### 1

#### ---Interpretation --- “Production of nuclear power” refers to fission inside a reactor used to generate electricity.

Young 2005

Steve, Whitepaper [WP-019] Environmental Regulation and Nuclear Power, http://www.unixworks.net/papers/wp-019.pdf

1.5.1.2 Production of Nuclear Power

When the U-235 atoms in fuel rods in a nuclear reactor are bombarded by neutrons, they fission, releasing energy and new neutrons. The neutrons released from the fissioning atoms bombard other U-235 atoms, fissioning them and releasing energy and still more neutrons, thereby creating an ongoing chain reaction. Nuclear power plants generate electricity by using the atomic energy to boil water and turn turbine generators with the resulting steam. 489

#### ---Violation --- (1.) ITER Laser is used for experimental observation, not electricity generation.

Donnelly 2009

Rich, SPIE newsroom editor, SPIE is an international society advancing an interdisciplinary approach to the science and application of light. About the Society The Society advances emerging technologies through interdisciplinary information exchange, continuing education, publications, patent precedent, and career and professional growth, “Giant Lasers at NIF,” http://spie.org/x36025.xml

NIF will not itself be used to generate electricity. But NIF's laser experiments, with fusion ignition and burn and energy gain in the lab, should bring fusion energy a major step closer to becoming a viable source of virtually limitless energy.

#### (2.) The affirmative deals with fusion not fission.

#### ---Voting Issue --- Explodes limits --- Allows a flood of affirmatives focused on unorthodox applications of energy for scientific or military purposes undermining core topic education and ground.

### 2

#### ---ITERs being funded now but the budgets tight -- the plan forces a tradeoff.

Cunningham 8/15 2012

Nicholas, American Security Project, “Fusion Budget on Hold’,” http://americansecurityproject.org/blog/2012/fusion-budget-on-hold/

The European Union is financing 45% of the total cost of ITER, with six other nations (one of which is the United States) chipping in 9% each. That means that the ITER bill for the U.S. totals a relatively modest $2.8 billion spread over 10 years. However, U.S. funding for both ITER and the American domestic fusion program comes out of the same pie, pitting the two against each other. Congressional efforts to cut government spending have put appropriators in a bind. In order to meet its international commitments, President Obama has proposed to take $45 million out of the domestic program (a 16% cut), and reallocate that money to ITER. The cut to the domestic program would essentially shut down MIT’s Alcator C-MOD fusion project, a facility that is researching smaller and cheaper ways of doing fusion. Scrapping the MIT program would be a huge setback. The Senate is going along with the President’s budget, appropriating $398 million for the Office of Fusion Energy Sciences, the office through which fusion labs get their funding. The House on the other hand, balked at the President’s request. Instead, it increased funding to $475 million. The two appropriations bills have not been reconciled. Fusion Power Associates has a good explanation of the details here. Realistically, fusion funding is a sideshow compared to other budget fights in Congress, so the fusion program is hostage to the political season. House Speaker John Boehner reached an agreement with Senate Majority Leader Harry Reid to pass a six-month continuing resolution when Congress returns in September. The six-month continuing resolution will mean that fusion funding remains unchanged from FY12 levels (no cuts), at least through early next year. So, while the fusion program has been spared for a few months, the budget fight will resume in early 2013.

#### ---Eliminating restrictions links --- Every additional experiment costs twenty thousand dollars.

Tarantola 2012

Andrew, OSU Powers Up a 500 Trillion Watt Laser, http://gizmodo.com/nif/

As the OSU site explains, This is where the Fast Fusion concept comes in: in Fast Fusion the "trigger" for the fusion within the compressed pellet is the arrival of an ultra-intense laser pulse of nominally 50kJ energy, with a pulse length of 20 picoseconds. There are many notional advantages in the fast fusion concept: The pellet no longer has to be so precisely manufactured, the energy of the compression lasers can be reduced up to an order of magnitude, and the concept lends itself to the relatively rapid sequencing required for an energy source. The data generated by these lasers will be used to increase the National Ignition Facility's precision for its own forthcoming fusion experiments later this year. And good thing too, every laser shot by the NIF costs taxpayers a cool $200,000. [OSU via Columbus Dispatch]

#### ---Flat energy budget guarantees funding for domestic fusion trades off with international efforts.

Hand 2012

Eric, Journalist for Nature, US fusion in budget vice, <http://www.nature.com/news/us-fusion-in-budget-vice-1.11061>

For years, US researchers have been steadfast in their support of ITER, the world’s largest fusion-energy experiment, which is under construction near Cadarache, France. But with funding commitments to ITER now putting the squeeze on three existing facilities in the United States, enthusiasm for the international project is becoming as difficult to sustain as a fusion reaction.“I think we should ask whether this is the right path,” Earl Marmar, head of the Alcator C-Mod fusion experiment run by the Massachusetts Institute of Technology in Cambridge, told colleagues on 18 July. The venue was a meeting of a US Department of Energy (DOE) group tasked with setting priorities for the non-ITER portion of the US fusion programme. At the meeting, in Bethesda, Maryland, Marmar pointed out that when US fusion researchers signed on to ITER in 2003, the project’s total construction cost was projected to be about US$5 billion, of which the United States would provide 9% over ten years. Now, the construction costs are projected to be roughly four times as much. Furthermore, the funds to support ITER were not supposed to be siphoned from existing facilities — yet if the total budget for US fusion science remains flat, as is expected, that is precisely what will happen (see ‘Death by ITER’). Marmar’s facility houses one of three US tokamaks — doughnut-shaped vessels in which physicists magnetically confine hydrogen nuclei in a plasma and heat them until they fuse and liberate energy. Alcator received $29 million in federal funding this year. But as ITER payments increase, US President Barack Obama’s 2013 budget proposal for the DOE would chop Alcator’s allocation back to $16 million, shutting down operations and forcing the experiment to lay off more than half of its 120 staff members.

#### ---ITER funding is critical to sustain science diplomacy and global survival.

**Fedoroff 2008**

Nina, Science and Technology Adviser to the Secretary of State and the Administrator of USAID, Testimony Before the House Science Subcommittee on Research and Science Education, <http://www.state.gov/g/oes/rls/rm/102996.htm>

Finally, some types of science – particularly those that address the grand challenges in science and technology – are inherently international in scope and collaborative by necessity. The ITER Project, an international fusion research and development collaboration, is a product of the thaw in superpower relations between Soviet President Mikhail Gorbachev and U.S. President Ronald Reagan. This reactor will harness the power of nuclear fusion as a possible new and viable energy source by bringing a star to earth. **ITER serves as a symbol of international scientific cooperation among key scientific leaders in the developed and developing world** **– Japan, Korea, China, E.U., India, Russia, and United States – representing 70% of the world’s current population.. The recent elimination of funding** for FY08 U.S. contributions **to the ITER project comes at an inopportune time** **as the Agreement on the Establishment of the ITER International Fusion Energy Organization for the Joint Implementation of the ITER Project had entered into force only on October 2007.** **The elimination of the promised U.S. contribution drew our allies to question our commitment and credibility in international cooperative ventures**. More problematically, it jeopardizes **a platform for reaffirming** U.S. relations with key states**. It should be noted that even at the height of the cold war, the United States used science diplomacy as a means to maintain communications and avoid misunderstanding between the world’s two nuclear powers – the Soviet Union and the United States.** **In a complex multi-polar world**, relations are more challenging, the threats perhaps greater, and **the need for engagement more paramount**. **Using Science Diplomacy to Achieve National Security Objectives The** **welfare and stability of countries** and **regions in many parts of the globe require a concerted effort by the developed world** **to address the causal factors that render countries fragile and cause states to fail. Countries that are unable to defend their people against starvation, or fail to provide economic opportunity, are susceptible to extremist ideologies, autocratic rule, and abuses of human rights. As well, the world faces common threats, among them climate change, energy and water shortages, public health emergencies,** environmental degradation**, poverty, food insecurity, and religious extremism. These threats can undermine the national security of the United States, both directly and indirectly.** Many are blind to **political boundaries, becoming regional or** global threats**. The United States has no monopoly on knowledge in a globalizing world and the scientific challenges facing humankind are enormous. Addressing these common challenges demands common solutions and necessitates scientific cooperation, common standards, and common goals.** **We must** increasingly **harness the power of American ingenuity in science and technology** **through strong partnerships with the science community in both academia and the private sector, in the U.S. and abroad among our allies, to advance U.S**. interests in **foreign policy**. **There are also important challenges to the ability of states to supply their populations with sufficient food. The still-growing human population, rising affluence in emerging economies, and other factors have combined to create unprecedented pressures on global prices of staples such as edible oils and grains. Encouraging and promoting the use of contemporary molecular techniques in crop improvement is an essential goal for US science diplomacy.** **An essential part of the war on terrorism is a war of ideas. The creation of economic opportunity can do much more to combat the rise of fanaticism than** can **any weapon**. The war of ideas is a war about rationalism as opposed to irrationalism. **Science and technology put us firmly on the side of rationalism by providing ideas and opportunities that improve people’s lives**. **We may use** the **recognition and the goodwill that science still generates** for the United States **to achieve our diplomatic and developmental goals**. Additionally**, the Department continues to use science as a means to reduce the proliferation of the weapons’ of mass destruction and prevent** what has been dubbed ‘**brain drain’. Through cooperative threat reduction activities, former** **weapons scientists redirect their skills to participate in peaceful, collaborative international research** **in a large variety of scientific fields. In addition,** **new global efforts focus on improving biological, chemical, and nuclear security by promoting and implementing best scientific practices as a means to enhance security, increase global partnerships, and create sustainability**.

### 1nc The Ohio States CP

#### ---Text --- The fifty state governments of the United States should substantially increase grants for energy production from direct drive fusion at the Ohio State University's high energy density physics scarlet laser facility and share all research findings with personnel at the National Ignition Facility.

#### ---Ohio state laser facility solves all of the case --- Replicates National Ignition Facility conditions, costs less & allows for a hundred additional experiments for every one conducted at the NIF.

Hunt 2012

Spencer, Chasing fusion, http://www.dispatch.com/content/stories/science/2012/04/22/chasing-fusion.html

To create fusion with a laser, you need power. A lot of power. The National Ignition Facility at the Lawrence Livermore National Laboratory in California boasts a $4 billion laser that fires a beam of energy equivalent to 411 trillion watts. Only 411? You might remember that the OSU laser fires 500 trillion watts of energy. And it cost less. The Lawrence Livermore laser fires a pulse of energy that lasts a billionth of a second. The OSU laser fires a pulse that lasts 30-million-billionths of a second. That’s a huge difference. The idea at Lawrence Liver-more is to split the laser into 192 beams that strike a pearl-size sphere of deuterium and tritium on all sides at the same moment, theoretically triggering fusion. Test shots are to be conducted later this year. Back at Ohio State, the amount of power its laser produces is equivalent to the electrical output of the northeastern U.S. power grid, Freeman said. Enam Chowdhury, an OSU physicist who designed the laser, said the device uses the equivalent power consumed by a light bulb over an incredibly short amount of time. “Then you get this enormous amount of power,” he said. Chowdhury and Freeman said the data recorded from fusion events will be crunched with supercomputers to help develop more-precise fusion models for the National Ignition Facility. “With our smaller-scale laser, we can create conditions that the (National Ignition Facility) creates, (but) at much lesser costs,” Chowdhury said. “One of the NIF shots would cost you on the order of $200,000 at least, and they can only shoot once a day. “We can shoot on the order of 100 times a day.” The OSU laser won’t focus solely on fusion. Other experiments will simulate nuclear reactions deep within young, still-forming stars and in white dwarfs, the cooling remnants of stars that have exhausted their nuclear fuel.

#### ---State funding is sufficient.

Yanosek 2012

Kassia, Entrepreneur-in-Residence – Stanford University’s Steyer-Taylor Center for Energy Policy and Finance, “Financing Nuclear Power in the US,” Stanford Energy Journal, Spring, http://energyclub.stanford.edu/index.php/Journal/Financing\_Nuclear\_Power\_by\_Kassia\_Yanosek

Furthermore, capital costs are inherently high, ranging in the billions or tens of billions of dollars, and are compounded by financing charges during long construction times. Without government support, financing nuclear is currently not possible in the capital markets. Recently, Constellation Energy and NRG separately pulled the plug on new multi-billion dollar plants, citing financing problems. Projects, however, will get done on a one-off basis. Southern Company’s Vogtle Plant in Eastern Georgia is likely to be the sponsor of the first new generation to be constructed, taking advantage of local regulatory and federal support. Two new reactors of next-generation technology are in the permitting stage, which will bring online 2,200 megawatts (MW) of new capacity, and will cost $14 billion. The project will take advantage of tax credits and loan guarantees provided in the 2005 Energy Policy Act. What is the ideal financial structure for funding new nuclear generation? The simplest answer is “through the rate base.” This is typically accomplished by state-level legislation which allows utilities to pass the construction costs through to the ratepayers. The ideal mechanism, which exists in a few states, allows the utility to raise rates during plant construction and adjust rates periodically for delays or cost overruns. However, this structure is not possible in most markets. California, for example, has a moratorium where utilities are not legislatively authorized to recover rates for nuclear development. And even with a regulated territory, utilities often require additional financing to raise sufficient up-front funds for construction or to mitigate risks in markets where cost recovery through the rate base is not assured. Another option, which could be a complementary solution, is a project finance model, in which debt is raised at the project level and backstopped by long-term contracts with creditworthy parties. Even this would be complex, since project financing would require finding a suite of investors willing to take on the different risk/return profiles that exist at different stages of the project. In addition, federal and/or state-based financial support designed specifically for nuclear would still be critical.

### 3

#### Text --- The United States federal government should hold a binding national policy referendum over whether to substantially increase applied research and development funding for direct-driven inertial confinement fusion at the National Ignition Facility, and should implement the result.

#### ---National referendums are insulated from political controversy.

Suksi 1993

Markku, Professor of law at Abo Akademi University, Bringing in the People, pg 12

A policy vote, again, is often characterized by a transference of the political responsibility for solving a problem to the people. The flexibility of a policy vote is very useful, for instance, in a situation in which the parties wish to avoid an outright conflict on a major principle issue. It can, in such cases, be submitted to an “impartical” body of the people which decides the issue but is expected to leave other matters related to the political parties more or less unaffected (as in the 1975 EC vote in Great Britain). This flexibility and the shift of conflict regulation from the institutionalized political actors to the people might prove to be advantageous in certain situations and result, as a matter of fact, in a positive-sum solution.

#### ---Genuine citizen engagement in energy policy formation is critical to solvency.

Hendriks 2009

Carolyn M., Crawford School of Economics and Government @ Australia National University, Securing public legitimacy for long-term energy reforms, PUBLIC POLICY NETWORK CONFERENCETHE AUSTRALIAN NATIONAL UNIVERSITY, CANBERRA29-30 JANUARY

Integrate policy development with empowered forms of citizen engagement A more radical strategy would be to extend energy debates into the public realm by facilitating inclusive forms of citizen engagement on energy reform. The idea here is to not only explore citizens’ ideas and feedback, but also their considered preferences of various scenarios or policy options. In many respects this proposal builds on the social mapping component of CSIRO’s EFF project described above. Here the recommendation is to ensure that public views are not merely informing research, but that they are fed into, and affect policy discussions and decisions. Another inspiring project in this respect is a recent Belgian project in which energy futures were co-produced with citizens and stakeholders.15 This strategy will only be successful if citizen input can penetrate through the highly elite and technical nature of existing energy discussions. For this to happen, actors in the energy community may have to reconsider their views on the role of citizens in energy politics.

#### ---The impact is extinction.

Cox 2012

William John, retired police officer, prosecutor, public interest lawyer, author and political activist, Global Research - Political Transformation in America: Effectuating Real Democracy by a Voters’ Rights Amendment, http://thevoters.org/

A National Policy Referendum can produce a number of positive results: First, the grassroots (and netroots) movement that compels the enactment of a referendum, whether by constitutional amendment or by congressional action will, in and of itself, transform the government. Once true representative democracy is effectuated, government will never again be the same. Second, the referendum process will result in a transformation of apathetic voters of every political persuasion into a more engaged, informed and motivated electorate. Once the power to create policy is realized by voters, they will naturally become more questioning and inquisitive. Moreover, voters will likely insist on civics classes in public schools to better prepare young people to evaluate and resist political propaganda and negative advertising in the future. Third, Congress will be compelled to identify actual problems, rather than the profit-motivated issues promoted by their corporate sponsors in the military-industrial complex and the health care, financial, and petroleum industries. In a representative democracy, it will necessarily be the responsibility of Congress to decide upon the most critical issues facing the nation during presidential elections; however, the Internet Age provides myriad opportunities for public participation in the process and for political parties to promote competing questions. Fourth, candidates for all elective offices, particularly presidential candidates, will be forced to take a public stand on a range of real problems. Undoubtedly, politicians will try to lie and dissemble about their positions on issues, but much like witnesses under cross-examination in a court case, they can be forced to simply answer yes or no to the most important questions. Finally, referendum voters will be much more inclined to study the issues, to confront their own prejudices and to challenge the positions of others before arriving at well-thought-out conclusions. Thoughtful answers to a policy referendum at the conclusion of an educational process are far more instructive and useful than quick answers offered during surprise opinion polls. Irrespective of their intelligence, level of education, or station in life, ordinary people are legally required to file income tax returns each year, as the government dips into their pockets to fund its operations and to pay the salaries of their representatives. If people are smart enough to pay taxes and brave enough to die in the wars started by their government, they also possess the ability to decide public policy. The collective wisdom of motivated and well-informed voters in a free society is a powerful force that will better protect its members against oppression by their own government and the people of other countries from the wars started for the financial benefit of corporate sponsors. The People’s Government The sanctity of elections in a representative democracy is directly dependent upon the strength of voter turnouts, which in turn depends on the trust of voters that their vote will make a difference, and by the integrity of the ballot box, which insures that all valid votes are properly counted. Voter Participation. In the United States, voter turnouts are historically much lower than in most other established democracies, and they have been steadily decreasing since peaking at 65% in 1960. The low point was reached in 1988 when barely half of the eligible voters appeared at the polls. Since then, the turnout has bounced up and down depending upon ballot issues, the closeness of the election and whether voters felt their lives would be affected or changed by the result. Even within the vagaries of turnouts, percentages are closely correlated with income, with 86% of people earning more than $75,000 voting, as compared to 52% of those with incomes of less than $15,000. Unsurprisingly, legislators are far more responsive to the issues that concern high-income voters. The best way to eliminate or minimize these disparities in participation is to hold elections on a national paid voting holiday to celebrate the federal elections held every two years and to honor the voters, who are the most important element of a democracy. A measure of the character of a person should not be which party, candidate or cause he or she supports, but whether or not the person actively participates in their government by casting a wise vote. Effective voting must become a sacrament in the nation’s political religion. Voter Suppression. Fair elections are best guaranteed by large turnouts; however, increasingly, there are political strategies that seek to subvert the process by actively suppressing voter turnout by those of opposing viewpoints. Rather than encouraging voters to support their position or candidate, campaigns engage in voter suppression efforts to discourage whole classes of people from exercising their right to vote. Suppression can operate indirectly through legislative processes, such as enacting unreasonable photo identification laws making it more difficult or expensive for low income, minority or elderly voters to register or to cast ballots, or by directly intimidating voters by threatening challenges at the polling place. Voter suppression can also take the form of mailings or telephone calls directing voters to the wrong polling place, by intentionally misleading voters about voting requirements, or by providing too few polling places in opposition precincts. Legislative restrictions on registration or voting must balance the benefits of an increased voter turnout with the risk of voting fraud, and all forms of intentional voter suppression should be prohibited. Computerized Voting. It might appear on the surface that computerized voting could supply a modern and secure method of voting; however, evidence of its vulnerabilities continues to accumulate. In addition to the facts that voting machines are manufactured and marketed by political partisans who refuse to disclose their operating codes, that the computers can be and have been easily hacked, and that voting machines are mechanically and electronically unreliable and often break down during elections, they do not produce an auditable paper ballot completed and verified by the voter. Paper Ballots. If American voters are to regain and retain control over their elections, they must refuse to use computerized voting machines or any other electronic ballot. Instead, voters must insist on hand-countable paper ballots upon which to record their choices. Even still, paper ballots can be optically scanned and quickly counted, but most importantly, each ballot is, indisputably, evidence of an individual’s vote and, collectively, paper ballots serve as a tangible symbol of democracy in action. Write-in Voting. Once in the voting booth, instead of responding like laboratory animals pushing a button in response to the stimulus of the latest ten-second television attack ad, voters should take time to carefully consider the issues and candidates presented on their ballots by the various political parties. Once a decision is reached, each voter should have the choice of demonstrating his or her literacy and inherent political power by voting on the most critical issues and by clearly writing in his or her personal choice for president of the United States, whether or not the name is printed on the ballot. So what if it takes a little longer to count, or recount, the ballots? Isn’t delayed gratification a small price to pay for ensuring that voters control elections, rather than those who profit from elections? If voter turnouts were to dramatically increase, and if only 15 to 25 percent of voters were to cast write-in votes, trust that the politicians would quickly register their willingness to accept every write-in vote naming them for any office of public trust and that they will be scrambling to ensure that all write-in votes cast for them are legally counted. The Future. Young Americans continue to be grievously wounded and killed in their nation’s wars to defend a “government of the people, by the people and for the people.” The question that must be answered now is what kind of government will these young people have in the future? Will it be a despotic government enabled by lazy and easily misled voters, who foolishly rely on robots to count their ballots? More likely, the People of the United States, of every political party, will prove once again they are smart enough to figure out they are being taken advantage of, and they will have the courage to do something about it. They just need to figure out what that “something” is. A Voters’ Rights Amendment Since its creation two hundred years ago, the People of the United States have traveled a long path toward achieving true representative democracy. Initially, only male property owners were allowed to cast ballots, but along the way the franchise has been extended, with a few exceptions, to all adult citizens. With its decision in Citizens United, the Supreme Court not only reversed two hundred years of progress toward a democracy for all of the people, it slammed the door shut and handed over the keys to corporations and other moneyed interests. Amending the Constitution. There has been a groundswell of bipartisan opposition to Citizens United, and a number of organizations representing tens of thousands of voters have proposed constitutional amendments to overcome the decision. Move to Amend is the best known and best organized of the opposition groups, and its proposed amendment aims to reverse the granting of corporate personhood and the equation of money and free speech ordered by the Court. Its proposal follows in the first three sections: Section 1 The rights protected by the Constitution of the United States are the rights of natural persons only. Artificial entities, such as corporations, limited liability companies, and other entities, established by the laws of any State, the United States, or any foreign state shall have no rights under this Constitution and are subject to regulation by the People, through Federal, State, or local law. The privileges of artificial entities shall be determined by the People, through Federal, State, or local law, and shall not be construed to be inherent or inalienable. Section 2 Federal, State and local government shall regulate, limit, or prohibit contributions and expenditures, including a candidate’s own contributions and expenditures, for the purpose of influencing in any way the election of any candidate for public office or any ballot measure. Federal, State and local government shall require that any permissible contributions and expenditures be publicly disclosed. The judiciary shall not construe the spending of money to influence elections to be speech under the First Amendment. Section 3 Nothing contained in this amendment shall be construed to abridge the freedom of the press. The V.R.A. A Voters’ Rights Amendment securing voter control over the government must not only reverse corporate personhood and provide for the control of money in politics, it must also clearly establish voter primacy as a matter of inherent constitutional right and it must include a solid foundation upon which to build a true and long-lasting representative democracy for future generations. Following is a working blueprint for such a structure: Section 4 The right of all adult citizens of the United States to cast effective votes in all elections is inherent under this Constitution and shall not be denied or abridged by the United States or by any State. Section 5 During the calendar year preceding a presidential election, Congress shall solicit public comment regarding the political issues that most concern the People. Prior to the end of the calendar year preceding a presidential election, Congress shall adopt a joint resolution enumerating the 12 most critical policy questions that should be addressed by the next President and Congress. Failure of Congress to adopt a joint resolution prior to the end of the calendar year shall result in the disqualification of all sitting members of Congress to be eligible for reelection. Section 6 Federal elections conducted every second year for Senators and Representatives shall be held on a national voter’s holiday, with full pay for all citizens who cast a ballot. Federal elections shall be conducted on uniform, hand-countable paper ballots and, for the presidential election, ballots shall include the 12 most critical policy questions identified by Congress, each to be answered yes or no by the voters. Paper ballots shall provide space allowing voters to handwrite in their choice for all elective federal offices, if they choose, and all such votes shall be counted. Section 7 The States shall ensure that all citizens who are eligible to vote are registered to vote. In balancing the public benefit of maximum voter participation with the prevention of voting fraud, Congress and the States shall not impose any unreasonable restriction on registration or voting by the People. The intentional suppression of voting is hereby prohibited and, in addition to any other penalty imposed by law, any person convicted of the intentional suppression of voting shall be ineligible for public office for a period of five years. Transformation The United States Constitution once stood as a model for new nations; however, today it is viewed by many as an outdated and difficult-to-amend document that guarantees few rights, when compared to other established democracies. There is an inherent right in a representative democracy to cast an effective vote, and a failure by the government to protect that right nullifies the electoral process. By amending their constitution to ensure the primacy of voters and their right to control their government, the People of the United States will once again demonstrate an evolutionary model for democratic governments around the world. Transformation of the United States government to a true representative democracy is no longer an option. It is a matter of survival!

### 4

A. Resolved means to make a firm decision

[Allwords.com](http://Allwords.com/) 2003

http://www.allwords.com/query.php?SearchType=3&Keyword=Resolved&goquery=Find+it%21&Language=ENG

1. To decide firmly or to determine to do it.

Form: resolve on something (usually)

Form: resolve to do something

#### B. They are not a firm decision, they don’t specify which branch or branches of the federal government enact the plan. Cross examination or 2AC clarification is Inadequate. The plan text is the only clear statement, it’s crucial to pre-round preparation and negative strategizing.

#### C. Agent Specification is Essential:

1. Ground & Clash: They destroy our ability to run solvency arguments and disads to actions by particular branches. Lack of specification means they can permute away agent counterplans.

2. Debatability: The desirability of a specific course of action depends on who is enacting it. A policy which might be desirable if undertaken by the President might be undesirable if undertaken by Congress.

3. Allows Affirmative Conditionality: Allowing the aff multiple potential agents is in effect allowing them multiple plans.

#### D. It’s a voting issue to preserve fairness and division of ground and because the affirmative must affirm the topic.

### 5

#### FUSION NOT T

#### Violates Energy production---it’s pre-production

Koplow 4 Doug Koplow is the founder of Earth Track in Cambridge, MA. He has worked on natural resource subsidy issues for 20 years, primarily in the energy sector "Subsidies to Energy Industries" Encyclopedia of Energy Vol 5 2004www.earthtrack.net/files/Energy%20Encyclopedia,%20wv.pdf

3. SUBSIDIES THROUGH THE FUEL CYCLE

Because no two fuel cycles are exactly the same, examining subsidies through the context of a generic fuel cycle is instructive in providing an overall framework from which to understand how common subsidization policies work. Subsidies are grouped into preproduction (e.g., R&D, resource location), production (e.g., extraction, conversion/generation, distribution, accident risks), consumption, postproduction (e.g., decommissioning, reclamation), and externalities (e.g., energy security, environmental, health and safety).

3.1 Preproduction

Preproduction activities include research into new technologies, improving existing technologies, and market assessments to identify the location and quality of energy resources.

3.1.1 Research and Development

R&D subsidies to energy are common worldwide, generally through government-funded research or tax breaks. Proponents of R&D subsidies argue that because a portion of the financial returns from successful innovations cannot be captured by the innovator, the private sector will spend less than is appropriate given the aggregate returns to society. Empirical data assembled by Margolis and Kammen supported this claim, suggesting average social returns on R&D of 50% versus private returns of only 20 to 30%.

However, the general concept masks several potential concerns regarding energy R&D. First, ideas near commercialization have much lower spillover than does basic research, making subsidies harder to justify. Second, politics is often an important factor in R&D choices, especially regarding how the research plans are structured and the support for follow-on funding for existing projects.

Allocation bias is also a concern. Historical data on energy R&D (Table III) demonstrate that R&D spending has heavily favored nuclear and fossil energy across many countries. Although efficiency, renewables, and conservation have captured a higher share of public funds during recent years, the overall support remains skewed to a degree that may well have influenced the relative competitiveness of energy technologies. Extensive public support for energy R&D may also reduce the incentive for firms to invest themselves. U.S. company spending on R&D for the petroleum refining and extraction sector was roughly one-third the multi-industry average during the 1956-1998 period based on survey data from the U.S. National Science Foundation. For the electric, gas, and sanitary services sector, the value was one-twentieth, albeit during the more limited 1995-1998 period.

3.1.2 Resource Location

Governments frequently conduct surveys to identify the location and composition of energy resources. Although these have addressed wind or geothermal resources on occasion, they most often involve oil and gas. Plant siting is another area where public funds are used, primarily to assess risks from natural disasters such as earthquakes for large hydroelectric or nuclear installations. Survey information can be important to evaluate energy security risks and to support mineral leasing auctions, especially when bidders do not operate competitively. However, costs should be offset from lease sale revenues when evaluating the public return on these sales. Similarly, the costs of siting studies should be recovered from the beneficiary industries.

3.2 Production

Energy production includes all stages from the point of resource location through distribution to the final consumers. Specific items examined here include resource extraction, resource conversion (including electricity), the various distribution links to bring the energy resource to the point of final use, and accident risks.

#### Violates incentives---they have to provide money to the private sector---r&D is distinct

CCES 9 Center for Climate and Energy Solutions (also called c2es) “Buildings and Emissions: Making the Connection” No specific date dated, most recent citation from 2009 www.c2es.org/technology/overview/buildings

Policy Options to Promote Climate-Friendly Buildings

The mosaic of current policies affecting the building sector is complex and dynamic involving voluntary and mandatory programs implemented at all levels of government, from local to federal. Government efforts to reduce the overall environmental impact of buildings have resulted in numerous innovative policies at the state and local levels. Non-governmental organizations, utilities, and other private actors also play a role in shaping GHG emissions from buildings through third-party “green building” certification, energy efficiency programs, and other efforts.

Various taxonomies have been used to describe the policy instruments that govern buildings, typically distinguishing between regulations, financial incentives, information and education, management of government energy use, and subsidies for research and development (R&D). Each of these is broadly described below.

-Standards and codes

Regulatory policies include building and zoning codes, appliance energy efficiency standards, clean energy portfolio standards, and electricity interconnection standards for distributed generation equipment. Building codes can require a minimum level of energy efficiency for new buildings, thus mandating reductions at the construction stage, where there is the most opportunity to integrate efficiency measures. Zoning codes can provide incentives to developers to achieve higher performance. Because of regional differences in such factors as climatic conditions and building practices, and because building and zoning codes are implemented by states and localities, the codes vary considerably across the country. While substantial progress has been made over the past decade, opportunities to strengthen code requirements and compliance remain.

Appliance and equipment standards require minimum efficiencies to be met by all regulated products sold; they thereby eliminate the least efficient products from the market. Federal standards exist for many residential and commercial appliances, and several states have implemented standards for appliances not covered by federal standards (see Appliance Efficiency Standards).

-Financial incentives

Financial incentives can best induce energy-efficient behavior where relatively few barriers limit information and decision-making opportunities (e.g., in owner-occupied buildings). Financial incentives include tax credits, rebates, low-interest loans, energy-efficient mortgages, and innovative financing, all of which address the barrier of first costs. Many utilities also offer individual incentive programs, because reducing demand, especially peak demand, can enhance the utility’s system-wide performance.

-Information and education

While many businesses and homeowners express interest in making energy-efficiency improvements for their own buildings and homes, they often do not know which products or services to ask for, who supplies them in their areas, or whether the energy savings realized will live up to claims. Requiring providers to furnish good information to consumers on the performance of appliances, equipment and even entire buildings is a powerful tool for promoting energy efficiency by enabling intelligent consumer choices.

-Lead-by-example programs

A variety of mechanisms are available to ensure that government agencies lead by example in the effort to build and manage more energy-efficient buildings and reduce GHG emissions. For example, several cities and states, and federal agencies (including the General Services Administration), have mandated LEED or LEED-equivalent certification for public buildings, and the Energy Independence and Security Act of 2007 includes provisions for reduced energy use and energy efficiency improvements in federal buildings.

-Research and development (R&D)

In the long run, the opportunities for a low-greenhouse gas energy future depend critically on new and emerging technologies. Some technological improvements are incremental and have a high probability of commercial introduction over the next decade (such as low-cost compact fluorescents). Other technology advances will require considerable R&D before they can become commercially feasible (such as solid-state lighting). The fragmented and highly competitive market structure of the building sector and the small size of most building companies discourage private R&D, on both individual components and the interactive performance of components in whole buildings.

Building Technologies Center. The Oak Ridge National Laboratory’s Buildings Technology Center was established by the U.S. Department of Energy (DOE) and performs research into issues including heating and cooling equipment, thermal engineering, weatherization, building design and performance, envelope systems and materials, and power systems.

Emerging Technologies. This U.S. DOE-sponsored program develops technology that would reduce energy use in residential and commercial buildings by 60-70 percent. Technologies are in fields including solid-state lighting, space conditioning and refrigeration, building envelopes, and analysis tools and design strategies that would facilitate the development of energy efficient buildings through software and computer-based building analysis.

#### Voting issue for limits and ground---creates an unmanageable topic of new speculative tech via government research that doesn’t interact with the market

### 6

#### ---Assuming fiat powers can change the current political order obscures bureaucrats and lobbies influence in the process of technological determinism that the 1ac participates in, the imagination of the plan serves to further the interest of neoliberal elites

White 2010

Damian, is a post-doctoral research fellow in the Schoolof Cultural and Innovation Studies, University of East London. “A Green Industrial Revolution? Sustainable Technological Innovation in a Global Age” http://www.academia.edu/1079379/Damian\_White\_A\_Green\_Industrial\_Revolution\_Sustainable\_Technological\_Innovation\_in\_a\_Global\_Age

There is a tendency in both Factor Four and Natural Capitalism to treat technology as ‘a black box’ – to use Pinch and Biker’s term [ Bijker, Hughesand Pinch, 1987 ]. That is, technological innovation, development and diffusion are viewed as processes that occur autonomous from politics ,cultural life and social relations. Essentially, embracing something of a‘whig’ view of technological innovation, as we have seen, the Factor Four revolution is presented as inevitable and when it comes, socially unproblematic. This is so because it is reasoned that the best technologies(that is, the most efficient and profitable) will win out. A basic problem with this claim, however, is that it comes close to providing a rather simple inversion of technological determinism, that is, a green technological determinism. Such an approach clearly stands at odds with much of theresearch that has emerged out of the history, philosophy and sociology of technology of late [ Bijker, Hughes and Pinch, 1987; Winner, 1986; Mackenzie and Wajcman et al., 1999; Feenberg, 1995, 1999 ].One central weakness of this Whig view of technological development is the failure to recognise – as a huge array of case studies in the social studies of technology have now fairly conclusively demonstrated [ Bijker and Law, 1992; Mackenzie and Wajcman et al., 1999 ] that technological choices are to a largely degree undetermined . Successful technical designs do need to respect technical principles. Beyond this though it is often the case that several different designs can achieve the same or similar objectives leaving no compelling technical reason to support one rather than the other. A consequences of the under-determination of technology is that ‘the final decisions between alternatives ultimately depends on the fit between them and the interests and beliefs of the various groups that influence the design process’ [ Feenberg, 1995: 4 ]. The point is not to deny that technologies, when subsequently developed, cannot have any intrinsic properties. Technological innovations such as the rise of eco technology do open up a new series of ‘affordances’ which can enable/constrain subsequent social action [ Hutchby, 2001 ]. But what is important is to recognise that technological design, diffusion and development is not adequately viewed as an a-social process of uniliner progression but rather a ‘negotiated achievement’ [ Feenberg, 1995: 4 ] , a multi-centred affair between numerous social actors such as owners of business, customers, political leaders and government bureaucrats. Such groups wield influence ‘by proffering or withholding resources, defining the purposes of devices they require, fitting them into technical arrangements to their own benefit, imposing new directions on existing technical means’[ Feenberg, 1954: 4 ]. What relevance do these observations have ourdiscussion of Factor Fourand Natural Capitalism though? The social studies of technology hold out two important lessons for advocates of a green industrial revolution. The first point is essentially negative. Notably, it draws attention to the fact that even if all the obstacles to a green industrial revolution posed by the structuring of the current political economy are addressed – if there are not forces to make things differently – the type of eco-technological and eco-industrial reorganisation that triumphs could simply serve and reinforce the patterns of interest of dominant groups. A neo-liberal version of the ‘greenindustrial revolution’ could simply give rise to eco-technologies and formsof industrial reorganisation that are perfectly compatible with extending social control, military power, worker surveillance and the broader repressive capacities of dominant groups and institutions. It might even be that a corporate dominated green industrial revolution would simply ensure that employers have ‘smart’ buildings which not only give energy back tothe national grid but allow for new ‘solar powered’ employee surveillance technologies. What of a sustainable military-industrial complex that usesgreen warfare technologies that kill human beings without destroying ecosystems? To what extent might a ‘northern’ dominated green industrial revolution simply ensure that the South receives ecotechnologies that primarily express Northern interests (for example, embedding relations of dependency rather than of self management and autonomy?). In short then, a green industrial revolution could simply give rise to new forms of ‘green governmentality’ [ Darier et al., 1999 ].

#### ---Their conflict scenarios are false and have only been constructed due to imperialist knowledge production, as an academic you have an ethical obligation to reject security epistemology

San Juan 1995 Professor of English and Comparative Literature at UConn, Hegemony and Strategies of Transgression, pg 1-2

Scenes of carnage in Somalia, East Timor, Haiti, in the occupied territories of Palestine and in all the fragments of what was once Yugoslavia. . . . Images of violent confrontations in South Africa, and not too long ago in Los Angeles, and now in Yemen and Rwanda. . . . The year 1994 opened with the uprising of the Indian communities led by the Zapatista National Liberation Front in Chiapas. Mexico, just after the signing of the North America Free Trade Agreement. Signs of the apocalypse? Or of the long-awaited devolution from the age of the superpowers? In the prologue to Tlie Rules Are No Game, Anthony Wilden (1987) has given us a background to this landscape of horrendous waste, disfigurations of pieties and ressentimeni. Connecting "local knowledges" with their overarching reality, Noam Chomsky (1991) has rendered in bold strokes the lessons of the paradigmatic First World (United States)-Third World (Vietnam) encounter in our time, recalling what Mark Twain (1992), in his "To the Person Sitting in Darkness," did for his audience at the turn of the century. Faced with this multitudinous reality, the practitioners of "humane letters" in the United States—quite a separate tribe from the aforementioned disturbers of the peace—have displayed erudition and ingenuity in theorizing but have failed to engage with crude, sublunary happenings. Why? Because all (except for those skeptics on the fringe and other scandalous but marginalized cottscietilicizers) have refused to understand exactly what is meant by the dominant, expansive, and virtually inescapable stranglehold of the United States—its economic, political, and cultural hegemony—over the world system in terms of the everyday lives of masses of people in what is called the "Third World." Although the term "cultural imperialism" has been domesticated for ideology-critique (Tomlinson 1991) and token criticism of certain government policies is the standard tare for liberals, still the majority of U.S. intellectuals and arbiters of taste function today without any thought of how their words and actions, whether they know it or not. "represent" the claims to (cultural/racial) superiority of a nation-state whose interventions in Latin America, Asia, and the Middle East have brought disaster and misery to millions since the nineteenth century. Edward Said's recent Culture and Imperialism is just one reminder of that record. Unless there is some sophisticated criticism and disavowal of this complicity, I am afraid that the activities of U.S. academics can only serve to advance transnational capital's ascendancy for now and throughout the next century.

### 1nc Nuclear Stewardship Adv --- Case Frontline

#### ---NIF stockpile stewardship fails --- Lack of oversight.

Bodner --- Their Solvency Author --- 2011

Their Author, <http://fire.pppl.gov/IFE_NAS_Bodner_PlanB.pdf>, To: ! Members of the National Academy of Sciences Committee on the Prospects for Inertial Confinement Fusion Energy Systems, and the Panel on Fusion Target Physics From: ! Dr. Stephen E. Bodner, retired, former head of the laser fusion program at the Naval Research Laboratory Date: ! December 9, 2011 (revised)

I have been thinking back about all of those research reports, and journal articles, and review articles, even books, by the NIF scientists, that conﬁdently described how to design an ignition target. Page upon page of experimental data and equations and computational studies. Even plans for a fusion power plant. Most of it now seen to be fundamentally wrong. And no oversight from the rest of Livermore Lab to bring them back to their senses. Lesson learned: I have a set of questions that disturb me. It is not part of the NAS review, but it is bothersome. Are we really going to rely on NIF-trained scientists to maintain our nuclear weapons stockpile in future decades? Can we really trust any part of this lab to maintain our nuclear weapons? Aren’t they going to oversell the NIF, since it is such a signiﬁcant fraction of their lab budget? In the past, when the nuclear weapons were still being designed, the competition between the two design labs was essential. Again, competition is beneﬁcial in research. Do we still need and want two labs just for stewardship and maintenance, given the sad story of the NIF?

#### ---Turn --- Stockpile modifications based on computer calculations inevitably compromises its integrity.

Gusterson 2001

Hugh, anthropologist, Gusterson is a professor of anthropology and sociology at George Mason University. His expertise is in nuclear culture, international security, and the anthropology of science. He has conducted considerable fieldwork in the United States and Russia, where he studied the culture of nuclear weapon scientists and antinuclear activists, The Virtual Nuclear Weapons Laboratory in the New World Order, American Ethnologist, Vol. 28, No. 2 (May, 2001), pp. 417-437, http://people.reed.edu/~ahm/Courses/Reed-POL-422-2012-S1\_NP/Syllabus/EReadings/07.1/07.1.Gusterson2001The-Virtual.pdf

Although activists and weapons scientists debate whether the new simulation technologies will allow the labs to perfect new weapons without nuclear testing, a second critique of stockpile stewardship professes a profound skepticism about even very limited use of simulation technologies. There are left and right versions of this critique. The left version is associated with Ray Kidder, an internal critic at the Livermore Laboratory who has proposed an alternative stockpile stewardship plan that would confine the labs to reproducing identical copies of old nuclear weapons when they wear out. This proposal, which would effectively demote physicists to engineers, is not well liked at Livermore or Los Alamos. Kidder published an article in Nature in 1997 attacking the government's stockpile stewardship program on the grounds that, by encouraging weapons designers to make even minor design modifications unproven by nuclear testing, it would actually compromise the integrity of the nuclear stockpile. He said: "A decline in competence concerning nuclear weapons is virtually inevitable....With less competent designers and engineers, a program of continuing modification of the physics package-bel ieved necessary by the DOE [Department of Energy] to maintain competence-would in fact pose an unnecessary risk to the safety and reliability of the stockpile" (Kidder 1997:646). The same argument has been made with a very different political spin by Robert Barker (1997), a senior manager at the Livermore Laboratory allied with prominent conservatives in Washington, and by Republican Congressman Floyd Spence (1996) and Republican Senator Robert Kyl, both ardent opponents of the nuclear test ban treaty. In testimony to Congress, Barker (1997) said: As a nuclear weapon designer, I learned the limitations of simulations and the humility that comes with the failure of a nuclear test. Computer calculations, regardless of how good or fast the computer is, are only as good as the data and models you give them and the knowledge and experience of the individual doing the calculations. Even today, no computers are big enough or fast enough to simulate all that goes on when a nuclear weapon explodes. The true knowledge of and experience with the limitations of calculations came from understanding the differences between calculations and experiments, including nuclear tests.

#### ---Statistical data disproves their “American weakness causes global war” claims.

Fettweis 2011

Christopher J. Fettweis, Department of Political Science, Tulane University, 9/26/11, Free Riding or Restraint? Examining European Grand Strategy, Comparative Strategy, 30:316–332, EBSCO

It is perhaps worth noting that there is no evidence to support a direct relationship between the relative level of U.S. activism and international stability. In fact, the limited data we do have suggest the opposite may be true. During the 1990s, the United States cut back on its defense spending fairly substantially. By 1998, the United States was spending $100 billion less on defense in real terms than it had in 1990.51 To internationalists, defense hawks and believers in hegemonic stability, this irresponsible “peace dividend” endangered both national and global security. “No serious analyst of American military capabilities,” argued Kristol and Kagan, “doubts that the defense budget has been cut much too far to meet America’s responsibilities to itself and to world peace.”52 On the other hand, if the pacific trends were not based upon U.S. hegemony but a strengthening norm against interstate war, one would not have expected an increase in global instability and violence. The verdict from the past two decades is fairly plain: The world grew more peaceful while the United States cut its forces. No state seemed to believe that its security was endangered by a less-capable United States military, or at least none took any action that would suggest such a belief. No militaries were enhanced to address power vacuums, no security dilemmas drove insecurity or arms races, and no regional balancing occurred once the stabilizing presence of the U.S. military was diminished. The rest of the world acted as if the threat of international war was not a pressing concern, despite the reduction in U.S. capabilities. Most of all, the United States and its allies were no less safe. The incidence and magnitude of global conflict declined while the United States cut its military spending under President Clinton, and kept declining as the Bush Administration ramped the spending back up. No complex statistical analysis should be necessary to reach the conclusion that the two are unrelated. Military spending figures by themselves are insufficient to disprove a connection between overall U.S. actions and international stability. Once again, one could presumably argue that spending is not the only or even the best indication of hegemony, and that it is instead U.S. foreign political and security commitments that maintain stability. Since neither was significantly altered during this period, instability should not have been expected. Alternately, advocates of hegemonic stability could believe that relative rather than absolute spending is decisive in bringing peace. Although the United States cut back on its spending during the 1990s, its relative advantage never wavered. However, even if it is true that either U.S. commitments or relative spending account for global pacific trends, then at the very least stability can evidently be maintained at drastically lower levels of both. In other words, even if one can be allowed to argue in the alternative for a moment and suppose that there is in fact a level of engagement below which the United States cannot drop without increasing international disorder, a rational grand strategist would still recommend cutting back on engagement and spending until that level is determined. Grand strategic decisions are never final; continual adjustments can and must be made as time goes on. Basic logic suggests that the United States ought to spend the minimum amount of its blood and treasure while seeking the maximum return on its investment. And if the current era of stability is as stable as many believe it to be, no increase in conflict would ever occur irrespective of U.S. spending, which would save untold trillions for an increasingly debt-ridden nation. It is also perhaps worth noting that if opposite trends had unfolded, if other states had reacted to news of cuts in U.S. defense spending with more aggressive or insecure behavior, then internationalists would surely argue that their expectations had been fulfilled. If increases in conflict would have been interpreted as proof of the wisdom of internationalist strategies, then logical consistency demands that the lack thereof should at least pose a problem. As it stands, the only evidence we have regarding the likely systemic reaction to a more restrained United States suggests that the current peaceful trends are unrelated to U.S. military spending. Evidently the rest of the world can operate quite effectively without the presence of a global policeman. Those who think otherwise base their view on faith alone.

#### **---No future nuclear testing --- Opposition is insurmountable.**

Reif 2012

Reif-director of nuclear nonproliferation, Center for Arms Control and Non-Proliferation-4/12

http://www.thebulletin.org/web-edition/columnists/kingston-reif/the-case-the-ctbt-stronger-ever

The case for the CTBT: Stronger than ever

What's more, the United States has not conducted a nuclear test since September 1992 and has no plans to resume explosive testing. As Lt. Gen. Frank Klotz, former commander of Air Force Global Strike Command, recently put it, "Absent a radical change in the international environment, the political barriers to a resumption of testing would be practically insurmountable." Given that testing is not on the political agenda and isn't necessary to the maintenance of the arsenal, that detection capabilities are at an all-time high, and that national security would be improved under the treaty, it's difficult to understand why the United States would not take advantage of the CTBT. After all, the United States has conducted 1,030 nuclear tests -- more than all other nations combined. The body of knowledge the United States has gleaned from this matchless testing history means that a permanent test ban would provide the nation with an enormous security advantage relative to other nuclear-armed states.

#### ---The affirmative doesn’t result in more experiments --- Laser firing limits are a function of system stress not institutional preference. Either the affirmative doesn’t increase direct drive experiments or they break the laser.

Clery 2011

Daniel, Their Author, Fusion Power’s Road Not Yet Taken, http://www.iter.org/doc/www/content/com/Lists/WebLinks/Attachments/750/Science-2011-Clery-445-8.pdf

Perhaps the biggest challenge facing all ICF fusion schemes is repetition rate. Current research facilities do their shots in no particular hurry. They want hours, days, or even weeks to analyze their results. But because the energy from each shot is not high, a power station would need to do lots of them, anywhere from one every 10 seconds to 16 times per second—nearly 1.4 million shots a day. A high repetition rate is hard to achieve because the driver has to power up and produce a highenergy pulse very fast; the chamber has to be cleared of debris after each shot so it doesn’t interfere with the next one; and targets must be manufactured at a high rate and placed precisely in the chamber.

#### ---Turn --- Fusion Arms Race --- (A.) Demonstration of fusion ignition would spark global fusion weaponization.

Makhijani 98 Arjun, Ph.D. and Pres. Inst. for Energy and Environmental Research, and Hisham Zerriffi, Project Scientist, 7-15, “Dangerous Thermonuclear Quest: The Potential of Explosive Fusion Research for the Development of Pure Fusion Weapons,” IEER, http://ieer.org/resource/reports/dangerous-thermonuclear-quest/

In the long term, facilities such as the National Ignition Facility and MTF facilities pose even greater threats to both the CTBT and the disarmament process. As discussed above, if ignition is demonstrated in the laboratory, the weapons labs and the DOE would likely exert considerable pressure to continue investigations and to engage in preliminary design activities for a new generation of nuclear weapons (even if it is just to keep the designers interested and occupied). Ignition would also boost political support and make large-scale funding of such activities more likely. Even without the construction of actual weapons, these activities could put the CTBT in serious jeopardy from forces both internal and external to the United States. Internally, those same pressures, which could lead to the resumption of testing of current generation weapons, could also lead to the testing of new weapons (to replace older, less safe or less reliable weapons). Externally, the knowledge that the United States or other weapons states were engaging in new fusion weapons design activities could lead other states to view this as a reversal of their treaty commitments. Comparable pressures to develop pure fusion weapons would be likely to mount in several countries. This would have severe negative repercussions for both non-proliferation and complete nuclear disarmament. The time to stop this dangerous thermonuclear quest for explosive ignition is now, before its scientific feasibility is established.

#### (B.) Nuclear war

Cohen and Douglass 2 Sam, nuclear weapons analyst and Joe, national security analyst, both members of the Los Alamos Tactical Nuclear Weapons panel, 3-11, “Nuclear Threat That Deesn’t Exist – Or Does It?” Rense, http://rense.com/general35/doex.htm

The comparison of a pure-fusion warhead with a normal fission warhead is even more stark. The lethal area to military troops of a 10 ton (high explosive equivalent yield) pure-fusion device would be approximately the same as the lethal area of a fission warhead several hundred times larger; that is, one in the kiloton range! The cost of a pure-fusion warhead is also reduced. In terms of the precious nuclear material that is required, namely, tritium and deuterium, pure-fusion devices are extremely cheap. Because the pure-fusion warhead does not need active nuclear material, such as plutonium, to "trigger" the deuterium-tritium burn, they can be made for a fraction of the cost of one fission-fusion neutron bomb of the 1980s. The inherent consequences of a pure-fusion device go far beyond low cost and greatly reduced explosive yield. Most significant, pure-fusion warheads, in contrast to warheads that use fissionable material, are not covered by the Nuclear Non-Proliferation Treaty (NPT). Any country can, in terms of international law, legally possess and even sell such weapons and not be in violation of the NPT. Also, deuterium-tritium fuel can be purchased openly on the international market. The spirit of the NPT may be in violation, but not the letter. Still further, because there is no fissionable component and because the explosive yield is so small, full operational tests of a pure-fusion device could be conducted in any country and not be detected by systems set up to monitor nuclear weapons tests. If tests were conducted underground at a moderate depth, say 50 to 100 meters, even the local inhabitants would suspect nothing. These consequences drive a stake through the heart of U.S. non-proliferation policies. These policies are based on preventing those who want to "go nuclear" from having access to the active nuclear material. A warhead or "device" that does not use active nuclear material (uranium or plutonium) is not prohibited. To make matters worse, in no sense can they be termed weapons of "mass destruction." Indeed, the pure-fusion devices are even more discriminant than the neutron bomb because there is, in comparison, negligible physical damage and a total absence of fission by-products and related contaminating fallout. Because of this, the pure-fusion device represents the worst fear of those whose personal crusade is to stop the spread of nuclear weapons and preserve the fire break in a hope that this will prevent a nuclear war. The pure-fusion device is less destructive than most conventional bombs, is reasonably cheap, and can be tested with impunity. It produces no fission radioactive by-products or fallout of serious concern. That is, the pure-fusion device renders the unthinkable thinkable. This is why officials do not want to discuss the possibility of pure-fusion warheads and, as will be seen, will do their best to deny their possible existence.

### Science

#### Meltdowns are low level

**Jaworowski 98** (Zbigniew, professor at the central laboratory for radiological protection in Warsaw, has also served as the chairman of the United Nations Scientific Committee on the Effects of Atomic radiation (UNSCEAR), “Radiation Risks in the 20th Century; Reality, Illusions and Risks,” 17-20 September, http://www.angelfire.com/mo/radioadaptive/anniversary1.html)

We are all exposed to natural ionizing radiation, which penetrates all living organisms. Radiation comes from the cosmos and from radionuclides present in rocks, buildings, and air, and in our own body. Each flake of snow, grain of soil, drop of rain, a flower, and even each man in the street is a source of this radiation The average individual dose of natural radiation received by the world population is now about 2.4 mSv per year. Every day, over a billion particles of natural radiation impact our bodies. However, in some regions, for example, in India and Iran, the natural radiation dose is up to hundred times higher. No adverse genetic, cancerogenic or other effects of these higher doses were observed among the people who have lived in these areas since time immemorial. In the 1990s, man-made radiation has increased the global average radiation dose by about 20 percent, mainly as a result of x-ray diagnostics in medicine. Other important man-made sources, like nuclear power, nuclear weapons tests, or the Chernobyl accident, contributed only a tiny fraction, <0.1 percent, of the total increase. In those regions of the former Soviet Union that were highly contaminated by Chernobyl fallout, the additional dose to inhabitants is much less than the dose in areas of high natural radiation (Figure 1). The entire man-made contribution to radiation dose amounts to only about 0.2 percent of natural dose in areas of high natural radiation.

#### Chernobyl can’t happen in the US

Robert Morris, PhD in Science Education and retired Environmental Consultant, *The Environmental Case for Nuclear Power,* 2000, pg 127-8

There are some very crucial differences between U.S.-built nuclear power reactors and Russian-built reactors. In the U.S. reactors, the uranium fuel rods are surrounded by water which acts as a moderator and also serves to transfer the heat generated by the fuel rods. If a U.S. reactor loses water, the nuclear reaction stops all by itself because the moderator, which is necessary for the reaction, is gone. But, in many Russian-built reactors, graphite is used as the moderator, and the water which is used to transfer heat actually slows down the reaction. This means that when water is lost from a Russian reactor, the chain reaction accelerates rapidly, and an engineer in the plant must act immediately to stop the rapidly increasing reaction rate and heat. Reactors of the Chernobyl type are so dangerous that they could never be licensed to generate electricity in the U.S., or in most Western countries. Secondly, U.S. nuclear power plants are built with multiple layers of containment. Usually, several 8-inch-thick steel jackets and a steel reinforced concrete containment up to 3-and-one-half feet thick enclose the reactor and insure that nothing can escape from it. But, at Chernobyl, this kind of safety containment was completely absent. Figure 7.1 shows this containment. Unlike Western-built power reactors, Chernobyl was built to serve a dual purpose: As it generated electricity, it was producing plutonium for nuclear weapons. Because the plutonium must be removed frequently, a heavy concrete containment would be in the way and, therefore, was never built. After the accident, observers studying the situation concluded that had containment such as is used in U.S. nuclear power plants been present, there would have been no escape of radioactive materials from the plant. At the time of the accident, electrical engineers—not nuclear engineers—were carrying out an electrical experiment which led to nuclear conditions so dangerous that plant rules strictly forbid operating under such conditions. However, the electrical engineers in charge disregarded these rules and proceeded with their experiment. Apparently, no nuclear engineers were on hand to emphasize how dangerous this was. At 1:23 A.M., on April 26, 1986, an automatically-generated computer print-out warned plant operators that the reactor should be shut down immediately, but the operators ignored this warning. Only minutes later, two explosions occurred almost simultaneously. Although the U.S. media failed to make the point clear, the explosion was not nuclear, but was either chemical or a steam explosion such as occurs when a water heater without a safety valve becomes overheated. In addition to the fact that not enough of the fissionable isotope of uranium is present for a nuclear explosion to occur, the fact that only two people were killed in the two explosions further indicates that the explosions were not nuclear.

#### People have the same chance of dying in a nuclear power accident as they do of being struck by a meteor

London Times, September 2, 2002

Its safety record is, however, very good: even including Chernobyl, the statistical probability of a member of the public dying in a nuclear accident is about the same as being struck by a meteorite. Modern reactors release virtually no extra radiation, and claims that there are "leukaemia clusters" around nuclear installations are largely rejected by scientists.

#### Nuclear power accidents don’t kill folks, the only reason Chernobyl was deadly was that people panicked

Atlanta Journal and Constitution, September 20, 2002

He and his 18 colleagues noted that much of the public's fear of nuclear power stems from the accident at the Three Mile Island plant in Pennsylvania in 1979 and the catastrophic accident at Chernobyl in the Ukraine in 1986. The Three Mile Island meltdown, however, caused no significant environmental damage or injury to any person, they wrote. "Even if containment had been severely breached, little radioactivity would have escaped," they pointed out. The Chernobyl accident caused 30 deaths and spewed radioactivity high into the atmosphere. But "the terrible and widespread consequences of that accident --- increased suicide, alcoholism, depression, and unemployment, plus 100,000 unnecessary abortions --- were caused by fear of radiation and by poor planning based on that fear," the group wrote.

**Growth is unsustainable, trying to maintain it makes their impacts and all other external extinction scenario’s inevitable**

**Trainer 11** (Ted, Senior Lecturer at University of New South Wales “The radical implications of a zero growth economy” <http://www.paecon.net/PAEReview/issue57/Trainer57.pdf>)

The planet is now racing into many massive problems, ***any one of which could bring about the collapse of civilization*** before long. The most serious are the destruction of the environment, the deprivation of the Third World, resource depletion, conflict and war, and the breakdown of social cohesion. The main cause of all these problems is over-production **and over-consumption** – people are trying to live at levels of affluence that are far too high to be sustained or for all to share. Our society is ***grossly*** unsustainable – the levels of consumption, resource use and ecological impact we have in rich countries like Australia are far beyond levels that could be kept up for long or extended to all people. Yet almost everyone’s supreme goal is to increase material living standards and the GDP and production and consumption, investment, trade, etc., as fast as possible and without any limit in sight. There is no element in our suicidal condition that is more important than this mindless obsession with accelerating the main factor causing the condition. The following points drive home the magnitude of the overshoot. • If the 9 billion people we will have on earth within about 50 years were to use resources at the per capita rate of the rich countries, annual resource production would have to be about 8 times as great as it is now. • If 9 billion people were to have a North American diet we would need about 4.5 billion ha of cropland, but there are only 1.4 billion ha of cropland on the planet. • Water resources are scarce and dwindling. What will the situation be if 9 billion people try to use water as we in rich countries do, while the greenhouse problem reduces water resources. • The world’s fisheries are in serious trouble now, most of them overfished and in decline. What happens if 9 billion people try to eat fish at the rate Australian’s do now? • Several mineral and other resources **are likely to be very scarce soon**, including gallium, indium, helium, and there are worries about copper, zinc, silver and phosphorous. Oil and gas are likely to be in decline soon, and largely unavailable in the second half of the century. If 9 billion were to consume oil at the Australian per capita rate, world demand would be about 5 times as great as it is now. The seriousness of this is extreme, given the heavy dependence of our society on liquid fuels. • Recent "Footprint" analysis indicates that it takes 8 ha of productive land to provide water, energy, settlement area and food for one person living in Australia. (World Wildlife Fund, 2009.) So if 9 billion people were to live as we do about 72 billion ha of productive land would be needed. But that is about 10 times all the available productive land on the planet. • The most disturbing argument is to do with the greenhouse problem. It is very likely that in order to stop the carbon content of the atmosphere rising to dangerous levels CO2 emissions will have to be totally eliminated by 2050 (Hansen says 2030). (Hansen, 2009, Meinschausen et al., 2009.) Geosequestration can’t enable this, if only because it can only capture about 85% of the 50% of emissions that come from stationary sources like power stations. These kinds of figures make it abundantly clear that rich world material “living standards” are grossly unsustainable. **We are living in ways that it is impossible for all to share. We are not just a little beyond sustainable levels of resource consumption -- we have overshot by a factor of 5 to 10.** Few seem to realise the magnitude of the overshoot, nor therefore about the enormous reductions that must be made.

**Collapse now is better, it avoids ecological decay**

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**H**umanity and the Earth are faced with an enormous conundrum -- sufficient climate policies enjoy political support only in times of rapid economic growth. Yet this growth is the primary factor driving greenhouse gas emissions and other environmental ills. **The growth machine has pushed the planet well beyond its ecological carrying capacity, and unless constrained, can only lead to human extinction and an end to complex life.** With every economic downturn, like the one now looming in the United States, it becomes more difficult and less likely that policy sufficient to ensure global ecological sustainability will be embraced. This essay explores the possibility that from a biocentric viewpoint of needs for long-term global ecological, economic and social sustainability; **it would be better for the economic collapse to come now rather than later**. **Economic growth is a deadly disease upon the Earth, with capitalism as its most virulent strain**. Throw-away consumption and explosive population growth are made possible by using up fossil fuels and destroying ecosystems. Holiday shopping numbers are covered by media in the same breath as Arctic ice melt, ignoring their deep connection. Exponential economic growth destroys ecosystems and pushes the biosphere closer to failure. Humanity has proven itself unwilling and unable to address climate change and other environmental threats with necessary haste and ambition. Action on coal, forests, population, renewable energy and emission reductions could be taken now at net benefit to the economy. Yet, the losers -- primarily fossil fuel industries and their bought oligarchy -- successfully resist futures not dependent upon their deadly products. Perpetual economic growth, and necessary climate and other ecological policies, are fundamentally incompatible. Global ecological sustainability depends critically upon establishing a steady state economy, whereby production is right-sized to not diminish natural capital. Whole industries like coal and natural forest logging will be eliminated even as new opportunities emerge in solar energy and environmental restoration. This critical transition to both economic and ecological sustainability is simply not happening on any scale. The challenge is how to carry out necessary environmental policies even as economic growth ends and consumption plunges. The natural response is going to be liquidation of even more life-giving ecosystems, and jettisoning of climate policies, to vainly try to maintain high growth and personal consumption. We know that humanity must reduce greenhouse gas emissions by at least 80% over coming decades. How will this and other necessary climate mitigation strategies be maintained during years of economic downturns, resource wars, reasonable demands for equitable consumption, and frankly, the weather being more pleasant in some places? If efforts to reduce emissions and move to a steady state economy fail; the collapse of ecological, economic and social systems is assured. Bright greens take the continued existence of a habitable Earth with viable, sustainable populations of all species including humans as the ultimate truth and the meaning of life. **Whether this is possible in a time of economic collapse is crucially dependent upon whether enough ecosystems and resources remain post collapse to allow humanity to recover and reconstitute sustainable, relocalized societies**. It may be better for the Earth and humanity's future that economic collapse comes sooner rather than later, while more ecosystems and opportunities to return to nature's fold exist. Economic collapse will be deeply wrenching -- part Great Depression, part African famine. There will be starvation and civil strife, and a long period of suffering and turmoil. Many will be killed as balance returns to the Earth. Most people have forgotten how to grow food and that their identity is more than what they own. Yet there is some justice, in that those who have lived most lightly upon the land will have an easier time of it, even as those super-consumers living in massive cities finally learn where their food comes from and that ecology is the meaning of life. Economic collapse now means humanity and the Earth ultimately survive to prosper again. **Human suffering -- already the norm for many, but hitting the currently materially affluent -- is inevitable given the degree to which the planet's carrying capacity has been exceeded**. We are a couple decades at most away from societal strife of a much greater magnitude as the Earth's biosphere fails. Humanity can take the bitter medicine now, and recover while emerging better for it; or our total collapse can be a final, fatal death swoon.

**Where past the point where tech can solve, gotta have dedev NOW**

**Li 10** (Dr. Minqi Li, Assistant Professor Department of Economics, University of Utah “The 21st Century Crisis: Climate Catastrophe or Socialism”[www.econ.utah.edu/.../Economics%207004/Article%20Forthcoming%20RRPE%20David%20Gordon%20Lecture.doc](http://www.econ.utah.edu/.../Economics%207004/Article%20Forthcoming%20RRPE%20David%20Gordon%20Lecture.doc))

The global average surface temperature is now about 0.8°C (0.8 degree Celsius) higher than the pre-industrial time. Under the current trend, the world is on track towards a long-term warming between 4°C and 8°C. At this level of global warming, the world would be in an extreme greenhouse state not seen for almost 100 million years**, devastating human civilization** and destroying nearly all forms of life on the present earth (Conner and McCarthy 2009). The scientific community has reached the consensus that the current global warming results from the excessive accumulation in the atmosphere of carbon dioxide (CO2) and other greenhouse gases (such as methane and nitrous oxide) emitted by human economic activities.[[1]](#footnote-1) The capitalist historical epoch has been characterized by the explosive growth of material production and consumption. The massive expansion of the world economy has been powered by fossil fuels (coal, oil, and natural gas). Since 1820, the world economy has expanded by about seventy times and the world emissions of carbon dioxide from fossil fuels burning have increased by about sixty times (see Figure 1). At the United Nations conference on climate change concluded at Copenhagen in December 2009, the world’s governments officially committed to the objective of limiting global warming to no more than 2°C. However, according to the “Climate Action Tracker”, despite the official statement, the national governments’ current pledges regarding emission reduction in fact imply a warming of at least 3°C by the end of the 21st century with more warming to come in the following centuries (Climate Action Tracker 2010). In reality, all the major national governments are committed to infinite economic growth and none of them is willing to consider any emission reduction policy that could undermine economic growth. This is not simply because of intellectual ignorance or lack of political will. The pursuit of endless accumulation of capital (and infinite economic growth) is derived from the basic laws of motion of the capitalist economic system. Without fundamental social transformation, human civilization is now on the path to self-destruction. The next section (Section 2) reviews the basic scientific facts concerning the climate change crisis. Without an end of economic growth, **it is virtually impossible for meaningful climate stabilization to be achieved** (Section 3). However, both capitalist enterprises and states are constantly driven to expand production and consumption. The system of nation states effectively rules out a meaningful global political solution to the climate change crisis (Section 4). The climate change crisis is but one of several long-term historical trends that are now leading to the structural crisis of capitalism (Section 5). The resolution of the crisis and the survival of the humanity require the building of a fundamentally different social system that is based on social ownership of the means of production and society-wide planning (Section 6). **Climate Catastrophe: the Crisis of the 21st Century** The world is currently about 0.8°C warmer than the pre-industrial time and continues to warm at a rate of about 0.2°C per decade. If global warming rises above 2°C, dangerous climate feedbacks may be triggered, leading to the release of more greenhouse gases from soil and ocean. For this reason, 2°C warming is generally considered by scientists as the “safe limit” beyond which global warming may be out of human control. A 3°C warming would destroy the Amazon rainforest, leading to a further warming of 1.5°C. Southern Africa, Australia, Mediterranean Europe, and Western US would turn into deserts. Sea level could rise by 25 meters and billions of people could become environmental refugees. With a 4°C warming, the melting of the Arctic permafrost could release massive amount of carbon dioxide and methane. Algae, the main carbon sinker in the ocean, would die out. The world is set for runaway global warming that could lead to additional temperature rises by several degrees. If global warming rises to 5°C and above, much of the world would cease to be inhabitable and global human population could be reduced by 90 percent. Table 1 summarizes the potential consequences of various degrees of global warming (Spratt and Sutton 2008; Guardian 2009; Lovelock 2009). At the pre-industrial time, the amount of greenhouse gases, measured by atmospheric concentration of CO2-equivalent (which measures the amount of *all greenhouse gases* in the atmosphere), was about 280 parts per million (ppm) (European Environment Agency 2009). According to the Intergovernmental Panel on Climate Change (IPCC), the “climate sensitivity” or the extent of global warming that would result from a doubling of the greenhouse gases in the atmosphere is estimated to be about 3°C. Thus, according to the IPCC climate sensitivity, if the atmospheric concentration of CO2-equivalent rises to 550 ppm, it should lead to an increase in global average temperature by about 3°C from the pre-industrial time (IPCC 2007b). However, new developments in climate science suggest that IPCC is likely to have underestimated the potential of global warming. Based on the study of paleoclimate data, James Hansen, one of the world’s leading climate scientists, concludes that when “slow” climate feedbacks (such as ice sheet disintegration and vegetation migration) are taken into account, the long-term climate sensitivity is about 6°C rather than 3°C (Hansen et al. 2008). Given the Hansen climate sensitivity, an atmospheric concentration of CO2-equivalent of 550 ppm would lead to a long-term global warming of about 6°C. Currently, the atmospheric concentration of CO2 (which measures *only carbon dioxide* in the atmosphere, other greenhouse gases not included) stands at near 390 ppm and is rising at an annual rate of about 2 ppm. The total greenhouse gases regulated by the Kyoto Protocol now stand at about 440 ppm CO2-equivalent and are rising at a rate of about 3 ppm a year (European Environment Agency 2009). Without any further increase in greenhouse gases, the current level of greenhouse gases already implies a long-term warming of 2-4°C. Table 2 summarizes the various scenarios of climate stabilization. Under Scenario I, atmospheric concentration of CO2 eventually stabilizes at 350 ppm and the total greenhouse gases stabilize at 450 ppm CO2-equivalent. This will lead to a long-term global warming of about 2°C under the IPCC climate sensitivity but a 4°C warming under the Hansen climate sensitivity. As more than 2°C global warming would significantly increase the risk of dangerous climate feedbacks and anything beyond 3°C warming would be devastating for human civilization, a responsible global climate policy should really aim at an atmospheric concentration of CO2 at no more than 350 ppm. To achieve this objective, the cumulative carbon dioxide emissions over the entire 21st century must be less than one trillion metric tons. In addition to emissions from fossil fuels burning, human activities also cause carbon dioxide emissions through deforestation and other land use changes. Currently, deforestation results in annual carbon dioxide emissions of about five billion metric tons. Suppose in the future, deforestation is reduced to about one-third of the current level. The cumulative carbon dioxide emissions from deforestation over the 21st century may be limited to no more than 200 billion metric tons. This leaves the cumulative fossil emissions budget for the century to be about 800 billion metric tons. However, over the first decade of this century, about 300 billion metric tons of carbon dioxide has already been emitted from fossil fuels burning. The remaining fossil emissions budget is therefore reduced to about 500 billion metric tons. The world currently emits about 30 billion metric tons of carbon dioxide each year from fossil fuels burning. Thus, at the current emission rate, the remaining fossil emissions budget required to achieve no more than 350 ppm CO2 will be exhausted in 17 years. At the current emission rate, the remaining fossil emissions budget required to achieve no more than 450 ppm CO2 will be exhausted in 50 years. If the current emission rate is maintained through the rest of the 21st century, the cumulative fossil emissions will amount to three trillions metric tons, **leading to the nightmarish Scenario** III (with long-term global warming of 4-8°C). **Economic Growth and Climate Change** Despite the imminent threat of global climate catastrophe, virtually all of the world’s governments, major corporations, the entire mainstream economics discipline, as well as the mainstream environmental groups continue to maintain that it is possible to achieve desirable climate stabilization while simultaneously pursuing infinite economic growth.[[2]](#footnote-2) The relationship between economic growth and carbon dioxide emissions can be explained by the following formula: Carbon Dioxide Emissions = World GDP \* Emission Intensity of GDP Emission intensity of GDP is simply the ratio of carbon dioxide emissions over GDP. It follows that: Carbon Dioxide Emissions Growth Rate = World Economic Growth Rate – Rate of Decline of Emission Intensity According to the mainstream argument, capitalist technological progress will result in rapid declines of emission intensity, which will more than offset the growth of the world economy, leading to absolute declines of carbon dioxide emissions. If technological progress becomes sufficiently rapid, then the world economy could keep growing while the global carbon dioxide emissions fall rapidly to meet the climate stabilization objectives. Given the current state of climate change crisis, is this argument at all realistic? To stabilize atmospheric concentration of CO2 at no more than 350 ppm, the cumulative fossil emissions over the rest of the century must not exceed 500 billion metric tons. It follows that the global carbon dioxide emissions from fossil fuels burning must fall at an annual rate of 5.5 percent through the rest of the century. By 2050, the annual emissions need to fall by about 90 percent from the current level. If the goal is to stabilize atmospheric concentration of CO2 at no more than 450 ppm (this would lead to the catastrophic long-term warming of 3-6°C), the cumulative fossil emissions over the rest of the century must not exceed 1.5 trillion metric tons. It follows that the global carbon dioxide emissions from fossil fuels burning must fall at an annual rate of 1.5 percent through the rest of the century. By 2050, the annual emissions need to fall by about 50 percent from the current level. In reality, over the decade 1999-2009, the world economy grew at an average annual rate of 3.5 percent, emission intensity fell at an average annual rate of 1.1 percent, and carbon dioxide emissions from fossil fuels burning had increased at an average annual rate of 2.4 percent. In 2009, the global economy suffered the deepest recession since the 1930s. Some had hoped that “the Great Recession” would help to greatly reduce the level of emissions.[[3]](#footnote-3) The emissions did fall, only by 1.3 percent (as the large reductions of emissions in the advanced capitalist countries were mostly offset by the rapid growth of coal consumption in China). If the world were to repeat the exercise of “Great Recession” every year for the rest of the century, it would just fall short of meeting the 450 ppm objective and not even get close to the 350 ppm objective (see Figure 2 for the emission paths required to meet the 350 ppm objective and 450 ppm objective). If the world economy keeps growing at 3 percent a year (roughly the growth rate needed to keep the unemployment rate constant in the advanced capitalist countries), then to meet the 450 ppm objective, the emission intensity must decline at an annual rate of 4.5 percent (a quadrupling of the recent pace of emission intensity decline). To meet the 350 ppm objective, the emission intensity must decline at an annual rate of 8.5 percent. What miracle technology could deliver this? Leave aside many other technical and economic difficulties involved in emission reduction, given the fact that the world’s entire existing energy and industrial infrastructure is built around fossil fuels, sufficient emission reduction is simply impossible under the condition of infinite economic growth.[[4]](#footnote-4) Suppose each year the world replaces 5 percent of the existing energy infrastructure and the new energy capital stock reduces emission intensity by 50 percent compared to the existing capital stock. This is roughly equivalent to assuming that all of the world’s new power plants and new motor vehicles are emission-free. With such heroic assumptions, it would only reduce the world’s overall emission intensity by 2.5 percent a year. At this rate of emission intensity reduction, the world economy must contract at an annual rate of 3 percent to meet the 350 ppm objective. **Capitalism and Climate Change** Society’s surplus product is the part of the total social product that is above what is needed to provide the population with basic consumption and replace the means of production consumed. Historically, surplus product tended to be used by a small group of elites for luxury consumption and various wasteful activities. As a result, for much of the human history, material production and consumption tended to either stagnate or grow very slowly. Under capitalism, the market relations have become the dominant mechanism of resources allocation. With universal market relations, capitalist enterprises are in constant and intense competition against one another. To survive and prevail in the competition, each capitalist enterprise is constantly under pressure to expand the scale of production. This in turn requires each capitalist enterprise generate as much profit as possible and use much of the profit (surplus value) for the purpose of capital accumulation. Thus, capitalism is an economic system based on production for profit and the operation of the system inevitably leads to the pursuit of endless accumulation of capital. At the global level, capitalism has evolved as a system of nation states. The states engage in constant and intense competition against one another in economic and military struggles. To prevail in these struggles, each state is compelled to adopt policies and institutions that tend to favor capital accumulation and maximize economic growth. Those states that fail to promote economic growth tend to suffer from economic and political instabilities, and even cease to exist as viable states.[[5]](#footnote-5) Against this powerful tendency towards infinite economic growth, are there counteracting forces which may result in an equally powerful tendency towards falling emission intensity? According to neoclassical economics, if the fossil fuels become scarce, prices of fossil fuels will rise, encouraging consumers to use less energy and capitalist enterprises to substitute renewable energies for the fossil fuels. Under this scenario, as long as “the prices are right”, the market will arrive at the proper solution and there is nothing to worry about. Of course, the problem is that in reality the prices are not right and greenhouse gas emissions have kept rising. The neoclassical solution to this problem is to treat the greenhouse gas emissions as an “externality”, which is a market failure. But a market failure may be corrected by getting the prices right. The fossil fuel prices may be corrected through either a carbon tax or a “cap and trade” system that helps to take account of the environmental cost of fossil emissions. But can we actually find a set of prices that could reduce the greenhouse gas emissions at a sufficiently rapid pace without seriously undermining capital accumulation and economic growth? In other words, within the limit of the capitalist economic logic, do right prices exist in this particular case? As is discussed in the previous section, due to difficulties in infrastructure transformation and other limits, such “right prices” may simply do not exist. But suppose a set of right prices for fossil fuels can be found, how can they be implemented? If the problem has to do with an environmental externality within the boundary of a national capitalist economy, then it is conceivable that it may be effectively regulated by the national government to the extent the political situation allows the national government to effectively represent the long-term interest of the national capitalist class (a condition that is not always guaranteed). But climate change is a global environmental crisis and the capitalist world system does not have a world government. Instead, it is a system made up with competing nation states. From the point of view of a nation state, to reduce fossil fuels consumption would mean either to reduce the overall energy consumption or to replace fossil fuels with renewable energies that are more expensive and suffer from certain technical limitations. Thus, one way or the other, reducing fossil fuels consumption means lower economic growth rate. Given these considerations, few states would unilaterally act to reduce fossil fuels consumption. Historically, from time to time, successive hegemonic powers (the Netherlands in the 17th century, the United Kingdom in the 19th century, and the US in the 20th century) had acted as proxies for the world government in the capitalist world system, promoting the long-term interest of the system. Could the current hegemonic power effectively represent the systemic interest and lead the global cooperation required to tackle the climate change crisis? The US hegemonic power has by now entered into irreversible decline. This is reflected by the fact that it can no longer effectively promote the systemic interest and its current act is often not in the system’s long-term interest. On the other hand, none of the other major powers is now in a position to replace the US to become the next hegemonic power and lead the system to overcome the current structural crisis.[[6]](#footnote-6) The inability of the existing system to overcome the global climate crisis was demonstrated by the Copenhagen fiasco. At the Copenhagen conference, the advanced capitalist countries (the US, Western Europe, and Japan) had agreed to undertake only limited emission reductions and refused to provide adequate financial assistance to the “developing countries” to help their emission reductions. In recent years, the so-called “emerging market” countries and especially China have become the leading contributors to global greenhouse gas emissions. China is already the world’s largest carbon dioxide emitter and now accounts for fully one quarter of the global emissions. Thus, unless China and other emerging market countries undertake to reduce greenhouse gas emissions, there is no hope for meaningful climate stabilization to be achieved. Instead, China and India have only agreed to reduce “emission intensity” rather than emissions. In effect, China and India have reserved the right to keep consuming fossil fuels on increasingly larger scales. Figure 2 compares the alternative paths of world carbon dioxide emissions from fossil fuels burning from 2000 to 2050. The “Copenhagen Accord” path assumes that the major countries will reduce emissions or emission intensity in accordance with their respective pledges made under the Copenhagen Accord. The US will reduce emissions by 20 percent by 2020 from the 2005 levels. Both the European Union and Japan will reduce emissions by 25 percent by 2020 from the 1990 levels. Russia will reduce emissions by 20 percent by 2020 from the 1990 levels. China’s emissions will grow at an average annual rate of 5 percent between 2005 and 2020 (assuming an average annual economic growth rate of 8.5 percent and an average annual emission intensity reduction rate of 3.5 percent). India’s emissions will grow at an average annual rate of 5 percent between 2005 and 2020 (assuming an average annual economic growth rate of 6.5 percent and an average annual emission intensity reduction rate of 1.5 percent). The above countries together accounted for 70 percent of the world’s total carbon dioxide emissions from fossil fuels burning in 2005. The rest of the world’s emissions are assumed to grow at an average annual rate of 1 percent between 2005 and 2020 (compared to an average annual growth rate of 2.3 percent between 1990 and 2005). If the national governments actually deliver what they promised, by 2020, the world emissions will be about four billion metric tons higher than the current levels. The cumulative fossil emissions from 2000 to 2020 will have amounted to 650 billion metric tons, leaving only 150 billion metric tons in the remaining emissions budget if the goal is to limit atmospheric concentration of CO2 to no more than 350 ppm. For all practical purposes, this would guarantee the 21st century to be the century of climate catastrophe. **The Structural Crisis of Capitalism** The impending climate catastrophe is but one of several aspects of the structural crisis of capitalism in the 21st century. We are currently in the beginning of a prolonged period of global instability and chaos. Similar periods of systemic chaos had happened before (for example, during the first half of the 20th century). Capitalism had managed to survive earlier crises, through institutional adjustments without changing the system’s essential features (production for profit and endless accumulation of capital). Because of this historical observation, some have developed the belief that capitalism is such a remarkably “flexible” and “creative” system that it can always reform itself, adapt to change, survive crises, and meet challenges. But **this belief is short-sighted and fundamentally ahistorical.** Like every other social system, for capitalism to exist and function, it requires certain necessary historical conditions. Capitalism would remain viable (and therefore “reformable”) only to the extent the necessary historical conditions required for its normal operations are present. But the development of capitalism inevitably leads to fundamental changes in the underlying historical conditions. Sooner or later, a point will be reached where the necessary historical conditions are no longer present, and capitalism **as a historical system will cease to exist**. If one compares the current systemic crisis with earlier instances of systemic crisis, what are some of the major differences? First, in previous periods of crisis, the world’s natural resources remained relatively abundant and the global environment remained largely intact. Today, the global ecological system is literally on the verge of complete collapse. The impending climate catastrophe is only one among many aspects of global environmental crisis. Global capitalism has already exhausted the environmental space for further capital accumulation. Secondly, the successful operations of the capitalist world system require it be regulated by an effective hegemonic power at the systemic level. However, with the decline of the US hegemony, no other big power was in a position to replace the US to become the new hegemonic power. Without an effective hegemonic power, the system would be unable to pursue its own long-term interest and solve system-wide problems. Thirdly, in the past the capitalist system had managed to survive crisis through social reforms. In essence, social reform is for the system to buy off certain opposition groups by making limited concessions. The concessions have to be limited so that they do not undermine the essential interest of the ruling class. Today, the system has run out of its historical space for social compromise. In virtually all the advanced capitalist countries, now a restoration of favorable conditions for capitalist accumulation would require nothing short of large and sustained declines of working class living standards. Will the western working classes simply surrender and give up their entire historical gains since the 19th century? If not, Western Europe and North America will again become major battlegrounds of class struggle in the coming decades. Fourthly, the world has reached the advanced stage of proletarianization. Marx famously predicted that the proletariat would become the grave diggers of capitalism. For the entire 19th and much of 20th century, the process of proletarianization was largely limited to the “West” (the advanced capitalist countries). In the neoliberal era, as capital is relocated from advanced capitalist countries to the rest of the world to exploit the reserve army of cheap labor force, there have been large formations of industrial working classes in the non-western world. Over time, the non-western working classes will have developed the organizational capacity and demand a growing range of economic, social, and political rights. For the capitalist world system, if its economic and ecological resources are already so limited that it is no longer possible to accommodate the historical demands of the western working classes, what is the chance for the system to accommodate the demands of the much larger non-western working classes? If the system can no longer survive by buying off its potential oppositions, can it simply survive by repression, and for how long? How will the combination of these trends play out in the coming decades? Will the current structural crisis turn out to be the terminal crisis of capitalism? One thing is clear. If capitalism does survive the current crisis, there is probably not much hope for the humanity to survive the coming global climate catastrophe. For the humanity’s sake, end capitalism before we are ended by capitalism.[[7]](#footnote-7) **Socialism and Climate Stabilization: What Is the Alternative?** When the existing system’s advocates run out of arguments, their favorite and seemingly irrefutable response is always: what is the alternative? The implied message, of course, is that the critics of capitalism have no viable alternative to offer. The polemical response would have been an effective way to win the debate except for the matter that capitalism itself has ceased to be a viable historical option. The future of the humanity lies elsewhere. Suppose the coming global political struggle is resolved in a way that is in the humanity’s long-term interest, how can the humanity be saved from the rapidly approaching climate catastrophe? How should the new economic system be structured for the purpose of meaningful climate stabilization, and to achieve broader objectives such as ecological sustainability and meeting the global populations’ basic needs? Under the conception of classical Marxism, the post-capitalist economic system is to be based on social ownership of the means of production and society-wide planning. These institutional arrangements are necessary to abolish not only the capitalist exploitation but also the capitalist “anarchy of production” which leads to destructive economic crises and enormous social wastes (Engels 1978[1880]). The 20th century socialist states were influenced by the classical Marxist conception in their internal economic organizations. However, the 20th century socialist states remained a part of the capitalist world system and to a large extent they were governed by the basic laws of motion of the capitalist world system, which contributed to their eventual demise.[[8]](#footnote-8) After the demise of the Soviet-style socialism, an ideological consensus had emerged within the mainstream economics and was shared by much of the intellectual left. According to this consensus, a socialist economy based on social ownership of the means of production with society-wide planning (where market relations are reduced to no more than a marginal role) is fundamentally flawed. As an economic system, socialism cannot work. According to the mainstream critique, socialist economy cannot work because it fails to solve the “information problem” (a modern economy is too complex for the planning authority to do effective planning), the “motivation problem” (without private property, no one is motivated to work hard and efficiently), and the “innovation problem” (without the financial reward for private risk-taking, there is no incentive for individuals to innovate and develop new technologies).[[9]](#footnote-9) In light of the actual historical development over the past several decades and the overwhelming challenge of global climate catastrophe confronting the humanity today, can this mainstream critique of socialism be reevaluated? Even the fiercest critic of socialism would not deny that a socialist planned economy can produce thousands of different modern goods and services by large quantities, meet the basic needs of a large population, generate some technological progress, and accomplish some achievements in science, culture, and education. So what exactly does it mean that “a socialist economy cannot work”? What the mainstream critique is really saying, is not that a socialist economy cannot produce and innovate, but that because socialism supposedly solves the information, motivation, and innovation problems less effectively, it fails to deliver as rapid economic growth as capitalism. Leave aside the question whether this critique can be applied to the possible democratic socialism in the future, given today’s historical context, this mainstream critique is no longer relevant. It has been argued above that it is impossible to achieve meaningful climate stabilization under the condition of infinite economic growth. To achieve meaningful climate stabilization, the most basic requirement for any future economic system is that it has to be based on the commitment to a steady-state economy. That is, the economy must operate with zero economic growth, and with levels of material consumption consistent with the normal operations of the ecological system.[[10]](#footnote-10) Capitalism clearly fails to meet this requirement. There is no direct historical evidence suggesting that a socialist economy can operate as a steady-state economy. The historical socialist states were all committed to the pursuit of rapid economic growth. But this was because the historical socialist states were surrounded by powerful capitalist states and had to expand industry and military in order to survive. Even though there has been no precedent of socialist steady-state economy, given the general understanding of the operational mechanism of a socialist planned economy, it is not difficult to imagine how socialism can achieve a steady-state economy. To achieve zero economic growth, the planning authority could simply decide to use the society’s surplus product for social consumption (such education, health care, science, and culture) rather than accumulation. Alternatively, the planning authority could decide to reduce the working time for every social member so that the size of the surplus product is reduced to a level consistent with zero economic growth. Given the urgency of the climate change crisis, to achieve meaningful climate stabilization, it is necessary for the society to undertake rapid and massive transformation of the society’s economic infrastructure. For example, if the world immediately commits its entire new power plant building capacity to the building of renewable electricity and transforms the transportation system into one that is based on electrified public transportation, then under the condition of no economic growth, the world may be able to reduce the global greenhouse gas emissions by half by the mid-21st century, roughly meeting the 450 ppm objective. Additional energy savings and some sacrifices of living standards would be required to achieve the 350 ppm objective.[[11]](#footnote-11) To realize this plan, the society needs to rapidly mobilize all available resources and direct these resources to the purpose of climate stabilization. There is no historical evidence suggesting that the capitalist market economy is capable of this kind of massive mobilization. By contrast, it is widely recognized that socialist planned economy tends to be very effective in mobilizing society-wide resources and using the resources for a clearly defined social objective. Some environmentalists have argued that to achieve meaningful climate stabilization, the advanced capitalist countries need to learn from their Second World War experience and undertake a wartime-like mobilization (Spratt and Sutton 2008). But the wartime economies were nothing but quasi-centrally planned economies. Cuba provided an actual example of how socialism could achieve rapid energy transformation without undermining the population’s basic needs. After the demise of the Soviet Union, Cuba was confronted with a severe energy and economic crisis. Under the socialist planning system, Cuba undertook a difficult but successful transition from a conventional oil based economy into an ecologically more sustainable economy while maintaining the basic social achievements.[[12]](#footnote-12) Given that the human greenhouse gas emissions and many other pollutions have already overshot the natural limits by large margins, the restoration of global ecological sustainability could require not only the establishment of a steady-state economy but also significantly lower levels of material consumption.[[13]](#footnote-13) If that is the case, the question is how to lower the global material consumption to achieve ecological sustainability without undermining the basic needs of the global population. In this respect, the historical socialist states had been very effective in providing the general population with basic needs, especially under comparatively low levels of material consumption and in comparison with capitalist states of similar levels of economic development.[[14]](#footnote-14) Back to the question: can socialism work? We have seen that it can meet the general populations’ basic needs with limited material resources. We have seen that it can undertake rapid and massive infrastructure transformation, the kind of transformation required for meaningful climate stabilization. We have not seen, but we have very good reason to believe that it can operate effectively as a steady-state economy. Because of these reasons, **socialism can save the humanity.**

**Economic growth causes global war—your historical examples actually prove our argument , dedev solves the incentive for conflict**

**Trainer 2** (Ted, is a Senior Lecturer, School of Social Work, University of New South Wales “If you want affluence, prepare for war.” <http://ssis.arts.unsw.edu.au/tsw/D62IfYouWantAffluence.html>, Donnie)

Finally, at the most abstract level, the struggle for greater wealth and power is central in the literature on the causes of war. "...warfare appears as a normal and periodic form of competition within the capitalist world economy." "...world wars regularly occur during a period of economic expansion."71 "**War is an inevitable result of the struggle between economies for expansion**."72 Choucri and North say their most important finding is that domestic growth is a strong determinant of national expansion and that this results in competition between nations and war.73. World Wars I and II can be seen as being largely about imperial grabbing. Germany, Italy and Japan sought to expand their territory and resource access. But Britain already held much of the world within its empire…which it had previously fought 72 wars to take! "Finite resources in a world of expanding populations and increasing per capita demands create a situation ripe for international violence."74 Ashley focuses on the significance of the quest for economic growth. "War is mainly explicable in terms of differential growth in a world of scarce and unevenly distributed resources…" "…expansion is a prime source of conflict. So long as the dynamics of differential growth remain unmanaged, it is probable that these long term processes will sooner or **later carry major powers into war."**75 The point being made can be put in terms of security. One way to seek security is to develop greater capacity to repel attack. In the case of nations this means large expenditure of money, resources and effort on military preparedness. However there is a much better strategy; i.e., to live in ways that do not oblige you to take more than your fair share and therefore that **do not give anyone any motive to attack you**. Tut this is not possible unless there is global economic justice. If a few insist on levels of affluence, industrialisation and economic growth that are totally impossible for all to achieve, and which could not be possible if they were taking only their fair share of global resources, then they must remain heavily armed and their security will require readiness to use their arms to defend their unjust privileges. In other words if we want affluence we must prepare for war. If we insist on continuing to take most of the oil and other resources while many suffer intense deprivation because they cannot get access to them then we must be prepared to maintain the aircraft carriers and rapid deployment forces, and the despotic regimes, without which we cannot secure the oil fields and plantations. **Global peace is not possible without global justice**, and that is not possible unless rich countries move to "The Simpler Way."

**Decline doesn’t cause war**

Morris Miller, Professor of Administration @ the University of Ottawa, ‘2K

(Interdisciplinary Science Review, v 25 n4 2000 p ingenta connect)

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

Economic collapse does not cause war—their historical arguments are wrong

**Ferguson 6** (Niall, MA, D.Phil., is the Laurence A. Tisch Professor of History at Harvard University. He is a resident faculty member of the Minda de Gunzburg Center for European Studies. He is also a Senior Reseach Fellow of Jesus College, Oxford University, and a Senior Fellow of the Hoover Institution, Stanford University, Foreign Affairs, Sept/Oct)

Nor can economic crises explain the bloodshed. What may be the most familiar causal chain in modern historiography links the Great Depression to the rise of fascism and the outbreak of World War II. But that simple story leaves too much out. Nazi Germany started the war in Europe only after its economy had recovered. Not all the countries affected by the Great Depression were taken over by fascist regimes, nor did all such regimes start wars **of aggression. In fact,** no general relationship between economics and conflict is discernible for the century as a whole. Some wars came after periods of growth, others were the causes rather than the consequences of economic catastrophe, and some severe economic crises were not followed by wars.

# 2nc

#### ---At

#### (A.) Predictable.

Smith-Socaris 2008

Christian, Reforming the Ballot Initiative Process: Making Direct Democracy Work, http://www.progressivestates.org/news/dispatch/reforming-the-ballot-initiative-process-making-direct-democracy-work

While reform of the initiative and referendum process is sorely needed in the majority of the 24 state with initiatives and popular referenda, it is important to recognize that direct democracy has also been essential to enacting important progressive reforms such as publicly financed elections in Maine and Arizona, clean energy policies, and minimum wage increases in multiple states. If progressives can reform the process in states with weak regulations and disclosure requirements, the attractiveness of ballot measures to monied interests will be greatly diminished, but the utility of initiatives for progressive reformers will remain.

#### (B.) Timely.

Hawkins 2010

Julia, Media manager for the Ashden Awards, First and largest referendum on clean energy policy, http://www.ashden.org/blog/first-and-largest-referendum-clean-energy-policy

Time magazine describes this result as: a decisive and historic victory for the state’s clean energy economy, clean air and climate policy. The defeat of the Dirty Energy Proposition signifies the first and largest public referendum in history on clean energy policy.

## counterplan

### AT: State Funding Fails (Hartwig)

#### Hartwig agrees fiat remedies his arguments

Zach Hartwig, email exchange w/ Harrigan, 10-23-2012, http://msudebate.blogspot.com/2012/10/exchange-with-hartwig-2.html

It would be fascinating to research the juriprudence on this issue to see how the courts have interpreted these clauses with respect to science; however, that's outside my scope. In principle, I think that state could sponsor fusion research; however, in practice and precedent, the federal government will almost exclusively fund fusion for the foreseeable future.

#### Hartwig says he has no idea what he’s talking about

Zach Hartwig, email exchange w/ Harrigan, 10-23-2012, http://msudebate.blogspot.com/2012/10/exchange-with-hartwig-2.html

However, I'll take crack at your constitutionality question because it's an important one. I will note that I am by no means a Constitional scholar or expert on this issue...

### AT: Coordination (Olynyk)

#### No link- the CP just has the states fund federal research programs- the CP is not 50 different fusion programs like their evidence describes

#### Their evidence is from an email from a grad student- it hasn’t been edited or peer reviewed

#### The specific mechanism of the CP avoid this- EPSCoR allows state collaboration with national labs on fusion- solves all the same research

DOE, 3-16-2011, “Experimental Program to Stimulate Competitive Research,” EPSCoR, http://science.energy.gov/bes/epscor/about/

Overview: DOE EPSCoR is located in the Office of Science and assists the Office by supporting basic and applied research and development across a wide range of interdisciplinary program areas including but not limited to: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics and Nuclear Physics. It also supports research that is relevant to other DOE Program Offices, including but not limited to: the Office of Civilian Radioactive Waste Management; the Office of Electricity Delivery and Energy Reliability; the Office of Energy Efficiency & Renewable Energy; the Office of Environmental Management; the Office of Fossil Energy; the Office of Legacy Management; and, the Office of Nuclear Energy. The participation of these other programs is critical to the success of EPSCoR applications and developing understanding of these programs should be long-term objective of all EPSCoR applicants. Goals of DOE EPSCoR: a) improve the capability of designated states and territories to conduct sustainable and nationally competitive energy-related research; b) jumpstart infrastructure development in designated states and territories through increased human and technical resources, training scientists and engineers in energy-related areas; and c) build beneficial relationships between scientists and engineers in the designated states and territories with the 10 world-class laboratories managed by the Office of Science, leverage DOE national user facilities, and take advantage of opportunities for intellectual collaboration across the DOE system. Through broadened participation DOE EPSCoR seeks to provide the most comprehensive network of energy-related research across the nation. DOE EPSCoR requests an annual budget of approximately $8 million per year and posts Funding Opportunity Announcements (FOAs) every one to two years. Program Priorities: DOE EPSCoR is a science-driven, merit-based program that supports basic and applied research activities spanning the broad range of science and technology programs within DOE. In addition, the program places high priority on increasing the number of scientists and engineers in energy-related areas. The program places particular emphasis and importance of collaboration with young faculty, postdoctoral associates, graduate and undergraduate students with scientists from the DOE national laboratories where unique scientific and technical capabilities are present. The program supports the most meritorious proposals based on merit and peer review. To maximize the effectiveness of the program, the development of the science and engineering resources component is closely coupled with the research part of the program.

#### ---Cost, increased number of experiments and cooperation between OSU and the NIF eliminates any risk of solvency deficit.

Tarantola 2012

Andrew, OSU Powers Up a 500 Trillion Watt Laser, http://gizmodo.com/nif/

The OSU laser will fire at a higher energy than the National Ignition Facility at Lawrence Livermore Labs—500 trillion watts vs 411 trillion watts—but will do so for a much shorter period—a billionth of a second for the NIF, 30 million-billionths for the OSU. This means that the OSU facility will be able to fire 100 times as many test shots in a day—literally one hundred shots to one—as the NIF. It will also do so at a greatly reduced cost (given the NIF soaked up $4 billion in its construction) even if a single OSU shot does constitute the same energy as the electrical output of the northeastern U.S. power grid. As the OSU site explains, This is where the Fast Fusion concept comes in: in Fast Fusion the "trigger" for the fusion within the compressed pellet is the arrival of an ultra-intense laser pulse of nominally 50kJ energy, with a pulse length of 20 picoseconds. There are many notional advantages in the fast fusion concept: The pellet no longer has to be so precisely manufactured, the energy of the compression lasers can be reduced up to an order of magnitude, and the concept lends itself to the relatively rapid sequencing required for an energy source. The data generated by these lasers will be used to increase the National Ignition Facility's precision for its own forthcoming fusion experiments later this year. And good thing too, every laser shot by the NIF costs taxpayers a cool $200,000. [OSU via Columbus Dispatch]

#### ---Only using OSU Facilities results in commercialization --- Laser firing rate means it’s the only model that can scale.

Adhikari 2012

Richard, World's Most Powerful Laser Could Pew Pew Its Way to Fusion Power, http://www.technewsworld.com/story/75657.html

Currently, the NIF laser operates at only a few shots a day because the researchers need to configure the experiments and let the facility's optical components cool down between shots. Operating an IFE plant at high pulse repetition rates will require adopting new technologies. "NIF was built using technology from the 1990s," LLNL's Bishop pointed out. "Due to advances in technology in the years since, a commercial power plant would be much smaller. The target chamber would stay roughly the same size, but the building itself would be approximately half the size of the NIF. This facility would not need to be situated near running water such as a river, lake or sea." Smaller Is Not Better The NIF cost about US$3.5 billion dollars to build, LLNL's Bishop said. It's not currently known how much a similar plant for commercial use would cost to build in the mid-2020s. The Ohio State University Department of Physics has built a laser that has a peak output of 400 TW, with a grant of just $6 million from the DoE. Called "SCARLET," it can fire once a minute. Why can't the NIF build something that cheaply? LIFE is "based on lasers that use technology similar to ours, [but] the laser beams used in LIFE last millions of times longer than our laser pulses, so you require a vast amount of energy," Douglass Schumacher, an associate professor of physics at Ohio State, told TechNewsWorld.

#### ---Ohio state fast-ignition fusion process generates more accurate data & superior chance for commercialization as compared to the NIF.

Overton 2012

Gail, OSU’s SCARLET laser aims for 500 TW/15 J/30 fs pulses, Laser Focus World, http://www.laserfocusworld.com/articles/print/volume-48/issue-06/world-news/scarlet-laser-aims-for-500-tw-15-j-30-fs-pulses.html

One anticipated area of study is fast-ignition fusion. Unlike the National Ignition Facility (NIF) program that requires 192 laser beams with 5 kJ each in a few-nanosecond pulse impinging on a few-millimeter-sized target, fast-ignition fusion involves a 50 kJ, 20 ps pulse interacting with a target manufactured with relatively modest precision for a less-expensive, easier-tomaintain fusion energy source. The SCARLET laser can assist with understanding how laser pulses can best ignite laser fusion targets by analyzing particle and energy transport through hot dense matter.

### Funding Solvency Ext --- 2nc States CP

#### ---The fundamental issue for fusion is one of funding, which the CP provides.

Holland 2012

Andrew Holland is a Senior Fellow and Nicholas Cunningham is a Policy Analyst for Energy and Climate at the American Security Project, a non-partisan think tank devoted to studying questions of America's long-term national security, 8/3/2012 http://energy.aol.com/2012/08/03/through-innovation-and-investment-the-u-s-can-lead-in-next-gen/?icid=apb2#page2

We know that fusion works, it is already being done in labs around the world. Here in the United States, the three major experiments for research into magnetically-confined fusion (which uses powerful magnets to confine the superheated plasma) **are** the Princeton Plasma Physics Laboratory, the Plasma Science and Fusion Center at the Massachusetts Institute for Technology (MIT), and the DIII-D Research Program at General Atomics' Fusion Energy Research Lab in San Diego. These experiments are **supported by major scientific research institutions** like Oak Ridge National Laboratory in Tennessee **and by a range of businesses**, **contractors**, **and researchers in every corner of the country**. Up to now, the problem with fusion has been crafting new materials that are strong enough to withstand the heat of a fusion reaction, which needs to reach 100 million degrees, more than six times hotter than the surface of the sun. The other challenge is confining the hot plasma long enough for the reaction to take place; a process that scientists are experimenting with either magnets or lasers. But scientists, together with the private sector, are making progress in these areas. The next step is to build a fusion reactor that will produce net energy power (get more power out than is put in); one is currently under construction in France, with American support. Known as ITER, the facility is backed by seven nations including the United States, and should be completed by 2020. Scientists are confident that the limitations to full commercialization of fusion reactors are not scientific, but budgetary. Exponential increases in power generation were achieved for twenty years leading up to the mid 1990s, but since then, budget cuts have caused delays. A program that had suffered years of atrophy was further harmed when President Obama's fiscal year 2013 budget request called for a $45 million cut from the domestic fusion program, a drastic reduction of 16%. **The budget cuts will force** MIT's Plasma Science and **Fusion Center to shut down**. This facility's "Alcator C-Mod" is a critical component of our national research program. Cuts like this would prevent American fusion labs and companies from capitalizing on the lessons learned from the ITER experiment. MIT is doubly important because it houses the largest collection of plasma science graduate students in the country; **our next generation of scientists would be trained here**. Unfortunately, the prospect of the budget cut has already caused the University to delay acceptances of the incoming 2012 graduate students. Cutting the program will start to dismantle a world class scientific workforce and send the message to our brightest science students that their best chance for career advancement will come from working abroad in France, Japan, or China. The U.S. has a remarkable track record in developing transformational technologies that revolutionize our way of life. With much needed investment, fusion energy can transform our energy system for the next generation.

#### ---States can empirically fund energy research at national labs

Corditz 2010

Kay Corditz, 3-15-2010, “State Grant to Fund Advanced Battery Materials Partnership,” Brookhaven National Lab, http://www.bnl.gov/newsroom/news.php?a=21663

Funded by a $550,000 grant from the New York State Energy Research and Development Authority (NYSERDA), Brookhaven National Laboratory will partner with battery materials researchers from leading New York State universities to explore new chemistries and synthesize new materials for long-lasting batteries. The Laboratory will partner with SUNY’s University at Buffalo and Binghamton University on three projects to develop improved batteries for use in stationary grid-scale energy storage applications, including lithium-air, lithium-ion, and lithium-titanate batteries. The Brookhaven effort, led by Brookhaven materials scientist Jason Graetz, will focus on the development and synthesis of new materials, and application of advanced experimental techniques to characterize these materials using Brookhaven’s National Synchrotron Light Source (NSLS). The SUNY-Buffalo lead is Esther S. Takeuchi, and the Binghamton University lead is M. Stanley Whittingham. “This partnership among Brookhaven and two leading SUNY schools will capitalize on the research strengths of each, and our materials characterization capabilities will be a key element of the project,” said James Misewich, Brookhaven’s Associate Laboratory Director for Basic Energy Sciences. The collaboration grew out of a workshop sponsored by Brookhaven and Stony Brook University’s Joint Photon Sciences Institute (JPSI) last spring. Chi-Chang Kao, NSLS Chair and Founding Director of JPSI, coordinated the collaboration’s successful proposal. “It is an excellent example of how universities, industries, and national laboratories can work together to address an important scientific challenge with major societal impact,” said Kao. Said Graetz: “NYSERDA’s funding of this program will give us the opportunity to expand our energy storage research to large-scale stationary energy storage systems, which are crucial for integrating intermittent renewable generation sources such as wind and solar. In the past, the vast majority of battery research investment has focused on the important problem of electrical energy storage for transportation. However, a different set of criteria exist for stationary systems, and this project will allow us to explore new electrode materials, like lithium titanate, that meet those criteria.”

#### ---State grants can fund national lab projects

Brandon 2012

John Brandon, 10-5-2012, “Could EV car batteries be made from salt water?” Fox News, http://www.foxnews.com/leisure/2012/10/05/could-ev-car-batteries-be-made-from-salt-water/

A California company is hoping to supply 20% of the world’s lithium by 2020 with an ingenious plan to produce this material used in the batteries that power most electric cars. Simbol Materials says it wants to build a plant in the Salton Sea near Imperial Valley, California, to extract lithium from the salt water brine that flows up from geo-thermal power generators. The salt water extraction process was originally conceived at California’s Lawrence Livermore National Laboratory (LLNL) with funds from a state grant, while Argonne National Laboratory in Chicago adapted it to be used with geothermal fluids.

#### ---States energy policies cause federal follow-on—empirics

McKinstry 2004

Prof-Forestry & Environmental Resources Conservation-Penn State, Laboratories for Local Solutions for Global Problems: State, Local and Private Leadership in Developing Strategies to Mitigate the Causes and Effects of Climate Change, 12 Penn St. Envtl. L. Rev. 15

Although the United States joined with the rest of the world in signing and ratifying the Framework Convention on Climate Change n1 and in signing the Kyoto Protocol to the Framework Convention, n2 concerns about possible, adverse short-term economic impacts from control of greenhouse gases has stymied further participation by the federal government in global efforts. These concerns have generated pressures that have prevented the United States from ratifying the Kyoto Protocol, participating in the Bonn, Germany in 2001 negotiations, or meeting some of its obligations under the Framework Convention. The federal government's withdrawal from active engagement in the global response to climate change has not, however, eliminated all response to climate change in the United States. It has simply moved the locus of the response from the federal government to state and local governments and the private sector. State leadership in environmental issues has not been uncommon historically. In a frequently quoted dissent, Justice Brandeis observed [\*16] that "it is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country." n3 Results from state "laboratories" have often **generated the models for federal legislation** governing the United States' national response to environmental problems. For example, California state air regulation provided a model for the Clean Air Act. n4 Regulation of water quality by the interstate Delaware River Basin Commission ("DRBC") n5 provided the model for the system of federal regulation implemented by the Clean Water Act. n6 Pennsylvania's system of surface mining regulation served as the model for the federal Surface Mining Control and Reclamation Act. n7 The hazardous site remediation program established by New Jersey pursuant to the New Jersey Spill Compensation and Control Act n8 was copied by Congress in enacting the federal Comprehensive Environmental Response Compensation and Liability Act. n9

#### ---This is resolves their solvency deficits --- Feds will model the best parts of the counterplan.

Yee 2008

JD-Notre Dame, “A Period of Consequences": Global Warming Legislation, Cooperative Federalism, and the Fight Between the EPA and the State of California,” 32 Environs Envtl. L. & Pol'y J. 183, Fall

In addition, the federal government has embraced state action in the field of environmental legislation and policy. When Congress enacts environmental legislation, it **often adopts state plans, demonstrating how states effectively serve as laboratories for national legislation**. n19 Other states and the federal government can learn from the successes and failures of varying approaches, incorporating the **most successful components into new legislation**. When the government limits states to only one federal approach, the United States **loses the opportunity to learn from different methods and, arguably, will enact less effective legislation.**

#### Hand evidence goes the other direction

Hand ’12 Eric Hand, “US fusion in budget vice,” Nature, vol. 487, issue 7408, 7/24/2012, http://www.nature.com/news/us-fusion-in-budget-vice-1.11061

For years, US researchers have been steadfast in their support of ITER, the world’s largest fusion-energy experiment, which is under construction near Cadarache, France. But with funding commitments to ITER now putting the squeeze on three existing facilities in the United States, enthusiasm for the international project is becoming as difficult to sustain as a fusion reaction. “I think we should ask whether this is the right path,” Earl Marmar, head of the Alcator C-Mod fusion experiment run by the Massachusetts Institute of Technology in Cambridge, told colleagues on 18 July. The venue was a meeting of a US Department of Energy (DOE) group tasked with setting priorities for the non-ITER portion of the US fusion programme. At the meeting, in Bethesda, Maryland, Marmar pointed out that when US fusion researchers signed on to ITER in 2003, the project’s total construction cost was projected to be about US$5 billion, of which the United States would provide 9% over ten years. Now, the construction costs are projected to be roughly four times as much. Furthermore, the funds to support ITER were not supposed to be siphoned from existing facilities — yet if the total budget for US fusion science remains flat, as is expected, that is precisely what will happen (see ‘Death by ITER’). Marmar’s facility houses one of three US tokamaks — doughnut-shaped vessels in which physicists magnetically confine hydrogen nuclei in a plasma and heat them until they fuse and liberate energy. Alcator received $29 million in federal funding this year. But as ITER payments increase, US President Barack Obama’s 2013 budget proposal for the DOE would chop Alcator’s allocation back to $16 million, shutting down operations and forcing the experiment to lay off more than half of its 120 staff members. Stephen Dean, president of Fusion Power Associates, an advocacy group in Gaithersburg, Maryland, says that DOE officials have little choice but to cut Alcator, the smallest of the three US experiments, to afford an overall US ITER commitment that has grown to about $2.2 billion. “Why can’t we get by with two?” asks Dean. “It’s not an insubstantial argument.” Yet leaders at the three experiments insist that all provide unique science (see ‘Tokamaks under pressure’). Marmar says that Alcator, for example, can operate at extremely high magnetic-field strengths that mimic those planned at ITER. And whereas most tokamaks have inner walls made of graphite, Alcator researchers have pioneered the use of tungsten — a more durable material that ITER is planning to adopt. Current experiments at Alcator also explore the use of special radio-wave antennas to heat the plasma in ways that reduce erosion of the walls. Stewart Prager, director of the Princeton Plasma Physics Laboratory in New Jersey, has a different argument for keeping all three experimental facilities running. If the United States is to spend all this money on ITER, he says, then it must maintain domestic plasma-science expertise that can take advantage of what is learned there. “Otherwise, the results from ITER will only benefit the rest of the world.” It seems that some members of the US Congress are listening. On 6 June, the House of Representatives voted to boost ITER funding and to support the domestic programme at almost 2012 levels. The Senate’s version of the bill, which has not yet been voted on, currently agrees with the cuts in the Obama administration’s budget request — but directs the DOE to explore the impact of simply withdrawing from ITER. US fusion researchers do not want that — yet. But if the 2014 budget looks at all like the 2013 one, Dean predicts, the knives will be out for ITER. “They’re not trying to kill ITER just yet,” he says. “If this happens again in 2014, I’m not so sure.”

## Iter da

ITER starved off deep sequestration cuts due to DOE planning but any reductions threatens the program

Malakoff 3/5/13 (News Writer, Science Magazine. With a B.A. in human ecology and a staff writing position at Science Magazine “Fermilab Researchers Could Face Furloughs,” http://news.sciencemag.org/scienceinsider/2013/03/fermilab-researchers-could-face-.html)

The automatic budget cuts known as sequestration could mean furloughs of up to a week for some 2000 employees at the only U.S. lab dedicated to particle physics. The cancellation of several research grant programs and delays in upgrades to major research facilities are also on the horizon, the head of the U.S. Department of Energy's (DOE's) Office of Science told a congressional committee this morning. "We face a unique and challenging time during this period of intense budget uncertainty," said DOE's William Brinkman in testimony presented to an appropriations subcommittee of the U.S. House of Representatives. "[T]here will be impacts to our programs, facilities and construction projects … but also the everyday lives of the researchers, institutions, and businesses we support." Brinkman manages DOE's major basic research arm, which funnels some $4.8 billion annually to six science programs, including those that provide the lion's share of the money used to support the nation's fusion, particle physics, and materials science efforts. The automatic sequester that went into force on 1 March requires DOE to trim the Office of Science's overall spending by about 5%—or about $215 million—by the end of the 2013 fiscal year, which ends on 30 September. The cuts will come out of a budget already frozen at 2012 levels, Brinkman noted, creating a "double punch." The science office started pinching pennies many months ago to prepare for tight budgets, Brinkman said. Still, DOE officials began planning how to deal with sequestration just about a month ago, he told Representative Rodney Frelinghuysen (R-NJ), chair of the House subcommittee that oversees the Office of Science's budget. "For a long time, we were told not to worry about this," Brinkman said. "You should worry," replied Frelinghuysen, drawing chuckles from a few dozen staffers and audience members. He is now, Brinkman assured lawmakers. "Sequestration greatly endangers the scope of our scientific program," he said, listing a number of specific impacts "should sequestration stay in effect" for the rest of the fiscal year. The hits could include: One-week furloughs for the roughly 2000 people who work at DOE's Fermi National Accelerator Laboratory in Batavia, Illinois, along with reduced runtime for its particle accelerator. Other DOE laboratories could feel similar pain, Brinkman said. "It appears that there definitely will be furloughs at several laboratories." Asked about the furloughs, Fermilab spokesperson Katie Yurkewicz wrote in an e-mail that lab officials "won't take any actions that will affect our staff or our scientific mission until Congress passes a final budget for this fiscal year and we know what that means for our laboratory's budget. We have been preparing for the possibility of sequestration, holding back on spending since the start of the fiscal year and planning for various possible budgetary scenarios. We are focusing on actions that minimize the impact of further budget cuts on our scientific mission and on our 1,750 employees. A week-long furlough is one of many options on the table. If our final budget makes it necessary to implement a week-long furlough, it would be implemented in a rolling manner so that we can continue to operate the laboratory throughout the furlough period. The effects of sequestration could be particularly harsh for Fermilab because we have already adjusted to a cut of about 8% proposed by the President in his FY13 Budget Request. We took a number of difficult and sometimes painful steps last year, including layoffs, to adjust to that expected lower budget." Possible delays in the delivery of U.S.-funded hardware to ITER, the international fusion reactor under construction in France. U.S. funding for ITER was due to ramp up this year, and any reduction "will impact our ability to meet US hardware delivery dates," Brinkman's written testimony stated.

The DOE is deciding between ITER and domestic fusion funding now

Brinkman 3/6/13 (WILLIAM F. BRINKMAN, Director of the Office of Science, Energy Department, “2014 APPROPRIATIONS: ENERGY AND WATER; COMMITTEE: HOUSE APPROPRIATIONS; SUBCOMMITTEE: ENERGY AND WATER DEVELOPMENT,” http://www.laserfocusworld.com/news/2013/03/06/2014-appropriations-energy-and-water-nl-committee-house-appropriations-nl-subcommittee-energy-and-wa.html)

In the Fusion Energy Sciences, sequestration will impact both domestic research facilities and funding for U.S.-made hardware for the international ITER project. We are still assessing the proper balance of reductions in these two areas. Funding levels for ITER below the FY 13 Budget request will impact our ability to meet US hardware delivery dates in support of the ITER construction schedule. In High Energy Physics, Fermi National Accelerator Laboratory (Fermilab) will face reduced accelerator runtime and staff reductions. Core research will also be reduced, impacting scientists at universities nation-wide and at DOE laboratories.

#### ICF funding won’t steal from the ITER---its secure

Clery 2/20/13 (DANIEL CLERY is a graduate in theoretical physics who has for more than 20 years worked as a writer and editor on some of the world's top science magazines, “Future U.S. Fusion Research Should Keep Options Open, Report Concludes,”)

DOE's existing ICF program is already under pressure to broaden its scope because of the difficulty that NIF is having getting to ignition. The proposal before Congress seeks funding to also pursue magnetic pulse fusion at Sandia and the rival laser technique called polar direct drive, which would be performed on NIF. "We should do all we can to get more data on polar direct drive at NIF. It gets an order of magnitude more energy onto the target," says Robert McCrory, director of the Laboratory for Laser Energetics at the University of Rochester. The report also highlights the fact that while ICF researchers have focused most of their effort on developing drivers and demonstrating ignition, other areas of research essential to commercial exploitation have received less attention. These include reaction chambers that can withstand repeated blasts for years on end, lasers that can fire high-energy pulses many times per second, and techniques to manufacture the tiny target capsules—a commercial plant may use more than a million per day. "To keep the cost of electricity low, there will need to be an R&D program to demonstrate the technology to manufacture targets on an industrial scale cost-effectively," Davidson says. It is unlikely, however, that such a program would start any time soon. Funding for fusion in general is extremely tight because of general government budget-cutting and the high cost of the ITER fusion reactor project in France, of which the United States is a partner. (ITER uses a different approach, called magnetic confinement fusion.) Nevertheless, ICF researchers would very much like to hear that starting pistol from NIF. "Until you demonstrate ignition, you don't have a path to energy," McCrory says.

ITER funded at the expense of domestic programs now

FRELINGHUYSEN 3/7 (“REP. , RODNEY FRELINGHUYSEN HOLDS A HEARING ON DEPARTMENT OF ENERGY BUDGET Political Transcript Wire,” Lexis.)

FRELINGHUYSEN: While Mr. Simpson's fortifying himself with a doughnut, I will proceed to focus on an area where I've traditionally done, fusion. And, you know, as well as anyone, that we've sought to strike a balance between ITER, the international program and our domestic program and striking a balance between those goals as well as obviously other priorities in your office has not been easy. But, both domestic fusion and ITER are important. We must participate in ITER for our domestic fusion program to be welded, and our domestic program must be strong to support ITER and to allow our scientists take advantage of ITER once it's brought online. Unfortunately, the fiscal year 2014 request shows a balance that while funding ITER, would actually risk it by sacrificing our own domestic program, and that, to many of us, was not a workable balance. How are you currently envisioning the balance between these two fronts, and would you give us your view as to where these programs, certainly domestically, are located in a number of parts of the country, but how are we progressing with ITER and how would you measure our progress domestically?

#### Maintaining ITER funding is critical to US science leadership -- cuts alienate allies and undermine credibility.

Colestock et al., ‘8

[Patrick L., Los Alamos National Laboratory, Roger D. Bengtson, University of Texas at Austin, James E. Brau, University of Oregon, Cary B. Forest, University of Wisconsin, Stephen Holmes, Fermi National Accelerator Laboratory, George J. Morales, University of California at Los Angeles, Thomas M. O’Neil, University of California at San Diego, Tony S. Taylor, General Atomics, Dennis G. Whyte, Massachusetts Institute of Technology, Michael C. Zarnstorff, Princeton University, “A Review of the DOE Plan for U.S. Fusion Community Participation in the ITER Program”, National Academy of the Sciences, http://www.nap.edu/catalog.php?record\_id=12449]

The committee is concerned that the lack of funding stability will make it difficult for the U.S. to effectively participate in ITER, and ultimately, to access and thus benefit from the valuable scientific and technical knowledge to be gained from the facility. ITER is the most globally participatory science project in history, and represents a significant step forward in the worldwide effort to develop commercially-viable fusion power. These funding developments threaten to keep the U.S. from being a participant in this important endeavor, and thus its ability to capitalize on advances made from ITER. It also, therefore, potentially impairs the U.S.’ ability to participate effectively in and benefit from future fusion projects that will bring commercial fusion power closer to reality. It would be a tremendous loss if the U.S. were unable to participate, and thus severely limit the DOE/OFES’ ability to achieve its overarching goal. The committee notes the wise decisions taken by DOE to keep the U.S. engaged, to the extent possible, in the ITER project despite budget difficulties. As the IO develops its full functionalities it will be imperative that the U.S. establish itself as a stable and participatory partner if it is to accomplish the goals set forward by DOE, Congress, the President, and the plasma science community. The committee is concerned, however, about the ramifications that the FY08 appropriations will have on the continued progression of developing a U.S. plan for participation in the ITER project, as well as on the establishment of robust participation by U.S. scientists in the ITER research effort. As stated earlier, the FY08 budget does not allocate funds to ITER as planned. Such unexpected, dramatic oscillations in commitment not only adversely affect the U.S.’ national standing amongst its peers in the ITER project, they deleteriously weaken the efficacy of careful planning that otherwise ensure balance across the nation’s broad scientific enterprise. Stable and predictable funding has been recommended in numerous NRC and FESAC reports, and this committee echoes the sapience of those recommendations.8 Failure to meet its obligations from the outset of the project will also jeopardize other countries’ willingness to collaborate with the U.S. in future major scientific projects, possibly including a DEMO reactor. If the participation of U.S. scientists at ITER is a Congressional priority, the stability of the U.S.’ contributions to the project needs to be ensured. Finding: The committee underscores as its greatest concern the uncertain U.S. commitment to ITER at the present time. Fluctuations in the U.S. commitment to ITER will undoubtedly have a large negative impact on the ability of the U.S. fusion community to influence the developing ITER research program, to capitalize on research at ITER to help achieve U.S. fusion energy goals, to participate in obtaining important scientific results on burning plasmas from ITER, **and to be an effective participant in and beneficiary of future international scientific collaborations**. Recommendation: The Department of Energy should take steps to seek greater U.S. funding stability for the international ITER project to ensure that the United States remains able to influence the developing ITER research program, to capitalize on research at ITER to help achieve U.S. fusion energy goals, to participate in obtaining important scientific results on burning plasmas from ITER, and to be an effective participant in and beneficiary of future international scientific collaborations.

1. The Intergovernmental Panel on Climate Change concluded that the observed global warming since the mid-20th century was very likely to have been caused by rising anthropogenic greenhouse gas concentrations (IPCC 2007a). Despite the media hype of the so-called “climate gate” (caused by the leak of the emails stolen from the Climate Research Unit at the British University of East Anglia), none of the basic scientific facts concerning climate change was challenged. See the open letter by 255 leading scientists on the issue (Guardian 2010). [↑](#footnote-ref-1)
2. For example, both the IPCC reports (see IPCC 2007a) and the very influential Stern Report (Stern 2006) assume that economic growth will continue through the rest of the 21st century and beyond. For a critique of the IPCC and Stern reports, see Trainer (2009). [↑](#footnote-ref-2)
3. In October 2009, the International Energy Agency predicted that the world carbon dioxide emissions from fossil fuel burning would have fallen by 3 percent in 2009 (IEA 2009). The actual emission reduction turned out to be much smaller. [↑](#footnote-ref-3)
4. For economic and technical limitations of renewable and nuclear energies, see Trainer (2007). [↑](#footnote-ref-4)
5. For additional arguments that capitalism needs infinite economic growth to survive, see Magdoff and Foster (2010). [↑](#footnote-ref-5)
6. On the decline of the American hegemony and the inability of other big powers to succeed the US as the next hegemonic power, see Arrighi and Silver, et al. (1999) and Wallestein (2003). [↑](#footnote-ref-6)
7. Immanuel Wallerstein, the leading world system theorist, argues that the capitalist world system is unlikely to survive the mid-21st century (Wallerstein 2003). For elaborations on the structural crisis of capitalism that take into account both Wallerstein’s and Arrighi’s arguments, see Li (2008). [↑](#footnote-ref-7)
8. On the historical lessons of the 20th century socialism, see Kotz (1997) and Li (2008: 24-66). [↑](#footnote-ref-8)
9. On the debate over socialist economics, see the special issue of *Science & Society* (Winter 1992), the special issue of *Review of Radical Political Economics* (Summer and Fall 1992), and Stiglitz (1994). [↑](#footnote-ref-9)
10. On the requirements of ecological sustainability and the necessity of economic steady-state, see Huesemann (2003), [↑](#footnote-ref-10)
11. The power generation sector accounts for about 35 percent of the world’s total carbon dioxide emissions from fossil fuels burning. Transportation accounts for about 20 percent. Thus, the decarbonization of both the power sector and the transportation sector would reduce emissions by about 50 percent if there were no economic growth. [↑](#footnote-ref-11)
12. On Cuba’s energy transition and the development of sustainable agriculture, see Pfeiffer (2006: 53-65). [↑](#footnote-ref-12)
13. According to the *Living Planet Report*, the world’s ecological footprint (a measure of the humanity’s demands on the planet’s resources) has already exceeded the planet’s regenerative capacity by about 30 percent (WWF, ZSL, and GFN 2008). [↑](#footnote-ref-13)
14. This was reflected by the much better health indicators of the socialist states in comparison with capitalist states of similar levels of economic development. See Navarro (1993). [↑](#footnote-ref-14)