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### Coal

#### CONTENTION 1: Coal

#### Anti-nuclear opposition is directly responsible for the spread of lethal coal fired plants throughout the US and the world

King ‘9 - Host and Executive Producer of “White House Chronicle” — a news and public affairs program airing on PBS

After 40 Years, Environmentalists Start To See the Nuclear Light, Llewellyn King, November 25, 2009 – 8:47 pm

Although very little happened, Nov. 24 was a red letter day for the nation’s nuclear power industry. No new nuclear reactors were purchased, no breakthrough in treating nuclear waste was announced, and the Obama administration did not declare that it would pay for new reactors.¶ Instead, the source of the industry’s happiness was The Washington Post leading Page One with an article that detailed how the environmental movement, after 40 years of bitter opposition, now concedes that nuclear power will play a role in averting further harm from global warming.¶ Mind you, not every environmental group has come around, but the feared and respected Natural Resources Defense Council has allowed that there is a place for nuclear power in the world’s generating mix and Stephen Tindale, a former anti-nuclear activist with Friends of the Earth in the United Kingdom, has said, yes, we need nuclear.¶ For the nuclear industry which has felt itself vilified, constrained and damaged by the ceaseless and sometimes pathological opposition of the environmental movement, this changing attitude is manna from on high.¶ No matter that the environmentalists, in opposing nuclear since the late 1960s, have critically wounded the U.S. reactor industry and contributed to the construction of scores of coal and gas-fired plants that would not have been built without their opposition to nuclear.¶ In short, the environmental movement contributed in no small way to driving electric utilities to the carbon fuels they now are seeking to curtail.¶ Nuclear was such a target of the environmental movement that it embraced the “anything but nuclear” policy with abandon. Ergo its enthusiasm for all forms of alternative energy and its spreading of the belief —still popular in left-wing circles — that wind and solar power, with a strong dose of conservation, is all that is needed.¶ A third generation of environmental activists, who have been preoccupied with global climate change, have come to understand that a substantial amount of new electric generation is needed. Also some environmentalists are beginning to be concerned about the visual impact of wind turbines, not to mention their lethality to bats and birds.¶ Of all of the deleterious impacts of modern life on the Earth, it is reasonable to ask why the environmentalists went after nuclear power. And why they were opposed to nuclear power even before the 1979 accident at Three Mile Island in Pennsylvania and the catastrophic 1986 Chernobyl reactor failure in Ukraine. Those deserved pause, but the movement had already indicted the entire nuclear enterprise.¶ Having written about nuclear energy since 1969, I have come to believe that the environmental movement seized on nuclear first because it was an available target for legitimate anger that had spawned the movement in the ’60s. The licensing of nuclear power plants gave the protesters of the time one of the only opportunities to affect public policy in energy. They seized it; at first timorously, and then with gusto.¶ The escalation in environmental targets tells the story of how the movement grew in confidence and expertise; and how it added political allies, like Ralph Nader and Rep. Ed Markey, D-Mass.¶ The first target was simply the plants’ cooling water heating up rivers and estuaries. That was followed by wild extrapolations of the consequences of radiation (mutated children). Finally, it settled on the disposition of nuclear waste; that one stuck, and was a lever that turned public opinion easily. Just mention the 240,000-year half-life of plutonium without mentioning how, as an alpha-emitter, it is easily contained.¶ It is not that we do not need an environmental movement. We do. It is just that sometimes it gets things wrong.¶ In the days of the Atomic Energy Commission, the environmental groups complained that it was policeman, judge and jury. Indeed.¶ But environmental groups are guilty of defining environmental virtue and then policing it, even when the result is a grave distortion, as in the nuclear imbroglio. Being both the arbiter of environmental purity and the enforcer has cost the environment 40 years when it comes to reducing greenhouse gases.

#### The Anti-Coal movement is polycentric and coalitional – it brings together multiples agents of resistance by targeting specific Coal plants like those that poison each breath of air we take in Chicago AND by challenging the larger global system of fossil fuel powered injustice

Russell ‘9 – Grassroots Action Organizer

Joshua Kahn Russell is the grassroots actions organizer at Rainforest Action Network and was an organizer on the Capitol Climate Action, May 2009, Z Magazine, <http://www.zcommunications.org/climate-justice-and-coals-funeral-procession-by-joshua-kahn-russell>

The pace of direct actions against coal has sharply increased since 2004. These campaigns have been organized and carried out by a polycentric global network of radical environmentalists, "frontline" communities (those most directly affected by injustice), student organizers, and traditional non-profits. In the United States, communities have been using non-violent direct action to confront coal at all stages of its lifecycle: finance, extraction, "cleaning" and transport, burning, and energy consumption. This trajectory began gaining momentum on November 10, 2004 with a blockade of Maryland's Dickerson Power Plant. It grew to 3 major direct actions in 2005, 2 more in 2006, 6 in 2007, 18 in 2008, and 15 in the first 3 months of 2009.

Similar to the anti-nuclear movement of the late 1970s and early 1980s, the anti-coal movement has targeted specific mines and plants while challenging the overall legitimacy of fossil fuel-based economies. This struggle has transcended single-issue organizing and the varied efforts to stop coal have brought together diverse stakeholders. Stemming from the people of color, working class, and women-led environmental justice movement, climate justice has become a political banner for intersecting racial justice, economic equity, community health, climate, and environmental quality struggles, of which elements of "no coal" struggles are a part. It is useful to think of campaigns against coal as one strand of a robust frontline-led climate justice movement.

#### Coalition building is critical to transform the Anti-Coal movement into a larger progressive majority that supports climate justice for the whole planet

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The seeds are planted for decentralized actions against coal across the United States. Should we be successful at networking efforts, this network must weave itself into a broader climate justice movement. If we hope to win, the movement must be relevant enough to help create a broad-based progressive majority that is not afraid to build unlikely alliances across the political spectrum, while maintaining a principled anchor of its left wing.

#### Nuclear’s inevitable globally but won’t solve warming until the US develops SMR’s --- otherwise 100,000 deaths from pollution in the US are inevitable every year

Shellenberger 12 – et al and Ted Nordhaus—co-founders of American Environics and the Breakthrough Institute a think tank that works on energy and climate change – AND – Jesse Jenkins-Director of Energy and Climate Policy, the Breakthrough Institute (Michael, Why We Need Radical Innovation to Make New Nuclear Energy Cheap, 9/11, thebreakthrough.org/index.php/programs/energy-and-climate/new-nukes/)

Arguably, the biggest impact of Fukushima on the nuclear debate, ironically, has been to force a growing number of pro-nuclear environmentalists out of the closet, including us. The reaction to the accident by anti-nuclear campaigners and many Western publics put a fine point on the gross misperception of risk that informs so much anti-nuclear fear. Nuclear remains the only proven technology capable of reliably generating zero-carbon energy at a scale that can have any impact on global warming. Climate change -- and, for that matter, the enormous present-day health risks associated with burning coal, oil, and gas -- simply dwarf any legitimate risk associated with the operation of nuclear power plants. About 100,000 people die every year due to exposure to air pollutants from the burning of coal. By contrast, about 4,000 people have died from nuclear energy -- ever -- almost entirely due to Chernobyl.¶ But rather than simply lecturing our fellow environmentalists about their misplaced priorities, and how profoundly inadequate present-day renewables are as substitutes for fossil energy, we would do better to take seriously the real obstacles standing in the way of a serious nuclear renaissance. Many of these obstacles have nothing to do with the fear-mongering of the anti-nuclear movement or, for that matter, the regulatory hurdles imposed by the U.S. Nuclear Regulatory Commission and similar agencies around the world.¶ As long as nuclear technology is characterized by enormous upfront capital costs, it is likely to remain just a hedge against overdependence on lower-cost coal and gas, not the wholesale replacement it needs to be to make a serious dent in climate change. Developing countries need large plants capable of bringing large amounts of new power to their fast-growing economies. But they also need power to be cheap. So long as coal remains the cheapest source of electricity in the developing world, it is likely to remain king.¶ The most worrying threat to the future of nuclear isn't the political fallout from Fukushima -- it's economic reality. Even as new nuclear plants are built in the developing world, old plants are being retired in the developed world. For example, Germany's plan to phase-out nuclear simply relies on allowing existing plants to be shut down when they reach the ends of their lifetime. Given the size and cost of new conventional plants today, those plants are unlikely to be replaced with new ones. As such, the combined political and economic constraints associated with current nuclear energy technologies mean that nuclear energy's share of global energy generation is unlikely to grow in the coming decades, as global energy demand is likely to increase faster than new plants can be deployed.¶ To move the needle on nuclear energy to the point that it might actually be capable of displacing fossil fuels, we'll need new nuclear technologies that are cheaper and smaller. Today, there are a range of nascent, smaller nuclear power plant designs, some of them modifications of the current light-water reactor technologies used on submarines, and others, like thorium fuel and fast breeder reactors, which are based on entirely different nuclear fission technologies. Smaller, modular reactors can be built much faster and cheaper than traditional large-scale nuclear power plants. Next-generation nuclear reactors are designed to be incapable of melting down, produce drastically less radioactive waste, make it very difficult or impossible to produce weapons grade material, useless water, and require less maintenance.¶ Most of these designs still face substantial technical hurdles before they will be ready for commercial demonstration. That means a great deal of research and innovation will be necessary to make these next generation plants viable and capable of displacing coal and gas. The United States could be a leader on developing these technologies, but unfortunately U.S. nuclear policy remains mostly stuck in the past. Rather than creating new solutions, efforts to restart the U.S. nuclear industry have mostly focused on encouraging utilities to build the next generation of large, light-water reactors with loan guarantees and various other subsidies and regulatory fixes. With a few exceptions, this is largely true elsewhere around the world as well.¶ Nuclear has enjoyed bipartisan support in Congress for more than 60 years, but the enthusiasm is running out. The Obama administration deserves credit for authorizing funding for two small modular reactors, which will be built at the Savannah River site in South Carolina. But a much more sweeping reform of U.S. nuclear energy policy is required. At present, the Nuclear Regulatory Commission has little institutional knowledge of anything other than light-water reactors and virtually no capability to review or regulate alternative designs. This affects nuclear innovation in other countries as well, since the NRC remains, despite its many critics, the global gold standard for thorough regulation of nuclear energy. Most other countries follow the NRC's lead when it comes to establishing new technical and operational standards for the design, construction, and operation of nuclear plants.¶ What's needed now is a new national commitment to the development, testing, demonstration, and early stage commercialization of a broad range of new nuclear technologies -- from much smaller light-water reactors to next generation ones -- in search of a few designs that can be mass produced and deployed at a significantly lower cost than current designs. This will require both greater public support for nuclear innovation and an entirely different regulatory framework to review and approve new commercial designs.¶ In the meantime, developing countries will continue to build traditional, large nuclear power plants. But time is of the essence. With the lion's share of future carbon emissions coming from those emerging economic powerhouses, the need to develop smaller and cheaper designs that can scale faster is all the more important.¶ A true nuclear renaissance can't happen overnight. And it won't happen so long as large and expensive light-water reactors remain our only option. But in the end, there is no credible path to mitigating climate change without a massive global expansion of nuclear energy. If you care about climate change, nothing is more important than developing the nuclear technologies we will need to get that job done.

#### Nuclear’s critical to displace coal and stop catastrophic climate change

Moore 4—co-founder of Greenpeace, is chairman and chief scientist of Greenspirit Strategies Ltd. (Patrick, Going Nuclear, <http://www.washingtonpost.com/wp-dyn/content/article/2006/04/14/AR2006041401209.html>)

In the early 1970s when I helped found Greenpeace, I believed that nuclear energy was synonymous with nuclear holocaust, as did most of my compatriots. That's the conviction that inspired Greenpeace's first voyage up the spectacular rocky northwest coast to protest the testing of U.S. hydrogen bombs in Alaska's Aleutian Islands. Thirty years on, my views have changed, and the rest of the environmental movement needs to update its views, too, because nuclear energy may just be the energy source that can save our planet from another possible disaster: catastrophic climate change.¶ Look at it this way: More than 600 coal-fired electric plants in the United States produce 36 percent of U.S. emissions -- or nearly 10 percent of global emissions -- of CO2, the primary greenhouse gas responsible for climate change. Nuclear energy is the only large-scale, cost-effective energy source that can reduce these emissions while continuing to satisfy a growing demand for power. And these days it can do so safely.¶ I say that guardedly, of course, just days after Iranian President Mahmoud Ahmadinejad announced that his country had enriched uranium. "The nuclear technology is only for the purpose of peace and nothing else," he said. But there is widespread speculation that, even though the process is ostensibly dedicated to producing electricity, it is in fact a cover for building nuclear weapons.¶ And although I don't want to underestimate the very real dangers of nuclear technology in the hands of rogue states, we cannot simply ban every technology that is dangerous. That was the all-or-nothing mentality at the height of the Cold War, when anything nuclear seemed to spell doom for humanity and the environment. In 1979, Jane Fonda and Jack Lemmon produced a frisson of fear with their starring roles in "The China Syndrome," a fictional evocation of nuclear disaster in which a reactor meltdown threatens a city's survival. Less than two weeks after the blockbuster film opened, a reactor core meltdown at Pennsylvania's Three Mile Island nuclear power plant sent shivers of very real anguish throughout the country.¶ What nobody noticed at the time, though, was that Three Mile Island was in fact a success story: The concrete containment structure did just what it was designed to do -- prevent radiation from escaping into the environment. And although the reactor itself was crippled, there was no injury or death among nuclear workers or nearby residents. Three Mile Island was the only serious accident in the history of nuclear energy generation in the United States, but it was enough to scare us away from further developing the technology: There hasn't been a nuclear plant ordered up since then.¶ Today, there are 103 nuclear reactors quietly delivering just 20 percent of America's electricity. Eighty percent of the people living within 10 miles of these plants approve of them (that's not including the nuclear workers). Although I don't live near a nuclear plant, I am now squarely in their camp.¶ And I am not alone among seasoned environmental activists in changing my mind on this subject. British atmospheric scientist James Lovelock, father of the Gaia theory, believes that nuclear energy is the only way to avoid catastrophic climate change. Stewart Brand, founder of the "Whole Earth Catalog," says the environmental movement must embrace nuclear energy to wean ourselves from fossil fuels. On occasion, such opinions have been met with excommunication from the anti-nuclear priesthood: The late British Bishop Hugh Montefiore, founder and director of Friends of the Earth, was forced to resign from the group's board after he wrote a pro-nuclear article in a church newsletter.¶ There are signs of a new willingness to listen, though, even among the staunchest anti-nuclear campaigners. When I attended the Kyoto climate meeting in Montreal last December, I spoke to a packed house on the question of a sustainable energy future. I argued that the only way to reduce fossil fuel emissions from electrical production is through an aggressive program of renewable energy sources (hydroelectric, geothermal heat pumps, wind, etc.) plus nuclear. The Greenpeace spokesperson was first at the mike for the question period, and I expected a tongue-lashing. Instead, he began by saying he agreed with much of what I said -- not the nuclear bit, of course, but there was a clear feeling that all options must be explored.¶ Here's why: Wind and solar power have their place, but because they are intermittent and unpredictable they simply can't replace big baseload plants such as coal, nuclear and hydroelectric. Natural gas, a fossil fuel, is too expensive already, and its price is too volatile to risk building big baseload plants. Given that hydroelectric resources are built pretty much to capacity, nuclear is, by elimination, the only viable substitute for coal. It's that simple.¶ That's not to say that there aren't real problems -- as well as various myths -- associated with nuclear energy. Each concern deserves careful consideration:¶ · Nuclear energy is expensive. It is in fact one of the least expensive energy sources. In 2004, the average cost of producing nuclear energy in the United States was less than two cents per kilowatt-hour, comparable with coal and hydroelectric. Advances in technology will bring the cost down further in the future.¶ · Nuclear plants are not safe. Although Three Mile Island was a success story, the accident at Chernobyl, 20 years ago this month, was not. But Chernobyl was an accident waiting to happen. This early model of Soviet reactor had no containment vessel, was an inherently bad design and its operators literally blew it up. The multi-agency U.N. Chernobyl Forum reported last year that 56 deaths could be directly attributed to the accident, most of those from radiation or burns suffered while fighting the fire. Tragic as those deaths were, they pale in comparison to the more than 5,000 coal-mining deaths that occur worldwide every year. No one has died of a radiation-related accident in the history of the U.S. civilian nuclear reactor program. (And although hundreds of uranium mine workers did die from radiation exposure underground in the early years of that industry, that problem was long ago corrected.)¶ · Nuclear waste will be dangerous for thousands of years. Within 40 years, used fuel has less than one-thousandth of the radioactivity it had when it was removed from the reactor. And it is incorrect to call it waste, because 95 percent of the potential energy is still contained in the used fuel after the first cycle. Now that the United States has removed the ban on recycling used fuel, it will be possible to use that energy and to greatly reduce the amount of waste that needs treatment and disposal. Last month, Japan joined France, Britain and Russia in the nuclear-fuel-recycling business. The United States will not be far behind.¶ · Nuclear reactors are vulnerable to terrorist attack. The six-feet-thick reinforced concrete containment vessel protects the contents from the outside as well as the inside. And even if a jumbo jet did crash into a reactor and breach the containment, the reactor would not explode. There are many types of facilities that are far more vulnerable, including liquid natural gas plants, chemical plants and numerous political targets.¶ · Nuclear fuel can be diverted to make nuclear weapons. This is the most serious issue associated with nuclear energy and the most difficult to address, as the example of Iran shows. But just because nuclear technology can be put to evil purposes is not an argument to ban its use.¶ Over the past 20 years, one of the simplest tools -- the machete -- has been used to kill more than a million people in Africa, far more than were killed in the Hiroshima and Nagasaki nuclear bombings combined. What are car bombs made of? Diesel oil, fertilizer and cars. If we banned everything that can be used to kill people, we would never have harnessed fire.¶ The only practical approach to the issue of nuclear weapons proliferation is to put it higher on the international agenda and to use diplomacy and, where necessary, force to prevent countries or terrorists from using nuclear materials for destructive ends. And new technologies such as the reprocessing system recently introduced in Japan (in which the plutonium is never separated from the uranium) can make it much more difficult for terrorists or rogue states to use civilian materials to manufacture weapons.¶ The 600-plus coal-fired plants emit nearly 2 billion tons of CO2annually -- the equivalent of the exhaust from about 300 million automobiles. In addition, the Clean Air Council reports that coal plants are responsible for 64 percent of sulfur dioxide emissions, 26 percent of nitrous oxides and 33 percent of mercury emissions. These pollutants are eroding the health of our environment, producing acid rain, smog, respiratory illness and mercury contamination.¶ Meanwhile, the 103 nuclear plants operating in the United States effectively avoid the release of 700 million tons of CO2emissions annually -- the equivalent of the exhaust from more than 100 million automobiles. Imagine if the ratio of coal to nuclear were reversed so that only 20 percent of our electricity was generated from coal and 60 percent from nuclear. This would go a long way toward cleaning the air and reducing greenhouse gas emissions. Every responsible environmentalist should support a move in that direction.

#### SMRs are flexible and can be used to replace coal

Colvin 11—Joe Colvin, President, American Nuclear Society, June 7, 2011, TESTIMONY BEFORE THECOMMITTEE ON ENERGY AND NATURAL RESOURCESUNITED STATES SENATE<http://theenergycollective.com/ansorg/58930/ans-president-joe-colvin-testifies-about-smr-legislation>

The ANS and its membership believe that the development of a new generation of small modular reactors has the potential to make a significant contribution to our long-term energy, economic, and national security. SMRs offer several unique advantages over their larger brethren.¶ First, they provide great operational flexibility. SMRs can be deployed in arid regions to produce large quantities of fresh water through desalination. They can be used as a heat source for industrial processes, including hydrogen production, fertilizers, production of synthetic fuels, and biofuels. They can be deployed in remote areas to produce energy for towns and military installations, as well as heat for mining operations and unconventional oil recovery. SMRs could be an attractive alternative for smaller U.S utilities, especially in the Midwest, that seek to replace their old, coal-fired generating stations because of environmental considerations. These facilities would already have the necessary water, rail, and transmission facilities and the necessary infrastructure, thereby simplifying the installation process.

#### The plan solves the only major roadblock to the creation of a robust domestic SMR industry

Loris 11 Nicolas D, Research Associate in the Roe Institute, Jack Spencer – Research Fellow in Nuclear Energy in the Thomas A. Roe Institute for Economic Policy Studies, Currently is The Heritage Foundation’s senior research fellow in nuclear energy policy, Previously worked on commercial, civilian and military components of nuclear energy at the Babcock & Wilcox Companies, Holds a bachelor's degree in international politics from Frostburg State University and a master's degree from the University of Limerick, “A Big Future for Small Nuclear Reactors?”, February 2, http://www.heritage.org/research/reports/2011/02/a-big-future-for-small-nuclear-reactors

Abstract: More and more companies—in the U.S. and abroad—are investing in new commercial nuclear enterprises, chief among them, small modular reactors (SMRs). The SMR industry is growing, with many promising developments in the works—which is precisely why the government should not interfere, as subsidies and government programs have already resulted in an inefficient system for large reactors. Heritage Foundation nuclear policy experts explain how the future for small reactors can remain bright.¶ Small modular reactors (SMRs) have garnered significant attention in recent years, with companies of all sizes investing in these smaller, safer, and more cost-efficient nuclear reactors. Utilities are even forming partnerships with reactor designers to prepare for potential future construction. Perhaps most impressive is that most of this development is occurring without government involvement. Private investors and entrepreneurs are dedicating resources to these technologies based on their future prospects, not on government set-asides, mandates, or subsidies, and despite the current regulatory bias in favor of large light water reactors (LWRs).¶ The result is a young, robust, innovative, and growing SMR industry. Multiple technologies are being proposed that each have their own set of characteristics based on price, fuel, waste characteristics, size, and any number of other variables. To continue this growth, policymakers should reject the temptation to offer the same sort of subsidies and government programs that have proven ineffective for large LWRs. While Department of Energy cost-sharing programs and capital subsidies seem attractive, they have yet to net any new reactor construction. Instead, policymakers should focus on the systemic issues that have continued to thwart the expansion of nuclear power in recent years. Specifically, the federal government needs to develop an efficient and predictable regulatory pathway to new reactor certification and to develop a sustainable nuclear waste management strategy.¶ Why SMRs?¶ Small modular reactors share many of the attractive qualities of large reactors, such as providing abundant emissions-free power, while adding new features that could make them more appropriate for certain applications, such as providing power to rural communities or for dedicated industrial use. SMRs are not yet positioned to take the place of traditional large LWRs, but they represent an important growth area for the commercial nuclear industry.¶ Indeed, should the promise of small modular reactors be realized, the technology could transform the nuclear industry. That is because these attributes would potentially mitigate some of the financial and regulatory problems that nuclear energy has recently faced. SMRs potentially cost less (at least in up-front capital), are more mobile and multifunctional, provide competition, and can largely be produced by existing domestic infrastructure.¶ Lower Costs Up Front. Large reactors are very expensive to license and construct and require massive up-front capital investments to begin a project. Small reactors, while providing far less power than large reactors, can be built in modules and thus be paid for over time. For example, estimates for larger reactors range from $6 billion to $10 billion and must be financed all at once. The Babcock & Wilcox Company’s modular mPower reactors, alternatively, can be purchased in increments of 125 megawatts (MW), which would allow costs to be spread out over time. Though cost estimates are not yet available for the mPower reactor, its designers have stated that they will be competitive. This should not be used as a reason to refrain from building larger, 1,000-plus MW reactors. Each utility will have its own set of variables that it must consider in choosing a reactor technology, but given that one of the primary justifications for government subsidies is that the high costs of large reactors puts unacceptable strain on utility balance sheets, an option that spreads capital outlays over time should be attractive.¶ Safe Installation in Diverse Locations. Some designs are small enough to produce power for as few as 20,000 homes. One such reactor, Hyperion Power’s HPM (Hyperion Power Module) offers 25 MW of electricity for an advertised cost of $50 million per unit. This makes the HPM a potential power solution for isolated communities or small cities.[1] The Alaskan town of Galena, for example, is planning to power its community with a small reactor designed by Toshiba, while Fairbanks is looking into a small plant constructed by Hyperion.[2] In addition, Western Troy Capital Resources has stated that it will form a private corporation to provide electric power from small reactors for remote locations in Canada.[3] Public utility officials in Grays Harbor, Washington, have spoken with the NuScale Power company about powering the community with eight small nuclear plants;[4] and Hyperion Power has reported a high level of interest in small nuclear reactor designs from islands around the world.[5]¶ Using a small nuclear reactor could cut electricity costs in isolated areas since there would be no need for expensive transmission lines to carry power to remote locations.[6] SMRs could also potentially be integrated into existing energy infrastructure. SMRs could be built into old coal plants, for instance. The reactors would replace the coal boilers and be hooked into the existing turbines and distribution lines. According to the Nuclear Regulatory Commission, these modifications could be completed safely since small reactors will likely be easier to control during times of malfunction.[7]¶ Multi-functionality. SMRs can be used in a variety of applications that have substantial power and heat requirements. The chemical and plastics industries and oil refineries all use massive amounts of natural gas to fuel their operations. Similarly, small reactors could produce the heat needed to extract oil from tar sands, which currently requires large amounts of natural gas. While affordable today, natural gas prices vary significantly over time, so the long-term predictable pricing that nuclear provides could be very attractive. SMRs may also provide a practical solution for desalination plants (which require large amounts of electricity) that can bring fresh water to parts of the world where such supplies are depleting.[8] Perhaps most important, is that SMRs have the potential to bring power and electricity to the 1.6 billion people in the world today that have no access to electricity, and to the 2.4 billion that rely on biomass, such as wood, agricultural residue, and dung for cooking and heating.[9]¶ Competition. While competition among large nuclear-reactor technologies currently exists, small reactors will add a new dimension to nuclear-reactor competition. Multiple small technology designs are set to emerge on the market. Not only will competition among small reactors create a robust market, it will also provide an additional incentive for large reactors to improve. If smaller reactors begin to capture a share of the nuclear market and the energy market at large, it will drive innovation and ultimately lower prices for both new and existing technologies.¶ Domestic Production. Although the nuclear industry necessarily shrank to coincide with decreased demand, much of the domestic infrastructure remains in place today and could support the expansion of small-reactor technologies. Although the industrial and intellectual base has declined over the past three decades, forging production, heavy manufacturing, specialized piping, mining, fuel services, and skilled labor could all be found in the United States. Lehigh Heavy Forge Corporation in Bethlehem, Pennsylvania, could build the forges while Babcock & Wilcox could provide the heavy nuclear components, for instance. AREVA/Northrop Grumman Shipbuilding broke ground on a heavy components manufacturing facility last June.[10] Further, a number of companies are expanding manufacturing, engineering, and uranium enrichment capabilities—all in the United States.¶ If SMRs are so great, where is the construction?¶ While some designs are closer to market introduction than others, the fact is that America’s regulatory and policy environment is not sufficient to support a robust expansion of existing nuclear technologies, much less new ones. New reactor designs are difficult to license efficiently, and the lack of a sustainable nuclear waste management policy causes significant risk to private investment.¶ Many politicians are attempting to mitigate these market challenges by offering subsidies, such as loan guarantees. While this approach still enjoys broad support in Congress and industry, the reality is that it has not worked. Despite a lavish suite of subsidies offered in the Energy Policy Act of 2005, including loan guarantees, insurance against government delays, and production tax credits, no new reactors have been permitted, much less constructed. These subsidies are in addition to existing technology development cost-sharing programs that have been in place for years and defer significant research and development costs from industry to the taxpayer.¶ The problem with this approach is that it ignores the larger systemic problems that create the unstable marketplace to begin with. These systemic problems generally fall into three categories:¶ Licensing. The Nuclear Regulatory Commission (NRC) is ill prepared to build the regulatory framework for new reactor technologies, and no reactor can be offered commercially without an NRC license. In a September 2009 interview, former NRC chairman Dale E. Klein said that small nuclear reactors pose a dilemma for the NRC because the commission is uneasy with new and unproven technologies and feels more comfortable with large light water reactors, which have been in operation for years and has a long safety record.[11] The result is that enthusiasm for building non-light-water SMRs is generally squashed at the NRC as potential customers realize that there is little chance that the NRC will permit the project within a timeframe that would promote near-term investment. So, regardless of which attributes an SMR might bring to the market, the regulatory risk is such that real progress on commercialization is difficult to attain. This then leaves large light water reactors, and to a lesser extent, small ones, as the least risky option, which pushes potential customers toward that technology, which then undermines long-term progress, competition, and innovation.¶ Nuclear Waste Management. The lack of a sustainable nuclear waste management solution is perhaps the greatest obstacle to a broad expansion of U.S. nuclear power. The federal government has failed to meet its obligations under the 1982 Nuclear Waste Policy Act, as amended, to begin collecting nuclear waste for disposal in Yucca Mountain. The Obama Administration’s attempts to shutter the existing program to put waste in Yucca Mountain without having a backup plan has worsened the situation. This outcome was predictable because the current program is based on the flawed premise that the federal government is the appropriate entity to manage nuclear waste. Under the current system, waste producers are able to largely ignore waste management because the federal government is responsible. The key to a sustainable waste management policy is to directly connect financial responsibility for waste management to waste production. This will increase demand for more waste-efficient reactor technologies and drive innovation on waste-management technologies, such as reprocessing. Because SMRs consume fuel and produce waste differently than LWRs, they could contribute greatly to an economically efficient and sustainable nuclear waste management strategy.¶ Government Intervention. Too many policymakers believe that Washington is equipped to guide the nuclear industry to success. So, instead of creating a stable regulatory environment where the market value of different nuclear technologies can determine their success and evolution, they choose to create programs to help industry succeed. Two recent Senate bills from the 111th Congress, the Nuclear Energy Research Initiative Improvement Act (S. 2052) and the Nuclear Power 2021 Act (S. 2812), are cases in point. Government intervention distorts the normal market processes that, if allowed to work, would yield the most efficient, cost-effective, and appropriate nuclear technologies. Instead, the federal government picks winners and losers through programs where bureaucrats and well-connected lobbyists decide which technologies are permitted, and provides capital subsidies that allow investors to ignore the systemic problems that drive risk and costs artificially high. This approach is especially detrimental to SMRs because subsidies to LWRs distort the relative benefit of other reactor designs by artificially lowering the cost and risk of a more mature technology that already dominates the marketplace.¶ How to Fix a Broken System¶ At the Global Nuclear Renaissance Summit on July 24, 2008, then-NRC chairman Dale Klein said that a nuclear renaissance with regard to small reactors will take “decades to unfold.”[12] If Members of Congress and government agencies do not reform their current approach to nuclear energy, this will most certainly be the case. However, a new, market-based approach could lead to a different outcome. Instead of relying on the policies of the past, Congress, the Department of Energy, and the NRC should pursue a new, 21st-century model for small and alternative reactor technologies by doing the following:¶ Reject additional loan guarantees. Loan guarantee proponents argue that high up-front costs of new large reactors make them unaffordable without loan guarantees. Presumably, then, a smaller, less expensive modular option would be very attractive to private investors even without government intervention. But loan guarantees undermine this advantage by subsidizing the capital costs and risk associated with large reactors. A small reactor industry without loan guarantees would also provide competition and downward price pressure on large light water reactors. At a minimum, Congress should limit guarantees to no more than two plants of any reactor design and limit to two-thirds the amount of any expanded loan guarantee program that can support a single technology. Such eligibility limits will prevent support from going only to a single basic technology, such as large light water reactors.[13]¶ Avoid subsidies. Subsidies do not work if the objective is a diverse and economically sustainable nuclear industry. Despite continued attempts to subsidize the nuclear industry into success, the evidence demonstrates that such efforts invariably fail. The nuclear industry’s success stories are rooted in the free market. Two examples include the efficiency and low costs of today’s existing plants, and the emergence of a private uranium enrichment industry. Government intervention is the problem, as illustrated by the government’s inability to meet its nuclear waste disposal obligations.¶ Build expertise at the Nuclear Regulatory Commission. The NRC is built to regulate large light water reactors. It simply does not have the regulatory capability and resources to efficiently regulate other technologies, and building that expertise takes time. Helping the NRC to develop that expertise now would help bring new technologies into the marketplace more smoothly. Congress should direct and resource the NRC to develop additional broad expertise for liquid metal-cooled, fast reactors and high-temperature, gas-cooled reactors. With its existing expertise in light water technology, this additional expertise would position the NRC to effectively regulate an emerging SMR industry.¶ Establish a new licensing pathway. The current licensing pathway relies on reactor customers to drive the regulatory process. But absent an efficient and predictable regulatory pathway, few customers will pursue these reactor technologies. The problem is that the legal, regulatory, and policy apparatus is built to support large light water reactors, effectively discriminating against other technologies. Establishing an alternative licensing pathway that takes the unique attributes of small reactors into consideration could help build the necessary regulatory support on which commercialization ultimately depends.[14]¶ Resolve staffing, security, construction criteria, and fee-structure issues by December 31, 2011. The similarity of U.S. reactors has meant that the NRC could establish a common fee structure and many general regulatory guidelines for areas, such as staffing levels, security requirements, and construction criteria. But these regulations are inappropriate for many SMR designs that often have smaller staff requirements, unique control room specifications, diverse security requirements, and that employ off-site construction techniques. Subjecting SMRs to regulations built for large light water reactors would add cost and result in less effective regulation. The NRC has acknowledged the need for this to be resolved and has committed to doing so, including developing the budget requirements to achieve it. It has not committed to a specific timeline.[15] Congress should demand that these issues be resolved by the end of 2011.

#### SMRs are feasible, safer and solve other nuclear downsides

Ringle 10 John, Professor Emeritus of Nuclear Engineering at Oregon State University, "Reintroduction of reactors in US a major win", November 13, robertmayer.wordpress.com/2010/11/21/reintroduction-of-reactors-in-us-a-major-win/

Small nuclear reactors will probably be the mechanism that ushers in nuclear power’s renaissance in the U.S.¶ Nuclear plants currently supply about 20 percent of the nation’s electricity and more than 70 percent of our carbon-free energy. But large nuclear plants cost $8 billion to $10 billion and utilities are having second thoughts about how to finance these plants.¶ A small modular reactor (SMR) has several advantages over the conventional 1,000-megawatt plant:¶ 1. It ranges in size from 25 to 140 megawatts, hence only costs about a tenth as much as a large plant.¶ 2. It uses a cookie-cutter standardized design to reduce construction costs and can be built in a factory and shipped to the site by truck, railroad or barge.¶ 3. The major parts can be built in U.S. factories, unlike some parts for the larger reactors that must be fabricated overseas.¶ 4. Because of the factory-line production, the SMR could be built in three years with one-third of the workforce of a large plant.¶ 5. More than one SMR could be clustered together to form a larger power plant complex. This provides versatility in operation, particularly in connection with large wind farms. With the variability of wind, one or more SMRs could be run or shut down to provide a constant base load supply of electricity.¶ 6. A cluster of SMRs should be very reliable. One unit could be taken out of service for maintenance or repair without affecting the operation of the other units. And since they are all of a common design, replacement parts could satisfy all units. France has already proved the reliability of standardized plants.¶ At least half a dozen companies are developing SMRs, including NuScale in Oregon. NuScale is American-owned and its 45-megawatt design has some unique features. It is inherently safe. It could be located partially or totally below ground, and with its natural convection cooling system, it does not rely on an elaborate system of pumps and valves to provide safety. There is no scenario in which a loss-of-coolant accident could occur.

### Plan

#### The United States federal government should reduce construction and annual licensing fee restrictions in the United States that prevent expansion of small modular nuclear reactors

### Framing

#### CONTENTION 2: OUR ADVOCACY IS GOOD

#### Academic debate over energy policy in the face of environmental destruction is critical to shape the direction of change and create a public consciousness shift---action now is key

Crist 4 (Eileen, Professor at Virginia Tech in the Department of Science and Technology, “Against the social construction of nature and wilderness”, Environmental Ethics 26;1, p 13-6, http://www.sts.vt.edu/faculty/crist/againstsocialconstruction.pdf)

Yet, constructivist analyses of "nature" favor remaining in the comfort zone of **zestless agnosticism** and **noncommittal meta-discourse**. As David Kidner suggests, this intellectual stance may function as a mechanism against facing the devastation of the biosphere—an undertaking long underway but gathering momentum with the imminent bottlenecking of a triumphant global consumerism and unprecedented population levels. Human-driven extinction—in the ballpark of Wilson's estimated 27,000 species per year—is so unthinkable a fact that choosing to ignore it may well be the psychologically risk-free option.¶ **Nevertheless, this is the** opportune **historical** moment **for** intellectuals in the humanities and social sciences **to join forces with** conservation **scientists** in order **to** help **create the consciousness shift and** policy changes **to stop this irreversible destruction. Given this outlook, how** students in the human sciences **are** trained **to regard scientific knowledge, and what kind of** messages percolate to the public from the academy **about the nature of scientific findings,** matter immensely. The "agnostic stance" of constructivism toward "scientific claims" about the environment—a stance supposedly mandatory for discerning how scientific knowledge is "socially assembled"[32]—is, to borrow a legendary one-liner, **striving to interpret the world at an hour that is pressingly calling us to change it.**

#### Public advocacy of climate solutions key to change governmental policy---individual change insufficient

CAG 10—Climate Change Communication Advisory Group. Dr Adam Corner School of Psychology, Cardiff University - Dr Tom Crompton Change Strategist, WWF-UK - Scott Davidson Programme Manager, Global Action Plan - Richard Hawkins Senior Researcher, Public Interest Research Centre - Professor Tim Kasser, Psychology department, Knox College, Galesburg, Illinois, USA. - Dr Renee Lertzman, Center for Sustainable Processes & Practices, Portland State University, US. - Peter Lipman, Policy Director, Sustrans. - Dr Irene Lorenzoni, Centre for Environmental Risk, University of East Anglia. - George Marshall, Founding Director, Climate Outreach , Information Network - Dr Ciaran Mundy, Director, Transition Bristol - Dr Saffron O’Neil, Department of Resource Management and Geography, University of Melbourne, Australia. - Professor Nick Pidgeon, Director, Understanding Risk Research Group, School of Psychology, Cardiff University. - Dr Anna Rabinovich, School of Psychology, University of Exeter - Rosemary Randall, Founder and director of Cambridge Carbon Footprint - Dr Lorraine Whitmarsh, School of Psychology, Cardiff University & Visiting Fellow at the, Tyndall Centre for Climate Change Research. (Communicating climate change to mass public audience, http://pirc.info/downloads/communicating\_climate\_mass\_audiences.pdf)

This short advisory paper collates a set of recommendations about how best to shape mass public communications aimed at increasing concern about climate change and motivating commensurate behavioural changes.¶ Its focus is not upon motivating small private-sphere behavioural changes on a piece-meal basis. Rather, it marshals evidence about how best to motivate the ambitious and systemic behavioural change that is necessary – including, crucially, greater public engagement with the policy process (through, for example, lobbying decision-makers and elected representatives, or participating in demonstrations), as well as major lifestyle changes. ¶ Political leaders themselves have drawn attention to the imperative for more vocal public pressure to create the ‘political space’ for them to enact more ambitious policy interventions. 1 While this paper does not dismiss the value of individuals making small private-sphere behavioural changes (for example, adopting simple domestic energy efficiency measures) it is clear that such behaviours do not, in themselves, represent a proportional response to the challenge of climate change. As David MacKay, Chief Scientific Advisor to the UK Department of Energy and Climate change writes: “Don’t be distracted by the myth that ‘every little helps’. If everyone does a little, we’ll achieve only a little” (MacKay, 2008).¶ The task of campaigners and communicators from government, business and non-governmental organisations must therefore be to motivate both (i) widespread adoption of ambitious private-sphere behavioural changes; and (ii) widespread acceptance of – and indeed active demand for – ambitious new policy interventions.¶ Current public communication campaigns, as orchestrated by government, business and non-governmental organisations, are not achieving these changes. This paper asks: how should such communications be designed if they are to have optimal impact in motivating these changes? The response to this question will require fundamental changes in the ways that many climate change communication campaigns are currently devised and implemented. ¶ This advisory paper offers a list of principles that could be used to enhance the quality of communication around climate change communications. The authors are each engaged in continuously sifting the evidence from a range of sub-disciplines within psychology, and reflecting on the implications of this for improving climate change communications. Some of the organisations that we represent have themselves at times adopted approaches which we have both learnt from and critique in this paper – so some of us have first hand experience of the need for on-going improvement in the strategies that we deploy. ¶ The changes we advocate will be challenging to enact – and will require vision and leadership on the part of the organisations adopting them. But without such vision and leadership, we do not believe that public communication campaigns on climate change will create the necessary behavioural changes – indeed, there is a profound risk that many of today’s campaigns will actually prove counter-productive. ¶ Seven Principles¶ 1. Move Beyond Social Marketing¶ We believe that too little attention is paid to the understanding that psychologists bring to strategies for motivating change, whilst undue faith is often placed in the application of marketing strategies to ‘sell’ behavioural changes. Unfortunately, in the context of ambitious pro-environmental behaviour, such strategies seem unlikely to motivate systemic behavioural change.¶ Social marketing is an effective way of achieving a particular behavioural goal – dozens of practical examples in the field of health behaviour attest to this. Social marketing is really more of a framework for designing behaviour change programmes than a behaviour change programme - it offers a method of maximising the success of a specific behavioural goal. Darnton (2008) has described social marketing as ‘explicitly transtheoretical’, while Hastings (2007), in a recent overview of social marketing, claimed that there is no theory of social marketing. Rather, it is a ‘what works’ philosophy, based on previous experience of similar campaigns and programmes. Social marketing is flexible enough to be applied to a range of different social domains, and this is undoubtedly a fundamental part of its appeal.¶ However, social marketing’s 'what works' status also means that it is agnostic about the longer term, theoretical merits of different behaviour change strategies, or the cultural values that specific campaigns serve to strengthen. Social marketing dictates that the most effective strategy should be chosen, where effective means ‘most likely to achieve an immediate behavioural goal’. ¶ This means that elements of a behaviour change strategy designed according to the principles of social marketing may conflict with other, broader goals. What if the most effective way of promoting pro-environmental behaviour ‘A’ was to pursue a strategy that was detrimental to the achievement of long term pro-environmental strategy ‘Z’? The principles of social marketing have no capacity to resolve this conflict – they are limited to maximising the success of the immediate behavioural programme. This is not a flaw of social marketing – it was designed to provide tools to address specific behavioural problems on a piecemeal basis. But it is an important limitation, and one that has significant implications if social marketing techniques are used to promote systemic behavioural change and public engagement on an issue like climate change. ¶ 2. Be honest and forthright about the probable impacts of climate change, and the scale of the challenge we confront in avoiding these. But avoid deliberate attempts to provoke fear or guilt. ¶ There is no merit in ‘dumbing down’ the scientific evidence that the impacts of climate change are likely to be severe, and that some of these impacts are now almost certainly unavoidable. Accepting the impacts of climate change will be an important stage in motivating behavioural responses aimed at mitigating the problem. However, deliberate attempts to instil fear or guilt carry considerable risk. ¶ Studies on fear appeals confirm the potential for fear to change attitudes or verbal expressions of concern, but often not actions or behaviour (Ruiter et al., 2001). The impact of fear appeals is context - and audience - specific; for example, for those who do not yet realise the potentially ‘scary’ aspects of climate change, people need to first experience themselves as vulnerable to the risks in some way in order to feel moved or affected (Das et al, 2003; Hoog et al, 2005). As people move towards contemplating action, fear appeals can help form a behavioural intent, providing an impetus or spark to ‘move’ from; however such appeals must be coupled with constructive information and support to reduce the sense of danger (Moser, 2007). The danger is that fear can also be disempowering – producing feelings of helplessness, remoteness and lack of control (O’Neill and Nicholson-Cole, 2009). Fear is likely to trigger ‘barriers to engagement’, such as denial2 (Stoll-Kleemann et al., 2001; Weber, 2006; Moser and Dilling, 2007; Lorenzoni, Nicholson-Cole & Whitmarsh, 2007). The location of fear in a message is also relevant; it works better when placed first for those who are inclined to follow the advice, but better second for those who aren't (Bier, 2001).¶ Similarly, studies have shown that guilt can play a role in motivating people to take action but can also function to stimulate defensive mechanisms against the perceived threat or challenge to one’s sense of identity (as a good, moral person). In the latter case, behaviours may be left untouched (whether driving a SUV or taking a flight) as one defends against any feelings of guilt or complicity through deployment of a range of justifications for the behaviour (Ferguson & Branscombe, 2010). ¶ Overall, there is a need for emotionally balanced representations of the issues at hand. This will involve acknowledging the ‘affective reality’ of the situation, e.g. “We know this is scary and overwhelming, but many of us feel this way and we are doing something about it”.¶ 3. Be honest and forthright about the impacts of mitigating and adapting to climate change for current lifestyles, and the ‘loss’ - as well as the benefits - that these will entail. Narratives that focus exclusively on the ‘up-side’ of climate solutions are likely to be unconvincing. While narratives about the future impacts of climate change may highlight the loss of much that we currently hold to be dear, narratives about climate solutions frequently ignore the question of loss. If the two are not addressed concurrently, fear of loss may be ‘split off’ and projected into the future, where it is all too easily denied. This can be dangerous, because accepting loss is an important step towards working through the associated emotions, and emerging with the energy and creativity to respond positively to the new situation (Randall, 2009). However, there are plenty of benefits (besides the financial ones) of a low-carbon lifestyle e.g., health, community/social interaction - including the ‘intrinsic' goals mentioned below. It is important to be honest about both the losses and the benefits that may be associated with lifestyle change, and not to seek to separate out one from the other.¶ 3a. Avoid emphasis upon painless, easy steps. ¶ Be honest about the limitations of voluntary private-sphere behavioural change, and the need for ambitious new policy interventions that incentivise such changes, or that regulate for them. People know that the scope they have, as individuals, to help meet the challenge of climate change is extremely limited. For many people, it is perfectly sensible to continue to adopt high-carbon lifestyle choices whilst simultaneously being supportive of government interventions that would make these choices more difficult for everyone. ¶ The adoption of small-scale private sphere behavioural changes is sometimes assumed to lead people to adopt ever more difficult (and potentially significant) behavioural changes. The empirical evidence for this ‘foot-in-thedoor’ effect is highly equivocal. Some studies detect such an effect; others studies have found the reverse effect (whereby people tend to ‘rest on their laurels’ having adopted a few simple behavioural changes - Thogersen and Crompton, 2009). Where attention is drawn to simple and painless privatesphere behavioural changes, these should be urged in pursuit of a set of intrinsic goals (that is, as a response to people’s understanding about the contribution that such behavioural change may make to benefiting their friends and family, their community, the wider world, or in contributing to their growth and development as individuals) rather than as a means to achieve social status or greater financial success. Adopting behaviour in pursuit of intrinsic goals is more likely to lead to ‘spillover’ into other sustainable behaviours (De Young, 2000; Thogersen and Crompton, 2009).¶ People aren’t stupid: they know that if there are wholesale changes in the global climate underway, these will not be reversed merely through checking their tyre pressures or switching their TV off standby. An emphasis upon simple and painless steps suppresses debate about those necessary responses that are less palatable – that will cost people money, or that will infringe on cherished freedoms (such as to fly). Recognising this will be a key step in accepting the reality of loss of aspects of our current lifestyles, and in beginning to work through the powerful emotions that this will engender (Randall, 2009). ¶ 3b. Avoid over-emphasis on the economic opportunities that mitigating, and adapting to, climate change may provide. ¶ There will, undoubtedly, be economic benefits to be accrued through investment in new technologies, but there will also be instances where the economic imperative and the climate change adaptation or mitigation imperative diverge, and periods of economic uncertainty for many people as some sectors contract. It seems inevitable that some interventions will have negative economic impacts (Stern, 2007).¶ Undue emphasis upon economic imperatives serves to reinforce the dominance, in society, of a set of extrinsic goals (focussed, for example, on financial benefit). A large body of empirical research demonstrates that these extrinsic goals are antagonistic to the emergence of pro-social and proenvironmental concern (Crompton and Kasser, 2009).¶ 3c. Avoid emphasis upon the opportunities of ‘green consumerism’ as a response to climate change.¶ As mentioned above (3b), a large body of research points to the antagonism between goals directed towards the acquisition of material objects and the emergence of pro-environmental and pro-social concern (Crompton and Kasser, 2009). Campaigns to ‘buy green’ may be effective in driving up sales of particular products, but in conveying the impression that climate change can be addressed by ‘buying the right things’, they risk undermining more difficult and systemic changes. A recent study found that people in an experiment who purchased ‘green’ products acted less altruistically on subsequent tasks (Mazar & Zhong, 2010) – suggesting that small ethical acts may act as a ‘moral offset’ and licence undesirable behaviours in other domains. This does not mean that private-sphere behaviour changes will always lead to a reduction in subsequent pro-environmental behaviour, but it does suggest that the reasons used to motivate these changes are critically important. Better is to emphasise that ‘every little helps a little’ – but that these changes are only the beginning of a process that must also incorporate more ambitious private-sphere change and significant collective action at a political level.¶ 4. Empathise with the emotional responses that will be engendered by a forthright presentation of the probable impacts of climate change. ¶ Belief in climate change and support for low-carbon policies will remain fragile unless people are emotionally engaged. We should expect people to be sad or angry, to feel guilt or shame, to yearn for that which is lost or to search for more comforting answers (Randall, 2009). Providing support and empathy in working through the painful emotions of 'grief' for a society that must undergo changes is a prerequisite for subsequent adaptation to new circumstances.¶ Without such support and empathy, it is more likely that people will begin to deploy a range of maladaptive ‘coping strategies’, such as denial of personal responsibility, blaming others, or becoming apathetic (Lertzman, 2008). An audience should not be admonished for deploying such strategies – this would in itself be threatening, and could therefore harden resistance to positive behaviour change (Miller and Rolnick, 2002). The key is not to dismiss people who exhibit maladaptive coping strategies, but to understand how they can be made more adaptive. People who feel socially supported will be more likely to adopt adaptive emotional responses - so facilitating social support for proenvironmental behaviour is crucial.¶ 5. Promote pro-environmental social norms and harness the power of social networks¶ One way of bridging the gap between private-sphere behaviour changes and collective action is the promotion of pro-environmental social norms. Pictures and videos of ordinary people (‘like me’) engaging in significant proenvironmental actions are a simple and effective way of generating a sense of social normality around pro-environmental behaviour (Schultz, Nolan, Cialdini, Goldstein and Griskevicius, 2007). There are different reasons that people adopt social norms, and encouraging people to adopt a positive norm simply to ‘conform’, to avoid a feeling of guilt, or for fear of not ‘fitting in’ is likely to produce a relatively shallow level of motivation for behaviour change. Where social norms can be combined with ‘intrinsic’ motivations (e.g. a sense of social belonging), they are likely to be more effective and persistent.¶ Too often, environmental communications are directed to the individual as a single unit in the larger social system of consumption and political engagement. This can make the problems feel too overwhelming, and evoke unmanageable levels of anxiety. Through the enhanced awareness of what other people are doing, a strong sense of collective purpose can be engendered. One factor that is likely to influence whether adaptive or maladaptive coping strategies are selected in response to fear about climate change is whether people feel supported by a social network – that is, whether a sense of ‘sustainable citizenship’ is fostered. The efficacy of groupbased programmes at promoting pro-environmental behaviour change has been demonstrated on numerous occasions – and participants in these projects consistently point to a sense of mutual learning and support as a key reason for making and maintaining changes in behaviour (Nye and Burgess, 2008). There are few influences more powerful than an individual’s social network. Networks are instrumental not just in terms of providing social support, but also by creating specific content of social identity – defining what it means to be “us”. If environmental norms are incorporated at this level (become defining for the group) they can result in significant behavioural change (also reinforced through peer pressure).¶ Of course, for the majority of people, this is unlikely to be a network that has climate change at its core. But social networks – Trade Unions, Rugby Clubs, Mother & Toddler groups – still perform a critical role in spreading change through society. Encouraging and supporting pre-existing social networks to take ownership of climate change (rather than approach it as a problem for ‘green groups’) is a critical task. As well as representing a crucial bridge between individuals and broader society, peer-to-peer learning circumnavigates many of the problems associated with more ‘top down’ models of communication – not least that government representatives are perceived as untrustworthy (Poortinga & Pidgeon, 2003). Peer-to-peer learning is more easily achieved in group-based dialogue than in designing public information films: But public information films can nonetheless help to establish social norms around community-based responses to the challenges of climate change, through clear visual portrayals of people engaging collectively in the pro-environmental behaviour.¶ The discourse should be shifted increasingly from ‘you’ to ‘we’ and from ‘I’ to ‘us’. This is starting to take place in emerging forms of community-based activism, such as the Transition Movement and Cambridge Carbon Footprint’s ‘Carbon Conversations’ model – both of which recognize the power of groups to help support and maintain lifestyle and identity changes. A nationwide climate change engagement project using a group-based behaviour change model with members of Trade Union networks is currently underway, led by the Climate Outreach and Information Network. These projects represent a method of climate change communication and engagement radically different to that typically pursued by the government – and may offer a set of approaches that can go beyond the limited reach of social marketing techniques.¶ One potential risk with appeals based on social norms is that they often contain a hidden message. So, for example, a campaign that focuses on the fact that too many people take internal flights actually contains two messages – that taking internal flights is bad for the environment, and that lots of people are taking internal flights. This second message can give those who do not currently engage in that behaviour a perverse incentive to do so, and campaigns to promote behaviour change should be very careful to avoid this. The key is to ensure that information about what is happening (termed descriptive norms), does not overshadow information about what should be happening (termed injunctive norms). ¶ 6. Think about the language you use, but don’t rely on language alone¶ A number of recent publications have highlighted the results of focus group research and talk-back tests in order to ‘get the language right’ (Topos Partnership, 2009; Western Strategies & Lake Research Partners, 2009), culminating in a series of suggestions for framing climate-change communications. For example, these two studies led to the suggestions that communicators should use the term ‘global warming’ or ‘our deteriorating atmosphere’, respectively, rather than ‘climate change’. Other research has identified systematic differences in the way that people interpret the terms ‘climate change’ and ‘global warming’, with ‘global warming’ perceived as more emotionally engaging than ‘climate change’ (Whitmarsh, 2009).¶ Whilst ‘getting the language right’ is important, it can only play a small part in a communication strategy. More important than the language deployed (i.e. ‘conceptual frames') are what have been referred to by some cognitive linguists as 'deep frames'. Conceptual framing refers to catchy slogans and clever spin (which may or may not be honest). At a deeper level, framing refers to forging the connections between a debate or public policy and a set of deeper values or principles. Conceptual framing (crafting particular messages focussing on particular issues) cannot work unless these messages resonate with a set of long-term deep frames.¶ Policy proposals which may at the surface level seem similar (perhaps they both set out to achieve a reduction in environmental pollution) may differ importantly in terms of their deep framing. For example, putting a financial value on an endangered species, and building an economic case for their conservation ‘commodifies’ them, and makes them equivalent (at the level of deep frames) to other assets of the same value (a hotel chain, perhaps). This is a very different frame to one that attempts to achieve the same conservation goals through the ascription of intrinsic value to such species – as something that should be protected in its own right. Embedding particular deep frames requires concerted effort (Lakoff, 2009), but is the beginning of a process that can build a broad, coherent cross-departmental response to climate change from government.¶ 7. Encourage public demonstrations of frustration at the limited pace of government action¶ Private-sphere behavioural change is not enough, and may even at times become a diversion from the more important process of bringing political pressure to bear on policy-makers. The importance of public demonstrations of frustration at both the lack of political progress on climate change and the barriers presented by vested interests is widely recognised – including by government itself. Climate change communications, including government communication campaigns, should work to normalise public displays of frustration with the slow pace of political change. Ockwell et al (2009) argued that communications can play a role in fostering demand for - as well as acceptance of - policy change. Climate change communication could (and should) be used to encourage people to demonstrate (for example through public demonstrations) about how they would like structural barriers to behavioural/societal change to be removed.

#### Simulation and institutional deliberation are valuable and motivate effective responses to climate risks

Marx et al 7 (Sabine M, Center for Research on Environmental Decisions (CRED) @ Columbia University, Elke U. Weber, Graduate School of Business and Department of Psychology @ Columbia University, Benjamin S. Orlovea, Department of Environmental Science and Policy @ University of California Davis, Anthony Leiserowitz, Decision Research, David H. Krantz, Department of Psychology @ Columbia University, Carla Roncolia, South East Climate Consortium (SECC), Department of Biological and Agricultural Engineering @ University of Georgia and Jennifer Phillips, Bard Centre for Environmental Policy @ Bard College, “Communication and mental processes: Experiential and analytic processing of uncertain climate information”, 2007, http://climate.columbia.edu/sitefiles/file/Marx\_GEC\_2007.pdf)

Based on the observation that experiential and analytic processing systems compete and that personal experience and vivid descriptions are often favored over statistical information, we suggest the following research and policy implications.¶ Communications designed to create, recall and highlight relevant personal experience and to elicit affective responses can lead to more public attention to, processing of, and engagement with forecasts of climate variability and climate change**.** Vicarious experiential information in the **form of scenarios**, narratives, and analogies **can help** the public and **policy makers imagine the potential consequences of climate** variability and **change, amplify** or attenuate **risk perceptions, and influence** both individual behavioral intentions and **public policy preferences.** Likewise, as illustrated by the example of retranslation in the Uganda studies, **the translation of statistical information** into concrete experience **with simulated forecasts, decisionmaking and its outcomes can greatly facilitate an intuitive understanding of** both **probabilities and the** consequences of incremental change and extreme events, and **motivate contingency planning**.¶ Yet, while the engagement of experience-based, affective decision-making can make risk communications more salient and motivate behavior, experiential processing is also subject to its own biases, limitations and distortions, such as the finite pool of worry and single action bias. Experiential processing works best with easily imaginable, emotionally laden material, yet many aspects of climate variability and change are relatively abstract and require a certain level of analytical understanding (e.g., long-term trends in mean temperatures or precipitation). Ideally, communication of **climate forecasts should encourage the interactive engagement of** both analytic and experiential **processing systems in** the course of **making concrete decisions** about climate, ranging from individual choices about what crops to plant in a particular season to broad social choices about how to mitigate or adapt to global climate change.¶ One way to facilitate this interaction is through group and participatory decision-making. As the Uganda example suggests, **group processes allow individuals with a range of knowledge, skills and** personal **experience to share diverse information and perspectives and work together on a problem**. Ideally, groups should include at least one member trained to understand statistical forecast information to ensure that all sources of information—both experiential and analytic—are considered as part of the decision-making process. Communications to groups should also try to translate statistical information into formats readily understood in the language, personal and cultural experience of group members. In a somewhat iterative or cyclical process, the shared concrete information can then be re-abstracted to an analytic level that **leads to action**.¶ Risk and uncertainty are inherent dimensions of all climate forecasts and related decisions. **Analytic products like trend analysis, forecast probabilities, and ranges of uncertainty ought to be valuable contributions to stakeholder decision-making**. Yet decision makers also listen to the inner and communal voices of personal and collective experience, affect and emotion, and cultural values. Both systems—analytic and experiential—should be considered in the design of climate forecasts and risk communications. If not, many analytic products will fall on deaf ears as decision makers continue to rely heavily on personal experience and affective cues to make plans for an uncertain future. The challenge is to find innovative and creative ways to engage both systems in the process of individual and group decision-making.

#### We have a moral obligation to advocate nuclear---any alternative results in extinction due to warming

Baker 12—Executive Director of PopAtomic Studios, the Nuclear Literacy Project (7/25/12, Suzy, Climate Change and Nuclear Energy: We Need to Talk, ansnuclearcafe.org/2012/07/25/climate-change-and-nuclear-energy-we-need-to-talk/)

Ocean Acidification¶ While I was making artistic monuments to single celled organisms in the ceramics studio, new research was emerging about ocean acidification affecting these beautiful and integral pieces of our ecosystem. As the ocean absorbs excess carbon from humans burning fossil fuels, the pH of the ocean is rapidly changing. This means that our ancient oxygen-making pals cannot properly do their job. As their ocean home becomes inhospitable, they are dying off in droves. This not only impacts the ocean’s ability to naturally sequester man made carbon emissions; it also negatively impacts the entire food chain, since they are the primary food source for other multi-cellular ocean creatures, some of which we enjoy eating.¶ Oh, and did I mention that these little phytoplankton are also responsible for creating the ozone layer that protects all life on the planet from cosmic radiation, and they churn out 70-80% of the oxygen we breathe? These creatures are much more than just a pretty floating form.¶ Ocean acidification is the issue that brought me to supporting nuclear energy. Ocean acidification is an often-overlooked aspect of climate change that is potentially more threatening than the heat, the super storms, the fires, the drought, the crop losses, and all of the other trends that we are seeing now, which climate scientists have been warning us about for decades.¶ Climate Change and Nuclear Energy: Like Oil and Water?¶ It didn’t take long for me to find out that in the nuclear industry, climate change is not something we all agree on. Discussing climate change as a concern is often polarizing, and brings up intrinsic conflicts of interest in the larger energy sector (the companies who design/build/run the nuclear plants also happen to design/build/run the fossil fuel plants). I’ve been advised by people who deeply care about me, and the success of my organization, not to bring up climate at all, and to be extremely careful not to base my support of nuclear on climate issues. I’ve also been specifically advised not to make the argument that nuclear energy is the only solution to climate change.¶ When you are the new kid, it is usually best not to make waves if you can help it. So, for the most part, I have heeded that advice and held my tongue, despite myself.¶ However, as I watch the news (and my wilting vegetable garden) and see the magnitude of human suffering that is directly related to increasingly severe weather events, I cannot keep silent. Climate change is why I am here supporting nuclear energy, so what am I doing not talking about it?¶ The CEO of Exxon Mobile recently made clear that despite his company’s acknowledgement of the irrefutable evidence of climate change, and the huge ecological and human cost, he has no intentions of slowing our fossil fuel consumption. In fact, he goes as far to say that getting fossil fuels to developing nations will save millions of lives. While I agree that we need stronger, better energy infrastructure for our world’s poorest nations, I wholly disagree that fossils are the right fit for the job.¶ Fossil fuel usage could be cast as a human rights issue only to the extent that access to reliable and affordable electricity determines what one’s standard of living is. At the same time, fossil fuel usage is the single largest threat to our planet and every species on it. Disregarding the impacts that fossil fuel use poses, merely to protect and increase financial profits, is unethical, and cloaking fossil fuel use as a human rights issue is immoral.¶ Although we are all entitled to our own opinions and beliefs, the idea that climate change and ocean acidification are even up for debate is not reasonable. Just think: The CEO of the largest fossil fuel company in America freely speaks out about climate change, while nuclear energy advocates are pressured to stay silent on the subject.¶ Silence is No Longer an Option¶ I am someone who avoids conflict, who seeks consensus in my personal and professional lives, and so I have followed the advice of well-meaning mentors and stayed silent in hopes of preserving a false peace within my pro-nuclear circles, including my family and friends. But my keeping silent is now over— starting here and starting now—because this is too big and too important to stay silent. I am not alone in believing this, and the nuclear industry does itself no favors by tacitly excluding the growing movement of people who are passionate about the need to use nuclear energy to address climate change.¶ And nuclear power is the only realistic solution. It would be great if there were also other viable solutions that could be easily and quickly embraced; however, the numbers just don’t work out. Renewables and conservation may have done more good if we had utilized them on a large scale 40 years ago, when we were warned that our ecosystem was showing signs of damage from fossils fuels…but at this point it’s really too late for them. And burning more fossil fuels right now, when we have the technologies and know-how to create a carbon-free energy economy, would be the height of foolishness.¶ In the meantime, there is real human suffering, and we here in the developed world are directly causing it. Our poorest brothers and sisters cannot escape the heat. They cannot import food when their crops fail. They cannot buy bottled water when there is a drought. They cannot “engineer a solution” any more than my childhood friends the phytoplankton can.¶ ¶ Energy Choices as an Ethical Obligation¶ We have an ethical obligation to stop killing people with our energy consumption. That statement may sound oversimplified, but let’s be honest—we know that fossil fuels kill approximately 1.3 million people each year through respiratory diseases and cancers, and the death toll for climate change related events rises every day. Yet, we do nothing but dither about climate change politics. Where is the outrage?¶ The fossil fuel industry has been successful at presenting a united front and maintaining consistent strategic communications. In contrast, the safety record and clean energy contributions of nuclear are always overshadowed by politics favoring fossil fuel use. If anything, nuclear advocates should be particularly sensitive that the very same politics are happening with climate science.¶ We should be championing nuclear energy as a science-based solution, instead of enforcing a meek code of silence. People from outside the nuclear industry, like Gwyneth Cravens, Barry Brooks and Tom Blees, have pointed out these relationships, yet the nuclear industry has yet to internalize and accept these realities.¶ How can we expect people to listen to science and not politics when it comes to nuclear energy, but not climate change?¶ Disagreeing with a policy does not change the facts. You can disagree with policy to limit carbon emissions, but that doesn’t change the fact that our fossil fuel consumption is changing the PH of our oceans. Many people disagree with the use of nuclear energy, but that doesn’t change the fact that nuclear is our largest source of carbon free electricity and the safest source of electricity per kilowatt hour.¶ Nuclear Must Lead by Example¶ If we want the public to overcome the cognitive dissonance between science and policy when it comes to nuclear energy, we need to lead by example and overcome our own cognitive dissonance when it comes to climate change — even if it means risking our own interests as members of the larger energy industry. We are not going to run out of fossil fuels any time soon, so the decision to move to carbon-free energy—to move to nuclear energy—must be made willingly, and based on ethical principles, not the limits of our natural resources.¶ As green groups wait endlessly for renewable technologies to have some kind of breakthrough, and nuclear supporters stay mum on climate change, we continue using fossil fuels. Our collective inaction is allowing the destruction of our planet’s ecosystem, the dying of our oceans, and the suffering of the poorest members of our own species. The climate conversation has become so convoluted by politics and greed that many smart, compassionate people have “thrown in the towel.” We should be more concerned than ever at our lack of a comprehensive global response.¶ I strongly believe that there’s still time to reclaim the dialogue about climate change based on ocean acidification evidence, and to use nuclear technologies to improve the long-term outcome for our planet and our species. The first step is acknowledging the complicated and unique role of the nuclear industry in this conflict, and the conflicts of interest that are impeding open communication. The second step is to realize that the climate change community is a potential ally, and that openly addressing the subject of climate change in our communications is in the best interest of the nuclear community. The third step is choosing to do the right thing, not just the polite thing, and reclaim our legitimate role in the energy community as the “top dog” of carbon-free electricity, instead of quietly watching natural gas become “the new coal.”¶ Climate change is not going away—it is getting worse—and each one of us in the nuclear community has an ethical obligation to speak up and to do something about it. I am speaking up for the oceans, for the cyano-bacteria and diatoms and our shared mitochondrial RNA that still fills me with wonder at the beauty of this world. Please join me if you can, to speak up for what you love—and if you cannot, please understand that we all remain nuclear advocates, and that the nuclear community is much stronger with the no-longer-silent climate change harbingers in it.

#### Taking action against warming represents an opportunity to rebuild progressive politics for a more just society, but only if we set aside traditional differences founded around identity in favor of a broad-based coalition

Smith 10 Brendan, co-founder of Labor Network for Sustainability, 11-23, “Fighting Doom: The New Politics of Climate Change,” Common Dreams, http://www.commondreams.org/view/2010/11/23-1

I admit I have arrived late to the party. Only recently have I begun to realize what others have known for decades: The climate crisis is not, at its core, an environmental issue. In fact it is not an "issue" at all; it is an existential threat to every human and community on the planet. It threatens every job, every economy in the world. It threatens the health of our children. It threatens our food and water supply. Climate change will continue to alter the world our species has known for the past three thousand years. As an oyster farmer and longtime political activist, the effects of climate change on my life will be neither distant nor impersonal. Rising greenhouse gases and ocean temperatures may well force me to abandon my 60-acre farm within the next forty years. From France to Washington state, oystermen are already seeing massive die-offs of seed oysters and the thinning shells science has long predicted. I can see the storm clouds and they are foretelling doom. But my political alter ego is oddly less pessimistic. Rather than triggering gloom, the climate crisis has surprisingly stirred up more hope than I have felt in twenty years as a progressive activist. After decades of progressive retreat it is a strange feeling. But I am haunted by the suspicion that this coming crisis may be the first opportunity we have had in generations to radically re-shape the political landscape and build a more just and sustainable society. The Power of Doom The modern progressive movement in the U.S. has traditionally grounded its organizing in the politics of identity and altruism. Organize an affected group -- minorities, gays, janitors or women -- and then ask the public at large to support the cause -- prison reform, gay marriage, labor rights, or abortion -- based on some cocktail of good will, liberal guilt, and moral persuasion. This strategy has been effective at times. But we have failed to bring these mini-movements together into a force powerful enough to enact broad-based social reform. It takes a lot of people to change society and our current strategy has left us small in numbers and weak in power. The highlights of my political life -- as opposed to oystering -- have been marked by winning narrow, often temporary, battles, but perennially losing the larger war. I see the results in every direction I look: growing poverty and unemployment, two wars, the rise of the right, declining unionization, the failure of the Senate's climate legislation and of Copenhagen, the wholesale domination of corporate interests. The list goes on and on. We have lost; it's time to admit our strategy has been too tepid and begin charting anew. This time can be different. What is so promising about the climate crisis is that because it is not an "issue" experienced by one disenfranchised segment of the population, it opens the opportunity for a new organizing calculus for progressives. Except for nuclear annihilation, humanity has never faced so universal a threat where all our futures are bound inextricably together. This universality provides the mortar of common interest required for movement building. We could literally knock on every door on the planet and find someone -- whether they know it or not -- who has a vital self-interest in averting the climate crisis by joining a movement for sustainability. With all of humanity facing doom, we can finally gather under one banner and count our future members not in the thousands but in the millions, even billions. But as former White House "Green Jobs Czar" Van Jones told the New Yorker in 2009, "The challenge is making this an everybody movement, so your main icons are Joe Six-Pack, Joe the Plumber, becoming Joe the Solar Guy, or that kid on the street corner putting down his handgun, picking up a caulk gun." The climate crisis is carrying us into uncharted waters and our political strategy needs to be directed toward making the climate movement an "everybody movement." Let me use a personal example. As an oysterman on Long Island Sound my way of life is threatened by rising greenhouse gases and ocean temperatures. If the climate crisis is not averted my oysters will die and my farm will be shuttered. Saving my livelihood requires that I politically engage at some level. Normally I would gather together my fellow oyster farmers to lobby state and federal officials and hold a protest or two. Maybe I would find a few coalitions to join. But we would remain small in number, wield little power, and our complaints about job loss would fall on largely unsympathetic ears in the face of so many suffering in so many ways. And what would we even petition our government to do about the problem? Buyouts and unemployment benefits? Re-training classes? Our oysters will still die and we will still lose our farms. To save our lives and livelihood we need to burrow down to the root of the problem: halting greenhouse gas emissions. And halting emissions requires joining a movement with the requisite power to dismantle the fossil fuel economy while building a green economy. To tackle such a large target requires my support for every nook and cranny effort to halt greenhouse gases and transition to a green economy. I need to gather up my fellow oyster farmers and link arms with students blocking new coal-fired power plants while fighting for just transition for coal workers; I need to join forces with other green workers around the country to demand government funding for green energy jobs, not more bank and corporate bailouts; I need to support labor movement efforts in China and elsewhere to climb out of poverty by going "green not dirty." I have a stake in these disparate battles not out of political altruism, but because my livelihood and community depend on stopping greenhouse gases and climate change. In other words, the hidden jewel of the climate crisis is that I need others and others need me. We are bound together by the same story of crisis and struggle. Some in the sustainability movement have been taking advantage of the "power of doom" by weaving together novel narratives and alliances around climate change. Groups in Kentucky are complementing their anti-mountain top removal efforts by organizing members of rural electrical co-ops into "New Power" campaigns to force a transition from fossil fuels to renewable power -- and create jobs in the process. Police unions in Canada, recognizing their members will be first responders as climate disasters hit, have reached out to unions in New Orleans to ensure the tragedies that followed Katrina are not repeated. Artists, chefs, farmers, bike mechanics, designers, and others are coalescing into a "green artisan movement" focused on building vibrant sustainable communities. Immigrant organizers, worried about the very real possibility of ever-worsening racial tensions triggered by millions of environmental refugees flooding in from neighboring countries, are educating their membership about why the climate crisis matters. My hope is that over the coming years we will be able to catalog increasing numbers of these tributaries of the climate crisis. Our power will not stem from a long list of issue concerns or sponsors at events -- we have tried that as recently as the October 2nd Washington D.C. "One Nation Working Together" march with little impact. Nor, with the rise of do-it-yourself organizing, will our power spring from top-down political parties of decades past. Instead oystermen like me, driven by the need to save our lives and livelihood, will storm the barricades with others facing the effects of the climate crisis. We will merge our mini-movements under a banner of common crisis, common vision and common struggle. We will be in this fight together and emerge as force not to be trifled with. This Time We Have an Alternative I am also guardedly optimistic because this time we have an alternative. My generation came of age after the fall of communism, and as a result, we have been raised in the midst of one-sided debate. We recognize that neoliberalism has ravaged society, but besides nostalgic calls for socialism, what has been the alternative? As globalization swept the globe, we demanded livable wages and better housing for the poorest in our communities; we fought sweatshops in China; we lobbied for new campaign finance and corporate governance laws. But these are mere patchwork reforms that fail to add up to a full-blown alternative to our current anti-government, free-market system. Never being able to fully picture the progressive alternative left me not fully trusting that progressive answers were viable solutions. But when I hear the proposed solutions to the climate crisis, the fog lifts. I can track the logic and envision the machinery of our alternative. And it sounds surprisingly like a common sense rebuttal to the current free-market mayhem: We face a global emergency of catastrophic proportions. Market fundamentalism will worsen rather than solve the crisis. Instead we need to re-direct our institutions and economic resources toward solving the crisis by replacing our carbon-based economy with a green sustainable economy. And by definition, for an economy to be sustainable it must addresses the longstanding suffering ordinary people face in their lives, ranging from unemployment and poverty to housing and healthcare. For years I have tossed from campaign to campaign, but the framework of our new progressive answer to the climate crisis now provides a roadmap for my political strategy. It helps chart my opponents -- coal companies and their political minions, for example -- as well as my diverse range of allies. It lays out my policy agenda, ranging from creating millions of new green jobs to building affordable green housing in low-income communities. I finally feel confident enough in my bearings to set sail. The Era of Crisis Politics While building a new green economy makes sense on paper, it is hard to imagine our entrenched political system yielding even modest progressive reform, let alone the wholesale re-formatting of the carbon economy. But I suspect this will change in the coming years, with our future governed by cascading political crises, rather than political stasis. We are likely entering an era of crisis politics whereby each escalating environmental disaster -- ranging from water shortages and hurricanes to wildfires and disease outbreaks -- will expose the impotence of our existing political institutions and economic system. In the next 40 years alone, scientists predict a state of permanent drought throughout the Southwest US and climate-linked disease deaths to double. As Danny Thompson, secretary-treasurer of the Nevada AFL-CIO, told the Las Vegas Review Journal, the ever-worsening water crisis could be "the end of the world" that could "turn us upside down, and I don't know how you recover from that." As if that is not enough, these crises will be played out in the context of a global economy spiraling out of control. Each hurricane, drought or recession will send opinion polls and politicians lurching from right to left and vice versa. Think of how quickly, however momentarily, the political debate pivoted in the wake of Katrina, the BP disaster, and the financial crisis. As White House chief of staff Rahm Emanuel famously said "Never let a serious crisis go to waste...It's an opportunity to do things you couldn't do before." While addressing the climate crisis requires radical solutions that cannot be broached in today's political climate, each disaster opens an opportunity to advance alternative agendas -- both for the left and right. While politicians debate modest technical fixes, ordinary people left desperate by floods, fires, droughts and other disasters will increasingly -- and angrily -- demand more fundamental reforms. While our current policy choices appear limited by polls and election results, in an era of crisis politics what appears unrealistic and radical before a storm may well appear as common sense reform in its wake. My generation has been raised in the politics of eternal dusk. Except for a passing ray of hope during the Obama campaign, our years have been marked by the failure of every political force in society -- whether it be political elites or social movement leaders -- to address the problems we face as a nation and world. They have left us spinning towards disaster. We can forge a better future. Climate-generated disasters will bring our doomed future into focus. The failure of political elites to adequately respond to these cascading crises will transform our political landscape and seed the ground for social movements. And if we prepare for the chaos and long battle ahead, our alternative vision will become a necessity rather than an impossibility. As a friend recently said to me, "God help us, I hope you're right."

#### The state is inevitable and an indispensable part of the solution to warming

Eckersley 4 Robyn, Reader/Associate Professor in the Department of Political Science at the University of Melbourne, “The Green State: Rethinking Democracy and Sovereignty”, MIT Press, 2004, Google Books, pp. 3-8

While acknowledging the basis for this antipathy toward the nation- state, and the limitations of state-centric analyses of global ecological degradation, I seek to draw attention to the positive role that states have played, and might increasingly play, in global and domestic politics. Writing more than twenty years ago, Hedley Bull (a proto-constructivist and leading writer in the English school) outlined the state's positive role in world affairs, and his arguments continue to provide a powerful challenge to those who somehow seek to "get beyond the state," as if such a move would provide a more lasting solution to the threat of armed conflict or nuclear war, social and economic injustice, or environmental degradation.10 As Bull argued, **given that the state is here to stay whether we like it or not**, then the call to get "beyond the state is a counsel of despair, at all events if it means that we have to begin by abolishing or subverting the state, rather than that there is a need to build upon it.""¶ In any event, rejecting the "statist frame" of world politics ought not prohibit an inquiry into the emancipatory potential of the **state as a crucial "node" in any future network of global ecological governance**. This is especially so, given that one can expect states to persist as major sites of social and political power for at least the foreseeable future and that **any green transformations of the present political order will, short of revolution, necessarily be state-dependent**. Thus, like it or not, those concerned about **ecological destruction must contend with existing institutions** and, where possible, seek to "rebuild the ship while still at sea." And if states are so implicated in ecological destruction, then an inquiry into the potential for their transformation even their modest reform into something that is at least more conducive to ecological sustainability would seem to be compelling.¶ Of course, it would be unhelpful to become singularly fixated on the redesign of the state at the expense of other institutions of governance. States are not the only institutions that limit, condition, shape, and direct political power, and it is necessary to keep in view the broader spectrum of formal and informal institutions of governance (e.g., local, national, regional, and international) that are implicated in global environmental change. Nonetheless, while the state constitutes only one modality of political power, it is an especially significant one because of its historical claims to exclusive rule over territory and peoples—as expressed in the principle of state sovereignty. As Gianfranco Poggi explains, the political power concentrated in the state "is a momentous, pervasive, critical phenomenon. **Together with other forms of social power, it constitutes an indispensable medium for constructing and shaping larger social realities**, for establishing, shaping and maintaining all broader and more durable collectivities."12 States play, in varying degrees, significant roles in structuring life chances, in distributing wealth, privilege, information, and risks, in upholding civil and political rights, and in securing private property rights and providing the legal/regulatory framework for capitalism**. Every one of these dimensions of state activity has, for good or ill, a significant bearing on the global environmental crisis**. Given that the green political project is one that demands far-reaching changes to both economies and societies, it is difficult to imagine how such changes might occur on the kind of scale that is needed **without the active support of states**. While it is often observed that states are too big to deal with local ecological problems and too small to deal with global ones, the state nonetheless holds, as Lennart Lundqvist puts it, "a unique position in the constitutive hierarchy from individuals through villages, regions and nations all the way to global organizations. The state is inclusive of lower political and administrative levels, and exclusive in speaking for its whole territory and population in relation to the outside world."13 In short, it seems to me inconceivable to advance ecological emancipation without also engaging with and seeking to transform state power.¶ Of course, not all states are democratic states, and the green movement has long been wary of the coercive powers that all states reputedly enjoy. Coercion (and not democracy) is also central to Max Weber's classic sociological understanding of the state as "a human community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory."14 Weber believed that the state could not be defined sociologically in terms of its ends\* only formally as an organization in terms of the particular means that are peculiar to it.15 Moreover his concept of legitimacy was merely concerned with whether rules were accepted by subjects as valid (for whatever reason); he did not offer a normative theory as to the circumstances when particular rules ought to be accepted or whether beliefs about the validity of rules were justified. Legitimacy was a contingent fact, and in view of his understanding of politics as a struggle for power in the context of an increasingly disenchanted world, likely to become an increasingly unstable achievement.16¶ In contrast to Weber, my approach to the state is explicitly normative and explicitly concerned with the purpose of states, and the democratic basis of their legitimacy. It focuses on the limitations of liberal normative theories of the state (and associated ideals of a just constitutional arrangement), and it proposes instead an alternative green theory that seeks to redress the deficiencies in liberal theory. Nor is my account as bleak as Weber's. The fact that states possess a monopoly of control over the means of coercion is a most serious matter, but it does not necessarily imply that they must have frequent recourse to that power. In any event, whether the use of the state's coercive powers is to be deplored or welcomed turns on the purposes for which that power is exercised, the manner in which it is exercised, and whether it is managed in public, transparent, and accountable ways—a judgment that must be made against a background of changing problems, practices, and under- standings. The coercive arm of the state can be used to "bust" political demonstrations and invade privacy. **It can also be used to prevent human rights abuses, curb the excesses of corporate power, and protect the environment.**¶ In short, although the political autonomy of states is widely believed to be in decline, **there are still few social institution that can match the** same degree of capacity and potential legitimacy that **states have to redirect societies and economies along more ecologically sustainable lines to address ecological problems** such as global warming and pollution, the buildup of toxic and nuclear wastes and the rapid erosion of the earth's biodiversity. States—particularly when they act collectively—have the capacity to curb the socially and ecologically harmful consequences of capitalism. They are also more amenable to democratization than cor- porations, notwithstanding the ascendancy of the neoliberal state in the increasingly competitive global economy. There are therefore many good reasons why green political theorists need to think not only critically but also constructively about the state and the state system. While the state is certainly not "healthy" at the present historical juncture, in this book I nonetheless join Poggi by offering "a timid two cheers for the old beast," at least as a potentially more significant ally in the green cause.17

#### Short-term market mechanisms are the only solution to environmental destruction

Bryant 12—professor of philosophy at Collin College (Levi, We’ll Never Do Better Than a Politician: Climate Change and Purity, 5/11/12, http://larvalsubjects.wordpress.com/2012/05/11/well-never-do-better-than-a-politician-climate-change-and-purity/)

Somewhere or other Latour makes the remark that we’ll never do better than a politician. Here it’s important to remember that for Latour– as for myself –every entity is a “politician”. Latour isn’t referring solely to those persons that we call “politicians”, but to all entities that exist. And if Latour claims that we’ll never do better than a politician, then this is because every entity must navigate a field of relations to other entities that play a role in **what is and is not possible** in that field. In the language of my ontology, this would be articulated as the thesis that the local manifestations of which an entity is capable are, in part, a function of the relations the entity entertains to other entities in a regime of attraction. The world about entities perpetually introduces **resistances and frictions** **that play a key role** in what comes to be actualized**.** ¶ It is this aphorism that occurred to me today after a disturbing discussion with a rather militant Marxist on Facebook. I had posted a very disturbing editorial on climate change by the world renowned climate scientist James Hansen. Not only did this person completely misread the editorial, denouncing Hansen for claiming that Canada is entirely responsible for climate change (clearly he had no familiarity with Hansen or his important work), but he derided Hansen for proposing market-based solutions to climate change on the grounds that “the market is the whole source of the problem!” It’s difficult to know how to respond in this situations.¶ read on! ¶ It is quite true that it is the system of global capitalism or the market that has created our climate problems (though, as Jared Diamond shows in Collapse, **other systems of production have also produced devastating climate problems).** In its insistence on profit and expansion in each economic quarter, markets as currently structured provide no brakes for environmental destructive actions. The system is itself pathological.¶ **However**, pointing this out and **deriding market based solutions doesn’t get us very far**. In fact, such a response to proposed market-based solutions is downright dangerous and irresponsible. The fact of the matter is that **1) we** currently **live in a market based world, 2) there is not**, in the foreseeable future **an alternative system on the horizon, and 3), above all,** we need to do something now**.** **We can’t afford to reject interventions simply** because they don’t meet our ideal conceptions of how things should be. **We have to work with the world that is here, not the one that we would like to be here**. And here it’s crucial to note that pointing this out does not entail that we shouldn’t work for producing that other world. It just means that we have to grapple with the world that is actually there before us.¶ It pains me to write this post because I remember, with great bitterness, the diatribes hardcore Obama supporters leveled against legitimate leftist criticisms on the grounds that these critics were completely unrealistic idealists who, in their demand for “purity”, were asking for “ponies and unicorns”. This rejoinder always seemed to ignore that words have power and that Obama, through his profound power of rhetoric, had, at least **the power to shift public debates and frames, opening a path to making new forms of policy and new priorities possible.** **The tragedy was that he didn’t use that power,** though he has gotten better.¶ I do not wish to denounce others and dismiss their claims on these sorts of grounds. As a Marxist anarchists, I do believe that we should fight for the creation of an alternative hominid ecology or social world. I think that the call to commit and fight, to put alternatives on the table, has been one of the most powerful contributions of thinkers like Zizek and Badiou. If we don’t commit and fight for alternatives those alternatives will never appear in the world. **Nonetheless, we still have to grapple with the world we find ourselves in**. And it is here, in my encounters with some Militant Marxists, that I sometimes find it difficult to avoid the conclusion that they are unintentionally **aiding and abetting the very things they claim to be fighting**. **In their refusal to become impure, to work with situations or assemblages as we find them, to sully their hands, they end up** reproducing the very system they wish to topple and change**. Narcissistically they get to sit there, smug in their superiority and purity, while everything continues as it did before because they’ve refused to become politicians or engage in the difficult concrete work of assembling** human and nonhuman **actors to render another world possible.** As a consequence, they occupy the position of Hegel’s beautiful soul that denounces the horrors of the world, celebrate the beauty of their soul, **while depending on those horrors of the world to sustain their own position**. ¶ To engage in politics is to engage in networks or ecologies of relations between humans and nonhumans. To engage in ecologies is to descend into networks of causal relations and feedback loops that you cannot completely master and that will modify your own commitments and actions. But there’s no other way, there’s no way around this, and we do need to act now.

#### Pragmatic warming policy is effective and key to prevent extinction

Simpson 10 (Francis, College of Engineering, Vanderbilt University, “Environmental Pragmatism and its Application to Climate Change The Moral Obligations of Developed and Developing Nations to Avert Climate Change as viewed through Technological Pragmatism”, Spring 2010 | Volume 6 | Number 1)

Pragmatism and Footprinting¶ Environmental pragmatism is a relatively new field of environmental ethics that seeks to move beyond the strictly theoretical exercises normal in philosophy and allows the environmental movement to formulate substantial new policies (Light, 1). Environmental Pragmatism was initially posited by Bryan Norton and evolved to not take a stance over the dispute between non-anthropocentric and anthropocentric ethics. Distancing himself from this dispute, he preferred to distinguish between strong and weak anthropocentricism (Light, 290-291, 298). The main philosophers involved in advancing the debate in environmental pragmatism include Eric Katz, Andrew Light, and Bryan Norton. **This particular discipline advocates moral pluralism, implying that the environmental problems being faced have multiple correct solutions.** Light argues that the urgency of ecological crises requires that action is necessary through negotiation and compromise. While theorists serve to further the field of environmental ethics and to debate the metaethical basis of various environmental philosophies**, some answers to questions are best left to private discussion rather than taking time to argue about them publically** (introduction of pragmatism). Pragmatism believes that if two theories are equally able to provide solutions to a given problem, then debate on which is more is argued that: “the commitment to solving environmental problems is the only precondition for any workable and democratic political theory” (Light, 11). While the science behind a footprint is well understood, what can the synthesis of environmental pragmatism and footprinting tell us about the moral obligation to avert climate change? How does grounding the practice of sustainability footprinting in environmental pragmatism generate moral prescriptions for averting climate change?¶ Environmental Pragmatism necessitates the need for tools in engineering to be developed and applied to avert the climate change problem, since **pragmatism** inherently **calls for bridging the gap between theory and policy/ practices**. With the theory of pragmatism in mind, further research and development of tools such as life-cycle analysis and footprinting are potential policy tools that are necessary under a pragmatist viewpoint so that informed decisions can be made by policy makers. Since the role of life-cycle analysis and footprinting attempt to improve the efficiency and decrease the overall environmental impact of a given process, good, or service, environmental pragmatism would call for the further development and usage of these tools so that we can continue to develop sustainably and fulfill our moral obligation to future generations. By utilizing footprinting and life-cycle analysis, it becomes possible to make environmentally conscious decisions not only based upon a gut instinct but additionally based on sound science. Finally, in regards to averting climate change, footprinting and life-cycle analysis offer another dimension to traditional cost-benefit analysis and can allow for our moral obligation to future generations to weigh into final decisions which will eventually result in policies and/ or a production of a good or service. Since traditional cost benefit analysis does not account for the environment explicitly, pragmatism would call for the application of these tools to ensure that the environment is adequately protected for future generations.¶ Climate change modeling inherently contains **many unknowns** in terms of future outcomes and applied simplifications, **but these factors should not be enough to hold us back from an environmental pragmatism stand point.** Rather than hiding behind a veil of uncertainty **with the science, the uncertainty of the** possible catastrophic outcomes demands action on the part of every human individual. Environmental pragmatism could also adopt a view point like the precautionary principle where a given action has great uncertainty, but also great consequence (Haller). Since we are attempting to protect human lives and prevent unnecessary suffering, **environmental pragmatism would dictate that we should take action now and** stop debating the theoretical aspects **of this problem**. A moral obligation exists to protect human life, and it becomes our obligation to avert climate change. Despite the relatively high economic costs of averting climate change, it is worth noting that the creation of green jobs and new sectors will help to stimulate the economy rather than completely hindering it. People inherently fear change, and it is my opinion that averting climate change requires a drastic change in our consumption patterns, an important reason why people are resisting averting climate change. From an environmental pragmatism viewpoint, it is humanities responsibility to avert climate change before it is too late since we have a moral obligation to protect the future of humanity and the biosphere.

#### Scientific knowledge is best because it subjects itself to constant refinement based on empirical evidence

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The introductory lecture in this series articulated the increasingly popular "postmodernist" claim that all science is ideology. Lewontin then proceeded to justify this by stating the obvious: that scientists are human like the rest of us and subject to the same biases and socio-cultural imperatives. Although he did not actually say it, his comments seemed to imply that the enterprise of scientific research and knowledge building could therefore be no different and no more reliable as a guide to action than any other set of opinions. The trouble is that, in order to reach such an conclusion, one would have to ignore all those aspects of the scientific endeavor that do in fact distinguish it from other types and sources of belief formation.¶ Indeed, if the integrity of the scientific endeavor depended only on the wisdom and objectivity of the individuals engaged in it we would be in trouble. North American agriculture would today be in the state of that in Russia today. In fact it would be much worse, for the Soviets threw out Lysenko's ideology-masquerading-as-science decades ago. Precisely because an alternative scientific model was available (thanks to the disparaged Darwinian theory) the former Eastern bloc countries have been partially successful in overcoming the destructive chain of consequences which blind faith in ideology had set in motion. This is what Lewontin's old Russian dissident professor meant when he said that the truth must be spoken, even at great personal cost. How sad that Lewontin has apparently failed to understand the fact that while scientific knowledge -- with the power it gives us -- can and does allow humanity to change the world, ideological beliefs have consequences too. By rendering their proponents politically powerful but rationally and instrumentally impotent, they throw up insurmountable barriers to reasoned and value-guided social change.¶ What are the crucial differences between ideology and science that Lewonton has ignored? Both Karl Popper and Thomas Kuhn have spelled these out with great care -- the former throughout a long lifetime of scholarship devoted to that precise objective. Stephen Jay Gould has also done a sound job in this area. How strange that someone with the status of Lewontin, in a series of lectures supposedly covering the same subject, would not at least have dealt with their arguments!¶ Science has to do with the search for regularities in what humans experience of their physical and social environments, beginning with the most simple units discernible, and gradually moving towards the more complex. It has to do with expressing these regularities in the clearest and most precise language possible, so that cause-and-effect relations among the parts of the system under study can be publicly and rigorously tested. And it has to do with devising explanations of those empirical regularities which have survived all attempts to falsify them. These explanations, once phrased in the form of testable hypotheses, become predictors of future events. In other words, they lead to further conjectures of additional relationships which, in their turn, must survive repeated public attempts to prove them wanting -- if the set of related explanations (or theory) is to continue to operate as a fruitful guide for subsequent research.¶ This means that science, unlike mythology and ideology, has a self-correcting mechanism at its very heart. A conjecture, to be classed as scientific, must be amenable to empirical test. It must, above all, be open to refutation by experience. There is a rigorous set of rules according to which hypotheses are formulated and research findings are arrived at, reported and replicated. It is this process -- not the lack of prejudice of the particular scientist, or his negotiating ability, or even his political power within the relevant university department -- that ensures the reliability of scientific knowledge. The conditions established by the community of science is one of precisely defined and regulated "intersubjectivity". Under these conditions the theory that wins out, and subsequently prevails, does so not because of its agreement with conventional wisdom or because of the political power of its proponents, as is often the case with ideology. The survival of a scientific theory such as Darwin's is due, instead, to its power to explain and predict observable regularities in human experience, while withstanding worldwide attempts to refute it -- and proving itself open to elaboration and expansion in the process. In this sense only is scientific knowledge objective and universal. All this has little relationship to the claim of an absolute universality of objective "truth" apart from human strivings that Lewontin has attributed to scientists.¶ Because ideologies, on the other hand, do claim to represent truth, they are incapable of generating a means by which they can be corrected as circumstances change. Legitimate science makes no such claims. Scientific tests are not tests of verisimilitude. Science does not aim for "true" theories purporting to reflect an accurate picture of the "essence" of reality. It leaves such claims of infallibility to ideology. The tests of science, therefore, are in terms of workability and falsifiability, and its propositions are accordingly tentative in nature. A successful scientific theory is one which, while guiding the research in a particular problem area, is continuously elaborated, revised and refined, until it is eventually superseded by that very hypothesis-making and testing process that it helped to define and sharpen. An ideology, on the other hand, would be considered to have failed under those conditions, for the "truth" must be for all time. More than anything, it is this difference that confuses those ideological thinkers who are compelled to attack Darwin's theory of evolution precisely because of its success as a scientific theory. For them, and the world of desired and imagined certainty in which they live, that very success in contributing to a continuously evolving body of increasingly reliable -- albeit inevitably tentative -- knowledge can only mean failure, in that the theory itself has altered in the process.