### 1AC Transition

#### CONTENTION 1 IS THE TRANSITION

#### Reforms are failing in the status quo – most recent evidence proves

Morales 8/31 – Emilio presented this at a conference of the ASCE; translated by Joseph Scarpaci of the Havana Consulting Group. (“Cuban reforms: the ultimate utopia?” last updated 8/31/13, <http://thehavanaconsultinggroups.com/index.php?option=com_content&view=article&id=348%3Acuban-reforms-the-ultimate-utopia&catid=47%3Aeconomy&lang=en>) \*Tables left out\*

When Cuban President Raúl Castro began the reforms to transform the island’s economic model, Cuban economists and foreign experts alike expected a bright future after more than five days decades of mistaken government policies and a centralized economy. Nevertheless, three years after the reforms began, the results have disappointed.

The reforms that began under Raúl Castro's government, despite having the greatest reach since those were carried out in the 1990s by his predecessor, have been rather limited, fairly shallow, slow, and somewhat contradictory.

But there is also something quite unique that the government is carrying out: they are enshrining the historic leadership of the revolution for eternity. This has never been seen before in recent history, not even in the countries of Eastern Europe or the former Soviet Union, where the emerging political forces were capable of carrying out reforms. In the Cuban case, the historical leaders have ultimately become trapped in their own errors.

The reforms are based on obsolete structures that have not been dismantled and serve only to preserve socialism. Therefore, what becomes of the so-called reforms is really a contradiction.

In this context, the economic situation of the island is chaotic, and its errors and failures have been piling up for more than a half century. They are a heavy burden that the crippled government must disentangle if the reforms are to work.

The current economy performs like a bankrupt company, and it survives thanks only to outside help: the Cuban diaspora and aid from Venezuela. Nevertheless there are two important factors that are preventing the total collapse of the system.

The outlook for reforms is not hopeful.

The pattern of Cuban outmigration for the last 10 years reveals that more than a half million Cubans have left the island in order to try their luck in other latitudes.

In 2012, two years after the reforms started, the island reached its peak outmigration level for the entire decade. A total of 56,207 Cubans emigrated to other countries. This high mark can be interpreted as a signal that the reforms have not improved the everyday life of Cubans, or, conversely, it may mean that there is considerable anxiety among the population.

Currently, 2.1 million Cubans live outside of the island, while 11.2 million remain there. That means that for every five residents on the Island, one is living abroad. While 3% of the world’s population has migrated internationally, for Cuba the figure is 15.3%.

However, this high Cuban migration rate is paradoxically derived from one of two legs that sustain the island’s economy: remittances.

Thanks to the removal of restrictions on sending money that President Obama implemented in 2009, approximately $2.6 billion in cash and another $2.5 billion in merchandise, reach the island annually. Goods such as clothing, food, medicine, household appliances, and other products constitute these in-kind remittances. Cubans living abroad send them to their family members back home in order to cope with mounting economic needs.

Annually, then, this amounts to $5.1 billion. This amount exceeds the combined gross revenue derived from the four leading products in the country: tourism ($2.6 billion), nickel ($1.4 billion), exporting medical products ($500 million) and sugar exports in the amount of $393.1 million. Those four productive export categories generate $4.9 billion. However, that amount excludes the costs of production, administrative overhead, marketing, and distribution. If we factor in those expenses, that leaves a net figure of about $1 billion in earnings, which is five times less than the amount that the Cuban diaspora gives to family on the island. Moreover, money and merchandise reaching the island does not take into account the cost of wiring money or sending merchandise. In the last four years, remittances grew by $8 billion, a remarkable rate of growth.

Sending remittances over the next few years should rise. This is because of the growing outmigration of Cubans as well as the increase in charter flights and the number of Cuban-Americans headed to the island.

Miami is now the leading city of origin for sending charter flights to Cuba, having surpassed Montreal and Toronto. An ongoing study being carried out by The Havana Consulting Group over the last seven weeks has monitored flights leaving Miami for Cuba. On average, five charter airlines with 150-seat planes make the trip. This translates into an average of about 11.08 flights daily, or 1,662 passengers, of which 17% are non-Cuban-American U.S. residents or citizens. They travel to to seven destinations in Cuba: Havana (66.25%), Camaguey (9.11%), Cienfuegos (8.49%), Holguín (7.25%), Santa Clara (6.21%), Manzanillo (1.45%), and Santiago de Cuba (1.25%). Those passengers report that they carry an average of $3,500 cash with them. If we adjust for the 17% who are non-Cuban American, the daily totals reach $4.82 million dollars entering the island daily. In other words, roughly $1.76 billion reaches Cuba this way annually.

Venezuela’s support is dangerously decreasing.

Venezuela's estimated $6 billion of annual support constitutes the other leg supporting the Cuban economy.

However, the present crisis that this south American economy is experiencing, coupled with the negative effect that the death of Chavez has had in continuing chavismo, means that this level of aid will be difficult to sustain.

The numbers speak for themselves and it is difficult for the Cuban government to ignore them. They shape how the Cuban government shapes their reforms and how they might save the Cuban economy in light of a possible melt down in Venezuela.

To better understand the warning alarm that the Venezuelan economy is sounding, let us take a look at the following data:

When Chávez came to power in 1999, there were 16 ministries. In 2013, there are 36 (up 125%).

In 1999, the government employed 900,000 public workers. Today, there are 2.3 million state employees, which is an increase of 155%.

In 1999, without foreign currency controls, the exchange rate of Venezuela’s currency (Bolivares no fuertes) was 573.86 to one U.S. dollar. Today, with control rates set by CADIVI (Comisión de Administración de Divisas, or Commission on Hard Currency Administration), that exchange rate is 6300 Bolivares to the dollar. This is a devaluation of 997.83%, without taking in to account the Venezuelan government’s subsidy currency, nor addressing the price of the dollar in the nation’s black market.

In 1999, a barrel of oil fetched $10.57. Today, it sells for $109.45 per barrel. This is an increase of 935.48%.

In 1999, oil production reached 3.48 million barrels daily. Today, it is 2.36 million barrels daily, which represents a reduction of nearly one third (32.27%).

In 1999, oil exports were 3 million barrels daily. In recent years, this figure has fallen by 26.67%, or to 2.2 million barrels daily.

In 1999, the state oil company (PDVSA) employed 40,000 employees. Today, it has approximately 120,000, a three-fold rise.

In 1999, PDVSA $6 billion of outstanding debt. Today, it approaches $40 billion, which is a 567% increase.

In 1999, Venezuela’s debt was $39.911 billion. Today, it approaches $104.481 billion. This translates into an increase of 162%.

The Venezuelan government has taken over some 600 fincas (plantations) ($2.5 million hectares).

The government has spent more than $14 billion in purchasing armaments.

What shape is the labor force in three years after the reforms?

The data are not uplifting regarding the number of workers in the private sector. This contrasts with the hope that the government will gradually downsize the public sector and reduce its bureaucracy.

If we analyze the labor force situation three years after the reforms began, we observe that there are 6.8 million persons of working age, of which, 5.17 million are working, and leaving 1.09 million people without work. This translates into unemployment rate of 16%.

Self-employed workers in 2012 reached a high mark of 429,458 workers, of which 77,302 were retired, and 60,124 persons also worked in the state sector. Accordingly, that means that only 292,031 persons or 4.29% of the entire working force age were employed entirely by the private sector of the island. If we add to that figure the private agricultural workers (about 537,000 persons), both sectors of the labor force amount to 12.18% of the working age population of the island.

Table 2. Workforce situation on the island two years after the onset of the reforms. Cuban Work Force 2012 % Those in economically-active age group who work 5,174,500 76.06 All self-employed 429,458 6.31 Retired self-employed 77,302 1.14 Self-employed with public jobs 60,124 0.88 Exclusively self-employed 292,031 4.29 Private agricultural workers 537,000 7.89 Economically-active Age working in public sector 4,745,042 69.75 Unemployed population 1,091,400 16.04 Economically Active Age 6,802,900

The figures are quite striking and show that the private sector has little weight in the island’s economy.

Why aren't the reforms working?

The main obstacles that the reforms confront are that there are no parallel structural reforms. All the reforms are based upon the old scheme of centralizing the economy. The reach of the new regulations and laws, therefore, remains shallow.

Rather, the reforms are more about resurrecting prohibitions and curtailing rights than they are about substantive structural change. Here are a few examples: the migration reform, freeing up of the selling of houses and cars, the authorization of more than 183 types of self-employed work, and more recently, contracting Cuban athletes to play with foreign teams.

With the ideology of the Cuban government still intact, reforms will only move forward slowly, if at all. This is been the situation for more than half a century, which is why it will be very difficult that a change in strategic thinking and philosophy will be able to manage the country’s economy. Absent is any critical thinking about moving the country away from a centralized system to a more open economy without restrictions. For instance, one of the main obstacles is the privatization of public goods that is prohibited by the Constitution and, among other reasons, is one of the brakes that slows down foreign capital to the island, and impedes the development of a strong national private sector.

Entrepreneurship and individual initiative are straightjacketed, and rigid laws trap the productive elements of the economy. That is why the national media characterizes the limited successes of self-employed workers as those achieved by the nouveau riche, which strikes distrust and fear if the private sector becomes an engine of social change. Put another way, there is strong resistance to change despite the fact that the top of the government understands that there really is no other option available.

The dual currency system will also be very difficult to eliminate in light of the low productivity of the labor force and the outlandish state levels of employment whose employees remain very unproductive. Witness, for example, the recent opening of the real-estate market, which has proven to be more speculative than one of sales. Prices ascribed to houses bear no relationship with the purchasing power of the Cuban people. The average price of a house in Cuba at the national level is $31,489 CUCs (convertible currency units, equivalent to $1 USD), while the mean monthly salary is $216 CUCs.

In this new market context, there is a lack of financial mechanisms to stimulate the sale of homes and to finance mortgages. State banks play a very small role in providing loans to finance the construction and repair of homes, therefore making the as a place where cash is the only vehicle for acquiring new homes; this is a tedious process that is not attractive to many Cubans.

Capital investment remains discriminatory because only foreign companies and investors can do so. Cubans are not allowed to invest, regardless of whether they live on or off the island.

The government encourages neither private firms from operating nor individual entrepreneurship. Instead, it insists on pursuing the tried old and unsuccessful path led by cooperatives.

Turning arable land into usufruct has been a failure. Even though the state has leased out 70% of public arable lands (80% of all arable land), Cuba still imports 60% of the food it needs at a cost of $2 billion annually. Those who are using these arable lands do not feel as if they own them, and as a result, crops that are produced are more for subsistence than for massive distribution.

Lastly, the 183 types of self-employment jobs that the government has approved will not allow for major increase of the private sector. In the meantime, the skilled labor force of the Cuban economy – professionals such as architects, engineers and programmers-- are not included in these reforms.

So what needs to be done to make these reforms work?

A first element would be to adapt to the present economic situation of the country, which means bringing into play strategic thought that marks a departure from the old schemes of the past and focuses more on how to run the economy. One would have to eliminate the taboos that are standing in the way all new reforms being carried out. The government and party must internalize these this thinking.

In this new paradigm, therefore, the level of freedom required for the productive elements of the economy have to be completely independent of government action; they must be self administered and encourage free association and cooperation. It is essential to do away with laws that stand in the way of these reforms. Now is the time to create new laws that encourage entrepreneurship and private initiative.

In this regard, professionals have a major role to play in the leadership of these reforms. Highly skilled workers have been relegated to the background, and this is a huge error. A trained labor force will be the engine to drive the Cuban economy and prove to be a counter-veiling weight to foreign capital investment in the near future.

As well, unfettered access to new technologies is a mandatory condition that would help modernize the economy and avoid allocating it unnecessary intermediate stages.

Agricultural reforms must be deeper. Land should be turned over in perpetuity and not in usufruct. Farmers need to be the true owners of their harvests and compete in a free market without state intervention. It is vital that the private sector compete in the distribution, warehousing, and marketing of agricultural goods. For that to be carried out, private companies must be creative to import machinery and inputs and the agricultural sector, as well as controlling the export of their products.

In this context, the stagnant sugar industry needs to be privatized slowly, in stair-step fashion so that private and foreign investors can participate.

The real-estate sector requires two fundamental premises. 1). Modify the laws that limit its development. 2). Allow the private sector to take a protagonist role in directing investments and carrying out projects.

Foreign capital in the development of a national private sector will be necessary to break up the state bureaucracy and to allow a national construction industry to develop if these changes in real estate are to take place. Such a scenario would have the advantage of accelerating new housing projects that can be occupied and ready for sale in order to move the market forward. Private financial entities that can provide mortgage credit for the sale of homes will be absolutely essential.

#### Lack of foreign investment makes economic and societal collapse inevitable—normalizing relations is key

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Cuba under Raúl Castro has entered a new period of economic, social, and political transformation. Reforms instituted within the past few years have brought the expansion of private sector entrepreneurial activity, including lifting restrictions on the sales of residential real estate, automobiles, and electronic goods. Additional reforms included, more than a million hectares of idle land has been leased to private farmers, where citizens have been granted permission to stay in hotels previously reserved for tourists, and freedom being granted for most Cubans to travel abroad. Stating that it was time for the “gradual transfer” of “key roles to new generations,” President Raúl Castro announced that he will retire by 2018, and named as his possible successor a man who was not even born at the time of the Cuban Revolution. [1] The twilight of the Castro era presents challenges and opportunities for U.S. policy makers. Normalization of relations is inevitable, regardless of timing, yet external and internal factors may accelerate or ~~retard~~ the process. The death of Venezuelan President Hugo Chávez is likely to undermine the already dysfunctional Cuban economy, if it leads to reductions in oil imports and other forms of aid. This could bring social chaos, especially among the island’s disaffected youth. Such an outcome would generate adverse consequences for U.S. national and regional security. To maintain Cuba’s social and economic stability while reforms are maturing, the United States must throw itself open to unrestricted bilateral trade with all Cuban enterprises, both private and state-owned. The collapse of Cuba’s tottering economy could seismically impact the United States and neighboring countries. It certainly did during the Mariel Boatlift of 1980, precipitated by a downturn in the Cuban economy which led to tensions on the island. Over 125,000 Cuban refugees landed in the Miami area, including 31,000 criminals and mental patients. Today, the United States defines its national security interests regarding Cuba as follows: • Avoid one or more mass migrations; • Prevent Cuba from becoming another porous border that allows continuous large-scale migration to the hemisphere; • Prevent Cuba from becoming a major source or transshipment point for the illegal drug trade; • Avoid Cuba becoming a state with ungoverned spaces that could provide a platform for terrorists and others wishing to harm the United States. [2] All of these national security threats are directly related to economic and social conditions within Cuba. U.S. policy specifically supports “a market-oriented economic system” [3] toward Cuba, yet regulations prohibit the importation of any goods of Cuban origin, whether from the island’s potentially booming private sector–including 300,000 agricultural producers–or State-Owned Enterprises (“SOEs”). [4] Such a policy is counterproductive to U.S. interests. Regardless of over 400,000 entrepreneurs, including agricultural cultivators, it could be many years, if ever, when Cuba’s private sector would be ready to serve as the engine of economic growth. SOEs employ 72 percent of Cuban workers. [5] A rational commercial rapprochement towards Cuba would therefore require a change in current laws and in the system of regulations prohibiting the importation of Cuban goods and products. Normalized bilateral trade will benefit the Cuban people by helping to provide economic stability and fostering the growth of a middle class–both of which are essential for the foundation of democratic institutions. Two-way trade must include both Cuba’s private sector as well as SOEs. Cuban SOEs are in a state of gradual transition like other parts of the economy. In December 2012, the Cuban government authorized a wide range of co-ops that will allow workers to collectively open new businesses or take over existing SOEs in construction, transportation, and other industries. Considered a pilot program that is a prime candidate for an expansion, the co-ops “will not be administratively subordinated to any state entity.” [6] Many Cuban officials, well aware of the limits to small-scale entrepreneurism, appear to harbor hope that co-ops could shift a large portion of the island’s economy to free-market competition from government-managed socialism. In other transitional states, particularly in post-socialist economies, co-ops have served as commercial bridges between state-owned and privatized business. Of the 300 largest co-ops in the world, more than half are in United States, Italy, or France. [7] Ironically, the outputs of such co-ops, including agricultural products which could find strong demand in the American market, are barred by short-sighted federal regulations, thus hampering, if not defeating, what could be a major U.S. policy goal.

#### Failure of economic reform causes civil war

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Indeed, if Cuba’s economic reform fails and local revolts ensue, the most likely outcome would be more a civil war such as that seen in Libya, with horrific acts of war, resistance and violations of human rights throughout the country. Nationalists who are concerned about the risk of political instability and criticize the lack of a credible proposal by most Cuban opposition groups should not be dismissed as opponents of democracy. The support for the political opposition should not be a litmus test that determines whether Washington will engage in cooperative dialogue with actors in Cuba.¶ By ignoring both the Cuban elite’s potential for governance and the current balance of power in which the opposition is fragmented, dispersed and without a clearly-articulated governance plan, the U.S. is opting for the most unstable and uncertain road to political transition. The immediate goals of U.S. policy towards Cuba must be to promote market growth through economic reform and a stable process of political liberalization that welcomes the growth of nonpartisan Cuban civil society organizations.

#### Economic liberalization forces reform and stability

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If Cuba implements the type of mixed economy proposed by the last Congress of the Communist Party—a new, more vital relationship with its diaspora and the world—it may also experience a political transformation. As the economy and society change, the political status quo cannot hold. The rise of market mechanisms and an autonomous non-state sector will reinforce the newly open flows of information, investment and technology. These new sectors will seek representation in the political arena. Citizens will have greater access to the Internet, and will be able to associate more horizontally. For at least the next five years, this does not imply a transition to multiparty democracy. But economic liberalization will force an expansion of the current system. Economic and migration opportunities will channel some of the energy in the direction of new businesses and travel, but it will not be enough. The party system will be reformed in order to remain at the helm of social and economic life. Political liberalization will probably start in the lower rungs of government, allowing citizens to vent their frustrations at that level. Raúl Castro’s decision to limit leadership positions to two terms, at a time when the older generation is leaving power by attrition, will result in a more institutionalized leadership that promotes younger leaders in an orderly fashion. Time for Presidential Action In this new context, the United States should open a path for those regime voices who have an interest in backing more serious reforms. Washington should weaken the naysayers within the Cuban elites by showing what Cuba can gain through opening up. This requires a U.S. willingness to test Havana with real incentives in ways it has not done since the Ford and Carter Administrations.

#### A total repeal of the embargo is key

CSG 13 – The Cuba Study Group is a non-profit and non-partisan organization studying Cuba. (“Restoring Executive Authority Over U.S. Policy Toward Cuba”, February 2013, <http://www.cubastudygroup.org/index.cfm/files/serve?File_id=45d8f827-174c-4d43-aa2f-ef7794831032>,)

Beyond failing to advance its stated objectives, the most counterproductive aspect of Helms-Burton is that it codifies U.S. embargo sanctions toward Cuba, and conditions the suspension of any and all such sanctions on congressional recognition of a transition government in Cuba. This is counterproductive in two ways. First, it hinders the United States’ ability to respond rapidly and strategically to developments on the Island as they occur. For example, if the Executive Branch wishes to increase assistance to the 400,000 private entrepreneurs currently operating small businesses in Cuba, it can only do so in a limited way through its licensing authority. Second, it creates a dynamic of “all-or-nothing” conditionality that effectively places U.S. policy in the hands of the Cuban government, making it easier for Cuban officials to resist political reform and dictate the degree of American influence on the Island. Defenders of the status quo inside the Cuban government have shown that they view greater engagement with the United States as a threat to their hold on power. As Elizardo Sanchez, the head of the Cuban Commission for Human Rights, has recognized: “The more American citizens in the streets of Cuban cities, the better for the cause of a more open society.” The Cuban government has become increasingly adept at manipulating U.S. policy choices. This is why any sign of a thaw from the United States has repeatedly been followed by confrontation or repression, which in turn has been followed by U.S. domestic pressure to tighten economic sanctions. This pattern has become somewhat predictable, as recently exemplified by Cuba’s imprisonment of U.S. contractor Alan Gross after President Obama relaxed family travel and remittance restrictions in 2009 and U.S. policymakers’ refusal to pursue improved bilateral relations in response.xvi It can be reasonably concluded that elements of the Cuban government do not, in fact, seek any substantial liberalization from U.S. sanctions. Indeed, Helms-Burton provides them with an alibi for their own failures and may well be essential to their political survival. Senator Jesse Helms famously said that Helms-Burton “tightened the noose around the neck of the last dictator in the Western Hemisphere, Fidel Castro.”xvii In practice, however, Helms-Burton may have served as an incredibly convenient life raft, giving a struggling and failing system the legitimacy that comes from the appearance of being a “state under siege.” Repealing Helms-Burton and related statutory provisions that limit the Executive Branch’s authority over Cuba policy. Over time, U.S. policies toward Communist countries with poor human rights records and histories of adversarial relations—such as China and Vietnam—have evolved toward diplomatic normalization and economic engagement. Policymakers in both parties have rightly judged that engagement, rather than isolation, better serves U.S. national interests and lends greater credibility to calls for political and economic reform. The Cuba Study Group believes the most effective way to break the deadlock of “all-or-nothing” conditionality and remedy the ineffectiveness of current U.S. policy is by de-codifying the embargo against Cuba through the repeal of Helms-Burton and related statutory provisions that limit the Executive Branch’s authority over Cuban policy.xviii Repealing Helm-Burton and related statutory provisions would shift the primary focus of U.S. Cuba policy away from the regime and toward empowering Cuban people. It would also enhance the leverage of the United States to promote a multilateral approach toward Cuba, as well as embolden reformers, democracy advocates and private entrepreneurs inside the island to press their government for greater change. De-codifying the embargo would allow the Executive Branch the flexibility to use the entire range of foreign policy tools at its disposal—diplomatic, economic, political, legal and cultural—to incentivize change in Cuba. The President would be free to adopt more efficient, targeted policies necessary for pressuring the Cuban leadership to respect human rights and implement political reforms, while simultaneously empowering all other sectors of society to pursue their economic wellbeing and become the authors of their own futures.xix Repealing Helms-Burton would also free civil society development and assistance programs to be implemented outside of a contentious sanctions framework. Repealing the extraterritorial provisions of Helms-Burton would allow the United States greater leverage in persuading the international community, especially key regional partners, to adopt a multilateral and targeted approach toward focusing on the advancement of human rights in Cuba. This would fundamentally transform the international dynamic that has long helped the Cuban government stifle dissent, since its efforts to isolate critics at home would increasingly lead to its own isolation from the international community. While it is difficult to prove a direct causal connection between economic reforms and an open society, modern history has taught us that it is increasingly difficult for dictatorial governments to maintain political control the more prosperity their people enjoy.xx Repealing Helms-Burton and related statutory provisions would allow the U.S. the ability to efficiently promote and provide direct support to Cuba’s private sector. Such support would empower a greater plurality within Cuban society, including government reformers, democracy advocates, Cuban entrepreneurs and society as a whole by increasing their access to the resources and expertise of the world’s most prosperous private sector (and largest Cuban diaspora), located a mere 90 miles from Cuba’s shores. In turn, this would enhance the relative power of Cuban society to that of the state, while stripping the latter of its preferred scapegoat for its oppressive practices and economic blunders. U.S. policy should also seek to incentivize the Cuban government to end state monopolies on economic activities and allow greater private participation in the economy. The Cuba Study Group believes that any forthcoming congressional review of current legislation relating to Cuba, such as a review of the Cuban Adjustment Act, must require a review of the totality of the legislative framework codified in HelmsBurton and related statutory provisions so that the United States may finally develop a coherent policy toward the Island. The U.S. should pursue this course of action independent of actions taken by the Cuban government so as not to place the reigns of U.S. policy in the hands of Cuban proponents of the status quo.

#### More moderate approaches comparatively fail to stabilize Cuba

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The United States requires a policy that will lead to better relations between the United States and Cuba, increase the soft power of the United States in the Latin American world, and pull the Cuban government towards a more representative form of governance. These conditions will contribute to the national security of the United States as well as to the western hemisphere. So with this in mind, what are our likely options? Options

• Path of least resistance, stay the course. The United States can continue with the current policy of trade embargo, travel restrictions, and limited diplomatic relations. The United States will not likely choose this path, but will rather go down it because it is easier politically to not change the status quo. This policy requires a long-term commitment and continuing patience. The Cuban Liberty and Democratic Solidarity Act of 1996 provides the way ahead that the Cuban government must follow in order to gain normalized relations with the United States. This option follows the path of the last forty nine years and no significant change is required on the part of the United States. Politically, this avoids the problems generated by going against the Cuban voters of Florida that have been strong supporters of the current policy. The risk is that the United States will miss a window of opportunity to make fundamental positive changes to our relationship with Cuba. Additionally, Cuba could attain economic prosperity in spite of the United States’ actions. Cuba would be forced to continue to look towards China and Venezuela for trade and security relationships. Additionally, for both trade and tourism, Cuba will continue to develop relationships with Canada and the European Union, while the United States’ influence will continue to wane.

• Strengthen the current policy. Eliminate the billions of dollars per year in remittances from Cuban-Americans to relatives within Cuba. Work multilaterally with other countries to increase the effectiveness of the current embargoes on trade and travel. Fully implement the “Powell Commission Report” recommendations to end the Castro dictatorship and undermine the succession strategy.31 The Powell Commission Report seeks to reverse the recent economic gains to put added pressure on the government of Cuba. 32 Additionally, pressure the European Union to stop trading with Cuba and restrict the ability of EU citizens to travel to Cuba. The EU nations provide a great opportunity to make up for lost trade with the United States and have a large population of potential tourists for Cuban beaches. The United States must deter actions by the Organization of American States to work closer with Cuba. The Organization of American States should also warn its members to limit the scope of bilateral relations with Cuba in order to support the efforts of the United States. The United States must use Radio and TV Marti to inform the Cuban people of the true cause of their economic difficulty, the dysfunctional communist centrally controlled economy vice economic sanctions. And finally, tighten the noose around the economy and government of Cuba to attempt to bring down the government in a shorter period of time. This option assumes that our current policy is the correct policy, but needs to be strengthened. It eliminates half measures and contradicting policies to produce a more powerful embargo with devastating effect on the Cuban dictatorship. The risk is that the United States will become further isolated from the world in regards to its Cuba policy and will create additional sympathy for Cuba. This could result in open disregard for the embargo by the European Union and other countries interested in trade with Cuba, with a collapse of the effectiveness of the embargo. The soft power of the United States would suffer with possibly no gain. The United States could lose all possible influence over the future direction of the Cuban government as the Castro regime is replaced.

• Limited easing of economic and travel sanctions. Engage the Cuban government and reward concessions by easing sanctions. Engage the Cuban government and use a carrot and stick program to encourage the Cuban leadership to transition from a dictatorship towards a more representative form of government, with more emphasis on the stick and less on the carrot. Reward concessions on human rights and moves toward democratization with increased levels of trade and travel. Use the enticement of increased revenue to the government through higher levels of trade as well as the income generated when Americans (of both Cuban descent and nonCuban descent) visit the island and spend dollars. This approach should be less threatening to the Cuban government as they have a level of control over the pace of change. The risk is that the government of Cuba would have the opportunity to adjust to the gradual changes and maintain control while conditions for the Cuban people improve, removing the pressure for a change towards market reforms and a more democratic form of government.

• Support the Cuban people, but not the government. This option would completely and unilaterally lift the embargo on trade and travel.33 Reestablish normal diplomatic relations with Cuba. Engage the Cuban government and use a carrot and stick program to encourage the Cuban leadership to transition from a dictatorship towards a more representative form of government, with more emphasis on the carrot and less on the stick. Included in the carrots are: military to military exchanges and exercises; observer status in the Organization of American States (OAS); and provide assistance transitioning the economic and financial aspects of the economy towards a free market system. Use the economic element of power to demonstrate the superior qualities of a free market economy. Encourage Cuba to allow United States businesses to operate in Cuba without the restrictions of government ownership and government collection of wages for labor. Help Cuba develop an economy that takes advantage of their educated workforce (literacy rate of 99.8%) 34 to move away from low value added products to high value added products with the goal of improving the per capita gross domestic product (GDP) and thus the quality of life for the average Cuban citizen. This option has risk politically, as Cuban voters in Florida have traditionally supported isolating the Cuban government and economic sanctions. There are recent indications that Cuban-American opinions are shifting towards more engagement with Cuba. The recent poll conducted by the Brookings Institution, in collaboration with Florida International University and the Cuba Study Group, found that over 55% of Cuban-Americans oppose continuing the embargo and seems to indicate that this risk has lessened recently.35 But, with a viable economy that improves the standard of living for the population of Cuba, their government will feel less pressure to change from a dictatorship into a more representative form of government.

Recommendations

The option with the greatest possibility of success and reward for the United States is to support the Cuban people, but not the Cuban government. The United States should take the following actions unilaterally • Lift completely the economic embargo**.** Establish banking and financial relationships to facilitate the trading of goods and services between the two countries.

• Lift completely the travel ban to allow not only Cuban-Americans with relatives but also all other Americans to travel to Cuba. This interaction of Americans with Cubans will help raise the awareness of Cubans about their northern neighbor.

• Next, the United States should engage the Cuban government to develop a bilateral trade agreement. The goal of this initiative would be to achieve normal trade relations between the two countries.

This leaves the issue of compensation for United States companies and individuals whose property was expropriated by the Cuban government. With the embargo lifted, the United States should enlist the assistance of the European Union and Canada to apply pressure to Cuba as well as to assist in negotiations with the World Trade Organization to address issues with illegally confiscated property.36 The United States will gain leverage with the Cuban government as relations improve, and that will be the time to address human rights in Cuba. The return of the Cuban Five, a group of Cuban spies arrested and convicted in Florida, should be worth some human rights concessions. In Cuba, these men are known as the “Cinco Heroes” and their plight is well known.37 So what leverage do we have now that we have unilaterally given the Cuban government most of what they have wanted? Offer to return back to Cuba the Guantanamo Naval Base after the government of Cuba shifts towards a representative form of government. The foundation for this action has already been laid with the Libertad Act. “The future of the Guantanamo base, a provision in the Cuban Liberty and Democratic Solidarity Act of 1996 states that once a democratically elected Cuban government is in place, United States policy is to be prepared to enter into negotiations either to return the base to Cuba or to renegotiate the present agreement under mutually agreeable terms.” The United States Congress should soften the language referring to a democratically elected government and instead substitute that a representative form of government is required before entering into negotiations for the Guantanamo base. Once Cuba makes changes towards a representative form of government the United States can start working on democratic reforms. The carrot is to offer Cuba, in exchange for changes to a democratic form of government, support for their return to the Organization of American States (OAS). Until Cuba makes changes towards democracy, the United States should block the request of several member states to let Cuba into the organization. Secretary of State Hillary Clinton said it well in a recent interview. “Many member countries originally sought to lift the 1962 suspension and allow Cuba to return immediately, without conditions, others agreed with us that the right approach was to replace the suspension — which has outlived its purpose after nearly half a century — with a process of dialogue and a future decision that will turn on Cuba’s commitment to the organization’s values.” These values include promoting democracy and defending human rights. The window of opportunity is open now for this type of change. The Obama administration has taken some steps in this direction with the lifting of remittance limits, unlimited visits to relatives in Cuba, and the ability to provide cell phones to relatives in Cuba. The other recent change is the new majority of Cuban-Americans, in Florida, that support removal of the embargo. Based on votes in the United Nations and the European Union it is clear that world opinion would definitely be supportive of this action. The combination of the above mentioned events now points to an opportunity to make real progress that will benefit both nations. The United States would gain in soft power, gain an additional economic trading partner, and have a chance to influence the type of changes in the Cuban government as the Castro influence wanes. Clearly, support to the Cuban people will indirectly provide support to the Cuban government, but that could work against the regime as well if the people realize that improvements in their living conditions are not the result of communism, but from the interaction with the capitalist world. There is a sound reason for unilaterally lifting the trade and travel embargoes without first seeing positive actions from the Cuban government. From Cuba expert Carlos A. Saladrigas, Co-Chairman, Cuba Study Group, “We can go back in the history -- in the 50-year history of United States-Cuba relations and clearly see that any time we begin to see a little bit of relaxation of tensions in the relationship, whenever we begin to see a little bit of openness on the part of the United States or Cuba, historically the Cuban government has done something to counteract that trend and significantly revert back to their playbook.” 40 The United States needs to take the initiative away from the Castro regime, and have them react to actions they have publicly called for (removal of the embargo), but in reality are unsure of the second and third order effects and their ability to control the outcome. One of the first problems for the Cuban government after the removal of the embargo will be the excuse for the poor performing economy. “… the embargo and the United States policy of confrontation and isolation have been incredibly useful to the Cuban regime as an alibi for the failures of the regime to meet the fundamental needs of the people on the island, but also is a significant source of legitimacy, both internal and external.” 41 Conclusion This situation may present the United States with the opportunity to step in to assist with market reforms if the Cuban economy sputters and the government realizes they don’t have a scapegoat. The efforts expended by the United States to keep the embargo effective, the loss of trade, and the loss of soft power in most of the world are clearly not worth it in comparison to the threat that Cuba poses today. The gains to be achieved by following any path other than the unilateral removal of the economic and travel embargoes are small in comparison to the overall costs of continuing the current failed policy. The United States is losing far too much soft power in its efforts to punish and isolate the government of Cuba. American firms could be left out of any economic gains as Cuba continues to grow its economy. As Cuba emerges from the economic difficulties of the last two decades, the United States has an opportunity to influence the future direction of our southern neighbor. The current United States policy has many passionate defenders, and their criticism of the Castro regime is justified. Nevertheless, we must recognize the ineffectiveness of our current policy and deal with the Cuban regime in a way that enhances United States interests.42 The United States cannot afford to miss out on the window of opportunity to affect a positive change in the relationship with Cuba. If Cuba is able to continue on a path of economic progress and emerge once again as a true regional power, with communism intact, the United States will be the loser in this half century struggle. Cuba is spreading its limited influence to Venezuela, Honduras, Nicaragua, and will be ready to bring in any other countries in the Americas that want to move away from the United States orbit. The United States can’t stand by and watch Cuba regain strength, intact as a communist country, but must take this opportunity to create an inflection point for Cuba that guides her onto a path that will benefit the nations of the Americas.

#### Cuban collapse makes resolving the Taiwan crisis impossible

Gorrell 05 – Tim is a Lieutenant Colonel in the US Army. This paper is a strategy research project. (“Cuba: The Next Unanticipated Strategic Crisis?” March 18, 2005, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA433074>)

Regardless of the succession, under the current U.S. policy, Cuba’s problems of a post Castro transformation only worsen. In addition to Cubans on the island, there will be those in exile who will return claiming authority. And there are remnants of the dissident community within Cuba who will attempt to exercise similar authority. A power vacuum or absence of order will create the conditions for instability and civil war. Whether Raul or another successor from within the current government can hold power is debatable. However, that individual will nonetheless extend the current policies for an indefinite period, which will only compound the Cuban situation. When Cuba finally collapses anarchy is a strong possibility if the U.S. maintains the “wait and see” approach. The U.S. then must deal with an unstable country 90 miles off its coast. In the midst of this chaos, thousands will flee the island. During the Mariel boatlift in 1980 125,000 fled the island.26 Many were criminals; this time the number could be several hundred thousand fleeing to the U.S., creating a refugee crisis. Equally important, by adhering to a negative containment policy, the U.S. may be creating its next series of transnational criminal problems. Cuba is along the axis of the drug-trafficking flow into the U.S. from Columbia. The Castro government as a matter of policy does not support the drug trade. In fact, Cuba’s actions have shown that its stance on drugs is more than hollow rhetoric as indicated by its increasing seizure of drugs – 7.5 tons in 1995, 8.8 tons in 1999, and 13 tons in 2000.27 While there may be individuals within the government and outside who engage in drug trafficking and a percentage of drugs entering the U.S. may pass through Cuba, the Cuban government is not the path of least resistance for the flow of drugs. If there were no Cuban restraints, the flow of drugs to the U.S. could be greatly facilitated by a Cuba base of operation and accelerate considerably. In the midst of an unstable Cuba, the opportunity for radical fundamentalist groups to operate in the region increases. If these groups can export terrorist activity from Cuba to the U.S. or throughout the hemisphere then the war against this extremism gets more complicated. Such activity could increase direct attacks and disrupt the economies, threatening the stability of the fragile democracies that are budding throughout the region. In light of a failed state in the region, the U.S. may be forced to deploy military forces to Cuba, creating the conditions for another insurgency. The ramifications of this action could very well fuel greater anti-American sentiment throughout the Americas. A proactive policy now can mitigate these potential future problems. U.S. domestic political support is also turning against the current negative policy. The Cuban American population in the U.S. totals 1,241,685 or 3.5% of the population.28 Most of these exiles reside in Florida; their influence has been a factor in determining the margin of victory in the past two presidential elections. But this election strategy may be flawed, because recent polls of Cuban Americans reflect a decline for President Bush based on his policy crackdown. There is a clear softening in the Cuban-American community with regard to sanctions. Younger Cuban Americans do not necessarily subscribe to the hard-line approach. These changes signal an opportunity for a new approach to U.S.-Cuban relations. (Table 1) The time has come to look realistically at the Cuban issue. Castro will rule until he dies. The only issue is what happens then? The U.S. can little afford to be distracted by a failed state 90 miles off its coast. The administration, given the present state of world affairs, does not have the luxury or the resources to pursue the traditional American model of crisis management. The President and other government and military leaders have warned that the GWOT will be long and protracted. These warnings were sounded when the administration did not anticipate operations in Iraq consuming so many military, diplomatic and economic resources. There is justifiable concern that Africa and the Caucasus region are potential hot spots for terrorist activity, so these areas should be secure. North Korea will continue to be an unpredictable crisis in waiting. We also cannot ignore China. What if China resorts to aggression to resolve the Taiwan situation? Will the U.S. go to war over Taiwan? Additionally, Iran could conceivably be the next target for U.S. pre-emptive action. These are known and potential situations that could easily require all or many of the elements of national power to resolve. In view of such global issues, can the U.S. afford to sustain the status quo and simply let the Cuban situation play out? The U.S. is at a crossroads: should the policies of the past 40 years remain in effect with vigor? Or should the U.S. pursue a new approach to Cuba in an effort to facilitate a manageable transition to post-Castro Cuba?

#### US support for Taiwan is critical to preventing war

Roy 12 – Dr. Denny Roy is a senior research fellow in Asian security issues with the East-West Center in Honolulu. (“Why the U.S. shouldn't abandon Taiwan”, December 6, 2012, <http://globalpublicsquare.blogs.cnn.com/2012/12/06/why-the-u-s-shouldnt-abandon-taiwan/>,)

China is the next superpower, the United States is in decline, and America needs to get on China’s good side. So say many analysts who have recently argued that in order to gain favor with Beijing, Washington should stop supporting Taiwan. The U.S. support at stake here includes two explicit policies and one implied policy. Since Taiwan cannot keep up with China’s massive military expansion, the United States sells arms to Taiwan. Washington also insists that any settlement of the Taiwan sovereignty issue must be agreeable to Taiwan’s people, not forced on them by Beijing. Finally, China understands that U.S. forces might intervene if Taiwan came under military attack. The argument for abandoning Taiwan may be superficially appealing in its cold-blooded logic. But it is terribly wrong. U.S. foreign policy has always been a reflection of American principles along with strategic and economic interests. Taiwan is a legitimate democracy, one with a long history of close friendship with the United States, threatened by a large authoritarian state demanding a political annexation that Taiwan’s people clearly do not want. If Americans will not stand by Taiwan, the principled component of U.S. foreign policy is dead. But abandoning Taiwan would not be merely immoral. Washington has economic, political and strategic interests in promoting democracy worldwide. In general, democratic governments make better international citizens than authoritarian states and are more likely to be partners than adversaries in America’s pursuit of its global agenda. Abandoning Taiwan would not only reduce the democratic world in concrete terms by throwing a community of 23 million people back over the barbed-wire fence. It would also signal that America is no longer serious about promoting democratization elsewhere. Some countries in the region are willing to stand up for their own interests against Chinese encroachment only if they have confidence in a long-term U.S. commitment to be a security partner. Other Asia-Pacific governments friendly to the United States would certainly take note if Washington sacrificed Taiwan to improve relations with China. Not only would the U.S. reputation for reliability suffer, but regional governments would perceive a shift in regional leadership from America to China. Absorption of Taiwan by China would make Taiwan an “unsinkable aircraft carrier” for the Chinese military. Taiwan anchors the “first island chain,” limiting the Chinese Navy’s access to the Pacific Ocean. Conversely, occupation of Taiwan would allow Chinese forces to straddle important sea lanes that are the economic lifelines of Japan and South Korea. Chinese control of Taiwan would greatly increase the pressure on Tokyo and Seoul, critically important U.S. allies, to accommodate Beijing’s strategic wishes. These alliances, and along with them the U.S. leadership role in the western Pacific, might become untenable. Although too small to act as a political “Trojan Horse” to massive China, as a vibrant Chinese democracy Taiwan is an influential model for China. It is easy for Chinese to dismiss the American or Western European democracies as unsuitable or unimaginable in a Chinese context, but Taiwan is a different matter. If the persistence of Taiwan as a political showcase (now viewed in person by almost two million mainland Chinese visitors annually) could constructively affect China’s political evolution toward democracy, this Taiwan contribution would be invaluable. But Taiwan requires help to safeguard its democratic system against Chinese pressure. Advocates of abandoning Taiwan may erroneously believe that halting U.S. military and diplomatic support for Taipei would reduce tensions in East Asia. This is certainly what Beijing would have us believe. According to Chinese officials and commentators, U.S. assistance to Taipei is all that stands in the way of peaceful unification, and without it the people of Taiwan would stop resisting and accept Beijing’s terms for unification. This premise, however, ignores an important reality: the main obstacle to unification is not U.S. arms sales, but rather Taiwanese nationalism and the wish of nearly all Taiwan’s people not to be ruled by the Chinese Communist Party. Thus, withdrawal of U.S. support would not necessarily lead to a peaceful resolution of the cross-Strait imbroglio. The opposite outcome is at least as likely. Deterrence against an attack by the People’s Liberation Army would be weakened, while Taiwan’s people may well choose to fight rather than capitulate. Another dubious assumption is that removing the Taiwan issue from U.S.-China relations would clear the way for a vastly improved bilateral relationship. It is true that Taiwan is the greatest single irritant in U.S.-China relations, that U.S. support for Taiwan reinforces Chinese suspicions of an American “containment” strategy, and that the cross-Strait war scenario is a major rationale for China’s military modernization and buildup. But neither U.S.-China relations nor Chinese regional behavior would improve much, if at all, as a result of a U.S. sellout of Taiwan. The Chinese would still have many other reasons to believe the United States is trying to keep China from rising, such as the U.S. alliances, increased American security cooperation with other governments in the region, and the alleged American “meddling” in the South China Sea dispute. There is no reason to expect that China would do more to further the American agenda on issues such as the North Korean and Iran nuclear weapons crises, since Chinese policy follows Chinese self-interests. Most importantly, Taiwan is not the source of China-U.S. friction. The two main Asia-Pacific powers are engaged in a rivalry for regional leadership and, even more fundamentally, in a struggle between two competing models for conducting international relations: one based on modern international laws and norms, and the other based on a return to the Sinocentric sphere of influence that prevailed for much of history. Rather than satisfying and pacifying Beijing, a U.S. concession regarding Taiwan might embolden Chinese demands for more concessions aimed at further weakening America’s strategic position in the Asia-Pacific region. Many observers see America in permanent decline and China as the anointed regional hegemon, but both of these outcomes are highly uncertain. Although now in the trough of an unemployment and fiscal crisis, the United States will probably recover. Conversely, China faces serious limits to its bid for regional leadership. These include internal vulnerabilities such as an aging population, the potential for large-scale political turmoil caused by groups angry at the Chinese government, and the necessity of making huge and painful adjustments to the Chinese economy. Externally, few states in Asia prefer Chinese to U.S. leadership. Unless China becomes overwhelmingly strong and American capabilities greatly diminish, security cooperation among the Asia-Pacific countries in defense of widely-accepted norms of international behavior will be sufficient to check those Chinese aspirations that are illegitimate in that they forcibly intrude on other people’s vital interests. One of these illegitimate aspirations is the notion that China cannot be a prosperous, secure great power without politically absorbing Taiwan, the last big piece of unfinished business from China’s “century of humiliation.” Abandoning Taiwan would, tragically, acquiesce to this notion. The threat of Taiwan independence is an unfortunate invention of the Chinese Communist Party. It is a fake threat. An autonomous Taiwan is not preventing massive increases in China’s prosperity and security. On the other hand, Beijing’s threat to militarily destroy the political system and political identity chosen by Taiwan’s people is real.

#### Taiwan crisis is the most likely scenario for nuclear war

Lowther 3/16 – William is a staff writer for the Taipei Times, citing a CSIS report. (“Taiwan could spark nuclear war: report”, 3/16/2013, <http://www.taipeitimes.com/News/taiwan/archives/2013/03/16/2003557211>)

Taiwan is the most likely potential crisis that could trigger a nuclear war between China and the US, a new academic report concludes. “Taiwan remains the single most plausible and dangerous source of tension and conflict between the US and China,” says the 42-page report by the Washington-based Center for Strategic and International Studies (CSIS). Prepared by the CSIS’ Project on Nuclear Issues and resulting from a year-long study, the report emphasizes that Beijing continues to be set on a policy to prevent Taiwan’s independence, while at the same time the US maintains the capability to come to Taiwan’s defense. “Although tensions across the Taiwan Strait have subsided since both Taipei and Beijing embraced a policy of engagement in 2008, the situation remains combustible, complicated by rapidly diverging cross-strait military capabilities and persistent political disagreements,” the report says. In a footnote, it quotes senior fellow at the US Council on Foreign Relations Richard Betts describing Taiwan as “the main potential flashpoint for the US in East Asia.” The report also quotes Betts as saying that neither Beijing nor Washington can fully control developments that might ignite a Taiwan crisis. “This is a classic recipe for surprise, miscalculation and uncontrolled escalation,” Betts wrote in a separate study of his own. The CSIS study says: “For the foreseeable future Taiwan is the contingency in which nuclear weapons would most likely become a major factor, because the fate of the island is intertwined both with the legitimacy of the Chinese Communist Party and the reliability of US defense commitments in the Asia-Pacific region.” Titled Nuclear Weapons and US-China Relations, the study says disputes in the East and South China seas appear unlikely to lead to major conflict between China and the US, but they do “provide kindling” for potential conflict between the two nations because the disputes implicate a number of important regional interests, including the interests of treaty allies of the US. The danger posed by flashpoints such as Taiwan, the Korean Peninsula and maritime demarcation disputes is magnified by the potential for mistakes, the study says. “Although Beijing and Washington have agreed to a range of crisis management mechanisms, such as the Military Maritime Consultative Agreement and the establishment of a direct hotline between the Pentagon and the Ministry of Defense, the bases for miscommunication and misunderstanding remain and draw on deep historical reservoirs of suspicion,” the report says. For example, it says, it is unclear whether either side understands what kinds of actions would result in a military or even nuclear response by the other party. To make things worse, “neither side seems to believe the other’s declared policies and intentions, suggesting that escalation management, already a very uncertain endeavor, could be especially difficult in any conflict,” it says. Although conflict “mercifully” seems unlikely at this point, the report concludes that “it cannot be ruled out and may become increasingly likely if we are unwise or unlucky.” The report says: “With both sides possessing and looking set to retain formidable nuclear weapons arsenals, such a conflict would be tremendously dangerous and quite possibly devastating.”

### 1AC—Plan Text

#### The United States federal government should normalize its trade relations with the Republic of Cuba.

### 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

Peters 10 – LL.M. expected 2011, University of Arkansas School of Law, Graduate Program in Agricultural and Food Law; J.D. 2010, University of Oregon School of Law. (“Creating a Sustainable Urban Agriculture Revolution”, Journal of Environmental Law and Litigation, Vol. 25, 203, <http://law.uoregon.edu/org/jell/docs/251/peters.pdf>)

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

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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.

#### Causes extinction—4 degree projections trigger a laundry list of extinction scenarios

**Roberts 13**—citing the World Bank Review’s compilation of climate studies - 4 degree projected warming, can’t adapt - heat wave related deaths, forest fires, crop production, water wars, ocean acidity, sea level rise, climate migrants, biodiversity loss David, "If you aren’t alarmed about climate, you aren’t paying attention" ~<http://grist.org/climate-energy/climate-alarmism-the-idea-is-surreal/~~> January 10mtc

We know we’ve raised global average temperatures around 0.8 degrees C so far. We know that 2 degrees C is where most scientists predict catastrophic and irreversible impacts. And we know that we are currently on a trajectory that will push temperatures up 4 degrees or more by the end of the century. What would 4 degrees look like? A recent [World Bank review of the science](http://climatechange.worldbank.org/) reminds us. First, it’ll get hot: Projections for a 4°C world show a dramatic increase in the intensity and frequency of high-temperature extremes. Recent extreme heat waves such as in Russia in 2010 are likely to become the new normal summer in a 4°C world. Tropical South America, central Africa, and all tropical islands in the Pacific are likely to regularly experience heat waves of unprecedented magnitude and duration. In this new high-temperature climate regime, the coolest months are likely to be substantially warmer than the warmest months at the end of the 20th century. In regions such as the Mediterranean, North Africa, the Middle East, and the Tibetan plateau, almost all summer months are likely to be warmer than the most extreme heat waves presently experienced. For example, the warmest July in the Mediterranean region could be 9°C warmer than today’s warmest July. Extreme heat waves in recent years have had severe impacts, causing heat-related deaths, forest fires, and harvest losses. The impacts of the extreme heat waves projected for a 4°C world have not been evaluated, but they could be expected to vastly exceed the consequences experienced to date and potentially exceed the adaptive capacities of many societies and natural systems. [my emphasis] Warming to 4 degrees would also lead to “an increase of about 150 percent in acidity of the ocean,” leading to levels of acidity “unparalleled in Earth’s history.” That’s bad news for, say, coral reefs: The combination of thermally induced bleaching events, ocean acidification, and sea-level rise threatens large fractions of coral reefs even at 1.5°C global warming. The regional extinction of entire coral reef ecosystems, which could occur well before 4°C is reached, would have profound consequences for their dependent species and for the people who depend on them for food, income, tourism, and shoreline protection. It will also “likely lead to a sea-level rise of 0.5 to 1 meter, and possibly more, by 2100, with several meters more to be realized in the coming centuries.” That rise won’t be spread evenly, even within regions and countries — regions close to the equator will see even higher seas. There are also indications that it would “significantly exacerbate existing water scarcity in many regions, particularly northern and eastern Africa, the Middle East, and South Asia, while additional countries in Africa would be newly confronted with water scarcity on a national scale due to population growth.” Also, more extreme weather events: Ecosystems will be affected by more frequent extreme weather events, such as forest loss due to droughts and wildfire exacerbated by land use and agricultural expansion. In Amazonia, forest fires could as much as double by 2050 with warming of approximately 1.5°C to 2°C above preindustrial levels. Changes would be expected to be even more severe in a 4°C world. Also loss of biodiversity and ecosystem services: In a 4°C world, climate change seems likely to become the dominant driver of ecosystem shifts, surpassing habitat destruction as the greatest threat to biodiversity. Recent research suggests that large-scale loss of biodiversity is likely to occur in a 4°C world, with climate change and high CO2 concentration driving a transition of the Earth’s ecosystems into a state unknown in human experience. Ecosystem damage would be expected to dramatically reduce the provision of ecosystem services on which society depends (for example, fisheries and protection of coastline afforded by coral reefs and mangroves.) New research also indicates a “rapidly rising risk of crop yield reductions as the world warms.” So food will be tough. All this will add up to “large-scale displacement of populations and have adverse consequences for human security and economic and trade systems.” Given the uncertainties and long-tail risks involved, “there is no certainty that adaptation to a 4°C world is possible.” There’s a small but non-trivial chance of advanced civilization breaking down entirely. Now ponder the fact that some scenarios show us going up to 6degrees by the end of the century, a level of devastation we have not studied and barely know how to conceive. Ponder the fact that somewhere along the line, though we don’t know exactly where, enough self-reinforcing feedback loops will be running to make climate change unstoppable and irreversible for centuries to come. That would mean handing our grandchildren and their grandchildren not only a burned, chaotic, denuded world, but a world that is inexorably more inhospitable with every passing decade.

#### Warming is anthropogenic – most comphrensive analysis to date proves

**Green 13** – Professor of Chemistry @ Michigan Tech, \*John Cook – Fellow @ Global Change Institute, produced climate communication resources adopted by organisations such as NOAA and the U.S. Navy Dana Nuccitelli – MA in Physics @ UC-Davis \*Mark Richardson – PhD Candidate in Meteorology, et al., ("Quantifying the consensus on anthropogenic global warming in the scientific literature," Environmental Research Letters, 8.2)

1. Introduction An accurate perception of the degree of scientific consensus is an essential element to public support for climate policy (Ding et al[2011](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib8)). Communicating the scientific consensus also increases people's acceptance that climate change (CC) is happening (Lewandowsky et al [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib14)). Despite numerous indicators of a consensus, there is wide public perception that climate scientists disagree over the fundamental cause of global warming (GW; Leiserowitz et al [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib13), Pew [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib20)). In the most comprehensive analysis performed to date, we have extended the analysis of peer-reviewed climate papers in Oreskes ([2004](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib17)). We examined a large sample of the scientific literature on global CC, published over a 21 year period, in order to determine the level of scientific consensus that human activity is very likely causing most of the current GW (anthropogenic global warming, or AGW). Surveys of climate scientists have found strong agreement (97–98%) regarding AGW amongst publishing climate experts (Doran and Zimmerman [2009](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib9), Anderegg et al [2010](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib2)). Repeated surveys of scientists found that scientific agreement about AGW steadily increased from 1996 to 2009 (Bray [2010](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib6)). This is reflected in the increasingly definitive statements issued by the Intergovernmental Panel on Climate Change on the attribution of recent GW (Houghton et al [1996](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib12), [2001](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib11), Solomon et al [2007](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib23)). The peer-reviewed scientific literature provides a ground-level assessment of the degree of consensus among publishing scientists. An analysis of abstracts published from 1993–2003 matching the search 'global climate change' found that none of 928 papers disagreed with the consensus position on AGW (Oreskes [2004](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib17)). This is consistent with an analysis of citation networks that found a consensus on AGW forming in the early 1990s (Shwed and Bearman [2010](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib22)). Despite these independent indicators of a scientific consensus, the perception of the US public is that the scientific community still disagrees over the fundamental cause of GW. From 1997 to 2007, public opinion polls have indicated around 60% of the US public believes there is significant disagreement among scientists about whether GW was happening (Nisbet and Myers [2007](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib15)). Similarly, 57% of the US public either disagreed or were unaware that scientists agree that the earth is very likely warming due to human activity (Pew [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib20)). Through analysis of climate-related papers published from 1991 to 2011, this study provides the most comprehensive analysis of its kind to date in order to quantify and evaluate the level and evolution of consensus over the last two decades. 2. Methodology This letter was conceived as a 'citizen science' project by volunteers contributing to the Skeptical Science website ([www.skepticalscience.com](http://www.skepticalscience.com/)). In March 2012, we searched the ISI Web of Science for papers published from 1991–2011 using topic searches for 'global warming' or 'global climate change'. Article type was restricted to 'article', excluding books, discussions, proceedings papers and other document types. The search was updated in May 2012 with papers added to the Web of Science up to that date. We classified each abstract according to the type of research (category) and degree of endorsement. Written criteria were provided to raters for category (table [1](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t1)) and level of endorsement of AGW (table [2](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t2)). Explicit endorsements were divided into non-quantified (e.g., humans are contributing to global warming without quantifying the contribution) and quantified (e.g., humans are contributing more than 50% of global warming, consistent with the 2007 IPCC statement that most of the global warming since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations). Table 1. Definitions of each type of research category.

| Category | Description | Example |
| --- | --- | --- |
| (1) Impacts | Effects and impacts of climate change on the environment, ecosystems or humanity | '...global climate change together with increasing direct impacts of human activities, such as fisheries, are affecting the population dynamics of marine top predators' |
| (2) Methods | Focus on measurements and modeling methods, or basic climate science not included in the other categories | 'This paper focuses on automating the task of estimating Polar ice thickness from airborne radar data...' |
| (3) Mitigation | Research into lowering CO2emissions or atmospheric CO2levels | 'This paper presents a new approach for a nationally appropriate mitigation actions framework that can unlock the huge potential for greenhouse gas mitigation in dispersed energy end-use sectors in developing countries' |
| (4) Not climate-related | Social science, education, research about people's views on climate | 'This paper discusses the use of multimedia techniques and augmented reality tools to bring across the risks of global climate change' |
| (5) Opinion | Not peer-reviewed articles | 'While the world argues about reducing global warming, chemical engineers are getting on with the technology. Charles Butcher has been finding out how to remove carbon dioxide from flue gas' |
| (6) Paleoclimate | Examining climate during pre-industrial times | 'Here, we present a pollen-based quantitative temperature reconstruction from the midlatitudes of Australia that spans the last 135 000 years...' |

Table 2. Definitions of each level of endorsement of AGW.

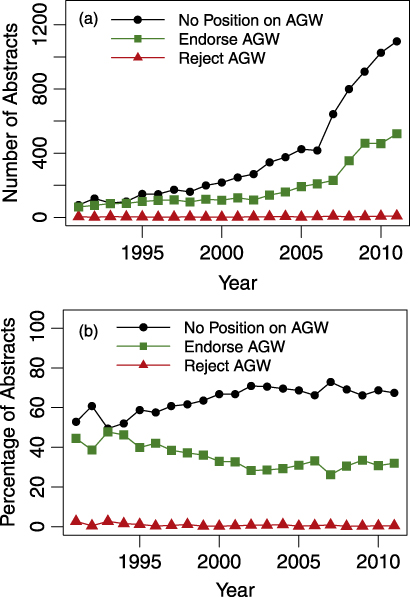
| Level of endorsement | Description | Example |
| --- | --- | --- |
| (1) Explicit endorsement with quantification | Explicitly states that humans are the primary cause of recent global warming | 'The global warming during the 20th century is caused mainly by increasing greenhouse gas concentration especially since the late 1980s' |
| (2) Explicit endorsement without quantification | Explicitly states humans are causing global warming or refers to anthropogenic global warming/climate change as a known fact | 'Emissions of a broad range of greenhouse gases of varying lifetimes contribute to global climate change' |
| (3) Implicit endorsement | Implies humans are causing global warming. E.g., research assumes greenhouse gas emissions cause warming without explicitly stating humans are the cause | '...carbon sequestration in soil is important for mitigating global climate change' |
| (4a) No position | Does not address or mention the cause of global warming |  |
| (4b) Uncertain | Expresses position that human's role on recent global warming is uncertain/undefined | 'While the extent of human-induced global warming is inconclusive...' |
| (5) Implicit rejection | Implies humans have had a minimal impact on global warming without saying so explicitly E.g., proposing a natural mechanism is the main cause of global warming | '...anywhere from a major portion to all of the warming of the 20th century could plausibly result from natural causes according to these results' |
| (6) Explicit rejection without quantification | Explicitly minimizes or rejects that humans are causing global warming | '...the global temperature record provides little support for the catastrophic view of the greenhouse effect' |
| (7) Explicit rejection with quantification | Explicitly states that humans are causing less than half of global warming | 'The human contribution to the CO2 content in the atmosphere and the increase in temperature is negligible in comparison with other sources of carbon dioxide emission' |

Abstracts were randomly distributed via a web-based system to raters with only the title and abstract visible. All other information such as author names and affiliations, journal and publishing date were hidden. Each abstract was categorized by two independent, anonymized raters. A team of 12 individuals completed 97.4% (23 061) of the ratings; an additional 12 contributed the remaining 2.6% (607). Initially, 27% of category ratings and 33% of endorsement ratings disagreed. Raters were then allowed to compare and justify or update their rating through the web system, while maintaining anonymity. Following this, 11% of category ratings and 16% of endorsement ratings disagreed; these were then resolved by a third party. Upon completion of the final ratings, a random sample of 1000 'No Position' category abstracts were re-examined to differentiate those that did not express an opinion from those that take the position that the cause of GW is uncertain. An 'Uncertain' abstract explicitly states that the cause of global warming is not yet determined (e.g., '...the extent of human-induced global warming is inconclusive...') while a 'No Position' abstract makes no statement on AGW. To complement the abstract analysis, email addresses for 8547 authors were collected, typically from the corresponding author and/or first author. For each year, email addresses were obtained for at least 60% of papers. Authors were emailed an invitation to participate in a survey in which they rated their own published papers (the entire content of the article, not just the abstract) with the same criteria as used by the independent rating team. Details of the survey text are provided in the supplementary information (available at [stacks.iop.org/ERL/8/024024/mmedia](http://stacks.iop.org/ERL/8/024024/mmedia)). 3. Results The ISI search generated 12 465 papers. Eliminating papers that were not peer-reviewed (186), not climate-related (288) or without an abstract (47) reduced the analysis to 11 944 papers written by 29 083 authors and published in 1980 journals. To simplify the analysis, ratings were consolidated into three groups: endorsements (including implicit and explicit; categories 1–3 in table [2](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t2)), no position (category 4) and rejections (including implicit and explicit; categories 5–7). We examined four metrics to quantify the level of endorsement:

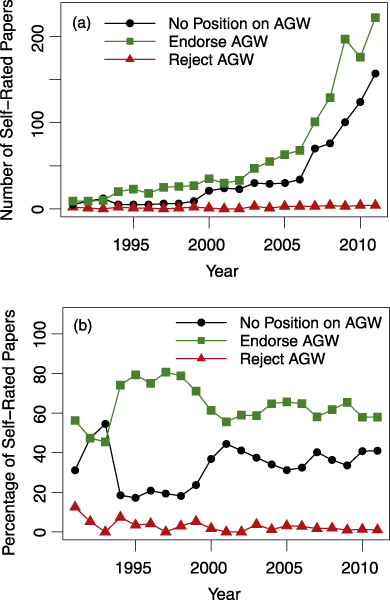
|  |  |
| --- | --- |
| (1) | The percentage of endorsements/rejections/undecideds among all abstracts. |
| (2) | The percentage of endorsements/rejections/undecideds among only those abstracts expressing a position on AGW. |
| (3) | The percentage of scientists authoring endorsement/ rejection abstracts among all scientists. |
| (4) | The same percentage among only those scientists who expressed a position on AGW (table [3](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t3)). |

Table 3. Abstract ratings for each level of endorsement, shown as percentage and total number of papers.

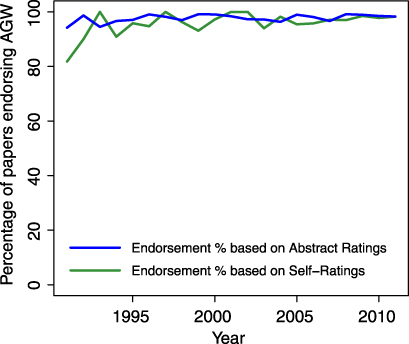
| Position | % of all abstracts | % among abstracts with AGW position (%) | % of all authors | % among authors with AGW position (%) |
| --- | --- | --- | --- | --- |
| Endorse AGW | 32.6% (3896) | 97.1 | 34.8% (10 188) | 98.4 |
| No AGW position | 66.4% (7930) | — | 64.6% (18 930) | — |
| Reject AGW | 0.7% (78) | 1.9 | 0.4% (124) | 1.2 |
| Uncertain on AGW | 0.3% (40) | 1.0 | 0.2% (44) | 0.4 |

3.1. Endorsement percentages from abstract ratings Among abstracts that expressed a position on AGW, 97.1% endorsed the scientific consensus. Among scientists who expressed a position on AGW in their abstract, 98.4% endorsed the consensus. The time series of each level of endorsement of the consensus on AGW was analyzed in terms of the number of abstracts (figure [1](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig1)(a)) and the percentage of abstracts (figure [1](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig1)(b)). Over time, the no position percentage has increased (simple linear regression trend 0.87% ± 0.28% yr−1, 95% CI, R2 = 0.66,p < 0.001) and the percentage of papers taking a position on AGW has equally decreased.  Reset Figure 1. (a) Total number of abstracts categorized into endorsement, rejection and no position. (b) Percentage of endorsement, rejection and no position/undecided abstracts. Uncertain comprise 0.5% of no position abstracts. [Export PowerPoint slide](http://iopscience.iop.org/1748-9326/8/2/024024/powerpoint/figure/erl460291fig1) Download figure:[Standard (154 KB)](http://iopscience.iop.org/1748-9326/8/2/024024/downloadFigure/figure/erl460291fig1" \t "_blank)[High-resolution (248 KB)](http://iopscience.iop.org/1748-9326/8/2/024024/downloadHRFigure/figure/erl460291fig1) The average numbers of authors per endorsement abstract (3.4) and per no position abstract (3.6) are both significantly larger than the average number of authors per rejection abstract (2.0). The scientists originated from 91 countries (identified by email address) with the highest representation from the USA (N = 2548) followed by the United Kingdom (N = 546), Germany (N = 404) and Japan (N = 379) (see supplementary table S1 for full list, available at [stacks.iop.org/ERL/8/024024/mmedia](http://stacks.iop.org/ERL/8/024024/mmedia)). 3.2. Endorsement percentages from self-ratings We emailed 8547 authors an invitation to rate their own papers and received 1200 responses (a 14% response rate). After excluding papers that were not peer-reviewed, not climate-related or had no abstract, 2142 papers received self-ratings from 1189 authors. The self-rated levels of endorsement are shown in table [4](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t4). Among self-rated papers that stated a position on AGW, 97.2% endorsed the consensus. Among self-rated papers not expressing a position on AGW in the abstract, 53.8% were self-rated as endorsing the consensus. Among respondents who authored a paper expressing a view on AGW, 96.4% endorsed the consensus. Table 4. Self-ratings for each level of endorsement, shown as percentage and total number of papers.

| Position | % of all papers | % among papers with AGW position (%) | % of respondents | % among respondents with AGW position (%) |
| --- | --- | --- | --- | --- |
| Endorse AGW[a](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t4fn1) | 62.7% (1342) | 97.2 | 62.7% (746) | 96.4 |
| No AGW position[b](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t4fn2) | 35.5% (761) | — | 34.9% (415) | — |
| Reject AGW[c](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t4fn3) | 1.8% (39) | 2.8 | 2.4% (28) | 3.6 |

aSelf-rated papers that endorse AGW have an average endorsement rating less than 4 (1 =explicit endorsement with quantification, 7 = explicit rejection with quantification). bUndecided self-rated papers have an average rating equal to 4.cRejection self-rated papers have an average rating greater than 4. Figure [2](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig2)(a) shows the level of self-rated endorsement in terms of number of abstracts (the corollary to figure [1](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig1)(a)) and figure [2](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig2)(b) shows the percentage of abstracts (the corollary to figure [1](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig1)(b)). The percentage of self-rated rejection papers decreased (simple linear regression trend −0.25% ± 0.18% yr−1, 95% CI, R2 = 0.28,p = 0.01, figure [2](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig2)(b)). The time series of self-rated no position and consensus endorsement papers both show no clear trend over time.  Reset Figure 2. (a) Total number of endorsement, rejection and no position papers as self-rated by authors. Year is the published year of each self-rated paper. (b) Percentage of self-rated endorsement, rejection and no position papers. [Export PowerPoint slide](http://iopscience.iop.org/1748-9326/8/2/024024/powerpoint/figure/erl460291fig2) Download figure:[Standard (149 KB)](http://iopscience.iop.org/1748-9326/8/2/024024/downloadFigure/figure/erl460291fig2)[High-resolution (238 KB)](http://iopscience.iop.org/1748-9326/8/2/024024/downloadHRFigure/figure/erl460291fig2) A direct comparison of abstract rating versus self-rating endorsement levels for the 2142 papers that received a self-rating is shown in table [5](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291t5). More than half of the abstracts that we rated as 'No Position' or 'Undecided' were rated 'Endorse AGW' by the paper's authors. Table 5. Comparison of our abstract rating to self-rating for papers that received self-ratings.

| Position | Abstract rating | Self-rating |
| --- | --- | --- |
| Endorse AGW | 791 (36.9%) | 1342 (62.7%) |
| No AGW position or undecided | 1339 (62.5%) | 761 (35.5%) |
| Reject AGW | 12 (0.6%) | 39 (1.8%) |

Figure [3](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291fig3) compares the percentage of papers endorsing the scientific consensus among all papers that express a position endorsing or rejecting the consensus. The year-to-year variability is larger in the self-ratings than in the abstract ratings due to the smaller sample sizes in the early 1990s. The percentage of AGW endorsements for both self-rating and abstract-rated papers increase marginally over time (simple linear regression trends 0.10 ± 0.09% yr−1, 95% CI, R2 = 0.20,p = 0.04 for abstracts, 0.35 ± 0.26% yr−1, 95% CI, R2 = 0.26,p = 0.02 for self-ratings), with both series approaching approximately 98% endorsements in 2011.  Reset Figure 3. Percentage of papers endorsing the consensus among only papers that express a position endorsing or rejecting the consensus. [Export PowerPoint slide](http://iopscience.iop.org/1748-9326/8/2/024024/powerpoint/figure/erl460291fig3) Download figure:[Standard (83 KB)](http://iopscience.iop.org/1748-9326/8/2/024024/downloadFigure/figure/erl460291fig3" \t "_blank)[High-resolution (128 KB)](http://iopscience.iop.org/1748-9326/8/2/024024/downloadHRFigure/figure/erl460291fig3) 4. Discussion Of note is the large proportion of abstracts that state no position on AGW. This result is expected in consensus situations where scientists '...generally focus their discussions on questions that are still disputed or unanswered rather than on matters about which everyone agrees' (Oreskes [2007](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib18), p 72). This explanation is also consistent with a description of consensus as a 'spiral trajectory' in which 'initially intense contestation generates rapid settlement and induces a spiral of new questions' (Shwed and Bearman[2010](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib22)); the fundamental science of AGW is no longer controversial among the publishing science community and the remaining debate in the field has moved to other topics. This is supported by the fact that more than half of the self-rated endorsement papers did not express a position on AGW in their abstracts. The self-ratings by the papers' authors provide insight into the nature of the scientific consensus amongst publishing scientists. For both self-ratings and our abstract ratings, the percentage of endorsements among papers expressing a position on AGW marginally increased over time, consistent with Bray ([2010](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib6)) in finding a strengthening consensus. 4.1. Sources of uncertainty The process of determining the level of consensus in the peer-reviewed literature contains several sources of uncertainty, including the representativeness of the sample, lack of clarity in the abstracts and subjectivity in rating the abstracts. We address the issue of representativeness by selecting the largest sample to date for this type of literature analysis. Nevertheless, 11 944 papers is only a fraction of the climate literature. A Web of Science search for 'climate change' over the same period yields 43 548 papers, while a search for 'climate' yields 128 440 papers. The crowd-sourcing techniques employed in this analysis could be expanded to include more papers. This could facilitate an approach approximating the methods of Doran and Zimmerman ([2009](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib9)), which measured the level of scientific consensus for varying degrees of expertise in climate science. A similar approach could analyze the level of consensus among climate papers depending on their relevance to the attribution of GW. Another potential area of uncertainty involved the text of the abstracts themselves. In some cases, ambiguous language made it difficult to ascertain the intended meaning of the authors. Naturally, a short abstract could not be expected to communicate all the details of the full paper. The implementation of the author self-rating process allowed us to look beyond the abstract. A comparison between self-ratings and abstract ratings revealed that categorization based on the abstract alone underestimates the percentage of papers taking a position on AGW. Lastly, some subjectivity is inherent in the abstract rating process. While criteria for determining ratings were defined prior to the rating period, some clarifications and amendments were required as specific situations presented themselves. Two sources of rating bias can be cited: first, given that the raters themselves endorsed the scientific consensus on AGW, they may have been more likely to classify papers as sharing that endorsement. Second, scientific reticence (Hansen [2007](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib10)) or 'erring on the side of least drama' (ESLD; Brysse et al [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib7)) may have exerted an opposite effect by biasing raters towards a 'no position' classification. These sources of bias were partially addressed by the use of multiple independent raters and by comparing abstract rating results to author self-ratings. A comparison of author ratings of the full papers and abstract ratings reveals a bias toward an under-counting of endorsement papers in the abstract ratings (mean difference 0.6 in units of endorsement level). This mitigated concerns about rater subjectivity, but suggests that scientific reticence and ESLD remain possible biases in the abstract ratings process. The potential impact of initial rating disagreements was also calculated and found to have minimal impact on the level of consensus (see supplemental information, section S1 available at [stacks.iop.org/ERL/8/024024/mmedia](http://stacks.iop.org/ERL/8/024024/mmedia)). 4.2. Comparisons with previous studies Our sample encompasses those surveyed by Oreskes ([2004](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib17)) and Schulte ([2008](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib21)) and we can therefore directly compare the results. Oreskes ([2004](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib17)) analyzed 928 papers from 1993 to 2003. Over the same period, we found 932 papers matching the search phrase 'global climate change' (papers continue to be added to the ISI database). From that subset we eliminated 38 papers that were not peer-reviewed, climate-related or had no abstract. Of the remaining 894, none rejected the consensus, consistent with Oreskes' result. Oreskes determined that 75% of papers endorsed the consensus, based on the assumption that mitigation and impact papers implicitly endorse the consensus. By comparison, we found that 28% of the 894 abstracts endorsed AGW while 72% expressed no position. Among the 71 papers that received self-ratings from authors, 69% endorse AGW, comparable to Oreskes' estimate of 75% endorsements. An analysis of 539 'global climate change' abstracts from the Web of Science database over January 2004 to mid-February 2007 found 45% endorsement and 6% rejection (Schulte [2008](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib21)). Our analysis over a similar period (including all of February 2007) produced 529 papers—the reason for this discrepancy is unclear as Schulte's exact methodology is not provided. Schulte estimated a higher percentage of endorsements and rejections, possibly because the strict methodology we adopted led to a greater number of 'No Position' abstracts. Schulte also found a significantly greater number of rejection papers, including 6 explicit rejections compared to our 0 explicit rejections. See the supplementary information (available at[stacks.iop.org/ERL/8/024024/mmedia](http://stacks.iop.org/ERL/8/024024/mmedia)) for a tabulated comparison of results. Among 58 self-rated papers, only one (1.7%) rejected AGW in this sample. Over the period of January 2004 to February 2007, among 'global climate change' papers that state a position on AGW, we found 97% endorsements. 5. Conclusion The public perception of a scientific consensus on AGW is a necessary element in public support for climate policy (Ding et al[2011](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib8)). However, there is a significant gap between public perception and reality, with 57% of the US public either disagreeing or unaware that scientists overwhelmingly agree that the earth is warming due to human activity (Pew [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib20)). Contributing to this 'consensus gap' are campaigns designed to confuse the public about the level of agreement among climate scientists. In 1991, Western Fuels Association conducted a $510 000 campaign whose primary goal was to 'reposition global warming as theory (not fact)'. A key strategy involved constructing the impression of active scientific debate using dissenting scientists as spokesmen (Oreskes [2010](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib19)). The situation is exacerbated by media treatment of the climate issue, where the normative practice of providing opposing sides with equal attention has allowed a vocal minority to have their views amplified (Boykoff and Boykoff [2004](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib4)). While there are indications that the situation has improved in the UK and USA prestige press (Boykoff[2007](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib3)), the UK tabloid press showed no indication of improvement from 2000 to 2006 (Boykoff and Mansfield [2008](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib5)). The narrative presented by some dissenters is that the scientific consensus is '...on the point of collapse' (Oddie [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib16)) while '...the number of scientific "heretics" is growing with each passing year' (Allègre et al [2012](http://iopscience.iop.org/1748-9326/8/2/024024/article#erl460291bib1)). A systematic, comprehensive review of the literature provides quantitative evidence countering this assertion. The number of papers rejecting AGW is a miniscule proportion of the published research, with the percentage slightly decreasing over time. Among papers expressing a position on AGW, an overwhelming percentage (97.2% based on self-ratings, 97.1% based on abstract ratings) endorses the scientific consensus on AGW.