## 1NC

### Topicality Investment

#### First, Energy production includes electricity production, production of fuels including nuclear, and heating and cooling by renewable resources.

NASA S&T Info Project no date

(NASA Scientific and Technical Information Project, “Scope and Subject Category Guide,” http://www.sti.nasa.gov/sscg/44.html

Definition

Energy Production – The production of electricity, combustible fuels, nuclear and thermonuclear fuels, and heating and cooling by renewable resources.

#### Second, For indicates purpose

Merriam Webster Online

<http://www.merriam-webster.com/dictionary/for>

used as a function word to indicate purpose <a grant for studying medicine>

#### B. Violation-There is a distinction between investment and production incentives-the plan must be an incentive directly tied to the production of electricity generation.

Doris, 12 – National Renewable Energy Laboratory (Elizabeth, “Policy Building Blocks: Helping Policymakers Determine Policy Staging for the Development of Distributed PV Markets,” Paper to be presented at the 2012 World Renewable Energy Forum, 5/13-5/17, http://www.nrel.gov/docs/fy12osti/54801.pdf)

3.3 Market Expansion This stage of policy development targets the development of projects and includes both incentives that attempt to distribute the high first costs of distributed technologies and policies that facilitate project installation. The purpose of this category is to increase the installation of individual projects through monetizing the non-economic benefits of distributed generation for the developer. Because the value of those benefits vary in different contexts, these policies can be politically challenging to put in place and technically challenging to design and implement. There is a large body of literature (encompassing the energy field as well as other fields) that discusses the design and implementation of effective market incentives. Specific policy types include: • Incentives. In the context of this framework, incentives are defined as direct monetary support for specific project development. Incentives, especially in the current economic environment, can be politically challenging to implement and require detailed design to ensure that they are effectively reaching the intended market at levels that spur development without creating over-subsidization. Because of the complications and expense of these types of policies, they are most used and most cost-effective in environments where the market is prepared for project development. There are three primary types of incentives: • Investment incentives directly alter the first cost of technologies. These incentives can take the form of grants, rebates, or tax incentives, depending on the market needs. Grants are typically applied to larger scale projects and are paid in advance of development, and so target development that would not take place without advance investment. Rebates are most commonly based on equipment purchases and can be applied at the time of purchase or through a post-purchase mechanism. Tax incentives can be deductions or credits, can be applied to entire installations, and are applied after purchase, annually. Tax incentives target development that does not need direct capital investment, but instead prioritizes reduction in pay-back period. • Production incentives provide payment for electricity produced from the distributed electricity. These are different from net metering because the aim is not to provide the economic value of electricity sold into the grid, but instead, to monetize the indirect benefits of distributed generation and apply that on a production basis to projects. These incentives do not directly remove the challenge of higher first costs, and so are most effective in situations in which those high first costs can be spread over the course of the project lifetime (e.g., where direct priori investment is not a priority). In the last decade, incentives for distributed generation have tended toward the production type, because it assures the public that the investment is resulting in clean energy development (whereas investment incentives have the potential to be invested in projects that do not materialize). • Feed-in-Tariffs. This incentive type reduces investment risk by providing fixed payments for projects based on the levelized cost of renewable energy generation. This (among other design characteristics) distinguishes feed-in-tariffs from production-based incentives, which are based on monetizing the value of the electricity to the grid or the value to the electricity purchaser. • Removing Siting Restrictions or Ensuring Broad Market Access. Siting restrictions can be stipulated by local ordinances or home owners associations and designate where solar panels can be placed within the jurisdiction. Twenty-four states currently have laws in place that prevent the restriction of solar facilities on residences (12). Like the current state role in encouraging transparency in permitting policies, these typically legislative policies cost nothing to put in place, but implementation and enforcement can be challenging and costly, depending on the interests of the localities. This is an expansion policy (as opposed to a preparation policy) because the effect of siting restrictions is currently unclear, and to date, market development has not been limited by these types of regulations. • Streamlined Permitting. Permitting for solar facilities has traditionally been the jurisdiction of localities, but there are some states that also issue permits. In the past two years, both Colorado (13) and Vermont (14) have issued laws regulating state permits for renewable energy systems. Such permitting falls into the market expansion category as a potential follow-on to the development of transparent permitting. However, because of its limited use to date there is little information on effectiveness, potential intended or unintended impacts, or broad applicability, so it is not currently considered a primary policy for developing markets.

#### C. Negative Interpretation is Superior

#### 1-Limits-Our interpretation distinguishes between each market stage: R&D, manufacturing, and deployment. Their interpretation explodes the topic to include entire range of energy related support.

Jenkins et al-Breakthrough Institute-4/12

Beyond Boom and Bust <http://thebreakthrough.org/blog/Beyond_Boom_and_Bust.pdf>

The pending decline in federal funding hits each market stage from clean tech RD&D to manufacturing to deployment, although manufacturing support and deployment programs seem the deepest declines (see Figure 9 below). Despite receiving the lion’s share of clean tech investment over this period, deployment subsidies and expenditures also see the most dramatic decline, falling by nearly 80 percent from 2009 to 2014. Additionally, by the end of 2014, the only direct support for US clean tech manufacturing will consist of any remaining appropriations not yet allocated to cover loans under the DOE’s ATVM loan program. Finally, while RD&D spending is the most consistent funding category, as most research programs receive regular appropriations as part of the annual budget process, federal clean tech RD&D expenditures are also expected to decline steadily. After a temporary boost under ARRA, federal clean tech RD&D spending has already fallen to less than $4 billion annually, leaving clean tech RD&D both underfunded and vulnerable to further cutbacks in future budget cycles.

#### 2-Ground-Our interpretation locks in core links to core arguments like energy disadvantages and focuses the debate on the site of production. Their interpretation allows affirmatives the dodge the central question of the topic by only indirectly relating to the production of energy.

### Obama DA

#### OBAMA DA

#### CIR will pass this year---Obama building momentum

The Hill 3/25 (Justin Sink and Meghashyam Mali, “Obama: 'The time has come' to move immigration reform in Congress,”

http://thehill.com/video/administration/290129-obama-the-time-has-come-to-move-immigration-reform)

Obama said he expects debate on an immigration bill to “begin next month” at a ceremony where 28 people, including 13 armed servicemembers, became citizens. Bipartisan groups in both the House and Senate are moving closer to unveiling separate immigration reform proposals, and the president is hoping to build momentum for a deal. “We've known for years that our immigration system is broken, that we're not doing enough to harness the talent and ingenuity of all those who want to work hard and find a place in America,” Obama said. “And after avoiding the problem for years, the time has come to fix it once and for all. The time has come for comprehensive, sensible immigration reform.” Speaking from the East Room, Obama argued that immigration strengthens the country. “It keeps us vibrant, it keeps us hungry, it keeps us prosperous. It is what makes us such a dynamic country,” he said. “If we want to keep attracting the best and the brightest, we've got to do a better job of welcoming them.” Advocates for immigration reform see a real chance for legislation to pass Congress this year, despite opposition from some House GOP lawmakers, many of whom have said they will oppose measures that grant “amnesty” to illegal immigrants and have questioned proposed protections for gay or lesbian couples. Immigration reform is a potent political issue for Obama, who won more than 70 percent of the Hispanic vote in 2012. Since that showing, a growing number of conservative lawmakers have signaled they would back immigration reform, including measures to provide a pathway to citizenship. Groups aligned with Obama have signaled their intention of pressuring Congress. On Monday, The New York Times reported that Organizing for Action — the political group born from the president's reelection campaign — will launch a new online effort featuring the stories of some 7,000 supporters, some of whom entered the country illegally. The Senate’s “Gang of Eight” introduced their framework, calling for a pathway to citizenship, heightened border security, increased high-skilled immigration and a guest worker program, in January. But since then, senators have been tied down in negotiations over the details of the plan, with many key issues still unresolved. Obama said he wanted to see debate begin on a congressional bill by April. “We are making progress, but we've got to finish the job, because this issue is not new,” Obama said. “Everyone pretty much knows what's broken, everyone knows how to fix it.”

#### Renewable energy push drains capital

Bowen 12 (Robert Bowen served in the Colorado legislature in the 1980s as a moderate Democrat. He was also appointed by three different governors to serve on various boards and commissions, “Western public lands could produce renewable energy for 7 million homes” http://www.examiner.com/article/western-public-lands-could-produce-renewable-energy-for-7-million-homes)

Much of the renewable energy being developed in the west is already on public land, excluding national parks and Monuments, managed by the Department of the Interior’s Bureau of Land Management. This agency oversees a large amount of the acreage in all six states: about 17% of Arizona, 15% of California, 12% of Colorado, 68% of Nevada, 17% of New Mexico, and 43% of Utah according to the study. Public lands are already leased to gas, oil, coal, and other mining operations. They are used for grazing of cattle, horses, and sheep. Use of these lands for renewable energy would not be a reinvention of the wheel. That is what is realistically possible? What will it take to make this happen? It will take political will, followed by policy changes, and of course, financing. If policies are changed, private capital could provide financing according to the report. The New York Times reported in June that banks are poised to invest in green technology firms. What are the obstacles? As presently constituted, Congress is the biggest problem. Republicans do not favor renewable energy and are not likely to enact any policies to facilitate it. Mitt Romney, should he win the election, is also not a fan of renewable energy either. His policies would essentially be dictated by big oil.

#### Political capital is key turning rhetoric into CIR

Shifter 12/27 Michael is the President of Inter-American Dialogue. “Will Obama Kick the Can Down the Road?” 2012, http://www.thedialogue.org/page.cfm?pageID=32&pubID=3186

Not surprisingly, Obama has been explicit that reforming the US’s shameful and broken immigration system will be a top priority in his second term. There is every indication that he intends to use some of his precious political capital – especially in the first year – to push for serious change. The biggest lesson of the last election was that the “Latino vote” was decisive. No one doubts that it will be even more so in future elections. During the campaign, many Republicans -- inexplicably -- frightened immigrants with offensive rhetoric. But the day after the election, there was talk, in both parties, of comprehensive immigration reform. ¶ Despite the sudden optimism about immigration reform, there is, of course**, no guarantee that it will happen. It will require a lot of negotiation and deal-making.** Obama will have to invest a lot of his time and political capital -- twisting some arms, even in his own party. **Resistance will not disappear.**

#### Immigration reform expands skilled labor—spurs relations and economic growth in China and India.

LA Times 11/9/12 [Other countries eagerly await U.S. immigration reform, http://latimesblogs.latimes.com/world\_now/2012/11/us-immigration-reform-eagerly-awaited-by-source-countries.html]

"Comprehensive immigration reform will see expansion of skilled labor visas," predicted B. Lindsay Lowell, director of policy studies for the Institute for the Study of International Migration at Georgetown University. A former research chief for the congressionally appointed Commission on Immigration Reform, Lowell said he expects to see at least a fivefold increase in the number of highly skilled labor visas that would provide "a significant shot in the arm for India and China." There is widespread consensus among economists and academics that skilled migration fosters new trade and business relationships between countries and enhances links to the global economy, Lowell said. "Countries like India and China weigh the opportunities of business abroad from their expats with the possibility of brain drain, and I think they still see the immigration opportunity as a bigger plus than not," he said.

#### US-Indian relations avert South Asian nuclear war.

Schaffer 2 [Spring 2002, Teresita—Director of the South Asia Program at the Center for Strategic and International Security, Washington Quarterly, Lexis]

Washington's increased interest in India since the late 1990s reflects India's economic expansion and position as Asia's newest rising power. New Delhi, for its part, is adjusting to the end of the Cold War. As a result, both giant democracies see that they can benefit by closer cooperation. For Washington, the advantages include a wider network of friends in Asia at a time when the region is changing rapidly, as well as a stronger position from which to help calm possible future nuclear tensions in the region. Enhanced trade and investment benefit both countries and are a prerequisite for improved U.S. relations with India. For India, the country's ambition to assume a stronger leadership role in the world and to maintain an economy that lifts its people out of poverty depends critically on good relations with the United States.

### China DA

#### China DA!

#### China’s leading clean tech development now---it’s zero-sum---key to Chinese growth, CCP stability, soft power, and warming

McMahon 13 Tamsin is a reporter for the National Post. “How China is going to save the world,” 1/27, http://www2.macleans.ca/2013/01/27/business/

China’s ongoing struggles with pollution have been a blight on the country’s international reputation. The world’s image of China is that of an industrial behemoth fuelled by the dirtiest of energies, coal. On the surface, the reputation is well deserved. No country pumps out as much CO2 as China (not even the U.S. comes close). But behind the smog, China’s environmental woes have become an unexpected boon to the global renewable energy industry. Last week’s air quality emergency sent Chinese green energy stocks soaring on the hope that the political fallout will prompt the Communist party to offer up more public money for the country’s burgeoning environmental protection sector.¶ Investors are counting on it. Even as it remains the scourge of environmentalists for being the largest emitter on the planet, China is also emerging as the world’s biggest spender on green energy.¶ Globally, green energy investment fell 11 per cent last year, according to a recent Bloomberg New Energy Finance report. Indebted European countries slashed subsidies, India cut its spending by more than 40 per cent and the U.S. witnessed a string of solar power manufacturer bankruptcies. China’s investment in renewable energy, meanwhile, was a bright spot. It rose 20 per cent to nearly $68 billion, or a full quarter of the $269 billion global total.¶ From having virtually no green energy infrastructure as recently as 2008, China has built 133 gigawatts of renewable energy—mainly wind turbines—enough to power as many as 53 million homes, or every household in Canada four times over. The International Energy Agency predicted that China would overtake Europe as the world’s top renewable energy growth market. It’s a market expected to be worth more than $470 billion by 2015, according to state-owned China Merchants Securities, or almost double what it was in 2009 and equal to about eight per cent of the country’s GDP.¶ That investment has caught the eye of clean-tech companies in Europe and North America, who are flocking to China in hopes of selling their technologies after seeing demand stagnate or collapse in their home markets. “All the key players are going to China these days,” says Changhua Wu, Greater China director of the Climate Group, a London-based agency that promotes green energy investment. “Everyone is trying to figure out what the potential for opportunity is, partly because everyone recognizes that China could potentially be the largest market for clean tech in the world.”¶ As China takes the lead, everyone will benefit from the technology that is developed and exported. China is saving itself, but might also be saving the world in the process.¶ While the Middle Kingdom’s smog problems have earned plenty of headlines, it has also been quietly attracting a host of very unlikely supporters, including praise from the Pew Charitable Trust and the World Wildlife Foundation, which gave its “climate solver” award this year to several Chinese companies that manufacture technology to capture and recycle wasted heat, water and chemical emissions to power everything from factories to refrigerators. Greenpeace predicted the country would be on track to install 400 gigawatts of wind energy by 2030 and could become the largest solar market in the world.¶ The argument that China is the world’s environmental bad guy “is increasingly difficult, if not impossible, to make given China’s recent policies,” wrote the authors of an October report for the Climate Institute, an Australian think tank. The country has closed more coal-fired power plants since 2006 than the entire capacity of Australia’s electrical grid, and exported more than $35-billion worth of renewable energy technology—equal to the total value of shoes exported from China that year. This year, China is rolling out pilot projects that could eventually lead to the world’s largest carbon trading system.¶ “The broad scheme of things is that China believes it wants to become a resource-conserving, environmentally friendly society and that’s the way they describe it, in those exact words,” says Arthur Hanson, one of Canada’s leading experts on sustainable development. The former founding director of Dalhousie University’s School for Resource and Environmental Studies, Hanson is in Beijing this week in his role as international chief adviser to the China Council for International Co-operation on Environment and Development.¶ Granted, China has little choice but to invest in renewables as it seeks out more sources of energy to help power its rapidly developing economy, with GDP growth expected just shy of eight per cent this year and an urban population rising by an estimated 2.3 per cent a year. Green energy is also seen as a political tool for the Chinese government that can quell rising environmental protests and appease political dissent. “The leadership in China is really recognizing that in order to manage and govern the country better you need to find a universal underlying theme to make sure everyone is with you,” says Wu. “Green growth or sustainable development happens to be the only one.”**¶** But beyond the obvious political and economic advantages of green energy, China is also pinning its hopes on the belief that demand for clean technology will enable the country to transform both its domestic economy and its exports.¶ Until now, China’s green energy sector has largely done what the country does best: import technology developed elsewhere, reproduce it for less money and then export it back to the West. That’s changing as China pours billions into research and development and advanced education in hopes that clean tech can help shift China from being merely the low-cost factory of the world to being a global leader in developing innovative technology.¶ China’s current five-year plan, which runs through 2015, includes an economic development blueprint that will see more than $1.5 trillion invested in seven industries, all of them related in some way to environmental protection and renewable energy technology.

#### China’s economic rise prevents CCP instability and lashout --- decline tubes the global economy, US primacy, and Sino relations

Mead 9 Walter Russell Mead, Henry A. Kissinger Senior Fellow in U.S. Foreign Policy at the Council on Foreign Relations, “Only Makes You Stronger,” The New Republic, 2/4/9, http://www.tnr.com/story\_print.html?id=571cbbb9-2887-4d81-8542-92e83915f5f8

The greatest danger both to U.S.-China relations and to American power itself is probably not that China will rise too far, too fast; it is that the current crisis might end China's growth miracle. In the worst-case scenario, the turmoil in the international economy will plunge China into a major economic downturn. The Chinese financial system will implode as loans to both state and private enterprises go bad. Millions or even tens of millions of Chinese will be unemployed in a country without an effective social safety net. The collapse of asset bubbles in the stock and property markets will wipe out the savings of a generation of the Chinese middle class. The political consequences could include dangerous unrest--and a bitter climate of anti-foreign feeling that blames others for China's woes. (Think of Weimar Germany, when both Nazi and communist politicians blamed the West for Germany's economic travails.) Worse, instability could lead to a vicious cycle, as nervous investors moved their money out of the country, further slowing growth and, in turn, fomenting ever-greater bitterness. Thanks to a generation of rapid economic growth, China has so far been able to manage the stresses and conflicts of modernization and change; nobody knows what will happen if the growth stops.

#### CCP instability causes extinction

Yee and Storey 2 Herbert is a Professor of Politics and IR @ Hong Kong Baptist University, and Ian is a Lecturer in Defence Studies @ Deakin University. “The China Threat: Perceptions, Myths and Reality,” p. 5

The fourth factor contributing to the perception of a China threat is the fear of political and economic collapse in the PRC, resulting in territorial fragmentation, civil war and waves of refugees pouring into neighbouring countries. Naturally, any or all of these scenarios would have a profoundly negative impact on regional stability. Today the Chinese leadership faces a raft of internal problems, including the increasing political demands of its citizens, a growing population, a shortage of natural resources and a deterioration in the natural environment caused by rapid industrialization and pollution. These problems are putting a strain on the central government’s ability to govern effectively. Political disintegration or a Chinese civil war might result in millions of Chinese refugees seeking asylum in neighbouring countries. Such an unprecedented exodus of refugees from a collapsed PRC would no doubt put a severe strain on the limited resources of China’s neighbours. A fragmented China could also result in another nightmare scenario- nuclear weapons falling into the hands of irresponsible local provincial leaders or warlords. From this perspective, a disintegrating China would also pose a threat to its neighbours and the world.

### K

#### ---The affirmatives takes a perfectly good moment to question our relationship with energy and replaces it with a search to swap inputs---this commodification process depolitisizes production and must be rejected at the level of knowledge production

Ruggero 2009

Colin Ruggero Currently a PhD Candidate at the New School for Social research, engaged as an activist and living in Philadelphia. “Radical Green Populism: Climate Change, Social Change and the Power of Everyday Practices” http://www.anarchiststudies.org/node/309

Green Titans The predominant energy systems of the past 100 years are part of an energy regime, a particular configuration of material, social, economic, political and psychological patterns and institutions. This particular regime is typified by its complex, centralized, and gigantic physical technologies and the technocracy, commodification, and hierarchy that support and reinforce their primacy. There is constant reciprocity among these factors, each one deepening the strength and logic of the others. Enter renewable energy systems. Renewable energy systems are ushering in the same, large-scale, centralized and complex forms as their predecessors. The technophilic awe inspired by massive coal plants and nuclear reactors in previous decades is replicated in visions of vast wind farms, huge tidal capture systems, lonely desert solar arrays, a complex hydrogen infrastructure, and so on. The old energy regime is maintained in that we are simply exchanging our sources, in the same extra-large form, while leaving the basic social configuration intact. The unique opportunity to question our relationship with energy offered by the decline of fossil fuels is lost in a seamless swap of inputs. There is, however, a critical problem raised by the incorporation of renewable technologies into this regime. The commodification process not only alienates the user/consumers from the energy production process but also the resources consumed in that process. While the physical technologies of the past did rely on organic sources, these were discrete inputs, that is, non-renewable sources. A commodified renewable energy not only maintains the alienation of the production process, but also its resources, in this case the Earth’s renewable, organic and omnipresent resources. The problem is not that the seemingly ceaseless march of commodification continues into the realm of basic ecosystems, but that the economic logic of commodification stands to erect barriers around these most pervasive of resources, these renewable energy commons. Some might argue that by their very nature these resources cannot be appropriated or privatized and, thus, are not susceptible to the same capitalist economic logic as fossil fuels. To be sure, it is true that, for example, wind resources are not technically excludable, in that you cannot prevent others from using them, and that they are not technically rival, in that one person’s use does not affect the ability of others to do the same. However, when government grants, investment portfolios and sheer technophilia support the development of wind farms over distributed, small, home-based turbines, the cost incentives for research effectively privatizes the commons. It is privatization through economies of scale, appropriation through (unbalanced) competition. Given the obvious seriousness of climate change and depth of the problems with the dominant discourse discussed here, how can radicals best approach the issue of climate change without losing focus, becoming (or remaining) ineffective or betraying a commitment to a wider project of social change? Many radical communities are already acting in ways that have the potential to threaten and sever these deep roots of both the climate change problem and the dominant solution discourse. Articulating a Radical Response Again, this hegemonic order influences what is perceived as a ‘conceivable’ response to environmental problems. For example, reigning 'green' energy discourse is focused on change of inputs rather than changes in our relationship with energy; environmental degradation is pigeonholed as a problem of pollution and resource scarcity as opposed to tackling *how we see ourselves in relation to the non-human world.* Thus, the problem of climate change, despite being so big as to be a perfect metaphor for the complexity of environmental problems on the whole, is reduced to one of trading pollution rights and carbon-free energy inputs. This is the reigning ‘flavor’ of green education, one that maintains the normative framework of the energy regimes of the past. Consequently, what needs to be emphasized is the importance of carefully articulating the ‘flavor’ of radical environmental education. The way in which this education frames environmental problems and prevailing solution options must be understood as a foundational element of the larger radical solution scheme. Those seeking change must develop and disseminate discourse that offers the tools necessary to conceive of different modes of life, that is, a counter-hegemonic radical green articulation*. Armed with the language of an alternative discourse,* anyone becomes capable of describing (to themselves most importantly) how their daily practices and internalized values are bound up in the ‘growth = wealth = good life’ hegemony. In this way, careful articulation or framing of environmental problems and solution schemes can not only encourage a more positive direction in environmental discourse, but offers the ability to incorporate other social problems as well. Issues of access to/affordability of more ‘green’ ways of life are necessarily linked with the social and economic systems that are hegemonic in their framing of those problems. Radicals must articulate approaches to dealing with climate change that account for these disparities, proposing solution schemes that are simultaneously grand enough to envision deep changes in hegemonic social relations and radical visions of the future while remaining grounded in day-to-day realties. For example, mainstream schemes include massive hydrogen or electric grids to support a revamped vehicle fleet. This disproportionately affects those capable of making the investment necessary to upgrade and those who rely primarily on personal forms of transportation. Alternatively, an expansion and modernization of public transportation systems and the promotion and support of human-powered options (i.e. walking, bicycling) have the potential to benefit a much wider swath of society.

#### ---Their politics make energy policy a rigged game requiring the annihilation of the environment, poverty and exploitation of billions, vote negative to ask energy security for whom

Hillyard et. al. 12

Hildyard Lohmann & Sexton 2012-Nicholas, founder and Director of The Corner House, Larry, author of the book “Carbon Trading: A Critical Conversation on Climate Change, Privatization and Power” & works at the British NGO The Corner House, Sarah, a director of The Corner House, Energy Security For What? For Whom? The Corner House, http://www.thecornerhouse.org.uk/resource/energy-security-whom-what

In sum, encouraging a rational debate about “energy security” necessitates understanding what is meant not only by the phrase, but also by its composite parts. The term “energy,” despite its apparent simplicity, presents particular challenges. During the past two centuries, the vernacular, varied, lower-case “energies” of commons regimes have been joined by a new, abstract, upper-case Energy evolved in industrialised societies. Exploring the difference between “energies” and Energy is crucial to understanding the international politics of “energy security”. Abstract, monolithic, seemingly limitless Energy is something that only became possible with fossil-fuelled productivism and the machines, networks and institutions that came with it. This Energy, like lowercase “energies”, can deliver the basic necessities of life, at least to some, lending a certain plausibility to politicians’ claims that their worries about “energy security” centre on keeping the lights on and homes warm. But its underlying logic is different. Upper-case Energy is a transformation and commensuration of specific energies into a general capacity to maximise the ability of human bodies to make stuff. As the First Law of Thermodynamics (developed at the same time as industrial capitalism) recognises, any form of energy can be transformed into others and used to do work (but cannot be created or destroyed). Just as the invention of an absolute Time independent of daylight variations and traditional holidays helped discipline early industrial workers into the regular rhythm of a long working day, so too the subsequent development of an abstract Energy was key to intensifying their productivity further and harnessing them to the pace of the machine. For this upper-case Energy, survival is incidental except insofar as it supports the production imperative. Whereas specific “energies” know their limits, of Energy there can never be too much. Other things being equal, the more there is, the more can be produced, and the more money business can make, without limit. Lower-case “energies” and Big-E Energy are not only different: they are also, in many senses, enemies to each other. In order that fragmented “energies” do not become an obstacle to the mobilisation of economic value, they have to be folded into abstract Energy under the care of dedicated disciplines and institutions (bureaucrats, engineers, statisticians, laboratories, economics departments, inventors, investors, armies). Obsessed with quantitative growth for growth’s sake, Energy tends to treat the right of all to a warm home (or a cool one in hotter climes), cooked food, electric light as a nuisance. It heralds a world that is not only unequal, but also unable to respect the common right to subsistence. Nowhere is this clearer than in the case of agrofuels, whose “interchangeability” with oil under the rubric of a unitary Energy makes routine the replacement of subsistence agriculture with industrial cropping aimed at fuelling cars and airplanes. It is also plain in India’s development plans, which call for US$100 billion to be spent on a burgeoning number of large Energy projects – coal, oil, hydropower and renewables – that will serve above all to boost the profits of industrialists but leave less than 2 per cent for the household use of the 700 million who lack modern services. And it can be seen in South Africa’s policy of providing some of the cheapest electricity in the world to smelting companies while many township residents are forced to pirate electricity illegally because the price is out of their reach. Well over a century into the era of electrification, more than a billion people, about one-quarter of the world’s population, have no access to electricity or other non-biotic forms of energy (and many will never have under fossil-fuelled capitalism). If fossil-fuelled capitalism has defined what we mean by energy, then merely to use the word uncritically is to make a commitment to certain assumptions about scarcity, foreclose certain alternatives and cover up some of the most important issues that need to be discussed. Paradoxically, having a serious discussion about “energy security” requires taking a therapeutic step back from the modern concept of Energy itself. For example, the seemingly innocent query “How can we have energy security in a post-fossil world?” is not so much a question as an ultimatum. The question implies that however we organise our societies in future, it will have to be on the model that fossil capitalism built, with its threats to the right to survive of both humans and nonhumans (and the associated threats to “security” itself, on a commons understanding). A more fruitful question would be: “Is the world that is defined (in part) by the modern concept of Energy the world that we want?” It is just such questions that policymakers and social movements must ask when initiating any discussion of energy security.

### Counterplan

The federal judiciary should rule the recapture rules for solar energy production investment unconstitutional

Comeptitive: their first pience if miser evidence says that Congress should do the plan, it’s a new aff so we don’t have prep to research otherwise, you should stick them to that actor of the aff is a moving target

### STATES

#### The Fifty states and relevant territories should < > financing with State Clean Energy Banks.

#### State action pushes the federal government to action---internationally perceived too

Peterson and Rose 6 (Thomas D. Peterson, Adam Z. Rose Pennsylvania State University, “Reducing conflicts between climate policy and energy policy in the US: The important role of the states” http://www.solarvalleycoalition.net/files/02-17-06\_Perterson\_Rose\_EP.pdf)

Just as broadening participation of non-energy sectors can reduce costs to the energy sector, the expansion of actions to broader geographical scales can increase mitigation choices and flexibility. Energy markets, in particular, rarely coincide with state or local boundaries, and mechanisms to enable recognition, crediting and other forms of sharing across boundaries are important to capturing the full range of mitigation options. By creating mechanisms for comparability and cooperation, both costs and market conflicts can be reduced for energy industries, with the greatest potential ultimately at the global scale. States have begun this process by structuring comparable approaches to mitigation plans, and by starting to link them through regional agreements, such as the NEG/ECP, the RGGI, and the West Coast Climate Initiative. At the state (and local) level, the first step toward mutual recognition and linkage of programs has been the framework design of the plans themselves. This involves adoption of comparable target years, baseline methods, policy mechanisms, and reporting and registry systems. Comparable approaches are essential to mutually acceptable comparisons of the level of effort at the multi sector and single sector level; level of effort is an important component of political negotiations toward state commitments under a regional system. Comparable reporting and forecasting methods are also critical to functional crediting and offset systems across state or regional boundaries. Increased harmonization of state and regional programs is also an important step toward definition of federal programs. At some point it is likely, if not inevitable, that congress will formulate national legislation—most likely under the McCain–Lieberman framework. State and regional programs are likely to influence federal design and the equity judgments of burden sharing in future national strategies. States are also likely to play an important role in implementation of policy.

#### The counterplan is empirically successful in Connecticut and can be applied across the board.

Muro 12 (Mark Muro, a senior fellow and the director of policy at the Metropolitan Policy Program at Brookings, manages the program's public policy analysis and leads its Next Economy Initiative “Banking on the States,” http://theenergycollective.com/markmuro1/112326/banking-states?utm\_source=feedburner&utm\_medium=email&utm\_campaign=The+Energy+Collective+%28all+posts%29)

Specifically, it’s a great time—in the realm of energy policy--to look at what’s going on in U.S. states, many of which have been at the forefront of implementing innovative clean energy solutions. Which is why my group at the Metropolitan Policy Program at Brookings (working with the Coalition for Green Capital) just posted a new brief this morning on the growing interest among multiple states in state-level clean energy finance banking—a new innovation in U.S. energy finance and sub-national pragmatism. Written by Reed Hundt of the coalition, Devashree Saha, and ourselves, the new brief (part of our Brookings-Rockefeller Project on State and Metropolitan Innovation ) describes Connecticut’s path-breaking design of the nation’s first “green” bank and proposes ways other states might get into the act. They probably need to. Financing the broad deployment of clean new energy and energy efficiency solutions remains one of the most challenging problems in energy policy. Energy efficiency projects remain complicated to finance given their large up-front costs and the limited capital resources available to consumers while the delivered cost of energy from renewable energy projects—even though its has been dropping rapidly--is still generally more expensive than the delivered cost of energy from conventional sources, making the widespread deployment of these projects problematic. Most notably, clean solutions tend to falter in the marketplace because neither their full social benefits not their dirtier competitors’ full social costs are priced in, leaving those dirtier solutions cheaper. Yet here is where Connecticut innovated, working with Hundt and Berlin. By consolidating several existing programs into a new quasi-public corporation and then securing for the new entity the ability to raise and leverage funds from private sources, the state set up the nation’s first clean energy finance bank to leverage scarce public dollars with private capital so as to provide a combination of low-interest rate funding for clean energy projects and low-cost up-front loans for energy efficiency projects. This was the Connecticut Clean Energy Finance and Investment Authority and over the last year the new entity has been making progress at transitioning Connecticut’s clean energy programs away from relatively expensive grants, rebates, and other subsidies toward the attraction and deployment of private capital to finance commercially available clean energy technologies. Though the start-up has been slower than hoped for the concept remains promising. And so in this way, Gov. Dannel Malloy, Energy and Environment Commissioner Dan Esty, and the state’s legislature have scored what appears to be a significant institutional and finance breakthrough on one of the truly hard problems. Drawing on such models as the Overseas Private Investment Corporation, the Export-Import Bank, and several foreign examples such as U.K.’s Green Investment Bank and Australia’s proposed Clean Energy Finance Corporation, a determined U.S. state has pushed ahead, and now other states are interested. Work is getting done and our paper seeks to suggest a variety of ways interested other states can design their own clean energy finance authorities beginning from their own starting points. In the vein, while some states may need—like Connecticut—to establish a new quasi-public corporation into which to gather existing funds and then leverage them, other states may prefer to repurpose an existing finance authority or adjust an existing state-level infrastructure bank so as to attach a clean energy finance bank. Others, moreover, may want to attach to their finance entity a special “innovation window” to provide financing solutions for scaling up riskier emerging technologies. In any event, there are many ways to proceed, and states are looking at all of them, just as they have embraced the important concept of state-level infrastructure banks, as is reviewed in a companion paper to the new energy one by my colleague Rob Puentes.

### Efficiency

#### The Federal Housing Authority should provide loan guarantees for energy efficiency Property Assessed Clean Energy assessments levied on new or refinanced mortgages in the United States.

The CP provides loans to home owners who retrofit their houses with energy efficient improvements

Saha 11/13, Devashree, senior policy analyst and associate fellow at the Brookings Metropolitan Policy Program,” “Enact Legislation Supporting Residential Property Assessed Clean Energy Financing,” November 13th, http://www.brookings.edu/~/media/Research/Files/Papers/2012/11/13%20federalism/13%20housing%20energy%20efficiency.pdf

The Metropolitan Policy Program at Brookings therefore proposes that Congress enact legislation that would require the FHFA to allow Fannie Mae and Freddie Mac to purchase residential mortgages with PACE assessments and incorporate underwriting standards protecting lenders and program standards for states and local governments offering PACE programs. These underwriting standards should be aligned with the PACE guidelines released by the Department of Energy in May 2010. Along these lines, Congressional support of residential PACE programs would:  Send a strong signal that the U.S. remains fiercely committed to investing in smart, innovative financing structures that can catalyze the energy retrofit market  Enable states and local governments—many of which suspended their residential PACE programs in the wake of the FHFA ruling—to design and implement such programs in their communities  Save money for homeowners by reducing energy costs  Create new jobs and career opportunities in both the energy efficiency and renewable energy industries  Reduce greenhouse gas emissions and so produce significant climate benefits Congressional support of residential PACE financing has the potential to inject billions of dollars into the U.S. economy while at the same time making lasting energy improvements in the nation’s metropolitan areas.

Efficiency is the best solution---their authors underestimate it because its hard to notice, but its historically successful

Lovins 8 (Physicist Amory B. Lovins has been a leading practitioner of advanced energy efficiency in buildings, vehicles and industry for over three decades “The Case For Efficiency” http://www.forbes.com/2008/07/03/energy-efficiency-biz-energy\_cx\_al\_0707efficiency\_lovins.html)

Using smarter technologies, more brains and less money to wring more work from less delivered energy--what energy experts call "end-use efficiency"--is the largest, cheapest, safest, cleanest, fastest, most diverse, least visible, least understood and most neglected way to provide energy services. How big is it? The 46% drop in U.S. energy intensity, a measure of energy consumption per dollar of real gross domestic product, during 1975-2005 represented, by 2005, the equivalent of a new energy "source." This source was slightly larger than annual total European energy use, 2.1 times the size of U.S. oil consumption, 3.4 times bigger than U.S. net oil imports, six times domestic oil output or net oil imports from OPEC countries and 13 times net imports from Persian Gulf countries. But because these savings came not from giant plants but in zillions of tiny pieces imperceptible to the untrained eye, energy efficiency gets little respect. It's ironic, given that rising energy prices automatically make efficiency gains more valuable, and cheaper to attain. And we've barely scratched the surface. Fully exploiting wherever practical the best available efficiency techniques throughout the U.S. economy could save half our oil and gas use, and three-fourths of our electricity, at about an eighth of their current price. Innovative designs, technologies, policies and marketing methods are increasing that potential faster than we are using it up. The three big efficiency stories--oil, gas and electricity--are all remarkable. As detailed in a Pentagon-co-sponsored 2004 study titled "Winning the Oil Endgame," half of U.S. oil can be saved for the equivalent of $12 a barrel, mainly by tripling the efficiency of cars, trucks and planes--without sacrificing consumer-pleasing design. Fantasy? Not really. Already, Boeing (nyse: BA - news - people ) is beating Airbus with the 787 Dreamliner--a plane that's 20% more efficient than rivals but costs about the same. Wal-Mart (nyse: WMT - news - people ), nearly done boosting its trucks' efficiency by 25%, is set to make billions more by doubling their efficiency by 2015. And the hottest strategic trend in automaking--led by Ford Motor (nyse: F - news - people ), Nissan (nasdaq: NSANY - news - people ) and China--is making lighter, safer and more fuel-efficient cars. Another example: natural gas. Half its use can be saved at an eighth of its price, two-thirds indirectly. At times of peak demand, electricity is made largely from natural gas in turbines so inefficient that saving 1% of U.S. electricity, including peak hours, saves 2% of total natural gas use and cuts its price 3% to 4%. This saving is more than paid for by the value of the saved generating capacity, so the net cost of saving the gas itself is less than zero. Three-fourths of U.S. electricity--69% of which is used in buildings, nearly all the rest in industry--can be saved for less than the price of just running a coal or nuclear plant. This "negawatt" potential is not just in smarter motors, lights, appliances, etc., but even more in their larger systems. For example, three-fifths of the world's electricity runs motors, and half their shaft power runs pumps and fans. Designing friction out of pipes and ducts can save 10 times as much fuel at the power plant. The savings are arrestingly simple: Redesigning a standard pumping loop in one factory saved 92% of the pumping power--with lower construction cost and better performance. Even better design could have saved about 98% at lower cost. The secret: Use fat, short, straight pipes rather than thin, long, crooked ones. More broadly, better design can make very big savings cost less than small savings, turning diminishing returns into expanding returns (For more detail, you can watch my lectures at Stanford's school of engineering. My team of practitioners, lately redesigning $30 billion worth of diverse facilities in 29 industrial sectors, typically finds 30% to 60% savings with two- to three-year paybacks on retrofit, and 40% to 90% savings in new facilities with generally lower capital cost. Energy efficiency can save trillions in national costs, but its side benefits are often even more valuable: 6% to 16% higher labor productivity in efficient offices, 20% to 26% faster learning in well-day-lit schools, 40% higher sales in well-day-lit shops, faster healing in efficient hospitals. When you count these kinds of side benefits, you double the cost-effective energy savings in a typical steel mill. Yet the efficiency cornucopia is the manual model: You have to turn the crank. Like any worthy management goal, saving energy requires leadership, learning, metrics, alignment, relentless patience and meticulous attention to detail. There are scores of real obstacles to be overcome. But in any business struggling for energy and capital, energy efficiency is often the highest-return, lowest-risk investment available, limited less by technology or economics than by culture and imagination. Using energy in a way that saves money protects the climate too, not at a cost but at a profit. McKinsey and Co. found that profits from U.S. energy efficiency can probably more than pay for other climate-protecting measures. And while politicians debate theoretical costs, smart firms race for real profits. IBM (nyse: IBM - news - people ) and STMicroelectronics (nyse: STM - news - people ) have cut their carbon intensity 6% a year. BP (nyse: BP - news - people ) made over $2 billion substituting efficiency for fuel; DuPont (nyse: DD - news - people ) and Dow Chemical (nyse: DOW - news - people ), $3 billion apiece. General Electric (nyse: GE - news - people ) aims for 30% savings by 2012 to build shareholder value. United Technologies (nyse: UTX - news - people ) cut its energy intensity 56% in a decade. Interface (nasdaq: IFSIA - news - people ) built the carpet industry's most oil-independent cost structure while cutting its greenhouse gas emissions 82%. We can save our bottom lines, and maybe our butts, by taking economics--and efficiency--seriously.

### ECON

#### Solar will never work---Rare earth metal shortages

Fridley- Energy Analysis Program, Lawrence Berkeley National Laboratory-10

<http://www.postcarbon.org/report/127153-energy-nine-challenges-of-alternative-energy>

Unlike what is generally assumed, the input to an alternative energy process is not money per se: It is resources and energy, and the type and volume of the resources and energy needed may in turn limit the scalability and affect the cost and feasibility of an alternative. This is particularly notable in processes that rely on advanced technologies manufactured with rare-earth elements. Fuel cells, for example, require platinum, palladium, and rare-earth elements. Solar-photovoltaic technology requires gallium, and in some forms, indium. Advanced batteries rely on lithium. Even technology designed to save energy, such as light-emitting diode (LED) or organic LED (OLED) lighting, requires rare earthsindium, and gallium. Expressing the costs of alternative energy only in monetary terms obscures potential limits arising from the requirements for resources and energy inputs. Because alternative energy today constitutes only a small fraction of total energy production, the volume of resources and energy demanded for its production has so far been easily accommodated. This will not necessarily be the case with large-scale expansion. For example, thin-film solar has been promoted as a much lower-cost, more flexible, and more widely applicable solar-conversion technology compared to traditional silicon panels. Thin-film solar currently uses indium because of its versatile properties, but indium is also widely used as a component of flat-screen monitors. Reserves of indium are limited, and a 2007 study found that at current rates of consumption, known reserves of indium would last just thirteen years. 7 Can greatly increased demand for these resources be accommodated? As shown in table 18.1, successful deployment to 2030 of a range of new energy technologies (and some non-energy advanced technologies) would substantially raise demand for a range of metals beyond the level of world production today. In the case of gallium, demand from emerging technologies would be expected to reach six times today’s total global production by 2030; for indium, more than three times today’s production—compared to just fractional increases in the demand for ruthenium and selenium. Although alternative metals and materials exist for certain technologies (albeit often with performance tradeoffs), embarking on a particular technology deployment path without consideration of long-term availability of material inputs can substantially raise risks. These risks are not limited to physical availability and price; they include potential supply disruptions as a consequence of the uneven geographical distribution of production and reserves. Currently, China is the dominant world source (over 95 percent) of the rare-earth element neodymium, a key input in the production of permanent magnets used in hybrid-vehicle motors and windmill turbines. In 2009, the Chinese government announced restrictions on the export of rare earths, ostensibly to encourage investment within China of industries using the metals. Whether for the rare earths themselves or for final products made from them, import dependency in the face of such a high concentration of production would do little to alleviate energy security concerns now seen in terms of import dependency on the Middle East for oil. Alternative energy production is reliant not only on a range of resource inputs, but also on fossil fuels for the mining of raw materials, transport, manufacturing, construction, maintenance, and decommissioning. Currently, no alternative energy exists without fossil-fuel inputs, and no alternative energy process can reproduce itself—that is, manufacture the equipment needed for its own production—without the use of fossil fuels. In this regard, alternative energy serves as a supplement to the fossil-fuel base, and its input requirements may constrain its development in cases of either material or energy scarcity.

#### Costs are far too high---their studies are too optimistic

Morriss et al 9 (Andrew P. Morriss H. Ross and Helen Workman Professor of Law & Professor of Business University of Illinois William T. Bogart Dean of Academic Affairs and Professor of Economics York College of Pennsylvania Andrew Dorchak Head of Reference and Foreign/International Law Specialist Case Western Reserve University School of Law Roger E. Meiners John and Judy Goolsby Distinguished Professor of Economics and Law University of Texas-Arlington “Green Jobs Myths” http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=1358423)

Solar power is a second favored technology in the green jobs literature. As with wind energy, substantial – and largely unacknowledged – hurdles to a significant expansion exist in solar electric generation. First, despite decades of effort and high subsidies,474 the current contribution of solar to meeting the nation’s energy needs is only 0.05 percent.475 Most of this (95 percent) is from solar thermal and hot water production rather than electricity generation. The remainder is from solar PV.476 By 2030, the contribution of solar to energy consumption is projected by the EIA to rise to just 0.13 percent, with only half of that from solar PV.477 Although solar PV is projected to grow faster than other forms of solar energy, current technical analyses suggest that the costs of current solar PV installations so far exceed their benefits. Indeed, no reasonable valuation of the benefits of greenhouse gas reductions would result in positive estimates for the total net benefits from solar PV.478 A comprehensive analysis of this issue by Borenstein accounts for the fact that in California and in most U.S. locations, solar electric power is produced disproportionately during summer peak demand hours, that is, at times when the value of electricity is high. Second, Borenstein considers that energy losses from electricity transmission and distribution from PV sources is low because it is primarily generated on-site. Despite taking into consideration these factors that favor solar technology, Borenstein finds that: the net present cost of installing solar PV technology today far exceeds the net present benefit under a wide range of assumptions about levels of real interest rates and real increases in the cost of electricity. Lower interest rates and faster increases in the cost of electricity obviously benefit solar PV, but even under the extreme assumption of a 1% real interest rate and 5% annual increase in the real cost of electricity, the cost of solar PV is about 80% greater than the value of the electricity that it will produce. It is worth noting that even without further technological progress in energy generation from wind, geothermal, biomass, and central station solar thermal, with a 5% annual increase in the real cost of electricity, all of these technologies would be economic (without subsidies or recognition of environmental externalities from fossil fuels) well before the 25year life of the solar panels was over. Under more moderate assumptions about the real interest rate and the escalation in the cost of electricity, the net present cost of a solar PV installation built today is three to four times greater than the net present benefits of the electricity it will produce. 479 Borenstein estimates for a range of scenarios that the market costs of solar PV exceed market benefits by $148/MWh to $492/MWh, in 2007 dollars.480 This cost-benefit gap is, he notes, “much greater than plausible estimates of the value of greenhouse gas reduction.”481 In a meta-analysis of over 200 estimates, economist Richard Tol concludes that there is a 1 percent probability that the social cost of carbon exceeds $78 per tonne of carbon in 1995 dollars, based on a 3 percent pure discount rate of time preference.482 And in a response to critiques of his analysis, Borentein concludes that: the current cost of solar PV, as it is being installed in California and the rest of the U.S. today, is extremely high not just compared to fossil fuel generation, but also compared to generation from wind, central station solar thermal, geothermal and other renewable resources.483 Finally, Borenstein makes other points with respect to solar PV, but which are applicable across the board to many alternative energy technologies: if solar PV costs are coming down very rapidly for reasons exogenous to the solar PV subsidy policy, then it is more likely to make sense to delay investment. If solar PV costs are declining by 20% per year, for instance, the same amount of investment (in present value terms) made 5 years from now will yield much more renewable energy than today. Given that the damage from GhGs is cumulative over time, it makes almost no difference whether the gasses are released in 2007 or 2012.484 Just as with our other examples, the green jobs literature’s treatment of the technical challenges facing solar power suffer from selective technological optimism. Even more problematically, the literature forecasts substantial increases in solar power generation without a serious discussion of the hurdles.

#### Local regulations

Walsh 11 (Bryan, is a senior writer for TIME magazine, covering energy and the environment, “Energy: The Obstacles to Scaling Up Solar Power” http://science.time.com/2011/01/31/energy-the-obstacles-to-scaling-up-solar-power/)

But there’s a lot more holding back renewable power in the U.S. than gridlock in Congress. One of the biggest obstacles to scaling up solar power in particular is regulation—not just from the federal government, but at the state, city and even community level. Rules on installing solar systems differ from town to town, and the work of researching and filling out permits adds to the cost of solar power across the country. According to a study by the solar installer SunRun, struggles over permits adds an average of $2,500 to the costs of each solar installation—while an effort to streamline regulations could provide a $1 billion stimulus to the residential and commercial solar markets over the next five years. “The costs to the solar market are really staggering,” says Ed Fenster, CEO of SunRun.

#### ---Economic decline does not cause war.

Miller 2000

Morris, Professor of Administration @ the University of Ottawa, Interdisciplinary Science Review, v 25 n4 2000 p ingenta connect

The question may be reformulated. Do wars spring from a popular reaction to a sudden economic crisis that exacerbates poverty and growing disparities in wealth and incomes? Perhaps one could argue, as some scholars do, that it is some dramatic event or sequence of such events leading to the exacerbation of poverty that, in turn, leads to this deplorable denouement. This exogenous factor might act as a catalyst for a violent reaction on the part of the people or on the part of the political leadership who would then possibly be tempted to seek a diversion by finding or, if need be, fabricating an enemy and setting in train the process leading to war. According to a study under- taken by Minxin Pei and Ariel Adesnik of the Carnegie Endowment for International Peace, there would not appear to be any merit in this hypothesis. After studying ninety-three episodes of economic crisis in twenty-two countries in Latin America and Asia in the years since the Second World War they concluded that:19 Much of the conventional wisdom about the political impact of economic crises may be wrong ... The severity of economic crisis – as measured in terms of inflation and negative growth – bore no relationship to the collapse of regimes ... (or, in democratic states, rarely) to an outbreak of violence ... In the cases of dictatorships and semi-democracies, the ruling elites responded to crises by increasing repression (thereby using one form of violence to abort another).

#### ---No Impact --- Iraq and Afghanistan prove that even if economic decline incentivizes war; power imbalances between nation states prevent escalation.

#### ---Economic decline creates a structural incentive for military caution --- Makes politicians sensitive to backlash.

Boehmer 2007

Charles, political science professor at the University of Texas, Politics & Policy, 35:4, “The Effects of Economic Crisis, Domestic Discord, and State Efficacy on the Decision to Initiate Interstate Conflict”

The theory presented earlier predicts that lower rates of growth suppress participation in foreign conflicts, particularly concerning conflict initiation and escalation to combat. To sustain combat, states need to be militarily prepared and not open up a second front when they are already fighting, or may fear, domestic opposition. A good example would be when the various Afghani resistance fighters expelled the Soviet Union from their territory, but the Taliban crumbled when it had to face the combined forces of the United States and Northern Alliance insurrection. Yet the coefficient for GDP growth and MID initiations was negative but insignificant. However, considering that there are many reasons why states fight, the logic presented earlier should hold especially in regard to the risk of participating in more severe conflicts. Threats to use military force may be safe to make and may be made with both external and internal actors in mind, but in the end may remain mere cheap talk that does not risk escalation if there is a chance to back down. Chiozza and Goemans (2004b) found that secure leaders were more likely to become involved in war than insecure leaders, supporting the theory and evidence presented here. We should find that leaders who face domestic opposition and a poorly performing economy shy away from situations that could escalate to combat if doing so would compromise their ability to retain power.

### WARMING

**The skwo solves debris and no impact**

**Butterworth 11** ( Dr. Robert Butterworth is the President of Aries Analytics, a company which provides market analyses and program development services to government, commercial and non-profit clients concerning space and space-related research and development. He has served on the staff of the President’s Foreign Intelligence Advisory Board, the Senate Select Committee on Intelligence, and at the Department of Defense. He was also responsible for the review and oversight activities, budget support and program analyses for selected space and intelligence activities. “Obama Administration's 'Three Cs' Means a Failing Space Policy” <http://defense.aol.com/2011/11/07/obama-administrations-three-cs-means-a-failing-space-policy/>, Donnie)

Consider, for example, the first "c:" Is space becoming increasingly congested? The US government says publicly that there are some 17,000 things that are 10 centimeters or bigger and many more items that are smaller orbiting the earth. That's a lot, but **those numbers say nothing about congestion**. For travel purposes, I don't care how many cars there are in northern Virginia; I care how many are on the road at the same time and place as I. The relevant question is not congestion but whether **the probability of collision is increasing**, and at least one informal **study suggests it has not changed over the past decade or so**. That finding might be due in part to better information about the what/where/when of space objects; if so, it suggests that orbital conjunctions are already being managed successfully, due primarily to **conjunction analyses** and **collision warnings** provided by U.S. Strategic Command. As explained in a recent Time magazine article, the risk of accidents "is minimized by the fact that all objects orbiting at the same altitude also move at the same speed." The Defense Department publication also mentions congestion in the electromagnetic spectrum, but there are longstanding measures to address both intentional and unintentional interference in this domain. From a defense perspective growth in the orbital population is not all bad. As the environment gets more complicated, **relative military advantage will accrue to the superior ability to identify and track objects and to conduct sophisticated maneuvers on orbit with great precision**. In these capabilities the U.S. is generally ahead of potential antagonists and should be able to make it increasingly difficult for adversaries to identify, track, and target militarily critical satellites.

**Space debris does not matter at all**

**Paradise 2** (LEE A. PARADISE <http://www.scienceclarified.com/dispute/Vol-1/Does-the-accumulation-of-space-debris-in-Earth-s-orbit-pose-a-significant-threat-to-humans-in-space-and-on-the-ground.html#b>, Donnie)

Most of us remember the children's story about Chicken Little who ran around shouting, "The sky is falling! The sky is falling." In truth, Chicken Little had mistaken a simple acorn to be a sign of impending catastrophe. Much like this fictional character, doomsayers would argue that the sky is actually falling and that space debris threatens to destroy life as we know it both on Earth and in space. However, **experts disagree and evidence indicates that the accumulation of space debris is not as significant a hazard a**s some people would have us believe. At first, the very concept of space debris appears to be a tremendous risk, especially for those traveling in space. The speed of orbital debris, the term sometimes used by NASA for space debris, can be approximately 6.2 mi/second (10 km/second). At that velocity, you could drive across the United States, coast-to-coast, in about seven and a half minutes. Even something as small as a fleck of paint moving at that rate of speed could cause damage to something in its path. Then couple that knowledge with photographs that show clusters of space debris floating around Earth and it isn't hard to understand why some people might believe that a significant threat exists. However, this risk has been overstated and sometimes even exaggerated. History has shown that even with the copious amount of space debris circling Earth, it has had very little effect on **space exploration**, and even less on the planet below. The reasons behind this are many, but include the vastness of Earth and space, protective measures, and early detection systems. Together these factors have reduced the possible risk dramatically. Most space debris that falls to Earth comes from Low Earth Orbit, which is generally considered from 90 to 600 mi (144 to 960 km) from Earth's surface. The team at NASA has, however, expanded that range to include an area approximately 1,250 mi (2,000 km) from Earth's surface. How long it takes to fall can range from a few years to over a century depending on its height. Upon reentry into Earth's atmosphere, the majority of this debris is incinerated. **Anything that does survive the trip down typically lands in an unpopulated stretch of the planet such as a desert or ocean**. NASA's Space Science Branch at the Johnson Space Center believes that approximately one cataloged piece of debris has fallen to Earth every day for the last 40 years. Thus far, no serious injuries or property damage have occurred as a result of this falling debris. Thanks to the atmosphere and the sheer size of Earth's land mass, the risk that falling space debris poses to anyone is extremely small. While space does not have an atmosphere to burn up space debris, Dr. Susan Holtz, a physicist and university professor, points out that "**as the solar system persists, it gets cleaner**." In other words, when considering the problem of space debris, it is important to look at the big picture. Often we tend to think of space as much smaller than it is in reality. One way Dr. Holtz explains the size of space to her students is to tell them the following story: "Space is big. To give you an idea of how big it is, let's go on a space trip from the Earth and travel toward the Sun. Let's drive day and night at 100 miles an hour and not take a pit stop. It'll take us 100 years driving day and night at 100 miles an hour to get to the Sun. After 29 years we would cross Venus' orbit, and after 65 years we would cross Mercury's orbit." Considering the small size of objects like satellites or the shuttle placed against an environment as vast as space, the risk of severe collisions is minimal. Even when an object in space is hit by space debris, the damage is typically negligible even considering the high rate of speed at which the debris travels. Thanks to precautions such as debris shielding, the damage caused by space debris has been kept to a minimum. Before it was brought back to Earth via remote control, the MIR space station received numerous impacts from space debris. None of this minor damage presented any significant problems to the operation of the station or its various missions. The International Space Station (ISS) is designed to withstand direct hits from space debris as large as 0.4 in (1 cm) in size.

#### Nuclear winter outweighs – no adaptation.

Starr 2008

Steven, Associate member of the Nuclear Age Peace Foundation Director of Clinical Laboratory Science Program, University of Missouri-Columbia, Catastrophic Climatic Consequences of Nuclear Conflict, International Network of Engineers and Scientists Against Proliferation, Bulletin 28 April 2008, http://www.inesap.org/bulletin-28/catastrophic-climatic-consequences-nuclear-conflict

Climatic changes resulting from nuclear conflict would occur many thousands of times faster – and thus would likely be far more catastrophic – than the climatic changes predicted as a result of global warming.40 The rapidity of the war-induced changes, appearing in a matter of days and weeks, would allow human populations and the whole plant and animal kingdoms no time to adapt. It is worth noting that the same methods and climate models used to predict global warming were used in these studies to predict global cooling resulting from nuclear war. These climate models have proved highly successful in describing the cooling effects of volcanic clouds during extensive U.S. evaluations and in international intercomparisons performed as part of the Fourth Assessment of the Intergovernmental Panel on Climate Change.41 Predicted drops in average global temperatures caused by small, moderate, and large nuclear conflicts are contrasted with the effects of global warming during the last century in Figure 4 and with average surface air temperatures during the last 1,000 years in Figure 5. There are, of course, other important considerations which must be made when estimating the overall environmental and ecological impacts of nuclear war. These must include the release of enormous amounts of radioactive fallout, pyrotoxins, and toxic industrial chemicals into the ecosystems. A decade after the conflict, when the smoke begins to clear, there will also be massive increases in the amount of deadly ultraviolet light which will reach the surface of the Earth as a result of ozone depletion. All these by-products of nuclear war must be taken into account when comparing the danger of nuclear conflict to other potential dangers now confronting humanity and life on Earth. Conclusions We cannot allow our political and military leaders to continue to ignore the potential cataclysmic climatic and environmental consequences posed by the use of nuclear weapons. Civilization remains at risk from nuclear winter despite a three-fold reduction in global nuclear arsenals during the last 20 years. This is due in part to the fact that nuclear arms control agreements have focused primarily on the dismantlement of delivery systems and have failed to include the verified dismantlement of nuclear warheads. Future negotiations must consider all the potential effects of the total number of nuclear weapons in the nuclear arsenals.44 The U.S. and Russia must recognize the senselessness of continued planning for a nuclear first-strike which, if launched, would make the whole world including their own country uninhabitable. As a first step, they should end their preparations for the pre-emptive use of their nuclear arsenals, stand-down their high-alert strategic nuclear forces, and eliminate the standard operating procedure of launch-on-warning.45 It is essential that all the nuclear weapon states be convinced of the need to honor their commitments under Article VI of the Non-Proliferation Treaty, to “act in good faith” to eliminate their nuclear arsenals. As long as they ignore this commitment and maintain nuclear weaponry as the cornerstone of their military forces, they confer validity to the false idea that nuclear weapons provide security to those who possess them, and thus encourage non-nuclear weapon states to follow in their footsteps. The unalterable conclusion is that a nuclear war cannot be won and must not be fought. Nuclear weapons must be seen not only as instruments of mass murder, but as instruments of global annihilation which put all humanity and civilization under a common threat of destruction.

Status quo solves warming---epa regs

Baltimore Sun 12 (“EPA's climatic victory” http://www.baltimoresun.com/news/opinion/editorial/bs-ed-epa-climate-20120627,0,7041174.story)

Tuesday's victory by the U.S. Environmental Protection Agency in federal appeals court in the District of Columbia has once again demonstrated that the science of climate change, while famously "inconvenient," is virtually impossible for fair and reasonable people to deny. In upholding the agency's right to regulate the emission of greenhouse gases, including carbon dioxide, under a handful of cases, the three-judge panel recognized climate change as the legitimate threat to public health and safety that it is, and that the Clean Air Act gives the agency appropriate authority to regulate it. This shouldn't have come as much surprise to opponents, as the decision is in line with the Supreme Court's 2007 decision affirming the EPA had that power. It would be nice, of course, if we lived in a world where coal and other fossil fuels could be burned without regard to the pollution they emit, but that's not real life. Unfortunately, the longer the U.S. and other developed countries wait to address climate change, the less chance they can do much about it. We would be sympathetic to polluters' complaints that climate change should be addressed by Congress and not by a regulatory agency if those same opponents had not worked so hard to thwart that very effort two years ago. They now must reap what they sowed: a less political and more science-driven regulatory process. The court's decision means the EPA can move forward with clean car standards that are, incidentally, already supported by industry and labor, and the issuance of restrictive permits to power plants and other major industrial polluters. There are, of course, winners and losers in this transition. Coal-producing states like West Virginia will be hurt economically as they gradually lose a market for their product. But until power plants and other major users of coal develop a reliable and economical method to capture carbon emissions (or at least offset them), this is unavoidable. Yet that setback for coal is a potential boon for alternative sources of energy. Much of the attention now will be on generating power from natural gas, which is less harmful to the environment (though hardly carbon-free), and on improving biofuels, solar and wind technologies. Conservatives can grouse all they want that the transition will inevitably cause consumer prices to rise. Coal was relatively cheap compared to the alternatives — if the harmful effects of greenhouse gas emissions are not factored into its price. Mitt Romney is already running ads in critical states like Ohio attacking the EPA, always a favorite Republican whipping boy, and promising to strip the agency of its authority to regulate carbon. But Mr. Romney may also find himself politically vulnerable on this issue. He has admitted in the past that the earth's climate is changing, that humans are contributing to the problem and that he favored reducing greenhouse gas emissions. Yet his refusal to endorse the EPA's regulatory role would seem to put him in a political no-man's land of recognizing that global warming is real and distressing but declining to do anything worthwhile about it. Even with the mountain of evidence supporting the reality of climate change and now a growing number of court opinions endorsing it, it's hard to believe a politically gridlocked Congress is capable of taking appropriate action on its own. Thus, the EPA represents the best hope for responsible behavior — and for the U.S. to set an example for countries that have been similarly reluctant to embrace reforms. This week's ruling may yet be appealed to the Supreme Court, but experts say there's little chance of reversal there, particularly given the high court's related 2007 decision and the slam-dunk nature of the appeals court's unanimous findings. Opponents would be better served putting their energy where it should have been in the first place — in developing methods to reduce greenhouse gas emissions. From Western fires and Southern flooding to severe weather, threatened animal and plant species and melting ice caps, the impact of global warming is real and distressing. A recent study from the U.S. Geological Survey suggests the East Coast is a "hot spot," as sea levels are rising more rapidly than previously thought. All of which strongly suggests it's time Washington stopped bickering over global warming and started supporting the EPA's efforts.

#### No impact to warming-most recent data proves the c02 escapes

Taylor 11 (James, is a senior fellow for environment policy at the Heartland Institute and managing editor of Environment & Climate News. “New NASA Data Blow Gaping Hole In Global Warming Alarmism” <http://www.forbes.com/sites/jamestaylor/2011/07/27/new-nasa-data-blow-gaping-hold-in-global-warming-alarmism/>)

NASA satellite data from the years 2000 through 2011 show the Earth’s atmosphere is allowing far more heat to be released into space than alarmist computer models have predicted, reports a new study in the peer-reviewed science journal Remote Sensing. The study indicates far less future global warming will occur than United Nations computer models have predicted, and supports prior studies indicating increases in atmospheric carbon dioxide trap far less heat than alarmists have claimed. Study co-author Dr. Roy Spencer, a principal research scientist at the University of Alabama in Huntsville and U.S. Science Team Leader for the Advanced Microwave Scanning Radiometer flying on NASA’s Aqua satellite, reports that real-world data from NASA’s Terra satellite contradict multiple assumptions fed into alarmist computer models. “The satellite observations suggest there is much more energy lost to space during and after warming than the climate models show,” Spencer said in a July 26 University of Alabama press release. “There is a huge discrepancy between the data and the forecasts that is especially big over the oceans.” In addition to finding that far less heat is being trapped than alarmist computer models have predicted, the NASA satellite data show the atmosphere begins shedding heat into space long before United Nations computer models predicted. The new findings are extremely important and should dramatically alter the global warming debate. Scientists on all sides of the global warming debate are in general agreement about how much heat is being directly trapped by human emissions of carbon dioxide (the answer is “not much”). However, the single most important issue in the global warming debate is whether carbon dioxide emissions will indirectly trap far more heat by causing large increases in atmospheric humidity and cirrus clouds. Alarmist computer models assume human carbon dioxide emissions indirectly cause substantial increases in atmospheric humidity and cirrus clouds (each of which are very effective at trapping heat), but real-world data have long shown that carbon dioxide emissions are not causing as much atmospheric humidity and cirrus clouds as the alarmist computer models have predicted. The new NASA Terra satellite data are consistent with long-term NOAA and NASA data indicating atmospheric humidity and cirrus clouds are not increasing in the manner predicted by alarmist computer models. The Terra satellite data also support data collected by NASA’s ERBS satellite showing far more longwave radiation (and thus, heat) escaped into space between 1985 and 1999 than alarmist computer models had predicted. Together, the NASA ERBS and Terra satellite data show that for 25 years and counting, carbon dioxide emissions have directly and indirectly trapped far less heat than alarmist computer models have predicted. In short, the central premise of alarmist global warming theory is that carbon dioxide emissions should be directly and indirectly trapping a certain amount of heat in the earth’s atmosphere and preventing it from escaping into space. Real-world measurements, however, show far less heat is being trapped in the earth’s atmosphere than the alarmist computer models predict, and far more heat is escaping into space than the alarmist computer models predict.

#### Even if it did, no extinction

Green 11 (Roedy, PHD from British Colombia, “Extinction of Man”, http://mindprod.com/environment/extinction.html//umich-mp)

Mankind is embarking on a strange ecological experiment. Over a couple of centuries, man is burning the carbon accumulated over millions of years by plants. The CO₂ levels are now at the level of the Permian extinction. There have been two mass extinctions in earth history, the Permian, 230 million years ago, was the worst. 70% of all species were lost. It was caused by natural global warming when volcanoes released greenhouse gases. (The other extinction event more familiar to most people was the more recent KT Cretaceous-Tertiary Mass Extinction event, 65 million years ago. It was caused when an asteroid plunged into the earth at Chicxulub Mexico wiping out the dinosaurs and half of earth’s species.) We are re-experiencing the same global warming conditions that triggered the more devastating Permian extinction, only this time it is man made. When it gets too hot, plants die. When it gets too hot and dry, massive fires ravage huge areas. When plants die, insects and herbivores die. When insects die, even heat-resistant plant’s don’t get pollinated and die. Birds die without insects to eat. Carnivores die without herbivores to eat, all triggered by what seems so innocuous — heat. Similarly, in the oceans, when they get just a few degrees too warm, corals expel their symbiotic algae and die soon thereafter. When coral reefs die, the fish that live on them die, triggering extinction chains. Satellites can chart the loss of vegetation over the planet. We are losing 4 species per hour, a rate on the same scale as the Permian and KT extinction events. Man has no ability to live without the support of other species. We are committing suicide and killing the family of life on earth along with us. The question is, will we wipe ourselves out along with the rest of the planet’s ecology? Man (sic) is very adaptable. He (sic) will destroy his food supply on land and in the oceans as a result, but some people will survive. That is not complete extinction.

#### Warming is cyclical – explains climate better than IPCC models.

Bell 2012

Larry, Professor of Architecture @ University of Houston, author of Climate of Corruption: Politics and Power behind the Global Warming Hoax, Global Warming Or Natural, Predictable Climate Change?, Forbes, January 2012, http://thegwpf.org/the-climate-record/4737-global-warming-or-natural-predictable-climate-change.html

An extensively peer-reviewed study published last December in the Journal of Atmospheric and Solar-Terrestrial Physics indicates that observed climate changes since 1850 are linked to cyclical, predictable, naturally occurring events in Earth’s solar system with little or no help from us. The research was conducted by Nicola Scafetta, a scientist at Duke University and at the Active Cavity Radiometer Solar Irradiance Monitor Lab (ACRIM), which is associated with the NASA Jet Propulsion Laboratory in California. It takes issue with methodologies applied by the U.N.’s Intergovernmental Panel for Climate Change (IPCC) using “general circulation climate models” (GCMs) that, by ignoring these important influences, are found to fail to reproduce the observed decadal and multi-decadal climatic cycles. As noted in the paper, the IPCC models also fail to incorporate climate modulating effects of solar changes such as cloud-forming influences of cosmic rays throughout periods of reduced sunspot activity. More clouds tend to make conditions cooler, while fewer often cause warming. At least 50-70% of observed 20th century warming might be associated with increased solar activity witnessed since the “Maunder Minimum” of the last 17th century. Dr. Scafetta’s study applies an astronomically-based model that reconstructs and correlates known warming and cooling phases with decadal and multi-decadal cycles associated with influences of planetary motions, most particularly those of Jupiter and Saturn. This “astronomical harmonics model” was used to address various cycles lasting 9.1, 10-10.5, 20-21, and 60-62 year-long periods. The 9.1-year cycle was shown to be likely related to decadal solar/lunar tidal oscillations, while those of ten years and longer duration relate to planetary movements about the Sun that may have solar influences that modulate electromagnetic properties of Earth’s upper atmosphere which can regulate the cloud system. Scafetta’s findings contradict IPCC claims that all warming observed from 1970 to 2000 has been man-made (“anthropogenically-induced”) based upon models that exclude natural quasi 20-year and 60-year climate cycle contributions. These cycles have been clearly detected in all global surface temperature records of both hemispheres since 1850, and are also evident in numerous astronomical records. The 60-year cycle is particularly easy to observe in significant surface temperature maxima that occurred in 1880-1881, 1940-1941, and 2000-2001. These momentarily warmer periods coincided with times when orbital positions of Jupiter and Saturn were relatively close to the Sun and Earth. A 60-year modulation cycle also corresponds with warming/cooling induced in the ocean surface which appears to correlate with the frequency of major Atlantic hurricanes, and is seen in the sea level rise since 1700 as well as in numerous ocean and terrestrial records dating back centuries. Further evidence of a 60-year cycle is referenced in ancient Sanskrit texts among observed monsoon rainfall cycles. Scafetta believes that a natural 60-year climate cycle associated with astronomical cycles may also explain calendars adopted in traditional Chinese, Tamil and Tibetan civilizations, since all major ancient civilizations knew about 20-year and 60-year Jupiter and Saturn cycles. Indeed, Scafetta pointed out to me that in the Hindu tradition, the 60-year cycle is known as the cycle of Brihaspati, the name of Jupiter, and that every 60 years special ceremonies are celebrated by some populations, such as the Sigui ceremony among the Dogon people of Africa. Proper reconstructions of natural 20-year and 60-year cycles, along with other independent studies, indicate that the IPCC has seriously overestimated human climate contributions. For example, according to all GCM simulations, increased CO2 concentrations should have produced an increased tropical warming trend with altitude, which is contrary to what balloon and satellites observations actually show. GCM interpretations also allege that volcano activity may have contributed an offsetting 0.1-0.2 degrees of cooling influence between from 1970 to 2000. However, that conclusion appears to significantly overestimate the volcano signal because the models predicted deep and large cooling spikes associated with eruptions which are observed to be much smaller in global surface temperature records. Accordingly, this too suggests that the 1970-2000 warming effect attributed to anthropogenic influences should be reduced. Moreover, some of the observed 0.5 degrees of warming recorded by surface stations during the 1970-2000 period which IPCC models associated with human greenhouse gases emissions, may be explained by improperly corrected urban “heat island” effects and other land use change influences. Finally, three major available global surface temperature record sources report a steady-to-cooling trend since 2001. These measurements contradict the strong warming predicted by all IPCC models during the same period that are attributed primarily to a continuing increase in CO2 emissions. Indeed, only one global surface record source shows a slight increase in the temperature since 2001. This occurred because missing temperature data needed to be adjusted or filled in to complete the records…which appears to be the case with NASA Goddard Institute for Space Studies model data resulting from poor sampling during the last decade for Antarctic and Arctic regions and the use of a 1200 km smoothing methodology. The Duke University/NASA JPL study estimates that as much as 0.3 degrees of warming from 1970 to 2000 may have been naturally induced by the 60-year modulation during the warming phase, amounting to at least 43-60% of the 0.5-0.7 degrees allegedly caused by human greenhouse emissions. Additional natural warming can be explained by increased solar activity during the last four centuries, as well as simply being part of a natural and persistent warming recovery since the end of the Little Ice Age of AD 1300-1900. Nicola Scaletta concludes that the scientific method requires that a physical model fulfill two conditions…it must be able to reconstruct as well as predict (or forecast) direct physical observations. Here, he argues that all climate models used by the IPCC can do neither. “They seriously fail to properly reconstruct even the large multi-decadal oscillations found in the global surface temperature which have climatic meaning. Consequently, the IPCC projections for the 21st century cannot be trusted.” In fact, he argues that “By not properly reconstructing the 20-year and 60-year natural cycles we found that the IPCC GCMs have seriously overestimated also the magnitude of the anthropogenic contribution to recent warming.” Unlike the current IPCC models, the astronomical harmonics model can have real climate forecasting value. By combining current trend information with natural cycle patterns Scafetta believes that the global temperature “may not significantly increase during the next 30 years mostly because of the negative phase of the 60-year cycle.” He goes on to say: “If multi-secular natural cycles (which according to some authors have significantly contributed to the observed 1700-2010 warming and may contribute to an additional natural cooling by 2100) are ignored, the same projected anthropogenic emissions would imply a global warming by about 0.3-1.2 degrees C by 2100, contrary to the IPCC 1.0-3.6 degree C projected warming.” Scafetta projects that the global climate may remain approximately steady until 2030-2040 (as was observed from the 1940s to the 1970s) because the 60-year cycle entered into its current cooling phase around 2000-2003. The climate may further cool if additional natural long and short-term cycles also enter into cooling phases. In fact the present warm period may well be at the top of a natural millennial cycle as previously occurred during Roman and Medieval times.

Warming won’t cause extinction

Barrett, professor of natural resource economics – Columbia University, ‘7

(Scott, Why Cooperate? The Incentive to Supply Global Public Goods, introduction)

First, climate change does not threaten the survival of the human species.5 If unchecked, it will cause other species to become extinction (though biodiversity is being depleted now due to other reasons). It will alter critical ecosystems (though this is also happening now, and for reasons unrelated to climate change). It will reduce land area as the seas rise, and in the process displace human populations. “Catastrophic” climate change is possible, but not certain. Moreover, and unlike an asteroid collision, large changes (such as sea level rise of, say, ten meters) will likely take centuries to unfold, giving societies time to adjust. “Abrupt” climate change is also possible, and will occur more rapidly, perhaps over a decade or two. However, abrupt climate change (such as a weakening in the North Atlantic circulation), though potentially very serious, is unlikely to be ruinous. Human-induced climate change is an experiment of planetary proportions, and we cannot be sur of its consequences. Even in a worse case scenario, however, global climate change is not the equivalent of the Earth being hit by mega-asteroid. Indeed, if it were as damaging as this, and if we were sure that it would be this harmful, then our incentive to address this threat would be overwhelming. The challenge would still be more difficult than asteroid defense, but we would have done much more about it by now.

Existing carbon triggers the impact

Daniel **Rirdan 12**, founder of The Exploration Company, “The Right Carbon Concentration Target”, June 29, <http://theenergycollective.com/daniel-rirdan/89066/what-should-be-our-carbon-concentration-target-and-forget-politics?utm_source=feedburner&utm_medium=feed&utm_campaign=The+Energy+Collective+%28all+posts%29>

James Hansen and other promi­nent cli­ma­tol­o­gists are call­ing to bring the CO2 atmos­pheric level to 350 parts per million. In fact, an orga­ni­za­tion, 350.org, came around that ral­ly­ing cry. This is far more radical than most politicians are willing to entertain. And it is not likely to be enough. The 350ppm target will not reverse the clock as far back as one may assume. It was in 1988 that we have had these level of car­bon con­cen­tra­tion in the air. But wait, there is more to the story. 1988-levels of CO2 with 2012-levels of all other green­house gases bring us to a state of affairs equiv­a­lent to that around 1994 (2.28 w/m2). And then there are aerosols. There is good news and bad news about them. The good news is that as long as we keep spewing mas­sive amounts of particulate matter and soot into the air, more of the sun’s rays are scattered back to space, over­all the reflec­tiv­ity of clouds increases, and other effects on clouds whose over­all net effect is to cool­ing of the Earth sur­face. The bad news is that once we stop polluting, stop run­ning all the diesel engines and the coal plants of the world, and the soot finally settles down, the real state of affairs will be unveiled within weeks. Once we fur­ther get rid of the aerosols and black car­bon on snow, we may be very well be worse off than what we have had around 2011 (a pos­si­ble addi­tion of 1.2 w/m2). Thus, it is not good enough to stop all green­house gas emis­sions. In fact, it is not even close to being good enough. A carbon-neutral econ­omy at this late stage is an unmit­i­gated disaster. There is a need for a carbon-negative economy. Essentially, it means that we have not only to stop emitting, to the tech­no­log­i­cal extent pos­si­ble, all green­house gases, but also capture much of the crap we have already out­gassed and lock it down. And once we do the above, the ocean will burp its excess gas, which has come from fos­sil fuels in the first place. So we will have to draw down and lock up that carbon, too. We have taken fos­sil fuel and released its con­tent; now we have to do it in reverse—hundreds of bil­lions of tons of that stuff.

Natural variability makes the impact inevitable and means that oceans will adapt—their studies don’t assume this

Hofmann, Professor of Ecology, Evolution and Marine Biology – University of California Santa Barbara et al., ‘11

(Gretchen E., “High-Frequency Dynamics of Ocean pH: A Multi-Ecosystem Comparison,” *PLoS ONE* Vol. 6, No. 12)

Since the publication of two reports in 2005–2006 [1], [2], the drive to forecast the effects of anthropogenic ocean acidification (OA) on marine ecosystems and their resident calcifying marine organisms has resulted in a growing body of research. Numerous laboratory studies testing the effects of altered seawater chemistry (low pH, altered pCO2, and undersaturation states - Ω - for calcium carbonate polymorphs) on biogenic calcification, growth, metabolism, and development have demonstrated a range of responses in marine organisms (for reviews see [3]–[8]). However, the emerging picture of biological consequences of OA – from data gathered largely from laboratory experiments – is not currently matched by equally available environmental data that describe present-day pH exposures or the natural variation in the carbonate system experienced by most marine organisms. Although researchers have documented variability in seawater carbonate chemistry on several occasions in different marine ecosystems (e.g., [9]–[15]), this variation has been under-appreciated in these early stages of OA research.

Recently, a deeper consideration of ecosystem-specific variation in seawater chemistry has emerged (e.g., [16]–[18]), one that is pertinent to the study of biological consequences of OA. Specifically, assessments of environmental heterogeneity present a nuanced complement to current laboratory experiments. The dynamics of specific natural carbonate chemistry on local scales provide critical context because outcomes of experiments on single species are used in meta-analyses to project the overall biological consequences of OA [7], [19], to forecast ecosystem-level outcomes [20], and ultimately to contribute to policy decisions [21] and the management of fisheries [22], [23]. As noted earlier [24], natural variability in pH is seldom considered when effects of ocean acidification are considered. Natural variability may occur at rates much higher than the rate at which carbon dioxide is decreasing ocean pH, about −0.0017 pH/year [25], [26]. This ambient fluctuation in pH may have a large impact on the development of resilience in marine populations, or it may combine with the steady effects of acidification to produce extreme events with large impacts [24]. In either case, understanding the environmental variability in ocean pH is essential.

Although data on the natural variation in the seawater CO2 system are emerging, nearly all high-resolution (e.g. hourly) time series are based on pCO2 sensors, with comparatively few pH time series found in the literature. From a research perspective, the absence of information regarding natural pH dynamics is a critical data gap for the biological and ecological arm of the multidisciplinary investigation of OA. Our ability to understand processes ranging from physiological tolerances to local adaptation is compromised. Specifically, laboratory experiments to test tolerances are often not designed to encompass the actual habitat exposure of the organisms under study, a critical design criterion in organismal physiology that also applies to global change biology [27]–[29]. It is noted that neither pH nor pCO2 alone provide the information sufficient to fully constrain the CO2 system, and while it is preferred to measure both, the preference for measuring one over the other is evaluated on a case-by-case basis and is often dictated by the equipment available.

In this light, data that reveal present-day pH dynamics in marine environments and therefore ground pH levels in CO2 perturbation experiments in an environmental context are valuable to the OA research community in two major ways. First, estimates of organismal resilience are greatly facilitated. Empiricists can contextualize lab experiments with actual environmental data, thereby improving them. Notably, the majority of manipulative laboratory experiments in OA research (including our own) have been parameterized using pCO2 levels as per the IPCC emission scenario predictions [30]. One consequence of this practice is that organisms are potentially tested outside of the current exposure across their biogeographic range, and tolerances are not bracketed appropriately. This situation may not be a lethal issue (i.e. negating all past observations in experiments where environmental context was not known); however, the lack of information about the ‘pH seascape’ may be translated through these organismal experiments in a manner that clouds the perspective of vulnerability of marine ecosystems. For example, recent data on the heterogeneity of pH in coastal waters of the Northeastern Pacific [31], [32] that are characterized by episodic upwelling has caused biologists to re-examine the physiological tolerances of organisms that live there. Specifically, resident calcifying marine invertebrates and algae are acclimatized to existing spatial and temporal heterogeneity [17], [18], and further, populations are likely adapted to local to regional differences in upwelling patterns [33].

Secondly, in addition to improving laboratory experiments, data regarding the nature of the pH seascape also facilitate hypothesis-generating science. Specifically, heterogeneity in the environment with regard to pH and pCO2 exposure may result in populations that are acclimatized to variable pH or extremes in pH. Although this process has been highlighted in thermal biology of marine invertebrates [34], such insight is not available with regard to gradients of seawater chemistry that occur on biogeographic scales. With that said, recent field studies have demonstrated that natural variation in seawater chemistry does influence organismal abundance and distribution [16], [35], [36]. With our newfound access to pH time series data, we can begin to explore the biophysical link between environmental seawater chemistry and resilience to baseline shifts in pH regimes, to identify at-risk populations as well as tolerant ones. Additionally, the use of sensors in the field can identify hidden patterns in the CO2 system, revealing areas that are refugia to acidification or carbonate undersaturation; such knowledge could enable protection, management, and remediation of critical marine habitats and populations in the future.

The recent development of sensors for in situ measurements of seawater pH [37], [38] has resulted in the ability to record pH more readily in the field in a manner that can support biological and ecological research. Since 2009, the Martz lab (SIO) has constructed 52 “SeaFET” pH sensors for 13 different collaborators (see http://martzlab.ucsd.edu) working in a broad range of settings. Using subsamples of data from many of these sensors, here we examine signatures of pH heterogeneity, presenting time series snapshots of sea-surface pH (upper 10 m) at 15 locations, spanning various overlapping habitat classifications including polar, temperate, tropical, open ocean, coastal, upwelling, estuarine, kelp forest, coral reef, pelagic, benthic, and extreme. Naturally, at many sites, multiple habitat classifications will apply. Characteristic patterns observed in the 30-day snapshots provide biome-specific pH signatures. This comparative dataset highlights the heterogeneity of present-day pH among marine ecosystems and underscores that contemporary marine organisms are currently exposed to different pH regimes in seawater that are not predicted until 2100.

Results

Overall, the patterns of pH recorded at each of the 15 deployment sites (shown in Figure 1, Table 1) were strikingly different. Figure 2 presents the temporal pattern of pH variation at each of these sites, and, for the sake of comparison, these are presented as 30-day time series “snapshots.” Note that all deployments generated >30 days of data except for sensors 3, 4, and 13, where the sensors were deliberately removed due to time constraints at the study sites. Though the patterns observed among the various marine ecosystems are driven by a variety of oceanographic forcing such as temperature, mixing, and biological activity, we do not provide a separate analysis of controlling factors on pH at each location. Each time series was accompanied by a different set of ancillary data, some rich with several co-located sensors, others devoid of co-located sensors. Given these differences in data collection across sites, here we focus on the comparative pH sensor data as a means to highlight observed pH variability and ecosystem-level differences between sites. For purposes of comparison, the metrics of variability presented here are pH minima, maxima, range, standard deviation, and rate of change (see Table 2). The rate presented in Table 2 and Figure 3 represents a mean instantaneous rate of change in pH hr−1, where a rate was calculated for each discrete time step as the absolute value of pH difference divided by the length of time between two adjacent data points.

In terms of general patterns amongst the comparative datasets, the open ocean sites (CCE1 and Kingman Reef) and the Antarctic sites (Cape Evans and Cindercones) displayed the least variation in pH over the 30-day deployment period. For example, pH range fluctuated between 0.024 to 0.096 at CCE1, Kingman Reef, Cape Evans, and Cindercones (Figure 2A, B and Table 2). In distinct contrast to the stability of the open ocean and Antarctic sites, sensors at the other five site classifications (upwelling, estuarine/near-shore, coral reef, kelp forest, and extreme) captured much greater variability (pH fluctuations ranging between 0.121 to 1.430) and may provide insight towards ecosystem-specific patterns. The sites in upwelling regions (Pt. Conception and Pt. Ano Nuevo, Figure 2C), the two locations in Monterey Bay, CA (Figure 2D), and the kelp forest sites (La Jolla and Santa Barbara Mohawk Reef, Figure 2F) all exhibited large fluctuations in pH conditions (pH changes>0.25). Additionally, at these 6 sites, pH oscillated in semi-diurnal patterns, the most apparent at the estuarine sites. The pH recorded in coral reef ecosystems exhibited a distinct diel pattern characterized by relatively consistent, moderate fluctuations (0.1<pH change<0.25; Figure 2E). At the Palmyra fore reef site, pH maxima occurred in the early evening (~5:00 pm), and pH minima were recorded immediately pre-dawn (~6:30 am). On a fringing reef site in Moorea, French Polynesia, a similar diel pattern was observed, with pH maxima occurring shortly after sunset (~7:30 pm) and pH minima several hours after dawn (~10:00 am). Finally, the greatest transitions in pH over time were observed at locations termed our “Extreme” sites - a CO2 venting site in Italy (site S2 in ref. [36]) and a submarine spring site in Mexico. For these sites, the patterns were extremely variable and lacked a detectable periodicity (Figure 2G).

The sites examined in this study do not comprehensively represent pH variability in coastal ecosystems, partly because we focused on surface epipelagic and shallow benthic pH variability. Many organisms that may be impacted by pH variability and ocean acidification reside at intermediate (>10 m) to abyssal depths. Notable regimes missing from Figure 2 include seasonally stratified open ocean locations that exhibit intense spring blooms; the equatorial upwelling zone; other temperate (and highly productive) Eastern Continental Boundary upwelling areas; subsurface oxygen minimum zones and seasonal dead zones; and a wide variety of unique estuarine, salt marsh, and tide pool environments. Spring bloom locations exhibit a marked increase in diel pCO2 variability during the peak bloom with a coincident drawdown similar in magnitude but opposite in sign to the upwelling signals shown in Figure 2 [39]. Equatorial upwelling locations undergo significant stochastic variability, as observed by pCO2 sensors in the TAO array (data viewable at http://www.pmel.noaa.gov/). Intertidal vegetated and tide pool habitats may exhibit major pH fluctuations due to macrophyte or animal respiratory cycles [15], while CO2 production in oxygen minimum zones can reduce pH to a limit of about 7.4 [40].

Due to local temperature differences, variable total alkalinity, and seasonal differences between deployment dates at each site, a comparison of average pH across the datasets would be somewhat misleading. However, some information can be gleaned from an examination of the averages: the overall binned average of all 15 mean values in Table 1 is 8.02±0.1. This pH value is generally in agreement with the global open ocean mean for 2010 of 8.07, a value generated by combining climatology data for temperature, salinity, phosphate, silicate [41]–[43], total alkalinity [44], and pCO2 [45] for the year 2000, corrected to 2010 using the average global rise of 1.5 µatm pCO2 yr−1. Rather than make a point-by-point comparison of the mean pH of each dataset, we focus instead on the differences in observed variability amongst the sites. For this analysis, summary statistics of the comparative datasets were ranked in order to examine the range of variability across all 15 sites (Fig. 3).

Discussion

Collected by 15 individual SeaFET sensors in seven types of marine habitats, data presented here highlight natural variability in seawater pH. Based on Figure 3, it is evident that regions of the ocean exhibit a continuum of pH variability. At sites in the open ocean (CCE-1), Antarctica, and Kingman reef (a coastal region in the permanently stratified open Pacific Ocean with very low residence times, and thus representative of the surrounding open ocean water), pH was very stable (SD<0.01 pH over 30 days). Elsewhere, pH was highly variable across a range of ecosystems where sensors were deployed. The salient conclusions from this comparative dataset are two-fold: (1) most non-open ocean sites are indeed characterized by natural variation in seawater chemistry that can now be revealed through continuous monitoring by autonomous instrumentation, and (2) in some cases, seawater in these sites reaches extremes in pH, sometimes daily, that are often considered to only occur in open ocean systems well into the future [46]. Admittedly, pH is only part of the story with regard to the biological impacts of OA on marine organisms. However, continuous long-term observations provided by sensors such as the SeaFET are a great first step in elucidating the biophysical link between natural variation and physiological capacity in resident marine organisms.

In the end, knowledge of spatial and temporal variation in seawater chemistry is a critical resource for biological research, for aquaculture, and for management efforts. From a biological perspective, the evolutionary history of the resident organisms will greatly influence the adaptation potential of organisms in marine populations. Thus, present-day natural variation will likely shape capacity for adaptation of resident organisms, influencing the resilience of critical marine ecosystems to future anthropogenic acidification. Below we discuss the comparative SeaFET-collected data and, where applicable, the biological consequences of the temporal heterogeneity that we found in each of the marine ecosystems where sensors were deployed.

As the most stable area, the open ocean behaves in a predictable way and generally adheres to global models attempting to predict future CO2 conditions based on equilibration of the surface ocean with a given atmospheric pCO2 (e.g. [47]). This can be shown with longer-term pH records obtained with SeaFET sensors, which are available at the CCE-1 mooring (Fig. 4). The ambient pH values for this open ocean location can be predicted to better than ±0.02 from the CO2-corrected climatology mentioned above; pH has dropped by about 0.015 units since 2000. At CCE-1, the annual carbonate cycle followed the sea surface temperature cycle, and pH was driven mostly by changes in the temperature dependence of CO2 system thermodynamics (Figure 4). SeaFET observations at CCE-1 agree with the climatology to +0.017±0.014 pH units, with episodic excursions from the climatology but a general return to the climatological mean. Although the annual cycle in the open ocean is somewhat predictable, it is notable that even at these seemingly stable locations, climatology-based forecasts consistently underestimate natural variability. Our observations confirm an annual mean variability in pH at CCE-1 of nearly 0.1, suggest an inter-annual variability of ~0.02 pH, and capture episodic changes that deviate from the climatology (Figure 4). Similar underestimates of CO2 variability were observed at nine other open ocean locations, where the Takahashi pCO2 climatology overlaps PMEL moorings with pCO2 sensors (not shown). Thus, on both a monthly (Fig. 2) and annual scale (Fig. 4), even the most stable open ocean sites see pH changes many times larger than the annual rate of acidification. This natural variability has prompted the suggestion that “an appropriate null hypothesis may be, until evidence is obtained to the contrary, that major biogeochemical processes in the oceans other than calcification will not be fundamentally different under future higher CO2/lower pH conditions” [24].

Similarly, the sensors deployed on the benthos in the Antarctic (Cindercones and Cape Evans, Figure 2B) recorded relatively stable pH conditions when compared to other sites in the study. Very few data exist for the Southern Ocean; however, open-water areas in this region experience a strong seasonal shift in seawater pH (~0.3–0.5 units) between austral summer and winter [48], [49] due to a decline in photosynthesis during winter and a disequilibrium of air-sea CO2 exchange due to annual surface sea ice and deep water entrainment [50]. Given the timing of deployment of our sensor in McMurdo Sound (austral spring: October–November), the sensor did not capture the change in seawater chemistry that might have occurred in the austral winter [49]. In general, due to sea ice conditions, observations from the Southern Ocean are limited, with water chemistry data falling into two categories: (1) discrete sampling events during oceanographic cruises (e.g. US Joint Global Ocean Flux Study, http://www1.whoi.edu/) and (2) single-point measurements from locations under sea ice [49], [51], [52]. Biologically speaking, the Southern Ocean is a region expected to experience acidification and undersaturated conditions earlier in time than other parts of the ocean [47], and calcifying Antarctic organisms are thought to be quite vulnerable to anthropogenic OA given the already challenging saturation states that are characteristic of cold polar waters [53]–[56]. Short-term CO2 perturbation experiments have shown that Antarctic calcifying marine invertebrates are sensitive to decreased saturation states [51], [57], although the number of species-level studies and community-level studies are very limited. The Western Antarctic Peninsula and the sub-Antarctic islands will experience pronounced increases in temperature [54] and could consequently undergo more variation and/or undersaturation given the increased potential for biological activity. Importantly, depending on the patterns of seasonally-dependent saturation state that will be revealed with improved observations [58], Antarctic organisms may experience more variation than might be expected, a situation that will influence their resilience to future acidification.

Three other types of study sites – the coastal upwelling, kelp forest and estuarine/near-shore sites – all exhibited variability due to a combination of mixing, tidal excursions, biological activity, and variable residence time (Fig. 2). Although these sites are all united by fairly obvious heterogeneity in pH, organisms living in these areas encounter unique complexities in seawater chemistry that will influence their physiological response, resilience, and potential for adaptation.

Typically, estuarine environments have riverine input that naturally creates very low saturation states [59]–[61]. Seawater chemistry conditions in these areas often shift dramatically, challenging biogenic calcification by resident organisms. Additionally, these species must also tolerate abiotic factors that interact with pH, such as temperature [62]. Two sensors in the Monterey Bay region, L1 (at the mouth of Elkhorn Slough) and L20 (~2 km seaward and north of L1), recorded rapid changes in pH. However, as opposed to riverine input, the low pH fluctuations observed here are likely due to isopycnal shoaling or low CO2 water that is pulsing up to the near shore on internal tides. These locations may also experience high river run-off in the rainy season, but such conditions were not reflected in the time series shown in Fig. 2.

Organisms living in upwelling regions may be acclimatized and adapted to extremes in seawater chemistry; here, deep CO2-enriched waters reach the surface and may shoal onto the benthos on the continental shelf [31], [32]. Data collected from our upwelling sites support the patterns found by cruise-based investigations; pH fluctuations were often sharp, and large transitions of up to ~0.35 pH units occurred over the course of days (Fig. 2). Laboratory studies on calcifying marine invertebrates living in upwelling regions suggest that these organisms maintain function under such stochastic conditions. However, overall performance may be reduced, suggesting that these species are indeed threatened by future acidification [17], [18], [63].

For kelp forests, although there is less influence from riverine inputs, pH variation is quite dynamic at these sites in the coastal California region (Fig 2; [18]). Patterns here are likely driven by fluctuations in coastal upwelling, biological activity, currents, internal tides, seasonally shoaling isopleths, as well as the size of the kelp forest, which may influence residence times via reduced flow. Kelps may respond positively to increased availability of CO2 and HCO3−, which may allow for reduced metabolic costs and increased productivity [64]. Increased kelp production may elevate pH within the forest during periods of photosynthesis, causing wider daily fluctuations in pH, though this is speculative at this time. As a result, kelp forests, particularly those of surface canopy forming species such as Macrocystis pyrifera, may contain a greater level of spatial heterogeneity in terms of the pH environment; vertical gradients in pH may form due to enhanced levels of photosynthesis at shallower depths. Such gradients may increase the risk of low pH exposure for benthic species while buffering those found within the surface canopy. Kelp forests provide habitat to a rich diversity of organisms from a wide range of calcifying and non-calcifying taxa [65]. As with organisms from the other coastal locations (estuarine and upwelling), the biota living within kelp forest environments are most likely acclimatized to this degree of natural variation. However, continued declines in oxygenation and shoaling of hypoxic boundaries observed in recent decades in the southern California bight [66], [67] are likely accompanied by a reduction in pH and saturation state. Thus, pH exposure regimes for the coastal California region's kelp forest biota may be changing over relatively short time scales. Over longer temporal scales as pH and carbonate saturation levels decrease, the relative abundances of these species may change, with community shifts favoring non-calcified species, as exemplified by long-term studies in intertidal communities by Wootton et al. [15].

For all the marine habitats described above, one very important consideration is that the extreme range of environmental variability does not necessarily translate to extreme resistance to future OA. Instead, such a range of variation may mean that the organisms resident in tidal, estuarine, and upwelling regions are already operating at the limits of their physiological tolerances (a la the classic tolerance windows of Fox – see [68]). Thus, future acidification, whether it be atmospheric or from other sources, may drive the physiology of these organisms closer to the edges of their tolerance windows. When environmental change is layered upon their present-day range of environmental exposures, they may thereby be pushed to the “guardrails” of their tolerance [20], [68].

In contrast to more stochastic changes in pH that were observed in some sites, our coral reef locations displayed a strikingly consistent pattern of diel fluctuations over the 30-day recording period. Similar short-term pH time series with lower daily resolution [69], [70] have reported regular diel pH fluctuation correlated to changes in total alkalinity and oxygen levels. These environmental patterns of pH suggest that reef organisms may be acclimatized to consistent but moderate changes in the carbonate system. Coral reefs have been at the center of research regarding the effects of OA on marine ecosystems [71]–[73]. Along with the calcification biology of the dominant scleractinian corals and coralline algae, the biodiversity on coral reefs includes many other calcifying species that will likely be affected [74]–[77]. Across the existing datasets in tropical reef ecosystems, the biological response of calcifying species to variation in seawater chemistry is complex (see [78]) –all corals or calcifying algal species will not respond similarly, in part because these calcifying reef-builders are photo-autotrophs (or mixotrophs), with algal symbionts that complicate the physiological response of the animal to changes in seawater chemistry.

Finally, the “Extreme” sites in our comparative dataset are of interest in that the low pH levels observed here represent a natural analogue to OA conditions in the future, demonstrating how the abundance and distribution of calcifying benthic organisms, as well as multi-species assemblages, can vary as a function of seawater chemistry [16], [35], [36], [79]. The variability in seawater pH was higher at both the groundwater springs off the coast of Mexico and the natural CO2 vents off the coast of Italy than at any of the other sensor locations. Offshore of Puerto Morelos, Mexico (and at other sites along the Mesoamerican Reef), natural low-saturation (Ω~0.5, pH 6.70–7.30, due to non-ventilated, high CO2, high alkalinity groundwater) submarine springs have been discharging for millennia. Here, variability in pH is due to long-term respiration driving a low ratio of alkalinity to dissolved inorganic carbon in effluent ground water. These sites provide insight into potential long-term responses of coral backreef ecosystems to low saturation conditions [79]. Unlike Puerto Morelos, the variability of pH at volcanic CO2 vents at Ischia, Italy is almost purely abiotically derived, due entirely to CO2 venting and subsequent mixing. This site in the Mediterranean Sea hosts a benthic assemblage that reflects the impacts of OA on rocky reef communities [16], [36].

Overall, the ‘extreme’ systems provide an opportunity to examine how variability in pH and extreme events (sensu [80]) affects ecological processes. Knowledge of this biophysical link is essential for forecasting ecological responses to acidification in ecosystems with sharp fluctuations in pH, such as upwelling or estuarine environments. Despite reductions in species richness, several calcifying organisms are found in low pH conditions close to the vents [16] and the springs [79]. The persistence of calcifying organisms at these extreme sites, where mean pH values are comparable to those that have reduced organism performance in laboratory experiments (i.e., pHT 7.8; reviewed in [16]), suggest that long exposures to such variability in pH, versus a consistently low-pH environment, could play an important role in regulating organism performance. Variability in pH could potentially promote acclimatization or adaptation to acidification through repeated exposure to low pH conditions [24]; alternatively, transient exposures to high pH conditions could buffer the effects of acidification by relieving physiological stress. Thus, the ecological patterns coupled with the high fluctuations in pH at the extreme sites highlight the need to consider carbonate chemistry variability in experiments and models aimed at understanding the impacts of acidification.

They make the topic unmanageable, investment affs are nearly impossible to debate, they shift the core focus of the resolution which is about the production of energy, the NDT is the time for our topic research to shine not for dodgy affs that shirt core debates.

Even if this one didn’t their interpretation definitely justifies it

### Topicality

#### Reasonability is impossible – it’s arbitrary and undermines research and preparation

Resnick, assistant professor of political science – Yeshiva University, ‘1

(Evan, “Defining Engagement,” Journal of International Affairs, Vol. 54, Iss. 2)

In matters of national security, establishing a clear definition of terms is a precondition for effective policymaking. Decisionmakers who invoke critical terms in an erratic, ad hoc fashion risk alienating their constituencies. They also risk exacerbating misperceptions and hostility among those the policies target. Scholars who commit the same error undercut their ability to conduct valuable empirical research. Hence, if scholars and policymakers fail rigorously to define "engagement," they undermine the ability to build an effective foreign policy.

## K

### Alternative

#### The political is a mutually exclusive clash over ideologies and politics are what those particular ideologies are. The affs politics are depolitisizing because they assume the inevitability of the current energy regime and force more inputs into it rather than questioning if the lifestyle it supports are beneficial at all, changing our way of life is non negotiable even though all of their advantages support the hypothesis that our current energy regime is screwed and is causing the exploitation of billions in such a way that all of humanity is threatened, this is our POVERTY PRODUCTION LINK

#### Taking a step back from energy production and questioning who energy benefits and why we use it is a prerequisite to a functioning energy politics and reshapes the political by acknowledging the failiure of politics to account for everyones aggregate interests, that’s Hilyard

#### This means the affirmative is incapable of predicting energy markets, their assumption that the future is an extension of the status quo means they cannot account for scenerios that are not desirable for their authors,

Labban 2010

Mazen, Preempting Possibility: Critical Assessment of IEA’s *World Energy Outlook 2010*, International Energy Agency, World Energy Outlook 2010, Paris: International Energy Agency, http://www.academia.edu/1424109/Preempting\_Possibility\_Critical\_Assessment\_of\_the\_IEAs\_World\_Energy\_Outlook\_2010

Growing uncertainty about energy markets following the crises of the 1970s boosted long-term energy forecasting as a planning device to prepare for an increasingly unpredictable future, on one hand, and as a techno-scientiﬁc(read: politically neutral and respectable) support for public policies ostensibly aimed at increasing energy security and environmental protection, on the other. Long-range forecasts, however, have invariably failed to produce accurate predictions about all aspects of energy markets: primary energy supplies, energy substitutions, the relative shares of different fuels in the energy mix, aggregate and sectoral energy demand, as well as carbon emissions. 6 Because they rely on trend projections, forecasts also rely on an assumption that the future is a smooth, gradual extension of the present at a constant rate with no structural changes or major interruptions or aberrations. They also rely on empirical correlation rather than causality and cannot therefore explain underlying forces that drive demand, price, etc. **Thus forecasts cannot predict a future that looks very different from the present, let alone explain how possible futures might unfold, which makes them useful only in short-term, business-as-usual projections**. Because of such inherent limitations, which prevent forecasts from accurately predicting long-term technical developments, capital markets and investment climates, let alone even more unpredictable processes such as government policies and geopolitical conﬂict, energy analysts, including the economists at the IEA, have shifted from long-range predictive forecasts towards more normative scenario building in the analysis of long-range energy-related developments. This technical move has a political dimension that is worth pondering in order to shed critical light on the signiﬁcance of the WEO 2010 scenarios. Scenario analysis has its origins in corporate and military strategic planning. 7 It was developed by Herman Kahn at the RAND corporation in the1950s — to help the US Air Force think about ‘the unthinkable’ — and pioneered by Shell in the early 1960s, initially as an internal communications vehicle, to help the company respond more readily to unexpected develop-ments in energy markets that might affect the price of oil. Whereas forecasts predict what is most likely to happen in the future given current trends and projections, scenarios contemplate what is possible if certain choices are made from within a hypothetical range of possibilities which typically includes a reference case describing what would happen if no action is takento alter the existing state of affairs in any fundamental manner. For this reason, scenarios not only describe hypothetical futures but must also prescribe pathways and roadmaps, policies and actions, and identify ways and meansto arrive at a desirable future and avoid undesirable fate. Unlike forecasts,in which the future is determined by projections of current trends, scenar-ios assume a less deterministic development that allows subjects to makechoices and whose agency, not the correlation of empirical facts, determines possible futures. Scenarios are ‘desiring machines’, to borrow a term from Deleuze and Guattari (1983): at the same time that they produce the desired future, they also produce the subject and mechanism by which to actualize it. This occasionally operates in the form of blackmail: coercing action in the present by showing the dire consequences of not acting. Despite obvious differences and assertions to the contrary, energy scenarios are one type of predictive forecast which, however, does not treat current circumstances and trends as immutable, therefore allowing itself ﬂexibility in projecting into the future (and an about-face if the future turns out differ-ently) in order to effect change in the present. For one, energy scenarios rely on forecasts about economic growth, population growth, energy demand, production and generation capacities, prices and costs, etc., hence the possibilities they construct are based on a set of predictions. Also, forecasting is often negatively implicit in scenario analysis. The authors of WEO 2010, as of other Outlooks, are adamant that their scenarios are not forecasts. Yet, all three WEO 2010 scenarios are forecasts about the state of the global economy in that they assume continued economic growth. They also assert that no matter what it will look like, the future is certainly not going to look like the present because WEO 2010 predicts that governments will act on their policy promises, no matter how weakly, and in predictable manner: ‘it is certain that energy and climate policies in many — if not most — countries will change, possibly in the way we assume in the New Policies Scenario’(p. 62). Thus, eliminating the abominable which is also impossible, WEO 2010 scenarios lay out two alternative futures that differ only quantitatively — one desirable, the other ‘realistic’, or likely. The possible becomes what ensues from action according to the scenario’s prescriptions or from absolute lack of action and this is effected by actualizing future events and processes that may or may not occur, depending on what course of action governments take or fail to take in the present. Scenarios limit what is possible to what is desirable for their authors, or to its exact opposite, and exclude possibilities that do not fall within this range. At the moment that scenarios produce possibilities they negate the very notion of possibility.x

### Framework

#### The affirmatives call to action is premised upon advantages and assumptions about energy that are preceded by prior questions about wheather these are correct premises or goals at all. Our understanding of the world is influenced by the constructions of social reality that comes from discourse of knowledge, our methodological critique is the only way to examine the more suble implications of the plan’s framing

#### *Counter-interpretation* – debate should allow for criticism of the underlying assumptions behind the affirmative. Its not enough for the aff to fiat their plan and claim advantages against our critique, they have to debate our critique from the perspective of impact calculus. Representations have to be considered in how they formulate the conclusions that their policy recommendation relies upon. Our interpretation is necessary to capture the race to the middle – must not focus on politics to the exclusion of engagement with what comprises “the political.”

#### ---Framing determines policy effectiveness --- 90% of policy errors emerge from the flawed and deterministic lens of security.

Lowth 2011

Colonel R. G., British Army, ‘Securitization’ and its effect on Strategic Thinking, SEAFORD HOUSE PAPER, Royal Defense Studies

A frame is ‘a perspective from which a problematic situation can be made sense of’.4 Framing sets a particular context. It shapes perceptions, and influences thinking and behaviour (Haider-Markel et al, 2006; Bradley, 2011).5 The re-framing of issues (ie. ‘reinterpreting their meaning and re-perceiving the situation’ (ibid)) is also potentially transformative.6 Much mistaken thinking and associated flawed behaviour is attributed, with authority, to mis-perception: ‘Around 90% of errors in thinking ... arise from errors of perception (Carr, 2010:5).7 Indeed some afford perceptions not just a primary but an exclusive explanatory role: ‘Perception is all there is’ (Peters and Austin, 1994:71). The ways in which problems are articulated and interpreted, in terms of their essential ‘form or origin’, fundamentally affects the strategies developed to resolve them (Goffman, 1986:10). The process of framing influences strategic thinking because it shapes a priori understanding, organisation and explanation: ‘Problems arise as much from the meaning that people involved give them as from the facts of the situation’ (Martin, 2002:28). Framed thinking is inherently convergent, focused and directed as if by a lens, but the process is neither objective nor universal; it varies between individuals and communities, and alters over time. Framing involves (re)definition. Words are critical and their impact, albeit invariably subconscious, can be profound: ‘There is nothing outside the text’ (Derrida, 1976:158). The cognitive linguist George Lakoff challenged his students not to think of an elephant – but none could avoid doing so. The word alone created an irresistible frame: Every word, like elephant, evokes a frame, which can be an image or other kinds of knowledge ... the word is defined relative to that frame (Lakoff, 2004:3). Framing is more than just associative, however; it also tends to be partial: When the word tax is added to relief, the result is a metaphor: Taxation is an affliction, the person who takes it away is a hero, and anyone who tries to stop him is a bad guy. This is a frame ... made up of ideas, like affliction and hero (ibid). Moreover, framing – as a form of linguistic construction – can be purposefully partial: Framing is about language that fits your worldview, [but] it is not just language. Ideas are primary — and the language carries those ideas, evokes those ideas (ibid). The language of security is similarly evocative, partial and inherently political. The theory of securitization within international relations – the use of the term ‘security’ to elevate an issue above and beyond normal politics – is remarkably similar to that of framing: The distinguishing feature of securitization is a specific rhetorical structure ... the staging of existential issues as of supreme priority. The process ... a speech-act ... causes the actor to operate in a different mode than he would have otherwise (Buzan et al, 1998:26,30). Both the generic process of framing and the specific example of securitization: ‘construct discourses through which the world comes to be perceived’ (Henry, 2002:68). They are both potentially powerful forms of sense-making. And yet, curiously, the two are seldom connected explicitly.8 Debates about securitisation are conducted within the milieu of security studies; they tend to focus on how issues become characterised as threats, rather than on the ramifications. Those concerned about framing, on the other hand, operating principally within psychology and its fields of application (behavioural sciences, sociology, media studies etc) tend to address much more keenly the cognitive implications, especially the creation of alternative world views, the colouring of perceptions, and associated influences on decision-making. This paper draws upon both fields of research to explore the framing effect of securitization on strategic thinking.9 Starting from the premise that: ‘By saying the word [security], something is done’ (Wæver, 1995:55), it is argued that: − (A part of) what securitization – as a form of discourse – ‘does’, is frame − In the context of strategy, this matters (so strategists should be aware). thinking. − A conscious process of de-securitization can re-frame thinking (with potentially beneficial results). The increasing breadth of affairs portrayed as ‘security issues’ – food, water, the environment, as well as energy – makes it imperative, in an ‘era of security obsessionism’ (Charrett, 2009:11), for policy makers and strategists to appreciate the cognitive influence of securitization. However, while both framing and securitization are periodically characterised as negative, this dissertation makes no such judgment – either in general, or in relation to European energy supply. The intention here is to demonstrate instead that securitization does frame strategic thinking, and that this matters: ‘Designating an issue as a matter of security is not just a theoretical question but caries ‘real-world’ significance’ (Hough, 2004:14).

#### Aff choice is a sham that isn’t based in the resolution. You aren’t allowed to pick the authoritative way the world works just because you spoke first. Reciprocity demands that the negative get to clash with their assumptions.

#### Predictability is a choice. We looked at the resolution and saw one interpretation of ground, they saw another. In order to win ground arguments, they need to explain why the ground they want is superior to the ground we offer.

#### Advocacy offense trumps their impacts. It’s better to have a slightly worse debate about an important subject than a fair and deep debate about one that doesn’t matter. Fairness is only a means to an end. If we prove that we lead to better discussions, you should vote neg.

#### Our critique raises issues around which there is a large amount of literature. They can defend the positivist means of thinking about international relations with china – all of our claims are backed up by evidence specific to the formulation of policy recommendations for dealing with china.

### Perm

#### No net benefit to the perm, we are critiquing the premises the aff has for the plan, either it still links or it severs our of those. Severance is a reason to reject the team, makes the aff a moving target preventing any stable links which is nessesary for neg ground.

#### It can’t solve---1nc Hildyard evidence says we need a therapeutic step back from energy production to reframe discussions surrounding energy security, their constant call for pragmatism with the permutation frames the debate in the same term wrigging the game towards productivism.

Hildyard Lohmann & Sexton 2012

Nicholas, founder and Director of The Corner House, Larry, author of the book “Carbon Trading: A Critical Conversation on Climate Change, Privatization and Power” & works at the British NGO The Corner House, Sarah, a director of The Corner House, Energy Security For What? For Whom? The Corner House, http://www.thecornerhouse.org.uk/resource/energy-security-whom-what

For time-pressed, slogan-bound, “must-be-ready-with-a-response” policy analysts and politicians, the invitation to reconsider such a seemingly settled concept as “energy” may look like an irksome invitation to navel-gaze. What does it matter if many societies – perhaps even the bulk of humanity – do not view a charcoal fire and a bullock drawing a plough through a field as twin instances of “energy consumption”? Far more important is the plight of the 2.7 billion people who rely on traditional biomass for cooking at the expense of forests and health; the 1.3 billion people who do not have access to electricity and thus the means to be “productive citizens”;2 the increasing competition for energy resources as the middle classes in China, India and Brazil weigh into the global mêlée for consumer goods; the need to assuage worried (Northern) consumers that the lights will not go out; and, above all, the threat that resource scarcities pose to continued economic growth. Who cares how or why fossil-fuelled capitalism is tied up with the evolution of a novel conception of energy? What matters is whether this gas pipeline should be built, that nuclear plant commissioned, or that LNG terminal financed. The pressing task is how to make the distasteful tradeoffs dictated by the realpolitik of securing energy for the future – human rights versus access to gas, maintaining jobs versus permitting pollution, leaving future generations with irresolvable problems of nuclear waste versus cutting carbon dioxide emissions. Such apparent pragmatism is understandable – but, in the end, unpragmatic. In today’s world, “energy” is about far more than pipelines and power stations, transmission lines and oil contracts: it is a system of economic and political relationships that weaves and reweaves the connections between corporations, governments, investors, human rights activists, environmentalists, the military, scientists, the media, trade unions and consumers alike into constantly shifting networks of power that serve to reproduce “the world that Energy begat”. No decision related to upper-case or abstract Energy (see pp.12ff) can escape the influences that such networks of power exert: Energy with a capital “E” not only frames the decision; it structures the solution, trapping the critical and the uncritical alike. To respond only to the daily froth of upper-case Energy talk – which power station? where? fuelled by gas or coal? – is to remain hostage to a dynamic that simply reinforces and reproduces the problems that Energy represents. Such “pragmatism” has helped shape an “energy security” agenda that mischaracterises the many energy scarcities – and insecurities – experienced by poorer people; promotes a response that has little to do with ensuring that everyone has the energy to meet their basic needs and everything to do with creating new sources of accumulation; and that disrespects the limits posed by climate change and resource depletion to endless economic growth. The result is a wave of new enclosures that, in addition to creating new scarcities (not only of energy but also of food, water, land and other necessities of life) are making a transition away from fossil fuels far harder to achieve

#### ---the permutations can only steamroll true politics because in its rush to include everything, it leaves no space for opposition or dissensus, refusing the antagonism between the alternative and the plan denies proper political space.

Swyngedouw 2009

Erik, Geography @ School of Environment and Development Manchester University, Climate Change as Post-Political and Post-Democratic Populism, Paper presented at DVPW conference, Kiel, Germany, 22-25 September

Consensually established concerns, like climate change, structured around ecologies of fear -- threats that may ultimately undermine the co-ordinates of daily life – and sustained by a universalising populist discourse express and sustain the deepening of a post-political condition. The latter is, in turn, institutionalised through forms of post-democratic governing. Post-politics is marked by the predominance of a managerial logic in all aspects of life, the reduction of the political to administration where decision-making is increasingly considered to be a question of expert knowledge and not of political position. It is accompanied by the diffusion of governance into a host of non-state or quasi-state institutional forms and actors, and fosters consensual understandings of political action and the particularization of political demands. Post-politics refers to a politics in which ideological or dissensual contestation and struggles are replaced by techno-managerial planning, expert management and administration, “whereby the regulation of the security and welfare of human lives is the primary goal” (Žižek, 1999). Whereas the proper democratic political recognizes the constitutive split of the people, the inherent antagonisms and heterogeneities that cut through the social, while presuming the quality of each and everyone qua speaking beings, the post-political disavows these antagonisms by displacing conflict and disagreement on to the terrain of consensually manageable problems, expert knowledge, and interest intermediation (Swyngedouw, 2009a). ‘Doing politics’ is reduced to a form of institutionalized social management and to the mobilization of governmental technologies where difficulties and problems are dealt with by administrative and techno-organizational means (Nancy, cited in (Marchart, 2007: 68). In other words, politics as policy-makings (la politique) have sutured the space of the political as expressions of disagreement/dissensus (le politique) (Dikeç, 2005). Such post-political arrangement signals a depoliticised (in the sense of the disappearance of the democratic agonistic struggle over the content and direction of socio-ecological life) public space whereby adminsistrative governance defines the zero-level of politics (see (Marquand, 2004) (Swyngedouw, 2009d)). Proper political choice as the agonistic confrontation of competing visions of different socio-ecological order is foreclosed as the spaces of the political or sutured by totalising threats that permit only one choice or direction, one that can be ‘managed’ through dialogical consensual practices (Mouffe, 2005). Post-politics reject ideological divisions and the explicit universalisation of particular political demands (Žižek, 1999: 198). Post-politics is thus about the administration (policing) of social, economic, ecological or other issues, and they remain of course fully within the realm of the possible, of existing social relations, they are ‘the partition of the sensible’ (Rancière, 2001). “The ultimate sign of post-politics in all Western countries”, (Žižek, 2002: 303) argues, “is the growth of a managerial approach to government: government is reconceived as a managerial function, deprived of its proper political dimension”. “In post-politics, the conflict of global ideological visions embodied in different parties which compete for power is replaced by the collaboration of enlightened technocrats (economists, public opinion specialists …) and liberal multiculturalists; via the process of negotiation of interests, a compromise is reached in the guise of a more or less universal consensus. Post-politics thus emphasizes the need to leave old ideological visions behind and confront new issues, armed with the necessary expert knowledge and free deliberation that takes people’s concrete needs and demands into account” (Žižek, 1999: 198). “The political (the space of litigation in which the excluded can protest the wrong/injustice done to them), [is] foreclosed … It is crucial to perceive … the post-political suspension of the political in the reduction of the state to a mere police agent servicing the (consensually established) needs of the market forces and multiculturalist tolerant humanitarianism” (Žižek, 2006b: 72). Post-politics refuses politicization in the classical Greek sense, that is, as the metaphorical universalization of particular demands, which aims at “more” than negotiation of interests. Politics becomes something one can do without making decisions that divide and separate (Thomson, 2003). Difficulties and problems, which are generally staged and accepted as problematic, have to be dealt with by means of compromise and the production of consensus. The key feature of consensus is “the annulment of dissensus ….. the ‘end of politics’” (Rancière, 2001: §32). Of course, this post-political world eludes choice and freedom (other than those tolerated by the consensus) and effaces the proper political from the spaces of public encounter. For Rancière, this disavowal of the political and the staging of politics as a form of consensual management of the givens of the situation as one of the tactics through which spaces of conflict and antagonism are smoothened and displaced (Rancière, 1998). This ‘re-treat of the political’ (Lacoue-Labarthe & Nancy, 1997) and its replacement by consensual policing arrangements is organised through post-democratic institutions of governance, like the Kyoto protocol and other public-private bodies, that increasingly replace the political institutions of government (see (Crouch, 2004)). Post-democratic institutional arrangements are the performative expression of a post-political condition. For Rancière (Rancière, 1998: 102), “Postdemocracy is … a democracy that has eliminated the appearance, the miscount, and dispute of the people and is thereby reducible to the sole interplay of state mechanisms and combinations of social energies and interests.” Urbaniti defines these post-democratic institutions of ‘governance-beyond-the-state’ (see (Swyngedouw, 2005)) as follows: “Governance entails an explicit reference to ‘mechanisms’ or ‘organized’ and ‘coordinated activities’ appropriate to the solution of some specific problems. Unlike government, governance refers to ‘policies’ rather than ‘politics’ … . Its recipients are not ‘the people’ as collective political subject, but ‘the population’ that can be affected by global issues such as the environment, migration, or the use of natural resources” ((Urbinati, 2003: 80), cited in (Mouffe, 2005)). This post-democratic constitution reconfigures the act of governing to a stakeholder based arrangement of multi-scalar governance in which the traditional state forms partake together with experts, NGOs, and other ‘responsible’ partners (while ‘irresponsible’ partners are excluded). They operate with a generally accepted consensus of a global and largely (neo-)liberal capitalism, the right of individual choice, an ecological awareness and the necessity to continue this, to sustain the state of the situation (that is allegedly in serious danger). Discussion and dispute are tolerated, even encouraged, in so far the general frame is not contested. Not only are radical dissent, critique, and fundamental conflict evacuated from the political arena (and relegated to the terrain of ‘extra-political’ and unauthorised violence), but the parameters of democratic governing itself are being shifted, announcing new forms of governmentality, in which traditional disciplinary society is transfigured into a society of control through democratically disembedded networks (like ‘the Kyoto Protocol’; ‘the Dublin Statement’, the ‘Rio Summit’, etc….). Conclusion: re-thinking the political environment “Against thoughts of the end and catastrophe, I believe it is possible and necessary to oppose a thought of political precariousness” (Rancière, 2004: 8). We have argued that the particular framing of climate change and its associated populist politics as outlined above foreclose (or at least attempt to do so) politicization and evacuates dissent through the formation of a particular regimes of environmental governance that revolves around consensus, agreement, participatory negotiation of different interests, and technocratic expert management in the context of a non-disputed management of market-based socio-economic organization. Even a cursory analysis of ‘green politics’, whether from the perspective of environmental movements (like Greenpeace) or environmental parties (the German Greens are a classic case), over the past few decades would signal their rapid transformation from engaging in a politics of contestation, organized acting, radical disagreement, and developing visionary alternatives to their integration into stakeholder based negotiation arrangements aimed at delivering a negotiated policy. A consensual post-politics emerges here, one that either eliminates fundamental conflict or elevates it to antithetical ultra-politics. The consensual times we are currently living in have thus eliminated a genuine political space of disagreement. These post-political climate change policies rest on the following foundations. First, the social and ecological problems caused by modernity/capitalism are external side-effects; they are not an inherent and integral part of the relations of liberal politics and capitalist economies. Second, a strictly populist politics emerges here; one that elevates the interest of an imaginary ‘the People’, Nature, or ‘the environment’ to the level of the universal rather than opening spaces that permit to universalize the claims of particular socio-natures, environments, or social groups or classes. Third, these side-effects are constituted as global, universal, and threatening. Fourth, the ‘enemy’ or the target of concern is continuously externalized and becomes socially disembodied, is always vague, ambiguous, unnamed and uncounted, and ultimately empty. Fifth, the target of concern can be managed through a consensual dialogical politics whereby demands become depoliticized and politics naturalized within a given socio-ecological order for which there is ostensibly no real alternative (Swyngedouw, 2007). The post-political environmental consensus, therefore, is one that is radically reactionary, one that forestalls the articulation of divergent, conflicting, and alternative trajectories of future socio-environmental possibilities and of human-human and human-nature articulations and assemblages. It holds on to a harmonious view of nature that can be recaptured while re-producing if not solidifying a liberal-capitalist order for which there seems to be no alternative. Much of the sustainability argument has evacuated the politics of the possible, the radical contestation of alternative future socio-environmental possibilities and socio-natural arrangements, and silences the antagonisms and conflicts that are constitutive of our socio-natural orders by externalising conflict. It is inherently reactionary. As Badiou (Badiou, 2005) argues, ‘proper’ politics must revolve around the construction of great new fictions that create real possibilities for constructing different socio-environmental futures. To the extent that the current post-political condition that combines apocalyptic environmental visions with a hegemonic neoliberal view of social ordering constitutes one particular fiction (one that in fact forecloses dissent, conflict, and the possibility of a different future), there is an urgent need for different stories and fictions that can be mobilised for realisation. This requires foregrounding and naming different socio-environmental futures and recognizing conflict, difference, and struggle over the naming and trajectories of these futures. Socio-environmental conflict, therefore, should not be subsumed under the homogenizing mantle of a populist environmentalist-sustainability discourse, but should be legitimised as constitutive of a democratic order. This, of course, turns the climate question into a question of democracy and its meaning. It asserts the horizon of a recuperated democracy as the terrain (space) for expressing conflict, for nurturing agonistic debate and disagreement, and, most importantly, for the naming different possible socio-environmental futures.

## States

### AT: links to politics

Avoids political consequences

Prasad, 12

(Sociology Prof-Northwestern, “State-level renewable electricity policies and reductions in carbon emissions,” Energy Policy, Volume 45, June)

Despite the hesitant pace of environmental policy at the national level, there is a proliferation of environmental policy at the state level, where ‘‘an almost stealth-like process of policy development’’ has been underway for over two decades (Rabe, 2004:11). Many state governments have determined that envir- onmental policy is necessary and feasible, and have experimented with several different policy approaches, particularly on the question of facilitating alternative energy. These state policies are surprising in many ways. For example, they are often driven by bipartisan coalitions, and, perhaps because of their **lower visibility**, they seem to have **escaped** the **partisan wrangling** that has limited national-level policy. Both George W. Bush and Christine Todd Whitman were pioneers of alternative energy policy at the state level, as governors of Texas and New Jersey respectively, before they went on to obstruct environmental policy at the federal level as president and head of the EPA (Rabe, 2004: 1). Texas, a state that produces reliably conservative and anti-environmental contingents at the national level, is a leader in wind energy (Rabe, 2004: 50). Environmental policy-making at the state level is pragmatic and catholic, with many different approaches being tried. Because electricity generation accounts for 41% of all CO2 emissions and is the largest single source of CO2 emissions (EPA, 2011:ES-8; Carley, 2011), many states have focused their efforts on the electric power sector. One of the main sites of policy innovation has been the attempt to increase the generation of electricity from renewable sources.

Low political visibility

Rabe, 4

(Prof of Public Policy-Ford School at Michigan, Statehouse and Greenhouse, P. 22)

But this is not what occurred in the states examined in this study. Instead, a much quieter process of policy formation has emerged, even during more recent years, when the pace of innovation has accelerated and the intent of many policies has been more far-reaching. This is not to suggest that climate-related episodes have been irrelevant or that leading environmental groups have played no role in state policy development. Contrary to the kinds of political brawls so common in debates about climate change policy at national and international venues, however, state-based policymaking has been far less visible and contentious, often cutting across traditional partisan and interest group fissures. It has, moreover, been far more productive in terms of generating actual policies with the potential to reduce greenhouse gas releases.

Informal nature allows states to escape backlash

Rabe, 4

(Prof of Public Policy-Ford School at Michigan, Statehouse and Greenhouse, P. 27)

Second, state-level policymaking is often quite different from what occurs in Washington. As at the federal level, state governments can bog down in partisan squabbles and succumb to the powers of influential interest groups. But in many states, policymaking is far more informal, and entrepreneurial opportunities may be considerably greater, than in Washington. In the absence of particularly strong opposition from interest groups, entrepreneurs may have a much better opportunity to establish and sustain supportive networks. These may involve other agencies, interest groups, or allied elcted officials and may have been established over an extended period, over a decade in some of the state climate change cases. Consequently, many state capitals may offer particularly promising entrepreneurshi. The mezzo level in many state agencies, such as environmental protection and energy, is much less densely staffed than in their federal counerparts, and the layers between an agency and the governor’s office are likely to be much thinner. This allows and individual to emerge as the trusted resident expert on a particular topic, such as climate change, able to get important messages to prominent places in the state governance structure p opportunities, particularly for relatively “new” issues for which and infrastructure of established policies and interest group positions has not been created.

### Spillover

#### States adopting clean energy banks assure specialization---it’s a necessary condition for renewable energy to take off and successfully facilities it to transform the US’s energy infrastructure

Sims 12 (Doug, is the NRDC’s Energy Project Finance Specialist, “Clean Energy Finance 3.0 - The Rise of the State Green Banks,” http://switchboard.nrdc.org/blogs/dsims/clean\_energy\_finance\_30\_-\_the.html)

Informed by OPIC and Ex-Im Bank and constituted along the lines described in the report, state level Green Banks are a powerful tool for many reasons. Here are some of them. Green Banks make public dollars invested go farther and give the public a return on its investment. Because of the underlying quality of investments in mature clean technologies (stemming from the use of solid underwriting criteria and risk management techniques), a well-structured and professionally managed Green Bank will have a very low default rate, earn revenues from interest and fees and be self-sustaining. As the report notes, OPIC has recorded a positive net income every year since its founding in 1969. Green Banks stimulate additional private sector investment. Currently, due to the European banking crisis and other factors, there is a limited amount of bank debt available to fund clean energy projects. A Green Bank lending alongside private lenders will create capacity for those lenders to participate in more deals. This is particularly important in large projects, like offshore wind. In areas like financing energy efficiency retrofits in buildings where banks need an incentive to enter an unfamiliar market, the Green Bank can provide tailored insurance to lenders to enable them to take the leap. NRDC and the City of New York have pioneered just such an approach with the New York Energy Efficiency Corporation (NYCEEC). A properly structured Green Bank will never “crowd out” private investors since its role is not to compete with private investors but to facilitate additional investment by them. Indeed, as the purely private market evolves to fill the gap, the Green Bank should change its products and sector focus to fill the then-current “green need”. Green Banks morph to fit to local conditions. In keeping with tried and true American tradition, each state can act a laboratory, borrowing what works from other states but ultimately designing its own program to fit its own needs. As discussed in detail in the report, Connecticut last year established the first state Green Bank though new legislation that repurposed several existing funds and programs and it is now examining how to effectively scale up PV market in state. Other states may decide to create “financing windows” within an existing clean energy policy framework without passing new legislation or create banks that combine the financing of clean energy with the financing of infrastructure like bridges and roads. It’s just a matter of working with stakeholders to find the sweet spot under the circumstances. Green Banks institutionalize sustainable finance. The transition to a more sustainable clean energy economy will be a long one and it will need different innovative financing tools over time. A professionally staffed, self-sustaining Green Bank will be flexible enough to meet those challenges and will not be dependent on appropriations which dry up during times, such as now, when state balance sheets are under pressure. Imagine what could happen if states across the country embraced the Green Bank model. They could make a sizeable difference in the deployment of low-pollution energy technologies. These banks have the potential to transform our energy system, along the way creating jobs for American workers, protecting our health and safeguarding the planet.

### at: fed certainty key to subsides

Clean Energy Finance Banks solve the need for subsides---private capital leverage reduces costs and provides certainty---our evidence assumes the phase out of federal incentives

Berlin et al 12 (Ken Berlin Senior VP for Policy and Planning & General Counsel Coalition for Green Capital “State Clean Energy Finance Banks: New Investment Facilities for Clean Energy Deployment,” http://www.brookings.edu/~/media/research/files/papers/2012/9/12%20state%20energy%20investment%20muro/12%20state%20energy%20investment%20muro.pdf)

Given these challenges, states that want to realize the benefits of clean energy deployment should consider a new approach to funding clean energy programs. Specifically, they should investigate the possibility of developing state clean energy finance banks that use limited public dollars and leverage private capital to provide a combination of low-interest rate funding that makes clean energy projects competitive and low-cost 100-percent up-front loans for energy efficiency projects. Such an approach would address the deployment and diffusion challenges faced by clean energy technologies while recognizing that federal and state appropriations, tax credits, and other incentives and subsidies will be sharply diminished in the years ahead because of the budget crisis at all levels of government. Likewise, the development of such finance entities would address the need for states to develop a new paradigm for financing strong clean energy and energy efficiency projects as part of a push to develop strong regional industries. So-called “clean energy finance banks” or “green banks” are ideally suited to solve the present problems because they offer a practical way for states to make available leveraged, low-cost financing for project developers in their states. First, they can be developed out of existing state programs while bringing into the enterprise the equivalent of substantial new resources given their ability to leverage funds. Likewise, because the banks would provide debt financing, they would be repaid on their loans, putting them in the position to borrow funds and to establish revolving loan funds that would provide funds that could be reinvested without new sources of financing. Furthermore, clean energy finance banks, if established as independent institutions, would be able to issue revenue bonds without the full faith and credit of the state and without the restrictions facing states, which have limited borrowing capacity. Finally, clean energy finance banks could efficiently seek large investors with patient, longterm capital who are seeking a long-term, conservative rate of return, such as pension fund investors. Clean energy finance banks, in this regard, hold great promise for financing both energy efficiency projects and the deployment of clean energy projects with low technology risks, including projects using existing wind and solar technologies. Such clean energy projects, because of their low technology risk and low financing risk (particularly when they have entered into long-term power purchase agreements for the purchase of their output) should be able to attract bond purchasers interested in long-term, safe returns and thus willing to accept rates of return at a conservative level. By providing standby purchase agreements or total return swaps, the clean energy finance bank could even increase the potential pool of tax equity investors by lowering the risk profile of such investments. At the same time, state clean energy finance banks could also be expanded to cover innovative, riskier new technologies and manufacturing facilities, although each of these propositions presents its own risk factors and would require a different funding “window” within the bank. Along these lines, state-organized clean energy finance banks offer a practical way for states to make available low-cost financing for project developers in their regions and keep the clean energy economy growing. Currently, a significant amount of relatively low-cost credit is available for at least large energy project developers. Studies that the Coalition for Green Capital (CGC) has conducted, however, show that lowering the cost of clean energy loans by 225 basis points and providing longterm loans to all developers would lower the cost for a clean energy project by 15 to 20 percent (See Figure 3). 21 CGC thinks that state clean energy finance banks could provide loans at this rate differential. A clean energy finance bank would establish loan loss reserves through credit subsidy fees or using bank capital that is replenished by credit subsidy fees. 22 This would be an important gain. A 15 to 20 percent reduction in the cost of a wind or solar project would make many projects cost-competitive with conventional generation. For other projects, clean energy finance banks’ offer of a low-interest rate tranche, rather than the full cost of the project, might be enough for the project to proceed. In yet other cases, the banks’ financing would not replace all of the tax credits and incentives that are likely to be withdrawn for budget reasons but it would substantially reduce the need for such supports. The need for financing of energy efficiency projects is different. When faced with a choice of spending scarce dollars on energy efficiency rather than other uses, most homeowners and small businessmen, and even many large businesses, choose projects other than energy efficiency. As a result, to ensure adequate demand for energy efficiency projects, most energy programs subsidize the cost of energy efficiency projects, and many experts believe that 100 percent subsidies or financing of the up-front costs of energy efficiency projects is needed, 23 with repayment limited to an estimate of the expected amount of the energy savings. 24 The latter limitation becomes difficult if the cost of the project is too high since the cost of repayment at high interest rates would eventually exceed the estimated value of the energy savings. Currently there are low-cost financing programs but often the interest rates are held down by interest rate buy-downs. These types of programs will be very hard to bring to scale in an austere budget environment and in many places it is difficult to obtain 100-percent up-front financing. A clean energy finance bank should be able to provide financing at low enough rates after a loan loss reserve is established to avoid the need for interest rate buy-downs and help bring energy efficiency projects to scale. In any event, the low-cost lending through state clean energy finance banks should be able to substantially reduce the cost of clean energy projects and so make many of them cost-competitive with traditional power generation while reducing their reliance on subsidies.

### at: state budgets=no funds

#### ---Banks solve, they raise capital from foundation grants, make money from interest rates, the bank loans out the money so it doesn’t increase state debt, that’s muro

#### Any required capital is easily reallocated

Malewitz 12 (Jim Malewitz, Staff Writer “As Washington Gridlock Persists, States Get Creative in Funding Renewable Energy,” http://www.pewstates.org/projects/stateline/headlines/as-washington-gridlock-persists-states-get-creative-in-funding-renewable-energy-85899383075)

The Connecticut program was a large influence on Hawaii's proposal, and renewable energy advocates hope it will catch on in several other states. Ken Berlin, a policy expert with Coalition for Green Capital, the Washington, D.C.-based group that helped design the state legislation, says as many as 10 states, including New York, California and Ohio, are taking hard looks at the model. Berlin says the prospect of creating a so-called "bank" needn't be daunting for states. "We're not asking for new funds," he says. "We're just asking to re-appropriate funds." Milford, of the Clean Energy Group, agrees, adding that some states could achieve similar goals outside of the "bank" model. "States can do many of these things through existing institutions," he says.

### Modeling

States restore US leadership---their economies are huge and the world is watching them

Northrop and Sassoon 8 (Michael Northrop is Program Director for Sustainable Development at the Rockefeller Brothers Fund. David Sassoon runs SolveClimate.com, a Web site dedicated to debating and advancing solutions to global warming. “States Take the Lead on Climate,” http://e360.yale.edu/feature/states\_take\_the\_lead\_on\_climate/2015/)

The federal government in the Bush era has done little to tackle our most pressing environmental problem — climate change. Yet there is one bright side amid Washington’s inaction: Many states have been stepping into the void and adopting comprehensive climate change policies that can be a model for the coming federal legislation to slow global warming. The leadership of states such as California, Arizona, Connecticut, New Jersey, and Florida is crucial not only because it provides a template for federal climate legislation that will no doubt be adopted under the next presidential administration. State action is also vital because among the top 75 emitters of greenhouse gases worldwide, half are U.S. states. Individually, the size of many of these state economies rivals those of most countries. State climate policy initiatives — though not yet implemented on a national scale — are collectively among the most advanced anywhere in the world. They provide a profound but largely unrecognized platform for national action, and for a potential reassertion of global environmental leadership by the United States. Indeed, state climate initiatives have provided hope to those in the global community who have waited patiently for the United States to engage meaningfully in international climate efforts. The decisive action of many states — 27 currently have or are developing comprehensive climate action plans — is taking on added importance for another reason: Innovative state climate and energy policies are showing skeptics in this country and in Congress that, rather than being a burden, ground-breaking energy conservation and renewable energy programs can create economic opportunity. Many of the more than 300 climate policies and mechanisms devised by various states will provide new business opportunities, as all sectors of society — housing, industry, commerce, energy, agriculture, forestry, transportation, waste management — adopt greater energy efficiencies and move to alternative sources of energy. Against the backdrop of inaction by the Bush administration and Congress, the states have moved farther and more rapidly than most people realize. Indeed, this September, ten mid-Atlantic and Northeastern states will begin implementing a cornerstone of effective national or global climate policy: A so-called “cap-and-trade” system under which emitters of greenhouse gases — in this case, power plants — must begin steadily reducing carbon emissions and can sell a portion of their emissions allotment once they begin implementing efficiencies. Power plants that fail to meet their emissions targets could buy allotments from more efficient utilities.

### AT: Theory

#### Future academics---learning about state policy is of vital importance, its increasingly relevant

Watkins 12 – Thesis for partial fulfillment of the requirements for the Degree of Bachelor of Arts with Departmental Honors in Economics at Wesleyan University [Miles, April 2012, “Party in the House? Examining the Effects of Political Control on State Government Spending,” Page 3-4, <http://wesscholar.wesleyan.edu/cgi/viewcontent.cgi?article=1796&context=etd_hon_theses>]

Focusing on American state governments, rather than those at the national or local levels, offers *several methodological advantages*. The states together provide a cross-section of data that is consistent over time, where all units face a “common institutional framework and cultural milieu” (Dye 1966 p. 11). This would not be available in a study of federal spending, and allows for the use of more powerful and precise econometric techniques; for example, I am able to eliminate from my regressions the perturbing effects of a state’s culture, geography, and political history. State data also trumps that of local governments, which suffer from incomplete and highly disaggregated information. Especially pertinent to my study is the fact that the majority of municipalities hold nonpartisan elections; this would prevent me from using an unbiased sample in my regressions (Ferreira & Gyourko 2009). Overall, little is sacrificed by choosing to study the states; the results of my study of state governments are largely applicable to local and federal ones as well, since in general there are great similarities in politics between different levels of American government (Gray et al. 1985 p. 89). Beyond those statistical issues, state public policy is also worthy of analysis in and of itself. States provide residents with crucial public goods and services, such as welfare, higher education, and transportation infrastructure. Further, in light of an increasingly polarized and gridlocked Washington, in the coming years state governments will likely take on more importance in determining the economic and social future of the United States (Katz & Bradley 2011).

## 1NR

### Impact

#### Comprehensive immigration reform is key to the economy and highly skilled workers

Farrell 12/13/12 (Chris, a contributing editor for Bloomberg Businessweek. From 1986-97, he was on the magazine's staff, as a corporate finance staff and department editor and then as an economics editor. Farrell wrote Right on the Money: Taking Control of Your Personal Finances and Deflation: What Happens When Prices Fall? Among Farrell's many awards are a National Magazine Award, two Loeb Awards, and the Edward R. Murrow Award. Farrell is a graduate of the London School of Economics and Stanford University. “Obama’s Next Act: Immigration Reform” <http://www.businessweek.com/articles/2012-12-13/obamas-next-act-immigration-reform>)

Washington won’t get much of a reprieve from verbal pyrotechnics once the drama of the fiscal cliff is over. Up next: major immigration reform. President Obama has made it clear that a comprehensive overhaul of the nation’s badly frayed immigration system is a second-term priority. Many Republican lawmakers are convinced the big takeaway from the 2012 election results is that conservatives need to rethink their hard-line stance on immigration—including illegal immigrants. Here’s what Washington should do before tackling the tough job of rewriting the immigration laws: Create a quicksilver path to citizenship for the 11 million to 12 million undocumented workers in the U.S. (excluding the small number convicted of violent crimes or multiple felonies). The shift in status acknowledges that these foreign-born newcomers, like previous generations of immigrants, overcame significant obstacles to come to the U.S. to make a better life for their families. Illegal immigrants are neighbors heading off to work, sending their kids to school, and attending church. Their everyday lives would vastly improve by moving from the shadows of society into the mainstream. More important from a public-policy perspective, the change would give a boost to the economy’s underlying dynamism. “What you’re doing in the short run is making it easier for workers to move between jobs, a relatively small effect,” says Gordon Hanson, a professor of economics at the University of California at San Diego. “The larger effect from eliminating uncertainty for these immigrants is creating incentives for them to make long-term investments in careers, entrepreneurship, education, homes, and community.” Let’s state the obvious: A rapid transformation of illegal immigrants into legal immigrants isn’t in the cards. Amnesty—let alone citizenship—is an anathema to large parts of the electorate. Too bad, since the scholarly evidence is compelling that immigrants—documented or not, legal or illegal—are a boon to the net economy. “Competition fosters economic growth,” says Michael Clemens, senior fellow at the Center for Global Development in Washington. The economic return from attracting skilled immigrants to the U.S. is well known. Foreign-born newcomers account for some 13 percent of the population, yet they are responsible for one-third of U.S. patented innovations. The nation’s high-tech regions such as Silicon Valley, the Silicon Hills of Austin, Tex., and Boston’s Route 128 rely on immigrant scientists, engineers, entrepreneurs, and employees. Better yet, economist Enrico Moretti at the University of California at Berkeley calculates that a 1 percent increase in the share of college-educated immigrants in a city hikes productivity and wages for others in the city. Less appreciated is how much the economy gains from the efforts of less-skilled immigrants, including illegal workers. Throughout the country, foreign-born newcomers have revived beaten-down neighborhoods as immigrant entrepreneurs have opened small businesses and immigrant families have put down stakes. Immigrant workers have played a vital role keeping a number of industries competitive, such as agriculture and meatpacking. Cities with lots of immigrants have seen their per capita tax base go up, according to David Card, an economist at UC Berkeley. Despite the popular impression that a rising tide of immigrants is associated with higher crime rates, research by Robert Sampson of Harvard University and others offer a compelling case that it’s no coincidence that the growing ranks of immigrants tracks the reduction in crime in the U.S. But don’t newcomers—legal and illegal—drive down wages and job opportunities for American workers? Not really. A cottage industry of economic studies doesn’t find any negative effect on native-born wages and employment on the local level. On the national level the research shows the impact on native-born Americans doesn’t drift far from zero, either positively or negatively. “In both cases, immigrants are more likely to complement the job prospects of U.S.-born citizens than they are to compete for the same jobs as U.S.-born citizens,” Giovanni Peri, an economist at the University of California at Davis, writes in Rationalizing U.S. Immigration Policy: Reforms for Simplicity, Fairness, and Economic Growth. The counterintuitive results reflect a numbers of factors. Immigrants expand the size of the economic pie by creating new businesses, new jobs, and new consumers. Middle-class families find it easier to focus on careers with affordable immigrant labor offering gardening, child care, and other services. Many illegal immigrants aren’t fluent in English, so they don’t compete for the same jobs as native-born workers. Another factor behind the lack of direct competition is the higher educational level of native-born Americans. In 1960 about half of U.S.-born working-age adults hadn’t completed high school, while the comparable figure today is about 8 percent. The real downside concern is on the fiscal side of the immigrant ledger. Yes, more taxes would go into Social Security, Medicare, and the like with legalization, but more people would qualify for Medicaid, welfare, and other benefits. At the local level, many school districts are strained financially from educating immigrant children, legal and illegal. That said, the prospect of fiscal costs would diminish as newly legalized immigrant workers move freely around the country seeking jobs, entrepreneurs are comfortable expanding their payrolls, and immigrant parents push their children to live the American Dream. “Over time, as entrepreneurs emerge and families are better able to get their kids through high school and college, you’re reducing the long-run fiscal claim of the group,” says Hanson. There is no economic evidence that making roughly 6 percent of the workforce illegal will benefit the economy. Plenty of research supports the opposite case. A fast track to legality offers Washington a rare twofer: a just move that’s economically efficient.

High skilled workforce key to US clean tech leadership – solves warming

Norris 10--Teryn, "Racing for Clean Tech Jobs: Why America Needs an Energy Education Strategy", Daily Kos, March 18th, [http://www.dailykos.com/story/2010/3/18/847363/-Racing-for-Clean-Tech-Jobs:-Why-America-Needs-an-Energy-Education-Strategy](http://www.dailykos.com/story/2010/3/18/847363/-Racing-for-Clean-Tech-Jobs%3A-Why-America-Needs-an-Energy-Education-Strategy)

In the aftermath of the Great Recession, the United States faces serious questions about the future of its economy and jobs market. Where will the good jobs of the future come from, how do we prepare the American workforce, and what is our strategy to maintain economic leadership in an increasingly competitive world? A growing consensus suggests that clean tech will be one of our generation's largest growth sectors. The global clean-tech market is expected to surpass $1 trillion in value within the next few years, and a perfect storm of factors - from the inevitability of a carbon-constrained world, to skyrocketing global energy demand, to long-term oil price hikes - will drive global demand for clean-energy technologies. That is why the national debate about global clean-tech competitiveness is so important, sparked by the rapid entry of China and other nations. My colleagues and I recently contributed to the discussion with "Rising Tigers, Sleeping Giant," a large report providing the first comprehensive analysis of competitive positions among the U.S. and key Asian challengers. In order to compete, we found, "U.S. energy policy must include large, direct and coordinated investments in clean-technology R&D, manufacturing, deployment, and infrastructure." But even if the United States adopts a real industrial policy for clean energy, there is little evidence that our workforce is skilled enough to compete. Unfortunately, according to the Department of Energy, "The U.S. ranks behind other major nations in making the transitions required to educate students for emerging energy trades, research efforts and other professions to support the future energy technology mix." A competitive energy workforce requires much more than technicians and building retrofitters. Scientists, engineers, high-tech entrepreneurs, and advanced manufacturers will play a critical role, just as they have in strategic sectors like infotech, aerospace, and biotech. The federal government has started to address the need for green technician and efficiency retrofit training, such as with the Green Jobs Act, but it has not implemented an education strategy to keep the U.S. at the leading edge of energy science, technology, and entrepreneurship. Unfortunately, the majority of our colleges and universities lack degree programs focused on energy, and the U.S. power engineering education system is on the decline. Over the next five years, 45 percent of electric utility engineers will be eligible for retirement, along with 40 percent of key power engineering faculty at U.S. universities, according to a report by IEEE. "Engineering workforce shortages are already occurring," the report concludes. "We need more electrical engineers to solve industry challenges, and to build the 21st century electric power grid... Meeting these needs requires long-term investment now." Meanwhile, other countries are producing a substantially larger portion of scientists, engineers, and researchers that will benefit their clean-tech industries. Science and engineering make up only about one-third of U.S. bachelor's degrees, compared to 63 percent in Japan, 53 percent in China and 51 percent in Singapore, and the number of Chinese researchers is now on par with the United States (though some have pointed out that the quality of these graduates and researchers is not always comparable). "Over time," stated a recent report by the National Science Board, "the United States has fallen from one of the top countries in terms of its ratio of natural science and engineering degrees to the college-age population to near the bottom of the 23 countries for which data are available." The energy workforce deficit and STEM education gap will substantially limit the nation's ability to lead the clean-tech industry and accelerate clean energy development. As Nobel Laureate Paul Krugman put it, "If you had to explain America's economic success with one word, that word would be 'education.'" In order to succeed in the clean-tech industry, the U.S. must develop an energy education strategy to develop tens of thousands of advanced energy scientists, engineers, and entrepreneurs, as well as technicians.

### Uniqueness

Obama is using all of his PC on CIR---it will pass

CT Post 3/28 (“Immigration reform gaining support in Congress,” http://www.ctpost.com/local/article/Immigration-reform-gaining-support-in-Congress-4393187.php)

A Republican Party in desperate search for relevance to Latino voters. An expanded Democratic advantage in the Senate. A second-term President with his legacy on the line. Does all that add up to enough to break decades of impasse and produce comprehensive immigration reform? As expectations -- and tensions -- rise, the answer won't be long in coming. A bipartisan bill could be filed in the Senate as early as next week, followed in relatively short order by a House bill, also crafted by a bipartisan group, aiming at a compromise on the key issue of citizenship. The efforts are being applauded by President Barack Obama, who is using every ounce of his political clout to try to get comprehensive reform. Obama said the time has come "to work up the political courage to do what's required to be done." "I expect a bill to be put forward. I expect a debate to begin next month. I want to sign that bill into law as soon as possible," Obama said at a White House naturalization ceremony. In addition to the issue of eventual citizenship for 11 million undocumented immigrants, Congress is expected to address the need for temporary or guest worker programs. Congress last passed comprehensive bipartisan reform legislation in 1986, when President Ronald Reagan signed a law that granted citizenship to several million undocumented immigrants and created a guest worker program. Up until now, Republicans have opposed citizenship programs as an "amnesty" for lawbreakers who entered the country illegally, and labor has chafed at guest worker programs. But Republican losses in the 2012 elections and increased public support for reform have many in the GOP talking compromise. "If there is one issue that the two parties could produce something meaningful on in this Congress, it would be immigration," said Stephen Hess, a political expert at The Brookings Institution. Hess said an eventual bill "will have lots of provisos, and it will go back and forth, but it would be hard not to produce something given the general feeling that something has to be produced." More and more Republicans are moving toward immigration-reform measures as the party seeks to reach out to Latinos, the nation's largest -- and growing -- minority voting bloc. Public opinion is behind them. A recent poll showed 63 percent of Americans supported a path to citizenship for undocumented workers provided they meet certain requirements, according to a survey by the Public Religion Research Institute. Notable Republicans who have recently spoken in favor of compromise on citizenship proposals include Sen. Rand Paul, R-Ky.; former Mississippi Gov. Haley Barbour; and Rep. Paul Ryan, R-Wis. And a March report by the National Republican Committee, considered a "post mortem" on the 2012 elections, recommended the GOP embrace comprehensive immigration reform to shore up its shaky standing with minorities -- Latinos, in particular. Roy Beck, executive director of Numbers USA, which advocates lower numerical numbers on immigration, predicted a majority of Republican senators would oppose citizenship. Groups like Numbers USA are working to hold GOP senators in line. They sent 13,000 emails to Kentucky voters that claimed Paul's position was "more radical and pro-immigration than anything proposed by President Obama." The group has targeted Sen. Lindsey Graham, R-S.C., one of the "Gang of Eight" senators writing the Senate bipartisan bill, as a lawmaker who favors foreign workers over unemployed South Carolinians. Democrats from conservative-leaning states could also feel political heat. Beck said if five to 10 Democrats in the Senate oppose a bill, proponents would need 10 to 15 Republicans to reach the 60 votes needed to cut off debate and vote on legislation. "You do the math," Beck said. In 2007, an effort to cut off debate on a Senate immigration reform bill died on a 46-53 vote. But immigrant reform proponents, such as America's Voice, say there is a "tectonic shift" in the GOP, and the Democrats also have expanded their Senate majority to 53-45, plus two independents who caucus with them. They predict the Senate will muster the votes necessary to pass a reform bill. Still, it won't be easy. "We will have not only a few potholes, but a few near-death experiences along the way," said Frank Sharry, America's Voice executive director. All eyes are on Texas Sen. Ted Cruz, a Republican who like Paul was elected with Tea Party support. Cruz joined Sen. John Cornyn, R-Texas, who is up for re-election in 2014, in a measure to stall the fast-moving process in the Senate. Both say they oppose "amnesty." In a letter to Sen. Patrick Leahy, D-Vt., the Texas Republicans urged the chairman of the Judiciary Committee to open up the legislative process with hearings. The "Gang of Eight" senators -- four Democrats and four Republicans -- are expected to introduce their bill when Congress returns from Easter recess. Overall, the new Senate bill is expected to grant undocumented immigrants a path to citizenship within 13 years, similar to a proposal put forth by the White House, according to those familiar with the discussions. Undocumented immigrants would have to pay fines, back taxes, learn English and have no criminal record to work legally and become eligible for naturalization. Although no specific details have been released, senators involved in the process say the citizenship proposals would be contingent upon border-security benchmarks and high-tech measures to curb illegal crossings. Congress will return to an expected throng of thousands of immigrants, labor and immigrant rights supporters on the West Lawn of the Capitol next week. Advocates are also holding more than 200 events in 35 states during the congressional recess to rally support, said Sue Chinn, campaign manager for Alliance for Citizenship.

#### Obama wont XO

Hamilton 3/26 (Keegan Hamilton is a freelance journalist based in Seattle. He was formerly an editorial fellow and reporter for Village Voice Media, “How Obama Could (But Probably Won't) Stop Deporting Illegal Immigrants Today,” http://www.theatlantic.com/politics/archive/2013/03/how-obama-could-but-probably-wont-stop-deporting-illegal-immigrants-today/274352/)

The question, he says, is "whether coming into the country in violation of the immigration laws or overstaying a visa could be deemed an 'offense against the United States.'" But the president has broad powers of pardon, and it seems that Obama could exercise those powers here. Beck cites United States v. Klein, an 1871 Supreme Court case that involved a presidential pardon issued during the Civil War to confederates who rejoined the union and took an oath of loyalty. But even if executive-branch lawyers could put forth a legal rationale for the move, there are political reasons why Obama would likely be reluctant to make it. Although potentially cementing loyalty from a generation of Latinos, a mass pardon would likely be deeply unpopular with moderates and liberals who put faith in the legislative process, and would be considered downright treasonous by many Republicans. Obama could face Congressional censure or perhaps even impeachment if he had any time remaining in office, and the backlash against Democrats could make the Tea Party-fueled, Obamacare-inspired shellacking of 2010 look mild. "If in December 2016 Obama says, 'Unconditional pardon to everybody in the country illegally,' that would totally dismantle Democratic Party governance for a generation," Mayer says. "I don't think he wants that to be his legacy."

### A2: No PC

#### Polls prove the public is with Obama on this one---he has PC for immigration

Salon 2/21 (“Polls show Republicans sinking on key issues,” http://www.salon.com/2013/02/21/approval\_of\_republicans\_sinks\_on\_key\_issues/singleton/)

According to two new polls, most Americans are in favor of President Obama’s approach to key issues like the budget, gun control and immigration. A USA Today/Pew Research poll released Thursday shows Obama with a strong lead over Republicans in Congress on gun policies (45-39 percent), the budget deficit (45-38 percent), immigration (50-33 percent) and even climate change (47-26 percent). “On many of the issues, President Obama has staked out positions that seem to be closer to the public’s thinking than the positions Republicans have staked out,” said Michael Dimock, director of the Pew Research Center for the People & the Press, in a statement on the poll. “The challenge for him is in building the public’s sense of immediacy on some of these issues, particularly on climate change and guns.” In addition, the poll finds that only 22 percent of Americans even identify themselves as Republicans, almost a record low. A Bloomberg poll from Wednesday had similar findings, with Obama’s approval ratings reaching a three-year high at 55 percent, while just 35 percent have a favorable view of Republicans. From Bloomberg: Americans by 49 percent to 44 percent believe Obama’s proposals for government spending on infrastructure, education and alternative energy are more likely to create jobs than Republican calls to cut spending and taxes to build business confidence and spur employment. To add to Republican troubles: 43 percent of Americans blame Republicans for what’s wrong in Washington, compared with 34 percent who blame Obama.

### A2: Energy Now

#### Obama putting immigration first

CNN 1/30 (“Obama wants immigration reform in first half of the year” http://politicalticker.blogs.cnn.com/2013/01/30/obama-wants-immigration-reform-in-first-half-of-the-year/)

President Barack Obama said Wednesday he wants to get an immigration reform package passed as soon as this summer. "I'm hopeful that this can get done, and I don't think that it should take many, many months," Obama said in an interview with the Spanish-language network Telemundo. "I think this is something we should be able to get done certainly this year, and I'd like to see if we could get it done sooner, in the first half of the year if possible." Obama previously said he wanted to accomplish immigration reform within the first year of his second term, but his latest comments represent a more rushed timeline of his goals. The president said "now's the time" for reform and highlighted his agenda Tuesday in a Las Vegas speech, specifying three pillars: better enforcement of immigration laws, providing a path to citizenship for the more than 11 million undocumented immigrants already in the country, and reforming the legal immigration system.

#### ---pc solves, he is exercising popularity to juggle immigration and other issues

The Week 1/30 (Harold Maass, the Week’s online executive editor, “President Obama's surging popularity: What it means” http://theweek.com/article/index/239410/president-obamas-surging-popularity-what-it-means)

Fresh off his second inauguration, President Obama is starting his new term with his favorability rating at a three-year high. Sixty percent of Americans say they have a favorable opinion of Obama, according to a Washington Post/ABC News poll released Wednesday. That's a considerable improvement over his poll numbers during last year's heated campaign, when Obama typically scored in the low- to mid-50 percent range. Of course, Obama is still way short of the peak of his personal popularity, when 79 percent gave him high marks at the start of his first term four years ago. Still, today's numbers are even better than they look for Obama at first glance, according to Brett LoGiurato at Business Insider. The percentage of people offering "strongly" favorable ratings (39 percent) is up, too, and exceeds the percentage saying they're strongly unfavorable for the first time in two years. Overall, it's the best image for Obama since 61 percent of Americans said they viewed him favorably in a Nov. 15, 2009, poll taken a year after the 2008 election. It could continue to give the president advantages on key legislative issues he's trying to push in the first few months of his new term — immigration, gun control, and on key fiscal battles. [Business Insider] Some conservatives aren't so sure. "While the mainstream press routinely reports that President Obama is riding high and that Republicans are reeling," says Jeffrey H. Anderson at The Weekly Standard, Obama's job approval ratings — which are different than personal popularity numbers — tell a different story. According to Gallup, Obama's job approval rating in January was, on average, 52 percent, which is lower than every president but one, dating back to 1945. President George W. Bush's average approval rating in January 2005, immediately following his re-election, was also 52 percent. This can hardly be a source of satisfaction for Obama, who ran against Bush not once but twice — without Bush's being on the ticket either time. [The Weekly Standard] It does appear that Obama is firing up his base, though. Democrats and independents are giving Obama higher marks, which helps explain why his progressive inaugural address served as "a pep rally, with raving reviews from supporters," according to Scott Clement and Aaron Blake at The Washington Post. Still, despite Obama's surging popularity among his fans, 80 percent of Republicans have an unfavorable view of him, similar to the 78 percent he scored last January. That could very well mean that Obama will run into the same obstacles he has for the last three years. After surviving the "fiscal cliff" debate no worse for wear, Obama seems emboldened by his current standing. He has tightened his grip on the bully pulpit, advocating new gun legislation and immigration reform in an effort to parlay his personal popularity into legislative victories. Still, the deep partisan divide over Obama will make it difficult for Republicans and conservative Democrats to get on board, especially those facing re-election contests in 2014

### A2: Hirsch

Political capital is key to the agenda and finite for Obama in the second term, he can’t do a replay of his first term

Schultz 1/22/13 (David Schultz is a professor at Hamline University School of Business, where he teaches classes on privatization and public, private and nonprofit partnerships. He is the editor of the Journal of Public Affairs Education (JPAE) “Obama's dwindling prospects in a second term” http://www.minnpost.com/community-voices/2013/01/obamas-dwindling-prospects-second-term)

Presidential power also is a finite and generally decreasing product. The first hundred days in office – so marked forever by FDR’s first 100 in 1933 – are usually a honeymoon period, during which presidents often get what they want. FDR gets the first New Deal, Ronald Reagan gets Kemp-Roth, George Bush in 2001 gets his tax cuts. Presidents lose political capital, support But, over time, presidents lose political capital. Presidents get distracted by world and domestic events, they lose support in Congress or among the American public, or they turn into lame ducks. This is the problem Obama now faces. Obama had a lot of political capital when sworn in as president in 2009. He won a decisive victory for change with strong approval ratings and had majorities in Congress — with eventually a filibuster margin in the Senate, when Al Franken finally took office in July. Obama used his political capital to secure a stimulus bill and then pass the Affordable Care Act. He eventually got rid of Don’t Ask, Don’t Tell and secured many other victories. But Obama was a lousy salesman, and he lost what little control of Congress that he had in the 2010 elections. Since then, Obama has be stymied in securing his agenda. Moreover, it is really unclear what his agenda for a second term is. Mitt Romney was essentially right on when arguing that Obama had not offered a plan for four more years beyond what we saw in the first term. A replay wouldn't work Whatever successes Obama had in the first term, simply doing a replay in the next four years will not work. First, Obama faces roughly the same hostile Congress going forward that he did for the last two years. Do not expect to see the Republicans making it easy for him. Second, the president’s party generally does badly in the sixth year of his term. This too will be the case in 2014, especially when Democrats have more seats to defend in the Senate than the GOP does. Third, the president faces a crowded and difficult agenda. All the many fiscal cliffs and demands to cut the budget will preoccupy his time and resources, depleting money he would like to spend on new programs. Obama has already signed on to an austerity budget for his next four years – big and bold is not there. Fourth, the Newtown massacre and Obama’s call for gun reform places him in conflict with the NRA. This is a major battle competing with the budget, immigration, Iran and anything else the president will want to do. Finally, the president is already a lame duck and will become more so as his second term progress. Presidential influence is waning One could go on, but the point should be clear: Obama has diminishing time, resources, support and opportunity to accomplish anything. His political capital and presidential influence is waning, challenging him to adopt a minimalist agenda for the future. What should Obama do? Among the weaknesses of his first term were inattention to filling federal judicial vacancies. Judges will survive beyond him and this should be a priority for a second term, as well as preparing for Supreme Court vacancies. He needs also to think about broader structural reform issues that will outlive his presidency, those especially that he can do with an executive order. Overall, Obama has some small opportunities to do things in the next four years – but the window is small and will rapidly close.

#### They misread Hirsh---his point isn’t that political capital is meaningless, he agrees with Orenstein that its influential

Hirsh 2/7 (Michael, “There’s No Such Thing as Political Capital,” http://www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207)

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.”

### **Link**

#### EVEN IF the plan doesn’t cost money and is generally bipartisan it drains capital

McEntee 12 (Christine McEntee Executive Director and CEO, American Geophysical Union “Science, Politics and Public Opinion” http://energy.nationaljournal.com/2012/08/finding-the-sweet-spot-biparti.php)

We know that objective scientific knowledge is needed to inform good policy decisions – and that objective knowledge exists – but all too often we are allowing politics and ideology to take precedence over, or be pitted against, science. This not only risks the legitimacy of the science, but also the strength of the policy and its ability to protect the security, health and welfare of the American people, and support a healthy and thriving economy. The current rhetoric on climate change is a perfect example. We also know that the biggest obstacles to passage of energy and environmental legislation are disagreements about the extent to which the federal government can and should regulate business, and reluctance to launch new initiatives that will add to the deficit. The science tells us that small initiatives that require only nominal investments can't begin to address the environmental and energy challenges we face; and legislation big enough to achieve significant results will cost more than Congress is willing to spend. Environmental legislation is also held prisoner to partisan gridlock, with far less bipartisan support than many energy proposals. Even environmental legislation that saves many times its cost in medical and health care savings cannot advance in the current Congress. One recent example is the defeat of legislation to limit the release of airborne particulates proven to adversely affect the respiratory health of children and seniors. Dissonance about the role of federal regulation, its cost-effectiveness, and potential to impose costs on private sector that might adversely impact economic recovery further complicate energy/environmental legislative calculus. For these reasons, it is difficult for Congress to pass new energy and/or environmental initiatives, even where there is wide bipartisan support for a given bill.

#### Energy debates in this Congress drain capital

Morgan Stanley 11/7/12 (“Post-2012 Election Look At Lame-Duck Session and 2013” http://www.morganstanleyfa.com/public/projectfiles/697ac6e3-64d3-4f8e-a026-2c81e2149e95.pdf)

With an “all of the above” strategy for achieving energy independence, Congress and the administration could move forward on policy that seeks expanded domestic energy production focused on all energy related resources, from conventional sources such as oil, natural gas, coal, and nuclear power, to renewable sources focused on wind, solar, geothermal, and other renewable energy projects. At the same time, achieving consensus will remain difficult. Wide ideological differences still exist, especially regarding the efficacy of focusing resources on the development of renewable versus traditional energy sources. Moreover, related issues such as the exportation of domestic energy sources, clean energy standards for utilities, and overall environmental protection will remain as obstacles to the success of any energy-related legislative effort.