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#### Interpretation – “Economic engagement” is limited to trade of goods and services -energy is a non-economic partnership

Rose, 8 -- UC Berkeley Haas School of Business Administration [Andrew, and Mark Spiegel, "Non-Economic Engagement and International Exchange: The Case of Environmental Treaties," April 2008, [www.nber.org/papers/w13988.pdf?new\_window=1](http://www.nber.org/papers/w13988.pdf?new_window=1)]

Non-Economic Engagementand International Exchange: The Case of Environmental Treaties We examine the role of non-economic partnerships in promoting international economic exchange. Since far-sighted countries are more willing to join costly international partnerships such as environmental treaties, environmental engagement tends to encourage international lending. Countries with such non-economic partnerships also find it easier to engage in economic exchanges since they face the possibility that debt default might also spill over to hinder their non-economic relationships. We present a theoretical model of these ideas, and then verify their empirical importance using a bilateral cross-section of data on international cross-holdings of assets and environmental treaties. Our results support the notion that international environmental cooperation facilitates economic exchange. Countries, like people, interact with each other on a number of different dimensions. Some interactions are strictly economic; for instance, countries engage in **international trade of goods, services, capital, and labor**. But many are not economic, at least not in any narrow sense.For instance, the United States seeks to promote human rights and democracy, deter nuclear proliferation, stop the spread of narcotics, and so forth. Accordingly America, like other countries, participates in a number of international institutionsto further its foreign policy objectives; it has joined security alliances like NATO, and international organizations such as the International Atomic EnergyAgency. In this paper, we concentrate on the interesting and understudied case of international environmentalarrangements (IEAs). We ask whether participation in such **non-economic** partnerships tends to enhance international economic relations. The answer, in both theory and practice, is positive.

#### Violation – the AFF is an energy partnership

**Voting issue –**

1. **Limits – opening the floodgates to other types of engagement make the topic massive and unpredictable – this hurts NEG preparation, which is key to competitiveness and clash**
2. **Ground – gives them unique advantage areas and guts generics like the politics DA and Neolib K that are key to negative strategy on a topic with few common linkages**

# Mexico CP

The Federal Government of Mexico should substantially increase decentralized integrated photovoltaic electrification

Mexico by itself can solve- Empirically proven

Cota and Foster ‘9 (Universidad Autónoma de Ciudad Juárez ¶ 2New Mexico State University,2009, “Photovoltaics for Rural Development in LatinAmerica: A Quarter Century of Lessons Learned,” http://cdn.intechopen.com/pdfs/12219/InTech- Photovoltaics\_for\_rural\_development\_in\_latin\_america\_a\_quarter\_century\_of\_lessons\_learned.pdf)

Over the past quarter century, Latin America has widely adopted photovoltaic (PV) ¶ technologies for social and economic development. Latin America is the world’s birthplace ¶ for small rural solar electric systems used for residential power, refrigeration, distance ¶ education and hybrid systems. The use of PV systems has increased dramatically from an ¶ initial concept pioneered by a few visionaries to many thriving businesses throughout the ¶ rural regions today. ¶ PV is a viable alternative to conventional large-scale rural grid systems. With the advent of ¶ PV as a dependable technology alternative allowing local private enterprise, and made ¶ available to the general public, PV systems have become attractive all over Latin America ¶ with hundreds of thousands of rural households electrified via solar energy. ¶ During the early 1980s, solar energy pioneers began to disseminate PV technologies in rural ¶ Latin America as a solution for providing basic electricity services for non-electrified ¶ populations. Some of the first pilot projects in Latin America were undertaken by NGOs, ¶ such as Enersol Associates in the Dominican Republic, beginning in 1984. In the late eighties, ¶ small solar companies began to form gradually throughout Latin America; the key module ¶ manufacturers such as Solarex and Arco sought out distributors for off-grid rural markets. ¶ By the mid-1990s, these activities were followed by large-scale solar electrification activities ¶ sponsored by government agencies in Mexico, Brazil, Colombia, Bolivia and Peru. Many of ¶ these early governments efforts for large-scale PV electrification faced sustainability issues; ¶ planners attempted to force “free” solar electrification projects onto unknowledgeable rural ¶ users. ¶ In Mexico, there were large-scale government PV rural electrification projects undertaken ¶ under PRONASOL (a Mexican program to better people lifestyle) in the early to mid-1990s ¶ with over 40,000 PV systems installed, especially in southern Mexico. In the State of Chiapas ¶ more than 12,000 systems were installed. The government also dabbled in village scale PV ¶ and wind electrification. Unfortunately, over two thirds of these systems ceased functioning ¶ in only a couple of years. The era of large PV electrification projects in Mexico came to a ¶ temporary halt in the late 1990s, in large part due to the poor performance and image of ¶ these original substandard PV systems. Typical problems on PV systems installations were ¶ not related to the PV modules, but rather due to poor quality installations and problems ¶ www.intechopen.com

# CP

#### Text: The United States federal government should provide decentralized integrated solar thermal assistance to Mexico.

#### Solar thermal technology is more efficient solves the aff better

Richard Klein1 and Mariela Vasquez2, Spring-xx-2010, founder, Quixotic Systems Inc, inventor and entrepreneur1, engineering team, Quixotic Systems, B.A. in Mechanical Engineering @ University of Virginia2, “Solar Thermal: A New Sustainable Solution for Urban Multi-Family Buildings,” <http://www.quixotic-systems.com/imgs/nesea-article.pdf>

Advantages of solar thermal over solar electric (PV) Over the past few years, solar electric (PV) systems have gained greater momentum over solar thermal systems due to government incentives and more attention from the media. However, due to the diversity of buildings and their demands, PV systems are not always the most efficient or financially beneficialrenewable energy source. Solar thermal systems are capable of providing better efficiency and return in larger residential buildings where the domestic hot water load is greater than the electricity con sumption (see table 1).

#### PV damages the environment

Mulvaney et al 1/14/09(Dustin Mulvaney, Ph.D.—Switzer Fellow, Vicki Bolam—Technical Writer, Monica Cendejas—Project Manager, SVTC, Sheila Davis—Executive Director, SVTC, Lauren Ornelas—Campaign Director, SVTC, Simon Kim—SVTC Intern, Stanford University, Serena Mau—SVTC Intern, University of California, Berkeley, William Rowan—SVTC Intern, Stanford University, Esperanza Sanz, SVTC Intern, De Anza College, Peter Satre—SVTC Intern, Stanford University, Ananth Sridhar—SVTC Intern, Stanford University, Dean Young—SVTC Intern, Stanford University. All work for Silicon Valley Toxics Coalition. “Towrds a Just and Sustainable Solar Energy Industry”. http://www.etoxics.org/site/DocServer/Silicon\_Valley\_Toxics\_Coalition\_-\_Toward\_a\_Just\_and\_Sust.pdf?docID=821)

Silicon-based solar PV production involves many of the same materials as the microelectronics industry and thereforepresents manyof the same hazards. At the same time,emerging thin-film and nanotech-based cells pose unknown health and environmental dangers.This section provides an overview of the hazards posed by current and emerging solar PV production technologies. A. Crystalline Silicon (c-Si) As with the production of silicon chips, production of c-Si wafers begins with the mining of silica (SiO2), found in the environment as sand or quartz.† Silica is refined at high temperatures to remove the O2 and produce metallurgical grade silicon, which is approximately 99.6 percent pure. However,silicon for semiconductor use must be much purer. Higher purities are achieved through a chemical process that exposes metallurgical grade silicon to hydrochloric acid and copper to produce a gas called trichlorosilane (HSiCl3). The trichlorosilane is then distilled to remove remaining impurities, which typically include chlorinated metals of aluminum, iron, and carbon. It is finally heated or “reduced” with hydrogen to produce silane (SiH4) gas. The silane gas is either heated again to make molten silicon, used to grow monocrystalline silicon crystals, or used as an input for amorphous silicon (see next section). The next step is to produce crystals of either monocrystalline or multicrystalline silicon. Monocrystalline silicon rods are pulled from molten silicon, cooled, and suspended in a reactor at high temperature and high pressure. Silane gas is then introduced into the reactor to deposit additional silicon onto the rods until they “grow” to a specified diameter. To produce multicrystalline silicon, molten silicon is poured into crucibles and cooled into blocks or ingots. Both processes producesilicon crystals that are extremely pure (from 99.99999 to 99.9999999 percent), which is ideal for microchips, but far more than required by the PV industry. The high temperatures required for c-Si production make it an extremely energy intensive and expensive process, and also produces large amounts of waste. As much as 80 percent of the initial metallurgical grade silicon is lost in the process.21 Sawing c-Si wafers creates a significant amount of waste silicon dust called kerf, and up to 50 percent of the material is lost in air and water used to rinse wafers.22 This process may generate silicon particulate matter that will pose inhalation problems for production workers and those who clean and maintain equipment. The U.S. Occupational Safety and Health Administration (OSHA) has set exposure limits to keep ambient dust levels low and recommends the use of respiratory masks, but it has been suggested that, despite the use of respiratory masks, workers remain overexposed to silicon dust.23The use of silane gas is the most significant hazard in the production of c-Si because it is extremely explosiveand presents a potential danger to workers and communities.24Accidental releases of silane have been known to spontaneously explode,and the semiconductor industry reports several silane incidents every year.25 Further back in the silicon supply chain, theproductionof silane and trichlorosilaneresults in waste silicon tetrachloride (SiCl4), an extremely toxic substancethat reacts violently with water, causes skin burns, and is a respiratory, skin, and eye irritant.26 Although it is easily recovered and reused as an input for silane production, in places with little or no environmental regulation,silicon tetrachloride can constitute an extreme environmental hazard. As the Washington Post reported in March 2008 (see above), polysilicon manufacturing is expanding rapidly in China, butfacilities to recycle silicon tetrachloride and other toxic outputs are not keeping pace.27The extremely potent greenhouse gas sulfur hexafluoride (SF6) isused to clean the reactorsused in silicon production. TheIntergovernmental Panel of Climate Change(IPCC) considers sulfur hexafluoride to be the most potent greenhouse gas per molecule;one ton of sulfur hexafluoride has a greenhouse effect equivalent to that of 25,000 tons of CO2.28It can react with silicon to makesilicon tetrafluoride (SiF4) and sulfur difluoride (SF2), or be reduced to tetrafluorosilane (SiF4) andsulfur dioxide (SO2). SO2 releases can cause acid rain, so scrubbers are required to limit air emissions in facilities that use it. It is imperative that a replacement for sulfur hexafluoride be found, because accidental or fugitive emissions† will greatly undermine the reductions in greenhouse gas emissions gained by using solar power. Other chemicals used in the production of crystalline silicon that require special handling and disposal procedures include the following: Large quantities of sodium hydroxide (NaOH) are used to remove the sawing damage on the silicon wafer surfaces. In some cases, potassium hydroxide (KOH) is used instead. These caustic chemicals are dangerous to the eyes, lungs, and skin. Corrosive chemicals like hydrochloric acid, sulfuric acid, nitric acid, and hydrogen fluoride are used to remove impurities from and clean semiconductor materials. Toxic phosphine (PH3) or arsine (AsH3) gas is used in the doping of the semiconductor material. Though these are used in small quantities, inadequate containment or accidental release poses occupational risks.29 Other chemicals used or produced in the doping process include phosphorous oxychloride, phosphorous trichloride, boron bromide, and boron trichloride. Isopropyl alcohol is used to clean c-Si wafers. The surface of the wafer is oxidized to silicon dioxide to protect the solar cell.Lead is often used in solar PV electronic circuitsfor wiring, solder-coated copper strips, and some lead-based printing pastes. Small quantities of silver and aluminum are used to make the electrical contacts on the cell.Chemicals released infugitive airemissions by known manufacturing facilities include trichloroethane, acetone, ammonia, and isopropyl alcohol.30

#### Environmental collapse causes extinction

Ehrlich & Ehrlich 13 **–** Professor of Biology & Senior Research Scientist in Biology @ Stanford University (Paul R. Ehrlich (President of the Center for Conservation Biology @ Stanford University) & Anne H. Ehrlich, “Can a collapse of global civilization be avoided?,” Proceedings of the Royal Society Biological Sciences, Proc. R. Soc. B 2013 280, published online 9 January 2013)//HA

Virtually every past civilization has eventually undergone collapse, a loss of socio-political-economic complexity usually accompanied by a dramatic decline in population size [1]. Some, such as those of Egypt and China, have recovered from collapses at various stages; others, such as that of Easter Island or the Classic Maya, were apparently permanent [1,2]. All those previous collapses were local or regional; elsewhere, other societies and civilizations persisted unaffected. Sometimes, as in the Tigris and Euphrates valleys, new civilizations rose in succession. In many, if not most, cases, overexploitation of the environment was one proximate or an ultimate cause [3].

But today, for the first time,**humanity’s global civilization**—the worldwide, increasingly interconnected, highly technological society in which we all are to one degree or another, embedded—is threatened with **collapse** byan array of**environmental problems**. Humankind finds itself engaged in what Prince Charles described as ‘an act of suicide on a grand scale’ [4], facing what the UK’s Chief Scientific Advisor John Beddington called a ‘perfect storm’ of environmental problems [5]. The most serious of these problems show signs of rapidly escalating severity, especially climate disruption. But other elements could potentially also contribute to a collapse: an accelerating **extinction** of animal and plant populations and species, which could lead to a loss of ecosystem services essential for human survival; land degradation and land-use change; a pole-to-pole spread of toxic compounds; ocean acidification and eutrophication (dead zones); worsening of some aspects of the epidemiological environment (factors that make human populations susceptible to infectious diseases); depletion of increasingly scarce resources [6,7], including especially groundwater, which is being overexploited inmany key agricultural areas [8]; and resource wars[9]. These are not separate problems; rather they interact in two gigantic complex adaptive systems: the biosphere system and the human socio-economic system. The negative manifestations of these interactions are often referred to as ‘the human predicament’ [10], and determining how to prevent it from generating a global collapse is perhaps the foremost challenge confronting humanity.

The human predicament is driven by **overpopulation**, overconsumption of natural resources and the use of unnecessarily **environmentally damaging tech**nologies and socio-economic-political arrangements to service Homo sapiens’ aggregate consumption [11–17]. How far the human population size now is above the planet’s long-term carrying capacity is suggested (conservatively) by ecological footprint analysis [18–20]. It shows that to support today’s population of seven billion sustainably (i.e. with business as usual, including current technologies and standards of living) would require roughly half an additional planet; to do so, if all citizens of Earth consumed resources at the US level would take four to five more Earths. Adding the projected 2.5 billion more people by 2050 would make the human assault on civilization’s life-support systems disproportionately worse, because almost everywhere people face systems with nonlinear responses [11,21–23], in which environmental damage increases at a rate that becomes faster with each additional person. Of course, the claim is often made that humanity will expand Earth’s carrying capacity dramatically with technological innovation [24], but it is widely recognized that technologies can both add and subtract from carrying capacity. The plough evidently first expanded it and now appears to be reducing it [3]. Overall, careful analysis of the prospects does not provide much confidence that technology will save us [25] or that gross domestic product can be disengaged from resource use [26]

2. Do current trends portend a collapse?

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#### Energy sharing creates justification for military conflicts

Langlois-Bertrand 10 (Simon, Defence R&D Canada Centre for Operational Research and Analysis, "The Contemporary Concept of Energy Security," http://cradpdf.drdc-rddc.gc.ca/PDFS/unc101/p533868\_A1b.pdf)

The energy securityproblem, in this view, isthus a purely geostrategic issue, **based on a logic of war**: energy is both the object of war (what states compete for) and the instrument of war (what states compete with).27 The language used in these debates is particularly telling, with the prominent use of terms such as the “oil weapon,” “competition over access,” and “exclusive backyards,” amongst others. Under this logic, energy security is derivative of geopolitics, as the “struggle for energy is (…) subsumed under the ‘normal’ competition for power, survival, land, valuable materials or markets.”28 Consequently, what comes out of these lines of argument is the inherent national dimension to all the discussions. The international oil companies, where mentioned, are often reduced to their home countries. The pillars of this approach to energy security are exemplified in the “regions and empires” narrative. In this storyline, the key change to energy security brought by the crises of the 1970s was an increasingly important geopolitical dimension. This approach would thus “place greater stress on strategic alliances; the search for ‘exclusive backyards’; military power to protect supplies; intra-Western rivalry and undercutting and Western oil companies taking control of production capacity through buy outs and mergers in producer states.”29 The common theme of analysis within this view is the idea that Western consumer countries should be wary of neglecting systematically to “incorporate energy security concerns into the design of their foreign policies.”30 The “regions and empires” narrative also places great importance on unilateral security policy in international energy market dynamics, involving essentially, a division of the world into countries and regions, on the basis of ideology, religion, and political arguments. Political and military strategy, bilateralism and regionalism divide the world up into competing U.S., E.U., Russian and Asian spheres of influence. The absence of effective world markets for strategic goods further stimulates the establishment of bilateral trade relationships and treaties, thus reinforcing the formation of more or less integrated blocks with satellite regions that compete for markets and energy resources.31 With, again, an implicit focus on oil and gas, proponents of this narrative would argue, for instance, that just four states (Russia, Iran, Turkmenistan and Qatar) possess more than half global gas reserves. Consequently, “many [doubt] the extent to which gas would be subjected to market dynamics, with fixed, structural dependence on a small number of producers actually increasing (…) and [lament] that the much heralded take-off of [liquefied natural gas] was proving illusive.”32 These arguments produce a conceptual **framework**for energy security by highlightingmore or less three interrelated levels of the (foreign policy) problem: vulnerabilities of the oil and gas supply chain; changes in the oil and gas trade patterns; and changes ingeopolitical environments for the supply of oil and gas.33 This is already quite restrictive, but the reasoning can be pushed further through its logical extension: energy becoming an integral part of strategic planning. The situation in Africa and Central Asia leaves little doubt as to the existence of at least some sense of competition overaccess to resourcesbetween core energy players (mostly China, the U.S., and Russia). The arrival of military planning to such problems, however, **inspires “a logic of hardening, securing and protecting**” in the entire domain of energy.34 The military component of energy security is not new, stemming back to at least the establishment of the Carter Doctrine.35 Following the Islamic revolution in Iran and the invasion of Afghanistan by the Soviet Union, U.S. President Jimmy Carter delivered a strong message to the world in his 1980 State of the Union address: Let our position be absolutely clear: an attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force.36 As Michael Klare points out, however, what is most striking with hindsight is not the assertion of the Carter Doctrine itself, but its reassertion and extension by every U.S. President since: after Carter created the Rapid Deployment Joint Task Force (RDJTF), subsequent Presidents followed with clear actions in support of the Doctrine. At first, it consisted of more “traditional” military actions: Ronald Reagan elevated the RDJTF to a full-scale regional headquarters, and eventually asserted the United States’ determination to protect oil flows in the Gulf by authorizing the “reflagging” of Kuwaiti tankers with the American ensign (and their protection); George H.W. Bush then protected Saudi Arabia against possible Iraqi attack (Operation Desert Shield) and then drove the Iraqis out of Kuwait (Operation Desert Storm) in the Persian Gulf War. These actions were soon extended, furthermore, to most other oil-producing regions of the world. The Clinton administration, for instance, pushed for the construction of a new oil pipeline between Azerbaijan through Georgia to Turkey, and began assisting these states with military aid and through a series of annual joint military exercises.37 Finally, after Clinton started this ‘globalization’ of the Carter Doctrine, George W. Bush made it a central objective of American foreign policy, as a consequence of the National Energy Policy announced in 2001.38 Klare and others go on to argue that this militarization, stemming from a **simplified**and overly strategic view of energy security concerns, increase the prospects forconflict and warin years to come. Several mechanisms influence those prospects: the prominence of insurgency and separatist warfare in oil-producing regions; the political violence associated with mechanisms falling under the ‘resource curse’ purview; international terrorism by groups such as Al-Qaeda; increased tensions over contested maritime resource zones as onshore energy sources are depleted; and, more generally, increasing doubts about the future sufficiency of global stockpiles of oil and gas.39 This, on top of the globalization of the Carter Doctrine, leads to a higher potential for conflict. To illustrate this, the most discussed case in the contemporary period is, “a growing risk, therefore, that U.S. and Chinese efforts to militarize their foreign energy endeavours will produce a competitive stance between them and someday spark a dangerous confrontation.”40 As can be expected, not every analyst shares this pessimism over future prospects for international energy dynamics. Fettweis, in a direct rebuttal of Klare’s arguments on the matter, argues that at least three reasons make it unlikely that wars over territories containing resources will be more common in the 21st century: first, fighting to control oil is usually a self-defeating proposition, as seizing oil will always be costlier than buying it; second, both consumers and producers share the same interest in stability; finally, there are fewer instances of any kind of warfare.41 In a different assessment, Daniel Yergin emphasizes the implications of interdependence in international energy markets, and both authors conclude that China and the United States are most likely to end up on the same side if a clash between producing and importing countries should happen again.42 Flowing from these debates, the foreign policy and military approach to energy security also underscores the United States’ special position and role in these matters. These considerations are neither based solely on the U.S. being a powerful actor on the international scene, nor on their use of the military in energy-related policy: other states have considerable influence, and the use of the military to protect the secure flow of oil is common all around the world. What makes the United States a special case is the extent to which their actions influence the global energy situation, giving it a set of responsibilities unequalled by any other state.43 The United States’ leading Cold War role during the 1970s and 1980s, and later on the “globalization” of the Carter Doctrine taken broadly, show that their “system-maintaining role has benefited a number of core states as well as America itself, [by] maintaining a stable supply of crucial energy onto the world market.”44 Finally, some proponents of this approach also see the inherently unstable nature of oil and gas exploitation as reinforcing these dynamics: exploitation of oil and gas, as it has been done in the past few decades, show patterns of increases in national instability, of public and political distrust, and of emergence of destabilizing forms of competition.45 Several different policies are being developed to deal with those issues, but an important policy gap remains in the sense that little attention is paid to changing those underlying dynamics.46 The bottom line is that while this approach has strong appeal, its **limited focus**on oil and gas, and on competition between states, **oversimplifies**issues related to securing energy supplies. Mitigation strategies areoften reduced to diversification,47and the militarizing of the problem **tends to order issues in a hierarchical manner**,48 relegating other important concerns

#### The aff creates the myth of a "dirty, foreign" where the First World exploits the Third World.

Mannathukkaren 12(Nissim, Associate Professor, International Development Studies, Dalhousie University, “Garbage as our alter ego”, Nov 3, 2012, http://www.thehindu.com/opinion/lead/garbage-as-our-alter-ego/article4059003.ece)

If there is one thing that is symptomatic of the modern human condition, but hardly recognised as such, it is garbage. **Garbage is capitalism’s dark underbelly**, its pathological alter ego. That is why we keep disavowing it, refusing to believe it exists. Vilappilsala standoff But the more we deny it, it rears its ugly head, as most recently, in Vilappilsalapanchayat in Kerala where the standoff between the local people, who are opposed to the reopening of a waste treatment plant, and the State has left 2 lakh tonnes of solid waste lying unprocessed, threatening an environmental disaster. It is, therefore, remarkable that the current boisterous debate on foreign direct investment in multi-brand retail in India has completely ignored the question of garbage. By focusing only on the supposed virtues of waste reduction in perishable goods (like fruits and vegetables) brought about by the better storage facilities of retail conglomerates, the issue of the latter’s humongous ecological footprint (for example, in terms of sprawl, increase in driving, and the proliferation of non-biodegradable waste) has been bypassed. According to a report from The Institute for Local Self-Reliance, Washington, D. C., in the 20-year period from 1990, the same period in which Walmart grew to be a behemoth, the average number of miles that a U.S. household travelled for shopping increased by around 1000. And from 2005 to 2010, despite Walmart’s initiation of a reduced waste programme, its reported greenhouse gas emissions shot up by 14 per cent. Big-box stores don’t just improve efficiency in consumption, they also increase **consumption** manifold, which ultimately **results in phenomenal amounts of trash**. The garbage generated by Americans annually reportedly amounts to 220 million tonnes, and 80 per cent of U.S. goods are used only once before being trashed. In the mythologiesof modernisation and development, we sing paeans to skyscrapers and nuclear plants. But there is no accompanying dirge about the costs we have had to pay for them. If there was, then we would have heard of Puente Hills — the largest active landfill/waste dump in the United States, which is a 1,365-acre monstrosity — as much as we have about the World Trade Center or the Empire State Building. It is ironical, Edward Humes tells us in his book Garbology: Our Dirty Love Affair with Trash, to call Puente Hills a “landfill,” for the garbage mountain has long ceased to fill a depression in the land and rises now an unbelievable 500 feet above the ground, a space capable of holding 15 million elephants. It takes, of course, a gargantuan effort, as Humes describes, to keep the toxic substance that leaks out of the 130-million tonnewaste (which includes 3 million tonnes of soiled disposable diapers — another “important” invention of modern life) from poisoning groundwater sources. Nevertheless, **waste is seen**, in popular development discourse **as a “third world” problem**, the ubiquitous mountains of garbage that blight the face of cities and towns in the poorer parts of the world — one of the first tasks that the newly-elected President in Egypt had was cleaning up the garbage mess in Cairo. And **the citizens of the third world have internalised this discourse, seeing themselves as part of the “dirty” developing world blissfully unaware of the cost at which a “clean” developed world is maintained**. Thus the story of the Somali pirates plundering the high seas has become a part of global lore but not that of Somalia being a (cheap) dumping ground for some of the most toxic garbage, including nuclear and medical waste, from Europe for the last two decades and more. As long as the streets are clean in Frankfurt and Paris, does it matter that children are born in Somalia without limbs? ‘Waste imperialism’ It is in this context of **“waste imperialism”** that the question of garbage needs to come out of its subterranean existence and occupy centre stage in any discussion on development, including FDI in retail. It is not accidental that **dumping grounds, and waste treatment plants are invariably located in places where the most vulnerable and marginalised sections of the population live**, whether in the developed or developing worlds. Not surprisingly, garbage has become an important political tool in the present with garbage strikes and struggles around garbage taking place in various cities in the West and elsewhere. The contestation in Vilappilsala has been going on since 2000 when the waste treatment plant opened with serious ecological impact. **We would be living in a mythical world if we think that the problems of waste can be solved only with better rational planning, management or recycling**. In the U.S., even after decades of environmental education, only around 24 per cent of the garbage is recycled with nearly 70 per cent of it going into landfills. Simply throwing trash into the recycling bin hardly does anything to reduce the production of rubbish; on the contrary **it might lull us into a false sense of complacency** as Heather Rogers, the author of Gone Tomorrow: The Hidden Life of Garbage argues. This is because household waste constitutes a minuscule percentage of the total waste produced, the vast majority of which is constituted by waste from industrial processes. As she shows, the mantra of recycling and green capitalism has been adopted by corporations and big business because it is the least threatening of the options to profit margins — no wonder, the rate of production of goods and, consequently, trash has only increased. More importantly, in this “greenwashing,” the responsibility of cleaning up the environment is displaced from corporations to people themselves in their own individual, personal capacities. Economy of ‘zero waste’ To be sure, there are rare examples like Germany, which have nearly eliminated landfills, and recycle up to 70 per cent of the waste. But the fact that the Cröbern Central Waste Treatment Plant in Germany, one of the most sophisticated plants in the world (built at a cost of $ 135 million), has been allegedly involved in criminal garbage profiteering by illegally securing solid waste from Italy (to sustain the operations of the plant) shows how tenuous and fragile the economy of “zero waste” is. Ultimately, the problem of waste cannot be fathomed without recognising the order of capitalism, which is built on the relentless production of commodities and the philosophy of planned obsolescence, in which goods are built to have short shelf life. As Sarah Moore of the University of Arizona has pithily pointed out the contradiction: “Modern citizens have come to expect the places they live, work, play, and go to school to be free of garbage — to be ordered and clean. These expectations can never be fully met, however, precisely because the same processes of modernization that have produced them have also produced a situation in which garbage proliferates.” The “golden age of capitalism” is thus also the “golden age of garbage.” Just between 1960 and 1980, solid waste in the U.S. increased by four times. This is the exponential growth in garbage the world over, which has rendered the Pacific Ocean awash with plastic particles thus making plastic outnumber zooplankton at a shocking rate of 6:1. And this is the growth that has ironically made garbage and its disposal a multi-billion dollar business, and has made the mafia enter and control it, as in Italy. Developing countries like India, with almost non-existent waste disposal systems, catastrophically seek to move to the next (superfluous) stage of consumption by imbibing the culture of Walmart. In this scenario, **if justicefor both human beingsand nature has to be ensured, the alter ego of garbage can no longer be hidden under the carpet. It has to be confronted head on**.

#### It’s try-or-die for the alternative shifting the view point to the consumer creates simplier strategies

Alexander 12Samuel, lecturer at the Office for Environmental Programs, University of Melbourne, Australia, “DEGROWTH IMPLIES VOLUNTARY SIMPLICITY: OVERCOMING BARRIERS TO SUSTAINABLE CONSUMPTION”, Simplicity Institute Report 12b, 2012)

The global economy is exceeding the sustainable carrying capacity of the planet, and it has been for some time (Global Footprint Network, 2012; Millennium Ecosystem Assessment, 2005). This ‘ecological overshoot’ is being driven by the escalation and expansion of Western-­‐style consumer lifestyles, which are highly resource and energy intensive. It is now commonplace to acknowledge that humankind would need more than five planets if North American lifestyles were universalised (e.g. Scott, 2009: 2). With the global population expected to reach 9 billion by mid-­‐century, it is increasingly clear that these high consumption lifestyles are unsustainable and certainly not universalizable. The science of climate change, furthermore, implies that we must decarbonise consumer lifestyles without delay (Hansen, 2011), and the spectre of ‘peak oil’ suggests that the supply of cheap petroleum upon which consumer societies and their growth-­‐orientated economies are based, may be coming to an end (Heinberg, 2011; Alexander, 2011a). All this means that ‘business as usual’ is simply not an option, and it may well be that the persistent delays in responding to these serious issues means that it is now too late to avoid some form of ‘great disruption’ to life as we know it (Gilding, 2011). What makes this admittedly gloomy situation even more troubling is that empirical research shows that many of those who have attained the Western-­‐style consumerist ideal may not be finding such lifestyles all that fulfilling (Lane, 2000). Technological progress and economic growth, it would seem, cannot solve all our problems or answer for us the question of how we ought to live. For these reasons, among others, it has never been more urgent to rethink contemporary practices of consumption. But the news is not all grim. The fact that many in the global consumer class are not finding high consumption lifestyles particularly fulfilling raises the tantalizing possibility that people could increase their quality of life by voluntarily reducing their material and energy consumption. This is sometimes called the ‘double dividend’ of sustainable consumption (Jackson, 2005), for the reason that ‘simpler’ lifestyles of reduced consumption can benefit the planet while also being in the immediate and long-­‐ term self-­‐interest of the individual (Brown and Kasser, 2005). Exchanging some superfluous consumption for more free time is one path to this ‘double dividend.’ Reducing superfluous consumption can also open up space for a ‘triple’ or even ‘quadruple’ dividend, on the grounds that low-­‐consumption lifestyles of voluntary simplicity have the potential to generate communitarian or humanitarian benefits too (e.g. by leaving more resources for others in greater need). It has even been suggested that lifestyles of voluntary simplicity, focusing as they do on non-­‐materialistic forms of meaning and fulfilment, might provide something of an antidote to the spiritual malaise that seemingly inflicts many people within materialistic cultures today (Alexander, 2011b; Myers, 2000). But if indeed there are multiple dividends to sustainable consumption, including self-­‐interested ones, why does the global consumer class consume so much? Are we not free to step out of the rat race and simply consume less? Unfortunately, things are not that simple. Our lifestyle decisions, especially our consumption decisions, are not made in a vacuum. Instead, they are made within social, economic, and political structures of constraint, and those structures make some lifestyle decisions easy or necessary and other lifestyle decisions difficult or impossible. Change the social, economic, and political structures, however, and different consumption practices would or could emerge. With a practical focus, this paper seeks to develop some of the theoretical work that has already been done in this area (Jackson and Papathanasopoulou, 2008; Jackson, 2003; Sanne, 2002; Ropke, 1999). More specifically, this paper examines the extent to which people in consumer societies are ‘locked in’ to high consumption, energy-­‐intensive lifestyles, and it explores ways that structural changes could facilitate a societal transition to practices of more sustainable consumption. This subject should be of interest to all those broadly engaged in work on sustainability, for the reasons outlined in the opening paragraph. But it should be of particular interest to those who have been convinced that the richest nations, if indeed they are serious about realising a sustainable world, ought to be initiating a degrowthprocess of planned economic contraction, with the aim of moving toward a socially desirable, ecologically sustainable, steady state economy (Kallis, 2011, Alexander, 2012a). It barely needs stating that a degrowth or steady state economy will never emerge voluntarily within societies that are generally comprised of individuals seeking ever-­‐higher levels of income and consumption. It follows that any transition to such an economy will depend upon people in those societies transitioning away from consumer lifestyles and embracing lifestyles of reduced and restrained consumption. This may seem like an unlikely cultural revolution, and it is, but if it is a necessary cultural precondition to the emergence of a degrowth or steady state economy, then it is an issue of critical importance that ought to be given due attention. In short, a macroeconomics of degrowth imply lifestyles of voluntary simplicity, in much the same way as a macroeconomics of limitless growth imply lifestyles of insatiable consumption. If it is the case, however, that contemporary consumer societies are structured in such a way to oppose lifestyles of voluntary simplicity, then it is important that those structures are exposed and challenged. Put otherwise, we must understand how our societies function to lock people into high consumption lifestyles and then set about changingthose structures to better facilitate practices of sustainable consumption. Structural change will not be enough, on its own, of course; there also needs to be a shift in values (Murtaza, 2011). However, it is tragic to think that there are some people living consumer lifestyles today who genuinely want to consume more sustainably, but who find it difficult or impossible, for structural reasons, to actually live lives of voluntary simplicity and put those values fully into practice. It is more tragic still if those consumerist structures are inhibiting people from increasing their quality of life through reduced consumption. This paper seeks to deepen the understanding of the relationship between consumer behaviour and the structures which shape that behaviour, in the hope that the existing barriers to sustainable consumption can be overcome.

# DA

#### Grid updates need pacing

POWERGRID International, 12/17/12 – from the editors based on an interview with Andre Begosso, managing director in the Accenture management consulting practice and is focused on the resources operating group. He has more than seventeen years of experience in the utility and energy industries and advises clients in the alternative energy, power generation and oil and gas sectors (“2013 trends for the power industry” December, <http://www.elp.com/blogs/eye-on-the-grid/2012/12/2013-trends-for-the-power-industry.html>)

In the absence of some major advance in energy storage, Andre said, he expects that renewable energy installation will probably start to slow as its shortcomings becomemore apparent to utilities and power companies.¶ "I would not expect these trends to continue because of the tremendous limitation that renewable technologies have. You cannot break the laws of physics or the laws of chemistry. The wind doesn't blow all the time and it never will, and the sun doesn't always shine and it never will," he said.¶ Trend No. 4: Energy back on the agenda¶ In my last blog post , I speculated about what it might take to get energy policy back on the agenda. When I asked about this, Andre said energy already is back on the agenda.¶ "Over the next 3 years, over $220 billion in new infrastructure will be built. But the problem with infrastructure is Rome wasn't built in a day.It takes time," he said.¶ This new wave of infrastructure upgrades will require a level of patience and understanding on the part of ratepayers that Andre wonders whether the average person is capable of. During Hurricane Sandy, for example, Con Edison had one of the most sophisticated electric grids available — yet it still failed, and people wonder why.

#### Decentralized solar creates instability

Jansson and Michelfelder, 8 - \*Associate Professor at Rowan University in the Department of Electrical and Computer Engineering AND \*\*assistant professor of finance at Rutgers University's School of Business (Peter and Richard, “Integrating Renewables into the U.S. Grid: Is It Sustainable?,” The Electricity Journal, July, science direct)

From utility economic and practical engineering perspectives, we have reached an impasse. Electric utilities are motivated by investors to provide real and growing returns on their capital investments and by state and national regulators to provide reliable electric power at the lowest costs to their consumers. Market-driven, independent power producers (IPPs) are motivated to develop projects that maximize shareholder value and minimizeotherinvestments that do not provide direct returns to their project investors. In today’s market-driven paradigm investing in major transmission facilities to increase reliability and new renewable generation technologies to achieve environmental responsibility goals will not provide high short-term ﬁnancial performance for any of the major players. Also, since the utilities can no longer control where customers may site new generation sources, new capacity additions (in either generation or transmission) will not necessarily increase grid reliability. Present evidence suggests that U.S. grid reliability in the early 21st century may actually be degrading (Anderson and Boulanger, 2004; NERC, 2004) with the areas most affected by massive outages being those states that have most aggressively embraced industry restructuring (Jansson and Michelfelder, 2005). As we move to more decentralized, market-driven, power generation systems based upon intermittent renewable energy sources the strain onexistingutility infrastructure will mount unless wise public policy direction is provided.

**Overloads the** **grid**

Rutgers News 8 (“Sustainable Energy Must Be Integrated Into Existing Power Grid, Says Rutgers–Camden Finance Scholar,” 11/18,<http://news.rutgers.edu/medrel/news-releases/2008/11/sustainable-energy-m-20081118/>)

CAMDEN -- Engineers and entrepreneurs are rushing to explore alternative sources of efficient and renewable energy in New Jersey and elsewhere in the country. ARutgers School of Business—Camden professor has strong words of caution as projects involving wind farms and photovoltaic cells proliferate.¶ With the electric-power industry poised for its most dramatic changes in decades, too little thought is being devoted to coordinating these piecemeal initiatives, warns [Richard Michelfelder](http://business.camden.rutgers.edu/facultystaff/directory/michelfelder.htm)in a recent edition of The Electricity Journal, the leading policy journal for the electric industry.¶ The consequence, he fears, might well be a disastrous overload of thenation’s electricalgrid.¶ An assistant professor of finance at the Rutgers School of Business—Camden and former president and CEO of Quantum Consulting Inc., a national public utilities consulting firm based in Berkeley, Cal., Michelfelder comes to his assessment after a quarter-century in the energy-technology industry.¶ “When you start adding random assets to the grid, you also add the possibility of disruptions in the coordination of the flow of electricity,” says Michelfelder.

**Blackouts cause nuclear meltdowns**

Cappiello ‘11 (Dina, reporter for the AP March 29, 2011 “AP IMPACT: Long Blackouts Pose Risk to US Reactors” The Post and Courier<http://www.postandcourier.com/news/2011/mar/29/ap-impact-long-blackouts-pose-risk-us-reactors/?print>)

Long before the nuclear emergency in Japan, U.S. regulators knew that a power failure lasting for days at an American nuclear plant, whatever the cause, could lead to a radioactive leak. Even so, they have only required the nation’s 104 nuclear reactors to develop plans for dealing with much shorter blackouts on the assumption that power would be restored quickly. In one nightmare simulation presented by the Nuclear Regulatory Commission in 2009, it would take less than a day for radiation to escape from a reactor at a Pennsylvania nuclear power plant after an earthquake, flood or fire knocked out all electrical power and there was no way to keep thereactors cool after backup battery power ran out. That plant, the Peach Bottom Atomic Power Station outside Lancaster, has reactors of the same older make and model as those releasing radiation at Japan’s Fukushima Dai-ichi plant, which is using other means to try to cool the reactors. And like Fukushima Dai-ichi, the Peach Bottom plant has enough battery power on site to power emergency cooling systems for eight hours. In Japan, that wasn’t enough time for power to be restored. According to the International Atomic Energy Agency and the Nuclear Energy Institute trade association, three of the six reactors at the plant still can’t get power to operate the emergency cooling systems. Two were shut down at the time. In the sixth, the fuel was removed completely and put in the spent fuel pool when it was shut down for maintenance at the time of the disaster. A week after the March 11 earthquake, diesel generators started supplying power to two other two reactors, Units 5 and 6, the groups said. The risk of a blackout leading to core damage, while extremely remote, exists at all U.S. nuclear power plants, and some are more susceptible than others, according to an Associated Press investigation. While regulators say they have confidence that measures adopted in the U.S. will prevent or significantly delay a core from melting and threatening a radioactive release, the events in Japan raise questions about whether U.S. power plants are as prepared as they could and should be. A top Nuclear Regulatory Commission official said Tuesday that the agency will review station blackouts and whether the nation’s 104 nuclear reactors are capable of coping with them. As part of a review requested by President Barack Obama in the wake of the Japan crisis, the NRC will examine “what conditions and capabilities exist at all 104 reactors to see if we need to strengthen the regulatory requirement,” said Bill Borchardt, the agency’s executive director for operations. Borchardt said an obvious question that should be answered is whether nuclear plants need enhanced battery supplies, or ones that can last longer. “There is a robust capability that exists already, but given what happened in Japan there’s obviously a question that presents itself: Do we need to make it even more robust?” He said the NRC would do a site-by-site review of the nation’s nuclear reactors to assess the blackout risk. “We didn’t address a tsunami and an earthquake, but clearly we have known for some time that one of the weak links that makes accidents a little more likely is losing power,” said Alan Kolaczkowski, a retired nuclear engineer who worked on a federal risk analysis of Peach Bottom released in 1990 and is familiar with the updated risk analysis. Risk analyses conducted by the plants in 1991-94 and published by the commission in 2003 show that the chances of such an event striking a U.S. power plant are remote, even at the plant where the risk is the highest, the Beaver Valley Power Station in Pennsylvania. These long odds are among the reasons why the United States since the late 1980s has only required nuclear power plants to cope with blackouts for four or eight hours. That’s about how much time batteries would last. After that, it is assumed that power would be restored. And so far, that’s been the case. Equipment put in place after the Sept. 11, 2001, terrorist attacks could buy more time. Otherwise, the reactor’s radioactive core could begin to melt unless alternative cooling methods were employed. In Japan, the utility has tried using portable generators and dumped tons of seawater, among other things, on the reactors in an attempt to keep them cool. A 2003 federal analysis looking at how to estimate the risk of containment failure said that should power be knocked out by an earthquake or tornado it “would be unlikely that power will be recovered in the time frame to prevent core meltdown.” In Japan, it was a one-two punch: first the earthquake, then the tsunami.

# Injustice

#### **PV models have already been installed in Mexico for electricity and water treatment**

King et al 11 (Carey W. King, Research Associate, Center for International Energy & Environmental Policy, Kelly M. Twomey, Graduate Research Assistant, Department of Mechanical Engineering, Ashlynn S. Stillwell, Graduate Research Assistant, Department of Civil, Architectural, and Environmental Engineering Webber Energy Group, and Michael E. Webber, Assistant Professor, Department of Mechanical Engineering Associate Director, Center for International Energy & Environmental Policy Co-Director, Clean Energy Incubator. 2011, “INVESTING IN RENEWABLE ENERGY THE GEF EXPERIENCE”, Clean Energy and Water: Assessment of Mexico for improved

water services with renewable energy, 09-26-13)

Mexico has enormous solar potential receiving an average of 5 kWh/m2 , and is as high as 7 kWh/m2 in states close to the Pacific reach. The country’s largest solar installations are in San Juanico (Baja California) and Agua Prieta Sonora, although solar technologies are still relatively

nascent in Mexico. In 2006, 839,686 m2 of solar collectors were installed for producing hot water. In the same year, 17.6 MW of photovoltaic modules were installed for rural electrification, communications, and water pumping. By 2013, 25 MW from photovoltaic arrays are expected to be online, which are estimated to produce 14 GWh/yr, or 0.01% of 2009 electricity generation [21]. Desalination is a common method of water treatment in BCS. A total of 67 systems are in operation, both state-managed and private, with 13 more under construction. Many private sector facilities exist to serve tourist populations. Of the 67 operating systems, 54 desalinate brackish water and 13 desalinate seawater using mostly reverse osmosis technology (four use multi-stage flash) with all systems using conventional sources of power. Sizes range from 2-1,998 m3/d treatment capacity, totaling 16,971 m3/d of installed capacity statewide. The desalination plant under construction in Cabo San Lucas will have a capacity of 17,280 m3/d[51].Despite the current reliance on conventional sources of power, some desalination facilities have worked to harness solar power. The first efforts to integrate solar power and desalination focused primarily on thermal desalination, with past projects in Puerto Chale in the 1970s, La Paz and Las Barrancas in 1980, and El Pardito in 1993. Current solar desalination projects utilize reverse osmosis technology, using solar PV arrays with battery banks to treat seawater. These current solar desalination installations can produce 19 m3/d [51]. Reported benefits of solar desalination in BCS include providing electricity and clean water to communities without access to electricity or primary fuel resources or water networks. Economics, reverse osmosis membrane maintenance, energy recovery, and energy storage are concerns that limit

implementation and performance of solar desalination systems [51].

#### Mexico will say no to any more decentralized energy production

Huacuz, 5 – (Jorge, Director of the Non-Conventional Energies Unit, Mexican Electric Research Institute; “The road to green power in Mexico—reflections on the prospects for the large-scale and sustainable implementation of renewable energy”, *Energy Policy*, Vol. 33, Issue 16, pages 2087–2099, November 2005, http://www.sciencedirect.com/science/article/pii/S0301421504001041)//HO

Technical, economic and institutional barriers had to be removed at the onset of the large-scale deployment of green power facilities in countries where new renewables are now becoming an important option (IEA, 1997). Individual countries have implemented strategies according to their particular circumstance, most of them embedded in their legal framework. For instance, in the United States, the Public Utility Regulatory Policies Act (PURPA) issued in 1978, was instrumental in the early implementation of a large variety of green power technologies. PURPA required utilities to purchase green power from small non-utility producers at avoided cost rates. In more recent times Spain introduced a special regime for renewables in which green power producers can get either a fixed price for the kWh fed to the grid, or a variable price calculated from the average price of the market pool plus a bonus per every kWh produced (Avia, 2000). In Germany an Electricity Feed Law was introduced in 1991, obligating utilities to buy green power from independent generators at preferential rates. This law was replaced in the year 2000 by the “Act on Granting Priority to Renewable Energy Sources” also known as the “Renewable Energy Sources Act”, which regulates the prioritization of grid-supplied electricity from renewable sources (FMENCNS, 2000). In India, a whole Ministry for Non-Conventional Energy Sources was created over a decade ago, while in China a law issued in 1999 allows renewable energy projects to receive loans at reduced rates and guarantees access to the grid and premium buy-back prices (Lew and Logan).¶The large-scale introduction of renewables in Mexico will not be easy. A number of barriers of different kinds have to be removed for this to happen (Huacuz, 2001). As already mentioned, the current legal framework does not favour the adoption of new renewables by the EPS, and virtually excludes any possibility of adopting incentive mechanisms based on preferential feed-in tariffs. On the other hand, distributed generation may be perceived as risky within a centrally structured utility (due to possible loss of political control over the electricity business; negative impacts on the integrity, safety and quality of the grid, etc.), or the “bigger is better” paradigm, followed by many power engineers can inhibit needed decisions. From the planning point of view, availability of fossil fuels challenges the wisdom of developing local renewable energy sources.¶International experience shows that success in creating a market for renewables is contingent upon private sector involvement. Based on this premise, a number of stakeholders in Mexico would like to see the hands of the government off the renewables business. However, experience also shows that government participation in the early stages of market development is critical in creating a favourable legal framework, providing adequate institutional support and setting long-term goals. It is unlikely that, due to budgetary constraints, the GOM will finance capital-intensive renewable energy projects, beyond early pilots or demonstrations. But experience in the commercial development of renewable power projects does not exist in Mexico, and hence, participation of the government is expected in many areas. For instance, a number of elements from the potential financial network useful for this purpose need to be identified and strengthened; regulatory barriers, which turn into financial constraints by perpetuating perceived high investment risks, associated with elevated project preparation costs and long lead times, need to be removed, along with subsidies now applied to conventional energy, which negatively impact the economic viability of renewable energy projects. No credits for capacity are currently granted for intermittent power production facilities, and CFE is under no obligation to purchase any renewable energy production, although in the case of self-supply with intermittent sources CFE is mandated to serve as an energy storage as explained earlier. Otherwise the regulatory framework is such that CFE cannot unilaterally grant exceptions or provide incentives for renewables, unless the legal framework is modified or alternative attractive market-based solutions are identified.

#### Energy access doesn’t have a substantial social or economic impact

Cabraal et al., 5 – (R. Anil et al., Energy and Water, Energy Sector Management Assistance Program, World Bank; “PRODUCTIVE USES OF ENERGY FOR RURAL DEVELOPMENT,” World Bank, http://siteresources.worldbank.org/EXTRENENERGYTK/Resources/5138246-1237906527727/5950705-1239304688925/productiveusesofenergyforrd.pdf)//HO

There is almost unanimous agreement that energy plays a pivotal role in nationaldevelopment. Generally, there is a high degree of correlation between energy use,economic growth, and level of development. In the context of rural development, the traditional view of the productive use of energy is that it is associated primarily with the provision of motive power for agricultural and industrial or commercial uses. For example, motors are used to grind grain, operate power tools, irrigate farmland, and facilitate many commercial activities. It was believed that the motive power made possible by electricity would result in tremendous productivitygains and economic growth, thus transforming the underdeveloped rural landscape. In other words, the emphasis has been on the direct income-generating uses of energy.The traditional concept of productive uses of energy for rural development needsto be revised for primarily two reasons. First, there is a growing realization that althoughenergy is a necessary condition for rural development, it **is insufﬁcient byitself to bring about the desired socioeconomic impact.** Second, there is a signiﬁcantshift in the understanding of what is meant by rural development, especially in the context of the Millennium Development Goals (MDGs) used by the major donors and international development agencies.The MDGs emphasize not just poverty reduction in terms of income, but theyalso highlight the importance of improved health, universal primary education,women’s empowerment, and gender equality. The very goals of development are to raise incomes of the poor and also to ensure that they are educated and healthy, and treated equally. Thus, an enhanced understanding of what is a productive use of energy must take into account not only the direct impact of energy on raising incomes, but also the indirect impacts that energy can have on education, health, and gender issues.

#### Toxic waste from panel production destroys arable land – means semiconductors cause wide spread hunger

Schwartz 09 (Ariel, was formerly the editor of CleanTechnica and is a senior editor at Co.Exist. She has contributed to SF Weekly, Popular Science, Inhabitat, Greenbiz, NBC Bay Area, GOOD Magazine, and more. A graduate of Vassar College, she has previously worked in publishing, organic farming, documentary film, and newspaper journalism.. January 14 2009, “Danger: Solar Panels Can Be Hazardous to Your Health?”, http://cleantechnica.com/2009/01/14/danger-solar-panels-can-be-hazardous-to-your-health//, 09-26-13)

It’s easy to think that solar panels can do no wrong— after all, they will help lead us out of our energy crisis, right? Unfortunately, these shining beacons of hope produce toxic e-waste just like cell phones, TVs, and computers. A report released today by the Silicon Valley Toxics Coalition admonishes the solar industry to face its e-waste problem head on or risk “repeating the mistakes made by the microelectronics industry.” The SVTC warns that solar panel production creates many of the same toxic byproducts as those found in semiconductor production, including silicon tetrachloride, dusts, and greenhouse gases like sulfur hexafluoride. These byproducts aren’t anything to scoff at— silicon tetrachloride, for example, makes land unsuitable for growing crops. And for each ton of polysilicon produced, four tons of silicon tetrachloride are generated.

#### Incentivizing solar panel production is bad – waste from production kills crops and poisons Chinese villages-underrepresented groups in society are hurt the most

Liu 13 (Yingling, is manager of the China Program at the Worldwatch Institute, a Washington-D.C. based environmental research organization. January 14 2009, “The Dirty Side of a “Green” Industry”, http://www.worldwatch.org/node/5650, 09-26-13)

The Post article describes how Luoyang Zhonggui, a major Chinese polysilicon manufacturer, is dumping toxic factory waste directly on to the lands of neighboring villages, killing crops and poisoning residents. Other polysilicon factories in the country have similar problems, either because they have not installed effective pollution control equipment or they are not operating these systems to full capacity. Polysilicon is a key component of the sunlight-capturing wafers used in solar photovoltaic (PV) cells. China is now a global leader in solar PV manufacture. According to the recent Worldwatch Institute report Powering China’s Development: The Role of Renewable Energy, PV production capacity in China jumped from 350 megawatts (MW) in 2005 to over 1,000 MW in 2006, with 1,500 MW estimated for 2007. High-profile initial public stock offerings for several Chinese companies, some valued in the billions of dollars, have focused global attention on how this industry will progress—having literally developed from scratch into the world’s third largest PV industry in just five years. Most of this development, however, is driven by global demand, with over 90 percent of Chinese-made solar PV systems being exported to Europe, Japan, and the United States. Technologies exist to recycle the chemical byproducts of solar-cell production, but some Chinese polysilicon plants, including Luoyang Zhonggui, are cutting costs and corners by avoiding significant extra investment in pollution control. The cheaper prices of their products, which do not currently factor in environmental costs, are projected to fan the rapid expansion of Chinese-made solar PV systems around the world, especially in industrial countries that can afford the still-expensive units. Although China will eventually benefit from this green technology as well as costs decline further, for the time being the industry continues to tread the traditional path of “pollute first, clean up afterwards.” At stake are the underrepresented groups in Chinese society, especially rural farmers who depend on increasingly polluted lands for a living. China’s shining solar industry, while enabling blue skies elsewhere, is leaving behind a scarred landscape at home. So far, the environment has been the biggest loser in China’s rapid economic growth. The irony of the recent Post exposé is that the environment is not even being considered seriously by those Chinese industries that bear a “green” tag, and whose products support progress toward a better environment.

#### Ethical policymaking requires calculation of consequences

**Gvosdev 5** – Rhodes scholar, PhD from St. Antony’s College, executive editor of The National Interest (Nikolas, The Value(s) of Realism, SAIS Review 25.1, pmuse)

As the name implies, realists focus on promoting policies that are achievable and sustainable. In turn, the morality of a foreign policy action is judged by its results, not by the intentions of its framers. A foreign policymaker must weigh the consequences of any course of action and assess the resources at hand to carry out the proposed task. As Lippmann warned, Without the controlling principle that the nation must maintain its objectives and its power in equilibrium, its purposes within its means and its means equal to its purposes, its commitments related to its resources and its resources adequate to its commitments, it is impossible to think at all about foreign affairs.8 Commenting on this maxim, Owen Harries, founding editor of The National Interest, noted, "This is a truth of which Americans—more apt to focus on ends rather than means when it comes to dealing with the rest of the world—need always to be reminded."9 In fact, Morgenthau noted that "there can be no political morality without prudence."10 This virtue of prudence—which Morgenthau identified as the cornerstone of realism—should not be confused with expediency. Rather, it takes as its starting point that it is more moral to fulfill one's commitments than to make "empty" promises, and to seek solutions that minimize harm and produce sustainable results. Morgenthau concluded: [End Page 18] Political realism does not require, nor does it condone, indifference to political ideals and moral principles, but it requires indeed a sharp distinction between the desirable and the possible, between what is desirable everywhere and at all times and what is possible under the concrete circumstances of time and place.11 This is why, prior to the outbreak of fighting in the former Yugoslavia, U.S. and European realists urged that Bosnia be decentralized and partitioned into ethnically based cantons as a way to head off a destructive civil war. Realists felt this would be the best course of action, especially after the country's first free and fair elections had brought nationalist candidates to power at the expense of those calling for inter-ethnic cooperation. They had concluded—correctly, as it turned out—that the United States and Western Europe would be unwilling to invest the blood and treasure that would be required to craft a unitary Bosnian state and give it the wherewithal to function. Indeed, at a diplomatic conference in Lisbon in March 1992, the various factions in Bosnia had, reluctantly, endorsed the broad outlines of such a settlement. For the purveyors of moralpolitik, this was unacceptable. After all, for this plan to work, populations on the "wrong side" of the line would have to be transferred and resettled. Such a plan struck directly at the heart of the concept of multi-ethnicity—that different ethnic and religious groups could find a common political identity and work in common institutions. When the United States signaled it would not accept such a settlement, the fragile consensus collapsed. The United States, of course, cannot be held responsible for the war; this lies squarely on the shoulders of Bosnia's political leaders. Yet Washington fell victim to what Jonathan Clarke called "faux Wilsonianism," the belief that "high-flown words matter more than rational calculation" in formulating effective policy, which led U.S. policymakers to dispense with the equation of "balancing commitments and resources."12 Indeed, as he notes, the Clinton administration had criticized peace plans calling for decentralized partition in Bosnia "with lofty rhetoric without proposing a practical alternative." The subsequent war led to the deaths of tens of thousands and left more than a million people homeless. After three years of war, the Dayton Accords—hailed as a triumph of American diplomacy—created a complicated arrangement by which the federal union of two ethnic units, the Muslim-Croat Federation, was itself federated to a Bosnian Serb republic. Today, Bosnia requires thousands of foreign troops to patrol its internal borders and billions of dollars in foreign aid to keep its government and economy functioning. Was the aim of U.S. policymakers, academics and journalists—creating a multi-ethnic democracy in Bosnia—not worth pursuing? No, not at all, and this is not what the argument suggests. But aspirations were not matched with capabilities. As a result of holding out for the "most moral" outcome and encouraging the Muslim-led government in Sarajevo to pursue maximalist aims rather than finding a workable compromise that could have avoided bloodshed and produced more stable conditions, the peoples of Bosnia suffered greatly. In the end, the final settlement was very close [End Page 19] to the one that realists had initially proposed—and the one that had also been roundly condemned on moral grounds.

#### Role of the ballot is the evaluation of policy simulation and to maximize the lives saved. We should never sacrifice individuals for abstract market values – however, attempts to preserve lives gives equality to all rational beings – that’s key to value to life

Cummisky 96 (David, professor of philosophy at Bates College, Kantian Consequentialism, pg. 145)

We must not obscure the issue by characterizing this type of case as the sacrifice of individuals for some abstract “social entity.” It is not a question of some persons having to bear the cost for some elusive “overall social good.” Instead, the question is whether some persons must bear the inescapable cost for the sake of other persons. Robert Nozick, for example, argues that to use a person in this way does not sufficiently respect and take account of the fact that he is a separate person, that his is the only life he has.” But why is this not equally true of all those whom we do not save through our failure to act? By emphasizing solely the one who must bear the cost if we act, we fail to sufficiently respect and take account of the many other separate persons, each with only one life, who will bear the cost of our inaction. In such a situation, what would a conscientious Kantian agent, an agent motivated by the unconditional value of rational beings, choose? A morally good agent recognizes that the basis of all particular duties is the principle that “rational nature exists as an end in itself” (GMM 429). Rational nature as such is the supreme objective end of all conduct. If one truly believes that all rational beings have an equal value, then the rational solution to such a dilemma involves maximally promoting the lives and liberties of as many rational beings as possible (chapter 5). In order to avoid this conclusion, the non-consequentialist Kantian needs to justify agent-centered constraints. As we saw in chapter 1, however, even most Kantian deontologists recognize that agent-centered constraints require a non-value-based rationale. But we have seen that Kant’s normative theory is based on an unconditionally valuable end. How can a concern for the value of rational beings lead to a refusal to sacrifice rational beings even when this would prevent other more extensive losses of rational beings? If the moral law is based on the value of rational beings and their ends, then what is the rationale for prohibiting a moral agent from maximally promoting these two tiers of value? If I sacrifice some for the sake for others, I do not use them arbitrarily, and I do not deny the unconditional value of rational beings. Persons may have “dignity, that is, an unconditional and incomparable worth” that transcends any market value ( GMM 436)., but persons also have a fundamental equality that dictates that some must sometimes give way for the sake of others (chapter 5 and 7). The concept of the end-in-itself does not support th view that we may never force another to bear some cost in order to benefit others. If one focuses on the equal value of all rational beings, the equal consideration suggests that one may have to sacrifice some to save many.

#### Political engagement in potentially flawed discourses is paramount – refusal to directly engage admittedly corrupt politics mirrors the practice of German leftists in the 1930’s – a practice that led directly to the rise of Hitler

**Wallace in ’96** (William, Prof. – London School of Economics, Review of International Studies, "Truth and Power, Monks and Technocrats: Theory and Practice in International Relations", 22:3, p. 307-309)

But if we cling to our intellectual chastity and reject such compromised vehicles of communication, we are unlikely to reach much of an audience. It is wonderfully ambitious to proclaim that `world politics is the new metaphysics, a global moral science' through which we will `reinvent the future ... freeing people, as individuals and groups, from the social, physical, economic, political and other constraints which stop them carrying out what they would freely choose to do'. 24 It falls far short of that ambition to communicate with the people of the world primarily through Millennium or the Review of International Studies, or even through the university lecture hall and tutorial. Sectarianism-to switch from a Catholic to a Protestant metaphor-is a besetting sin of academic life, each exclusive group selfrighteously insisting that it has discovered the path to truth and salvation. 25 Ken Booth's concluding chapter to International Relations Theory Today has all the power and passion of an evangelical sermon, reminding its sinful readers that `the enemy is us ', calling on us to repent of our consumerist culture of contentment and to ` ask the victims of world politics to reinvent the future ' . 26 The discourse of postmodernist and critical theorists tells us much about their own self-closure to the world of policy. `Dissidence' and `resistance' are powerful words, implying that the writers live in truth (as Havel put it) in a political system based upon lies; drawing a deliberate parallel with the dissidents of socialist central Europe, as if these Western `dissidents' had also to gather secretly in cramped apartments to hear a lecturer smuggled in from the free universities on the `other' side-Noam Chomsky, perhaps, or Edward Said, slipping into authoritarian whom so many of our younger generation yearn'-though Max Weber, who went on to warn that `academic prophecy ... will create only fanatical sects but never a genuine community', was referring to a much earlier rising generation. 28 The terminology of dissidence and exile is drawn from the post-Vietnam image of an authoritarian and capitalist America, in which hegemonic Harvard professors suppress the views-and stunt the careers-of those who do not share their positivist doctrines. There is a tendency within American political science towards orthodoxy, with professors from leading departments (like Dominicans) hounding heretics off the tenure track. 29 Banishment to a second-class university, or even to Canada, is not however quite of the same order as the treatment of intellectuals in post-1968 Czechoslovakia, to which we are invited to compare their situation; the victims of positivist hegemony do not risk arrest, may even continue to teach, to publish and to travel. 30 And it would be hard to argue that any comparable orthodoxy stunts the careers of promising academics in Britain, or elsewhere in Western Europe. The failure of the Weimar Republic to establish its legitimacy owed something to the irresponsibility of intellectuals of the right and left, preferring the private certainties of their ideological schools to critical engagement with the difficult compromises of democratic politics. The Frankfurt School of Adorno and Marcuse were Salonbolschewisten, `relentless in their hostility towards the capitalist system' while `they never abandoned the lifestyle of the haute bourgeoisie ' . 31 The followers of Nietzsche on the right and those of Marx on the left both worked to denigrate the limited achievements and the political compromises of Weimar, encouraging their students to adopt their own radically critical positions and so contribute to undermining the republic. Karl Mannheim, who had attempted in Ideology and Utopia to build on Weber's conditional and contingent sociology of knowledge, was among the first professors dismissed when the Nazis came to power. Intellectuals who live within relatively open civil societies have a responsibility to the society within which they live: to act themselves as constructive critics, and to encourage their students to contribute to the strengthening of civil society rather than to undermine it.32

# Scalar Politics

#### National and International Model based approaches are useful in the context of energy politics

Craig 2 – (Paul, Professor of Engineering Emeritus at the University of California, Davis, “What Can History Teach Us? A Retrospective Examination of Long-Term Energy Forecasts for the United States,” Annu. Rev. Energy Environ. 2002. 27:83–118)

The applicable measure of success here is the degree to which the forecast can prompt learning and induce desired changes in behavior. The Limits to Growth model (discussed below) has been widely used to help students understand the counterintuitive nature of dynamical systems (11). Simulations and role-playing games have also been used to teach executives in the utility industry how new markets for SO2 emissions permits or electric power might behave. Experience with exercising these types of models can improve intuition for the behavior of complex systems (12–14). 2.4. Use 4: In Automatic Management Systems Whose Efﬁcacy Does Not Require the Model to be a True Representation Hodges & Dewar use the example of the Kalman ﬁlter, which can be used to control (for example) the trafﬁc on freeway on-ramps. These ﬁlters can model trafﬁc ﬂow, but only in a stochastic representation that does not pretend to be exact and validated, just useful. Similar ﬁlters can also be embedded in management systems controlling power systems or factory processes. As long as the model cost-effectively controls the process in question, the issue of whether it is an exact representation of reality is not of concern. Neural networks fall into this category (15). 2.5. Use 5: As Aids in Communication and Education By forcing analysts to discuss data and analysis results in a systematic way, forecasting models can facilitate communication between various stakeholders. The measure of success for this use is the degree to which the model improves understanding and communication, both for individuals and between groups with different mindsets and vocabularies. For example, the population of a developing country at some future time might depend on childhood survival rates, longevity, female literacy, afﬂuence, income distribution, health care, and nutrition. Modeling these inﬂuences could permit better understanding of interlinkages between them and improve communication between expert groups with diverse backgrounds. Such a model could inform, for instance, a government’s long-term plans. Another example is the U.S. DOE’s Energy Information Administration (EIA) Annual Energy Outlook forecast (16). This widely used forecast, based on the EIA’s latest analysis of the current data and industry expectations, provides a baselinethat others can and do use for their own explorations of the future. When a problem is being analyzed, word leaks out and leads to suggestions, ideas, and information from outside parties. This can add to the analysis directly, or stimulate helpful complementary work by others. A politician facing a thorny problem might commission a study to locate knowledgeable people. Thus, studies can identify talent as a by-product. The National Academy of Sciences Committee on Nuclear and Alternative Energy Systems (CONAES) study, one of those assessed in the DOE review of forecasts from the 1970s (Figure 1) (5), was directly or indirectly responsible for many career shifts. The American Physical Society “Princeton Study” held during the summer of 1973 was explicitly designed with this intent (17). The oil embargos of the 1970s had led many physicists to think about making career shifts. The study gave them an opportunity to learn about energy issues, to meet and get to know experts, and to ﬁnd jobs. 2.6. Use 6: To Understand the Bounds or Limits on the Range of Possible Outcomes Models can enhance conﬁdence through limiting or bounding cases. The Princeton Study referred to in Use 5 includes many examples (17). This study emphasized energy efﬁciency, with a focus on physical constraints to energy use. The cornerstone of the analysis was the concept of fundamental physical limits such as the ﬁrst and second laws of thermodynamics. This work showed that great potential existed for improving efﬁciency by engineering change. Energy efﬁciency became a major theme of energy policy and remains so to this day. 2.7. Use 7: As Aids to Thinking and Hypothesizing Forecasts can help people and institutions think through the consequences of their actions. Researchers often begin their exercises with baseline or “business-asusual” forecasts, which attempt to predict how the world will evolve assuming current trends continue. Alternative forecasts are then created to assess the potential effects of changes in key factors on the results. For example, an economic forecaster might use such an analysis to assess the likely effects of a change in property taxes on economic growth in a particular state. Computer forecasting is an excellent tool to teach people the dynamics of complex systems (12, 13). The behavior of these systems is often counterintuitive, so such forecasting games can help people learn to manage them better. For example, systems dynamics models (described below) were used in the 1960s to explain why building premium housing in urban areas can under some plausible circumstances accelerate, rather than slow, migration to suburbs (14, p. 5)2. Some forecasts are generated as part of scenario exploration exercises, which can be helpful any time a person or institution faces a critical choice. Oil companies, for example, are well aware that at some point the transportation sector may have to switch to some other fuel. Even though this switch may be a long time in the future, the prospect needs to be part of current contingency planning. Considering a wide range of scenarios can help institutions prepare for the many different ways the future can evolve. Institutions use forecasts to allocate physical and personnel resources. Some businesses have massive infrastructures with long time constants and ﬁnd it useful to forecast over decades (18).

#### Policymakers have an obligation to err in favor of prediction—it’s inevitable and using explicit predictions enhances decision-making

Fitzsimmons 7 (Michael, Washington DC defense analyst, “The Problem of Uncertainty in Strategic Planning”, Survival, Winter 06-07, online)

In defence of prediction ¶ Uncertainty is not a new phenomenon for strategists. Clausewitz knew that ‘many intelligence reports in war are contradictory; even more are false, and most are uncertain’. In coping with uncertainty, he believed that ‘what one can reasonably ask of an officer is that he should possess a standard of judgment, which he can gain only from knowledge of men and affairs and from common sense. He should be guided by the laws of probability.’34 Granted, one can certainly allow for epistemological debates about the best ways of gaining ‘a standard of judgment’ from ‘knowledge of men and affairs and from common sense’. Scientific inquiry into the ‘laws of probability’ for any given strate- gic question may not always be possible or appropriate. Certainly, analysis cannot and should not be presumed to trump the intuition of decision-makers. Nevertheless, Clausewitz’s implication seems to be that the burden of proof in any debates about planning should belong to the decision-maker who rejects formal analysis, standards of evidence and probabilistic reasoning. Ultimately, though, the value of prediction in strategic planning does not rest primarily in getting the correct answer, or even in the more feasible objective of bounding the range of correct answers. Rather, prediction requires decision- makers to expose, not only to others but to themselves, the beliefs they hold regarding why a given event is likely or unlikely and why it would be impor- tant or unimportant. Richard Neustadt and Ernest May highlight this useful property of probabilistic reasoning in their renowned study of the use of history in decision-making, Thinking in Time. In discussing the importance of probing presumptions, they contend: The need is for tests prompting questions, for sharp, straightforward mechanisms the decision makers and their aides might readily recall and use to dig into their own and each others’ presumptions. And they need tests that get at basics somewhat by indirection, not by frontal inquiry: not ‘what is your inferred causation, General?’ Above all, not, ‘what are your values, Mr. Secretary?’ ... If someone says ‘a fair chance’ ... ask, ‘if you were a betting man or woman, what odds would you put on that?’ If others are present, ask the same of each, and of yourself, too. Then probe the differences: why? This is tantamount to seeking and then arguing assumptions underlying different numbers placed on a subjective probability assessment. We know of no better way to force clarification of meanings while exposing hidden differences ... Once differing odds have been quoted, the question ‘why?’ can follow any number of tracks. Argument may pit common sense against common sense or analogy against analogy. What is important is that the expert’s basis for linking ‘if’ with ‘then’ gets exposed to the hearing of other experts before the lay official has to say yes or no.’35 There are at least three critical and related benefits of prediction in strate- gic planning. The first reflects Neustadt and May’s point – prediction enforces a certain level of discipline in making explicit the assumptions, key variables and implied causal relationships that constitute decision-makers’ beliefs and that might otherwise remain implicit. Imagine, for example, if Shinseki and Wolfowitz had been made to assign probabilities to their opposing expectations regarding post-war Iraq. Not only would they have had to work harder to justify their views, they might have seen more clearly the substantial chance that they were wrong and had to make greater efforts in their planning to prepare for that contingency. Secondly, the very process of making the relevant factors of a deci- sion explicit provides a firm, or at least transparent, basis for making choices. Alternative courses of action can be compared and assessed in like terms. Third, the transparency and discipline of the process of arriving at the initial strategy should heighten the decision-maker’s sensitivity toward changes in the envi- ronment that would suggest the need for adjustments to that strategy. In this way, prediction enhances rather than under-mines strategic flexibility. This defence of prediction does not imply that great stakes should be gambled on narrow, singular predictions of the future. On the contrary, the central problem of uncertainty in plan- ning remains that any given prediction may simply be wrong. Preparations for those eventualities must be made. Indeed, in many cases, relatively unlikely outcomes could be enormously consequential, and therefore merit extensive preparation and investment. In order to navigate this complexity, strategists must return to the dis- tinction between uncertainty and risk. While the complexity of the international security environment may make it somewhat resistant to the type of probabilis- tic thinking associated with risk, a risk-oriented approach seems to be the only viable model for national-security strategic planning. The alternative approach, which categorically denies prediction, precludes strategy. As Betts argues, Any assumption that some knowledge, whether intuitive or explicitly formalized, provides guidance about what should be done is a presumption that there is reason to believe the choice will produce a satisfactory outcome – that is, it is a prediction, however rough it may be. If there is no hope of discerning and manipulating causes to produce intended effects, analysts as well as politicians and generals should all quit and go fishing.36 Unless they are willing to quit and go fishing, then, strategists must sharpen their tools of risk assessment. Risk assessment comes in many varieties, but identification of two key parameters is common to all of them: the consequences of a harmful event or condition; and the likelihood of that harmful event or condition occurring. With no perspective on likelihood, a strategist can have no firm perspective on risk. With no firm perspective on risk, strategists cannot purposefully discriminate among alternative choices. Without purposeful choice, there is no strategy. \* \* \* One of the most widely read books in recent years on the complicated relation- ship between strategy and uncertainty is Peter Schwartz’s work on scenario-based planning, The Art of the Long View. Schwartz warns against the hazards faced by leaders who have deterministic habits of mind, or who deny the difficult implications of uncertainty for strategic planning. To overcome such tenden- cies, he advocates the use of alternative future scenarios for the purposes of examining alternative strategies. His view of scenarios is that their goal is not to predict the future, but to sensitise leaders to the highly contingent nature of their decision-making.37 This philosophy has taken root in the strategic-planning processes in the Pentagon and other parts of the US government, and properly so. Examination of alternative futures and the potential effects of surprise on current plans is essential. Appreciation of uncertainty also has a number of organisational impli- cations, many of which the national-security establishment is trying to take to heart, such as encouraging multidisciplinary study and training, enhancing information sharing, rewarding innovation, and placing a premium on speed and versatility. The arguments advanced here seek to take nothing away from these imperatives of planning and operating in an uncertain environment. But appreciation of uncertainty carries hazards of its own. Questioning assumptions is critical, but assumptions must be made in the end. Clausewitz’s ‘standard of judgment’ for discriminating among alternatives must be applied. Creative, unbounded speculation must resolve to choice or else there will be no strategy. Recent history suggests that unchecked scepticism regarding the validity of prediction can marginalise analysis, trade significant cost for ambiguous benefit, empower parochial interests in decision-making, and undermine flexibility. Accordingly, having fully recognised the need to broaden their strategic-planning aperture, national-security policymakers would do well now to reinvigorate their efforts in the messy but indispensable business of predicting the future.

#### Complexity theory leads to paralysis

Hendrick 9 (Diane; Department of Peace Studies – University of Bradford, “Complexity Theory and Conflict Transformation: An Exploration of Potential and Implications,” June, <http://143.53.238.22/acad/confres/papers/pdfs/CCR17.pdf>)

It is still relatively early days in the application of complexity theory to social sciences and there are doubts and criticisms, either about the applicability of the ideas or about the expectations generated for them. It is true that the translation of terms from natural science to social science is sometimes contested due to the significant differences in these domains, and that there are concerns that the meanings of terms may be distorted, thus making their use arbitrary or even misleading. Developing new, relevant definitions for the new domain applications, where the terms indicate a new idea or a new synthesis that takes our understanding forward, are required. In some cases, particular aspects of complexity theory are seen as of only limited applicability, for example, self-organisation (see Rosenau‘s argument above that it is only relevant in systems in which authority does not play a role). There are those who argue that much that is being touted as new is actually already known, whether from systems theory or from experience, and so complexity theory cannot be seen as adding value in that way. There are also concerns that the theory has not been worked out in sufficient detail, or with sufficient rigour, to make itself useful yet. Even that it encourages woolly thinking and imprecision.

In terms of application in the field, it could be argued that it may lead to paralysis, in fear of all the unexpected things that could happen, and all the unintended consequences that could result, from a particular intervention. The proposed adaptability and sensitivity to emerging new situations may lead to difficulties in planning or, better expressed, must lead to a different conception of what constitutes planning, which is, in itself, challenging (or even threatening) for many fields. The criteria for funding projects or research may not fit comfortably with a complexity approach, and evaluation, already difficult especially in the field of conflict transformation, would require a re-conceptualisation. Pressure for results could act as a disincentive to change project design in the light of emergent processes. There may be the desire to maintain the illusion of control in order to retain the confidence of funders. On the other hand, there are fears that complexity may be used as an excuse for poor planning, and implementation, which is a valid concern for funders. In addition, there may be scepticism that the co-operation and co-ordination between different researchers or interveners, (let alone transdisciplinary undertakings) appropriate to working on complex problem domains, will not work due to differing mental models, competing interests and aims, competition for funding, prestige, etc. Such attempts appear, therefore, unrealistic or unfeasible.

#### Squo Solves-Mexico is leading the indigenous peoples political participation in Latin America

Munoz 12 (Herald, is a UN Assistant Secretary-General and UNDP's Director for Latin America and the Caribbean. 23 May 2012, “Indigenous peoples’ political inclusion enriches democracy in Latin America | Heraldo Muñoz”, <http://www.undp.org/content/undp/en/home/ourperspective/ourperspectivearticles/2013/05/23/la-inclusion-politica-de-los-pueblos-indigenas-enriquece-las-democracias-en-america-latina.html>, 09-26-13)

Mexico, for example, is advancing the ‘coexistence’ of indigenous peoples’ legal systems with the national legal system. It is not an easy process. The indigenous peoples’ representation at local and national levels, including dispute resolution methods, can differ widely and also spark tensions. However, indigenous peoples have shown that they are aware of how modern democracies work, as well as the limitations imposed to their political participation. For this reason, indigenous peoples have been adapting their traditional knowledge systems and their institutions to become key players in national and international politics. Even though their participation has been limited to certain decision-making spaces, they have proven that their contribution is crucial to enrich Latin American democracies. We see multiculturalism as part of the process to build a broader democracy. In our region we argue that sustainable democracy depends largely on its ability to guarantee human rights, including those recognized by the United Nations Declaration on the Rights of Indigenous Peoples.

The efforts of Mexican institutions and indigenous leaders show that with political will we can move towards a multicultural democracy that promotes human development to all citizens.

#### **Plan fails – our evidence contextualizes your affirmative**

Practical Action 6 – (provides practical power: renewable, locally-sourced sustainable energy solutions which lift people out of poverty, “Decentralised energy schemes,” 5/8/06, <http://practicalaction.org/decentralised-energy>)

Appropriate options include renewable energy schemes: solar photovoltaic (PV) systems, small-scale wind electricity generators, small-scale hydro schemes and biomass systems. They are considered appropriate because they use local resources, can be sized according to need, operated and managed locally, and because local people can participate in the processes of planning and installation. Diesel sets have been frequently used for applications of this kind and can still be useful, under particular conditions of reliability and affordability. However this option is generally limited to few hours of supply because of the high cost of diesel fuel. Despite their high cost in most cases, renewable energy technologies have progressed significantly. Nevertheless such progress have been mostly in developed countries, were there have been experimenting a fast grown of solar PV and wind systems, but in developing countries it is slow. Among the most remarkable examples of implementation of decentralised renewable energies are: 150,000 in Kenya, 100,000 in China, 85,000 in Zimbabwe, 60,000 in Indonesia and 40,000 in Mexico; around 150,000 PV and wind systems for health clinics, schools and other communal buildings world-wide. Over 45,000 small-scale hydro schemes are operational in China, providing electricity to more than 50 million people. Over 100,000 families in Vietnam use very small water turbines to generate electricity from hydro schemes, while more than 50,000 small-scale wind turbines provide electricity in remote rural areas in the world. Despite the small demands of electricity in rural areas, as said above the challenges to access to modern energy services to all are huge. In fact for those involved in the provision of energy services to the rural poor it is clear that the lack of money is not the only constraint for the poor countries, but there are important barriers which prevent the increase of access to modern energy services; all of the associated with social, technical, managerial and institutional issues.

#### Plan can’t solve gendered aspect of energy poverty – broader agenda is key

Parikh et al., 99 – (Jyoti et al., writers for Economic and Political Weekly, citing numerous studies; *Economic and Political Weekly*, Vol. 34, No. 9, pages 539-544, 5 March 1999, http://www.jstor.org/stable/4407707?seq=3)//HO

The pollutants released due to use of bio-fuels for cooking in traditional stoves cause serious health problems like acute respiratory infections, chronic obstructive lung disease, lung cancer, tuberculosis, etc. Women and children below five years of age are most affected,- as they are regularly and severely exposed. There is a-need to pay more attention to the plight of hundreds and millions of women and children living daily with exposure to Indoor air pollution. Many actions are required to address this air pollution. A short- and medium-term solution is to design and disseminate efficient smokeless stoves in a cost-effective manner. Effective price of such a successfully installed stove is approximate Rs 2,000 with a lifetime of 15 years, which may seem to be very high as compared to stoves currently, installed under government programmes. But it should be noted that these less expensive stoves have a high failure rate and a very small lifetime, and do not offer good efficiency . While improved stoves reduce the pollution exposure, they do not eliminate it. In the long term clean fuels would be needed not only to reduce pollution but also to provide convenient and controllable fuels by increasing availability of clean fuels in rural and remote areas. Since LPG, propane, butane are in limited supply and require heavy initial investment for bottling plants and cylinders, and availability of electricity is not reliable and economical in the rural areas, next best alternative is kerosene. There is a need to change the petroleum product policy in a manner to make kerosene available, to the people who are willing and are able to pay for it,. in the open market at an affordable price. Government should reformulate its policy to make parallel marketing system for kerosene effective and successful. This will reduce the burden of diseases suffered by a large number of women and children, and will also ease the pressure on forests and other bio-fuel resources. When the segment, which can pay, is dealt with the poor who cannot afford to buy commercial fuels may have less pressure. More surveys and analytical work is needed to devise cost effective strategies and comparison of alternatives. High occurrence of indoor air' pollution signifies inequalities in environmental policies, energy policies and health policies.

# Solvency

#### **No Linkage between energy and poverty**

**Their Author, Their article-**Environment and Natural Resources Service, Food and Agriculture Organization of the United Nations (Bart Van Campen; Daniele Guidi, Renewable Energy Consultant; Gustavo Best, Environment and Natural Resources Service "Solar Photovoltaics for Sustainable Agriculture and Rural Development" 2000

In recent years attention has risen again regarding the issue of rural access to electricity supply and regarding the relation between energy (electricity) and poverty. Cecelski (2000) reviews several "success factors" in widening rural access to electricity, including subsidies,

credit and leasing options for PV systems. Cecelski acknowledges that even under these circumstances, rural electrification is still not likely to reach more than 50-75 percent of the rural population and is more likely to benefit the less-poor. Increasing attention to poverty

alleviation has brought the issue of impact of rural electrification back on the agenda, but very few empirical studies convincingly demonstrate a linkage between energy and poverty. If there is a linkage to the poor, it is generally through increased employment and income generating opportunities. Improved communal services such as water supply and improved health care (vaccine refrigeration), have the potential of benefiting all rural inhabitants providing that careful consideration is taken to the access of the marginalized groups.

#### **PV systems are expensive-Germany proves**

Monbiot 10 (George, writes for The Guardian and is the author of the bestselling books The Age of Consent: A Manifesto for a New World Order and Captive State: The Corporate Takeover of Britain , March 11 2010, “Solar PV has failed in Germany and it will fail in the UK”, http://www.theguardian.com/environment/georgemonbiot/2010/mar/11/solar-power-germany-feed-in-tariff, 09-26-13)

Against my instincts I have come to oppose solar photovoltaic power (PV) in the UK, and the feed-in tariffs designed to encourage it, because the facts show unequivocally that this is a terrible investment. There are much better ways of spending the rare and precious revenue that the tariffs will extract from our pockets. If we are to prevent runaway climate change, we have to ensure that we get the biggest available bang for our buck: in other words the greatest cut in greenhouse gas production from the money we spend. Money spent on ineffective solutions is not just a waste: it's also a lost opportunity. Environmentalists have no trouble understanding this argument when lobbying against nuclear power. Those who maintain that it's more expensive than renewable electricity argue that we shouldn't waste our money investing in it. But now I hear the same people telling us that we should support every form of renewable generation, regardless of the cost. I'm delighted that Jeremy has accepted my bet that solar PV won't reach grid parity in 2013. I am also happy for the winnings to go to SolarAid. I agree with Jeremy that solar PV is an appropriate technology in Africa, where most people are off-grid and there's much more sunlight. It's in this country that it makes no sense. And I accept Jeremy's challenge to write a column admitting I'm wrong if he wins the bet (but I won't accept his subtle slippage, substituting "near" for "at"). If I am wrong, it won't be the first time. In 2005, before I had crunched the numbers, I called on green NGOs to switch from supporting windfarms to promoting "decentralised microgeneration projects", which I considered a more attractive option. After I discovered just how badly this would set back efforts to decarbonise our power supplies, I changed my views. What would it take to change his? Jeremy and I can speculate about how useful solar electricity will be in the UK until we've worn our keyboards out. Until our bet closes in 2013, by which time billions of pounds will have been committed, no one will know which of us is right. But you don't have to rely on speculation to see how this is likely to pan out. As the old cookery programes used to say: "Here's one we prepared earlier." The German experiment, almost identical to the UK's, has now been running for ten years. An analysis published in November by the Ruhr University (pdf) shows just what it has achieved. When the German programme began in 2000, it offered index-linked payments of 51 euro cents for every KWh of electricity produced by solar PV. These were guaranteed for 20 years. This is similar to the UK's initial subsidy, of 41p. As in the UK, the solar subsidy was, and remains, massively greater than the payments for other forms of renewable technology. The real net cost of the solar PV installed in Germany between 2000 and 2008 was €35bn. The paper estimates a further real cost of €18bn in 2009 and 2010: a total of €53bn in ten years. These investments make wonderful sense for the lucky householders who could afford to install the panels, as lucrative returns are guaranteed by taxing the rest of Germany's electricity users. But what has this astonishing spending achieved? By 2008 solar PV was producing a grand total of 0.6% of Germany's electricity. 0.6% for €35bn. Hands up all those who think this is a good investment. After years of these incredible payments, and the innovation and cost reductions they were supposed to stimulate, the paper estimates that saving one tonne of carbon dioxide through solar PV in Germany still costs €716. The International Energy Agency has produced an even higher estimate: €1000 per tonne.

#### **Can’t solve-nobody wants to make PV systems-best studies**

Solarbuzz 2012 (NPD Solarbuzz is a globally recognized market research business focused on solar energy and photovoltaic industries. Since 2001, NPD Solarbuzz has grown its client base to include many of the largest global PV manufacturers, major investment banks, equipment manufacturers, materials suppliers, hedge fund companies, and a vast range of other multi-nationals. NPD Solarbuzz offers a wide array of reports, including Marketbuzz, an annual global PV industry report, and Solarbuzz Quarterly, which details both historical and forecast data on the global PV supply chain, October 22 2012, “Order Cancellations Drive PV Book-to-Bill Ratio into Negative Territory, According to NPD Solarbuzz http://www.solarbuzz.com/news/recent-findings/order-cancellations-drive-pv-book-bill-ratio-negative-territory-according-npd-s, 09-26-13)

During Q3’12, utilization rates for cell and module capacity had to be reduced considerably in an attempt to restore inventories to more manageable levels. However, PV manufacturers remain highly cautious about short-term capacity and production plans, with growing uncertainty related to the outcomes of several ongoing anti-dumping investigations. Some Chinese c-Si manufacturers are considering geographic diversification of their manufacturing capacity. PV equipment spending is forecast to decline by more than 66% during 2012, and to remain at pre-2008 levels of $5 billion during 2013. Equipment spending is not forecast to rebound until at least 2014, with tier 1 spending accounting for over 90% of addressable revenues. PV equipment spending over the next 12-18 months will be comprised of process tool upgrades, advanced high-efficiency pilot lines, and potential geographic capacity diversification to address any trade restrictions or local content requirements. The NPD Solarbuzz PV Equipment Quarterly report enables PV equipment suppliers to navigate spending cycle challenges by identifying target customers and competitors, equipment revenues on offer (down to the key process tool level), and the precise timing of each PV manufacturer’s fab expansions by quarter through 2016. The performance of leading PV equipment suppliers is analyzed and forecast, including PV-specific process tool revenues, bookings, and backlogs. The report features a comprehensive capacity and production database, incorporating proprietary NPD Solarbuzz industry knowledge covering over 390 c-Si cell and thin-film panel producers and including an extensive analysis of technology, equipment spending, and market-share trends.