



## Climate Change

**Point #1** Climate change is a “threat multiplier” that decreases stability and increases conflict.

**Point #2** Climate change is straining the resources of the armed services by degrading equipment and forcing the military to move or repair bases affected by changing weather or extreme storms.

**Point #3** Moves to mitigate climate change - reducing our consumption of oil, making polluters pay, etc. - make us safer and more self-reliant.

**Point #4** The seriousness of the threat requires a national program for basic research and investment in clean energy, carried out with the urgency and the scale of the Manhattan Project.

**Global Climate Change** presents a serious national security threat that could impact Americans at home and abroad. Eleven of the twelve warmest years on record have taken place since 1995. Between 1950 and 2000, average temperatures in the Northern Hemisphere appear to have been the highest in the last 1,300 years. And the likelihood that these trends were caused principally by human activities stands greater than 90% (Greenberg, *Generation WE*).

Climate change is a threat to international peace and security due to the likely impact of changing temperatures on Earth’s physical environment. In 2007 the CNA Corporation brought together eleven retired three-star and four-star admirals and generals to provide advice, expertise, and perspective on how earth’s changing climate promises to alter the global security environment.

In the CNA report, former U.S. Army Chief of Staff General Gordon Sullivan argues that:

*“Climate change is occurring at a much faster pace than the scientists previously thought it could. Military professionals are accustomed to making decisions during times of uncertainty. Even if you don’t have complete information, you still need to take action. Waiting for 100 percent certainty during a crisis can be disastrous.”*

**According to the CNA Military Advisory Board, Climate Change is likely to:**

- Destabilize Governments
- Create havens for extremists
- Lead to mass migration and refugee crisis
- Spread infectious disease
- Increase volatility in the Middle East over scarce water resources

**They also believe it will affect military resources:**

- Military bases are threatened by rising sea levels, and are vulnerable on the East Coast to increased hurricanes and extreme weather;
- Military equipment requirements must reflect rising temperatures and more volatile seas;
- Disruptions to the U.S. electrical grid, on which the military is dependent, are likely. This requires rethinking energy resources;
- Thinning Arctic ice is already leading to a multi-country struggle for control of resources and access through the “Northern Passage”

**The Military Advisory Board concluded that the national security consequences of climate change were so important that addressing and slowing climate change should be fully integrated into national security and national defense strategies.**



# Truman National Security Project

## The Effects of Climate Change

How will climate change cause these effects? According to the Intergovernmental Panel on Climate Change (IPCC) - a scientific body established through the United Nations in 1988 to evaluate the risks associated with global warming - the changing climate will have a tremendous impact on planet Earth.



### Climate Change is Expected To...

*Increase the intensity of hurricanes and other extreme storms.*

#### Why It Matters:

- When Indonesia was hit by a massive tsunami in December 2004, the U.S. military responded with logistical aid, ships, planes, and helicopters to establish a rapid supply chain to stricken regions. At a price tag of \$5 million per day, only the U.S. military had the capacity to respond so quickly to a disaster of such magnitude. If the intensity and occurrence of such storms increase, the demand for the United States to respond to such events will increase in turn. This will seriously tax U.S. resources.
- Responding to a natural disaster in a foreign country may not always have a direct impact on U.S. security, but sometimes it will. Indonesia is the world's most populous Muslim country, and U.S. efforts after the tsunami dramatically improved the image of the U.S. in the eyes of Indonesians, a major accomplishment in America's fight against Islamic extremism.

### Climate Change is Expected To...

*Raise sea levels through thermal expansion and melting land-based ice.*

#### Why It Matters:

- Rising sea levels could cause the displacement of tens-of-millions of people from low-lying and coastal areas. In addition to the humanitarian costs of such mass-migration, panic and deprivation could act as a lightning rod for extremism.
- Bangladesh presents an instructive case. A low-lying country vulnerable to flooding, Bangladesh boasts a population that is projected to grow from approximately 140 million to some 240 million people in just a few decades. Rising sea levels are already forcing people from their homes. Islamic extremism has become a growing force in Bangladesh. Hundreds of jihadists found safe haven there after the U.S. invasion of Afghanistan, and intelligence analysts have identified it as a potential new base of operations for regional or global terrorists. If climate change prompts mass migration, it would provide terrorists in Bangladesh with access to a pool of recruits and a fluid population in which to hide.



# Truman National Security Project

## Climate Change is Expected To...

*Lead to drought-producing heat waves and water shortages that decrease agricultural productivity over the long-term and lead to food shortages and water scarcity.*

### Why It Matters:

- For every 1.8°F rise in temperature, the overall global production of grain is expected to drop by 10%. Moreover 40% of the world's population derives at least half of its water supplies from summer melt of mountain glaciers, which may disappear within decades.
- Unabated climate change will impact Africa particularly hard: by the second half of this century, half of Africa's nations could see their agricultural productivity drop by more than 25% due to increased temperatures and decreased soil moisture.
- Food shortages have already led to genocide in Africa. Drought in Darfur reduced grazing and farm land, leading to conflicts between nomads and farmers. Compounded by ethnic and religious differences, the resource conflict has erupted into a genocide that has claimed at least 300,000 lives. The 1994 genocide in Rwanda – which killed more than 800,000 – was also compounded by conflicts over agricultural resources.
- In the spring and summer of 2008, the increasing cost and declining availability of food led to riots that affected nearly a dozen countries worldwide. Angry protestors burned buildings in Burkina Faso and violence in Haiti left six people dead. The U.S. military is likely to be called on when rioting threatens government stability—or will be forced to deal with its aftermath.
- Water shortages are already creating tensions between Israel and Jordan, and are likely to further inflame tensions in the Middle East.

## Climate Change is Expected To...

*Increase the spread of infectious, tropical, and heat-related diseases.*

### Why It Matters:

- Changing weather patterns are spreading the conditions in which vector-borne diseases, such as malaria, and food-borne diseases, such as salmonellosis, thrive. The 2008 salmonella scare, which rendered 1,000 people ill and caused more than \$1 million in losses to the tomato industry, proved that even the United States remains vulnerable to the outbreak of diseases. Warming temperatures will only increase the likelihood that such scares will occur again.
- In 2007, Italy experienced an unexpectedly large outbreak of a mosquito-borne disease. Officials discovered that the disease entered the country via an Indian tourist, and that the disease-spreading mosquito population was boosted by the particularly mild winter, proving that disease in the developing world can migrate to the developed world with great ease.
- Water-borne diseases will also become more prevalent as sea levels rise and extreme weather events combine to cause more large-scale flooding and coastal inundation.
- Heat waves are predicted to become more intense and prolonged, meaning that events like Europe's 2003 heat wave, which killed approximately 35,000 people, will become more prevalent.
- Tropical diseases are likely to pop up more and more in the United States, bringing the threat of malaria, West Nile virus, and other diseases to our shores.



# Truman National Security Project

## The Pentagon Speaks Out: “Imagining the Unthinkable”

In 2003, the Pentagon commissioned a study entitled “Imagining the Unthinkable.” The purpose of the study was to investigate the potential consequences of an abrupt change in the world’s climate and to examine the ramifications for American national security. According to the authors, “because of the potentially dire consequences, the risk of abrupt climate change, although uncertain and quite possibly small, should be elevated beyond a scientific debate to a U.S. national security concern.”



Picture courtesy Eric Greenberg, *Generation WE*

### The Worst Case Scenario Findings

- As temperatures rise during this decade, some regions experience severe storms and flooding.
- By 2020, after a decade of cooling, Europe’s climate becomes “more like Siberia’s.”
- “Mega-droughts” hit southern China and northern Europe around 2010 and last 10 years.
- In the United States, agricultural areas suffer from soil loss due to higher winds and drier climate, but the country survives the economic disruption without catastrophic losses.
- Widespread famine in China triggers chaos, and “a cold and hungry China peers jealously” at Russia’s energy resources. In the 2020-2030 period, civil war and border wars break out in China.
- “Disruption and conflict will be endemic features of life.” Food and water shortages will lead to a “world of warring states,” in which more countries develop nuclear weapons, including Japan, South Korea, Germany, Iran and Egypt.

### The Pentagon study recommended a series of actions to reduce the likelihood of this worst case scenario:

- Improve predictive climate models so more confidence can be placed in climate change predictions.
- Vulnerability metrics should be created to assess a given country’s vulnerability to the impacts of climate change. Metrics may include agricultural, mineral, and water resources; technical capability; social cohesion and adaptability.
- Identify “no regrets” strategies such as helping developing countries improve their water and food infrastructure, as well as developing response teams that can aid struggling nations.



# Truman National Security Project

## Climate Change will also affect the U.S.



While most of the issues discussed above will mainly impact the developing world, the effects of climate change will not be confined to the underdeveloped alone. Even the United States will face significant homeland security threats.

Our eastern and Gulf coastlines are exceptionally vulnerable to strong storms, as we witnessed with Hurricane Katrina in 2005 (which cost nearly 2,000 lives and more than \$80 billion in damages).

Many scientists are predicting that temperature increases will cause hurricanes to become more powerful, and when factoring in rising sea levels, the impact of these storms on the U.S. could get markedly worse.



The West Coast is also expected to feel the impact of stronger storms: one study found that a six-inch rise in the sea level can cause catastrophic 100-year storms (powerful storms that happen only once per century) in San Francisco Bay to become a *once-per-decade* occurrence.

The U.S. southwest is also an area of particular concern: how will the residents of Las Vegas and Phoenix fare as climate change triggers a prolonged era of declining rainfall, worsening heat waves, and more fire seasons like the one California recently experienced?

As the author of a January 2008 article in the journal *Science* stated, “Global warming is an abstraction to most people. Well, the people who live in the West, if they haven’t already, are going to very shortly find out what global warming really means to them.”

Mass migration is also a threat that will not spare the U.S. As conditions deteriorate in Central and South America – particularly regarding freshwater supplies – the U.S. is expected to face increasing migratory pressures from its southern neighbors. For example, anywhere between 7 million to 77 million people in Latin America could soon be faced with a shortage of water. By the 2050s the number could climb to 100 million or more.

The immigration we experience today is driven mainly by economics, meaning that if economic conditions improve, migratory pressures could decrease. Environmentally-induced migration is a different story: how do you repatriate people to land with no water resources?



# Truman National Security Project

## Project FREE

**Project FREE** is a proposal that takes seriously the threat we face and the opportunity to create the next generation of energy, freeing us from fossil fuels and mitigating the effects of climate change. Technological innovation can only happen if we make an investment in proportion to the threat. Fortunately, it's in America's DNA to meet these challenges.

**Manhattan Project.** When the Nazis threatened to build a nuclear weapon, we invested in the Manhattan Project to beat Hitler's Germany to the punch.

**Apollo Project.** When the Soviets threatened to win the space race and outpace U.S. technology, we invested in the Apollo Project and put a man on the moon.

**Project FREE.** Get America "off the grid" - free ourselves from dependence on few centralized energy sources and create a new system where energy is produced where it is consumed, at home or on the job. This will require:

- A National Program driven by the President, headed by a high level official.
- An endowment of \$30-\$40 billion per year for 10 to 15 years.
- A concentration on funding basic research and commercialization.

Learn more about **Project FREE** from Eric Greenberg and Karl Weber's *Generation We* at [www.gen-we.com](http://www.gen-we.com).

### Climate Change: From Threat to Opportunity

While climate change represents a significant national security threat, it is also important to recognize the opportunities for the U.S. to reclaim its role as a global leader. Helping developing countries build their capacity to cope with climate change will not only prevent the onset of conflict or state collapse, but will broaden our circle of friends and allies, and enhance our moral standing in the world.

**President Bush and Climate Change.** During his presidency, George W. Bush blocked most serious efforts aimed at domestic and international action on greenhouse gas emissions. He used every tool at his disposal to stop Congress from adopting greenhouse gas controls and to stop the international community from developing a serious follow-on to the Kyoto protocol. Under the Bush Administration, the EPA also prevented states from taking action on their own, blocking California and sixteen other states that wished to reduce their emissions requirements.

**President Obama and Climate Change.** In comparison, President Obama has explicitly recognized climate change as a national security issue, and he has so far acted as such. He has adopted strict greenhouse gas standards, specifically in terms of automobile emissions. Congress has also responded to the threat of climate change by drafting a bill – "American Clean Energy and Security Act" – that aims to reduce greenhouse gas emissions 17% percent by 2020.

These constitute important actions, but the real challenge lies in crafting an international climate agreement with which the world's major powers and polluters – the United States, Europe, China, India, etc. – can agree. Heads of state from around the world will meet in Copenhagen in December 2009 to craft a successor agreement to the Kyoto Protocol. It is in America's national security interest to push for a meaningful international agreement that both reduces greenhouse gases, and wins the support of other important nations.



# Truman National Security Project

## From the CNA Reports, “National Security and The Threat of Climate Change” and “Powering America’s Defense”

**Admiral T. Joseph Lopez**, *Commander-in-Chief, U.S. Naval Forces Europe and Allied Forces, Southern Europe*

“Climate change will provide the conditions that will extend the war on terror.”

**General Anthony Zinni**, *Former Commander-in-Chief U.S. Central Command*

“We will pay for this one way or another. We will pay to reduce greenhouse gas emissions today, and we’ll have to take an economic hit of some kind. Or we will pay the price later in military terms. And that will involve human lives. There will be a human toll. There is no way out of this that does not have real costs.”

**General Gordon Sullivan** *Former U.S. Army Chief of Staff*

“Climate change is occurring at a much faster pace than the scientists previously thought it could.... Military professionals are accustomed to making decisions during times of uncertainty... Even if you don’t have complete information, you still need to take action. Waiting for 100 percent certainty during a crisis can be disastrous... The US has the responsibility to lead [on global climate change]. If we don’t make changes, then others won’t.

“I have images of New England that stick with me. Tapping sugar maples in winter. Fishing off the Cape. These were images I held close when I was stationed overseas... They are important to me now when I think of how we’ll respond to climate change. Those treasures are at risk. There’s a lot at stake.”

**General Robert Magnus**, *Former Assistant Commandant of the U.S. Marine Corps*

“The more instability increase, the more pressure there will be to use our military. That’s the issue with climate change.”

**Vice Admiral Dennis McGinn**, *Former Deputy Chief, Naval Warfare Requirements and Programs*

“A Yellow ribbon on a car or truck is a wonderful message... I’d like to see the American people take it several steps further. If you say a yellow ribbon is ‘talk,’ then being energy efficient is the ‘walk’.

“We have less than ten years to change our fossil fuel dependency course in significant ways. Our nation’s security depends on the swift, serious, and thoughtful response to the inter-linked challenges of energy security and climate change.”



# Truman National Security Project

## Climate Change: Sources

Karen Grigsby Bates, "Salmonella Scare Hurts Calif. Tomato Growers," NPR, 9 July 2008.

Eric Greenberg with Karl Weber, *Generation We*, Eric Greenberg (Publisher) 2008.

"The Environment in the News," United Nations Environment Program, 2 April 2007.

"Going the Distance: The U.S. Tsunami Relief Effort 2005," U.S. State Department, 2005.

Catherine Makino, "G8: Climate Change High On Summit Agenda," Inter Press Service News Agency, 28 June 2008.

National Security and the Threat of Climate Change, The CNA Corporation, 2007.

Powering America's Defense: Energy and the Risks to National Security, The CNA Corporation, 2009.

John Podesta and Peter Ogden, "G8 Must Consider the Security Risks of Global Warming," Center for American Progress, 30 June 2008.

Joseph Romm, "Ignoring the Climate Change Alarm," The Guardian, 9 July 2008.

Peter Schwartz and Doug Randall, "An Abrupt Climate Change Scenario and Its Implications for United States National Security," October 2003.

"Storm over Pentagon climate scenario," MSNBC, 26 February 2004.

Steve Szkotak, "Tomato growers: Salmonella scare damages industry," Yahoo News, 19 July 2008.

"World Food Programme Crisis Page: High Food Prices," World Food Programme, 2008.

World Health Organization

