### 1AC—Agriculture Advantage

#### Advantage 2 is Agriculture

#### Status quo food production is failing—a shift to urban agriculture is key to sustainable food systems and biodiversity preservation

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URBAN AGRICULTURE Urban agriculture is a system that ensures food security by providing access to land and resources to support urban farming efforts.68 The United Nations Development Programme defines urban agriculture as follows: [A]n industry that produces, processes, and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock.69 In the United States, urban agriculture is perhaps better known as community gardening.70 Community gardens are areas where residents grow food on publicly held or privately held land that they do not own.71 Most often, community gardens are located within neighborhoods, on public housing premises, or on school grounds.72 In the face of an imminent food shortage, especially in light of the economic and energy crises discussed above, it is imperative that urban residents expand urban food production. Neglected and abandoned vacant lots in blighted urban areas comprise a vast amount of land that could be converted into urban gardens.73 In addition to vacant lots, other urban areas including schoolyards, hospital grounds, parks and other open spaces, utility easements, alleys, rooftops, building walls,75 and even windowsills all provide opportunities for urban agriculture.76 While the many benefits of a sustainable urban agricultural system will be discussed below, additional benefits to urban communities deserve mention here. Urban gardens beautify and green urban neighborhoods while also building a sense of community.77 Urban gardens provide educational and employment opportunities, promote self-respect, and can even reduce crime rates.78 These gardens also offer urban residents an opportunity to connect with nature and can instill environmental ethics.79 Additionally, urban gardens promote entrepreneurship, as urban farmers can sell excess produce at farmers’ markets, through Community Supported Agriculture programs,80 and directly to restaurants.81 Finally, urban gardening provides lowincome urban residents with a supply of fresh and healthy organic food that can combat problems associated with inadequate nutrition, such as illness, fatigue, depression, anxiety, and hunger.82 IV SUSTAINABILITY Sustainability is best described as a concept of making decisions for the courses of action we choose in a way that balances the three “E’s” of sustainability—environment, economy, and social equity83 — as well as the lesser known prong of sustainability, national security.84 Sustainability is a big-picture concept. Our individual actions as well as local, state, and federal policies do not exist in a vacuum; every action has an impact on the world at large and on future generations. To create a truly sustainable world, all of our decisions, from individual choices to federal policies, must consider the impact on the environment, economy, society, and national security. Media coverage, marketing of consumer products,85 and recent documentaries have all contributed to bringing the terms “green” and “sustainability” into our everyday vocabulary,86 yet no clear definitions of these terms exist. While green focuses on protection of the environment, sustainability is much broader. In 1987, the World Commission on Environment and Development, in the Brundtland Report, defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”87 At a more fundamental level, sustainability can be defined as “able to be sustained,”88 where sustain means to “strengthen or support physically or mentally . . . [to] keep (something) going over time or continuously.”89 In this broader context, sustainability requires that we look at our current lifestyles and practices and evaluate their capability of being continued indefinitely. Much of the recent attention concerning sustainability focuses on technologies designed to reduce energy consumption and foster development of renewable energy sources.90 Little discourse has been directed towards the immediate impact individuals can have merely by reducing personal levels of consumption through a simplified lifestyle, yet such a reduction would yield immediate results and require little financial investment. As individuals, we can foster sustainability while increasing our food supply simply by providing more for ourselves through a sustainable urban agricultural system. Government incentives, discussed infra Part VII, provide land and resources that would enable individuals and communities to take action to transform our agricultural system into one that is both sustainable and secure. In the following sections, this Note provides an overview of each of the four elements of sustainability—environment, economy, equity, and national security. This Note also discusses modern industrial agriculture, urban development trends, and urban agriculture in terms of the elements of sustainability. A. Environmental Sustainability In the environmental context, sustainability encourages production and development methods that preserve and protect our natural resources and reduce our impact on the environment.91 This involves “protecting existing environmental resources (both in the natural and ‘built’ world), including the preservation of historical sites and the development of environmental resources and assets for future use.”92 To accomplish this goal, we must find innovative ways to reduce our consumption of resources and replenish the resources we do consume. We must protect biodiversity and ecosystems, as well as our land, air, and water resources by reducing greenhouse gas emissions, carbon footprints, air and water pollution, and soil contamination.93 In the context of land use and food production, environmental sustainability demands that we conserve undeveloped land and employ food production methods that will have a minimal impact on the planet. 1. Environmental Sustainability and Industrial Agriculture Industrial agriculture is a system in which economies of scale and maximization of profits are the ultimate goals.94 Profits are maximized when agribusinesses produce the largest yield of single crops at the lowest possible cost, primarily through mechanization and intensive use of agricultural chemicals.95 As discussed supra Part I, the environmental effects of industrial agricultural methods include soil erosion, depletion of soil nutrients, groundwater contamination from chemical inputs, and consumption of finite fuels.96 Additionally, as crop yields decline due to environmental degradation and demand for agricultural products rises due to population growth and the increased use of plant-derived biofuels, more and more land will be consumed by industrial agriculture. This will result in an agricultural system that depletes and destroys natural resources at an increasing rate, which will negatively impact the planet’s carrying capacity.97 Along with farm subsidies and corporate control of food production in the United States, policies that allow the harms of industrial agriculture to be treated as externalities help perpetuate the current agricultural system.98 Under the current system, agribusinesses may pollute the environment, deplete clean water and soil, and promote social inequity without having to account for these harms when calculating profits. These external costs are significant; contaminated industrial farm runoff alone causes an estimated $9 billion of damage annually to U.S. surface waters.99 Further, the externalization of these costs discourages agribusinesses from conserving water, fertile land, and other natural resources. 2. Environmental Sustainability and Urban Development Trends Current urban development trends impact the environment in several significant ways. The most direct impacts are land consumption and the destruction of natural habitats.100 While interior urban areas are deteriorating and being abandoned at an increasing rate, the constant consumption of land to support new urban development is destroying greenfields, forests, and species.101 These new communities require land not only for building homes and businesses, but also for housing public services, such as schools and hospitals, and for creating an expanded transportation infrastructure.102 Increased commuting associated with urban sprawl and flight from blighted areas relies on oil, a finite resource with decreasing availability, and significantly contributes to greenhouse gas emissions,103 which pollute the air and contribute to climate change.104 Urban sprawl further contributes to the degradation of the environment by polluting water sources with runoff from newly constructed impervious surfaces such as homes and transportation infrastructures.105 During the construction phase, stormwater flows over construction sites, “pick[ing] up debris, chemicals, and sediment that flow into water bodies.”106 Water pollution continues to degrade the environment post-construction as stormwater runoff from paved surfaces, including new roads and highways, is also contaminated.107 3. Environmental Sustainability and Urban Agriculture Transitioning from an industrial agricultural system to a sustainable urban agricultural system would minimize the impacts of food production on the planet. Urban agriculture reduces the consumption of undeveloped land for farming. Food would be produced in areas that are already developed and populated, thereby conserving open space for natural habitat. Due to the proximity of urban gardens to dwellings and other buildings, urban agriculture must be performed without the use of large machinery and without the use of chemical pesticides and fertilizers.108 While lack of such inputs could be perceived as a challenge, urban gardening methods may result in increased crop yields on smaller plots of land than conventional farming practices achieve.109 Rather than maximizing crop yields through extensive use of chemicals, sustainable agriculture relies on crop rotation, composting, biofertilizers, and other organic farming techniques to improve soil fertility.110 Organic farming methods also protect water resources because organic farms do not use chemical inputs so there is no contamination of groundwater and streams.111 Furthermore, organic fertilizers reduce the amount of waste deposited in landfills because they are made from composted and recycled food waste, leaves, and lawn clippings.112 Urban gardening reduces the effects of climate change by decreasing greenhouse gas emissions. Unlike industrial farms, urban gardens are cultivated and harvested with minimal mechanization and do not use oil-based fertilizers.113 Moreover, food that is grown and sold locally eliminates the need for wasteful plastic packaging and fossil-fueled transport to market.114 Additionally, having fresh food available in every neighborhood would reduce carbon-emitting automobile trips to the grocery store.115 Urban agriculture presents an opportunity to reverse the decline of urban areas. A significant benefit of urban gardens is the beautification of urban neighborhoods and strengthening of community spirit.116 Urban gardens also can prompt the cleanup of contaminated vacant lots.117 Furthermore, increasing the amount of vegetation in urban areas would reduce surface temperatures during hot months and improve urban air quality.118 B. Economic Sustainability Sustainability requires that economic growth and development must be integrated with environmental protection and sustainable utilization of resources.119 Economic growth and development must also promote both intergenerational and intragenerational equity.120 While a steadily expanding economy is considered prosperity, a growing world population coupled with increasing overall consumption threatens to strain our planet beyond its carrying capacity.121 When economic stability is equated with increased consumption, we push the limits of the planet’s carrying capacity. Simply put, we are depleting the Earth’s resources at a rate that threatens the Earth’s future ability to support our species. The economic aspect of sustainability also addresses the fact that many of the planet’s resources are treated as externalities in the marketplace.122 For example, the costs of depleting natural resources and polluting the air, water, and ground are not reflected in the price of goods. Through regulations, mandates, and incentives, the U.S. government addresses some of these environmental costs,123 but more must be done to implement policies that will incorporate external costs into pricing structures. 1. Economic Sustainability and Industrial Agriculture Industrial agriculture is not economically sustainable. Industrial agriculture seeks to maximize profits without regard for environmental degradation or the long-term effects of heavy reliance on chemical pesticides and fertilizers. Rather than balancing economic growth with environmental protection and equity, industrial agriculture concentrates on maximizing profits at the expense of the environment and society, both in the present and the future. The United States currently has no regulations or policies in place that would impose costs upon agribusinesses for externalities;124 rather, current policies promote harmful industrial agricultural methods.125 A food production system that allows businesses to maximize profits without concern for its impact on society and the environment is not sustainable.

#### Cuban agriculture sustainability is failing—foreign investment is key

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Cuba needed an alternative agricultural model when foreign oil imports were cut off significantly at the end of the 1980s, and the partial opening of the Cuban economy, focused on creating more autonomous agricultural cooperatives, in the 1990s helped diversity food crops and set Cuba along a path of increased food security. The Cuban model was initiated out of necessity, not because of any sort of Cuban environmental consciousness, yet better environmental conditions went hand in hand with the new development strategy. Cuba learned the limits of their agricultural model under their socialist economic system and it is in need of further transformation in both the agriculture and energy sectors. A further opening of the economy to joint ventures could help with updating the power grid and providing more sources of renewable energy – potentially expanding Cuba’s potential for a more sustainable means of energy security. Further, Cuba needs foreign investment to update agriculture facilities and take maximum advantage of cogeneration and biofuel potential with sugarcane waste. The strong state control of farming practices, used to successfully jumpstart the alternative model, has hit its limit. The Cuban government must begin loosening its grips on the domestic economy to allow for more competition in the farming sector. Despite the potential to become more sustainable with a purposive and focused opening of the economy, the recent surge in joint venture investment on expanding domestic oil extraction, petrochemical facilities, and oil refinery infrastructure reveals a trend toward decreasing environmental sustainability. Once heralded as the world’s most sustainable country by coupling environmental performance indicators with their human development scores, Cuba is slipping further away from this goal. Perhaps the most distressing part of this current trend is that it took Cuba decades to create a national identity that embraced sustainable environmental practices in both the energy and agricultural sector, and it seemingly took only a couple of years to derail these efforts. Undoubtedly, conservation efforts and sustainable education programs can only satiate citizen’s energy desires to a certain point. In order to further the quality of life in the country, electric production must increase to rural areas with little energy infrastructure and to Havana in order to spur foreign investment and domestic small business growth. Cuba’s trade agreement with Venezuela is bringing in much-needed petroleum for electricity production, but their dependence on a relatively unstable country for crude is trapping them into the same relationship that crippled their economy in 1990 – impairing their original goal of self-sufficiency. Cuba is at a turning point in their path toward environmental sustainability, and the current need for immediate foreign capital and increased energy production seem to be trumping its desire to achieve development sustainably. Cuba still has enough centralized control to leap-frog dirty electric production for cleaner renewable forms of energy and the potential to guide development strategies that emphasize investments in and research on renewable energy. It can utilize its expertise on organic farming strategies to increase sugar production in a much more ecologically friendly manner than their monoculture approach in the 1970s and 80s. Decisions made in the next five years will demonstrate whether Cuba embraces their newly created national identity as a society striving for sustainable development or rejects the goal of sustainable development to increase short-term capital and energy needs.

#### The plan provides foreign capital to Cuba and allows its model to be exported globally

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Cuba today is experiencing the most rapid shifts towards privatization and reform since the revolution more than sixty years ago. Though truly open trade with Cuba will remain out of reach until the embargo is relaxed or a new trade agreement is reached, it is worth the time of agricultural and business entities in the United States to consider how they may approach doing business in Cuba. Given the extent of pre-embargo trade between the United States and Cuba it is no stretch to imagine the enormous possibilities once that partnership is reestablished. Though reforms over the past decade have made significant progress towards this end, they only scratch the surface on what Cuba has to offer. The two economic areas where Cuba shows perhaps the most promise and have the greatest potential for international trade and investment are tourism and agriculture. Tourism shows great promise simply for the fact that for more than half a century the country has been entirely cut off from open trade and travel by U.S. citizens, citizens who will likely flock to the country once access is restored. Agriculture in Cuba also presents numerous unique opportunities, and since the collapse of the Soviet Union the country has developed novel agricultural production techniques that could help serve a growing demand for natural, organic foods in the United States. While tourism may increase economic opportunity for existing businesses and industries, Cuba’s agricultural model, on the other hand, presents unique opportunities to both existing and entirely new busi-ness opportunities in the United States. A. Cuba as a Tourist Destination Prior to the embargo, Cuba was a travel destination for as many as 300,000 American tourists per year.91 Tourists from various Soviet Bloc nations never came close to making up this loss in travel, reaching no more than 30,000tourists per year.92 Since the demise of the Soviet Union, however, tourism to the island has continued to increase dramatically. As of July 2012, Cuba is the sec-ond most popular tourist destination in the Caribbean region, trailing only the Dominican Republic.93 Slightly more than two million tourists per year now visit the island as of 2011, representing growth of 7.3% over the last year alone.94 Asof 2005, Cuba’s service sector accounted for 67.8% of the nation’s annual gross domestic product, eclipsing traditional Cuban exports such as nickel and sugar.95Tourist infrastructure in Cuba, however, has strained to accommodate the rapid surge in visitors, with hotels, resorts, restaurants, and other accommodations showing their age after decades of relatively little improvement or investment.96Depending on the precise means through which the travel and economic embargos are lifted, estimates of the number of U.S. visitors expected to visit Cuba within the first year range from six hundred thousand to more than one million, with up to five million visitors per year by the fifth year of open travel.97 There is the potential for modest yet not insignificant job growth in response to new travel opportunities, with potentially over twelve thousand new service sector and trav-el jobs in the United States within five years.98B. Agricultural Trade with Cuba It is the agricultural sector, however, that provides some of the most substantial and intriguing opportunities for both trade with Cuba and the creation of entirely new businesses in the United States. In fact, agricultural products were the very first items traded between the United States and Cuba since the embargo in December of 2001, when two ships loaded with chicken and corn arrived inHavana.99 The potential for the U.S. agricultural sector is abundantly clear when the sheer volume of Cuba’s agricultural imports are taken into account. In 2008,Cuba imported approximately $1.8 billion in agricultural goods.100 Only approximately 40% of imported agricultural goods were from the United States, leaving over $1 billion of trade going to other countries.101Cuba itself is very much in favor of increased agricultural trade with the United States simply for the logistical simplicity and cost-savings it would pro-vide.102 Import costs account for as much as 35% of the goods Cuba currently imports from its trading partners.103 Because Cuba is less than one hundred miles from the coast of the United States, the country is naturally eager to enter into trade relationships that lead to lower transportation costs.104 Cuban officials cite rice as just one example of an agricultural product that they would be inter-ested in obtaining from the United States.106 Rice is a staple food for Cuban citizens, and they enjoy it with almost every meal.107 Presently, the bulk of their rice must be imported from Eastern Asia, meaning a long voyage by sea and the expenses that go along with shipping tons of goods across the Pacific Ocean.108Rice exports alone present an enormous opportunity for U.S. producers. The United States is a major exporter of both processed and unprocessed rice, accounting for 10% of all international trade in rice each year.109 Half of annual U.S. rice sales come from the export market, and the United States is considered a reliable supplier of a quality product on the international market.110 The USDA estimates that if the current restrictions on trade were removed, Cuba could potentially exceed Mexico and Japan as the biggest importer of rice grown in the United States.111 As of September 2005, Cuba estimated that they could purchase more than one million metric tons of rice annually, but restrictions make it unlikely that import from the United States will go much beyond current levels of 712,000 metric tons.112 A key obstacle, according to Cuba, is the requirement that all shipments of agricultural products from the United States be paid for in cash before they leave port.113 This resulted in a reduction in rice ex-ports to Cuba by nearly 50% from 2004 to 2005, according to the USA Rice Fed-eration.114 For the foreseeable future, any effort by agricultural groups in the United States to take advantage of trade opportunities with Cuba will have to operate within the guidelines and policy directives of Cuba as well as the United States. One risk that any organization that wishes to trade with Cuba might encounter is that their proposals and business plans will run into red tape not only through regulations in the United States, but through conflict with the Communist Party of Cuba, which still holds tremendous sway over policy and business decisions on the island. Cuban officials are, of course, aware of the tremendous opportunity that trade with the United States might bring to their country, and for the most part remain eager to pursue closer ties with whom they see as their closest, most natu-ral trading partner.115 Roy Ramón Philippón, a leading official with the Cuban Society of Agrarian Law, indicated that the country recognizes that changes are necessary in order to properly compete with and participate in an open globalmarket.116 Long gone are the days when Cuba could count on highly subsidized exports to the Soviet Bloc as a stable source of income.117 For the first forty years of Cuba’s “socialist experiment” following their revolution, the first priority for the Cuban government was to provide the maximum amount of social services and benefit to the population regardless of the cost; something that they could achieve through trade with the Soviet Bloc prior to its collapse.118The process of reform in Cuba is necessarily dependent upon the approv-al of the national Communist Party. All of the reforms that have been put in place must be considered by and ultimately recommended by the Communist Party operating under their internal guidelines.119 By its nature this is intended to be a slow, deliberative process, the intent of which is to allow all interested gov-ernment officials, business representatives, and interested citizens to voice their opinions and for the Party’s guidelines to take each group’s concerns into ac-count.120Cuba has continued to introduce new programs to assist local producers in becoming more productive while also promoting ecological restoration andpreservation.121 In a shift away from the large state-run farms that characterized Cuban agriculture for much of the twentieth century, Cuba is now focused on diversifying agricultural production through a variety of both privately run and some state-controlled enterprises.122Cuban officials responsible for investigating and recommending addi-tional improvements to the Cuban agricultural system echo this call for reform and increased efficiency and productivity.123 Cuban officials point to the two primary goals that Cuba is pursuing in its efforts to improve its agricultural out-put and modernize their agricultural system; eco-restoration and preservation and urban and suburban agriculture.124 In addition, while the country is desirous of increasing its agricultural exports as a source of income, enough of the goods produced must be funneled into an official state-controlled market that can con-trol prices and ensure that food is affordable even to those with low incomes.125The first priority before any additional exports can be considered is to increase production for local consumption to the point where the country could conceiva-bly become self-sustaining for the majority of its food production needs.126 Once they are producing enough food for local consumption, then priorities may shift towards producing additional crops for export; coffee in particular is one locally produced crop that Cuba is particularly interested in increasing production for both local consumption and export.127Government officials recognize that the Cuban economy is in a relatively underdeveloped state, and future policies will need to be responsive to the state’s economic needs as well as their agricultural ones.128 If, for example, the price of corn were to skyrocket on the world market, Cuban officials indicate that if it made economic sense, they “would cover this island with corn.”129 Similar to the practices of the former Soviet Bloc, the Cuban economy is still very much orga-nized and planned by the state, and the current agricultural plan in Cuba is de-signed to cover the next five years of anticipated growth.130As for direct investment by foreign investors and producers, current poli-cies in Cuba will make that somewhat difficult for the foreseeable future, as all direct business relationships with foreign entities are currently organized and controlled by a number of governmental bodies.131 Cuban officials indicate that future reforms could conceivably open the door to direct investment and transac-tions between Cuban agricultural producers and foreign buyers.132 Understanding this future opportunity first requires a digression into the organizational structure employed in Cuba to manage and direct the agricultural system in Cuba. V. NEW REFORMS The current agricultural system has gone through a period of significant readjustment since the collapse of the Soviet Union. Beginning in 1993, Cuba started to move away from enormous state-run facilities and fully embraced a model of cooperative ownership that it had first introduced in the 1970s with the cooperativa de producción agropecuaria, or CPA.133 The new model, the basic unit of cooperative production, or UBPC, was introduced in September of 1993,and by 1995 there were 2855 UBPCs in operation.134 The UBPC differs from the CPA in that a UBPC operates on land that continues to be owned by the state but is provided to farmers in the form of a usufruct agreement, while a CPA is made up of lands that groups of farmers already had in their possession.135 By the endof 2007, the UBPC had far exceeded the CPA in the amount of land being farmed, with more than 2.8 million hectares of land organized under the UBPC system, compared to just under 700,000 hectares in CPAs.136 The majority of farmland in Cuba remained under state control as of the end of 2007, with more than 6 million hectares of farmland overseen by the state.137Both the UBPCs and the CPAs operate under an arrangement whereby the state provides assistance in the form of access to credit and a market for the goods produced, and in exchange the production cooperatives provide a certain quota of goods for sale and distribution by the state.138 One of the key objectives in the legislation itself is that the farms shall “be owners of the means of produc-tion and of the crop,” while still retaining ownership of the land in state hands.139Goals of this new organization were to improve efficiency and encourage more productive use of land. The goals of the Cuban Revolution continue to be em-bodied in the legislation that created these entities.140In 2008, Cuba passed what is perhaps the most substantial piece of agri-cultural legislation in decades. Named simply “Law 259,” it provides a means for almost any Cuban citizen, existing farm, or authorized agency to acquire un-used state lands and put them to better use as farmland.141 This is a substantial departure from the earlier CPA and UBCP systems that for the most part only transferred existing agricultural land controlled by the state into quasi-privatecooperatives.142 Law 259 continues the usufruct method of land distribution pio-neered by the UBPC system and allows for any interested, qualified party to ap-ply for an initial tract of a maximum of 13.42 hectares (33.16 acres), with their ownership potentially increasing to up to 40.26 hectares (99.48 acres) in the fu-ture.143 Continued operation of farmland granted under this program is contin-gent upon the land being used in a productive, sustainable manner with appropri-ate environmental conservation measures.144Even with the new reforms, the land is still technically tied to the state, and individuals who take possession of land under this program are not permitted to sell or rent the land to others, though the state will compensate landowners for the improvements they have made to the land during their term of tenancy.145The CPA, UBPC, and now Law 259 reforms Cuba put in place, along with reforms the Cuban government is discussing for the future, mean that opportunities for further U.S. involvement in Cuban agriculture are numerous. Presently, foreign companies that wish to enter into business relation-ships with Cuban counterparts must do so almost entirely via official government channels.146 Government agencies such as the Ministry of Sugar or the Ministry of Agriculture are responsible for managing trade for their respective indus-tries.147 All imports of food and other agricultural products must first enter the country via Alimport, a state-run agency that handles the entire sales process from securing contracts and arranging for payment to managing the distributionprocess.148 For the time being, the sole agency that U.S. companies wishing to engage in agricultural trade in Cuba can work with is Alimport.149 Rarely will there be any contact directly between U.S. companies and end-users in Cuba.150The process in the United States can be similarly convoluted. The U.S. Department of Commerce’s Bureau of Industry and Security oversees all busi-ness negotiations with Cuban companies, and notifications of sales must be sub-mitted through them before a license will be granted.151 Since U.S. policy still prohibits the extension of credit to any Cuban banks, all payments either have tobe paid for in cash prior to shipment or a confirmed letter-of-credit can be com-pleted with a bank located in a third country.152 In an unusual and unfortunate overlap in U.S. policy directives, goods that are paid for in cash prior to shipment are legally Cuban property though still in the United States, and potentially sub-ject to seizure on behalf of Cuban exiles within the United States who have out-standing legal and monetary claims against the Cuban government.153 Ships with goods meant for Cuba, however, may leave port as soon as payment is either received in cash or confirmed deposited in a foreign bank, a clarification made by the Department of Treasury Office of Foreign Asset Control in July 2005 in an attempt to reduce anxiety over this possibility.154José Garea Alonso, an official with the Cuban Ministry of Agriculture, indicated that recent legislation such as Law 259 is the start of what may eventu-ally lead to more direct commercial ties between Cuban organizations and foreign buyers or investors.155 At the moment, Cuba’s agricultural cooperatives are relatively small and continue to rely on the state for the bulk of their marketingopportunities.156 In the future, these cooperatives may be allowed to join together to form larger groups of linked agricultural cooperatives working together to manage their own affairs, and may include the ability to directly negotiate with foreign buyers rather than requiring an intervening hand from Alimport or anoth-er appropriate ministry.157Foreign investment in Cuban businesses has only been possible in a lim-ited form since the early 1980s, when the Cuban government introduced legisla-tion allowing for foreign entities to create a joint venture with the Cuban gov-ernment for investment purposes.158 Ultimately, the goal of this legislation was to provide an easier means for Cuba to acquire additional foreign currency to inject into its economy.159 Even with the new law, regulations prohibited any foreign participant in a joint enterprise from controlling more than 49%, though such a restriction was not in place for a partnership.160VI. NEW OPPORTUNITIES While investment in Cuban businesses and sales or purchases of Cuban products must still move through official channels under the joint venture law or other Cuban programs, the time is ripe for organizations in the United States to begin laying groundwork for closer ties with Cuban agricultural entities. Recent regulatory changes implemented by the U.S. government provide a means for individuals and businesses to begin forming the relationships with their Cuban counterparts that will lead to future trade opportunities.161As previously mentioned, recent changes in U.S. policy now allow for any individual in the United States, not simply relatives, to donate money to Cu-ban citizens, though not to exceed $500 for any three month consecutive period, with the only restriction being that the recipient is not an official in the Cuban government or the Communist Party.162 Specifically written into these new regu-lations is the idea that these remittances may be spent “to support the develop-ment of private businesses.”163 A five hundred dollar infusion of capital to sup-port a fledging business or farm can be enormously beneficial when the average monthly salary is only 448 pesos, or approximately twenty dollars.164Additional capital will enable small Cuban farms to expand operations by hiring additional help or perhaps purchasing additional farm animals. While purchasing a tractor may seem like an obvious choice for a growing farm, Medardo Naranjo Valdes of the Organoponico Vivero Alamar, a UBPC just out-side of Havana, indicated that farm animals such as oxen would remain the pre-ferred choice for the foreseeable future on the small and midsized farms that make up the majority of the newer agricultural cooperatives.165 Not only do farm animals not require gasoline or incur maintenance costs beyond perhaps an occa-sional veterinarian charge, their waste can be used as fertilizer. Apart from additional labor, funds provided to agricultural cooperatives could be put to use in developing innovative pest control techniques that do not require the use of expensive pesticides or other chemicals. The Vivero Alamar is currently experimenting with a variety of natural pest control techniques such as introducing plants that serve as natural repellents to insects and the introduction of other insects that feed on harmful pests without harming the crops.166Investment in agricultural cooperatives done in this manner will likely fail to see much return on the investment for their foreseeable future, until poli-cies in both the United States and Cuba are changed.167 For a relatively small sum, American investors will get not only the benefit of a close relationship with a Cuban farm that will become a new source of both import and export business in the future, but potentially gain access to innovative agricultural techniques that could be used in the United States immediately.168 Because the logistical structure needed to transport goods from large ru-ral farms into city markets remains underdeveloped, urban and suburban agricul-ture makes up a growing portion of the food produced and consumed in Cuba.169 As in other countries, the population trends in Cuba have continued to shift away from rural areas to more concentrated urban and suburban areas, with about three-fourths of Cubans living in cities.170 With this shift in population has also come a shift in the country’s agricultural system. As of 2007, about 15% of all agriculture in Cuba could be classified as urban agriculture.171 Not only have agricultural practices changed, but eating habits have as well. Without the Soviet Union to provide a ready source of income and the machinery needed to engage in large-scale livestock production, vegetable consumption has increased dramat-ically.172 Nearly every urban area has direct access to a wide variety of locally grown, organic produce.173 Many of the urban farms in Cuba, including the Vivero Alamar, make use of organoponics, a system where crops are produced in raised beds of soil on land that would otherwise be incapable of supporting intensive agricultural pro-duction.174 Many of these raised beds can be constructed in a concentrated area to support a wide variety of produce, with the typical organoponic garden covering anywhere from one half to several hectares in size.175 The rise of the organoponic production method was a shift away from the earlier centralized production mod-el employed by the state. It has been supported through intensive research and development by a variety of state agencies, such as the National Institute of Agri-cultural Science, and continued development has been guided through intensive training and educational programs.176 The organoponic system is not limited in its application to Cuban urban farms, but maintains potential to be applied worldwide, including in the United States. Urban agriculture in Cuba revitalized and put to use previously aban-doned and unused land. A similar approach could be applied to the United States as a means to restore blighted areas.177 Applying Cuban-derived organoponics in U.S. cities could potentially open up an enormous amount of land that was previ-ously unusable. From a business perspective, investing in an organoponic agri-cultural program in the United States is also a sound decision since the demand for local produce reached $4.8 billion in 2008 and is only expected to grow fur-ther, potentially reaching $7 billion in 2012. In an American city beset with high unemployment such as Detroit, Michigan, for example, investing in urban agriculture could potentially generate as many as five thousand new jobs.179 By utilizing Cuba’s system of organopon-ics, the need to use expensive and complex farm machinery could be significantly reduced. Already companies in the United States, such as Farmscape Gardens in southern California, recognize what Cuba’s organoponic system could achieve and have integrated it into their business practices.180 Rachel Bailin, a partner in the company, indicated that it was Cuba’s organic farming practices that helped inspire them to start a company devoted to urban agriculture.181 They have al-ready used Cuba’s organoponic farming methods to produce more than 50,000 pounds of produce since the spring of 2009.182 The potential for future growth in this industry is huge, as Farmscape Gardens’ current levels of production make it the largest urban agriculture company in the state of California.183Cuba not only offers attractive prospects for trading in the future, but methods of agriculture pioneered out of necessity have broad prospects if applied to agriculture in the United States. As the demand for locally grown produce continues to increase, a cost-effective and proven agricultural model like Cuba’s organoponic system may be just what is needed to allow for urban agriculture to flourish. VII. CONCLUSIONS The United States and Cuba have a long, complicated history that years of animosity and finger pointing have certainly done little to improve. For more than fifty years now, the United States has shunned one of its closest neighbors, but recent actions by the Obama administration indicate change is certainly a possibility. In conclusion, the future of trade relations with Cuba can be summed up as follows: First, truly open trade with Cuba is not likely to occur for many years. The political and foreign policy practices that have supported the embargo will not disappear overnight. What is more likely, though, is a continued and gradual relaxation of certain trade policies that will ultimately benefit a number of U.S. industries, agriculture included. While trade in agricultural products is currently possible on a limited scale, agricultural entities in the United States interested in trading with Cuba on a larger scale should begin their preparations now by forg-ing relationships with their Cuban counterparts. Opening the door to further trade will not happen without a concentrated and prolonged push by various in-terest groups in the United States. Second, certain companies that wish to do business in Cuba today are able to do so and should begin familiarizing themselves with the Cuban govern-mental entities such as Alimport. Barring a complete reorganization of the Cu-ban government, agencies such as Alimport will likely continue to oversee for-eign trade for the foreseeable future. Forming business relationships with Cuban companies in the short-term under existing regulations will help support broader trade opportunities in the future. Finally, what Cuba has accomplished in the field of cooperative and ur-ban agricultural products is remarkable, and should serve as an inspiration to farmers and businesses in the United States as well. The Cuban organoponic system of production has great potential for a variety of urban and suburban farming activities in the United States, particularly as demand for local and or-ganic produce continues to rise. As relations between Cuba and the United States continue to thaw in the coming years, organizations that began their preparations today will be best equipped to meet the challenges and opportunities posed by this new and grow-ing market. Political animosities will eventually crumble in the face of the eco-nomic opportunities that closer trade relations could bring to both nations. One of the United States’ closest neighbors has been its enemy for far too long. Cuba presents a unique opportunity American business and agricultural enterprises cannot afford to overlook.

#### Access to the US market is critical to sustainability and emulation

Kost 04 – William is part of the Economic Research Service for the USDA. (“CUBAN AGRICULTURE: TO BE OR NOT TO BE ORGANIC?” 2004, <http://www.ascecuba.org/publications/proceedings/volume14/pdfs/kost.pdf>)

MARKETS MAY BE CRITICAL FOR AN ORGANIC CUBA In addition to the above European markets, the successful expansion and viability of Cuba’s organic production may also depend on access to geographically close, high-income foreign markets, namely the United States and Canada. Currently, Cuban produce is not certified-organic in either of these markets. Only after Cuban products are certified for these countries could Cuba legally export produce labeled organic to these markets. Given that many technical production practices currently followed by Cuban producers are potentially compatible with U.S. certification standards and given Cuba’s prior experience in becoming Swiss-certified, Cuba could be well positioned to meet U.S. certification standards. For the U.S. organic market, in addition to a lifting of the U.S. embargo, Cuba would have to be certified by a USDA-accredited certification program that assures U.S. markets that Cuban products labeled organic meet all National Organic Program standards and regulations under the U.S. Organic Foods Production Act of 1990. If the U.S. embargo on Cuba were lifted, Cuban exports, once certified, could play a significant role in the U.S. organic market. In this current U.S. niche market, production costs are high. Opening the U.S. market would enable Cuba to exploit its significant comparative advantage in this area. This market could become a quick foreign exchange earner for Cuba. The largest barrier Cuba faces in expanding into the U.S. organic market will be meeting U.S. requirements for organic certification. Tapping the U.S. market may create sufficient price incentives for Cuban producers to take the necessary steps to meet the organic standards of other importing countries. Cuba could then expand production of organic produce geared to these specialty export markets. With sufficiently high prices for organic produce, urban labor may remain active in an organic urban gardening sector. Most likely, the viability of a vibrant organic produce production and processing sector in Cuba will depend on Cuba’s gaining access to the large, nearby U.S. market. Without such access, organic-oriented production of horticultural products in Cuba will likely remain a necessity-driven way to produce food for domestic consumption in an environment where other production approaches are just not available. The U.S. market is large and diverse. The demand for organic produce is only one portion of that market. How Cuba’s horticultural industry responds to restored U.S. trade will be a function of the relative price and cost incentives of the organic and non-organic market segments. If the organic price premiums are sufficient, Cuba has the climate, land resources, low-cost labor, and history of organicoriented production to allow it to develop and grow its horticultural sector in that direction. If the market incentives are not sufficiently large to pursue the organic produce market, Cuba will return to a chemical- and technology-driven, yield-maximizing, and labor-minimizing commercial production as rapidly as they can afford to do so. Cuba will have some incentive to increase domestic food production as rapidly as possible to feed the domestic population, rather than importing food for domestic consumption. Cuba could then use a larger share of its scarce foreign exchange to import energy, technology, and other inputs to support growth in other sectors of the Cuban economy.

#### Continued reliance on industrial mechanized ag results in catastrophic warming and biodiversity loss

Cummins 10 – Ronnie is the International Director of the Organic Consumers Association. (“Industrial Agriculture and Human Survival: The Road Beyond 10/10/10”, Organic Consumer’s Association, October 7, 2010, <http://www.organicconsumers.org/articles/article_21747.cfm>)

Although transportation, industry, and energy producers are obviously major fossil fuel users and greenhouse gas polluters, not enough people understand that the worst U.S. and global greenhouse gas emitter is "Food Incorporated," transnational industrial food and farming, of which Monsanto and GMOs constitute a major part. Industrial farming, including 173 million acres of GE soybeans, corn, cotton, canola, and sugar beets, accounts for at least 35% of U.S. greenhouse gas emissions (EPA's ridiculously low estimates range from 7% to 12%, while some climate scientists feel the figure could be as high as 50% or more). Industrial agriculture, biofuels, and non-sustainable cattle grazing - including cutting down the last remaining tropical rainforests in Latin America and Asia for GMO and chemical-intensive animal feed and biofuels - are also the main driving forces in global deforestation and wetlands destruction, which generate an additional 20% of all climate destabilizing GHGs. In other words the direct (food, fiber, and biofuels production, food processing, food distribution) and indirect damage (deforestation and destruction of wetlands) of industrial agriculture, GMOs, and the food industry are the major cause of global warming. Unless we take down Monsanto and Food Inc. and make the Great Transition to a relocalized system of organic food and farming, we and our children are doomed to reside in Climate Hell. Overall 78% of climate destabilizing greenhouse gases come from CO2, while the remainder come from methane, nitrous oxide, and black carbon or soot. To stabilize the climate we will need to drastically reduce all of these greenhouse gas emissions, not just CO2, and sequester twice as much carbon matter in the soil (through organic farming and ranching, and forest and wetlands restoration) as we are doing presently. Currently GMO and industrial/factory farms (energy and chemical-intensive) farms emit at least 25% of the carbon dioxide (mostly from tractors, trucks, combines, transportation, cooling, freezing, and heating); 40% of the methane (mostly from massive herds of animals belching and farting, and manure ponds); and 96% of nitrous oxide (mostly from synthetic fertilizer manufacture and use, the millions of tons of animal manure from factory-farmed cattle herds, pig and poultry flocks, and millions of tons of sewage sludge spread on farms). Black carbon or soot comes primarily from older diesel engines, slash and burn agriculture, and wood cook stoves. Per ton, methane is 21 times more damaging, and nitrous oxide 310 times more damaging, as a greenhouse gas than carbon dioxide, when measured over a one hundred year period. Damage is even worse if you look at the impact on global warming over the next crucial 20-year period. Many climate scientists admit that they have previously drastically underestimated the dangers of the non-CO2 GHGs, including methane, soot, and nitrous oxide, which are responsible for at least 22% of global warming.

#### Ecosystem collapse causes extinction

**WATSON 2006** (Captain Paul, Founder and President of Sea Shepherd Conservation Society, has a show on Animal Planet, Last Mod 9-17, http://www.eco-action.org/dt/beerswil.html)

The facts are clear. More plant and animal species will go through extinction within our generation than have been lost thorough natural causes over the past two hundred million years. Our single human generation, that is, all people born between 1930 and 2010 will witness the complete obliteration of one third to one half of all the Earth's life forms, each and every one of them the product of more than two billion years of evolution. This is biological meltdown, and what this really means is the end to vertebrate evolution on planet Earth. Nature is under siege on a global scale. Biotopes, i.e., environmentally distinct regions, from tropical and temperate rainforests to coral reefs and coastal estuaries, are disintegrating in the wake of human onslaught. The destruction of forests and the proliferation of human activity will remove more than 20 percent of all terrestrial plant species over the next fifty years. Because plants form the foundation for entire biotic communities, their demise will carry with it the extinction of an exponentially greater number of animal species -- perhaps ten times as many faunal species for each type of plant eliminated. Sixty-five million years ago, a natural cataclysmic event resulted in extinction of the dinosaurs. Even with a plant foundation intact, it took more than 100,000 years for faunal biological diversity to re-establish itself. More importantly, the resurrection of biological diversity assumes an intact zone of tropical forests to provide for new speciation after extinction. Today, the tropical rain forests are disappearing more rapidly than any other bio-region, ensuring that after the age of humans, the Earth will remain a biological, if not a literal desert for eons to come. The present course of civilization points to ecocide -- the death of nature. Like a run-a-way train, civilization is speeding along tracks of our own manufacture towards the stone wall of extinction. The human passengers sitting comfortably in their seats, laughing, partying, and choosing to not look out the window. Environmentalists are those perceptive few who have their faces pressed against the glass, watching the hurling bodies of plants and animals go screaming by. Environmental activists are those even fewer people who are trying desperately to break into the fortified engine of greed that propels this destructive specicidal juggernaut. Others are desperately throwing out anchors in an attempt to slow the monster down while all the while, the authorities, blind to their own impending destruction, are clubbing, shooting and jailing those who would save us all. SHORT MEMORIES Civilized humans have for ten thousand years been marching across the face of the Earth leaving deserts in their footprints. Because we have such short memories, we forgot the wonder and splendor of a virgin nature. We revise history and make it fit into our present perceptions. For instance, are you aware that only two thousand years ago, the coast of North Africa was a mighty forest? The Phoenicians and the Carthaginians built powerful ships from the strong timbers of the region. Rome was a major exporter of timber to Europe. The temple of Jerusalem was built with titanic cedar logs, one image of which adorns the flag of Lebanon today. Jesus Christ did not live in a desert, he was a man of the forest. The Sumerians were renowned for clearing the forests of Mesopotamia for agriculture. But the destruction of the coastal swath of the North African forest stopped the rain from advancing into the interior. Without the rain, the trees died and thus was born the mighty Sahara, sired by man and continued to grow southward at a rate of ten miles per year, advancing down the length of the continent of Africa. And so will go Brazil. The precipitation off the Atlantic strikes the coastal rain forest and is absorbed and sent skyward again by the trees, falling further into the interior. Twelve times the moisture falls and twelve times it is returned to the sky -- all the way to the Andes mountains. Destroy the coastal swath and desertify Amazonia -- it is as simple as that. Create a swath anywhere between the coast and the mountains and the rains will be stopped. We did it before while relatively primitive. We learned nothing. We forgot. So too, have we forgotten that walrus once mated and bred along the coast of Nova Scotia, that sixty million bison once roamed the North American plains. One hundred years ago, the white bear once roamed the forests of New England and the Canadian Maritime provinces. Now it is called the polar bear because that is where it now makes its last stand. EXTINCTION IS DIFFICULT TO APPRECIATE Gone forever are the European elephant, lion and tiger. The Labrador duck, gint auk, Carolina parakeet will never again grace this planet of ours. Lost for all time are the Atlantic grey whales, the Biscayan right whales and the Stellar sea cow. Our children will never look upon the California condor in the wild or watch the Palos Verde blue butterfly dart from flower to flower. Extinction is a difficult concept to fully appreciate. What has been is no more and never shall be again. It would take another creation and billions of years to recreate the passenger pigeon. It is the loss of billions of years of evolutionary programming. It is the destruction of beauty, the obliteration of truth, the removal of uniqueness, the scarring of the sacred web of life To be responsible for an extinction is to commit blasphemy against the divine. It is **the greatest of all possible crimes**, more evil than murder, more appalling than genocide, more monstrous than even the apparent unlimited perversities of the human mind. To be responsible for the complete and utter destruction of a unique and sacred life form is arrogance that seethes with evil, for the very opposite of evil is live. It is no accident that these two words spell out each other in reverse. And yet, a reporter in California recently told me that "all the redwoods in California are not worth the life on one human being." What incredible arrogance. The rights a species, any species, must take precedence over the life of an individual or another species. This is a basic ecological law. It is not to be tampered with by primates who have molded themselves into divine legends in their own mind. For each and every one of the thirty million plus species that grace this beautiful planet are essential for the continued well-being of which we are all a part, the planet Earth -- the divine entity which brought us forth from the fertility of her sacred womb. As a sea-captain I like to compare the structural integrity of the biosphere to that of a ship's hull. Each species is a rivet that keeps the hull intact. If I were to go into my engine room and find my engineers busily popping rivets from the hull, I would be upset and naturally I would ask them what they were doing. If they told me that they discovered that they could make a dollar each from the rivets, I could do one of three things. I could ignore them. I could ask them to cut me in for a share of the profits, or I could kick their asses out of the engine room and off my ship. If I was a responsible captain, I would do the latter. If I did not, I would soon find the ocean pouring through the holes left by the stolen rivets and very shortly after, my ship, my crew and myself would disappear beneath the waves. And that is the state of the world today. The political leaders, i.e., the captains at the helms of their nation states, are ignoring the rivet poppers or they are cutting themselves in for the profits. There are very few asses being kicked out of the engine room of spaceship Earth. With the rivet poppers in command, it will not be long until the biospheric integrity of the Earth collapses under the weight of ecological strain and tides of death come pouring in. And that will be the price of progress -- ecological collapse, the death of nature, and with it the horrendous and mind numbing specter of massive human destruction.

#### A move towards organic ag mitigates future emissions and prevents warming

Scialabba 10 – Nadia is from the Natural Resources Management and Environment Department, Food and Agriculture Organization of the United Nations (FAO). (“Organic agriculture and climate change”, February 2, 2010, Renewable Agriculture and Food Systems 25.2, <http://www.fao.org/docs/eims/upload/275960/al185e.pdf>,)

Organic agricultural systems have an inherent potential to both reduce GHG emissions and to enhance carbon sequestration in the soil (Table 1). An important potential contribution of organically managed systems is the careful management of nutrients, and hence the reduction of N2 O emissions from soils, which are the most relevant single source of direct GHG emissions from agriculture. More research is needed to quantify and improve the effects of organic paddy rice production and to develop strategies to reduce methane emissions from enteric fermentation (e.g., by promoting double-use breeds). Indirect GHG emissions are reduced in organic systems by avoidance of mineral fertilizers. With the current organic consumers’ demand, further emission reductions are expected when organic standards include speciﬁc climate standards that consider, inter alia, reduced energy consumption in the organic food chain (e.g., limitations on greenhouse heating/cooling, processing and packaging, food miles combined with life cycle assessment). The advantage of organic systems is that they are driven by aware consumers and that they already carry a guarantee system of veriﬁcation and labeling which is consonant with climate labeling113 . The highest mitigation potential of organic agriculture lies in carbon sequestration in soils and in reduced clearing of primary ecosystems. The total amount of mitigation is difﬁcult to quantify, because it is highly dependent on local environmental conditions and management practices. Should all agricultural systems be managed organically, the omission of mineral fertilizer production and application is estimated to reduce the agricultural GHG emissions by about 20% — 10% caused by reduced N2 O emissions and about 10% by lower energy demand. These avoided emissions are supplemented by an emission compensation potential through carbon sequestration in croplands and grasslands of about 40–72% of the current annual agricultural GHG emissions76. However, further research is needed to conﬁrm these ﬁgures, as long-term scientiﬁc studies are limited and do not apply to different kinds of soils, climates and practices. To date, most of the research on the mitigation potential of agricultural practices has been carried out in developed countries; dedicated investigations are needed to assess and understand the mitigation potential in tropical and subtropical areas and under the predominant management practices of developing countries. More importantly, the adaptation aspects of organic agricultural practices must be the focus of public policies and research. One of the main effects of climate change is an increase of uncertainties, both for weather events and global food markets. Organic agriculture has a strong potential for building resilience in the face of climate variability (Table 2). The total abstention from synthetic inputs in organic agriculture has been a strong incentive to develop agricultural management practices that optimize the natural production potential of speciﬁc agro-ecosystems, based on traditional knowledge and modern research. These strategies can be used to enhance agricultural communities that have no access to purchased inputs, which is the case of the majority of the rural poor. The main organic strategies are diversiﬁcation and an increase of soil organic matter, which both could enhance resilience against extreme weather events and are recommended by the IPCC. These strategies have, in particular, a high potential to enhance the productivity of degraded soils, especially in marginal areas, while enhancing soil carbon sequestration. The adaptive approach inherent to organic agriculture offers simultaneous climate mitigation beneﬁts. Finally, certiﬁed organic products cater for higher income options for producers and hence a market-based incentive for environmental stewardship. The scaling-up of organic agriculture would promote and support climatefriendly farming practices worldwide. However, investments in research and development of organic agriculture are needed to better unlock its potential and application on a large scale.

#### Warming causes extinction

Costello 11 – Anthony, Institute for Global Health, University College London, Mark Maslin, Department of Geography, University College London, Hugh Montgomery, Institute for Human Health and Performance, University College London, Anne M. Johnson, Institute for Global Health, University College London, Paul Ekins, Energy Institute, University College London [“Global health and climate change: moving from denial and catastrophic fatalism to positive action” May 2011 vol. 369 no. 1942 1866-1882 Philosophical Transactions of the Royal Society]

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

#### Independently, CO2 emissions cause extinction

Romm 12 (Joe Romm is a Fellow at American Progress and is the editor of Climate Progress, “Science: Ocean Acidifying So Fast It Threatens Humanity’s Ability to Feed Itself,” 3/2/2012, http://thinkprogress.org/romm/2012/03/02/436193/science-ocean-acidifying-so-fast-it-threatens-humanity-ability-to-feed-itself/?utm\_source=feedburner&utm\_medium=email&utm\_campaign=Feed%3A+climateprogre)

The world’s oceans may be turning acidic faster today from human carbon emissions than they did during four major extinctions in the last 300 million years, when natural pulses of carbon sent global temperatures soaring, says a new study in Science. The study is the first of its kind to survey the geologic record for evidence of ocean acidification over this vast time period. “What we’re doing today really stands out,” said lead author Bärbel Hönisch, a paleoceanographer at Columbia University’s Lamont-Doherty Earth Observatory. “We know that life during past ocean acidification events was not wiped out—new species evolved to replace those that died off. But if industrial carbon emissions continue at the current pace, we may lose organisms we care about—coral reefs, oysters, salmon.” Paleoceanographer James Zachos with a core of sediment from some 56 million years ago That’s the news release from a major 21-author Science paper, “The Geological Record of Ocean Acidification” (subs. req’d). We knew from a 2010 Nature Geoscience study that the oceans are now acidifying 10 times faster today than 55 million years ago when a mass extinction of marine species occurred. But this study looked back over 300 million and found that “the unprecedented rapidity of CO2 release currently taking place” has put marine life at risk in a frighteningly unique way: … the current rate of (mainly fossil fuel) CO2 release stands out as capable of driving a combination and magnitude of ocean geochemical changes potentially unparalleled in at least the last ~300 My of Earth history, raising the possibility that we are entering an unknown territory of marine ecosystem change. That is to say, it’s not just that acidifying oceans spell marine biological meltdown “by end of century” as a 2010 Geological Society study put it. We are also warming the ocean and decreasing dissolved oxygen concentration. That is a recipe for mass extinction. A 2009 Nature Geoscience study found that ocean dead zones “devoid of fish and seafood” are poised to expand and “remain for thousands of years.“ And remember, we just learned from a 2012 new Nature Climate Change study that carbon dioxide is “driving fish crazy” and threatening their survival. Here’s more on the new study: The oceans act like a sponge to draw down excess carbon dioxide from the air; the gas reacts with seawater to form carbonic acid, which over time is neutralized by fossil carbonate shells on the seafloor. But if CO2 goes into the oceans too quickly, it can deplete the carbonate ions that corals, mollusks and some plankton need for reef and shell-building.

#### Warming’s real and anthropogenic—reject skeptics

* Blue highlighting

Prothero 12 [Donald R. Prothero, Professor of Geology at Occidental College and Lecturer in Geobiology at the California Institute of Technology, 3-1-2012, "How We Know Global Warming is Real and Human Caused," Skeptic, 17.2, EBSCO]

How do we know that global warming is real and primarilyhuman caused? There are numerous lines of evidence that converge toward this conclusion. 1. Carbon Dioxide Increase Carbon dioxide in our atmosphere has increased at an unprecedented rate in the past 200 years. Not one data set collected over a long enough span of time shows otherwise. Mann et al. (1999)compiled the past 900 years' worth of temperature data from tree rings, ice cores, corals, and direct measurements in the past few centuries, and the sudden increase of temperature of the past century stands out like a sore thumb. This famous graph is now known as the "hockey stick" because it is long and straight through most of its length, then bends sharply upward at the end like the blade of a hockey stick. Other graphs show that climate was very stable within a narrow range of variation through the past 1000, 2000, or even 10,000 years since the end of the last Ice Age. There were minor warming events during the Climatic Optimum about 7000 years ago, the Medieval Warm Period, and the slight cooling of the Litde Ice Age in the 1700s and 1800s. But the magnitude and rapidity of the warming represented by the last 200 years is simply unmatched in all of human history. More revealing, the timingof this warming coincides with the Industrial Revolution, when humans first began massive deforestation and released carbon dioxide into the atmosphere by burning an unprecedented amount of coal, gas, and oil. 2. Melting Polar Ice Caps The polar icecaps are thinningand breaking up at an alarming rate. In 2000, my former graduate advisor Malcolm McKenna was one of the first humans to fly over the North Pole in summer time and see no ice, just open water. The Arctic ice cap has been frozen solid for at least the past 3 million years (and maybe longer),[ 4] but now the entire ice sheet is breaking up so fast that by 2030 (and possibly sooner) less than half of the Arctic will be ice covered in the summer.[ 5] As one can see from watching the news, this is an ecological disaster for everything that lives up there, from the polar bears to the seals and walruses to the animals they feed upon, to the 4 million people whose world is melting beneath their feet.The Antarctic is thawing even faster. In February-March 2002, the Larsen B ice shelf -- over 3000 square km (the size of Rhode Island) and 220 m (700 feet) thick -- broke up in just a few months, a story -typical of nearly all the ice shelves in Antarctica. The Larsen Bshelf had survived all the previous ice ages and interglacialwarming episodes over the past 3 million years, and even the warmest periods of the last 10,000 years -- yet it and nearly all theother thick ice sheets on the Arctic, Greenland, and Antarctic arevanishing at a rate never before seen in geologic history. 3. Melting Glaciers Glaciers are all retreating at the highest rates ever documented. Many of those glaciers, along with snow melt, especially in the Himalayas, Andes, Alps, and Sierras, provide most of the freshwater that the populations below the mountains depend upon -- yet this fresh water supply is vanishing. Just think about the percentage of world's population in southern Asia (especially India) that depend on Himalayan snowmelt for their fresh water. The implications are staggering. The permafrost that once remained solidly frozen even in the summer has now thawed, damaging the Inuit villages on the Arctic coast and threatening all our pipelines to the North Slope of Alaska. This is catastrophic not only for life on the permafrost, but as it thaws, the permafrost releases huge amounts of greenhouse gases which are one of the major contributors to global warming. Not only is the ice vanishing, but we have seen record heat waves over and over again, killing thousands of people, as each year joins the list of the hottest years on record. (2010 just topped that list as the hottest year, surpassing the previous record in 2009, and we shall know about 2011 soon enough). Natural animal and plant populations are being devastated all over the globe as their environments change.[ 6] Many animals respond by moving their ranges to formerly cold climates, so now places that once did not have to worry about disease-bearing mosquitoes are infested as the climate warms and allows them to breed further north. 4. Sea Level Rise All that melted ice eventually ends up in the ocean, causing sea levels to rise, as it has many times in the geologic past. At present, the sea level is rising about 3-4 mm per year, more than ten times the rate of 0.1-0.2 mm/year that has occurred over the past 3000 years. Geological data show that the sea level was virtually unchanged over the past 10,000 years since the present interglacial began. A few mm here or there doesn't impress people, until you consider that the rate is accelerating and that most scientists predict sea levels will rise 80-130 cm in just the next century. A sea level rise of 1.3 m (almost 4 feet) would drown many of the world's low-elevation cities, such as Venice and New Orleans, and low-lying countries such as the Netherlands or Bangladesh. A number of tiny island nations such as Vanuatu and the Maldives, which barely poke out above the ocean now, are already vanishing beneath the waves. Eventually their entire population will have to move someplace else.[ 7] Even a small sea level rise might not drown all these areas, but they are much more vulnerable to the large waves of a storm surge (as happened with Hurricane Katrina), which could do much more damage than sea level rise alone. If sea level rose by 6 m (20 feet), most of the world's coastal plains and low-lying areas (such as the Louisiana bayous, Florida, and most of the world's river deltas) would be drowned. Most of the world's population lives in low-elevation coastal cities such as New York, Boston, Philadelphia, Baltimore, Washington, D.C., Miami, and Shanghai. All of those cities would be partially or completely under water with such a sea level rise. If all the glacial ice caps meltedcompletely (as they have several times before during past greenhouse episodes in the geologic past), sea level would rise by 65 m (215 feet)! The entire Mississippi Valley would flood, so you could dock an ocean liner in Cairo, Illinois. Such a sea level rise would drown nearlyevery coastal region under hundreds of feet of water, and inundateNew York City, London and Paris. All that would remain would be the tall landmarks such as the Empire State Building, Big Ben, and the Eiffel Tower. You could tie your boats to these pinnacles, but the rest of these drowned cities would lie deep underwater. Climate Change Critic's Arguments and Scientists' Rebuttals Despite the overwhelming evidence there are many people who remain skeptical. One reason is that they have been fed distortions and misstatements by the global warming denialists who cloud or confuse the issue. Let's examine some of these claims in detail: \* "It's just natural climatic variability." No, it is not. As I detailed in my 2009 book, Greenhouse of the Dinosaurs, geologists and paleoclimatologists know a lot about past greenhouseworlds, and the icehouse planet that has existed for the past 33 million years. We have a good understanding of how and why the Antarctic ice sheet first appeared at that time, and how the Arctic froze over about 3.5 million years ago, beginning the 24 glacial and interglacial episodes of the "Ice Ages" that have occurred since then. We know howvariations in the earth's orbit (the Milankovitch cycles) controlsthe amount of solar radiation the earth receives, triggering the shifts between glacial and interglacial periods. Our current warm interglacial has already lasted 10,000 years, the duration of most previous interglacials, so if it were not for global warming, we would be headed into the next glacial in the next 1000 years or so. Instead, our pumping greenhouse gases into our atmosphere after they were long trapped in the earth's crust has pushed the planet into a "super-interglacial," already warmer than any previous warming period. We can see the "big picture" of climate variabilitymost clearly in ice cores from the EPICA (European Project for Ice Coring in Antarctica), which show the details of the last 650,000 years of glacial-inters glacial cycles (Fig. 2). At no time during any previous interglacial did the carbon dioxide levels exceed 300 ppm, even at their very warmest. Our atmospheric carbon dioxide levels are already close to 400 ppm today. The atmosphere is headed to 600 ppm within a few decades, even if we stopped releasing greenhouse gases immediately. This is decidedly not within the normal range of "climatic variability," but clearly unprecedented in human history. Anyone who says this is "normal variability" has never seen the huge amount of paleoclimatic data that show otherwise. \* "It's just another warming episode, like the Medieval Warm Period, or the Holocene Climatic Optimum or the end of the Little Ice Age."Untrue. There were numerous small fluctuations of warming and cooling over the last 10,000 years of the Holocene. But in the case of the Medieval Warm Period (about 950-1250 A.D.), the temperatures increased only 1°C, much less than we have seen in the current episode of global warming (Fig. 1). This episode was also only a local warming in the North Atlantic and northern Europe. Global temperatures over this interval did not warm at all, and actually cooled by more than 1°C. Likewise, the warmest period of the last 10,000 years was the Holocene Climatic Optimum ( 5,000-9,000 B.C.E.) when warmer and wetter conditions in Eurasia contributed to the rise of the first great civilizations in Egypt, Mesopotamia, the Indus Valley, and China. This was largely a Northern Hemisphere-Eurasian phenomenon, with 2-3°C warming in the Arctic and northern Europe. But there was almost no warming in the tropics, and cooling or no change in the Southern Hemisphere.[ 8] From a Eurocentric viewpoint, these warming events seemed important, but on a global scale the effect was negligible. In addition, neither of these warming episodes is related to increasing greenhouse gases. The Holocene Climatic Optimum, in fact, is predicted by the Milankovitch cycles, since at that time the axial tilt of the earth was 24°, its steepest value, meaning the Northern Hemisphere got more solar radiation than normal -- but the Southern Hemisphere less, so the two balanced. By contrast, not only is the warming observed in the last 200 years much greater than during these previous episodes, but it is also global and bipolar, so it is not a purely local effect. The warming that ended the Little Ice Age (from the mid-1700s to the late 1800s) was due to increased solar radiation prior to 1940. Since 1940, however, the amount of solar radiation has been dropping, so the only candidate remaining for the post-1940 warming is carbon dioxide.[ 9] "It's just the sun, or cosmic rays, or volcanic activity or methane." Nope, sorry. The amount of heat that the sun provides has been decreasing since 1940,[ 10] just the opposite of the critics' claims (Fig. 3). There is no evidence of an increase in cosmic ray particles during the past century.[ 11] Nor is there any clear evidence that large-scale volcanic events(such as the 1815 eruption of Tambora in Indonesia, which changed global climate for about a year) have any long-term effects that would explain 200 years of warming and carbon dioxide increase. Volcanoes erupt only 0.3 billion tonnes of carbon dioxide each year, but humans emit over 29 billion tonnes a year,[ 12] roughly 100 times as much. Clearly, we have a bigger effect. Methane is a more powerfulgreenhouse gas, but there is 200 times more carbon dioxidethan methane, so carbon dioxide is still the most important agent.[ 13]Every other alternative has been looked at and can be ruled out. The only clear-cut relationship is between human-caused carbon dioxide increase and global warming. \* "The climate records since 1995 (or 1998) show cooling." That's simply untrue. The only way to support this argument is to cherry-pick the data.[ 14] Over the short term, there was a slight cooling trend from 1998-2000, but only because 1998 was a record-breaking El Nino year, so the next few years look cooler by comparison (Fig. 4). But since 2002, the overalllong-term trend of warming is unequivocal. All of the 16 hottest years ever recorded on a global scale have occurred in the last 20 years. They are (in order of hottest first): 2010, 2009, 1998, 2005, 2003, 2002, 2004, 2006, 2007, 2001, 1997, 2008, 1995, 1999, 1990, and 2000.[ 15] In other words, every year since 2000 has been on the Top Ten hottest years list. The rest of the top 16 include 1995, 1997, 1998, 1999, and 2000. Only 1996 failed to make the list (because of the short-term cooling mentioned already). \* "We had record snows in the winter of 2009-2010, and also in 2010-2011." So what? This is nothing more than the difference between weather (short-term seasonal changes) and climate (the long-term average of weather over decades and centuries and longer). Our local weather tells us nothing about another continent, or the global average; it is only a local effect, determined by short-term atmospheric and oceano-graphic conditions.[ 16] In fact, warmer global temperatures mean more moisture in the atmosphere, which increases the intensity of normal winter snowstorms. In this particular case, the climate change critics forget that the early winter of November-December 2009 was actually very mild and warm, and then only later in January and February did it get cold and snow heavily. That warm spell in early winter helped bring more moisture into the system, so that when cold weather occurred, the snows were worse. In addition, the snows were unusually heavy only in North America; the rest of the world had different weather, and the global climate was warmer than average. Also, the summer of 2010 was the hottest on record, breaking the previous record set in 2009. \* "Carbon dioxide is good for plants, so the world will be better off." Who do they think they're kidding? The Competitive Enterprise Institute (funded by oil and coal companies and conservative foundations[ 17]) has run a series of shockingly stupid ads concluding with the tag line "Carbon dioxide: they call it pollution, we call it life." Anyone who knows the basic science of earth's atmosphere can spot the gross inaccuracies in this ad.[ 18] True, plants take in carbon dioxide that animals exhale, as they have for millions of years. But the whole point of the global warming evidence (as shown from ice cores) is that the delicate natural balance of carbon dioxide has been thrown off balance by our production of too much of it, way in excess of what plants or the oceans can handle. As a consequence, the oceans are warming[ 19, 20] and absorbing excess carbon dioxide making them more acidic. Already we are seeing a shocking decline in coral reefs ("bleaching") and extinctions in many marine ecosystems that can't handle too much of a good thing. Meanwhile, humans are busy cutting down huge areas of temperate and tropical forests, which not only means there are fewer plants to absorb the gas, but the slash and burn practices are releasing more carbon dioxide than plants can keep up with. There is much debate as to whether increased carbon dioxide might help agriculture in some parts of the world, but that has to be measured against the fact that other traditional "breadbasket" regions (such as the American Great Plains) are expected to get too hot to be as productive as they are today. The latest research[ 21] actually shows that increased carbon dioxide inhibits the absorption of nitrogen into plants, so plants (at least those that we depend upon today) are not going to flourish in a greenhouse world. It is difficult to know if those who tell the public otherwise are ignorant of basic atmospheric science and global geochemistry, or if they are being cynically disingenuous. \* "I agree that climate is changing, but I'm skeptical that humans are the main cause, so we shouldn't do anything." This is just fence sitting. A lot of reasonable skeptics deplore the right wing's rejection of the reality of climate change, but still want to be skeptical about the cause. If they want proof, they can examine the huge array of data that points directly to human caused global warming.[ 22] We can directly measure the amount of carbon dioxide humans are producing, and it tracks exactly with the amount of increase in atmospheric carbon dioxide. Throughcarbon isotope analysis, we can show that this carbon dioxide in the atmosphere is coming directly from our burning of fossil fuels, not from natural sources. We can also measure the drop in oxygen as it combines with the increased carbon levels to produce carbon dioxide. We have satellites in space that are measuring the heat released from the planet and can actually see the atmosphere getting warmer. The most crucial evidence emerged only within the past few years: climate models of the greenhouse effect predict that there should be cooling in the stratosphere(the upper layer of the atmosphere above 10 km or 6 miles in elevation), but warming in the troposphere (the bottom layer below 10 km or 6 miles), and that's exactly what our space probes havemeasured. Finally, we can rule out any other suspects (see above): solar heat is decreasing since 1940, not increasing, and there are no measurable increases in cosmic rays, methane, volcanic gases, or any other potential cause. Face it -- it's our problem. Why Do People Continue to Question the Reality of Climate Change? Thanks to all the noise and confusion over climate change, the general public has only a vague idea of what the debate is really about, and only about half of Americans think global warming is real or that we are to blame.[ 23] As in the evolution/creationism debate, the scientific community is virtually unanimous on what the data demonstrate about anthropogenic global warming. This has been true for over a decade. When science historian Naomi Oreskes[ 24] surveyed all peer-reviewed papers on climate change published between 1993 and 2003 in the world's leading scientific journal, Science, she found that there were 980 supporting the idea of human-induced global warming and none opposing it. In 2009, Doran and Kendall Zimmerman[ 25] surveyed all the climate scientists who were familiar with the data. They found that 95-99% agreed that global warming is real and human caused. In 2010, the prestigious Proceedings of the National Academy of Sciences published a study that showed that 98% of the scientists who actually do research in climate change are in agreement over anthropogenic global warming.[ 26] Every major scientific organization in the world has endorsed the conclusion of anthropogenic climate change as well. This is a rare degree of agreement within such an independent and cantankerous group as the world's top scientists. This is the same degree of scientificconsensus that scientists have achieved over most major ideas, including **gravity, evolution**, and **relativity**. These and only a few other topics in science can claim this degree of agreement among nearly all the world's leading scientists, especially among everyone who is close to the scientific data and knows the problem intimately. If it were not such a controversial topic politically, there would be almost no interest in debating it since the evidence is so clear-cut. If the climate science community speaks with one voice (as in the 2007 IPCC report, and every report since then), why is there still any debate at all? The answer has been revealed by a number of investigations by diligent reporters who got past the PR machinery denying global warming, and uncovered the money trail. Originally, there were no real "dissenters" to the idea of global warming by scientists who are actually involved with climate research. Instead, the forces with vested interests in denying global climate change (the energy companies, and the "free-market" advocates) followed the strategy of tobacco companies: create a smokescreen of confusion and prevent the American public from recognizing scientific consensus. As the famous memo[ 27] from the tobacco lobbyists said "Doubt is our product." The denialists generated an anti-science movement entirely out of thin air and PR. The evidence for this PR conspiracy has been well documented in numerous sources. For example, Oreskes and Conway revealed from memos leaked to the press that in April 1998 the right-wing Marshall Institute, SEPP (Fred Seitz's lobby that aids tobacco companies and polluters), and ExxonMobil, met in secret at the American Petroleum Institute's headquarters in Washington, D.C. There they planned a $20 millioncampaign to get "respected scientists" to cast doubt on climate change, get major PR efforts going, and lobby Congress that global warming isn't real and is not a threat. The right-wing institutes and the energy lobby beat the bushes to find scientists -- any scientists -- who might disagree with the scientific consensus. As investigative journalists and scientists have documented over and over again,[ 28] the denialist conspiracy essentially paid for the testimony of anyone who could be useful to them. The day that the 2007 IPCC report was released (Feb. 2, 2007), the British newspaper The Guardian reported that the conservative AmericanEnterprise Institute (funded largely by oil companies and conservative think tanks) had offered $10,000 plus travelexpenses to scientists who would write negatively about the IPCC report.[ 29] In February 2012, leaks of documents from the denialist Heartland Institute revealed that they were trying to influence science education, suppress the work of scientists, and had paid off many prominent climate deniers, such as Anthony Watts, all in an effort to circumvent the scientific consensus by doing an "end run" of PR and political pressure. Other leaks have shown 9 out of 10 major climate deniers are paid by ExxonMobil.[ 30] We are accustomed to hired-gun "experts" paid by lawyers to muddy up the evidence in the case they are fighting, but this is extraordinary -- buying scientists outright to act as shills for organizations trying to deny scientific reality. With this kind of money, however, you can always find a fringe scientist or crank or someone with no relevant credentials who will do what they're paid to do. Fishing around to find anyone with some science background who will agree with you and dispute a scientific consensus is a tactic employed by the creationists to sound "scientific". The NCSE created a satirical "Project Steve,"[ 31] which demonstrated that there were more scientists who accept evolution named "Steve" than the total number of "scientists who dispute evolution". It may generate lots of PR and a smokescreen to confuse the public, but it doesn't change the fact that scientists who actually do research in climate change are unanimous in their insistence that anthropogenic global warming is a real threat. Mostscientists I know and respect work very hard for little pay, yet they still cannot be paid to endorse some scientific idea they know to be false. The climate deniers have a lot of other things in common with creationists and other anti-science movements. They too like to quote someone out of context ("quote mining"), finding a short phrase in the work of legitimate scientists that seems to support their position. But when you read the full quote in context, it is obvious that they have used the quote inappropriately. The original author meant something that does not support their goals. The "Climategate scandal" is a classic case of this. It started with a few stolen emails from the Climate Research Unit of the University of East Anglia. If you read the complete text of the actual emails[ 32] and comprehend the scientific shorthand of climate scientists who are talking casually to each other, it is clear that there was no great "conspiracy" or that they were faking data. All six subsequent investigations have cleared Philip Jones and the other scientists of the University of East Anglia of any wrongdoing or conspiracy.[ 33] Even if there had been some conspiracy on the part of these few scientists, there is no reason to believe that the entire climate science community is secretly working together to generate false information and mislead the public. If there's one thing that is clear about science, it's about competition and criticism, not conspiracy and collusion. Mostlabs are competing with each other, not conspiring together. If one lab publishes a result that is not clearly defensible, other labs will quickly correct it. As James Lawrence Powell wrote: Scientists…show no evidence of being more interested in politics or ideology than the average American. Does it make sense to believe that tens of thousands of scientists would be so deeply and secretly committed to bringing down capitalism and the American way of life that they would spend years beyond their undergraduate degrees working to receive master's and Ph.D. degrees, then go to work in a government laboratory or university, plying the deep oceans, forbidding deserts, icy poles, and torrid jungles, all for far less money than they could have made in industry, all the while biding their time like a Russian sleeper agent in an old spy novel? Scientists tend to be independent and resist authority. That is why you are apt to find them in the laboratory or in the field, as far as possible from the prying eyes of a supervisor. Anyone who believes he could organize thousands of scientists into a conspiracy has never attended a single faculty meeting.[ 34] There are many more traits that the climate deniers share with the creationists and Holocaust deniers and others who distort the truth. They pick on small disagreements between different labs as if scientists can't get their story straight, when in reality there is always a fair amount of give and take between competing labs as they try to get the answer right before the other lab can do so. The key point here is that when all these competing labs around the world have reached a consensus and get the same answer, there is no longer any reason to doubt their common conclusion. The anti-scientists of climate denialism will also point to small errors by individuals in an effort to argue that the entire enterprise cannot be trusted. It is true that scientists are human, and do make mistakes, but the great power of the scientific method is that peer review weeds these out, so that when scientists speak with consensus, there is no doubt that their data are checked carefully Finally, a powerful line of evidence that this is a purely political controversy, rather than a scientific debate, is that the membership lists of the creationists and the climate deniers are highly overlapping. Both anti-scientific dogmas are fed to their overlapping audiences through right-wing media such as Fox News, Glenn Beck, and Rush Limbaugh. Just take a look at the "intelligent-design" cre-ationism website for the Discovery Institute. Most of the daily news items lately have nothing to do with creationism at all, but are focused on climate denial and other right-wing causes.[ 35] If the data about global climate change are indeed valid and robust, any qualified scientist should be able to look at them and see if the prevailing scientific interpretation holds up. Indeed, such a test took place. Starting in 2010, a group led by U.C. Berkeley physicist Richard Muller re-examined all the temperature data from the NOAA, East Anglia Hadley Climate Research Unit, and the Goddard Institute of Space Science sources. Even though Muller started out as a skeptic of the temperature data, and was funded by the Koch brothers and other oil company sources, he carefully checked and re-checkedthe research himself. When the GOP leaders called him to testify before the House Science and Technology Committee in spring 2011, they were expecting him to discredit the temperature data. Instead,Muller shocked his GOP sponsors by demonstrating his scientific integrity and telling the truth: the temperature increase is real, and the scientists who have demonstrated that the climate is changing are right (Fig. 5). In the fall of 2011, his study was published, and the conclusions were clear: global warming is real, even to a right-wing skeptical scientist. Unlike the hired-gun scientists who play political games, Muller did what a true scientist should do: if the data go against your biases and preconceptions, then do the right thing and admit it -- even if you've been paid by sponsors who want to discredit global warming. Muller is a shining example of a scientist whose integrity and honesty came first, and did not sell out to the highest bidder.[ 36] \* Science and Anti-Science The conclusion is clear: there's science, and then there's the anti-science of global warming denial. As we have seen, there is a nearly unanimous consensus among climate scientists that anthropogenic global warming is real and that we must do something about it. Yet the smokescreen, bluster and lies of the deniers has created enough doubt so that only half of the American public is convinced the problem requires action. Ironically, the U.S. is almost alone in questioning its scientific reality. International polls taken of 33,000 people in 33 nations in 2006 and 2007 show that 90% of their citizens regard climate change as a serious problem[ 37] and 80% realize that humans are the cause of it.[ 38] Just as in the case of creationism, the U.S. is out of step with much of the rest of the world in accepting scientific reality. It is not just the liberals and environmentalists who are taking climate change seriously. Historically conservative institutions (big corporations such as General Electric and many others such as insurance companies and the military) are already planning on how to deal with global warming. Many of my friends high in the oil companies tell me of the efforts by those companies to get into other forms of energy, because they know that cheap oil will be running out soon and that the effects of burning oil will make their business less popular. BP officially stands for "British Petroleum," but in one of their ad campaigns about 5 years ago, it stood for "Beyond Petroleum."[ 39] Although they still spend relatively little of their total budgets on alternative forms of energy, the oil companies still see the handwriting on the wall about the eventual exhaustion of oil -- and they are acting like any company that wants to survive by getting into a new business when the old one is dying. The Pentagon (normally not a left-wing institution) is also making contingency plans for how to fight wars in an era of global climate change, and analyzing what kinds of strategic threats might occur when climate change alters the kinds of enemies we might be fighting, and water becomes a scarce commodity. The New York Times reported[ 40] that in December 2008, the National Defense University outlined plans for military strategy in a greenhouse world. To the Pentagon, the big issue is global chaos and the potential of even nuclear conflict. The world must "prepare for the inevitable effects of abrupt climate change -- which will likely come [the only question is when] regardless of human activity." Insurance companies have no political axe to grind. If anything, they tend to be on the conservative side. They are simply in the business of assessing risk in a realistic fashion so they can accurately gauge their future insurance policies and what to charge for them. Yet they are all investing heavily in research on the disasters and risks posed by climatic change. In 2005, a study commissioned by the re-insurer Swiss Re said, "Climate change will significantly affect the health of humans and ecosystems and these impacts will have economic consequences."[ 41] Some people may still try to deny scientific reality, but big businesses like oil and insurance and conservative institutions like the military cannot afford to be blinded or deluded by ideology. They must plan for the real world that we will be seeing in the next few decades. They do not want to be caught unprepared and harmed by global climatic change when it threatens their survival. Neither can we as a society.

### 1AC—Plan Text

#### The United States federal government should phase out its economic sanctions against the Republic of Cuba.

### 1AC—Iran Prolif

#### Contention 1 is Iran Proliferation

#### Iran prolif is likely which causes Israel-Iran war and destabilizing regional prolifMontgomery ‘11 (Eric Edelman, distinguished fellow at the center for strategic and budgetary assessments, Andrew Krepinevich, President of the CSBA, evan montgomery, research fellow at the CSBA “Why Obama Should Take Out Iran's Nuclear Program,”<http://www.foreignaffairs.com/articles/136655/eric-s-edelman-andrew-f-krepinevich-jr-and-evan-braden-montgomer/why-obama-should-take-out-irans-nuclear-program?cid=nlc-this_week_on_foreignaffairs_co-111011-why_obama_should_take_out_iran-111011#)>

The November 8 International Atomic Energy Agency (IAEA) report casts further doubt on Iran's continual claims that its nuclear program is intended solely for peaceful use. Rather than halting its weapons program in 2003, as was reported in a controversial 2007 U.S. National Intelligence Estimate, Iran has apparently continued to develop the various components necessary to produce a nuclear weapon, including neutron initiators, which trigger nuclear chain reactions, and complex explosives needed to build a warhead small enough to place atop a ballistic missile.¶ Meanwhile, Tehran has openly worked to increase its stockpile of low-enriched uranium - especially uranium enriched to 20 percent - which could be further refined to weapons grade. If the IAEA's suspicions are correct, Iran might have both the technology and material to build a nuclear bomb in a matter of months.¶ To date, the United States has relied on a combination of sticks and carrots to prevent Iran from going nuclear. It has tightened economic sanctions against the regime, isolated it diplomatically, and offered improved relations in return for Tehran abandoning its nuclear ambitions. The attractions of this approach are readily apparent. The main alternative, a military operation against Iran's nuclear infrastructure, would likely be extremely costly and might not even succeed.¶ Moreover, by slowing Iran's progress toward a nuclear weapon, sanctions and isolation buy time for a "silver bullet," such as an internal political change that brings a more moderate Iranian leadership to power or a sabotage effort that derails the program for the foreseeable future. Unfortunately, no such solution has presented itself: The current Iranian regime has remained in control despite popular unrest and an ongoing dispute between the president and the supreme leader, and the new IAEA report suggests that efforts to disrupt Iran's nuclear program have so far yielded naught. All the while, Iran is getting closer to crossing the nuclear threshold.¶ [Why Obama Should Highlight Iran's Human Rights Abuses](http://www.foreignaffairs.com/articles/136651/sarah-morgan-and-andrew-apostolou/why-obama-should-highlight-irans-human-rights-abuses)¶ Even so, the U.S. government might persist with its existing approach if it believes that the consequences of a nuclear-armed Iran are manageable through a combination of containment and deterrence. In fact, the Obama administration has downplayed the findngs of the new IAEA report, suggesting that a change in U.S. policy is unlikely. Yet this view underestimates the challenges that the United States would confront once Iran acquired nuclear weapons.¶ For example, the Obama administration should not discount the possibility of an Israeli-Iranian nuclear conflict. From the very start, the nuclear balance between these two antagonists would be unstable. Because of the significant disparity in the sizes of their respective arsenals (Iran would have a handful of warheads compared to Israel's estimated 100-200), both sides would have huge incentives to strike first in the event of a crisis.¶ Israel would likely believe that it had only a short period during which it could launch a nuclear attack that would wipe out most, if not all, of Iran's weapons and much of its nuclear infrastructure without Tehran being able to retaliate. For its part, Iran might decide to use its arsenal before Israel could destroy it with a preemptive attack. The absence of early warning systems on both sides and the extremely short flight time for ballistic missiles heading from one country to the other would only heighten the danger. Decision-makers would be under tremendous pressure to act quickly.¶ Beyond regional nuclear war, Tehran's acquisition of these weapons could be a catalyst for additional proliferation throughout the Middle East and beyond. Few observers have failed to note that the United States has treated nuclear-armed rogues, such as North Korea, very differently from non-nuclear ones, such as Iraq and Libya. If Iran became a nuclear power and the United States reacted with a policy of containment, nuclear weapons would only be more appealing as the ultimate deterrent to outside intervention.¶ [After Iran Gets the Bomb](http://www.foreignaffairs.com/articles/66032/james-m-lindsay-and-ray-takeyh/after-iran-gets-the-bomb)¶ Meanwhile, Iran's rivals for regional dominance, such as Turkey, Egypt, and Saudi Arabia, might seek their own nuclear devices to counterbalance Tehran. The road to acquiring nuclear weapons is generally a long and difficult one, but these nations might have shortcuts. Riyadh, for example, could exploit its close ties to Islamabad - which has a history of illicit proliferation and a rapidly expanding nuclear arsenal - to become a nuclear power almost overnight.

#### Proxy conflicts and miscalc ensures Israeli conflict goes nuclearRobb 10/10 (Charles, B.A. from the University of Wisconsin–Madison, J.D. at the University of Virginia Law School, Charles Wald, Master of Political Science degree in international relations, Troy State University, Bipartisan Policy Center Board Member “The Price of Inaction: Analysis of Energy and Economic Effects of a Nuclear Iran,” October 10th, 2012, [http://bipartisanpolicy.org/sites/default/files/PriceofInaction.pdf)](http://bipartisanpolicy.org/sites/default/files/PriceofInaction.pdf%29)

A nuclear Iran would immediately encounter another nuclear state—even if an undeclared¶ one—in the region: Israel. Compared with the relative stability of the Cold War, an initial¶ stalemate between Israel and Iran would be highly precarious at best and would also¶ threaten the entirety of Gulf exports, although for a more limited duration.¶ Were Iran to become nuclear, the frequency of crises and proxy conflicts between Iran and¶ Israel would likely increase, as would the probability of such confrontations spiraling into a¶ nuclear exchange, with horrendous humanitarian consequences. There could be an Israeli-¶ Iranian nuclear exchange through miscalculation and/or miscommunication. There could¶ also be a calculated nuclear exchange, as the Israeli and Iranian sides would each have¶ incentives to strike the other first.¶ Tehran would likely have the ability to produce only a small handful of weapons, whereas¶ Israel is already estimated to possess more than 100 devices, including thermonuclear¶ warheads far beyond the destructive power of any Iranian fission weapon. Under such¶ circumstances, Iran’s vulnerability to a bolt-from-the-blue Israeli nuclear strike would¶ actually increase its incentive to launch its own nuclear attack, lest its arsenal be¶ obliterated. Israel’s small territorial size reduces the survivability of its second-strike¶ capability and, more importantly, the survivability of the country itself, despite its vastly¶ larger and more advanced arsenal. Thus, Israeli leaders might feel the need to act¶ preventatively to eliminate the Iranian arsenal before it can be used against them, just as¶ American military planners contemplated taking out the fledgling Soviet arsenal early in the¶ Cold War, except that as a much smaller country Israel has far less room for maneuver.xxvi

#### Tensions and Iran influence would cause Saudi Arabia to proliferate

**Edelman et al 2011,** Eric Edelman, Distinguished Fellow at the Center for Strategic and Budgetary Assessments, Andrew F Krepinevich, President of the Center for Strategic and Budgetary Assessments, Evan Braden Montgomery, Research Fellow at the Center for Strategic and Budgetary Assessments [“The Dangers of a Nuclear Iran: The Limits of Containment,” January/February edition of Foreign Policy]

There is, however, at least one state that could receive significant outside support: Saudi Arabia. And if it did, proliferation could accelerate throughout the region. Iran and Saudi Arabia have long been geopolitical and ideological rivals. Riyadh would face tremendous pressure to respond in some form to a nuclear-armed Iran, not only to deter Iranian coercion and subversion but also to preserve its sense that Saudi Arabia is the leading nation in the Muslim world. The Saudi government is already pursuing a nuclear power capability, which could be the first step along a slow road to nuclear weapons development. And concerns persist that it might be able to accelerate its progress by exploiting its close ties to Pakistan. During the 1980s, in response to the use of missiles during the Iran-Iraq War and their growing proliferation throughout the region, Saudi Arabia acquired several dozen css-2 intermediate-range ballistic missiles from China. The Pakistani government reportedly brokered the deal, and it may have also offered to sell Saudi Arabia nuclear warheads for the css-2s, which are not accurate enough to deliver conventional warheads effectively. There are still rumors that Riyadh and Islamabad have had discussions involving nuclear weapons, nuclear technology, or security guarantees. This "Islamabad option" could develop in one of several different ways. Pakistan could sell operational nuclear weapons and delivery systems to Saudi Arabia, or it could provide the Saudis with the infrastructure, material, and technical support they need to produce nuclear weapons themselves within a matter of years, as opposed to a decade or longer. Not only has Pakistan provided such support in the past, but it is currently building two more heavy-water reactors for plutonium production and a second chemical reprocessing facility to extract plutonium from spent nuclear fuel. In other words, it might accumulate more fissile material than it needs to maintain even a substantially expanded arsenal of its own. Alternatively, Pakistan might offer an extended deterrent guarantee to Saudi Arabia and deploy nuclear weapons, delivery systems, and troops on Saudi territory, a practice that the United States has employed for decades with its allies. This arrangement could be particularly appealing to both Saudi Arabia and Pakistan. It would allow the Saudis to argue that they are not violating the npt since they would not be acquiring their own nuclear weapons. And an extended deterrent from Pakistan might be preferable to one from the United States because stationing foreign Muslim forces on Saudi territory would not trigger the kind of popular opposition that would accompany the deployment of U.S. troops. Pakistan, for its part, would gain financial benefits and international clout by deploying nuclear weapons in Saudi Arabia, as well as strategic depth against its chief rival, India. The Islamabad option raises a host of difficult issues, perhaps the most worrisome being how India would respond. Would it target Pakistan's weapons in Saudi Arabia with its own conventional or nuclear weapons? How would this expanded nuclear competition influence stability during a crisis in either the Middle East or South Asia? Regardless of India's reaction, any decision by the Saudi government to seek out nuclear weapons, by whatever means, would be highly destabilizing. It would increase the incentives of other nations in the Middle East to pursue nuclear weapons of their own. And it could increase their ability to do so by eroding the remaining barriers to nuclear proliferation: each additional state that acquires nuclear weapons weakens the nonproliferation regime, even if its particular method of acquisition only circumvents, rather than violates, the npt. Were Saudi Arabia to acquire nuclear weapons, the Middle East would count three nuclear-armed states, and perhaps more before long. It is unclear how such an n-player competition would unfold because most analyses of nuclear deterrence are based on the U.S.- Soviet rivalry during the Cold War. It seems likely, however, that the interaction among three or more nuclear-armed powers would be more prone to miscalculation and escalation than a bipolar competition. During the Cold War, the United States and the Soviet Union only needed to concern themselves with an attack from the other. Multipolar systems are generally considered to be less stable than bipolar systems because coalitions can shift quickly, upsetting the balance of power and creating incentives for an attack. More important, emerging nuclear powers in the Middle East might not take the costly steps necessary to preserve regional stability and avoid a nuclear exchange. For nuclear-armed states, the bedrock of deterrence is the knowledge that each side has a secure second-strike capability, so that no state can launch an attack with the expectation that it can wipe out its opponents' forces and avoid a devastating retaliation. However, emerging nuclear powers might not invest in expensive but survivable capabilities such as hardened missile silos or submarinebased nuclear forces. Given this likely vulnerability, the close proximity of states in the Middle East, and the very short flight times of ballistic missiles in the region, any new nuclear powers might be compelled to "launch on warning" of an attack or even, during a crisis, to use their nuclear forces preemptively. Their governments might also delegate launch authority to lower-level commanders, heightening the possibility of miscalculation and escalation. Moreover, if early warning systems were not integrated into robust command-and-control systems, the risk of an unauthorized or accidental launch would increase further still. And without sophisticated early warning systems, a nuclear attack might be unattributable or attributed incorrectly. That is, assuming that the leadership of a targeted state survived a first strike, it might not be able to accurately determine which nation was responsible. And this uncertainty, when combined with the pressure to respond quickly, would create a significant risk that it would retaliate against the wrong party, potentially triggering a regional nuclear war. Most existing nuclear powers have taken steps to protect their nuclear weapons from unauthorized use: from closely screening key personnel to developing technical safety measures, such as permissive action links, which require special codes before the weapons can be armed. Yet there is no guarantee that emerging nuclear powers would be willing or able to implement these measures, creating a significant risk that their governments might lose control over the weapons or nuclear material and that nonstate actors could gain access to these items. Some states might seek to mitigate threats to their nuclear arsenals; for instance, they might hide their weapons. In that case, however, a single intelligence compromise could leave their weapons vulnerable to attack or theft. Meanwhile, states outside the Middle East could also be a source of instability. Throughout the Cold War, the United States and the Soviet Union were engaged in a nuclear arms race that other nations were essentially powerless to influence. In a multipolar nuclear Middle East, other nuclear powers and states with advanced military technology could influence-for good or ill-the military competition within the region by selling or transferring technologies that most local actors lack today: solid-fuel rocket motors, enhanced missile-guidance systems, warhead miniaturization technology, early warning systems, air and missile defenses. Such transfers could stabilize a fragile nuclear balance if the emerging nuclear powers acquired more survivable arsenals as a result. But they could also be highly destabilizing. If, for example, an outside power sought to curry favor with a potential client state or gain influence with a prospective ally, it might share with that state the technology it needed to enhance the accuracy of its missiles and thereby increase its ability to launch a disarming first strike against any adversary. The ability of existing nuclear powers and other technically advanced military states to shape the emerging nuclear competition in the Middle East could lead to a new Great Game, with unpredictable consequences.

#### Specifically causes Iran-Saudi nuclear conflict – no defense Robb 10/10 (Charles, B.A. from the University of Wisconsin–Madison, J.D. at the University of Virginia Law School, Charles Wald, Master of Political Science degree in international relations, Troy State University, Bipartisan Policy Center Board Member “The Price of Inaction: Analysis of Energy and Economic Effects of a Nuclear Iran,” October 10th, 2012, [http://bipartisanpolicy.org/sites/default/files/PriceofInaction.pdf)](http://bipartisanpolicy.org/sites/default/files/PriceofInaction.pdf%29)

Saudi Arabia would be very likely to try to follow Iran across the nuclear threshold. Should it¶ do so, the world would face the possibility of an Iran-Saudi nuclear exchange—a¶ catastrophic humanitarian event that would threaten the entirety of Gulf oil exports for an¶ extended period of time.¶ In early 2008, the Senate Foreign Relations Committee concluded: “If Iran obtains a nuclear¶ weapon, it will place tremendous pressure on Saudi Arabia to follow suit.”xix By 2012, some¶ experts believe it has already begun to do so. Two main factors could drive Saudi Arabia to¶ pursue a nuclear weapon: (1) a decades-long Saudi-Iran cold war waged along sectarian,¶ religious, ethnic, and geopolitical lines and (2) a deep-seated competition over the energy¶ policies that form the lifeblood of both regimes.¶ The Sunni Saudi monarchy and Shiite Iranian theocracy each claim leadership of the Islamic¶ world. This sectarian competition for primacy is reinforced by ethnic differences: Saudi¶ Arabia is the largest and most populous Arab country astride the Gulf, but it is dwarfed by¶ Iran’s much larger Persian-majority population. These competing claims have pitted the two¶ countries in an enduring cold war and proxy conflict spanning from Lebanon to Iraq and the¶ Arabian Peninsula. Iran—under both the Shah and the ayatollahs—has routinely sought to¶ use its conventional military capabilities, large population, geostrategic position, expansive¶ resources, and ties to armed groups to shift the balance of power in the Persian Gulf in its¶ favor and at the expense of its Sunni Arab neighbors.xx¶ As a result, Saudi Arabia has made it clear it views a nuclear-capable Iran as an existential¶ threat. In 2008, King Abdullah urged the United States to “cut off the head of the snake,”¶ one instance of his “frequent exhortations [to] the United States to attack Iran to put an¶ end to its nuclear weapons program,” according to U.S. diplomatic cables revealed by¶ Wikileaks.xxi With uncertain prospects for a halt to Iran’s nuclear program—peaceful or¶ otherwise—in 2009, the King informed a senior American official, “If [Iran] gets nuclear¶ weapons, we will get nuclear weapons.” This year, senior Saudi officials reiterated that “it¶ would be completely unacceptable to have Iran with a nuclear capability and not the¶ kingdom [of Saudi Arabia].”xxii¶ Rather than lose time developing an indigenous nuclear program, it is likely the Saudi¶ kingdom would seek to obtain a nuclear warhead from Pakistan ready to mount on its CSS-¶ 2 ballistic missiles. Close Saudi-Pakistani security ties date back to shared Cold War–era¶ interests, and it is widely believed that Riyadh bankrolled Islamabad’s nuclear weapons¶ program with the stipulation that Pakistan would sell nuclear devices to Saudi Arabia in an¶ emergency; in the words of a senior Saudi official, “within weeks.”xxiii Pakistan would benefit¶ by receiving much-needed cash and could demand in return dual-key authority over missile¶ launches, both to control Saudi policy and to bolster its own second-strike capability against¶ India.¶ At best, this would create a nuclear-armed standoff between the two most powerful and¶ mutually antagonistic countries in the Persian Gulf. At worst, it could devolve into atomic warfare. Iran’s and Saudi Arabia’s small arsenals, lack of durable communication channels,¶ poor civilian oversight of command-and-control systems, erratic intelligence, proximity to¶ each other, religious ardor, and sectarian divide would all distinguish this scenario from the¶ Cold War balance between the United States and the Soviet Union.

#### Squo sanctions are insufficient because of lack of focus

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People who practice U.S. economic sanctions law like to talk about how sanctions are policy-oriented, or an engine of U.S. foreign policy. Whereas some laws may be more opaquely political, economic sanctions and embargoes seem to express most bluntly how international leverage works through regulation. And yet, a few recent regulatory developments show that the direction that sanctions take is not always predictable. The U.S. Department of Treasury, Office of Foreign Assets Control (“OFAC”) has had a raucously busy year. A torrent of development in laws and regulations on Iran served as the unsurprising focus of this year’s OFAC symposium, held on March 19, 2013, in Washington D.C. Among the developments were sanctions imposed on non-U.S. banks, a new executive order related to the purchase of petroleum and petrochemical products from Iran, an expanded scope of the Iran Transactions and Sanctions Regulations to companies “owned or controlled” by U.S. companies, and a new statute that targets sectors of the economy related to goods and services to Iran, including secondary financial transactions in energy, shipping, shipbuilding, precious metal, and graphite. See our recent posts on Iran here and here. Perhaps the most striking aspect of the Iran sanctions program is its proliferation into not only additional laws and regulations, but also additional regulatory regimes. The Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010 (“CISADA”), the National Defense Authorization Act for 2012 (“NDAA”), and Iran Threat Reduction and Syria Human Rights Act of 2012 (“ITR”), have created a polyglot system focused on individual sectors of the economy. OFAC presenters at the March symposium gave the sense of a proliferation of laws that is undoubtedly aimed at accomplishing U.S. foreign policy goals. But the laws are paradoxically both targeted (at industries, vessels, banks) and incredibly expansive in jurisdiction. The system is the embodiment of the powerful yet somewhat disorganized U.S. government piling on everything it can to economically overwhelm Iran. The Iran program also serves as a good case study of how far and wide economic sanctions can be made to reach. If legislation of past years has proved anything, it is that the U.S. Congress appears ready to use any and all means within its legislative authority to sanction Iran. Insofar as Congress is able to map out the reach of the U.S. financial system and economy further, it seems likely that additional sanctions will be applied.

#### Plan boosts OFAC sanctions on Iran – reallocates resources

Johnson, Spector and Lilac 10 - Andy Johnson, Director, National Security Program, Kyle Spector, Policy Advisor, National Security Program, Kristina Lilac, National Security Program, Senior Fellows of The Third Way Institute, (“End the Embargo of Cuba”, Article for The Third Way Institute, 9/16/10, <http://content.thirdway.org/publications/326/Third_Way_Memo_-_End_the_Embargo_of_Cuba.pdf>, Accessed 7/02/13, )

Keeping the embargo in place requires that the US government devote time and resources to fighting a Cold War -8 era threat. Senator Chris Dodd argued in a 2005 op ed that the US spends “extraordinary resources” each year to enforce the sanctions instead of devoting such resources to the fight against terrorism. 4 While the financial resources dedicated to enforcing the embargo may be limited compared to resources dedicated to other causes, lifting the Cuban embargo could put the US in a better position to fight terrorist organizations by freeing up resources currently enforcing the embargo. For example, the Treasury Department’s Office of Foreign Assets Control (OFAC), which governs travel and trade between the US and Cuba, is also responsible for maintaining sanctions against truly problematic countries, including Iran and North Korea. OFAC also is responsible for responding to economic threats posed by terrorist organizations and narcotics traffickers. By ending OFAC’s need to regulate the Cuban embargo, OFAC could instead devote those resources to respond to the current threats posed by rogue states and terrorist networks

#### Sanctions solve Iran prolif – multilateral coalitions – international position of strength

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Indeed, amid an array of political transitions and military conflicts around the globe, the prospect of Iran acquiring nuclear weapons has galvanized a global debate on how to stop the regime in Tehran from getting the bomb. This debate has spilled over into the domestic politics of the world’s great powers, becoming a talking point in the 2012 U.S. presidential election and the subject of behind-the-scenes discussion during China’s transition to its next generation of political leadership at their Party Congress this fall. In the Middle East and Central Asia, Iran’s nuclear program has implications for the ongoing civil war in Syria, a political transition beset by economic troubles in Egypt, and U.S. and NATO ground combat operations in Afghanistan entering their 10th year. Oil price surges worldwide threaten economic recoveries around the globe—recoveries Iran could thwart in a number of ways depending on how it reacts to global pressure to come clean on its nuclear program. Events are quickly producing a decision point: A concerned Israel warns the diplomatic community that its window for military options to delay or deny Iran’s potential weapon is not unlimited due to the progress Iran has made in hardening its nuclear facilities beyond Israeli capability to penetrate them. At the same time, a vigorous roster of nations is tightening the burden of economic sanctions against Iran—isolating the country’s already feeble economy, which survives only because of its vast oil reserves. Iran—a longtime supporter of terrorism, both directly and through its proxies, with a track record of dissimulation on its nuclear ambitions—has no reservoir of credibility or good will, and its repeated professions that its nuclear program is peaceful deserve no benefit of the doubt. Of course Iran could quickly defuse the crisis and allow the inspectors of the International Atomic Energy Agency full access to all facilities of interest so it can measure and catalogue Iran’s capability to produce highly enriched uranium (the essential element required for weapons production), and Iran could come clean on its known nuclear weapons research. As IAEA Director General Yukio Amano affirms, Iran needs “to cooperate fully with the [International Atomic Energy] Agency on all outstanding issues, particularly those which give rise to concerns about the possible military dimensions to Iran’s nuclear program, including by providing access without delay to all sites, equipment, persons and documents requested by the Agency.” It is Iran’s lack of response that fuels concerns about their nuclear ambitions. Importantly, there is a strong bipartisan consensus in America and within the inter national community on this single point—an Iranian nuclear weapon would destabilize the one of the world’s most important oil-producing regions at a critical point in the global economic recovery, would harm Israel’s security, and would severely undermine the Nuclear Non-Proliferation Treaty. Unfortunately, much of the political debate in this U.S. election year now distracts from these central realities. Today the United States is leading a successful three-year global effort to isolate Iran diplomatically and implement a broad range of strict economic sanctions targeted at undermining its nuclear program. The Obama administration’s initial outreach to the Iranian regime in 2009 did not achieve immediate constructive results, but the demonstration of American good faith forged greater international unity around the problem and served as an important force multiplier for subsequent successful efforts to pressure the regime. Now, as talks with the P5+1 approach, Iran must choose how to respond to the growing global concerns about its nuclear program and make the choice to live up to its international obligations or face increased international isolation. During the 2008 campaign, candidate Obama defended his proposed engagement policy by explaining that “we’re [not] going to be able to execute the kind of sanctions we need without some cooperation with some countries like Russia and China that...have extensive trade with Iran but potentially have an interest in making sure Iran doesn’t have a nuclear weapon.” Affirming his goal of “tough, direct diplomacy with Iran,” Obama acknowledged that diplomacy “may not work, but if it doesn’t work, then we have strengthened our ability to form alliances to impose tough sanctions.” Over the past three years, this is precisely what the Obama administration achieved. The engagement policy has served as an important force multiplier for efforts to pressure the Iranian government. By giving Iran repeated opportunities to meet its international responsibilities, this administration has been able to forge a far stronger and more enduring international coalition to pressure Iran. Far from strengthening the Iranian regime, as some critics have alleged, Obama’s engagement effort has in fact further isolated it. The United States and its partners in the P5+1 group are operating from a position of strength that would have been hard to imagine four short years ago. U.S. policy on Iran should not be determined by partisan politics and easy sound bites. Nor will U.S. policy objectives be quickly accomplished. Instead, this crisis requires policymakers and all citizens to challenge their own preconceived notions and make decisions based on facts while preparing fully for all contingencies.