatory, and legal – DoD has limited ability to manage electrical power demand and supply on its installations. As noted above, DHS is the lead agency for critical infrastructure protection by law and pursuant to Homeland Security Presidential Directive 7. The Department of Energy (DOE) is the lead agency on energy matters. And within DoD, energy and energy security roles and responsibilities are distributed and shared, with different entities managing security against physical, nuclear, and cyber threats; cost and regulatory compliance; and the response to natural disasters. And of course, production and delivery of electric power to most DoD installations are controlled by commercial entities that are regulated by state and local utility commissions. The resulting paradox: DoD is dependent on a commercial power system over which it does not – and never will – exercise control.

#### **Second, oil dependence wrecks DOD budgeting and operations**

Gardner 12 (Robert, Adjunct Junior Fellow at the American Security Project, 6/21/12, Budgeting for Biofuels:The Military’s Dependence on Petroleum Must be Mitigated, http://americansecurityproject.org/blog/2012/budgeting-for-biofuelsthe-militarys-dependence-on-petroleum-must-be-mitigated/, JD)

Petroleum is currently used to satisfy 80% of the US military’s energy needs and is relied upon as the single source of liquid fuel for transportation, operations, and training. The volatile price of oil has incurred huge unbudgeted costs for the military, causing national security risks for the military’s operations. In light of national security risks it has become widely agreed upon that the Department of Defense should be hedging its bets against petroleum use. The Navy is seeking to move away from petroleum dependence by investing in biofuels, the primary alternative to petroleum fuels. However, both the House and Senate Armed Services Committees have moved to block the Navy’s plans to purchase biofuels for testing and to directly invest in domestic biofuels producers. This action undermines the military’s efforts to mitigate the long term strategic risks posed by its dependence on petroleum. Biofuel research and development needs to be on the table as the military reduces its dependence on petroleum. Why does the military need to shift away from petroleum fuel? Currently the military is dependent upon volatile petroleum prices set on the global market. These prices are largely determined by the unpredictable politics of foreign countries. Even if the military dose not import oil directly from Iran or the Middle East, the price paid for petroleum is largely set by market conditions in the region. Price instability has caused budgeting dilemmas for the military in recent years. A June 2012 Congressional Research Service report found that the cost of buying fuel has increased faster than any other major DoD budget category. Despite the DoD’s cutting back 4% on petroleum use from FY2005 to FY2011, its spending on petroleum ballooned 381% in real (i.e., inflation-adjusted) terms during this time period. Along with rising prices, the short term volatility of oil prices poses substantial risks for DoD budgeting and operations. Secretary of the Navy Ray Mabus has stated that every dollar increase in the price of a barrel of petroleum costs the Navy about $31 million of unbudgeted funding annually . DoD reports have found that a 10% increase from the FY2011 price of fuel would cost the DoD as a whole an additional $1.7 billion a year . Former Defense Secretary Robert Gates asserted that unbudgeted fuel costs could force operational cuts in Air Force flying hours, Navy steaming days, and training for home-stationed Army troops. These cuts pose serious security risks for military operations. While testifying on military budgeting for 2013 Secretary Mabus stated that “we would be irresponsible if we did not reduce our dependence on foreign oil.” Steps Forward Steep increases and fluctuations in petroleum spending emphasize the need for the DoD to hedge its bets against rising petroleum prices. The Navy and Air Force have set forth 2020 goals to reduce their oil usage by 50%, by using alternative fuels. Secretary Mabus and others have stated that efforts toward biofuel development will increase the security of the energy supplies and reduce the service’s vulnerability to price shocks. In the short-term, biofuels will do nothing to help the budget – this year’s investments in biofuels will do nothing to rectify the budget – but over the longer term, developing an alternative to oil will be an important way to break oil’s monopoly. The military must be willing to take significant steps today to reach its goals of mitigating the security risks of its current dependence on oil. As will be expanded upon in further posts, biofuels should be on the table as part of the military’s comprehensive plan for hedging its bets against petroleum use.

## Advantage 2: Climate Change

Warming is real, anthropogenic, and by far the largest risk of extinction

Deibel ‘7 (Terry L. Deibel, professor of IR at National War College, Foreign Affairs Strategy, “Conclusion: American Foreign Affairs Strategy Today Anthropogenic – caused by CO2”)

Finally, **there is one major existential threat** to American security (as well as prosperity) of a nonviolent nature, which, though far in the future, demands urgent action. **It is the threat of global warming to the stability of the climate upon which all earthly life depends**. Scientists worldwide have been observing the gathering of this threat for three decades now, **and what was once a mere possibility has passed through probability to near certainty.** Indeed **not one of more than 900 articles** **on climate change published in refereed scientific journals** from 1993 to 2003 doubted that anthropogenic warming is occurring. “In legitimate scientific circles,” writes Elizabeth Kolbert, “it is virtually **impossible to find evidence of disagreement** over the fundamentals of global warming.” Evidence from a vast international scientific monitoring effort accumulates almost weekly, as this sample of newspaper reports shows: an international panel predicts “brutal droughts, floods and violent storms across the planet over the next century”; climate change could “literally alter ocean currents, wipe away huge portions of Alpine Snowcaps and aid the spread of cholera and malaria”; “glaciers in the Antarctic and in Greenland are melting much faster than expected, and…worldwide, plants are blooming several days earlier than a decade ago”; “rising sea temperatures have been accompanied by a significant global increase in the most destructive hurricanes”; “NASA scientists have concluded from direct temperature measurements that 2005 was the hottest year on record, with 1998 a close second”; “Earth’s warming climate is estimated to contribute to more than 150,000 deaths and 5 million illnesses each year” as disease spreads; “widespread bleaching from Texas to Trinidad…killed broad swaths of corals” due to a 2-degree rise in sea temperatures. “The world is slowly disintegrating,” concluded Inuit hunter Noah Metuq, who lives 30 miles from the Arctic Circle. “They call it climate change…but we just call it breaking up.” From the founding of the first cities some 6,000 years ago until the beginning of the industrial revolution, carbon dioxide levels in the atmosphere remained relatively constant at about 280 parts per million (ppm). At present they are accelerating toward 400 ppm, and by 2050 they will reach 500 ppm, about double pre-industrial levels. Unfortunately, atmospheric CO2 lasts about a century, so there is no way immediately to reduce levels, only to slow their increase, we are thus in for significant global warming; the only debate is how much and how serous the effects will be. As the newspaper stories quoted above show, we are already experiencing the effects of 1-2 degree warming in more violent storms, spread of disease, mass die offs of plants and animals, species extinction, and threatened inundation of low-lying countries like the Pacific nation of Kiribati and the Netherlands at a warming of 5 degrees or less the Greenland and West Antarctic ice sheets could disintegrate, leading to a sea level of rise of 20 feet that would cover North Carolina’s outer banks, swamp the southern third of Florida, and inundate Manhattan up to the middle of Greenwich Village. Another catastrophic effect would be the collapse of the Atlantic thermohaline circulation that keeps the winter weather in Europe far warmer than its latitude would otherwise allow. Economist William Cline once estimated the damage to the United States alone from moderate levels of warming at 1-6 percent of GDP annually; severe warming could cost 13-26 percent of GDP. But **the most frightening scenario is runaway greenhouse warming, based on positive feedback from the buildup of water** **vapor** in the atmosphere that is both caused by and causes hotter surface temperatures. Past ice age transitions, associated with only 5-10 degree changes in average global temperatures, took place in just decades, even though no one was then pouring ever-increasing amounts of carbon into the atmosphere. Faced with this specter, the best one can conclude is that “humankind’s continuing enhancement of the natural greenhouse effect is akin to playing Russian roulette with the earth’s climate and humanity’s life support system. At worst, says physics professor Marty Hoffert of New York University, “we’re just going to burn everything up; we’re going to het the atmosphere to the temperature it was in the Cretaceous when there were crocodiles at the poles, and then everything will collapse.” During the Cold War, astronomer Carl Sagan popularized a theory of nuclear winter to describe how a thermonuclear war between the Untied States and the Soviet Union would not only destroy both countries but possible end life on this planet. **Global warming is the post-Cold War era’s equivalent of nuclear winter at least as serious and considerably better supported scientifically. Over the long run it puts dangers form terrorism and traditional military challenges to shame**. It is a threat not only to the security and prosperity to the United States, but potentially to the continued existence of life on this planet.

#### CO2 kills ocean biodiversity – causes acidification and mass dieoff

Joe Romm is a Fellow at American Progress and is the editor of Climate Progress, “Science: Ocean Acidifying So Fast It Threatens Humanity’s Ability to Feed Itself,” 3/2/2012, http://thinkprogress.org/romm/2012/03/02/436193/science-ocean-acidifying-so-fast-it-threatens-humanity-ability-to-feed-itself/?utm\_source=feedburner&utm\_medium=email&utm\_campaign=Feed%3A+climateprogre

The world’s oceans may be turning acidic faster today from human carbon emissions than they did during four major extinctions in the last 300 million years, when natural pulses of carbon sent global temperatures soaring, says a new study in Science. The study is the first of its kind to survey the geologic record for evidence of ocean acidification over this vast time period. “What we’re doing today really stands out,” said lead author Bärbel Hönisch, a paleoceanographer at Columbia University’s Lamont-Doherty Earth Observatory. “We know that life during past ocean acidification events was not wiped out—new species evolved to replace those that died off. But if industrial carbon emissions continue at the current pace, we may lose organisms we care about—coral reefs, oysters, salmon.” That’s the news release from a major 21-author Science paper, “The Geological Record of Ocean Acidification” (subs. req’d). We knew from a 2010 Nature Geoscience study that the oceans are now acidifying 10 times faster today than 55 million years ago when a mass extinction of marine species occurred. But this study looked back over 300 million and found that “the unprecedented rapidity of CO2 release currently taking place” has put marine life at risk in a frighteningly unique way: … the current rate of (mainly fossil fuel) CO2 release stands out as capable of driving a combination and magnitude of ocean geochemical changes potentially unparalleled in at least the last ~300 My of Earth history, raising the possibility that we are entering an unknown territory of marine ecosystem change. That is to say, it’s not just that acidifying oceans spell marine biological meltdown “by end of century” as a 2010 Geological Society study put it. We are also warming the ocean and decreasing dissolved oxygen concentration. That is a recipe for mass extinction. A 2009 Nature Geoscience study found that ocean dead zones “devoid of fish and seafood” are poised to expand and “remain for thousands of years.“ And remember, we just learned from a 2012 new Nature Climate Change study that carbon dioxide is “driving fish crazy” and threatening their survival. Here’s more on the new study: The oceans act like a sponge to draw down excess carbon dioxide from the air; the gas reacts with seawater to form carbonic acid, which over time is neutralized by fossil carbonate shells on the seafloor. But if CO2 goes into the oceans too quickly, it can deplete the carbonate ions that corals, mollusks and some plankton need for reef and shell-building.

**Extinction**

Romm ‘10 (Dr. Joseph Romm is the editor of Climate Progress and a Senior Fellow at the American Progress, Acting Assistant Secretary of Energy for Energy Efficiency and Renewable Energy during the Clinton Administration, PhD in Physics from MIT, “Nature Geoscience study: Oceans are acidifying 10 times faster today than 55 million years ago when a mass extinction of marine species occurred” <http://climateprogress.org/2010/02/18/ocean-acidification-study-mass-extinction-of-marine-life-nature-geoscience/#more-19529>)

Marine life face some of the worst impacts. We now know that global warming is “capable of wrecking the marine ecosystem and depriving future generations of the harvest of the seas” (see 2009 Nature Geoscience study concludes ocean dead zones “devoid of fish and seafood” are poised to expand and “remain for thousands of years”). The acidification of the ocean in particular is a grave threat — for links to primary sources and recent studies, see “Imagine a World without Fish: Deadly ocean acidification — hard to deny, harder to geo-engineer, but not hard to stop” (and below). A new Nature Geoscience study, “Past constraints on the vulnerability of marine calcifiers to massive carbon dioxide release” (subs. req’d) provides a truly ominous warning. The release from the researchers at the University of Bristol is “Rate of ocean acidification the fastest in 65 million years.” I am reprinting below a piece by award-winning science journalist Carl Zimmer published this week by Yale environment360, which explains ocean acidification and what this important study says: The JOIDES Resolution looks like a bizarre hybrid of an oil rig and a cargo ship. It is, in fact, a research vessel that ocean scientists use to dig up sediment from the sea floor. In 2003, on a voyage to the southeastern Atlantic, scientists aboard the JOIDES Resolution brought up a particularly striking haul. They had drilled down into sediment that had formed on the sea floor over the course of millions of years. The oldest sediment in the drill was white. It had been formed by the calcium carbonate shells of single-celled organisms — the same kind of material that makes up the White Cliffs of Dover. But when the scientists examined the sediment that had formed 55 million years ago, the color changed in a geological blink of an eye. “In the middle of this white sediment, there’s this big plug of red clay,” says Andy Ridgwell, an earth scientist at the University of Bristol. In other words, the vast clouds of shelled creatures in the deep oceans had virtually disappeared. Many scientists now agree that this change was caused by a drastic drop of the ocean’s pH level. The seawater became so corrosive that it ate away at the shells, along with other species with calcium carbonate in their bodies. It took hundreds of thousands of years for the oceans to recover from this crisis, and for the sea floor to turn from red back to white. The clay that the crew of the JOIDES Resolution dredged up may be an ominous warning of what the future has in store. By spewing carbon dioxide into the air, we are now once again making the oceans more acidic. Today, Ridgwell and Daniela Schmidt, also of the University of Bristol, are publishing a study in the journal Nature Geoscience, comparing what happened in the oceans 55 million years ago to what the oceans are experiencing today. Their research supports what other researchers have long suspected: The acidification of the ocean today is bigger and faster than anything geologists can find in the fossil record over the past 65 million years. Indeed, its speed and strength — Ridgwell estimate that current ocean acidification is taking place at ten times the rate that preceded the mass extinction 55 million years ago — may spell doom for many marine species, particularly ones that live in the deep ocean. “This is an almost unprecedented geological event,” says Ridgwell. When we humans burn fossil fuels, we pump carbon dioxide into the atmosphere, where the gas traps heat. But much of that carbon dioxide does not stay in the air. Instead, it gets sucked into the oceans. If not for the oceans, climate scientists believe that the planet would be much warmer than it is today. Even with the oceans’ massive uptake of CO2, the past decade was still the warmest since modern record-keeping began. But storing carbon dioxide in the oceans may come at a steep cost: It changes the chemistry of seawater. At the ocean’s surface, seawater typically has a pH of about 8 to 8.3 pH units. For comparison, the pH of pure water is 7, and stomach acid is around 2. The pH level of a liquid is determined by how many positively charged hydrogen atoms are floating around in it. The more hydrogen ions, the lower the pH. When carbon dioxide enters the ocean, it lowers the pH by reacting with water. The carbon dioxide we have put into the atmosphere since the Industrial Revolution has lowered the ocean pH level by .1. That may seem tiny, but it’s not. The pH scale is logarithmic, meaning that there are 10 times more hydrogen ions in a pH 5 liquid than one at pH 6, and 100 times more than pH 7. As a result, a drop of just .1 pH units means that the concentration of hydrogen ions in the ocean has gone up by about 30 percent in the past two centuries. To see how ocean acidification is going to affect life in the ocean, scientists have run laboratory experiments in which they rear organisms at different pH levels. The results have been worrying — particularly for species that build skeletons out of calcium carbonate, such as corals and amoeba-like organisms called foraminifera. The extra hydrogen in low-pH seawater reacts with calcium carbonate, turning it into other compounds that animals can’t use to build their shells. These results are worrisome, not just for the particular species the scientists study, but for the ecosystems in which they live. Some of these vulnerable species are crucial for entire ecosystems in the ocean. Small shell-building organisms are food for invertebrates, such as mollusks and small fish, which in turn are food for larger predators. Coral reefs create an underwater rain forest, cradling a quarter of the ocean’s biodiversity. But on their own, lab experiments lasting for a few days or weeks may not tell scientists how ocean acidification will affect the entire planet. “It’s not obvious what these mean in the real world,” says Ridgwell. One way to get more information is to look at the history of the oceans themselves, which is what Ridgwell and Schmidt have done in their new study. At first glance, that history might suggest we have nothing to worry about. A hundred million years ago, there was over five times more carbon dioxide in the atmosphere and the ocean was .8 pH units lower. Yet there was plenty of calcium carbonate for foraminifera and other species. It was during this period, in fact, that shell-building marine organisms produced the limestone formations that would eventually become the White Cliffs of Dover. But there’s a crucial difference between the Earth 100 million years ago and today. Back then, carbon dioxide concentrations changed very slowly over millions of years. Those slow changes triggered other slow changes in the Earth’s chemistry. For example, as the planet warmed from more carbon dioxide, the increased rainfall carried more minerals from the mountains into the ocean, where they could alter the chemistry of the sea water. Even at low pH, the ocean contains enough dissolved calcium carbonate for corals and other species to survive. Today, however, we are flooding the atmosphere with carbon dioxide at a rate rarely seen in the history of our planet. The planet’s weathering feedbacks won’t be able to compensate for the sudden drop in pH for hundreds of thousands of years. Scientists have been scouring the fossil record for periods of history that might offer clues to how the planet will respond to the current carbon jolt. They’ve found that 55 million years ago, the Earth went through a similar change. Lee Kump of Penn State and his colleagues have estimated that roughly 6.8 trillion tons of carbon entered the Earth’s atmosphere over about 10,000 years. Nobody can say for sure what unleashed all that carbon, but it appeared to have had a drastic effect on the climate. Temperatures rose between 5 and 9 degrees Celsius (9 to 16 Fahrenheit). Many deep-water species became extinct, possibly as the pH of the deep ocean became too low for them to survive. But this ancient catastrophe (known as the Paleocene-Eocene thermal maximum, or PETM) was not a perfect prequel to what’s happening on Earth today. The temperature was warmer before the carbon bomb went off, and the pH of the oceans was lower. The arrangement of the continents was also different. The winds blew in different patterns as a result, driving the oceans in different directions. All these factors make a big difference on the effect of ocean acidification. For example, the effect that low pH has on skeleton-building organisms depends on the pressure and temperature of the ocean. Below a certain depth in the ocean, the water becomes so cold and the pressure so high that there’s no calcium carbonate left for shell-building organisms. That threshold is known as the saturation horizon. To make a meaningful comparison between the PETM and today, Ridgwell and Schmidt built large-scale simulations of the ocean at both points of time. They created a virtual version of the Earth 55 million years ago and let the simulation run until it reached a stable state. The pH level of their simulated ocean fell within the range of estimates of the pH of the actual ocean 55 millions years ago. They then built a version of the modern Earth, with today’s arrangements of continents, average temperature, and other variables. They let the modern world reach a stable state and then checked the pH of the ocean. Once again, it matched the real pH found in the oceans today. Ridgwell and Schmidt then jolted both of these simulated oceans with massive injections of carbon dioxide. They added 6.8 trillion tons of carbon over 10,000 years to their PETM world. Using conservative projections of future carbon emissions, they added 2.1 trillion tons of carbon over just a few centuries to their modern world. Ridgwell and Schmidt then used the model to estimate how easily carbonate would dissolve at different depths of the ocean. The results were strikingly different. Ridgwell and Schmidt found that ocean acidification is happening about ten times faster today than it did 55 million years ago. And while the saturation horizon rose to 1,500 meters 55 million years ago, it will lurch up to 550 meters on average by 2150, according to the model. The PETM was powerful enough to trigger widespread extinctions in the deep oceans. Today’s faster, bigger changes to the ocean may well bring a new wave of extinctions. Paleontologists haven’t found signs of major extinctions of corals or other carbonate-based species in surface waters around PETM. But since today’s ocean acidification is so much stronger, it may affect life in shallow water as well. “We can’t say things for sure about impacts on ecosystems, but there is a lot of cause for concern,” says Ridgwell. Ellen Thomas, a paleoceanographer at Yale University, says that the new paper “is highly significant to our ideas on ocean acidification.” But she points out that life in the ocean was buffeted by more than just a falling pH. “I’m not convinced it’s the whole answer,” she says. The ocean’s temperature rose and oxygen levels dropped. Together, all these changes had complex effects on the ocean’s biology 55 million years ago. Scientists now have to determine what sort of combined effect they will have on the ocean in the future. Our carbon-fueled civilization is affecting life everywhere on Earth, according to the work of scientists like Ridgwell — even life that dwells thousands of feet underwater. “The reach of our actions can really be quite global,” says Ridgwell. It’s entirely possible that the ocean sediments that form in the next few centuries will change from the white of calcium carbonate back to red clay, as ocean acidification wipes out deep-sea ecosystems. “It will give people hundreds of millions of years from now something to identify our civilization by,” says Ridgwell. And for completeness’ sake, here’s more background on ocean acidification (which regular CP readers can skip). You can watch NOAA administrator Lubchenco give a demonstration of the science of ocean acidification. Ocean acidification must be a core climate message, since it is hard to deny and impervious to the delusion that geoengineering is the silver bullet. Indeed, a major 2009 study GRL study, “Sensitivity of ocean acidification to geoengineered climate stabilization” (subs. req’d), concluded: The results of this paper support the view that climate engineering will not resolve the problem of ocean acidification, and that therefore deep and rapid cuts in CO2 emissions are likely to be the most effective strategy to avoid environmental damage from future ocean acidification. If you want to understand ocean acidification better, see this BBC story, which explains: Man-made pollution is raising ocean acidity at least 10 times faster than previously thought, a study says. Or see this Science magazine study, “Evidence for Upwelling of Corrosive “Acidified” Water onto the Continental Shelf” (subs. req’), which found Our results show for the first time that a large section of the North American continental shelf is impacted by ocean acidification. Other continental shelf regions may also be impacted where anthropogenic CO2-enriched water is being upwelled onto the shelf. Or listen to the Australia’s ARC Centre of Excellence for Coral Reef Studies, which warns: The world’s oceans are becoming more acid, with potentially devastating consequences for corals and the marine organisms that build reefs and provide much of the Earth’s breathable oxygen. The acidity is caused by the gradual buildup of carbon dioxide (CO2) in the atmosphere, dissolving into the oceans. Scientists fear it could be lethal for animals with chalky skeletons which make up more than a third of the planet’s marine life…. Corals and plankton with chalky skeletons are at the base of the marine food web. They rely on sea water saturated with calcium carbonate to form their skeletons. However, as acidity intensifies, the saturation declines, making it harder for the animals to form their skeletal structures (calcify). “Analysis of coral cores shows a steady drop in calcification over the last 20 years,” says Professor Ove Hoegh-Guldberg of CoECRS and the University of Queensland. “There’s not much debate about how it happens: put more CO2 into the air above and it dissolves into the oceans. “When CO2 levels in the atmosphere reach about 500 parts per million, you put calcification out of business in the oceans.” (Atmospheric CO2 levels are presently 385 ppm, up from 305 in 1960.) I’d like to see an analysis of what happens when you get to 850 to 1000+ ppm because that is where we’re headed (see U.S. media largely ignores latest warning from climate scientists: “Recent observations confirm … the worst-case IPCC scenario trajectories (or even worse) are being realised” — 1000 ppm). In June, dozens of Academies of Science, including ours and China’s, issued a joint statement on ocean acidification, warned “Marine food supplies are likely to be reduced with significant implications for food production and security in regions dependent on fish protein, and human health and wellbeing” and “Ocean acidification is irreversible on timescales of at least tens of thousands of years.” They conclude: Ocean acidification is a direct consequence of increasing atmospheric CO2 concentrations. To avoid substantial damage to ocean ecosystems, deep and rapid reductions of global CO2 emissions by at least 50% by 2050, and much more thereafter are needed. We, the academies of science working through the InterAcademy Panel on International Issues (IAP), call on world leaders to: • Acknowledge that ocean acidification is a direct and real consequence of increasing atmospheric CO2 concentrations, is already having an effect at current concentrations, and is likely to cause grave harm to important marine ecosystems as CO2 concentrations reach 450 ppm and above; • Recognise that reducing the build up of CO2 in the atmosphere is the only practicable solution to mitigating ocean acidification; • Within the context of the UNFCCC negotiations in the run up to Copenhagen 2009, recognise the direct threats posed by increasing atmospheric CO2 emissions to the oceans and therefore society, and take action to mitigate this threat; • Implement action to reduce global CO2 emissions by at least 50% of 1990 levels by 2050 and continue to reduce them thereafter. If we want to save life in the oceans — and save ourselves, since **we depend on that life** — the time to start slashing carbon dioxide emissions is now.

The science is settled - warming is real and anthropogenic - be highly skeptical of negative evidence

Costello et al ‘11(Anthony, Professor and Co-Director of the Institute for Global Health @ University College London, Mark Malsin, Professor in the Department of Geography @ UCL, Director of the UCL Institute for Human Health and Performance, Anne Johnson, Professor of Infectious Disease Epidemiology @ UCL, Paul Ekins, PhD in Economics from University of London and Professor of Energy and Environmental Policy @ UCL Energy Institute, "Global health and climate change: moving from denial and catastrophic fatalism to positive action," May, http://rsta.royalsocietypublishing.org/content/369/1942/1866.full)

Advocacy about the health consequences will ensure that climate change is a high priority. The United Nations Convention on Climate Change was set up in 1992 to ensure that nations worked together to minimize the adverse effects, but McMichael and Neira noted that, in preparation for the Copenhagen conference in December 2009, only four of 47 nations mentioned human health as a consideration [1]. With business as usual, global warming caused by rising greenhouse gas (GHG) emissions will threaten mass populations through increased transmission of some infections, heat stress, food and water insecurity, increased deaths from more frequent and extreme climate events, threats to shelter and security, and through population migration [2]. On the one hand it is necessary in the media to counter climate change sceptics and denialists, but on the other it is also important not to allow climate catastrophists, who tell us it is all too late, to deflect us from pragmatic and positive action. Catastrophic scenarios are possible in the longer term, and effective action will be formidably difficult, but evidence suggests that we do have the tools, the time and the resources to bring about the changes needed for climate stability. Previous Section Next Section 2. Climate change evidence and denial Given the current body of evidence, it is surprising that global warming and its causal relationship with atmospheric GHG pollution is disputed any more than the relationship between acquired immune deficiency syndrome (AIDS) and human immunodeficiency virus (HIV) infection, or lung cancer and cigarette smoking. The basic principles that determine the Earth’s temperature are, of course, relatively simple. Some of the short-wave solar radiation that strikes the Earth is reflected back into space and some is absorbed by the land and emitted as long-wave radiation (heat). Some of the long-wave radiation is trapped in the atmosphere by ‘greenhouse gases’, which include water vapour, carbon dioxide and methane. Without GHGs the Earth would be on average 33°C colder. Over the last 150 years, since the Industrial Revolution, humans have been adding more carbon dioxide and methane into the atmosphere. The result is that the Earth’s atmosphere, ocean and land are indeed warming—due to increased atmospheric ‘greenhouse gas’ concentrations [3]. Gleick et al. [4], from the US National Academy of Sciences, wrote a letter to Science stating ‘There is compelling, comprehensive, and consistent objective evidence that humans are changing the climate in ways that threaten our societies and the ecosystems on which we depend’. The most recent report by the Intergovernmental Panel on Climate Change (IPCC) [5], amounting to nearly 3000 pages of detailed review and analysis of published research, also declares that the scientific uncertainties of global warming are essentially resolved. This report states that there is clear evidence for a 0.75°C rise in global temperatures and 22 cm rise in sea level during the twentieth century. The IPCC synthesis also predicts that global temperatures could rise further by between 1.1°C and 6.4°C by 2100, and sea level could rise by between 28 and 79 cm, or more if the melting of Greenland and Antarctica accelerates. In addition, weather patterns will become less predictable and the occurrence of extreme climate events, such as storms, floods, heat waves and droughts, will increase. There is also strong evidence for ocean acidification driven by more carbon dioxide dissolving in the oceans [6]. Given the current failure of international negotiations to address carbon emission reductions, and that atmospheric warming lags behind rises in CO2 concentration, there is concern that global surface temperature will rise above the supposedly ‘safe limit’ of 2°C within this century. Each doubling of atmospheric carbon dioxide concentration alone is expected to produce 1.9–4.5°C of warming at equilibrium [7]. Of course, climate modelling is an extremely complex process, and uncertainty with projections relating to future emissions trajectories means that the time scale and magnitude of future climate change cannot be predicted with certainty [8]. These uncertainties are magnified when future climate predictions are used to estimate potential impacts. For example, the environmental impacts of climate change are also uncertain, but could underestimate such impacts because they detrimentally interact with habitat loss, pollution and loss of biodiversity due to other causes. There is also the additional problem that switching from biome to biome may not be directly reversible. For example, rainforest recycles a huge amount of water so it can survive a significant amount of aridification before it burns and is replaced by savannah. But the region then has to get much wetter before rainforest can return, as there is greatly reduced water cycling in savannah [9]. In the policy arena, further uncertainty surrounds the desire for international agreements on emission cuts, and the possible routes to such agreement and implementation. The feasible speed of technological innovation in carbon capture and provision of renewable/low-carbon energy resources is also uncertain. Denying the causes or the current weight of evidence for anthropogenic climate change is irrational, just as the existence of ‘uncertainties’ should not be used to deny the need for proportionate action, when such uncertainties could underestimate the risks and impact of climate change. There is no reason for inaction and there are many ways we can use our current knowledge of climate change to improve health provision for current and future generations. Previous Section Next Section 3. Catastrophism At the other end of the scale are doom-mongers who predict catastrophic population collapse and the end of civilization. In the early nineteenth century, the French palaeontologist Georges Cuvier first addressed catastrophism and explained patterns of extinction observed in the fossil record through catastrophic natural events [10]. We know now of five major extinctions: the Ordovician–Silurian extinction (439 million years ago), the Late Devonian extinction (about 364 million years ago), the Permian–Triassic extinction (about 251 million years ago), the End Triassic extinction (roughly 199 million to 214 million years ago) and the Cretaceous–Tertiary extinction (about 65 million years ago). These mass extinctions were caused by a combination of plate tectonics, supervolcanism and asteroid impacts. The understanding of the mass extinctions led Gould & Eldredge [11] to update Darwin’s theory of evolution with their own theory of punctuated equilibrium. Many scientists have suggested that the current human-induced extinction rates could be as fast as those during these mass extinctions [12,13]. For example, one study predicted that 58 per cent of species may be committed to extinction by 2050 due to climate change alone [14], though this paper has been criticized [15,16]. Some people have even suggested that human extinction may not be a remote risk [17–19]. Sherwood & Huber [7] point to continued heating effects that could make the world largely uninhabitable by humans and mammals within 300 years. Peak heat stress, quantified by the wet-bulb temperature (used because it reflects both the ambient temperature and relative humidity of the site), is surprisingly similar across diverse climates and never exceeds 31°C. They suggest that if it rose to 35°C, which never happens now but would at a warming of 7°C, hyperthermia in humans and other mammals would occur as dissipation of metabolic heat becomes impossible, therefore making many environments uninhabitable.

#### Fulfilling domestic commitments to reduce emissions spills over internationally

Eilperin 2/6 (Juliety Eilperin, McGraw Professor of Journalism at Princeton University, magna cum laude from Princeton University, where she received a bachelor's in Politics, Reporter for the Washington Times, “U.S. could fall short of 2020 climate goal, new study says, but target remains in reach”, <http://www.washingtonpost.com/national/health-science/us-could-fall-short-of-2020-climate-goal-new-study-says-but-target-remains-in-reach/2013/02/06/128f8f82-6f08-11e2-ac36-3d8d9dcaa2e2_story_1.html>, February 6, 2013)

The United States is not on track to meet its international commitment to cut greenhouse gas emissions by 2020, according to an analysis released Wednesday by the World Resources Institute. The new findings examine the impact of the U.S. energy and transportation sectors as well as sources such as methane releases from landfills. The economic recession and a turn to natural gas for electricity production have caused a dip in greenhouse gas emissions, but the temporary decline isn’t enough for the United States to meet its pledged reduction of 17 percent by 2020, according to the World Resources Institute, which recommends an ambitious approach to tackling emissions. The economic recession and a turn to natural gas for electricity production have caused a dip in greenhouse gas emissions, but the temporary decline isn’t enough for the United States to meet its pledged reduction of 17 percent by 2020, according to the World Resources Institute, which recommends an ambitious approach to tackling emissions. The study gives a pessimistic view of the future even though carbon emissions have fallen in recent years because of the economic downturn and increased use of natural gas to produce electricity. While the Obama administration has taken several steps to curb greenhouse gas emissions, such as imposing the first carbon limits on vehicles and new power plants, the analysis suggests that non-carbon emissions from the U.S. natural gas boom and from chemicals used as refrigerants are on the rise. The U.S. target is to cut greenhouse gas emissions 17 percent by 2020 compared with 2005 levels. Energy-related carbon dioxide emissions have fallen 8.7 percent compared with 2005 levels and are projected to stay near that level through 2035. But greenhouse gas emissions from other sources are expected to increase 18 percent by 2020 compared with the 2005 baseline and 36 percent by 2035. Imposing greenhouse gas emission limits on existing power plants — a policy the White House is considering — could halve the gap between the current trajectory and the country’s 2020 climate target. Phasing out hydrofluorocarbons (HFCs), used in cooling equipment from soda machines to many car air conditioners, would make up 23 percent of the gap, according to the report, while stricter federal rules for natural-gas methane emissions and energy efficiency standards would make up 11 percent and 8 percent, respectively, of the difference. “The U.S. is not yet on track to hit its 17 percent target, but we have the tools to get there,” said Nicholas Bianco, a senior associate at World Resources Institute and the report’s lead author. Michael A. Levi, a senior fellow for energy and the environment at the Council on Foreign Relations, praised the report as “the first serious attempt to show what it would take to slash emissions over the next two decades without new legislation.” Facing stiff congressional opposition, President Obama has made clear that he plans to undertake more ambitious action on climate change in his second term by using existing regulatory authority. Durwood Zaelke, president of the Institute for Governance and Sustainable Development, noted that the car sector accounts for roughly half of U.S. HFC use, “making this the biggest opportunity for getting rid of this super greenhouse gas.” “The last time we changed the coolant in our cars, it only took three years to change the fleet in the U.S. and most of the world,” he added. Without setting these and other climate polices in motion, the WRI analysts warn, the United States will find itself falling short of the pledge it made in 2009 as part of U.N. climate negotiations. While the commitment is more modest than many scientists and other world leaders have called for, the United States’ ability to meet it could influence whether more than 190 nations can broker a new climate pact over the next three years that would take effect in 2020. Neil Morisetti, Britain’s climate and energy security envoy, said in a phone interview that the United States and other industrialized nations need to fulfill their climate pledges both to build trust among negotiators and to ensure that any global warming agreement delivers results. “It is important, having made that commitment, that you deliver against it,” Morisetti said of the current U.S. climate pledge. He added that when it comes to any future treaty, “it’s important not only that we sign bits of paper, but we have a plan to get there. It is that action by national governments that is the wind beneath the sails.” Jake Schmidt, international climate policy director for the Natural Resources Defense Council, an advocacy group, said that the rest of the world “will be looking to see what the U.S. does in the next few months,” given the signal that Obama has sent about tackling global warming. “It will show the U.S. can follow through, even after the climate bill demise” of 2010, Schmidt added. Still, Levi warned, the report “also emphasizes how unlikely we are to achieve deep emissions cuts without meaningful congressional action, particularly beyond 2020.” Ultimately, Levi said, the critical climate question is how the United States and the rest of the world will cut greenhouse gas emissions through 2030 and 2050, since that will have a much bigger impact on future warming. “Steps between now and 2020 should be evaluated primarily based on how they set the U.S. up for the longer term, not on the exact number of tons that get cut in the next eight years,” he said.

#### It’s not too late—emissions reductions can avoid and delay catastrophic impacts.

Chestney 1/13/13 (Nina, senior environmental correspondent, “Climate Change Study: Emissions Limits Could Avoid Damage By Two-Thirds,” <http://www.huffingtonpost.com/2013/01/13/climate-change-study-emissions-limits_n_2467995.html>)

The world could avoid much of the damaging effects of climate change this century if greenhouse gas emissions are curbed more sharply, research showed on Sunday. The study, published in the journal Nature Climate Change, is the first comprehensive assessment of the benefits of cutting emissions to keep the global temperature rise to within 2 degrees Celsius by 2100, a level which scientists say would avoid the worst effects of climate change. It found 20 to 65 percent of the adverse impacts by the end of this century could be avoided. "Our research clearly identifies the benefits of reducing greenhouse gas emissions - less severe impacts on flooding and crops are two areas of particular benefit," said Nigel Arnell, director of the University of Reading's Walker Institute, which led the study. In 2010, governments agreed to curb emissions to keep temperatures from rising above 2 degrees C, but current emissions reduction targets are on track to lead to a temperature rise of 4 degrees or more by 2100. The World Bank has warned more extreme weather will become the "new normal" if global temperature rises by 4 degrees. Extreme heatwaves could devastate areas from the Middle East to the United States, while sea levels could rise by up to 91 cm (3 feet), flooding cities in countries such as Vietnam and Bangladesh, the bank has said. The latest research involved scientists from British institutions including the University of Reading, the Met Office Hadley Centre and the Tyndall Centre for Climate Change, as well as Germany's Potsdam Institute for Climate Impact Research. It examined a range of emissions-cut scenarios and their impact on factors including flooding, drought, water availability and crop productivity. The strictest scenario kept global temperature rise to 2 degrees C with emissions peaking in 2016 and declining by 5 percent a year to 2050. FLOODING Adverse effects such as declining crop productivity and exposure to river flooding could be reduced by 40 to 65 percent by 2100 if warming is limited to 2 degrees, the study said. Global average sea level rise could be reduced to 30cm (12 inches) by 2100, compared to 47-55cm (18-22 inches) if no action to cut emissions is taken, it said. Some adverse climate impacts could also be delayed by many decades. The global productivity of spring wheat could drop by 20 percent by the 2050s, but the fall in yield could be delayed until 2100 if strict emissions curbs were enforced. "Reducing greenhouse gas emissions won't avoid the impacts of climate change altogether of course, but our research shows it will buy time **to** make things like buildings, transport systems and agriculture more resilient to climate change," Arnell said.

#### Several internal links:

#### First – Airborne Wind revolutionizes energy production and goes global, squo renewables will fail

Fagiano ‘9 (Lorenzo, Marie Curie fellow at Politecnico di Torino and a visiting researcher at the University of California, Santa Barbara, co-author of 50 papers published in international journals, conference proceedings and book chapters. He is recipient of the ENI award "Debut in Research" prize 2010, of the Maffezzoni prize 2009 and of a Marie Curie International Outgoing Fellowship, “High-altitude wind power generation for renewable energy cheaper than oil,” http://ec.europa.eu/research/sd/conference/2009/papers/15/lorenzo\_fagiano,\_mario\_milanese\_and\_dario\_piga\_-\_high\_altitude\_wind\_power\_generation\_for\_renewable\_energy\_cheaper\_than\_oil.pdf)

The dependance of the global energy system on fossil sources owned by few producer countries leads to economical instability, prevents millions of people from having access to energy and gives rise to delicate geopolitical equilibria. Non–OECD countries growing at fast rates like China and India will account for a 50% increase of energy demand in the next two decades. Such an increment has to be covered by an increase of energy supply: considering the current situation, fossil sources are the ﬁrst candidates to fuel the growth of non–OECD world. As a consequence, the present problems of high concentration of fossil sources in few countries will be more acute, energy costs will continuously increase on average and pronounced short–term swings of oil price will remain the norm in the next 20 years.

The issue of climate change due to excessive concentration of greenhouse gases in the atmosphere, that is clearly related to the predominance of fossil sources in the global energy mix, may be even more serious than geopolitics. In fact, if no measure is undertaken to contain the emissions of carbon dioxide, a doubling of CO2 concentration is expected to be reached by 2100, with a consequent global average temperature increase of up to 6 ± C [1, 21, 22, 23]. Almost all of the increase of emissions in the next twenty years is accounted for by non–OECD countries. In [1], two alternative climate–policy scenarios are considered (in addition to the reference one), in which the undertaking of political measures and investments aimed at reducing CO2 emissions is assumed. Both scenarios lead to a long–term stabilization of carbon– dioxide emissions and they differ on the basis of the amount of efforts and investments employed to reach such a goal. Without entering into details (the interested reader is referred to [1]), the alternative scenarios clearly indicate two key points: ² power generation is a critical sector since it is the less expensive ﬁeld for CO2 reduction. As showed in Section 1.1, power generation accounts for 45% of energy– related CO2 emissions. A shift to carbon–free electricity and heat generation would signiﬁcantly contribute to reduce the emissions of greenhouse gases with relatively low costs and timings as compared to those needed to renew the transportation system, which is heavily oil dependent and would require expensive and slow transformation. Moreover, electricity is the most reﬁned form of energy and it can be used to replace the use of fossil sources in every sector.

Given the actual situation, policy intervention will be necessary, through appropriate ﬁnancial incentives and regulatory frameworks, to foster the development of renewable and carbon–free electricity generation. One of the key points to reduce the dependance on fossil fuels is the use of a suitable combination of alternative energy sources. Nuclear energy actually represents the fourth contribution to the world’s power generation sector (with a 15% share, see Section 1.1) and it avoids the problems related to carbon dioxide emissions. However, the issues related to safe nuclear waste management have not been solved yet, despite the employed strong efforts. Moreover, the cost of nuclear energy is likely to increase, due to massive investments of emerging countries [35, 36] and uranium shortage [37]. Renewable energy sources like hydropower, biomass, wind, solar and geothermal actually cover 19% of global electricity generation (with hydro alone accounting for 16%), but they could meet the whole global needs, without the issues related to pollution and global warming. However, the present cost of renewable energies is not competitive without incentives, mainly due to the high costs of the related technologies, their discontinuous and non–uniform availability and the low generated power density per km2 . The use of hydroelectric power is not likely to increase substantially in the future, because most major sites are already being exploited or are unavailable for technological and/or environmental reasons. Biomass and geothermal power have to be managed carefully to avoid local depletion, so they are not able to meet a high percentage of the global consumption. Solar energy has been growing fast during the last years (35% average growth in the U.S. in the last few years, [38]), however it has high costs and requires large land occupation.

Focusing the attention on wind energy, in Section 1.2 it has been noted that there is enough potential in global wind power to sustain the world needs [6]. However, the technical and economical limitations to build larger turbines and to deploy wind towers in “good” sites, that are often difﬁcult to reach, the low average power density per km2 and the environmental impact of large wind farms hinder the potential of the actual technology to increase its share of global electric energy generation above the actual 1%. The expected technological improvements in the next decade are not enough to make the cost of wind energy competitive against that of fossil energy, without the need of incentives. As is is stated in [7], “There is no “big breakthrough” on the horizon for wind technology”. The major contribution of Part I of this dissertation is to demonstrate that **a real revolution of wind energy can be achieved with the innovative KiteGen technology.** It will be showed that high–altitude wind power generation using controlled airfoils has the potential to overcome most of the main limits of the present wind energy technology, thus providing renewable energy, available in large quantities everywhere in the world, at lower costs with respect to fossil energy and without the need for ad–hoc policies and incentives. Moreover, it will be showed that such a breakthrough can be realized in a relatively short time, of the order of **few years**, with relatively small efforts in research and development. Indeed, the idea of harvesting high–altitude wind energy introduced in the early ’80s (see [8]) can be fully developed nowadays thanks to recent advances in several engineering ﬁelds like aerodynamics, materials, mechatronics and control theory. In particular, the advanced control techniques investigated in Part II of this dissertation play a role of fundamental importance, since they allow to control and maximize the performance of complex systems like KiteGen, while satisfying demanding operational constraints, at the relatively fast adopted sampling rate. In order to support these claims, the original results of the research activity performed in the last three years are organized in the next Chapters as follows.

#### Baseload power is the key source of emissions

AP ‘12 (DINA CAPPIELLO, “EPA: Power Plants Main Global Warming Culprits,” Associated Press, January 11, 2012)

**The most detailed data** yet on emissions of heat-trapping gases show that U.S. power plants are responsible for the bulk of the pollution blamed for global warming. Power plants released 72 percent of the **g**reen**h**ouse **g**ase**s** reported to the Environmental Protection Agency for 2010, according to information released Wednesday that was the first catalog of global warming pollution by facility. The data include more than 6,700 of the largest industrial sources of greenhouse gases, or about 80 percent of total U.S. emissions. According to an Associated Press analysis of the data, 20 mostly coal-fired power plants in 15 states account for the top-releasing facilities. Gina McCarthy, the top air official at the EPA, said the database marked "a major milestone" in the agency's work to address climate change. She said it would help industry, states and the federal government identify ways to reduce greenhouse gases.

#### Second – the plan spurs offshore wind, reduces costs and technical barriers

Hassan ’11 (GL Garrad Hassan, largest renewable energy consulting firm, “MARKET STATUS REPORT¶ HIGH ALTITUDE WIND ENERGY”, August 2011, http://www.gl-garradhassan.com/en/highaltitudewind.php/)

Also there are advantages in some of the high altitude wind technology concepts that could help to¶ overcome some of the main technology issues in conventional offshore wind energy technology. Most¶ high altitude wind energy technologies have lower structural forces (e.g. tower bottom bending¶ moments) when compared to conventional wind turbines, leading to lower material expenses for the¶ systems. Also the applicability on floating structures will be easier from a structural point as moment¶ resistance required by a floating platform for an airborne system. This advantage would help for¶ market regions where the site conditions (dominantly water depth) are to difficult or expensive for¶ normal fixed structure systems.¶ Looking into the market side the high altitude wind energy systems could participate in the boosting¶ offshore wind energy industry and market in which several of the challenges and barriers - especially¶ regulatory, safety and acceptance issues - are much easier to solve. Looking beyond identified project¶ sites, it is clear that significant high altitude wind resource exists. Most of these areas have deep¶ waters, much greater than that capable of being developed using fixed offshore foundations and so¶ might present suitable regions for economical floating solutions. This benefit could at the near future¶ been realised in parts of the market where the normal fixed structure systems are not applicable. Some¶ of the prospect regions include:¶ North America especially the Pacific West of Oregon and British Columbia and the Atlantic¶ east;¶ Northern Europe especially west of the UK and Ireland and the deep water areas of the¶ German Coast;¶ east of Japan costal areas.¶ Currently the first research projects appear on the horizon and also the airborne industry as a whole¶ becomes more visible in the policy and industry public. Thus maybe in the near future more¶ government research investment as well as commercial research and development investment will be¶ made into this emerging technology.¶ The development and success of the renewable energy industry including wind energy will benefit¶ from new technologies being introduced and getting more mature. From what is visible now of the¶ young airborne technology and industry the concepts seem to have a promising potential to play a vital¶ role in the renewable energy sector and should be seen as one of the available technical solutions.¶

#### Offshore wind is critical to boost marine ecosystems and reduce climate change

Casey ’12 (Zoe, Offshore wind farms benefit sealife, says study, 12/4/12, <http://www.ewea.org/blog/2012/12/offshore-wind-farms-benefit-sealife-says-study/>)

Offshore wind farms can create a host of benefits for the local marine environment, as well as combatting climate change, a new study by the Marine Institute at Plymouth University has found.¶ The Marine Institute found that wind farms provide shelter to fish species since sea bottom trawling is often forbidden inside a wind farm, and it found that turbine support structures can create artificial reefs for some species.¶ A separate study at the Nysted offshore wind farm in Denmark confirmed this finding by saying that artificial reefs provided favourable growth conditions for blue mussels and crab species. A study on the Thanet offshore wind farm in the UK found that some species like cod shelter inside the wind farm.¶ One high-profile issue covered by the Marine Institute study was that of organisms colliding with offshore wind turbines. The study, backed-up by a number of previous studies, found that many bird species fly low over the water, avoiding collision with wind turbine blades. It also found that some species, such as Eider ducks, do modify their courses slightly to avoid offshore turbines.¶ When it comes to noise, the study found “no significant impact on behaviour or populations.” It noted that a separate study in the Netherlands found more porpoise clicks inside a Dutch wind farm than outside it “perhaps exploiting the higher fish densities found”.¶ The study also said that offshore wind power and other marine renewable energies should be rolled out rapidly in order to combat the threats to marine biodiversity, food production and economies posed by climate change.¶ “It is necessary to rapidly deploy large quantities of marine renewable energy to reduce the carbon emissions from fossil fuel burning which are leading to ocean acidification, global warming and climatic changes,” the study published said.¶ EWEA forecasts that 40 GW of offshore wind capacity will be online in European seas by 2020 which will offset 102 million tonnes of CO2 every year. By 2030, the expected 150 GW of offshore capacity will offset 315 million tonnes of CO2 annually – that’s a significant contribution to the effort to cut carbon.¶ “It is clear that the marine environment is already being damaged by the increasingly apparent impacts of climate change; however it is not too late to make a difference to avoid more extreme impacts,” the study said.¶ “If you bring all these studies together they all point to a similar conclusion: offshore wind farms have a positive impact on the marine environment in several ways,” said Angeliki Koulouri, Research Officer at EWEA. “First they contribute to a reduction in CO2 emissions, the major threat to biodiversity, second, they provide regeneration areas for fish and benthic populations,” she added.¶ Koulouri and the studies noted in this blog suggest that further research is needed, in particular because impacts are season and site specific, and they note one proviso: offshore wind farms must be carefully planned and sited in order not to dramatically disturb sensitive marine environments.¶ “Developers and regulators should work closely with marine ecologists and conservation groups at an early stage to identify suitable locations for marine renewables,” the Marine Institute study recommended.

#### Spurs alternative fuel transitions

Mahan ’10 (Simon, Southern Alliance for Clean Energy (SACE) Renewable Energy Manager, Untapped Wealth:¶ Offshore Wind Can deliver Cleaner, More affordable ¶ energy and More Jobs than Offshore Oil, September 2010, http://oceana.org/sites/default/files/Offshore\_Wind\_Report\_-\_Final\_1.pdf)

Making a comparison between miles-per-gallon of gasoline ¶ (MPG), natural gas miles-per-gallon equivalent (MPGe) and ¶ miles per kilowatt hour (MPkWh), shows the potential for offshore ¶ wind to replace oil and natural gas in the transportation sector. ¶ Nearly 99 percent of all US cars and trucks use oil as an energy ¶ source.¶ 81¶ Vehicles that operate from natural gas are commercially ¶ available and currently in use, although in limited numbers. Plugin hybrid-electric vehicles, like Chevrolet’s Volt¶ 82¶ , and completely ¶ electric vehicles, like Nissan’s Leaf¶ 83¶ and THINK’s City¶ 84¶ , will ¶ begin to be sold commercially in the US within the next year. ¶ Tesla is already selling plug in electric cars, and the electrification ¶ of the fleet is a key component of the needed transition to ¶ clean energy. Therefore, it is reasonable to consider the role ¶ that offshore resources might play in the transportation sector ¶ in the next decade or two. Estimates of how many miles could ¶ be driven by fully utilizing each of the offshore energy resource ¶ available are provided in MPG, MPGe and MPkWh to compare ¶ the potential for each form of energy in terms of miles driven. ¶ With an electrified car fleet, 127 gigawatts of offshore wind could ¶ power nearly twice as many vehicles as new offshore oil and ¶ gas development combined. According to MMS estimates, East ¶ Coast offshore oil resource could fuel approximately 16 million ¶ gasoline vehicles annually for 20 years, while the natural gas ¶ resource could fuel an estimated 41.3 million compressed natural ¶ gas cars over the same time. In contrast, this analysis shows that ¶ the economically recoverable offshore wind resource on the East ¶ Coast could power approximately 112.5 million electric cars—¶ about twice as many vehicles than the East Coast’s offshore ¶ oil and natural gas resources combined. For comparison, DOE ¶ estimates that in 2010, there were about 227 million light-duty ¶ vehicles on the road in the United States.¶ Nissan, Chevrolet, Ford, Tesla and a variety of other companies ¶ are preparing to sell plug-in hybrid-electric vehicles (PHEV), ¶ or completely electric vehicles on an increasingly larger scale. ¶ According to a study by the National Renewable Energy Laboratory, ¶ if half of all light-duty vehicles are PHEV by 2050, gasoline ¶ consumption would decrease by between 35 billion and 53 billion ¶ gallons annually.¶ 86¶ If this scenario takes place by 2050, by 2055, the ¶ United States will have conserved more gasoline in just those five ¶ years than the entire oil resource available off the East Coast. This ¶ figure doesn’t even begin to assess the savings that would occur ¶ between now and 2050.¶ 87 ¶ As homes, heating and cars become more and more electrified, ¶ wind will become even better able to displace oil use. Ultimately, it ¶ is this shift to clean energy and away from fossil fuels that will turn back the clock on climate change.

## Solvency -- Restrictions

#### Despite technical progress restrictions undermine High Altitude Wind development

Leggett ’12 (Nickolaus E. Leggett, Masters degree in political science from Johns Hopkins, licensed pilot for hot-air balloons, gliders, and single-engine airplanes, certified electronics technician, testimony to the FAA, “To the Federal Aviation Administration: Formal Comments of Nickolaus E. Leggett” 1/29/12)

Near-Term Experimental Operation of AWES Prototypes

The first AWES prototypes should be operated in large but restricted airspace currently used for military practice work and/or for unmanned aircraft operations. The use of these areas is quite structured and disciplined which would be a useful starting point for learning to live with AWES installations.

**The** proposed **limit of testing to 499 feet** AGL is totally inadequate **for research and development**. This low height can be easily reached with a child’s classical hand-held kite. I have done it myself as a child. Such a low altitude does not represent the full physical situation of a commercial AWES installation. At this low altitude, the wind will often be too low to support a kite-type AWES installation.

A limit of near 2000 feet AGL is more appropriate for tests of actual deployed AWES installations. This would allow industrial-sized AWES to be tested in a realistic manner where a heavy structure is supported by the air and is exposed to the weather changes. Limiting AWES tests to daylight hours is also inadequate for realistic testing. An important part of any testing program is to expose the AWES to the variations of the weather over long periods of time (at least months). Any commercial AWES will have to survive and produce power continuously for long periods of time just as commercial terrestrial wind farms do. They will not be deploying these rather complex devices every morning. Think of an AWES as being more like a suspension bridge. You set it up and you leave it for long periods of time. Some mobile AWES installations will be used in the future. For example, specifically designed AWES could be used to provide electric power to ships at sea while they are in motion. This type of power could be used to recharge navy ships that are equipped with electric rail gun systems. Other mobile AWES could be used to resupply energy to fuel-cell propelled ships at sea via the electrolysis of water. Some mobile AWES will be used over land for large open-pit mining operations, prospecting efforts, and large agricultural properties. As a result of this, some controlled testing of mobile and portable AWES prototypes should be allowed by the FAA. Some testing of multiple-unit AWES is also needed to understand the aerodynamics of operating several units in close proximity to each other in various weather conditions and climates. It is important to realize that a whole new family of devices is being developed here and so a fairly liberal testing environment is needed.

#### **The plan is key to stimulate investment**

Kozubek ’11 (Jim, 11/4/11, Airborne Wind Energy Industry Struggles To Fly,

<http://idealab.talkingpointsmemo.com/2011/11/airborne-wind-energy-industry-struggles-to-take-off.php>)

To date Google.org has invested $15 million, and the Department of Energy’s the Advanced Research Projects Agency-Energy has invested $3 million. Over the summer, Makani Power made news with the maiden flight of its Wing 7 prototype, an airborne glider capable of generating 20 kW with a wingspan of eight meters, or just over 26 feet. The glider is designed to capture wind energy with its propeller at altitudes exceeding 1,000 feet and relay it by tether to the ground. “It is important to the overall U.S. airborne wind energy effort that Makani Power is successful in carrying out the work for the grant awarded” says PJ Shepard, secretary for industry group Airborne Wind Energy Consortium, and a spokesperson for California-based Sky WindPower, another company developing such a glider. One hurdle the nascent industry has to surmount, as most emerging technologies and industries do, is regulation. The Federal Aviation Administration is currently weighing a decision as to whether to allow such tethered gliders to operate. So far a ruling appears at least a year away, Shepard said. For its part, Makani to date has burned through most of its working capital, and is nearing completion of its 18-month ARPA-E grant-funded pilot project. And while the nascent industry awaits an FAA ruling, investors have been skittish of sinking capital into technology. Sky WindPower was named by TIME Magazine as one of the top 50 top inventions of 2008, but has yet to land investment capital; Dmitri Cherny, founder of energy glider developer Highest Wind, was the darling of New Hampshire’s Speed Venture Summit in 2009, only to come away empty-handed from scores of meetings in venture capital circuits in New Hampshire and South Carolina.

Our estimates are correct – AFF sufficiently solves

Fagiano ‘9 (Lorenzo, Marie Curie fellow at Politecnico di Torino and a visiting researcher at the University of California, Santa Barbara, co-author of 50 papers published in international journals, conference proceedings and book chapters. He is recipient of the ENI award "Debut in Research" prize 2010, of the Maffezzoni prize 2009 and of a Marie Curie International Outgoing Fellowship, “High-altitude wind power generation for renewable energy cheaper than oil,” http://ec.europa.eu/research/sd/conference/2009/papers/15/lorenzo\_fagiano,\_mario\_milanese\_and\_dario\_piga\_-\_high\_altitude\_wind\_power\_generation\_for\_renewable\_energy\_cheaper\_than\_oil.pdf)

A reliable estimate of the energy production costs of a KGfarm certainly requires more experimentations. However, for all the aspects discussed so far, a conservative estimate can be obtained by assuming that the overall costs are similar to those of an actual wind farm with the same nominal power. In a site with CF ≈ 0.3, a present wind farm has energy production costs of about 150 $/MWh. In the same location a KG-farm has CF ≈ 0.6, i.e. it can generate twice the energy with the same nominal power. Then, a conservative estimate of energy production cost of about 75 $/MWh is obtained. Note that the actual costs of energy production from fossil sources are in the range 60-90 $/MWh, according to the different types of source (coal, oil, gas). Moreover, the presented analyses show that a suitably designed KG-farm may generate an average power density from 7 to 13 times greater than that of an actual wind farm. Thus, scale factors may positively affect the production costs of KiteGen technology, leading to estimates of about **50 $/MWh** for a 100 MW KG-farm and **15 $/MWh** for a 500 MW KG-farm. In conclusion, from the results obtained so far, including numerical simulations, prototype experiments and wind data analyses, the KiteGen technology, capturing the wind power at significantly higher altitude over the ground than the actual wind towers, has the potential of generating renewable energy available in large quantities almost everywhere, with a cost even lower than that of fossil energy. Moreover, such a significant reduction of the dependence on fossil sources could be realized in a relatively short time. Indeed, the industrialization of KiteGen technology may require from 3 to 5 years, since no more basic research or technological innovations are needed, but only the fusion of advanced competencies already available in different engineering fields, such as modelling and control, aerodynamics and flight mechanics, materials and mechatronics.

#### High Altitude Wind solves military operations, budgets, and remote deployment

Cahoon ’11 (Troy L. AIRBORNE WIND ENERGY: IMPLEMENTATION AND DESIGN FOR THE U.S. AIR FORCE THESIS, AIR UNIVERSITY AIR FORCE INSTITUTE OF TECHNOLOGY, March 2011, THESIS Presented to the Faculty, Department of Aeronautics and Astronautics, Graduate School of Engineering and Management, Air Force Institute of Technology, Air University)

However, now that ground-based wind power is reaching a peak and advancements are leveling off, it has become difficult to significantly improve the cost effectiveness of wind power unless someone makes a new leap in the technological approach used to harness wind energy. One innovative way to make a new leap in wind power technology would be to encourage the DoD to look into, and use, the winds at higher altitudes, where vastly more energy is available. Ground-based wind power has proven that it can be competitive with other energy sources when the price of energy is high. However, if the technology of AWE is advanced to the point where it is cost effective and competitive at any energy price, then this would greatly benefit the DoD, citizens, utilities, and the U.S. Thus, the future of the country is dependent on utilizing and enhancing such resources as AWE technology. Airborne Wind Energy has many interesting attributes that could lead to a potential solution for many of the energy issues that the U.S. faces. AWE is a means to have energy on demand at a remote location, without dependence upon a supply line. AWE is available almost everywhere in the entire world. The leap and potential for energy availability, and the consistency at which this energy can be tapped, is very far reaching. It is possible that continued development in technology for wind power could push this energy into being fully competitive with fossil fuels. Thissource of energy could do wonders for the U.S. economy and domestic energy security.AWE has the ability to supplant traditional energy sources on its own, without subsidy. And streamlined AWE could meet all of the DoD’s national security goals described.

#### **No disads – DOE just increased funding**

Max 12/3 (John, ARPA-E looks to seed breakthroughs in energy technology, http://www.hydrogenfuelnews.com/arpa-e-looks-to-seed-breakthroughs-in-energy-technology/857225/)

ARPA-E announces new grants

The Advanced Research Project Agency-Energy (ARPA-E) has announced a new round of grants that are meant to help encourage “transformational, breakthrough technologies” in the energy sector. ARPA-E is an offshoot of DARPA, an agency that is famously responsible for scientific and technological breakthroughs that have lead to phenomenon such as the Internet and cell phones. The U.S. Department of Energy oversees ARPA-E and is keen to see the agency’s latest round of grants produce some breakthroughs that could revolutionize the way energy is used and generated.

Agency chooses 66 groups to receive funding for their innovative energy projects¶ In March of this year, ARPA-E began accepting applications for its grant program. The agency received thousands of concept papers that it had reviewed extensively. This week, ARPA-E has chosen 66 applications that will receive a total of $130 million in grants. These applications cover a wide range of alternative energy projects, such as wind, solar, and even hydrogen fuel. The money awarded to the companies and organizations behind the applications is expected to help these innovative projects take form.¶ ¶ Makani Power chosen as a recipient for funding¶ Makani Power is one of the groups that will receive funding from ARPA-E. The company has been working on developing an airborne wind turbine, which is meant to take advantage of the strong wind streams that are found at high altitudes. This project received funding from ARPA-E in 2009 and has again won the agency’s support this year. The project is ambitious and innovative, representing the overarching goal of ARPA-E, according to the Department of Energy.¶

#### **Renewables boost military capabilities by transitioning away from diesel – but lack of development precludes wind power**

Boland ’12 (Rita, SIGNAL Magazine’s news editor. Before coming to AFCEA, she worked at Booz Allen Hamilton as a communications consultant, Marines Test Alternative Power in Afghanistan, March 2011, http://www.afcea.org/content/?q=node/2549)

The U.S. Marine Corps hopes a forward operating base that obtains its power from renewable energy sources will benefit the force in many ways—especially by saving lives. Eliminating the need for fuel deliveries lowers the number of convoys and exposed troops on treacherous roads in perilous places. The experimental base also could reduce the amount of equipment Marines take into theater, ensuring the Corps remains an expeditionary force. With the tools in the battlespace now, program officials are waiting to hear how the concept performs in combat. Warfighters in the 3rd Battalion, 5th Marine Regiment’s Company I volunteered to take the Expeditionary Forward Operating Base (ExFOB) with them on their seven-month deployment in Afghanistan to determine how the included technologies operate on the battlefield. The deployment follows field studies at Marine Corps Air Ground Combat Center Twentynine Palms, California. In that environment, Marines were able to maintain continuous power for 200 hours without any fossil fuels. Program officials decided the time was right to send it into combat operations based on the users’ assessments. “A 19-year-old Marine gave us the thumbs up,” says Col. Bob “Brutus” Charette Jr., USMC, director, Marine Corps Expeditionary Energy Office. Narrowing down which technologies to include in the ExFOB was an involved process for decision makers. They received almost 200 proposals to evaluate and eventually invited 26 vendors to showcase their capabilities at Marine Corps Base Quantico, Virginia. In the end, the Marines purchased seven technologies, six of which traveled to Afghanistan. The items sent into the theater are a solar field shelter to power lights and field communications; a portable hybrid photovoltaic/battery power system called the Ground Renewable Expeditionary ENergy System (GREENS); a ReGenerator that uses solar energy to power high-tech devices; a towable solar lighting system, a light-emitting diode (LED) lighting system; and the Solar Portable Alternative Communications Energy System that offers portable power to charge batteries, operate communications equipment and run electronic accessories. The generators power computers, radios, life-support equipment, shavers, iPods and the other various devices troops take onto the battlefield. Each produces approximately 300 watts of power and has battery storage. During the summer training at Twentynine Palms, these technologies kept all equipment up and running except the surveillance system. Col. Charette explains that traditional fuel still is necessary for that capability, though the military is working on a renewable energy source for it as well. During the field assessments, program officials monitored activities to ensure that none of the equipment was harmful. After handing it off to young troops, leaders watched how they operated. Col. Charette compares the process to cooking. After going to the grocery store to buy ingredients, the shopper still has to come home and turn them into dinner. In the same way, the Marines have to put together the components of the ExFOB and make war. As evidenced by the choices, the Marine Corps has particular interest in solar-energy technology. “The biggest point I like to leave with industry when I talk to them is we’ve got to harvest the sun,” Col. Charette says. He would like developers to obtain as many watts as possible from the center of the solar system, but he also wants to find methods to derive more energy out of diesel fuel. Experiments with wind power have proven unsuccessful at that tactical level because of the size of the necessary towers and because of the unknown conditions where Marines often operate. The colonel explains wind is difficult to harvest, and the Corps has found no wind solution with the potential to work in expeditionary operations. Marines also have researched nuclear power, which comes with issues of its own, and geothermal power. They have had some success with the latter, but Col. Charette explains that “it comes with a lot of drilling.” Desert conditions in Afghanistan with their high levels of solar radiation are a prime place to test solar-energy technologies. Marines also plan to examine the technologies in jungle conditions, sending them along with Marine Corps Forces Pacific personnel to the Cobra Gold exercise in Thailand. Troops there can experiment with how the energy gathering works in areas with a thick overhead plant canopy and determine if they have to put flexible panels up in trees. Maj. Sean M. Sadlier, USMC (l), of the Marine Corps Expeditionary Energy Office, explains the solar power element of the Expeditionary Forward Operating Base (ExFOB) concept to Col. Anthony Fernandez, USMC, during a testing phase of this sustainable energy initiative in Tan Tan, Morocco, at African Lion 2010, a month-long theater security cooperation exercise led by Marine Forces Africa. Photo by Maj. Paul Greenberg, USMC. The Marines pulled no punches when they decided to allow Company I to move out to Afghanistan with the experimental solution. The unit is engaged in the northern section of the Helmand Province, an area of the country with an extremely kinetic fight. Sadly, the unit has suffered heavy losses, including the deaths of more than a dozen Marines in less than two months in 2010. Conditions currently are so dangerous that not only were the Devil Dogs unable to accommodate an interview, but at the time of Col. Charette’s interview had not yet reported on their experiences. And the officer is in no hurry to receive any information if it means putting Marines in even more danger. In fact, keeping troops safe is the major goal in this impetus. His biggest test of success will be if the unit “comes back and says we didn’t have to have a Marine on the road because of this solution.” Col. Charette adds that if he learns one Marine was relieved from having to haul fuel, that fact will be worth the approximately $3.5 million spent on research, development and procurement. When the unit does return, the colonel explains, the plan is to write a report about what worked well and what needs improvement. Though the Corps hopes to replace fossil fuels, according to Col. Charette, it is not particularly focused on the issue. “Others will figure that out,” he says, explaining that the Marines maintain dialog with those groups, but “we don’t drive the fossil fuel equation.” What the Marine Corps would like is a drop in its need for liquid fuels from the current 200,000 gallons a day in Afghanistan to 100,000 gallons a day by 2025 when comparing forces of the same size and needs. Col. Charette emphasizes the term “liquid fuels,” which he expects will remain the norm. However, what makes up that fuel could vary. Another reason for the ExFOB is the Marines’ focus on the expeditionary edge. “Your Marine Corps is the expeditionary force in readiness,” the colonel says. This means they need small, lightweight equipment to move from sea to shore. The Army and Air Force have renewable-energy experiments for larger camps and systems. Col. Charette says the Corps’ capability is to provide resources to the expeditionary fighter. One huge consideration for remaining a lean, mean fighting force is the amount of equipment troops must carry with them. For Marines, this entails thinking about how their items fit on the ships that transport them. Col. Charette says that some of the solar technologies in the ExFOB might originally take up more space than their fossil-fuel counterparts. However, with these renewable-energy generators, the number of batteries needed per day for equipment drops from seven or eight down to one or two, resulting in less room needed overall. The colonel states that this drop in batteries pays off pretty quickly not just in money, but also in weight and space. In some cases, the benefits might be a little harder to find. GREENS can fit onto the back of a military vehicle, but the solar panels and batteries take up more space and cost more than similar gas systems. They also cost more. Col. Charette says one such system runs $50,000 to $70,000, while a same-level, traditional-fuel generator costs approximately $800 at a commercial hardware store. “But the thing is, you have to look at the holistic picture,” he explains. While the solar alternative is bulkier and more expensive up front, it results in fewer fuel trucks on the road, which comes with its own costs in money and lives. He urges people not to look at this capability myopically, but to stand back and consider overall effects. Being at the front edge of the fight was a major impetus for the ExFOB project. The commandant of the Marine Corps began the initiative in 2009, telling his personnel that Marines would take the lead in pushing expeditionary technology out to the battlefield. He also directed them to employ commercial off-the-shelf technology as quickly as possible to reduce risks and increase combat effectiveness. Col. Charette says the commandant has watched the exponential growth in power needs and power generators over the last decade or so. As those requirements grew, so did the risks to troops who have to haul the fuel. To get their arms around the problem, Marines stood up the Marine Corps Expeditionary Energy Office and then the ExFOB initiative. The moves also partly address the improvised explosive device threat—estimated to account for more than 70 percent of battlefield casualties—by reducing the number of Marines on the road for refueling purposes. Col. Charette says Marines have learned many lessons during the war in Afghanistan, explaining they can now perform tasks on the battlefield that were unimaginable even five years ago. “There’s no greater change agent than war,” he states. When Marines are spending less time on the roads, not only does it protect life and limb, it also increases the time they can spend on other facets of missions, such as helping allies and battling enemies. Another benefit of renewable energy is its potential to help local populaces in areas with minimal infrastructure. Many of the places where U.S. forces end up fighting are undergoverned at least. “They’re not hospitable places,” Col. Charette says, and the people living there often lack power and clean water. A less-discussed aspect of the ExFOB and similar initiatives is the effort to figure out how to take the technologies U.S. troops are using to help build renewable systems in these communities. Funding is one concern for such civilian-assistance projects, because Title X money is designated for other uses, but work already has started in some places. Col. Charette shares that Marines are in the early stages of looking at small projects in Helmand Province. Along with the many current and potential benefits of the ExFOB come several downsides, especially for those operating the systems in dangerous locations. For one, almost all the deployed solar technologies are commercial off the shelf; nothing is very hardened, and program officials are unsure how they will hold up to the elements. “We’re worried about consecutive days of bad weather,” Col. Charette says. The Company I warfighters also carry the concern that ExFOB is only an 80 percent solution and has never been tested in combat before. Decision makers know the capability is not the complete answer to Marine Corps issues, and Col. Charette is unsure how comfortable Marines will be with the technology in a shooting match. System officials tried to help mitigate risks through training, including with vendors, and by sending along traditional power sources on the deployment in case the renewable technologies fall short. Because whether on the road or in battle, saving lives is a top priority. “At the end of the day, we told them if it doesn’t work, to throw it in the Helmand River,” Col. Charette says.

# 2AC

### AT: Lightning

#### **Combination of safety strategies solve**

Stough et al ’12 (Andy Stough, Vice-President of Engineering, Dr. Matthew Bennett, Vice-President of Research and Development, Robert Creighton, President Windlift, Response to the Federal Aviation Authority (FAA), 2/6/12, http://www.energykitesystems.net/FAA/FAAfromWindLift.pdf)

3. Overall safety--safety to other airspace users, safety to persons and property on the

ground, safety to the efficient and effective use of NAS facilities, safety to airports,

safety to air commerce, and safety to the efficient operations and managing of the NAS;

 Windlift’s machine uses a reel-in, reel-out method to generate power. The powerful ground based winch can reel-in the wing at a rate of 10 m/s (22 mph). When the airfoil is at the end of the tether it can be brought back to the base station in less than 50 seconds. The wing can also be flown toward the ground at 30 m/s (67 mph). A combination of strategies can be utilized to bring the wing and tethers from 1000 feet above ground level (AGL) to below 500 feet AGL in less than 6 seconds. Windlift’s proposed final system will include a low-cost traffic collision avoidance system

### AT: Deterrence K

#### We have a firm epistemological basis—empiricism, quantitative evidence, case studies, counterfactual analysis, and game theory all validate the theory of deterrence

**Rauchhaus ‘9**

(Rauchhaus, Robert. “Evaluating the Nuclear Peace Hypothesis: A Quantitative Approach,” Journal of Conflict Resolution, 2/5/09 jcr.sagepub.com/cgi/content/abstract/53/2/258>)

In recent years, neo-liberal explanations of the Long Peace have received the most rigorous empirical scrutiny. 7 Realist explanations including the distribution of power, system polarity, and alliance systems have also received considerable attention. 8 Surprisingly, the nuclear peace hypothesis—one of the central tenants of realist explanations for the Long Peace— has received relatively little quantitative scrutiny. Scholars have employed case studies, counterfactual analysis, and formalized their arguments with game theory, but, with the exception of this issue (Gartzke and Jo, Horowitz, Beardsley and Asal, This issue), only a handful of studies have attempted to quantitatively evaluate the effects of nuclear weapons (Bueno de Mesquita and Riker 1982; Geller 1990; Asal and Beardsley 2007). Moreover, previous quantitative studies have exclusively focused on the relationship between nuclear weapons and crises, or between nuclear weapons and dispute escalation. The relationship between nuclear weapons and the probability of war remains quantitatively untested. The central purpose of this paper is to offer an empirical answer to the question: do nuclear weapons reduce the probability of war? To answer this question, this project borrows 3 heavily from the last 15 years of work on democratic peace theory (DPT). Beginning with Maoz and Russett (1993), the dyadic DPT research design has been reproduced in dozens of articles and survived peer review in nearly every leading journal of political science and international relations. Building on Pevehouse and Russett (2006) and using the same key “control” variables, this study incorporates new data that allow for the quantitative evaluation of the nuclear peace hypothesis. The results presented below indicate that the impact of nuclear weapons is more complicated than is conventionally appreciated. Both proliferation optimists (Waltz 1981) and proliferation pessimists (Sagan 1994) find confirmation of some of their key claims. As proliferation optimists contend, when two states possess nuclear weapons, the odds of war drop precipitously. However, in most other respects, proliferation pessimists find vindication of their position. In disputes where only one of two parties posses nuclear weapons, there is an increased chance of war. Moreover, nuclear weapons are generally associated higher likelihoods of crises, uses of force, and conflicts involving lower-levels of casualties. The findings of this article are consistent with the larger themes of the special issue, demonstrating that nuclear possession can enhance the security of their possessors by shifting conflict to the lower end of the intensity spectrum.

### AT: Warming Reps

**They have conceded the biggest internal link to warming is scientifically a result of our own use of fossil fuels that emit C02 into the atmosphere – ignoring these issues does not absolve us of our responsibility to reduce those emissions**

**Climate representations avoid their impacts and break down securitization- only way to solve**

**Trombetta ‘8** (Maria Julia, Professor of Economics of Infrastructures of [Delft University of Technology](http://tudelft.academia.edu/), “The meaning and function of climate security” <http://tudelft.academia.edu/MariaJuliaTrombetta/Papers/899481/The_meaning_and_function_of_climate_security>)

The two main arguments against considering the environment as a security issue come from Realists, and from those who warn against the problematic implications the word security brings with it.

Constructivists and poststructuralists have challenged the narrow realist perspective suggesting that threats are socially constructed. Amongst these approaches, the most innovative and thoughtful attempt to conceptualise the social construction of security issues, is the theory of securitization elaborated by the Copenhagen School, a body of research mainly associated with the work of Barry Buzan and Ole Waever. It is relevant to this analysis because it allows considerations on how discourses can transform the way of dealing with an issue but at the same time it narrows down this possibility by adopting a rather static understanding of what security is about. The theory of securitization argues that there are not objective threats, waiting to be discovered, and various issues can be transformed into security issues through a successful speech-act that transforms the way of dealing with them. Security in this perspective is not a value or a condition but a form of social practice, which by successfully labelling an issue as a security issue transforms the way of dealing with it. Considering the discursive formation of security issues provides a new perspective to analyse the environmental security discourse. First, it allows an **investigation of the political process behind the selections of threats**, exploring why some of them are considered more relevant and urgent than others. Second, it suggests that the awareness of environmental issues can have a relevant role in defining and transforming political communities and their identities, since the process creates new ideas about who deserve to be protected and by whom. Finally, as Behnke points out, securitization **can open the space for a “genuinely political**” constitutive and **formative struggle** through which political structures (including the practices associated with security) are contested and re-established (2000, 91). For the Copenhagen School however this transformation has problematic consequences. The label security brings with it a set of practices and a way of dealing with a problem that characterizes an issue as a security issue. The word security brings with it a specific logic or rationality, independently from the context or the intentions of the speakers. Security is about survival, urgency and emergency. It allows exceptional measures, the breaking of otherwise binding rules, governing by decrees rather than by democratic decisions and implies a ‘decisionist’ attitude, which emphasizes the importance of reactive, emergency measures. This mindset, once activated, is not open to negotiation. While it is possible to decide whether or not to securitize an issue and securitization, as a social process, is determined by a collectivity rather than by individuals, once an issue is securitized the logic of security necessarily follows. This logic, it has been noted, has been borrowed from the Schimittian understanding of the political.[[1]](#footnote-1)For Schmitt the political is about the friend-enemy distinction and successfully evoking security brings about that distinction. The logic of security is the logic of war; this suggests an extreme form of antagonism and a zero sum understanding of security. With the codification and institutionalization of a national security discourse this rationality has been narrowed down to a specific context, attempts to broaden the security agenda results in the spreading of this rationality to other contexts from which it had been excluded (Buzan and Waever 1998). **Climate** **change challenges this logic** on several aspects. The first one concerns the identification of the referent object of security. Climate itself is not the referent. What is intended to be secured are the political communities that depend on a stable climate. In this sense **representing climate change as a threat to the whole humankind, suggests** the possibility of **creating a global community**. As Beck has argued “threats create society and global threats create global society.”(Beck 2000b: 38) A process of securitization can be considered as part of a broader process of transformation of political communities. As Weaver has noticed securitization identifies “security units”, whose existence is legitimised by reference to their own survival. (Wæver 1997: 355) The question then becomes whether these security units are “always limited collectivities, or can they also be inclusive and universalist?” (Wæver 1997: 357). The second possibility is particularly relevant within climate security discourses since several attempts to link security and the environment, since several attempts have been don with cosmopolitan intents, Weaver’s answer however tends to be negative and the reason is to be fund in a specific understanding of security and in its fixity. The second problematic aspect concerns the identification of the enemy. Several environmental problems, including climate change can affect the whole humankind. It is impossible to create barriers and distance oneself from them, from the enemy. For the Copenhagen School security is about the inscription of enemies and the logic of war. For Beck instead ‘[t]he concept of “enemy” is the strongest possible antithesis to the concept of security,’ (Beck 1997, 82) since ‘enemy stereotypes empower’ as they create ‘the relationships and the behavioural logic of attack and defence, pro and contra, which first kill the question and then the people.’ (Beck 1997, 82) The final aspect concerns the fixity of security practices. The theory of securitization, following Austin and Derrida argue that securitization is a performative, in saying something, something is done and the context is transformed. In this perspective communication is more than the transmission of a meaning, which depends on the intention of the speaker and her presence. It has to be itereable, independently for the context and the intention of the speaker. In this perspective, the securitiness of security is associated with a specific meaning and specific practices that are supposed to be fixed.[[2]](#footnote-2) The theory of securitization downplays two aspects. First, security as a social practice is embedded in a specific context. Different sets of practice characterises different sectors. The theory of securitization has the great merit of having characterised the main aspects of the dominant western security formation that has characterised theory and practices of international relations (quote Huysmans), but the Copenhagen School downplays the existence and role f other security practices, from those based on risk to that related with preventions and safety standards. Security means different things for different people and **in different contexts and to subsume all these understanding to the understanding of suggested by realism is problematic**. Second, social practices are reflexive, in this sense the understanding provided by Beck is relevant. Social practices are subject to a process of repetition and are checked against specific formats in unreflective manners but by repeating these practices over and over again and by transporting them to different sectors they become the subject of reflection. In this sense securitization can be considered as a reflexive process, which is not only rule-directed but also rule-transforming (see Beck) In this respect Beck’s analysis of risk society is relevant for two reasons. First, he provides an analysis inspired by environmental problems which argues that contemporary risks are unbound and challenges existing security practices and institutions on two aspects: the first is the possibility of inscribing enemies into a context, the second is the possibility of relying on emergencies measures. The second reason that makes Beck’s analysis relevant is his suggestion that the awareness of the environmental crisis is making modernity **becoming reflexive**. Second he suggests that modernity is becoming reflexive. In this sense it is relevant to explore how the “**climate security discourse” has evolved and transformed security practices.**

**Catastrophic warming reps are good and key to solve**

**Romm ‘12**

(Joe Romm is a Fellow at American Progress and is the editor of Climate Progress, which New York Times columnist Tom Friedman called "the indispensable blog" and Time magazine named one of the 25 “Best Blogs of 2010.″ In 2009, Rolling Stone put Romm #88 on its list of 100 “people who are reinventing America.” Time named him a “Hero of the Environment″ and “The Web’s most influential climate-change blogger.” Romm was acting assistant secretary of energy for energy efficiency and renewable energy in 1997, where he oversaw $1 billion in R&D, demonstration, and deployment of low-carbon technology. He is a Senior Fellow at American Progress and holds a Ph.D. in physics from MIT., 2/26/2012, “Apocalypse Not: The Oscars, The Media And The Myth of ‘Constant Repetition of Doomsday Messages’ on Climate”, http://thinkprogress.org/romm/2012/02/26/432546/apocalypse-not-oscars-media-myth-of-repetition-of-doomsday-messages-on-climate/#more-432546)

The two greatest myths about global warming communications are 1) constant repetition of doomsday messages has been a major, ongoing strategy and 2) that strategy doesn’t work and indeed is actually counterproductive! These myths are so deeply ingrained in the environmental and progressive political community that when we finally had a serious shot at a climate bill, the powers that be decided not to focus on the threat posed by climate change in any serious fashion in their $200 million communications effort (see my 6/10 post “Can you solve global warming without talking about global warming?“). These myths are so deeply ingrained in the mainstream media that such messaging, when it is tried, is routinely attacked and denounced — and the flimsiest studies are interpreted exactly backwards to drive the erroneous message home (see “Dire straits: Media blows the story of UC Berkeley study on climate messaging“) The only time anything approximating this kind of messaging — not “doomsday” but what I’d call blunt, science-based messaging that also makes clear the problem is solvable — was in 2006 and 2007 with the release of An Inconvenient Truth (and the 4 assessment reports of the Intergovernmental Panel on Climate Change and media coverage like the April 2006 cover of Time). The data suggest that strategy measurably moved the public to become more concerned about the threat posed by global warming (see recent study here). You’d think it would be pretty obvious that the public is not going to be concerned about an issue unless one explains why they should be concerned about an issue. And the social science literature, including the vast literature on advertising and marketing, could not be clearer that only repeated messages have any chance of sinking in and moving the needle. Because I doubt any serious movement of public opinion or mobilization of political action could possibly occur until these myths are shattered, I’ll do a multipart series on this subject, featuring public opinion analysis, quotes by leading experts, and the latest social science research. Since this is Oscar night, though, it seems appropriate to start by looking at what messages the public are exposed to in popular culture and the media. It ain’t doomsday. Quite the reverse, climate change has been mostly an invisible issue for several years and the message of conspicuous consumption and business-as-usual reigns supreme. The motivation for this post actually came up because I received an e-mail from a journalist commenting that the “constant repetition of doomsday messages” doesn’t work as a messaging strategy. I had to demur, for the reasons noted above. But it did get me thinking about what messages the public are exposed to, especially as I’ve been rushing to see the movies nominated for Best Picture this year. I am a huge movie buff, but as parents of 5-year-olds know, it isn’t easy to stay up with the latest movies. That said, good luck finding a popular movie in recent years that even touches on climate change, let alone one a popular one that would pass for doomsday messaging. Best Picture nominee The Tree of Life has been billed as an environmental movie — and even shown at environmental film festivals — but while it is certainly depressing, climate-related it ain’t. In fact, if that is truly someone’s idea of environmental movie, count me out. The closest to a genuine popular climate movie was the dreadfully unscientific The Day After Tomorrow, which is from 2004 (and arguably set back the messaging effort by putting the absurd “global cooling” notion in people’s heads! Even Avatar, the most successful movie of all time and “the most epic piece of environmental advocacy ever captured on celluloid,” as one producer put it, omits the climate doomsday message. One of my favorite eco-movies, “Wall-E, is an eco-dystopian gem and an anti-consumption movie,” but it isn’t a climate movie. I will be interested to see The Hunger Games, but I’ve read all 3 of the bestselling post-apocalyptic young adult novels — hey, that’s my job! — and they don’t qualify as climate change doomsday messaging (more on that later). So, no, the movies certainly don’t expose the public to constant doomsday messages on climate. Here are the key points about what repeated messages the American public is exposed to: The broad American public is exposed to virtually no doomsday messages, let alone constant ones, on climate change in popular culture (TV and the movies and even online). There is not one single TV show on any network devoted to this subject, which is, arguably, more consequential than any other preventable issue we face. The same goes for the news media, whose coverage of climate change has collapsed (see “Network News Coverage of Climate Change Collapsed in 2011“). When the media do cover climate change in recent years, the overwhelming majority of coverage is devoid of any doomsday messages — and many outlets still feature hard-core deniers. Just imagine what the public’s view of climate would be if it got the same coverage as, say, unemployment, the housing crisis or even the deficit? When was the last time you saw an “employment denier” quoted on TV or in a newspaper? The public is exposed to constant messages promoting business as usual and indeed idolizing conspicuous consumption. See, for instance, “Breaking: The earth is breaking … but how about that Royal Wedding? Our political elite and intelligentsia, including MSM pundits and the supposedly “liberal media” like, say, MSNBC, hardly even talk about climate change and when they do, it isn’t doomsday. Indeed, there isn’t even a single national columnist for a major media outlet who writes primarily on climate. Most “liberal” columnists rarely mention it. At least a quarter of the public chooses media that devote a vast amount of time to the notion that global warming is a hoax and that environmentalists are extremists and that clean energy is a joke. In the MSM, conservative pundits routinely trash climate science and mock clean energy. Just listen to, say, Joe Scarborough on MSNBC’s Morning Joe mock clean energy sometime. The major energy companies bombard the airwaves with millions and millions of dollars of repetitious pro-fossil-fuel ads. The environmentalists spend far, far less money. As noted above, the one time they did run a major campaign to push a climate bill, they and their political allies including the president explicitly did NOT talk much about climate change, particularly doomsday messaging Environmentalists when they do appear in popular culture, especially TV, are routinely mocked. There is very little mass communication of doomsday messages online. Check out the most popular websites. General silence on the subject, and again, what coverage there is ain’t doomsday messaging. Go to the front page of the (moderately trafficked) environmental websites. Where is the doomsday? If you want to find anything approximating even modest, blunt, science-based messaging built around the scientific literature, interviews with actual climate scientists and a clear statement that we can solve this problem — well, you’ve all found it, of course, but the only people who see it are those who go looking for it. Of course, this blog is not even aimed at the general public. Probably 99% of Americans haven’t even seen one of my headlines and 99.7% haven’t read one of my climate science posts. And Climate Progress is probably the most widely read, quoted, and reposted climate science blog in the world. Anyone dropping into America from another country or another planet who started following popular culture and the news the way the overwhelming majority of Americans do would get the distinct impression that nobody who matters is terribly worried about climate change. And, of course, they’d be right — see “The failed presidency of Barack Obama, Part 2.” It is total BS that somehow the American public has been scared and overwhelmed by repeated doomsday messaging into some sort of climate fatigue. If the public’s concern has dropped — and public opinion analysis suggests it has dropped several percent (though is bouncing back a tad) — that is primarily due to the conservative media’s disinformation campaign impact on Tea Party conservatives and to the treatment of this as a nonissue by most of the rest of the media, intelligentsia and popular culture.

### T: Restrictions

**WM: the plan removes FAA airspace restrictions that preclude wind power**

USAF ‘8 (Air Installation Compatible Use Zone (AICUZ) Study, Dyess Air Force Base (TX), <http://www.dyess.af.mil/shared/media/document/AFD-100310-100.pdf>)

3.1.1 Airspace Area Controlled for Height Restrictions

Airspace area controlled for height restrictions results from the application of criteria for height and obstruction clearance given in 14 Code of Federal Regulations (CFR), Part 77, Objects Affecting Navigable Airspace, and in USAF design standards. 14 CFR Part 77 establishes standards for determining obstructions in navigable airspace that apply to existing and proposed man-made objects, objects of natural growth, and terrain. The standards in 14 CFR Part 77 are provided for both civilian and military airports. 14 CFR Part 77 states that the area surrounding a runway must be kept clear of objects that might damage an aircraft and therefore is bounded by imaginary airspace control surfaces that are defined in detail in Appendix D. 14 CFR Part 77 classifies an object as an obstruction to air navigation if the object is more than 500 feet above ground level at the site of the object, or exceeds the height of the imaginary airspace control surfaces.

**Restrictions are based on geographic location -- NOT METHOD of energy production**

**WordNet in 2012 (**http://www.thefreedictionary.com/restriction)- the act of keeping something within specified bounds (by force if necessary); "the restriction of the infection to a focal area"

**On indicates DESTINATION** Merriam Webster 12ON - used as a function word to indicate destination or the focus of some action, movement, or directed effort <crept up *on* him> <feast your eyes *on* this> <working *on* my skiing> <made a payment *on* the loan>

#### Default to reasonability---prevents race to the bottom to arbitrarily limit out the aff and is preferable in restrictions context

MME 12 Mexican Ministry of Economy, “Other Appellant Submission of Mexico”, UNITED STATES – CERTAIN COUNTRY OF ORIGIN LABELLING REQUIREMENTS, March, http://www.economia.gob.mx/files/comunidad\_negocios/comercio\_exterior/solucion\_controversias/EDO.EDO/ORGANIZACION%20MUNDIAL%20DE%20COMERCIO/Participaci%C3%B3n%20de%20M%C3%A9xico%20como%20reclamante/EU\_COOL/20COMUNICACIONDELOTROAPELANTEDEMEXICO.pdf

52. The ordinary meaning of “restrictive” is “imposing restrictions”63 “[i]mplying, conveying or expressing restriction or limitation” and “[h]aving the nature or effect of a restriction; imposing a restriction.”64 The term “restriction” is defined as “the act or an instance of restricting; the state of being restricted”65 and as “[a] thing which restricts someone or something, a limitation on action, a limiting condition or regulation.”66 The term “restrict” is defined as “confine, bound, limit”.67 53. The meaning of “restriction” has been elaborated upon in jurisprudence concerning other WTO provisions. The term “restriction” should not be given a narrow meaning.68 A “disguised restriction” in the context of Article XX of the GATT 1994 has been interpreted to include “disguised discrimination in international trade”.69 In the context of Article XI and other non-discrimination provisions of the GATT 1994, it has been found that GATT disciplines on the use of restrictions are not meant to protect “trade flows”, but rather the “competitive opportunities of imported products”.70 In Argentina – Hides and Leather, the Panel found that in determining whether a measure makes effective a restriction in the context of Article I, II, III and XI:1 of the GATT 1994 the focus is on the competitive opportunities of imported products, not the trade effects. That panel considered that the complaining party claiming the existence of a restriction need not prove actual trade effects.

#### Prefer our interp

#### Limits: there are infinite environmental, security, licensing, and technical process restrictions for HOW each energy can be produced – geographic restrictions on LOCATION provides a bright line for predictable AFF and NEG prep

1. **Equitable Aff and neg ground**

### Immigration

#### Immigration reform wont’ pass – border security and gay rights.

Brock 2-8. [Janna, "Immigration Reform 2013: What the President Can Learn From the Obamacare Battle" Policy Mic -- www.policymic.com/articles/25188/immigration-reform-2013-what-the-president-can-learn-from-the-obamacare-battle]

¶ Looking at Obama's plan, it is quite similar to the bipartisan group of senators one labeled the "gang of eight" — and their plan to make it possible for 11 million illegal immigrants to achieve citizenship. This includes granting "probationary legal status" for eligible undocumented workers, learning English, and paying taxes. While this measure has been praised by Obama recently, it now appears the plan could be dead in the water thanks to Obama himself.¶ ¶ Apparently, Obama has his own strings attached to immigration reform. He is against the "border security plan" first, which was the main stipulation brought forth by the conservatives within the "gang of eight." Senator Marco Rubio (R-Fla.) said he "will not be supporting any law that does not ensure that the enforcement things happen."¶ ¶ Another wrench Obama has thrown into his immigration reform is guaranteeing bi-national same sex couples the same rights as heterosexual couples. Just as both Senate and House members were warming up to the idea of immigration reform, Obama's extra additives could throw the reform effort into limbo. Senator John McCain (R-Ariz.) said, "what is more important, LGBT or border security?" ¶ ¶ McCain is right. The two issues are completely separate. Obama is being reckless in using this issue to go along with immigration reform. At this juncture, he risks conservatives abandoning the effort for immigration reform and others who were on board. He will lose the "gang of eight" backing for sure. He will receive the same backlash he got with the passage of Obamacare.¶ ¶ President Obama seems to be using the same tactics he did when trying to pass Obamacare. In November 2009, the House barely passed a version of the bill, 220-215, and in December 2009, the Senate passed the bill 60-39. But just because it passed does not mean it was not without a fierce battle.¶ ¶ Right now, there are multiple companies suing on the basis of religious freedoms largely because of Obamacare's contraceptive mandate. Just because the Supreme Court declared Obamacare constitutional does not mean it has not been bitterly opposed, and will be for the foreseeable future. And if his immigration reform is forced like Obamacare was through Congress it could mean a bloody, bitter political war.¶ ¶ President Obama should exercise caution. He is going off on his own path instead of working with Congress. If he chooses to approach immigration reform this way, he will once again alienate a host of congressional members. He has to work with Congress not against them. It will guarantee more court battles and intense showdowns. But most importantly, it will ensure that immigration reform will not happen while he is in office.

#### Obama nomination fights sap capital – jacks agenda.

Thurlow 2-5. [Tom, political writer, "Obama's Political Capital" Red State -- www.redstate.com/tfthurlow/2013/02/05/obamas-political-capital/]

President Obama blows through his own political capital just as fast as he blows through America’s financial capital. Neither case of over-spending is sustainable, and we will just have to wait to see which spending spree is forced to end first.¶ But this further confirms my suspicion that President Obama’s brains are the most over-rated to occupy the Oval Office in generations. Take his recent nominations, which are a mess.¶ Last week’s Senate hearings on Senator Hagel’s confirmation as defense secretary were a disaster. Senator McCain pressed Senator Hagel to confirm or deny Hagel’s earlier statement that the Surge in Iraq was “the greatest foreign policy blunder since the Vietnam War.” Senator Ted Cruz pointed out that Senator Hegal, during an interview with the Al Jazeera English network in 2009 had agreed with a questioner who said that the United States appeared and acted like the world’s bully. As Paul Mirengoff at the Powerline Blog wrote, “if he were a Broadway play, Hagel would close after one performance.”¶ There were also a number of past anti-Semitic, or at least anti-Israel statements about which Senator Hagel was questioned. About the only thing about the hearing that was reassuring to those who take national defense seriously was that Hagel bumbled so much he sounded like he may have dementia. Let’s face it, a demented defense secretary may not be as bad as an anti-American defense secretary who is purposefully soft on defense and unconcerned about looming problems with Iran’s nuclear program.¶ Senator Lindsey Graham has threatened a hold on the Hagel nomination, and he should. Not only is a defense secretary an important policy position, but as has been pointed out by Republican critics that in any given foreign crisis, the defense secretary will be one of the few advisors in the room, advising the president.¶ Next up: a nomination battle for a Treasury secretary nominee, Jacob Lew, who has never worked in a bank except as an attorney for Citibank, and has held many different government jobs, most recently President Obama’s chief of staff. Definitely a financial industry lightweight. Lew has also been accused of misleading the public on deficits. About the only thing that stands out about Jacob Lew as Treasury secretary is the fact that his signature — which will appear on all of our currency – looks like a bunch of circles. Oddly enough, it doesn’t appear as if Lew has had any medical training.¶ After that, brace yourself for President Obama’s nominee for director of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Todd Jones. Jones is the current acting director of ATF and has been criticized by a local Democratic FBI office director as being politically well-connected but incompetent and soft on gun and violent crime prosecutions.¶ Past presidents have had difficult times in their second terms, but the difficulty is usually with big proposals. President George W. Bush unsuccessfully tried to pass privatization of Social Security and immigration reform in his second term. President Reagan spent his second term solidifying his victory in the Cold War and simplified the tax code, lowering the top marginal tax rate to 28%. Meanwhile, President Obama is trying to get Charles Hagel approved as defense secretary, Jacob Lew at Treasury secretary, and Todd Jones as ATF director, not grand plans by any means.¶ President Obama may get these nominees approved by a majority of senators. But the question is: why is he fighting these particular battles? He could have easily found better qualified nominees for these positions and fought bigger battles on some substantive legislative proposals. Why spend what remaining political capital he has on these problematic appointments? I have a theory, and here goes.¶ As liberal as he is, President Obama prefers to settle scores with his political adversaries even more than getting big liberal proposals passed. There were some clues dropped in the recent campaign. In one speech President Obama told his audience, who booed after Gov. Romney was mentioned, “don’t boo … voting is the best revenge.” This follows a slip he made a couple years earlier when he encouraged Latinos to punish their “enemies,” and when he warned African Americans that a Republican take-over of Congress would mean “hand-to-hand combat up here on Capitol Hill.”¶ These Freudian slips and others show the resentment that President Obama feels towards anyone who opposes him. Opposing ideas are not to be argued against; their proponents are to be personally defeated and the victory noted. Somewhere in his brain the president is keeping score, and he relishes announcing to his opponents, as he did in his first term, “I won.”¶ It is a pettiness that may work out well for the conservative cause. After all, the best way to block any future liberal proposals is to not have them proposed in the first place. The Hagel, Lew and Jones nominations, and the spending of President Obama’s political capital needed to advance these nominations, may be just the ticket to stall any future liberal proposals.

#### Pol cap not key and backfires

Sanchez and Dennis 1-30. [Humberto, Steven, RC staff, "GOP warns Obama to tread lightly on immigration" Roll Call -- www.rollcall.com/news/gop\_warns\_obama\_to\_tread\_lightly\_on\_immigration-222040-1.html?pos=oplyh]

An immigration policy rewrite may be President Barack Obama’s top priority, but Senate Republicans are warning that if he tries to influence Congress too much, the delicate talks could run aground.¶ “I think this is going to be a congressional thing,” Senate Judiciary ranking member Charles E. Grassley, R-Iowa, said Wednesday. “I think the president is going to stay out of this. He doesn’t want to talk to Congress. You saw that last fall in the fiscal cliff.¶ “He wants to give speeches; he wants to campaign,” Grassley continued. “So I don’t think he’s going to influence this. I don’t think he’s got enough influence to influence this anyway.”¶ Sen. Orrin G. Hatch, R-Utah, a veteran of previous immigration policy change efforts, said he hopes the president will use a light touch when it comes to pressing for his stated prerogatives.¶ “I actually believe he doesn’t care much for Congress,” Hatch said. The Utah lawmaker stressed that he likes “the president personally,” but he said Obama hasn’t reached out to lawmakers on recent legislative business such as the fiscal cliff.¶ “I hope we provide the leadership and that he follows along,” Hatch said.

#### Reform won’t pass – long timeframe to a vote.

Cowan 2-5. [Richard, journalist, "House Republican warns against rushing immigration reform" Reuters -- www.reuters.com/article/2013/02/05/us-usa-immigration-idUSBRE9130V620130205]

The immigration system is badly in need of reform but Congress should not rush legislation to President Barack Obama, who is demanding prompt action, a leading Republican said on Tuesday.¶ In the first of a series of hearings planned by the House of Representatives Judiciary Committee, Chairman Bob Goodlatte warned a packed hearing room that his panel "needs to take the time to learn from the past so that our efforts to reform our immigration laws do not repeat the same mistakes."¶ Obama and many of his fellow Democrats in Congress are pushing for passage this year of comprehensive reforms that would include putting 11 million illegal residents on a path to U.S. citizenship.¶ Pro-immigrant groups have been pushing for action for years without success. But November elections, in which Hispanic-Americans voted overwhelmingly for Democrats, gave new impetus for legislation. They also jarred Republicans into acknowledging the need for action - a turnaround after their presidential hopefuls campaigned on tough anti-immigration platforms in 2011 and 2012.¶ But there still are significant disagreements between the two parties over how to balance the need for border security and regularize the status of illegal immigrants. The most contentious issue is the possible legalization of those who emigrated to the United States without permission.¶ Goodlatte acknowledged that Congress must address how to deal with those who have come to the United States illegally, many of whom now have deep roots, with children attending American public schools.¶ But the Virginia Republican noted that members of Congress "have a lot of questions about how a large-scale legalization program would work, what it would cost and how it would prevent illegal immigration in the future."¶ Goodlatte's remarks focused on the need to enforce immigration laws and to accommodate more foreign workers with high-tech skills, which are needed by corporations in the Silicon Valley and elsewhere, and farm workers.¶ Some Republicans are calling for more modest steps in dealing with the 11 million illegal immigrants in the United States who live under the threat of deportation. Instead of putting them on a path to citizenship, some have suggested a permanent work visa for them.¶ FRANCE, GERMANY WARNING¶ But Representative Zoe Lofgren of California, the senior Democrat on the House judiciary subcommittee that will delve into legislative fixes, warned: "Partial legalization, as some are suggesting, is a dangerous path and we need only look at France and Germany to see how unwise it is to create a permanent underclass" in the United States.¶ A bipartisan group of senators last week unveiled a comprehensive reform plan that they hope to translate into legislation in coming weeks. Significant questions were unresolved in their outline, including what kind of system to create for allowing future visa applicants.¶ Senate Democrats hope to pass a bill by mid-year with a large, bipartisan vote that could improve chances for passage of a bill in the Republican-controlled House.¶ However, House Republican leaders have not committed to passing an immigration bill this year.

#### PC theory is wrong

*-add green highlighting for immigration*

Hirsh, 2-7 – National Journal chief correspondent, citing various political scientists

[Michael, former Newsweek senior correspondent, "There’s No Such Thing as Political Capital," National Journal, 2-9-13, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207, accessed 2-8-13, mss]

**There’s No Such Thing as Political Capital**

The idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get itwrong. On Tuesday, in his State of the Union address, President Obama will do what every president does this time of year. For about 60 minutes, he will lay out a sprawling and ambitious wish list highlighted by gun control and immigration reform, climate change and debt reduction. In response, the pundits will do what they always do this time of year: They will talk about how unrealistic most of the proposals are, discussions often informed by sagacious reckonings of how much “political capital” Obama possesses to push his program through. Most of **this** talk **will have no bearing on what actually happens** over the next four years. Consider this: Three months ago, just before the November election, if someone had talked seriously about Obama having enough political capital to oversee passage of both immigration reform and gun-control legislation at the beginning of his second term—even after winning the election by 4 percentage points and 5 million votes (the actual final tally)—this person would have been called crazy and stripped of his pundit’s license. (It doesn’t exist, but it ought to.) In his first term, in a starkly polarized country, the president had been so frustrated by GOP resistance that he finally issued a limited executive order last August permitting immigrants who entered the country illegally as children to work without fear of deportation for at least two years. Obama didn’t dare to even bring up gun control, a Democratic “third rail” that has cost the party elections and that actually might have been even less popular on the right than the president’s health care law. And yet, for reasons that have very little to do with Obama’s personal prestige or popularity—variously put in terms of a “mandate” or “political capital”—chances are fair that both will now happen. What changed? In the case of gun control, of course, it wasn’t the election. It was the horror of the 20 first-graders who were slaughtered in Newtown, Conn., in mid-December. The sickening reality of little girls and boys riddled with bullets from a high-capacity assault weapon seemed to precipitate a sudden tipping point in the national conscience. One thing changed after another. Wayne LaPierre of the National Rifle Association marginalized himself with poorly chosen comments soon after the massacre. The pro-gun lobby, once a phalanx of opposition, began to fissure into reasonables and crazies. Former Rep. Gabrielle Giffords, D-Ariz., who was shot in the head two years ago and is still struggling to speak and walk, started a PAC with her husband to appeal to the moderate middle of gun owners. Then she gave riveting and poignant testimony to the Senate, challenging lawmakers: “Be bold.” As a result, momentum has appeared to build around some kind of a plan to curtail sales of the most dangerous weapons and ammunition and the way people are permitted to buy them. It’s impossible to say now whether such a bill will pass and, if it does, whether it will make anything more than cosmetic changes to gun laws. But one thing is clear: The **political tectonics** have **shift**ed **dramatically in very little time**. Whole new possibilities exist now that didn’t a few weeks ago. Meanwhile, the Republican members of the Senate’s so-called Gang of Eight are pushing hard for a new spirit of compromise on immigration reform, a sharp change after an election year in which the GOP standard-bearer declared he would make life so miserable for the 11 million illegal immigrants in the U.S. that they would “self-deport.” But this turnaround has very little to do with Obama’s personal influence—his political mandate, as it were. It has almost entirely to do with just two numbers: 71 and 27. That’s 71 percent for Obama, 27 percent for Mitt Romney, the breakdown of the Hispanic vote in the 2012 presidential election. Obama drove home his advantage by giving a speech on immigration reform on Jan. 29 at a Hispanic-dominated high school in Nevada, a swing state he won by a surprising 8 percentage points in November. But the movement on immigration has mainly come out of the Republican Party’s recent introspection, and the realization by its more thoughtful members, such as Sen. Marco Rubio of Florida and Gov. Bobby Jindal of Louisiana, that without such a shift the party may be facing demographic death in a country where the 2010 census showed, for the first time, that white births have fallen into the minority. It’s got nothing to do with Obama’s political capital or, indeed, Obama at all. The point is not that “political capital” is a meaningless term. Often it is a synonym for “mandate” or “momentum” in the aftermath of a decisive election—and just about every politician ever elected has tried to claim more of a mandate than he actually has. Certainly, Obama can say that because he was elected and Romney wasn’t, he has a better claim on the country’s mood and direction. Many pundits still defend political capital as a useful metaphor at least. “It’s an unquantifiable but meaningful concept,” says Norman Ornstein of the American Enterprise Institute. “You can’t really look at a president and say he’s got 37 ounces of political capital. But the fact is, it’s a concept that matters, if you have popularity and some momentum on your side.” The real problem is that the idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get it wrong. “Presidents usually over-estimate it,” says George Edwards, a presidential scholar at Texas A&M University. “The best kind of political capital—some sense of an electoral mandate to do something—is very rare. It almost never happens. In 1964, maybe. And to some degree in 1980.” For that reason, **political capital** is a concept that **misleads** far more than it enlightens. **It is** **distortionary**. It conveys the idea that we know more than we really do about the ever-elusive concept of political power, and it discounts the way unforeseen events can suddenly change everything. Instead, it suggests, erroneously, that a political figure has a concrete amount of political capital to invest, just as someone might have real investment capital—that a particular leader can bank his gains, and the size of his account determines what he can do at any given moment in history. Naturally, any president has practical and electoral limits. Does he have a majority in both chambers of Congress and a cohesive coalition behind him? Obama has neither at present. And unless a surge in the economy—at the moment, still stuck—or some other great victory gives him more momentum, it is inevitable that the closer Obama gets to the 2014 election, the less he will be able to get done. Going into the midterms, Republicans will increasingly avoid any concessions that make him (and the Democrats) stronger. But the abrupt emergence of the immigration and gun-control issues illustrates how suddenly shifts in mood can occur and how political interests can align in new ways just as suddenly. Indeed, the pseudo-concept of political capital masks a larger truth about Washington that is kindergarten simple: You just don’t know what you can do until you try. Or as Ornstein himself once wrote years ago, “**Winning wins.”** In theory, and in practice, depending on Obama’s handling of any particular issue, even in a polarized time, he could still deliver on a lot of his second-term goals, depending on his skill and the breaks. Unforeseen catalysts can appear, like Newtown. Epiphanies can dawn, such as when many Republican Party leaders suddenly woke up in panic to the huge disparity in the Hispanic vote. Some **political scientists** **who study** the elusive calculus of **how to pass legislation** and run successful presidencies **say** that **political capital is**, at best, **an empty concept**, and that **almost nothing in** the **academic literature** successfully quantifies or even defines it. “It can refer to a very abstract thing, like a president’s popularity, but there’s no mechanism there. That makes it kind of useless,” says Richard Bensel, a government professor at Cornell University. Even Ornstein concedes that the calculus is far more complex than the term suggests. **Winning** on one issue often **changes the** **calculation** for the next issue; there is never any known amount of capital. “The idea here is, if an issue comes up where **the conventional wisdom is that president is not going to get what he wants**, and [they]he gets it, then each time that happens, it changes the calculus of the **other actors**” Ornstein says. “If they think he’s going to win, they may **change positions to get on the winning side**. **It’s a bandwagon effect**.” ALL THE WAY WITH LBJ Sometimes, a clever practitioner of power can get more done just because [they’re]he’s aggressive and knows the hallways of Congress well. Texas A&M’s Edwards is right to say that the outcome of the 1964 election, Lyndon Johnson’s landslide victory over Barry Goldwater, was one of the few that conveyed a mandate. But one of the main reasons for that mandate (in addition to Goldwater’s ineptitude as a candidate) was President Johnson’s masterful use of power leading up to that election, and his ability to get far more done than anyone thought possible, given his limited political capital. In the newest volume in his exhaustive study of LBJ, The Passage of Power, historian Robert Caro recalls Johnson getting cautionary advice after he assumed the presidency from the assassinated John F. Kennedy in late 1963. Don’t focus on a long-stalled civil-rights bill, advisers told him, because it might jeopardize Southern lawmakers’ support for a tax cut and appropriations bills the president needed. “One of the wise, practical people around the table [said that] the presidency has only a certain amount of coinage to expend, and you oughtn’t to expend it on this,” Caro writes. (Coinage, of course, was what political capital was called in those days.) Johnson replied, “Well, what the hell’s the presidency for?” Johnson didn’t worry about coinage, and he got the Civil Rights Act enacted, along with much else: Medicare, a tax cut, antipoverty programs. He appeared to understand not just the ways of Congress but also the way to maximize the momentum he possessed in the lingering mood of national grief and determination by picking the right issues, as Caro records. “Momentum is not a mysterious mistress,” LBJ said. “It is a controllable fact of political life.” Johnson had the skill and wherewithal to realize that, at that moment of history, he could have unlimited coinage if he handled the politics right. He did. (At least until Vietnam, that is.)

[Matt note: gender paraphrased]

### K

The role of the ballot is political simulation - we should get access to the 1AC

McClean 1, (David E. “The Cultural Left and the Limits of Social Hope,” Am. Phil. Conf., [www.american-philosophy.org/archives/past\_conference\_programs/pc2001/Discussion%20papers/david\_mcclean.htm](http://www.american-philosophy.org/archives/past_conference_programs/pc2001/Discussion%20papers/david_mcclean.htm))

Yet for some reason, at least partially explicated in Richard Rorty's Achieving Our Country, a book that I think is long overdue, leftist critics continue to cite and refer to the eccentric and often a priori ruminations of people like those just mentioned, and a litany of others including Derrida, Deleuze, Lyotard, Jameson, and Lacan, who are to me hugely more irrelevant than Habermas in their narrative attempts to suggest policy prescriptions (when they actually do suggest them) aimed at curing the ills of homelessness, poverty, market greed, national belligerence and racism. I would like to suggest that it is time for American social critics who are enamored with this group, those who actually want to be relevant, to recognize that they have a disease, and a disease regarding which I myself must remember to stay faithful to my own twelve step program of recovery. The disease is the need for elaborate theoretical "remedies" wrapped in neological and multi-syllabic jargon. These elaborate theoretical remedies are more "interesting," to be sure, than the pragmatically settled questions about what shape democracy should take in various contexts, or whether private property should be protected by the state, or regarding our basic human nature (described, if not defined (heaven forbid!), in such statements as "We don't like to starve" and "We like to speak our minds without fear of death" and "We like to keep our children safe from poverty"). As Rorty puts it, "When one of today's academic leftists says that some topic has been 'inadequately theorized,' you can be pretty certain that he or she is going to drag in either philosophy of language, or Lacanian psychoanalysis, or some neo-Marxist version of economic determinism. . . . These futile attempts to philosophize one's way into political relevance are a symptom of what happens when a Left retreats from activism and adopts a spectatorial approach to the problems of its country. Disengagement from practice produces theoretical hallucinations"(italics mine).(1) Or as John Dewey put it in his The Need for a Recovery of Philosophy, "I believe that philosophy in America will be lost between chewing a historical cud long since reduced to woody fiber, or an apologetics for lost causes, . . . . or a scholastic, schematic formalism, unless it can somehow bring to consciousness America's own needs and its own implicit principle of successful action." Those who suffer or have suffered from this disease Rorty refers to as the Cultural Left, which left is juxtaposed to the Political Left that Rorty prefers and prefers for good reason. Another attribute of the Cultural Left is that its members fancy themselves pure culture critics who view the successes of America and the West, rather than some of the barbarous methods for achieving those successes, as mostly evil, and who view anything like national pride as equally evil even when that pride is tempered with the knowledge and admission of the nation's shortcomings. In other words, the Cultural Left, in this country, too often dismiss American society as beyond reform and redemption. And Rorty correctly argues that this is a disastrous conclusion, i.e. disastrous for the Cultural Left. I think it may also be disastrous for our social hopes, as I will explain. Leftist American culture critics might put their considerable talents to better use if they bury some of their cynicism about America's social and political prospects and help forge public and political possibilities in a spirit of determination to, indeed, achieve our country - the country of Jefferson and King; the country of John Dewey and Malcom X; the country of Franklin Roosevelt and Bayard Rustin, and of the later George Wallace and the later Barry Goldwater. To invoke the words of King, and with reference to the American society, the time is always ripe to seize the opportunity to help create the "beloved community," one woven with the thread of agape into a conceptually single yet diverse tapestry that shoots for nothing less than a true intra-American cosmopolitan ethos, one wherein both same sex unions and faith-based initiatives will be able to be part of the same social reality, one wherein business interests and the university are not seen as belonging to two separate galaxies but as part of the same answer to the threat of social and ethical nihilism. We who fancy ourselves philosophers would do well to create from within ourselves and from within our ranks a new kind of public intellectual who has both a hungry theoretical mind and who is yet capable of seeing the need to move past high theory to other important questions that are less bedazzling and "interesting" but more important to the prospect of our flourishing - questions such as "How is it possible to develop a citizenry that cherishes a certain hexis, one which prizes the character of the Samaritan on the road to Jericho almost more than any other?" or "How can we square the political dogma that undergirds the fantasy of a missile defense system with the need to treat America as but one member in a community of nations under a "law of peoples?" The new public philosopher might seek to understand labor law and military and trade theory and doctrine as much as theories of surplus value; the logic of international markets and trade agreements as much as critiques of commodification, and the politics of complexity as much as the politics of power (all of which can still be done from our arm chairs.) This means going down deep into the guts of our quotidian social institutions, into the grimy pragmatic details where intellectuals are loathe to dwell but where the officers and bureaucrats of those institutions take difficult and often unpleasant, imperfect decisions that affect other peoples' lives, and it means making honest attempts to truly understand how those institutions actually function in the actual world before howling for their overthrow commences. This might help keep us from being slapped down in debates by true policy pros who actually know what they are talking about but who lack awareness of the dogmatic assumptions from which they proceed, and who have not yet found a good reason to listen to jargon-riddled lectures from philosophers and culture critics with their snobish disrespect for the so-called "managerial class."

#### Predictions are good, even if imperfect

Garrett 12

Banning, In Search of Sand Piles and Butterflies, director of the Asia Program and Strategic Foresight Initiative at the Atlantic Council.

http://www.acus.org/disruptive\_change/search-sand-piles-and-butterflies

 “Disruptive change” that produces “strategic shocks” has become an increasing concern for policymakers, shaken by momentous events of the last couple of decades that were not on their radar screens – from the fall of the Berlin Wall and the 9/11 terrorist attacks to the 2008 financial crisis and the “Arab Spring.” These were all shocks to the international system, predictable perhaps in retrospect but predicted by very few experts or officials on the eve of their occurrence. This “failure” to predict specific strategic shocks does not mean we should abandon efforts to foresee disruptive change or look at all possible shocks as equally plausible. Most strategic shocks do not “come out of the blue.” We can understand and project long-term global trends and foresee at least some of their potential effects, including potential shocks and disruptive change. We can construct alternative futures scenarios to envision potential change, including strategic shocks. Based on trends and scenarios, we can take actions to avert possible undesirable outcomes or limit the damage should they occur. We can also identify potential opportunities or at least more desirable futures that we seek to seize through policy course corrections. We should distinguish “strategic shocks” that are developments that could happen at any time and yet may never occur. This would include such plausible possibilities as use of a nuclear device by terrorists or the emergence of an airborne human-to-human virus that could kill millions. Such possible but not inevitable developments would not necessarily be the result of worsening long-term trends. Like possible terrorist attacks, governments need to try to prepare for such possible catastrophes though they may never happen. But there are other potential disruptive changes, including those that create strategic shocks to the international system, that can result from identifiable trends that make them more likely in the future—for example, growing demand for food, water, energy and other resources with supplies failing to keep pace. We need to look for the “sand piles” that the trends are building and are subject to collapse at some point with an additional but indeterminable additional “grain of sand” and identify the potential for the sudden appearance of “butterflies” that might flap their wings and set off hurricanes. Mohamed Bouazizi, who immolated himself December 17, 2010 in Sidi Bouzid, Tunisia, was the butterfly who flapped his wings and (with the “force multiplier” of social media) set off a hurricane that is still blowing throughout the Middle East. Perhaps the metaphors are mixed, but the butterfly’s delicate flapping destabilized the sand piles (of rising food prices, unemployed students, corrupt government, etc.) that had been building in Tunisia, Egypt, and much of the region. The result was a sudden collapse and disruptive change that has created a strategic shock that is still producing tremors throughout the region. But the collapse was due to cumulative effects of identifiable and converging trends. When and what form change will take may be difficult if not impossible to foresee, but the likelihood of a tipping point being reached—that linear continuation of the present into the future is increasingly unlikely—can be foreseen. Foreseeing the direction of change and the likelihood of discontinuities, both sudden and protracted, is thus not beyond our capabilities. While efforts to understand and project long-term global trends cannot provide accurate predictions, for example, of the GDPs of China, India, and the United States in 2030, looking at economic and GDP growth trends, can provide insights into a wide range of possible outcomes. For example, it is a useful to assess the implications if the GDPs of these three countries each grew at currently projected average rates – even if one understands that there are many factors that can and likely will alter their trajectories. The projected growth trends of the three countries suggest that at some point in the next few decades, perhaps between 2015 and 2030, China’s GDP will surpass that of the United States. And by adding consideration of the economic impact of demographic trends (China’s aging and India’s youth bulge), there is a possibility that India will surpass both China and the US, perhaps by 2040 or 2050, to become the world’s largest economy. These potential shifts of economic power from the United States to China then to India would likely prove strategically disruptive on a global scale. Although slowly developing, such disruptive change would likely have an even greater strategic impact than the Arab Spring. The “rise” of China has already proved strategically disruptive, creating a potential China-United States regional rivalry in Asia two decades after Americans fretted about an emerging US conflict with a then-rising Japan challenging American economic supremacy. Despite uncertainty surrounding projections, foreseeing the possibility (some would say high likelihood) that China and then India will replace the United States as the largest global economy has near-term policy implications for the US and Europe. The potential long-term shift in economic clout and concomitant shift in political power and strategic position away from the US and the West and toward the East has implications for near-term policy choices. Policymakers could conclude, for example, that the West should make greater efforts to bring the emerging (or re-emerging) great powers into close consultation on the “rules of the game” and global governance as the West’s influence in shaping institutions and behavior is likely to significantly diminish over the next few decades. The alternative to finding such a near-term accommodation could be increasing mutual suspicions and hostility rather than trust and growing cooperation between rising and established powers—especially between China and the United States—leading to a fragmented, zero-sum world in which major global challenges like climate change and resource scarcities are not addressed and conflict over dwindling resources and markets intensifies and even bleeds into the military realm among the major actors. Neither of these scenarios may play out, of course. Other global trends suggest that sometime in the next several decades, the world could encounter a “hard ceiling” on resources availability and that climate change could throw the global economy into a tailspin, harming China and India even more than the United States. In this case, perhaps India and China would falter economically leading to internal instability and crises of governance, significantly reducing their rates of economic growth and their ability to project power and play a significant international role than might otherwise have been expected. But this scenario has other implications for policymakers, including dangers posed to Western interests from “failure” of China and/or India, which could produce huge strategic shocks to the global system, including a prolonged economic downturn in the West as well as the East. Thus, looking at relatively slowly developing trends can provide foresight for necessary course corrections now to avert catastrophic disruptive change or prepare to be more resilient if foreseeable but unavoidable shocks occur. Policymakers and the public will press for predictions and criticize government officials and intelligence agencies when momentous events “catch us by surprise.” But unfortunately, as both Yogi Berra and Neils Bohr are credited with saying, “prediction is very hard, especially about the future.” One can predict with great accuracy many natural events such as sunrise and the boiling point of water at sea level. We can rely on the infallible predictability of the laws of physics to build airplanes and automobiles and iPhones. And we can calculate with great precision the destruction footprint of a given nuclear weapon. Yet even physical systems like the weather as they become more complex, become increasingly difficult and even inherently impossible to predict with precision. With human behavior, specific predictions are not just hard, but impossible as uncertainty is inherent in the human universe. As futurist Paul Saffo wrote in the Harvard Business Review in 2007, “prediction is possible only in a world in which events are preordained and no amount of actions in the present can influence the future outcome.” One cannot know for certain what actions he or she will take in the future much less the actions of another person, a group of people or a nation state. This obvious point is made to dismiss any idea of trying to “predict” what will occur in the future with accuracy, especially the outcomes of the interplay of many complex factors, including the interaction of human and natural systems. More broadly, the human future is not predetermined but rather depends on human choices at every turning point, cumulatively leading to different alternative outcomes. This uncertainty about the future also means the future is amenable to human choice and leadership. Trends analyses—including foreseeing trends leading to disruptive change—are thus essential to provide individuals, organizations and political leaders with the strategic foresight to take steps mitigate the dangers ahead and seize the opportunities for shaping the human destiny. Peter Schwartz nearly a decade ago characterized the convergence of trends and disruptive change as “inevitable surprises.” He wrote in Inevitable Surprises that “in the coming decades we face many more inevitable surprises: major discontinuities in the economic, political and social spheres of our world, each one changing the ‘rules of the game’ as its played today. If anything, there will be more, no fewer, surprises in the future, and they will all be interconnected. Together, they will lead us into a world, ten to fifteen years hence, that is fundamentally different from the one we know today. Understanding these inevitable surprises in our future is critical for the decisions we have to make today …. We may not be able to prevent catastrophe (although sometimes we can), but we can certainly increase our ability to respond, and our ability to see opportunities that we would otherwise miss.

#### Perm – do the AFF and whatever the 2nr is

**Apocalyptic imagery is key to genuine resistance**

**Schatz 12** (JL, Binghamton U, "The Importance of Apocalypse: The Value of End-­‐Of-­‐ The-­‐World Politics While Advancing Ecocriticism," The Journal of Ecocriticism: Vol 4, No 2 (2012))

Any **hesitancy to deploy images of apocalypse** out of the risk of acting in a biopolitical manner **ignores** how any particular metaphor—apocalyptic or not—**always risks getting co--‐opted**. **It does not excuse inaction**. Clearly hegemonic forces have already assumed control of determining environmental practices when one looks at the debates surrounding off--‐shore drilling, climate change, and biodiversity within the halls of Congress. “As this ideological quagmire worsens, urgent problems … will go unsolved … only to fester more ominously into the future. … [E]cological crisis … cannot be understood outside the larger social and global context … of internationalized markets, finance, and communications” (Boggs 774). If it weren’t for people such as Watson connecting things like whaling to the end of the world it wouldn’t get the needed coverage to enter into public discourse. It takes big news to make headlines and hold attention spans in the electronic age. Sometimes it even takes a reality TV show on Animal Planet. As Luke reminds us, “Those who dominate the world exploit their positions to their advantage **by defining how the world is known**. Unless they also face resistance, questioning, and challenge from those who are dominated, **they** certainly **will remain the dominant forces**” (2003: 413). Merely sitting back and theorizing over metaphorical deployments does a **grave injustice** to the gains activists are making on the ground. It also **allows hegemonic institutions to continually define the debate** over the environment by framing out any attempt for significant change, whether it be radical or reformist. Only by jumping on every opportunity for resistance can ecocriticism have the hopes of combatting the current ecological reality. This means we must recognize that **we cannot fully escape the master’s house** since the surrounding environment always shapes any form of resistance. Therefore, **we ought to act even if we may get co--‐opted.** As Foucault himself reminds us, “instead of radial ruptures more often one is dealing with mobile and transitory points of resistance, producing cleavages in a society that shift about[.] … And it is doubtless the strategic codification of these points of resistance that makes a revolution possible, somewhat similar to the way in which the state relies on the institutional integration of power relationships. It is in this sphere of force relations that we must try to analyze the mechanisms of power” (96--‐97). Here Foucault “asks us to think about resistance differently, as not anterior to power, but a component of it. If we take seriously these notions on the exercise and circulation of power, then we … open … up the field of possibility to talk about particular kinds of environmentalism” (Rutherford 296). This is not to say that all actions are resistant. Rather, the revolutionary actions that are truly resistant oftentimes appear mundane since it is more about altering the intelligibility that frames discussions around the environment than any specific policy change. Again, this is why people like Watson use one issue as a jumping off point to talk about wider politics of ecological awareness. Campaigns that look to the government or a single policy but for a moment, and then go on to challenge hegemonic interactions with the environment through other tactics, allows us to codify strategic points of resistance in numerous places at once. Again, this does not mean we must agree with every tactic. It does mean that even failed attempts are meaningful. For example, while PETA’s ad campaigns have drawn criticism for comparing factory farms to the Holocaust, and featuring naked women who’d rather go naked than wear fur, their importance extends beyond the ads alone6. By bringing the issues to the forefront they draw upon known metaphors and reframe the way people talk about animals despite their potentially anti--‐Semitic and misogynist underpinnings. Michael Hardt and Antonio Negri’s theorization of the multitude serves as an excellent illustration of how **utilizing the power of the master’s biopolitical tools can** become powerful enough to **deconstruct** its house **despite the risk of co--‐optation or backlash**. For them, the multitude is defined by the growing global force of people around the world who are linked together by their common struggles without being formally organized in a hierarchal way. While Hardt and Negri mostly talk about the multitude in relation to global capitalism, their understanding of the commons and analysis of resistance is useful for any ecocritic. They explain, [T]he multitude has matured to such an extent that it is becoming able, through its networks of communication and cooperation … [and] its production of the common, to sustain an alternative democratic society on its own. … Revolutionary politics must grasp, in the movement of the multitudes and through the accumulation of common and cooperative decisions, the moment of rupture … that can create a new world. In the face of the destructive state of exception of biopower, then, there is also a constituent state of exception of democratic biopolitics[,] … creating … a new constitutive temporality. (357) Once one understands the world as interconnected—instead of constructed by different nation--‐states and single environments—conditions in one area of the globe couldn’t be conceptually severed from any other. In short, we’d all have a stake in the global commons. Ecocritics can then **utilize biopolitics** to shape discourse and fight against governmental biopower by waking people up to the pressing need to inaugurate a new future for there to be any future. Influencing other people through argument and end--‐of--‐the--‐world tactics is not the same biopower of the state so long as it doesn’t singularize itself but for temporary moments. Therefore, “it is not unreasonable to hope that in a biopolitical future (after the defeat of biopower) war will no longer be possible, and the intensity of the cooperation and communication among singularities … will destroy its [very] possibility” (Hardt & Negri 347). In The context of capitalism, when wealth fails to trickle down it would be seen as a problem for the top since it would stand testament to their failure to equitably distribute wealth. In the context of environmentalism, not--‐in--‐my--‐backyard reasoning that displaces ecological destruction elsewhere would be exposed for the failure that it is. There is no backyard that is not one’s own. Ultimately, **images of planetary doom** demonstrate how we are all **interconnected** and in doing so inaugurate a **new world** where multitudes, and not governments, guide the fate of the planet.

#### Complexity theory destroys empiricism and makes objectivity impossible

#### Dekker ’11 (Sidney, Centre for Ethics, Law, Justice and Governance, Griffith University Professor, 2/21/11, “The complexity of failure: Implications of complexity theory for safety investigations”, Safety Science Volume 49, Issue 6, July 2011, Pages 939–945)

The conditions of a complex system are irreversible. The precise set of conditions that gave rise to the emergence of a particular outcome (e.g. an accident) is something that can never be exhaustively reconstructed. Complex systems continually experience change as relationships and connections evolve internally and adapt to their changing environment. Given the open, adaptive nature of complex systems, the system after the accident is not the same as the system before the accident—many things will have changed, not only as a result of the outcome, but as a result of the passage of time. This also means that the any predictive power of retrospective analysis of failure is limited (Leveson, 2002). Decisions in organizations, for example, to the extent that they can be described separately from context at all, are not the single beads strung along some linear cause-effect sequence that they may seem afterward. Complexity argues that they are spawned and suspended in the messy interior of organizational life that influences and buffets and shapes them in a multitude of ways. Many of these ways are hard to trace retrospectively as they do not follow documented organizational protocol but rather depend on unwritten routines, implicit expectations, professional judgments and subtle oral influences on what people deem rational or doable in any given situation (Vaughan, 1999). Reconstructing events in a complex system, then, is impossible, primarily as a result of the characteristics of complexity. The system that is subjected to scrutiny after the fact is never the same system that produced the outcome. It will already have changed, partly because of the outcome, and partly because of passing time and the nature of complexity. But psychological characteristics of retrospective investigation make it so too. As soon as an outcome has happened, whatever past events can be said to have led up to it, undergo a whole range of transformations ( Fischhoff and Beyth, 1975 and Hugh and Dekker, 2009). Take the idea that it is a sequence of events that precedes an accident. Who makes the selection of the “events” and on the basis of what? The very act of separating important or contributory events from unimportant ones is an act of construction, of the creation of a story, not the reconstruction of a story that was already there, ready to be uncovered. Any sequence of events or list of contributory or causal factors already smuggles a whole array of selection mechanisms and criteria into the supposed “re”-construction. There is no objective way of doing this—all these choices are affected, more or less tacitly, by the analyst’s background, preferences, experiences, biases, beliefs and purposes. “Events” are themselves defined and delimited by the stories with which the analyst configures them, and are impossible to imagine outside this selective, exclusionary, narrative fore-structure (Cronon, 1992).

#### Permutation solves- combine complexity bottom up approach with federal oversight solves

**Levy and Lichtenstein, 2011** – Levy is a Professor in Management and Marketing at UMass while Lichtenstein is an associate professor in management at UMass (David and Benyamin, “Approaching Business and the Environment with Complexity Theory”, Oxford Press, http://www.faculty.umb.edu/david\_levy/LevyLicht2011\_complexity\_chap32.pdf) //BZ

Opportunities exist here for research into the appropriate form and combination of top-down governance and bottom-up experimentation. While complexity theory has produced some general insights into the conditions needed for self-organization, these are difficult to apply and operationalize in particular circumstances, such as supply chains and local climate governance experiments. Moreover, the sustainable supply chain and industrial ecology literatures are overly reliant on material and energy flows, while neglecting the social, political, and economic structures in which these systems are embedded. This integrative perspective on bottom-up initiatives and top-down control represents a new and important understanding of complex systems. The notion that selforganization is feasible only in the absence of top-down hierarchical control reflects an inaccurate but popular understanding of complexity science that has generated a faddish wave of organizational consultants invoking complexity in a metaphorical, even mystical manner. Implicit in this approach is a free-market ideology that celebrates individual initiatives and frowns on governmental guidance. Further research can explore the degree, pace, and effectiveness of local environmental initiatives, in the context of complementary dynamics of wider, more structured coordination. If these local initiatives need protection within strategic niches, research is needed into the means of doing so without stifling the active diffusion of successful innovations into the larger system. The development of modeling tools to represent the complexities of business- environment interactions offers substantial potential for future research. Even as we recognize that limitations on long-term forecasting in complex systems, models that are well specified with realistic structures and parameters promise to generate insights into our current environmental and economic trajectory, critical thresholds, and future dangers, as well as points of leverage and intervention

#### **Environmental education concerning specific action-based policies is best – critical to sparking debate and accessibility**

Mogensen and Schnak 10 – Prof at University College West, Denmark, Associate Professor in the Research of Environmental and Health Education, PhD in Biology; Professor Emeritus of Education at Laererhoejskolen, Danish university of Education, DPU, and Aarhus University(Finn and Karsten, Feb 2010, “The action competence approach and the ‘new’ discourses of education for sustainable development, competence and quality criteria,” Environmental Education Research, Volume 16, Issue 1, 2010, pg 59-74, http://www.tandfonline.com/doi/abs/10.1080/13504620903504032)

Seen from a philosophical point of view, the main point of action competence is the idea of action. Inspired by analytic philosophy concerning explanation and understanding (Taylor 1966; von Wright 1971) and philosophical psychology (Kenny 1963; Peters 1958; White 1968) as well as pragmatist analyses (Bernstein 1971) and critical theory (Habermas 1968), the point can be made that human action differs from, or is a special kind of, mere behaviour and activity. Not only are actions intentional, the intentions, motives and reasons all have an intrinsic relation to the actions. So it will be a different action if the intention turns out to be different (Schnack 1977). In this sense, it is our forte as human beings to be able to act, given the links to associated humanistic concepts such as personhood, experience, responsibility, democracy, and education – insofar as we take education to be more than schooling, training or manipulation. In relation to problem-oriented environmental and health education, the notion of action is qualified by the criterion that **actions should be addressed to solutions of the problem and should not just be activities as a counterweight to academic tuition**. Not that activity is a bad thing or not good enough in certain situations, but the action competence approach emphasises the epistemological point that action-oriented teaching–learning has specific, important learning potentials. In this way, the notion of action in action competence is heavily loaded, philosophically and educationally. Actions are a special kind of behaviour: (a) qualified by the intentions of the agent, and in principle, not by someone else (which again challenges current discussions of participation in education discussed elsewhere in this collection; see Læssøe this issue); (b) qualified by being conscious and purposive, seen from the point of view of the agent, which also challenges the discussion of success criteria in education (see later). This latter perspective on the notion of action also means that the action must be addressed to solving the problem or changing the conditions or circumstances that created the problem in the first place. In adding this aspect to the action concept, this can be qualified in relation to the concept of activity. Hence, actions can be seen as specific activity. The status of action competence as an educational ideal and its utopian goals means that it will never be possible to say: ‘now it is not possible to be more action competent’. In this sense there is a parallel to the notion of sustainable development in that an objective reachable stage does not exist. In relation to sustainable development it is evident that you cannot satisfy the needs of people who live now without radically changing the conditions for the people to come for a number of reasons, not least that the satisfaction of human needs in specific (cultural) ways develops and changes the needs themselves. In the same way is it not possible to become the ultimate action competent individual because human actions will always produce intended and unintended changes and conditions that give rise to a quest for new capabilities. In this sense, the striving for qualifying one’s action competence is a never-ending process. The action competence approach seen in this Bildung perspective will be discussed further in a later section. However, a central element of the approach is to be critical of moralistic tendencies, preconceived ideas and hidden agendas when working with environmental education, health education, ESD or other teaching– learning sequences that deal with societal issues involving conflicting interests. Rather, the action competence approach points to democratic, participatory and action-oriented teaching–learning that can help students develop their ability, motivation and desire to play an active role in finding democratic solutions to problems and issues connected to sustainable development that may even consist of the aforementioned tendencies, ideas and agendas. From the very beginning, the action competence approach has been critical towards any reductionistic tendency in what has been called the first generation of environmental education (Breiting 1993), where the goal of many of its campaigns and programmes is to change people’s, including pupils’, behaviour (Jensen and Schnack 1997). But the newcomer to the international agenda, ‘education for sustainable development’, must also be critically discussed when seen from the philosophical perspective of the action competence approach. **The notion of sustainable development**, as introduced in the Brundtland Report, ‘Our Common Future’ (World Commission on Environment and Development 1987), and in ESD in particular, does not solve any questions. On the contrary, it **leads to a lot of dilemmas**. As the dilemmas are sound, **this is a good thing**, though you need to be on your guard: the more politically correct the rhetoric around sustainable development becomes, the more we may see a tendency to (mis)use ESD as a means to spread specific (political) viewpoints and interests. The point is then that in democratic education, as in taking an action competence approach, this should be analysed as part of the ideological criticism that continuously runs through the teaching–learning process. Thus, we can start by observing that the whole idea behind ESD seems to be very much in line with the action competence approach. To treat environmental issues and health issues as not only interrelated, but also fundamentally connected to economic, social, cultural and political aspects (as happens in ESD) is in full harmony with the action competence approach, and aligns well with its broader insistence of understanding environmental problems as societal issues constituted by conflicting interests. At the same time, **ESD without a democratic action competence perspective very easily becomes dogmatic and moralistic.** How, then, does the action competence approach developed within the field of environmental education fit into the pedagogy of ESD? This, of course, depends on the interpretation of the two concepts and the relationship between them. The research literature advocates highly different perspectives regarding the relationship between ESD and environmental education. Some claim that ESD is a different discipline to environmental education (Hopkins and McKeown 2003), some argue that ESD is replacing environmental education (Tilbury and Cooke 2005; Fien 2001), while others that ESD is considered a new paradigm on education (Sterling 2001). The different conceptualisations are in some situations, perhaps, used interchangeably to describe similar work, while in other situations they are expressions of more profound differences in focus and approach. Some commentators find this not only acceptable but actually stimulating (Scott and Oulton; in Summer, Corney, and Childs 2004) – and of course it is, even if it does complicate complex matters further. In some studies in Sweden, for example, a democratic approach to environmental education is sometimes called ‘pluralistic environmental education’ and sometimes simply ‘education for sustainable development’ (Sandell, Öhman, and Östman 2004; Öhman 2004). This may, of course, be a terminological problem in some respects, but at the same time it illustrates, redolent of with Arjen Wals’ (2006) arguments, among others, that the central point in the action competence approach is that it is the ‘education’ that matters the most. Environmental education, health education, and ESD are not the same, as they differ in their main substantive foci. More important, though, is the distinction between dogmatic, manipulative, and moralistic forms of these ‘educations’ on the one hand, and critical, open-ended, pluralistic and democratic forms on the other. As mentioned previously, **the action component is the most important part of the conception of action competence.** However, not least because of the increasing international use of the word ‘competence’ in the past decade, the competence component of the notion has a new controversial status that must be explored in connection to the action competence approach.

#### Discussion of energy policymaking is uniquely critical to positively engage the debate space

Kuzemko ’12[Caroline Kuzemko, CSGR University of Warwick, Security, the State and Political Agency: Putting ‘Politics’ back into UK Energy, <http://www.psa.ac.uk/journals/pdf/5/2012/381_61.pdf>]

This observation brings us on to the way in which debates and narratives within political circles, particularly within parliament and amongst policymakers, started to shift. A plethora of new papers, debates and policy documents on energy emerged over this time, despite the round of energy reviews and the new White Paper that had been produced immediately prior to this period (see in particular Havard 2004; Ofgem 2004; DTI 2005a, 2005b, 2006a, 2006b and 2006c; JESS 2006). The energy sector became increasingly referenced in these proliferating policy and other government documents in terms of potential supply insecurity (FCO 2004; Straw in Plesch et al 2004). Echoing media, academic and think-tank narratives, direct links can be found between fears of supply insecurity and Russia (FAC 2008; see also House of Commons 2007; Ofgem 2009: 1). In particular, in 2007 the Foreign Affairs Committee (FAC) produced a report entitled ‘Global Security: Russia’ (FAC 2008). This is where we see how assumptions about resource nationalism and energy ‘politicisation’ as wrong affect perceptions (Straw in Plesch et al 2004; DTI 2007: 19). The FAC report focuses on certain political frameworks in non-OECD producer countries, particularly Russia, which may not allow new reserves to be developed properly making them ‘unstable’ suppliers (Havard 2004; FCO 2004). This in turn had negative implications for energy prices (Straw in Plesch et al 2004; DTI 2007: 19). What was also evident over this time, however, was the rising amount of reports produced by political institutions **outside of those directly responsible for policymaking**, the Energy Directorate of the DTI and the independent regulator, Ofgem. The Foreign Office, House of Commons committees and parliamentary offices, such as that of Science and Technology, all started to produce reports on energy focused on energy security (FCO 2004; POST 2004; Fox 2006; House of Lords 2006; House of Commons 2007; FAC 2007). Energy security was added, by the UK, to formal forums for international negotiation. In 2005, during the October EU Summit at Hampton Court, the issue of ‘energy security’ was added to the agenda (Offerdahl 2007). In a paper prepared for conference delegates energy is characterised as a sector which was by then becoming an issue of national security (Helm 2005b: 2). Increasing dependence on Russia for supplies of, particularly gas, is seen as a source of threat to the security of EU, and by extension UK, energy supply. Likewise, energy security was made top of the agenda in the G8 Summit of 2006 (G8 2006). In 2006 Prime Minister Tony Blair used his annual Lord Mayor’s speech to highlight energy security concerns (DTI 2006c: 4). Growing political interest in energy, outside of those institutions formally responsible for energy policymaking, indicates the extent to which energy was becoming subject, once more, to political debate and deliberation. What is also interesting to note at this time is the degree to which the deliberation of energy becomes formalised through various new institutions. In July 2004, in the immediate aftermath of the Yukos affair, the new Energy Act had conferred on the Secretary of State for Trade and Industry a fixed duty to report annually on energy security matters to Parliament (DTI 2005a). Thus a specific political process was put in place to revisit energy security at least annually. Changes related to the need to deliberate more formally had also started to take place within the DTI and FCO in that new resources were allocated to energy analysis (Interview 5). The 2007 White Paper acknowledged that energy had not up until the mid 2000s existed as a discrete area of foreign policy. Again, as such, it had less dedicated capacity assigned to it. The paper announced that, for the first time, the UK would have ...an integrated international energy strategy which describes the action we are taking to help deliver secure energy supplies and tackle climate change. (DTI 2007: 8) Concurrent with the degree to which **energy was re-entering elite political debates at both the national and international levels, which in itself indicates a degree of deliberative repoliticisation , there were a number of policy alterations made** relating to changing interpretations of energy and international markets. It could be argued that energy security had, in 2003, been assumed to exist, especially given the degree to which energy governance was still understood to be heading in a promarket direction (Thomas 2006: 583; Jegen 2009: 1; Lesage et al 2010: 6; EC 2011: 14). For example the energy supply objective had been worded such that the UK should continue to “maintain the reliability of… supplies” (DTI 2003: 11). Energy security, although still an objective, had been an assumed outcome of marketisation which explains why competitive markets had been the principal objective of energy policy at that time (cf. Helm 2005). By contrast, however, by 2007 energy security is understood to be something that needs to be established, as one of the ‘immense’ challenges facing the UK as a nation, and furthermore, to require further political action to achieve (DTI 2006c: Introduction and 4). This refocus of objectives onto achieving energy security, over time, **added to the political pressures being brought to bear on energy policymakers** given the degree to which supplies continued to be considered ‘insecure’ (Kuzemko 2012b: ). These changes in policy objectives, political institutions, and the addition of political capacity to deliberate energy are understood have taken place partly in response to political pressures to change emanating from outside energy policy circles, i.e. the DTI and Ofgem. Ofgem officials report a higher degree of ‘outside’ political interference in their practices (Interview 15), and it has been widely claimed that both the 2006 Energy Review and 2007 White Paper were researched and compiled specifically because the DTI and Ofgem understood the political need to respond to the crisis (CEPMLP 2006; House of Commons 2007a). As these processes of deliberation intensified it started also to become clear that the state had lost considerable capacity to understand the complexities of energy. Government was considered to be more responsible, given that the narrative was of national energy supply security, but lacking in information and knowledge both about what was happening and what to do about it. Ultimately this resulted in the formation of a new government institution, the Department of Energy and Climate Change (DECC), with specific mandates to deliver on energy and climate security.

**Their conception of violence is reductive and can’t be solved**

**Boulding 77** Twelve Friendly Quarrels with Johan Galtung Author(s): Kenneth E. BouldingReviewed work(s):Source: Journal of Peace Research, Vol. 14, No. 1 (1977), pp. 75-86Published Kenneth Ewart Boulding (January 18, 1910 – March 18, 1993) was an economist, educator, peace activist, poet, religious mystic, devoted Quaker, systems scientist, and interdisciplinary philosopher.[1][2] He was cofounder of General Systems Theory and founder of numerous ongoing intellectual projects in economics and social science. He graduated from Oxford University, and was granted United States citizenship in 1948. During the years 1949 to 1967, he was a faculty member of the University of Michigan. In 1967, he joined the faculty of the University of Colorado at Boulder, where he remained until his retirement.

 Finally, we come to the great Galtung metaphors of 'structural violence' 'and 'positive peace'. They are metaphors rather than models, and for that very reason are suspect. Metaphors always imply models and metaphors have much more persuasive power than models do, for models tend to be the preserve of the specialist. But when a metaphor implies a bad model it can be very dangerous, for it is both persuasive and wrong. The metaphor of structural violence I would argue falls right into this category. The metaphor is that poverty, deprivation, ill health, low expectations of life, a condition in which more than half the human race lives, is 'like' a thug beating up the victim and 'taking his money away from him in the street, or it is 'like' a conqueror stealing the land of the people and reducing them to slavery. The implication is that poverty and its associated ills are the fault of the thug or the conqueror and the solution is to do away with thugs and conquerors. While there is some truth in the metaphor, in the modern world at least there is not very much. Violence, whether of the streets and the home, or of the guerilla, of the police, or of the armed forces, is a very different phenomenon from poverty. The processes which create and sustain poverty are not at all like the processes which create and sustain violence, although like everything else in 'the world, everything is somewhat related to everything else. There is a very real problem of the structures which lead to violence, but unfortunately Galitung's metaphor of structural violence as he has used it has diverted attention from this problem. Violence in the behavioral sense, that is, somebody actually doing damage to somebody else and trying to make them worse off, is a 'threshold' phenomenon, rather like the boiling over of a pot. The temperature under a pot can rise for a long time without its boiling over, but at some 'threshold boiling over will take place. The study of the structures which underlie violence are a very important and much neglected part of peace research and indeed of social science in general. Threshold phenomena like violence are difficult to study because they represent 'breaks' in the systenm rather than uniformities. Violence, whether between persons or organizations, occurs when the 'strain' on a system is too great for its 'strength'. The metaphor here is that violence is like what happens when we break a piece of chalk. Strength and strain, however, especially in social systems, are so interwoven historically that it is very difficult to separate them. The diminution of violence involves two possible strategies, or a mixture of the two; one is Ithe increase in the strength of the system, 'the other is the diminution of the strain. The strength of systems involves habit, culture, taboos, and sanctions, all these 'things which enable a system to stand lincreasing strain without breaking down into violence. The strains on the system 'are largely dynamic in character, such as arms races, mutually stimulated hostility, changes in relative economic position or political power, which are often hard to identify. Conflicts of interest 'are only part 'of the strain on a system, and not always the most important part. It is very hard for people ito know their interests, and misperceptions of 'interest take place mainly through the dynamic processes, not through the structural ones. It is only perceptions of interest which affect people's behavior, not the 'real' interests, whatever these may be, and the gap between percepti'on and reality can be very large and resistant to change. However, what Galitung calls structural violence (which has been defined 'by one unkind commenltator as anything that Galitung doesn't like) was originally defined as any unnecessarily low expectation of life, on that assumption that anybody who dies before the allotted span has been killed, however unintentionally and unknowingly, by somebody else. The concept has been expanded to include all 'the problems of poverty, destitution, deprivation, and misery. These are enormously real and are a very high priority for research and action, but they belong to systems which are only peripherally related to 'the structures whi'ch produce violence. This is not rto say that the cultures of violence and the cultures of poverty are not sometimes related, though not all poverty cultures are cultures of violence, and certainly not all cultures of violence are poverty cultures. But the dynamics lof poverty and the success or failure to rise out of it are of a complexity far beyond anything which the metaphor of structural violence can offer. While the metaphor of structural violence performed a service in calling attention to a problem, it may have d'one a disservice in preventing us from finding the answer.

**Democracy checks the terminal impact**

**O’Kane, 1997** (“Modernity, the Holocaust, and politics”, Economy and Society, February, ebsco)

Chosen policies cannot be relegated to the position of immediate condition (Nazis in power) in the explanation of the Holocaust. Modern bureaucracy is not ‘intrinsically capable of genocidal action’ (Bauman 1989: 106). Centralized state coercion has no natural move to terror. In the explanation of modern genocides it is chosen policies which play the greatest part, whether in effecting bureaucratic secrecy, organizing forced labour, implementing a system of terror, harnessing science and technology or introducing extermination policies, as means and as ends. As Nazi Germany and Stalin’s USSR have shown, furthermore, those chosen policies of genocidal government turned away from and not towards modernity. The choosing of policies, however, is not independent of circumstances. An analysis of the history of each case plays an important part in explaining where and how genocidal governments come to power and analysis of political institutions and structures also helps towards an understanding of the factors which act as obstacles to modern genocide. But it is not just political factors which stand in the way of another Holocaust in modern society. Modern societies have not only pluralist democratic political systems but also economic pluralism where workers are free to change jobs and bargain wages and where independent firms, each with their own independent bureaucracies, exist in competition with state-controlled enterprises. In modern societies this economic pluralism both promotes and is served by the open scientific method. By ignoring competition and the capacity for people to move between organizations whether economic, political, scientific or social, Bauman overlooks crucial but also very ‘ordinary and common’ attributes of truly modern societies. It is these very ordinary and common attributes of modernity which stand in the way of modern genocides.

**Kritik alone causes policy paralysis and sediments exisiting discourses**

Anna M. Agathangelou, Dir. Global Change Inst. And Women’s Studies Prof @ Oberlin, and L.H.M. Ling, Inst. For Social Studies @ Hague, Fall ‘97, Studies in Political Economy, v. 54, p 7-8

Yet, ironically if not tragically, dissident IR also paralyzes itself into non-action. While it challenges the status quo, dissident IR fails to transform it. Indeed, dissident IR claims that a “coherent” paradigm or research program — even an alternative one — reproduces the stifling parochialism and hidden power-mongering of sovereign scholarship. “Any agenda of global politics informed by critical social theory perspectives,” writes Jim George “must forgo the simple, albeit self-gratifying, options inherent in ready-made alternative Realisms and confront the dangers, closures, paradoxes, and complicities associated with them. Even references to a “real world, dissidents argue, repudiate the very meaning of dissidence given their sovereign presumption of a universalizable, testable Reality. What dissident scholarship opts for, instead, is a sense of disciplinary crisis that “resonates with the effects of marginal and dissident movements in all sorts of other localities.” Despite its emancipatory intentions, this approach effectively leaves the prevailing prison of sovereignty intact. It doubly incarcerates when dissident IR highlights the layers of power that oppress without offering a heuristic, not to mention a program, for emancipatory action. Merely politicizing the supposedly non-political neither guides emancipatory action nor guards it against demagoguery. At best, dissident IR sanctions a detached criticality rooted (ironically) in Western modernity. Michael Shapiro, for instance, advises the dissident theorist to take “a critical distance” or “position offshore’ from which to “see the possibility of change.” But what becomes of those who know they are burning in the hells of exploitation, racism, sexism, starvation, civil war, and the like while the esoteric dissident observes “critically” from offshore? What hope do they have of overthrowing these shackles of sovereignty? In not answering these questions, dissident IR ends up reproducing despite avowals to the contrary, the sovereign outcome of discourse divorced from practice, analysis from policy, deconstruction from reconstruction, particulars from universals, and critical theory from problem-solving.

**There is no substitute to the current security framework – the alternative causes the state to become more powerful and interventionist – flipping their impacts**

Tara **McCormack, ’10**, is Lecturer in International Politics at the University of Leicester and has a PhD in International Relations from the University of Westminster. 2010, (Critique, Security and Power: The political limits to emancipatory approaches, page 127-129)

The following section will briefly raise some questions about the rejection of the old security framework as it has been taken up by the most powerful institutions and states. Here we can begin to see the political limits to critical and emancipatory frameworks. In an international system which is marked by great power inequalities between states, the rejection of the old narrow national interest-based security framework by major international institutions, and the adoption of ostensibly emancipatory policies and policy rhetoric, has the consequence of **problematising weak or unstable states** and allowing international institutions or major states **a more interventionary role**, yet without establishing mechanisms by which the citizens of states being intervened in might have any control over the agents or agencies of their emancipation. Whatever the problems associated with the pluralist security framework **there were at least formal and clear demarcations**. This has the consequence of **entrenching international power inequalities** and allowing for a shift towards a hierarchical international order in which the citizens in weak or unstable states may arguably have even less freedom or power than before.

Radical critics of contemporary security policies, such as human security and humanitarian intervention, argue that we see an assertion of Western power and the creation of liberal subjectivities in the developing world. For example, see Mark Duffield’s important and insightful contribution to the ongoing debates about contemporary international security and development. Duffield attempts to provide a coherent empirical engagement with, and theoretical explanation of, these shifts. Whilst these shifts, away from a focus on state security, and the so-called merging of security and development are often portrayed as positive and progressive shifts that have come about because of the end of the Cold War, Duffield argues convincingly that these shifts are highly problematic and unprogressive. For example, the rejection of sovereignty as formal international equality and a presumption of nonintervention has eroded the division between the international and domestic spheres and led to an international environment in which Western NGOs and powerful states have a major role in the governance of third world states. Whilst for supporters of humanitarian intervention this is a good development, Duffield points out the depoliticising implications, drawing on examples in Mozambique and Afghanistan.

Duffield also draws out the problems of the retreat from modernisation that is represented by sustainable development. The Western world has moved away from the development policies of the Cold War, which aimed to develop third world states industrially. Duffield describes this in terms of a new division of human life into uninsured and insured life. Whilst we in the West are ‘insured’ – that is we no longer have to be entirely self-reliant, we have welfare systems, a modern division of labour and so on – sustainable development aims to teach populations in poor states how to survive in the absence of any of this. Third world populations must be taught to be self-reliant, they will remain uninsured. Self-reliance of course means **the condemnation of millions to** **a barbarous life of inhuman bare survival**. Ironically, although sustainable development is celebrated by many on the left today, by leaving people to fend for themselves rather than developing a society wide system which can support people, sustainable development actually leads to a less human and humane system than that developed in modern capitalist states. Duffield also describes how many of these problematic shifts are embodied in the contemporary concept of human security.

For Duffield, we can understand these shifts in terms of Foucauldian biopolitical framework, which can be understood as a regulatory power that seeks to support life through intervening in the biological, social and economic processes that constitute a human population (2007: 16). Sustainable development and human security are for Duffield technologies of security which aim to *create* self-managing and self-reliant subjectivities in the third world, which can then survive in a situation of serious underdevelopment (or being uninsured as Duffield terms it) without causing security problems for the developed world. For Duffield this is all driven by a neoliberal project which seeks to control and manage uninsured populations globally. Radical critic Costas Douzinas (2007) also criticises new forms of cosmopolitanism such as human rights and interventions for human rights as a triumph of American hegemony.

Whilst we are in agreement with critics such as Douzinas and Duffield that these new security frameworks cannot be empowering, and ultimately lead to more power for powerful sta**tes**, we need to understand why these frameworks have the effect that they do. We can understand that these frameworks have political limitations without having to look for a specific plan on the part of current powerful states. In new security frameworks such as human security we can see the political limits of the framework proposed by critical and emancipatory theoretical approaches.

### Add-on: Decent

#### High Altitude Wind promotes decentralized local energy production

Valentine ‘11 (Harry Valentine holds a degree in engineering and has worked for several years in energy and transportation research organizations. He undertakes transportation and energy-related research for several clients and publishes internationally on commercial transportation energy matters as well as other energy related issues, “The Survival of and Potential for Decentralized Power Generation”, 3/24/11, *Electric Energy Online*)

Wind Power

Ongoing developments in the aeronautical field and in the development of innovative designs of kites along with advances in mass-production technology form the basis upon which to develop cost competitive wind power technology. Several companies offer vertical-axis wind turbines that can be fitted on to the roofs of buildings. Other developments revolve around the ongoing development of airborne wind turbines by groups such as Magenn, Skywindpower and Makani Power whose technology carries airborne electrical generation equipment. The greater energy in winds at higher elevation can provide more power at more competitive costs. Competing designs combine ground-based electrical generation equipment with various forms or airborne technologies that include wings and kites. A research group based at Delft University in the Netherlands has developed a LadderMill (Insert: Laddermill) that involves a series of kites that form the rungs of a giant ladder. A design from Italy and New Zealand proposes to coordinate the drag of kites via multiple control lines to drive a vertical drive shaft connected to generation equipment (Insert: Kite-Driven-Wheel). Various wind power technologies are well suited to serving localized markets through distributed generation. Conclusions Distributed or decentralized generation is a power generation option awaiting application on a mass scale. Most of the expense of developing the technology was focused on other applications, except that the technology could easily and be adapted to distributed generation at low cost. An increased demand for electric power could see and increased number of smaller power plants supplying that electric power. Advances in the efficiency, reliability and durability along with low cost make distributed generation a competitive option. Multiple small power stations can be monitored and managed remotely using computer control and modern telecommunications technology. The technology has perhaps unexpectedly advanced to the point where it challenges the economy of scale of mega-scale power stations.

#### High Altitude Wind uniquely benefits rural communities

Casey ’12 (Tina, Wind Farm in the Sky Created by Donut-Shaped Blimp, 3/2/12, <http://cleantechnica.com/2012/04/02/wind-farm-in-the-sky-created-by-donut-shaped-blimp/>)

The Airborne Wind Turbine has also received funding from the U.S. Department of Agriculture, which is interested in the technology for its potential for bringing clean, low cost energy to underserved rural areas. In a project statement for USDA, the company noted that “85 percent of rural communities cannot utilize wind power today due to community concerns or poor wind resources at ground level that make projects uneconomical.”

#### Independently, small farms preserve biodiversity, the environment and human survival

Boyce ‘4

[James. Prof of Ag @ UMass. “A Future for Small Farms?” <http://www.peri.umass.edu/fileadmin/pdf/Boyce_paper_griffin_conference.pdf> 2004//JVOSS]

There is a future for small farms. Or more precisely, there can be and should be a future for them. Given the dependence of ‘modern’ low-diversity agriculture on ‘traditional’ high-diversity agriculture, the long-term food security of humankind will depend on small farms and their continued provision of the environmental service of in situ conservation of crop genetic diversity. Policies to support small farms can be advocated, therefore, not merely as a matter of sympathy, or nostalgia, or equity. Such policies are also a matter of human survival. The diversity that underpins the sustainability of world agriculture did not fall from the sky. It was bequeathed to us by the 400 generations of farmers who have carried on the process of artificial selection since plants were first domesticated. Until recently, we took this diversity for granted. The ancient reservoirs of crop genetic diversity, plant geneticist Jack Harlan (1975, p. 619) wrote three decades ago, ‘seemed to most people as inexhaustible as oil in Arabia.’ Yet, Harlan warned, ‘the speed which enormous crop diversity can be essentially wiped out is astonishing.’ 26 The central thesis of this essay is that efforts to conserve in situ diversity must go handin- hand with efforts to support the small farmers around the world who sustain this diversity.

# 1AR

#### Government action on climate is key to address the public efficacy gap

Pike 10-14

Cara Pike is the Founder and Director of the Social Capital Project. This piece was originally published at Climate Access and was reprinted with permission. “What Climate Solutions Can We Achieve Together?” ThinkProgress.

http://thinkprogress.org/climate/2012/10/14/1005801/what-climate-solutions-can-we-achieve-together/

I was there to talk about one of the common threads underlying many of the sessions at SXSW Eco – the efficacy gap that blocks public engagement in addressing complex challenges such as climate disruption. (Thanks to Pete Rafle from Spitfire Communications, Sabrina Hersi Issa from Be Bold Media and Alex Bosmoski from the Energy and Enterprise Institute for joining me for the SXSW Eco session.) I’ve been thinking about the efficacy gap for some time now. For at least a decade, public opinion on global warming has been consistent with the majority of Americans being aware of global warming and feeling the issue requires significant attention. The problem is that few people have confidence that either the challenge can be addressed or that we have the collective/political will (to) do it. (See the Climate Change in the American Mind survey – “Humans can reduce global warming and we are going to do so successfully.” Only 4% thought so in March 2012.) Unpacking how to close the efficacy gap is critical and something we will be addressing again at the upcoming Climate Access roundtable: Climate Policy Push and Pull: Building a Sense of Efficacy while Calling for Change, Pre- and Post-Election (on Tuesday October 16 from 1-2 pm EDT featuring panelists Betsy Taylor of Breakthrough Strategies and Solutions, Kevin Curtis of The Climate Reality Project and Angus Duncan of the Oregon Global Warming Commission). Experiencing tension around climate issues without having a way to resolve it creates an uncomfortable dissonance that makes many of us want to run the other way. Most public discourse on climate issues has focused on the long list of global impacts and more recently on the increasing number of extreme weather events in the United States. The tension dial has definitely been ratcheted up yet we still do not have a clear sense of the best, most scalable solutions to prioritize and the most efficient, responsible ways to pursue them. With a challenge as immense as global warming, the efficacy gap grows when citizens do not see national or global government action. Can it be such a big problem if it is not even mentioned in presidential debates? Is it something that can be addressed given the scale and influence of the fossil fuel industry? At the same time, the efficacy gap may also exist in part due to the ways citizen organizations advocate for change by focusing on policy and leadership failures. What groups ask of their bases can also contribute to the efficacy gap when actions do not seem on scale with the problem (i.e. solve a global problem by changing a light bulb), when guilt appeals or individual actions are over-emphasized and not reinforced (i.e. lists of the 50 things we can do to save the planet), or when commitment is minimized (i.e. save the world from the comfort of your home via Facebook). What seems to be lacking is a sense that significant, collective solutions are possible to achieve. The funny thing is that many leaders and communities are starting to prepare for climate impacts and already seeing the benefits of their actions yet these stories don’t seem to get much airtime as we continue to be caught up in the scientific uncertainty/should we act debate. In some cases, climate leaders don’t want their efficacy stories to get out for fear of public backlash and believe they can only move ahead if their actions are under the radar. The failure to tout climate efficacy and solution messages is a lost opportunity and raises key questions around they ways in which citizens and government should be working together to address climate disruption. For example: How can citizens compel governments to act and provide a watchdog function without adding to the sense that we cannot address problems collectively through our shared institutions and decision-making processes?

#### Political action is key – changing individual consumption patterns don’t solve

Lipow 2011- Gar, a environmental activist and journalist with a strong technical background, has spent years immersed in the subject of efficiency and renewable energy. His new book *Solving the Climate Crisis will be published* by Praeger Press in Spring 2012.November 8th 2011, *Green lifestyle choices won’t solve the climate problem,* <http://grist.org/living/2011-11-03-the-trouble-with-rolling-your-own-offsets-and-the-politics-of/>

Elisabeth Kwak-Hefferan, aka the [Greenie Pig](http://grist.org/green-living-tips/2011-09-22-meet-the-greenie-pig), is feeling guilty about her plane trip to a friend’s wedding and decided to try to make up for it by [rolling her own carbon offsets](http://grist.org/climate-change/2011-11-03-the-greenie-pig-gets-religion-on-global-warming)— that is, skimping on car travel and other energy use to make up for all that jet fuel she helped burn. While I appreciate her avoiding [offset schemes](http://grist.org/article/2009-10-06-ask-umbra-on-buying-carbon-offsets), I think rolling her own misses the point, and it makes her life harder than it needs to be. Elisabeth doesn’t have much to feel guilty about, really. I guess instead of taking a plane, she should have taken the high-speed rail. Oh wait, we don’t have any existing true high-speed rail lines in the U.S. Well, certainly she could have taken light rail from the airport to her final destination, or maybe rented an electric car. Oh wait, again. There is no light rail on that route. The airport doesn’t rent electric cars, plus we don’t have the infrastructure to fast-recharge or swap an electric battery several times between the airport and the wedding location. In short, Elisabeth had no better choice. And offsetting her carbon emissions does nothing to change that. After all, we did not get into this mess via individual consumer choice, and we won’t get out of it that way either. The road to our current predicament was long, and built on public policy and public investment. Take the gradual reduction of freight rail in this country, for example. We have less than half the miles of freight-rail track we had at the peak of freight-rail shipping; that is a result of a massive public investment in public highways — [which do not in fact pay for themselves](http://grist.files.wordpress.com/2011/11/do-roads-pay-for-themselves_-wus.pdf) [PDF]. In our system, rail pays property tax and highways don’t, much of the so-called gas tax is really diverted sales tax, and railroads also pay fuel taxes but don’t get fuel tax money back the way highways do. Similarly, passenger rail in this country suffers from that same competition for public resources by highways. It also competes with massive [subsidized parking for cars and trucks](http://grist.files.wordpress.com/2010/07/tca0504.pdf) [PDF]. It further still reels from the deliberate [destruction of trolley systems](http://www.baycrossings.com/Archives/2003/04_May/paving_the_way_for_buses_the_great_gm_streetcar_conspiracy.htm) that once existed all over the country. The latter happened due to a combination of a requirement that electric utilities (which owned many of the trolley systems) divest them, with a campaign to purchase and destroy trolleys by [General Motors, Standard Oil, and Goodyear Tires](http://en.wikipedia.org/wiki/Great_American_streetcar_scandal.). The bottom line: Consumer demand follows spending on public goods. It does not lead it. For instance: At a certain point, consumer demand may have driven the growth of the internet, but it came into existence, and grew large enough to attract consumer demand to begin with, almost entirely due to military and university spending. In this context, how do we drive change? The climate crisis is one of the great issues of the 21st century. Slavery was one of the great issues of the 19th. Certain utopian communes at that time raised their own cotton and avoided buying any slave-made products. They were pioneers in treating political issues as a matter of personal consumer virtue. In contrast: Harriet Tubman, who wore slave-made cotton clothes, actually infiltrated slave territory and freed hundreds of slaves. Frederick Douglass, who wore slave-made clothes and used slave-grown sugar, was one of the great orators of his era and successfully promoted the abolitionist cause. If you were supporting the anti-slavery movement in the 19th century, where would your money have been better spent — supporting the communes that ran on the principles of personal virtue, or backing Harriet Tubman and Frederick Douglass? If you wanted to go beyond donations to personal action, which example would have been better to follow? I would have to go with Tubman and Douglass. Setting an example by doing some simple, logical things to reduce an individual environmental footprint is wonderful. But ultimately, we will not make up, through private spending or lifestyle changes, for the fact that we currently don’t invest enough in public goods. Nor will we privately make up for the fact that much of our public spending is directed to the wrong public goods. Contrary to the famous Dick Cheney quote, energy efficiency is not a matter of [personal virtue](http://grist.org/article/cheney4). The answer to collective political failure is political action. It is not as though most of those concerned with airline emissions want to eliminate air travel. We want to keep it from growing beyond its current level, and to substitute land-based electric transportation where possible. Some of us want to put an end to stupid wars that are responsible for many aircraft emissions. Some of us also want to curtail the tax breaks and airport space for corporate and luxury jets — air yachts. Instead of either purchasing offsets or rolling her own, Elisabeth might consider donating to the [Institute for Policy Studies](http://www.ips-dc.org/), [Rising Tide](http://www.risingtidenorthamerica.org/), or other groups that combine concern for the environment with opposition to war and opposition to the growth of the 1% at the expense of the 99%.

**Their arg is backwards – warming reps are key to mobilization and avoids militarization**

**Rodrigues, 11** (Rafaela Rodrigues de Brito, PhD Student, Department of Politics & International Relations, “A Climate for Conflict or Cooperation? Addressing the Securitisation of Climate Change” 17-20 August 2011, University of Porto, Portugal, <http://www.wiscnetwork.org/porto2011/papers/WISC_2011-724.pdf>)

Climate change has unequivocally entered the international security agenda. However, there is extensive debate on the advantages and disadvantages of establishing a link between climate change and security. On the one hand, the **securitisation of climate change is acknowledged a positive role, mainly because it is seen to attribute a sense of urgency to the issue and consequently attract political support**. However, on the other hand, there is a strong concern in the literature that linking climate change and security could represent a militarisation of the issue and lead to a state-centred approach to deal with it, hindering necessary cooperation to tackle the issue. 12 Mostly focusing on the case of the EU, this paper has analysed the assumption of militarisation that is usually connected to securitisation. The paper has sought to demonstrate how **security is no longer** seen **exclusively in military terms, as the** securitisation of non-military issues, and notably **climate change, is transforming security practices**. In the EU, although climate change is increasingly being framed as a security issue, both causes and effects are being dealt within the realm of normal environmental politics, namely through adaptation and mitigation measures. What securitisation created was an increase **sense of urgency** that is speeding the response to both causes and consequences of climate change.

1. See Williams (2003) and Huysmans (1999). [↑](#footnote-ref-1)
2. even if Waver has outlined that the emphasis on stability is related with the need of outlining the characteristics and implications of securitization, an this fixity can be relaxed in subsequent analysis, this assumption limits the potential of the analysis and create a sort of self-fulfilling expectations. [↑](#footnote-ref-2)