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## 1AC

#### Observation 1 is Inherency:

#### US airlines are in decline- the new NextGen system needs federal support to overhaul our overall air infrastructure

**Fried ’11** [Brandon, Executive Director of the U.S. Airforwarders Association, “NextGen project needs government assistance,” June, EBSCO]

If you're headed west to Chicago from the Baltimore/ Washington International Airport, you will most likely fly south before heading northwest toward your destination. This 35-mile detour is required because today's air traffic control system is using 1950s technology and flight paths in an era when highway drivers utilize modern GPS navigation. **Because today's technology cannot precisely pinpoint an aircraft position, greater separation is required in flight patterns. This creates the need for more flight time, increased fuel consumption and other inconveniences that not only add costs to passengers, but also affect the 36 billion pounds of air cargo flying around the U.S. annually. The past 10 years have been difficult for the U.S. airline industry, as evidenced by carriers' balance sheets. Financial losses have risen to more than $50 billion. Fuel costs have increased almost five times**. In 2011 alone, jet fuel has risen $0.75 per gallon. While airlines pressure manufacturers to develop and produce the most advanced aircraft engines and airframes that could run on alternative jet fuels, modernizing our nation's air traffic control system would save a tremendous amount of fuel, emissions and costs. Gary Kelly, CEO of Southwest Airlines, says that the first step is to develop a much more direct and efficient satellite-based air traffic control system. The Federal Aviation Administration (FAA) designed NextGen to meet this challenge. To make this concept a reality, **the federal government needs to allocate funds to match technology investments already made by the airline industry. Kelly says that a satellite-based system would make flying safer and more efficient**. Put simply, **it increases visibility; everyone shares the same precise view of aircraft in their vicinity. Airline and airport operations would be improved due to greater scheduling and operating reliability, thereby increasing efficiency and reducing emissions. The savings would enable airlines to compete more effectively in the global marketplace**. Projected fuel savings after NextGen implementation range from 6 percent to 15 percent. Kelly says that even a 6 percent reduction in fuel burn provides 1.16 billion gallons in fuel savings and 11 million tonnes of carbon dioxide savings. The FAA projects that by 2019, **NextGen** technologies, combined with runway improvements and new procedures, **will reduce delays by 21 percent and save 1.4 billion gallons of fuel**. Coming out ahead of the game, Southwest Airlines has committed millions of dollars to outfitting its entire fleet with GPS-based, NextGen technology. Recently, freight hauler and Airforwarders Association member Northern Air Cargo began using FAA's Wide Area Augmentation System, a part of NextGen, to guide its flights into formerly prohibitive airports during Alaska's bad weather conditions. This system not only allows more efficient airport access, but also keeps air cargo on time and keeps crewmembers safe while serving destinations in challenging environments. Without this enhanced capability, remote towns had to wait days for better weather conditions before planes with important cargo could land. **NextGen will also allow FAA controllers and airlines to make better decisions while keeping passengers and freight shippers better informed. With the new system, operators will be able to quickly identify risks, keeping everyone safe in the process. Since our nation's economy depends on aviation, NextGen will provide for continuous improvement while accommodating the future needs of air travel**. Although implementation of NextGen will be expensive and time-consuming, it is achievable if the FAA coordinates with the aviation community. **By focusing limited resources to design and implement GPS-based flight paths, cost savings will yield a return on investment in measurable reductions in fuel consumption and emissions. The effort already spans across many federal agencies and touches every aspect of the U.S. airspace system**. Time and again, the private sector has taken the lead on new initiatives to improve safety and service through actions and financial investments. **It is now time for the U.S. government to join the industry in providing necessary funds and guidance to improve aviation for travelers, shippers and the environment**.

#### Thus we offer the following plan:

#### The United States Federal Government should substantially increase investment in its transportation infrastructure by providing loan guarantees for adoption of the Next Generation Air Transportation System.

#### Advantage 1 is the Economy:

#### The US economy is dependent on functioning airlines- without NextGen, economic disaster is inevitable

**Deloitte Development ’11** [Private professional service firm, “Transforming the Air Transportation System: A business case for program acceleration,” <http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us_ad_Transforming_ATS_06132011.pdf>]

The NAS has a far-reaching affect on the air transportation industry and the U.S. economy. According to the FAA in their recent 2009 economic impact survey, civil aviation contributes $1 .3 trillion annually to the U.S. economy, or 5 .6% of gross domestic product (GDP). It generates nearly 12 million jobs with earnings of $369 billion. The same report cites that the U.S. civil aviation manufacturing industry remains the single largest contributor to the nation’s balance of trade, exporting $70 .5 billion and importing $22 .2 billion in relevant products in 2009, for a net surplus of $48 .3 billion . The industry contributes positively to the U.S. trade balance, creates high-paying jobs, keeps just-in-time business models viable and connects friends, family, and commercial opportunities. 7 **According to the FAA Web site, without NextGen, there will be gridlock in the skies in the medium term . By 2022, they estimate that failure to implement would cost the U .S . economy $22 billion annually in lost economic activity . That number grows to over $40 billion per year by 2033 if NextGen is not implemented . Even as early as 2015, FAA simulations show that without some of the initial elements of NextGen, the U .S . will experience delays far greater than what we are seeing today. Current estimates are that U .S . NAS capacity utilization will be reduced from 85% today to 65% of available usage by 2025 without NextGen** . 8 However, the current commercial traffic recession has significantly reduced travel demand and may affect that forecast as least in the short term . Increased capacity benefits are expected to mainly accrue to airline operators in the future as transformation initiatives are implemented . **According to a recently released FAA-sponsored study by NEXTOR, it was estimated that the total cost of all U .S . air transportation delays in 2007 was $32 .9 billion . This consisted of $8 .3 billion of increased airline operator expenses for crew, fuel, and maintenance, among other direct costs** **. It also consisted of another $16 .7 billion in passenger time lost due to schedule buffers, delayed flights, flight cancellations, and missed connections, in addition to another $3 .9 billion in welfare loss incurred by passengers who avoid air travel as the result of delays** . Finally, **the study found that air transportation delays reduced the 2007 U.S. GDP by $4 billion**. 9 The global dependence on air travel was highlighted in the recent European shutdown of flight operations for several days due to the eruption of an Icelandic volcano in April 2010. According to a recent International Air Transport Association (IATA) report, over 100,000 flights were canceled during the six days of airspace closure, and many European economies, let alone affected airlines, were financially affected. Hundreds of thousands of passengers and their related businesses were financially affected as well. 10 Although global ATS transformation initiatives may not have completely mitigated that situation, **it does illustrate our dependence on air travel and the significant economic affect ATS disruptions can cause**.

#### Our economy is dependent on a stable aviation industry- NextGen is vital to effectiveness

**Grizzle ’11** [David, Chief Operating Officer, Air Traffic Organization, Federal Aviation Administration, “The Economic Impact of Civil Aviation on the U.S. Economy,” <http://www.faa.gov/air_traffic/publications/media/FAA_Economic_Impact_Rpt_2011.pdf>]

Look around. In today’s ever-changing and innovative world, **aviation provides a vital link to economic opportunities at home and abroad. In the wake of global economic and financial uncertainties, runways have become the new main streets for cities and towns to get down to business and soar once more. In 2009, civil aviation supported over 10 million jobs, contributed $1.3 trillion in total economic activity and accounted for 5.2 percent of total U.S.** Gross Domestic Product (**GDP**). **Civilian aircraft engines, equipment and parts also contribute $75 billion toward the U.S. trade balance. Civilian aircraft engines, equipment and parts have been the top net export for the past decade. Our economic success clearly depends on the success of aviation**. So the Federal Aviation Administration (FAA) is committed to providing the safest, most efficient aerospace system in the world. As we move forward, the FAA will continue to invest in airports, and build the Next Generation Air Transportation System (NextGen). **NextGen is a transformation of the National Airspace System. It will add a suite of 21st century technologies and procedures to make air travel more efficient and green**. FAA’s Destination 2025 will provide the strategic bridge to accomplish the NextGen vision.

#### Economic decline causes World War III

O'Donnell **’09** [Sean, Baltimore Republican Examiner writer and Marine Corps Reserve squad leader,

"Will this recession lead to World War III?," 2-26-09, http://www.examiner.com/x- 3108-Baltimore-Republican- Examiner~y2009m2d26-Will-this- recession-lead-to-World-War- III]

**Could the current economic crisis** affecting this country and the world **lead to another world war?** The answer may be found by looking back in history. **One of the causes of World War I was the economic rivalry** that existed between the nations of Europe. In the 19th century France and Great Britain became wealthy through colonialism and the control of foreign resources. **This forced other up-and-coming nations** (such as Germany) **to be more competitive in world trade which led to rivalries and ultimately, to war. After the Great Depression ruined the economies** of Europe in the 1930s, **fascist movements arose to seek economic and social control. From there** fanatics like **Hitler and Mussolini took over** Germany and Italy **and led them both into World War II. With most of North America and Western Europe currently experiencing a recession, will competition for resources and economic rivalries with the Middle East, Asia, or South American cause another world war? Add in nuclear weapons and Islamic fundamentalism and things look even worse. Hopefully the economy gets better before it gets worse and the terrifying possibility of World War III is averted. However sometimes history repeats itself**.

#### Advantage 2 is Warming:

#### Aviation is becoming a large source of emissions that cause warming- NextGen is key to reduce air pollution

**Dillingham ’08** [Gerald L., PhD, Director, Physical Infrastructure Division, Government Accountability Office, “NextGen and Research and Development Are Keys to Reducing Emissions and Their Impact on Health and Climate,” May 6, <http://www.gao.gov/assets/120/119976.pdf>]

**Aviation contributes a** modest but **growing proportion of total U.S. emissions, and these emissions contribute to adverse health and environmental effects**. **Aircraft and airport operations, including those of service and passenger vehicles, emit ozoneand other substances that contribute to local air pollution, as well as carbon dioxide and other greenhouse gases that contribute to climate change**. EPA estimates that aviation emissions account for less than 1 percent of local air pollution nationwide and about 2.7 percent of U.S. greenhouse gas emissions, but these emissions are expected to grow as air traffic increases. Two **key federal efforts, if implemented effectively, can help to reduce aviation emissions—NextGen initiatives in the near term** and research and development over the longer term. For example, **NextGen technologies and procedures, such as satellite-based navigation systems, should allow for more direct routing, which could improve fuel efficiency and reduce carbon dioxide emissions. Federal research and development efforts**—led by FAA and NASA in collaboration with industry and academia—**have achieved significant reductions in aircraft emissions through improved aircraft and engine technologies, and federal officials and aviation experts agree that such efforts are the most effective means of achieving further reductions in the longer term**. Federal R&D on aviation emissions also focuses on improving the scientific understanding of aviation emissions and developing lower-emitting aviation fuels. **Next steps in reducing aviation emissions include managing NextGen initiatives efficiently; deploying NextGen technologies and procedures as soon as practicable to realize their benefits, including lower emissions levels**; and managing a decline in R&D funding, in part, by setting priorities for R&D on NextGen and emissions-reduction technologies. Challenges in reducing aviation emissions include designing aircraft that can simultaneously reduce noise and emissions of air pollutants and greenhouse gases; encouraging financially stressed airlines to purchase more fuel-efficient aircraft and emissions-reduction technologies; addressing the impact on airport expansion of more stringent EPA air quality standards and growing public concerns about the effects of aviation emissions; and responding to proposed domestic and international measures for reducing greenhouse gases that could affect the financial solvency and competitiveness of U.S. airlines.

#### NextGen substantially reduces both air and vehicle emissions

**NEXA Advisors ’11** [NEXA Advisors provides economic, financial, M&A and strategic advisory services to the aerospace, defense and geomatics sectors, “NextGen Equipage Fund,” April, <http://www.nextgenfund.com/files/downloads/NEF_Economic_Study.pdf>]

In 2008 GAO advocated accelerated deployment of NextGen to realize environmental benefits. xv **More efficient operations will lower unit emissions per passenger through lower fuel burn per passenger. Aviation emissions**, like other combustible emissions, **include pollutants that affect public health. The FAA estimates that NextGen could reduce aircraft greenhouse emissions by as much as 12 percent, which is equivalent to removing 2.2 million cars from the roads**. xvi Additionally, **improved air transportation will reduce the number of passengers diverted to their cars on the U.S. roadways and thereby reduce air pollution from cars and reduce congestion on the highways**. NextGen procedures will reduce communities’ exposure to noise through better air traffic management. For example, Continuous Descent Arrivals will allow aircraft to remain at cruise longer as they approach destination airports, use lower power levels, and thereby lower noise and emissions during landing. **These environmental benefits will also improve international flight efficiencies, further reducing emissions and greenhouse gasses**.

#### Temperature data and observational evidence confirm substantial global warming:

Morris Goodman, 1/25/2011 (past president of the Dearborn Democratic Club, Dearborn Press and Guide, " Local Republican, Democrat square off: Global warming, real or imagined? ", http://www.pressandguide.com/articles/2011/01/25/opinion/doc4d3f1f77e3b1d528573259.txt)

Strange, and even bizarre, weather events are occurring on a regular basis, with 2010 being reportedly the hottest year on record. Most of the world's renowned environmental scientists warn of the dangers of global warming. Thus, it is curious that Connolly should call the concept global warming itself “the product of a quasi-religious cult.” There is incontrovertible evidence that both polar ice caps are experiencing substantial melting and, as a result, world water levels are dangerously rising.

#### Warming causes human extinction

**Tickell ’08** [Oliver, Climate Researcher, The Gaurdian, “On a planet 4C hotter, all we can prepare for is extinction”, 8-11-08, <http://www.guardian.co.uk/commentisfree/2008/aug/11/climatechange>]

We need to get prepared for four degrees of global warming, Bob Watson told the Guardian last week. At first sight this looks like wise counsel from the climate science adviser to Defra. But the idea that we could adapt to a 4C rise is absurd and dangerous. Global warming on this scale would be a catastrophe that would mean, in the immortal words that Chief Seattle probably never spoke, "the end of living and the beginning of survival" for humankind. Or perhaps the beginning of our extinction. The collapse of the polar ice caps would become inevitable, bringing long-term sea level rises of 70-80 metres. All the world's coastal plains would be lost, complete with ports, cities, transport and industrial infrastructure, and much of the world's most productive farmland. The world's geography would be transformed much as it was at the end of the last ice age, when sea levels rose by about 120 metres to create the Channel, the North Sea and Cardigan Bay out of dry land. Weather would become extreme and unpredictable, with more frequent and severe droughts, floods and hurricanes. The Earth's carrying capacity would be hugely reduced. Billions would undoubtedly die. Watson's call was supported by the government's former chief scientific adviser, Sir David King, who warned that "if we get to a four-degree rise it is quite possible that we would begin to see a runaway increase". This is a remarkable understatement. The climate system is already experiencing significant feedbacks, notably the summer melting of the Arctic sea ice. The more the ice melts, the more sunshine is absorbed by the sea, and the more the Arctic warms. And as the Arctic warms, the release of billions of tonnes of methane – a greenhouse gas 70 times stronger than carbon dioxide over 20 years – captured under melting permafrost is already under way. To see how far this process could go, look 55.5m years to the Palaeocene-Eocene Thermal Maximum, when a global temperature increase of 6C coincided with the release of about 5,000 gigatonnes of carbon into the atmosphere, both as CO2 and as methane from bogs and seabed sediments. Lush subtropical forests grew in polar regions, and sea levels rose to 100m higher than today. It appears that an initial warming pulse triggered other warming processes. Many scientists warn that this historical event may be analogous to the present: the warming caused by human emissions could propel us towards a similar hothouse Earth.

#### Advantage 3 is Agriculture:

#### NextGen technology bolsters agricultural aviation- saves the ag industry

**House Transportation and Infrastructure Committee 2-8**-12 [“SUBCOMMITTEE HEARING EXAMINES GPS USE IN AVIATION INDUSTRY,” <http://transportation.house.gov/news/PRArticle.aspx?NewsID=1524>]

**GPS is at the center of FAA’s Next Gen air traffic control modernization program, which will optimize air traffic controller performance, consolidate obsolete facilities, enhance safety improvements, and improve operational efficiency of the national airspace system**. The Honorable John Porcari, Deputy Secretary of the U.S. Department of Transportation, testified to the benefits of NextGen this morning: “The FAA and industry have invested as much as $8 billion into NextGen. The FAA conservatively estimates that the benefits of NextGen will total $23 billion by 2018 and over $120 billion by 2030.” Porcari added, “In addition to the transportation applications I mentioned, **GPS is essential for** the operations of first responders, search and rescue, resource management, weather tracking and prediction, earthquake monitoring, national security, and critical infrastructure such as dams and power plants, financial transactions, surveying and mapping, and **industries such as precision agriculture, where the ability to fertilize plants with centimeter-level accuracy increases conservation, reduces waste run-off, and saves American farmers up to $14-30 billion, annually**.”

#### Global agriculture stability is approaching the brink- US technology spreads globally and is key to global food security

**Pardey and Alston ’10** [Philip G. Pardey is professor of science and technology policy in the Department of Applied Economics at the University of Minnesota, where he also directs the university’s International Science and Technology Practice and Policy Center and former senior research fellow at the International Food Policy Research Institute, and Julian M. Alston is a professor in the Department of Agricultural and Resource Economics of the University of California, Davis Washington D.C., “U.S. Agricultural Research in a Global Food Security Setting,” <http://csis.org/files/publication/100111_Pardey_USAgriRes_Web.pdf>]

**The United States has been pivotal to the crucial role of agricultural R&D in alleviating global hunger and addressing pervasive food security concerns**. Public and private investments in U.S. agricultural R&D constitute a large share of total global R&D spending. **Consequently,** **shifts in the amount and emphasis of agricultural R&D within the United States have measurable consequences for the pool of global scientific knowledge affecting agriculture worldwide**. Moreover, as well as being directly useful to farmers around the world, **many new ideas and innovations developed by U.S. scientists have been taken up at home and abroad by other scientists, spurring further rounds of innovation**. Thus the global food-security consequences of U.S. agricultural R&D are realized in two important ways. First, **U.S. agricultural R&D has fueled productivity growth in U.S. agriculture, which, given the importance of U.S. production in global food and feed staples** such as corn, wheat, and soybeans, **has been a significant element of growing food supplies globally**. Second, **R&D and technology spillovers from the United States to the rest of the world have had important implications for growth in supply of food and feed in the rest of world. Agricultural R&D is at a crossroads. The close of the twentieth century marked** changes in policy contexts, fundamental shifts in the scientific basis for agricultural R&D, and **shifting funding patterns for agricultural R&D in developed countries**. Even though rates of return to agricultural research are demonstrably very high, **we have seen a slowdown in spending growth and a diversion of funds away from farm productivity enhancement. Together these trends will contribute to a slowdown in farm productivity growth** at a time when the market has, perhaps, begun to signal the beginning of the end of a half-century and more of global agricultural abundance. **It is a crucial time for rethinking national policies and revitalizing multinational approaches for financing and conducting agricultural research**. Following a brief description of the links between agricultural R&D, productivity growth, and food security outcomes, we briefly review the patterns of agricultural productivity growth in the United States and elsewhere in the world. The evolving institutional and investment realities confronting agricultural R&D both at home and abroad are then presented, including developments in the public and private sectors. Agricultural R&D has some distinctive attributes that are critical to bear in mind—especially so when thinking about the food security and general economic implications of that research. These dimensions are briefly described before presenting and evaluating some practical policy actions for revitalizing agricultural R&D in the United States and globally to meet global food demand in the face of climate change and other challenges in the decades ahead.

#### Resource insecurity is the biggest risk of extinction- population growth guarantees the worst impacts

**Kolankiewicz ‘10** [Leon, environmental scientist and national natural resources planner, masters in environmental planning from U of British Columbia, worked with the US Fish and Wildlife Service, National Marine Fisheries Service, Alaska Dept of Environmental Conservation, U Wash, U New Mexico; Policy Brief #10-1, "From Big to Bigger How Mass Immigration and Population Growth Have Exacerbated America's Ecological Footprint." Progressives for Immigration Reform, <http://www.progressivesforimmigrationreform.org/2010/03/05/from-big-to-bigger-how-mass-immigration-and-population-growth-have-exacerbated-americas-ecological-footprint/>]

As of early 2010, the United States has a rapidly growing population of 308 million.33 In the 1990s, U.S. population expanded by nearly 33 million, the largest single decade of growth in American history since the decennial national censuses began in 1790. The 1990s exceeded even the peak decade of the Baby Boom, the 1950s by nearly five million (Figure 7). The 2001-2010 decade now drawing to a close will approach this record increment. Far from coasting to a stop or cessation in growth, U.S. population remains stubbornly and persistently high, and is literally growing with no end in sight. At current growth rates, every year more than three million net new residents are added to the U.S. population.34 The U.S. Census Bureau projects that by 2050, the population of the United States will have grown to 439 million. This is an increase of 131 million, or 43 percent, over our current population of 308 million. In 2050, if the Census Bureau’s current projections come to pass, the U.S. population would still be adding 3.45 million residents a year (more than today, though the annual growth rate will have declined somewhat), and there would be 5.7 million births compared to 4.3 million annual births today.35 Yet it is misleading to imply that increased births would be the dominant force behind this massive population growth. That is because many of those births would not occur, or at least would not occur in the United States, were it not for the persistently high levels of net immigration that are assumed by the Census Bureau in these projections. In 2050, the Bureau’s projections assume “net international migration” (immigration minus emigration) of 2.05 million, an increase from 1.34 million in 2010. This assumption reflects the Bureau’s professional judgment that domestic and international pressures to further increase already high immigration rates will only intensify. If the factors behind demographic change are divided between “net natural increase” (births minus deaths) and “net migration” (immigration minus emigration), then in 2050, 41 percent of the annual increment of 3.45 million would be attributable to net natural increase, and 59 percent would be due to net migration. However, even this breakdown understates the decisive influence that the level of immigration has in determining America’s demographic future. The full impact of immigration on demographic trends only becomes apparent when the U.S.-born descendents of immigrants are accounted for because, after all, these U.S. births would not have occurred but for the prior acts of migration by eventual parents that made them possible. When births to immigrants are accounted for, demographers at the Pew Research Center calculated recently that: If current trends continue, the population of the United States will rise to 438 million in 2050, from 296 million in 2005, and 82 percent of the increase will be due to immigrants arriving from 2005 to 2050 and their U.S.-born descendants.36 [emphasis added] Figures 8-10 graphically illustrate the powerful role of immigration policy in shaping current and future U.S. demographic trends. Figure 8 shows U.S. population growth from 1790 to 1970; the steepening curve, one characterized by larger and larger increments over time is a shape characteristic of all phenomena experiencing exponential growth. If, however, the 1970 levels of demographic components (net immigration, fertility or birth rates, and mortality rates) had been maintained over the decades that followed, the growth trajectory would have appeared more like that of the curve in Figure 9, rather than the much steeper curve in Figure 8. At the time of the first celebration of Earth Day in 1970, young environmentalists who had just finished reading Paul Ehrlich’s best-selling 1968 book The Population Bomb and listening to one of Earth Day Founder Senator Gaylord Nelson’s moving speeches believed whole-heartedly in the cause and necessity of U.S. and global population stabilization. They endorsed the view of popular cartoonist Walt Kelly’s character Pogo that, “We have met the enemy and he is us” (a play on words of the famous line by Commodore Perry: “We have met the enemy, and they are ours”). In other words, the more of “us” there are, the more “enemies,” or at least environmental burdens Mother Earth faces. If this generation had been able to realize its vision of slowing and then stopping U.S. population growth and reining in the environmental degradation it caused, the trajectory might have looked something like that of the curve in Figure 9. Growth would have tapered off and America’s population would never have hit 300 million. Instead, because of the rapidly rising wave of immigration unleashed by the Immigration and Nationality Act of 1965, Americans and their environment are facing the grim, and utterly unsustainable, future of ever-greater demographic pressures represented by Figure 10. What bearing do these “inconvenient truths” have on America’s Ecological Footprint? In a nutshell — everything. Current immigration levels are enlarging the already enormous U.S. Ecological Footprint and ecological deficit. With the U.S. population booming by more than 10 percent a decade, the only way to maintain — much less reduce the current, unacceptable size of our EF is to reduce our per capita consumption every decade by more than 10 percent — not just for one or five decades, but indefinitely, for as long as population growth continues. One doesn’t have to be a physicist or a political scientist to recognize that an achievement of this magnitude would be technically and politically unrealistic, if not impossible. America is already in ecological overshoot, and massive population growth driven by high immigration rates only serves to exacerbate the situation. Figure 11 shows current trends with respect to the Ecological Footprint and Biocapacity of the United States from 1961 through 2006.37 As is evident from the crossing lines in this graph, America’s EF first surpassed its biocapacity in the late 1960s, just prior to the first Earth Day. Since then the gap or ecological deficit has only continued to widen. While the addition of each new American does not necessarily increase our per capita or per person (as opposed to our aggregate) EF — only increased per capita resource consumption and CO2 generation does that, it does directly decrease our per capita biocapacity, and thus increases our ecological deficit. Population growth does this in two ways. First, given a fixed biocapacity — that is, a land base that is demonstrably finite and constant, with fixed maximum acreages of potential cropland, grazing land, forestland, and fishing grounds — it is a simple mathematical reality that adding more people who depend on this ecologically productive land base reduces per capita biocapacity. Second, the more than three million new Americans added every year require space and area in which to live, work, play, shop, and attend school. As open space is converted into the “built-up land” category, some combination of forestland, cropland, and grazing land is inevitably developed. (In the 1950s, Orange County, California, home to Disneyland, was touted by developers as “Smog Free Orange County,” but by the 1990s, after four decades of relentless sprawl development to accommodate Southern California’s multiplying millions, it became known as “Orange Free Smog County”). In this way, our country’s biocapacity is steadily and inexorably diminished by a growing population. The USDA Natural Resources Conservation Service’s (NRCS’s) National Resources Inventory (NRI) estimated that the United States lost 44 million acres of cropland, 12 million acres of pastureland, and 11 million acres of rangeland from 1982 to 1997, for a total loss to our agricultural land base of 67 million acres over this 15-year period.38 (One explanation of the much higher acreage of lost cropland than pastureland and rangeland was that a larger fraction of the cropland acreage was not “lost” per se, but deliberately “retired” from active production into the so-called Conservation Reserve Program or CRP, a program administered by the U.S. Department of Agriculture’s Farm Service Agency. These were lands of marginal quality and high erodibility, lands on which modern, intensive agriculture is unsustainable). All 49 states inventoried lost cropland. Overall cropland losses continued in the next NRI published in 2007.39 The impacts of the loss of this land extend beyond agriculture. The USDA has estimated that each person added to the U.S. population requires slightly more than one acre of land for urbanization and highways.40 Clearly, more land is required as more people are added to our population. A comparison of NRI acreage — 25 million acres of newly developed land over the 1982-1997 period and 67 million acres of agricultural land lost shows that development per se is not responsible for all or even half of agricultural land loss. Arable land is also subject to other natural and manmade phenomena such as soil erosion (from both water and wind), salinization, and waterlogging that can rob its fertility, degrade its productivity and eventually force its retirement or increase its dependency on ever greater quantities of costly inputs like (fossil-fuel derived) nitrogen fertilizers. Arguably, however, much of these losses are due to over-exploitation by intensive agricultural practices needed to constantly raise agricultural productivity (yield per acre) in order to provide ever more food for America’s and the world’s growing populations and meat-rich diets. Thus, the potent combination of relentless development and land degradation from soil erosion and other factors is reducing America’s productive agricultural land base even as the demands on that same land base from a growing population are increasing. If the rates of agricultural land loss that have prevailed in recent years were to continue to 2050, the nation will have lost 53 million of its remaining 377 million acres of cropland, or 14 percent, even as the U.S. population grows by 43 percent from 308 million to 440 million.41 Continuing on to 2100, the discrepancy between booming population numbers and declining cropland acreage widens even further (Figure 12). The Census Bureau’s “middle series” projection (made in the year 2000) is 571 million, more than a doubling of U.S. population in 2000.42 (The “highest serious” projection was 1.2 billion, and actual growth since these projections were made has been between the middle and highest series). If the same rate of cropland loss were to continue, the United States would lose approximately 106 million acres of its remaining 377 million acres of cropland, or nearly 30 percent. Cropland per capita, that is, the acreage of land to grow grains and other crops for each resident, would decline from 1.4 acres in 1997 to 0.47 acres in 2100, a 66 percent reduction. If this occurs, biotechnology will need to work miracles to raise yields per acre in order to maintain the sort of diet Americans have come to expect. These ominous, divergent trends — an increasing population and declining arable land, have actually led some scientists to think the unthinkable: that one day America may no longer be able to feed itself, let alone boast a food surplus for export to the world. In the 1990s, Cornell University agricultural and food scientists David and Marcia Pimentel and Mario Giampietro of the Istituto Nazionale della Nutrizione in Rome, Italy, argued that by approximately 2025, the United States would most likely cease to be a food exporter, and that food grown in this country would be needed for domestic consumption. These findings suggest that by 2050, the amount of arable land per capita may have dropped to the point that, “the diet of the average American will, of necessity, include more grains, legumes, tubers, fruits and vegetables, and significantly less animal products.”43 While this might, in fact, constitute a healthier diet both for terrestrial and aquatic ecosystems and for many calorically and cholesterol-challenged Americans, it would also represent a significant loss of dietary choice. As nations get wealthier, they tend to “move up the food chain” in the phrase of the Earth Policy Institute’s Lester Brown, that is they consume higher trophic level, more ecologically demanding and damaging meat and dairy products, but were these predictions to hold true, Americans, for better or worse, would be moving in the opposite direction. From 2005 to 2006, the U.S. per capita ecological deficit widened from 10.9 to 11.3 acres, continuing the long-term trend depicted in Figure 11. Assuming the Census Bureau’s official population projections for 2050 actually do happen, the U.S. population would be 43 percent larger than at present. Even if there were no further increase in the U.S. per capita EF, which is, as can be seen from the 45-year trend in Figure 11, a rather generous assumption, a 43 percent increase in the U.S. population would correspond to a further 43 percent reduction in biocapacity per capita, even without the types of continuing land and resource degradation just discussed above for cropland. The 2006 U.S. biocapacity was 10.9 global acres (ga) per capita. By 2050, if current U.S. demographic trends and projections hold, this will have been reduced to 6.2 ga per capita. If the per capita American EF of consumption were to remain at the 2006 value of 22.3 ga, the ecological deficit in 2050 would increase to 16.1 ga per capita. In essence, if we American “Bigfeet” do not opt for a different demographic path than the one we are treading now, Ecological Footprint analysis indicates unequivocally that we will continue plodding ever deeper into the forbidden zone of Ecological Overshoot, trampling our prospects for a sustainable future. Incidentally, we would also be trampling the survival prospects for many hundreds of endangered species with which we share our country. These birds, mammals, fish, amphibians, reptiles, butterflies, mussels, and other taxa are menaced with extinction by our aggressive exploitation of nearly every ecological niche, nook, and cranny. In nature, no organism in overshoot remains there for long. Sooner or later, ecosystem and/or population collapse ensues. Are we humans, because of our unique scientific acumen, immune from the laws of nature that dictate the implacable terms of existence to all other species on the planet? Our political, economic, and cultural elites seem to think so, and en masse, we certainly act so. Yet ironically, many scientists themselves believe otherwise: that all-too-human hubris, unless checked by collective wisdom and self-restraint, will prove to be our undoing, and that **civilization as we know it may unravel**.44

#### Observation 2 is Solvency:

#### New federal loans are key to NextGen progress

**Schofield 5-14**-12 [Adrian, Aviation Week & Space Technology, “NextGen Emerges,” Vol. 174, Issue 17, EBSCO]

NextGen was launched in 2004, the result of an ambitious call to transform the U.S. air transport system by 2025. **Potential threats to the FAA's budget are an ever-present concern, but an even bigger question mark has been how aircraft operators will pay for the equipment needed to operate in the modernized environment. U.S. airlines are strapped for cash and are reluctant to invest in new avionics unless they can see a compelling business case**. The FAA is showing signs that it is prepared to help airlines pay for at least some equipment. As part of its data communications program, it intends to set aside $80 million to help carriers make the necessary upgrades to their aircraft. On a broader scale, **the equipage funding solution with the most potential is public-private partnerships, where government loan guarantees would help unlock private equity at reasonable rates**. One such initiative, called **the NextGen Fund, has been proposed by Nexa Capital Partners**, with the backing of ITT Exelis. The plan is for participating airlines to pay back equipage costs as the financial benefits of NextGen emerge. **While the outline of this plan was unveiled more than a year ago, there has been little movement since then. The NextGen Fund's managers have been waiting for the government to provide the commitments required for the program to work**.

#### Uncertainty has hindered NextGen investment- the signal of the plan causes NextGen adoption

**Eno Transportation Foundation 4-5**-12 [The Eno Transportation Foundation is a neutral, non-partisan think-tank that promotes policy innovation and provides professional development opportunities across the career span of transportation professionals, “NextGen: Aliging Costs, Beneftis, and Political Leadership,” <http://www.infrastructureusa.org/nextgen-aliging-costs-beneftis-and-political-leadership/>]

Fourth, **NextGen faces funding issues that pose some very difficult policy decisions. Work on the ground infrastructure aspect of NextGen is currently funded by the Facilities and Equipment account of the AATF and some progress, albeit slow, has been made on this project**. However, **recent reports by the Congressional Budget Office and the Government Accountability Office show that current AATF revenues are inadequate to fund NextGen**. Despite recent resolution over the long overdue FAA reauthorization bill, **little progress has been regarding securing a full-fledged modernization funding plan**. The current bill authorizes a flat amount of $2.731 billion over four years for NextGen and funding is still subject to annual appropriation. **A project that is already endangered by uncertainties regarding its worth would benefit from a stable and adequate funding source**.

## \*\*\*Inherency\*\*\*

## Inherency- No NextGen funding now

#### Funding for NextGen is frozen-

**Poole 2-24**-12 [Robert, Searle Freedom Trust Transportation Fellow and Director of Transportation Policy at the Reason Foundation, “Air Traffic Control Reform Newsletter #90,” <http://reason.org/news/show/air-traffic-control-reform-news-90>]

**After 23 extensions since the nominal expiration of the last FAA authorization** (Sept. 30, 2007), **Congress finally enacted and the President signed the bill.** **Despite some blather by politicians about how the bill opens the door to ATC modernization by fully funding NextGen, the bill does nothing of the kind**. In fact, **it freezes for four years the FAA budget account** (Facilities & Equipment) **from which NextGen projects** (and a lot of other capital expenditures) **are paid for.** **All the other main accounts are also frozen for four years—airport grants** (AIP), **operations** (mostly payroll), **and research** (tiny), making this the first FAA reauthorization ever that does not increase spending. Actually, however, the impact is worse than flat. That’s because the largest budget category, the $9.6 billion per year Operations account, almost certainly will not remain at that level during the four-year period. Doing so would mean violating the terms of the FAA’s union contracts, which provide for annual increases in compensation. Hence, when Congress each year gets around to appropriating the money for FAA, if it sticks with the overall $15.9 billion per year FAA budget total, something else will have to be cut if Operations goes up each year. It won’t be AIP, because that is the one category that is on the “mandatory” side of the budget. The Research account is too small to matter. So **the account that takes the hit will be**—you guessed it-- Facilities & Equipment (a.k.a. **NextGen**). Just to illustrate the magnitudes, assume the Operations budget increases by 5% in each of FY2013, 2014, and 2015. By FY2015, it would have increased from $9.653 billion to $11.174 billion, and the four-year difference would be $3.024 billion. Subtracting that from the budget’s four-year total for F&E ($10.906 billion) would reduce F&E to $7.872 billion over four years. So **FAA would have to defer some $3 billion of F&E projects into future years, further stretching out the transition to NextGen**. (And this example ignores the possibility of across-the-board cuts in all federal discretionary spending as a future deficit-reduction measure.)

#### NextGen funding is uncertain- no short-term commitments

**Eno Center for Transportation ’12** [The Eno Center for Transportation is a neutral, non-partisan think-tank that promotes policy innovation and leads professional development in the transportation industry, “NextGen Aligning Costs, Benefits and Political Leadership,” April, <http://www.infrastructureusa.org/wp-content/uploads/2012/04/nextgen-paper.pdf>]

Securing funding for infrastructure. **The AATF has relied on increasing general fund contributions in recent years to meet increasing outlays. This has led to a rapidly depleting uncommitted funds level. In this fiscal climate, it is not reasonable to continue to expect general fund injections**. Furthermore, **there is no clear source of funds for NextGen in the upcoming years to ensure its continuity. There is a lack of an equitable long term funding mechanism for FAA’s portion of NextGen’s capital investment needs**.

#### NextGen requires new funding-

**Deloitte Development ’11** [Private professional service firm, “Transforming the Air Transportation System: A business case for program acceleration,” <http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us_ad_Transforming_ATS_06132011.pdf>]

First, **under the acceleration scenario, the study assumes that funding for the multibillion dollar NextGen program will be increased . Accelerating the program would require substantial annual increases by pulling forward funding intended to be spent for the 2021–2025 budget years . If the relevant constituents support acceleration of NextGen, this action would likely require an exemption from the president’s five-year budget freeze for the discretionary civil budget**.

#### No funding for NextGen

**Bogdan ’12** [Jennifer, staff writer for Press of Atlantic City, <http://www.pressofatlanticcity.com/communities/eht/uncertainty-about-benefits-funds-hurting-next-generation-air-transportation-system/article_606a1c4a-86a1-11e1-9a37-001a4bcf887a.html>]

Airline carriers are reluctant to take on the costs associated with upgrading planes to accommodate the Next Generation Air Transportation System because there is no clear funding stream for the project and there is disagreement about its benefits, according to a study by a Washington, D.C., think tank.

## Inherency- Poor airlines now

#### US airlines are horribly outdated- GPS technologies are necessary to overcome inefficiency

**Deloitte Development ’11** [Private professional service firm, “Transforming the Air Transportation System: A business case for program acceleration,” <http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/AD/us_ad_Transforming_ATS_06132011.pdf>]

**The current ground-based system of radar, radio beacons, voice communications, and related systems and processes requires certain safety procedures to be followed, such as minimum separation distances between aircraft both vertically and horizontally, and altitude of flight and reserves for fuel . These systems and processes were designed when air traffic was limited and navigation, weather forecasting, and communications technology was much less mature, and certainly before the invention and deployment of the game changing** U .S . government-owned global positioning system (**GPS**) . **Air travel has become more frequent, the price of fuel has increased, and the dependence on proper operation of the system has become more acute . Disruptions such as weather delays and capacity limitation at airports have increased costs to airlines, passengers, and the global economy**.

#### US airlines are in disrepair- new investments have stalled

**Star Telegram 5-31**-12 [“FAA plan due soon is not ready,” <http://www.star-telegram.com/2012/05/31/4000000/faa-plan-due-soon-is-not-ready.html>]

**A Federal Aviation Administration plan to consolidate hundreds of outdated facilities isn't ready two weeks before a deadline set by Congress**, potentially delaying a $40 billion program to modernize the nation's World War II-era air traffic-control system. **Aviation officials told lawmakers Thursday that they haven't agreed on a plan to close, consolidate or realign more than 400 air traffic-control facilities nationwide, many of which are more than 50 years old and have fallen into disrepair**.

**Regulations for air traffic controllers are failing now**

**Washington Post 6-15**-12

http://www.mysanantonio.com/news/article/Air-traffic-controllers-aren-t-keeping-to-no-doze-3638251.php

**New regulations intended to keep air traffic controllers from dozing off on duty have been violated nearly 4,000 times, according to internal Federal Aviation Administration documents. After a controller fell asleep last year in the tower at Reagan National Airport, it emerged that such lapses were commonplace at airports across the country, and the FAA said it would act to curb the problem. But a memo to more than 400 frontline FAA managers this month said a five-month internal review this year uncovered repeated violations of a requirement that controllers have at least nine hours off between shifts. More than half of the airport control towers were found to have violated the rule at least once. One facility broke the rule scores of times. The FAA suspended or fired several controllers for sleeping on the job last year, and the controversy contributed to the ouster of the head of the FAA's air traffic control organization**. Among those incidents was one at Reagan National Airport when the pilots of two late-night jet liners had to land on their own after the controller supervisor who was the lone man on duty fell asleep. **A Knoxville, Tenn., controller working the overnight shift made a bed for himself and slept during a five-hour period when seven planes landed.** And a controller at a Nevada airport slept as a medical flight sought to land with a sick patient. **A scheduling practice that let controllers pack a full workweek into just four days was singled out as the primary reason they were coming to work too tired to stay awake.**

## \*\*\*Economy Advantage\*\*\*

## Economy- Aviation key

#### Aviation prosperity is a tremendous asset to the US economy

**AIAA ’09** [Aerospace Industries Association of America, “Aerospace and Defense: The Strength to Lift America,” http://www.aia-aerospace.org/assets/wp\_strength\_aug09.pdf]

**Commercial aviation is a vital engine for the American economy. The U.S. civil aviation industry** (which includes aircraft, engines and parts manufacturers, airlines, airports, and general aviation) **directly or indirectly generates over ten million jobs and $1.1 trillion in economic activity**.9 **All of that economic activity is funneled through the nation’s air traffic system. As long as the system can accommodate the demand for air travel and just-in-time express delivery, the growth of jobs and economic activity associated with civil aviation will continue. That system is safe, but antiquated and highly inefficient**. ATC modernization is essential to helping airlines return to profitability. It is essential to reducing fuel consumption and airplane emissions. **If, however, the national airspace is not modernized to handle demand, the stimulating effect of America’s commercial aviation industry is at risk**.

#### A thriving aerospace sector yields billions in trade surplus

**AIAA ’09** [Aerospace Industries Association of America, “Aerospace and Defense: The Strength to Lift America,” http://www.aia-aerospace.org/assets/wp\_strength\_aug09.pdf]

**Government policies that advance free and fair trade in global markets are vital to our industry and our country. Aerospace brings in the biggest foreign trade surplus of any manufacturing sector**.7 **The industry’s $57 billion surplus in 2008 came from exporting nearly 40 percent of all aerospace production and, during some economic quarters, nearly 70 percent of civil aircraft and components**.8 **That’s American economic growth being paid for by other countries’ money. And it can only happen when government policies allow the things American workers build to compete fairly in international markets**.

## Economy- NextGen key

#### The economy is doomed without NextGen- aviation is pivotal to growth

**Hess ’11** [Dave Hess is the president of Pratt & Whitney based in East Hartford, which manufactures engines powering more than 30 percent of the world's passenger aircraft, “Modern Air Control Vital To Economy, Jobs,” Sept. 27, <http://articles.courant.com/2011-09-27/news/hc-op-hess-nextgen-0927-20110927_1_air-traffic-radar-air-routes>]

But with one important program waiting for funding in Congress, there's really no room to disagree — it's plain right now that **funding the Next Generation Air Transportation System will bring enormous returns to the U.S. economy for years to come. NextGen will completely replace our World War II-era analog, ground radar-based air traffic control infrastructure with a 21st-century, all digital, satellite-guided system. With an annual federal investment of roughly $1 billion, NextGen is on time and under budget and will produce economic and environmental benefits that will more than pay for the cost of the program less than three years after it's fully implemented**. According to independent experts at the Deloitte firm, **this small investment will yield nearly $300 billion in U.S. economic benefits** over the next 25 years. Furthermore, **every year before its completion will cost our economy roughly $40 billion in air traffic delays, wasted fuel and lost productivity**. Unfortunately, I don't think most Americans know what NextGen is. We tend to focus on roads, rail and ports when we talk about transportation infrastructure. Yet, **in a world increasingly dependent on international commerce and coast-to-coast travel, speedy, reliable air transportation is just as important**. And as safe as air travel is right now, the NextGen overhaul will make it even safer, more efficient and more environmentally friendly. It's almost unbelievable, but 50,000 flights a day in the U.S. are controlled much the same as they were in 1960 — by World War II-era ground radar stations. Today's air routes follow radio beacons installed in the very spots where bonfires guided Lindberg-era airmail pilots in the 1930s. NextGen will use precision satellite technology for navigation and surveillance, allowing planes to safely fly closer together. **NextGen will enable pilots to choose more direct routes, no longer limiting them to zigzagging between ground-based radar stations**. The results? Safer and more efficient flights, fewer weather delays and reduced emissions and noise. The 793 ground transceivers that will replace conventional radar by linking controllers and aircraft to global positioning satellites will be in place by 2013. But NextGen cannot work unless commercial airlines and private aircraft that operate in congested space install avionics systems designed to send and receive NextGen data. That equipment, however, isn't required until 2020. That's a seven-year gap with a half-complete system that will cost our economy $35 billion. Collectively, airlines and private aircraft owners will pay billions of dollars to upgrade to NextGen-enabling equipment. Although the future economic and environmental benefits of NextGen are significant, **the current economic state of the civil aviation industry makes capital investments difficult**. Airborne NextGen equipment is transportation infrastructure for the 21st century. Using the right public-private partnership financial incentives and investments, industry and government can not only finish building NextGen early, but also deliver significant safety, economic and environmental improvements to our national airspace system. **We need to get our economy moving again**. And **the civil aviation industry has a critical role to play. Civil aviation directly and indirectly contributes more than $1.3 trillion to the U.S. economy each year — or 5.6 percent of gross domestic product. The value of air travel** — leisure and business — **is almost inestimable. Hotels and resorts, conference centers, rental car companies, tourist attractions and just-in-time deliveries are not viable without reliable, efficient, affordable air travel. In today's economy** — and even more so tomorrow's — **millions of jobs depend on keeping the air travel system healthy. The business case for NextGen is undisputable**. For a Congress charged with handling "the people's business," this decision should be an easy one.

#### NextGen uniquely bolsters the economy- aviation is the most important industry

**Travel Pulse ’11** [“ATA: NextGen Air Traffic Control Will Boost U.S. Economy,” Feb 9, <http://www.travelpulse.com/ata-nextgen-air-traffic-control-will-boost-us-economy.html>]

**Commercial aviation drives $1.2 trillion in economic activity annually, supports nearly 11 million jobs and is responsible for more than 5 percent of the nation's gross domestic product. "No other industry has such a powerful economic multiplier effect as commercial aviation**," said ATA President and CEO Nicholas E. Calio. "Aviation provides the key connections that make the economy grow. **If we want to double our nation's exports over the next five years, there is no way to do it without commercial aviation**." ATA called on Congress to view FAA reauthorization as a jobs bill, as an investment in NextGen air traffic management that will lead to the creation of 150,000 jobs immediately, and more over time. Other countries, including China, are investing heavily in their aviation infrastructure, to help transform their economies. China recently announced the equivalent of a $228 billion investment in aviation. "[**NextGen] is about the underlying strength of the U.S. economy and the ability of American industries to compete -- and win -- on the global stage**," Calio said. "**The antiquated, ground-based air traffic control system in place today is a major drag on productivity and job creation.** **By accelerating NextGen, more than 150,000 jobs can be created, fuel consumption can be cut by as much as 12 percent and delays, which cost the United States $31 billion in 2007 alone, can be reduced**." ATA urged that Congress and the administration craft a cohesive national airline strategy that would include accelerated deployment of NextGen and a rationalizing of the industry's tax burden, which has soared from $3.7 billion in 1990 to more than $16 billion in 2010.

#### NextGen is key to the economy

U.S. Rep. Patrick **Meehan**   Tuesday February 14, 20**12**[“Meehan Says NextGen Air Traffic Control Investment Key to Regional Economy” <http://meehan.house.gov/latest-news/meehan-says-nextgen-air-traffic-control-investment-key-to-regional-economy/>

**Patrick Meehan (PA-07) today urged President Obama to sign the Federal Aviation Administration reauthorization bill, saying key investments in the bill like the NextGen air traffic control system will boost our regional economy and improve the safety of our skies**. Meehan made the comments while touring the air traffic control tower and meeting with controllers at the Philadelphia International Airport. **“This bipartisan bill means faster and safer travel, lower emissions, and an increase in private sector jobs,” said Meehan. “It will also advance badly needed modernization of our air traffic control system, which is essential in our congested mid-Atlantic airspace that sees one out of every six flights in the world.** This is particularly important here at Philadelphia International – no airport in the northeast sees more takeoffs and landings.” **Meehan said the FAA reauthorization legislation will advance the modernization of the country’s air traffic control system to a GPS-based system known as NextGen. This will help ease congestion, decrease delay times and reduce fuel waste**. NextGen technologies are expected to bring a net $281 billion to the overall U.S. economy.

## Impacts- Nuclear war

#### Economic decline causes every major impact

**Green ‘09** [Michael J., Senior Advisor and Japan Chair at the Center for Strategic and International Studies (CSIS) and Associate Professor at Georgetown University. Asia Times Online, 3.26.9, http://www.atimes.com/atimes/Asian\_Economy/KC26Dk01.html AD 6/30/09]

**Facing the worst economic crisis since the Great Depression, analysts** at the World Bank and the US Central Intelligence Agency **are just beginning to contemplate the ramifications for international stability if there is not a recovery in the next year**. For the most part, **the focus has been on fragile states such as some in Eastern Europe**. However, **the Great Depression taught us that a downward global economic spiral can even have jarring impacts on great powers. It is no mere coincidence that the last great global economic downturn was followed by the most destructive war in human history. In the 1930s, economic desperation helped fuel autocratic regimes and protectionism in a downward economic-security death spiral that engulfed the world in conflict**. This spiral was aided by the preoccupation of the United States and other leading nations with economic troubles at home and insufficient attention to working with other powers to maintain stability abroad. Today's challenges are different, yet 1933's London Economic Conference, which failed to stop the drift toward deeper depression and world war, should be a cautionary tale for leaders heading to next month's London Group of 20 (G-20) meeting. **There is no question the US must urgently act to address banking issues and to restart its economy. But the lessons of the past suggest that we will also have to keep an eye on those fragile threads in the international system that could begin to unravel if the financial crisis is not reversed early in the** Barack **Obama administration and realize that economics and security are intertwined in most of the critical challenges we face**. A disillusioned rising power? Four areas in Asia merit particular attention, although so far the current financial crisis has not changed Asia's fundamental strategic picture. China is not replacing the US as regional hegemon, since the leadership in Beijing is too nervous about the political implications of the financial crisis at home to actually play a leading role in solving it internationally. Predictions that the US will be brought to its knees because China is the leading holder of US debt often miss key points. China's currency controls and full employment/export-oriented growth strategy give Beijing few choices other than buying US Treasury bills or harming its own economy. Rather than creating new rules or institutions in international finance, or reorienting the Chinese economy to generate greater long-term consumer demand at home, Chinese leaders are desperately clinging to the status quo (though Beijing deserves credit for short-term efforts to stimulate economic growth). The greater danger with China is not an eclipsing of US leadership, but instead the kind of shift in strategic orientation that happened to Japan after the Great Depression. Japan was arguably not a revisionist power before 1932 and sought instead to converge with the global economy through open trade and adoption of the gold standard. **The worldwide depression and protectionism of the 1930s devastated the newly exposed Japanese economy and contributed directly to militaristic and autarkic policies in Asia as the Japanese people reacted against what counted for globalization at the time. China today is similarly converging with the global economy**, and many experts believe China needs at least 8% annual growth to sustain social stability. Realistic growth predictions for 2009 are closer to 5%. Veteran China hands were watching closely when millions of migrant workers returned to work after the Lunar New Year holiday last month to find factories closed and jobs gone. There were pockets of protests, but nationwide unrest seems unlikely this year, and Chinese leaders are working around the clock to ensure that it does not happen next year either. However, the economic slowdown has only just begun and nobody is certain how it will impact the social contract in China between the ruling communist party and the 1.3 billion Chinese who have come to see President Hu Jintao's call for "harmonious society" as inextricably linked to his promise of "peaceful development". If the Japanese example is any precedent, a sustained economic slowdown has the potential to open a dangerous path from economic nationalism to strategic revisionism in China too. Dangerous states **It is noteworthy that North Korea, Myanmar and Iran have all intensified their defiance in the wake of the financial crisis, which has distracted the world's leading nations, limited their moral authority and sown potential discord. With Beijing worried about the potential impact of North Korean belligerence or instability on Chinese internal stability, and leaders in Japan and South Korea under siege in parliament because of the collapse of their stock markets, leaders in the North Korean capital of Pyongyang have grown increasingly boisterous about their country's claims to great power status as a nuclear weapons state**. The junta in Myanmar has chosen this moment to arrest hundreds of political dissidents and thumb its nose at fellow members of the 10-country Association of Southeast Asian Nations. Iran continues its nuclear program while exploiting differences between the US, UK and France (or the P-3 group) and China and Russia - differences that could become more pronounced if economic friction with Beijing or Russia crowds out cooperation or if Western European governments grow nervous about sanctions as a tool of policy. **It is possible that the economic downturn will make these dangerous states more pliable because of falling fuel prices (Iran) and greater need for foreign aid (North Korea and Myanmar), but that may depend on the extent that authoritarian leaders care about the well-being of their people or face internal political pressures linked to the economy**. So far, **there is** little evidence to suggest either and **much evidence to suggest these dangerous states see an opportunity to advance their asymmetrical advantages against the international system.**

#### If the recession turns into a depression, multiple scenarios of nuclear war take place:

James Cusick, 3/18/2009 Sunday Herald (Scotland)

http://www.sundayherald.com/oped/opinion/display.var.2495478.0.dont\_bank\_on\_financial\_trouble\_being\_resolved\_without\_conflict.php

I'm not saying that America is about to declare war on China, or that Germany is going to invade France. But there are profound economic stresses in central Europe that could rapidly turn into conflict in the bankrupt Baltic states, Hungary, Ukraine. And if the Great Recession, as the IMF's Dominique Strauss-Kahn called it last week, turns into a Great Depression, with a prolonged collapse in international trade and financial flows, then we could see countries like Pakistan disintegrate into **nuclear anarchy and war** with neighbouring India, which will itself be experiencing widespread social unrest. Collapsing China could see civil war too; Japan will likely re-arm; Russia will seek to expand its sphere of economic interests. Need I to go on?

#### US economic decline causes great WMD wars

Nyquist ‘05 [J.R. renowned expert in geopolitics and international relations, WorldNetDaily contributing editor, “The Political Consequences of a Financial Crash,” February 4, www.financialsense.com/stormw...2005/0204.html]

Should the United States experience a severe economic contraction during the second term of President Bush, the American people will likely support politicians who advocate further restrictions and controls on our market economy – guaranteeing its strangulation and the steady pauperization of the country. In Congress today, Sen. Edward Kennedy supports nearly all the economic dogmas listed above. It is easy to see, therefore, that the coming economic contraction, due in part to a policy of massive credit expansion, will have serious political consequences for the Republican Party (to the benefit of the Democrats). Furthermore, an economic contraction will encourage the formation of anti-capitalist majorities and a turning away from the free market system. The danger here is not merely economic. The political left openly favors the collapse of America’s strategic position abroad. The withdrawal of the United States from the Middle East, the Far East and Europe would catastrophically impact an international system that presently allows 6 billion people to live on the earth’s surface in relative peace. Should anti-capitalist dogmas overwhelm the global market and trading system that evolved under American leadership, the planet’s economy would contract and untold millions would die of starvation. Nationalistic totalitarianism, fueled by a politics of blame, would once again bring war to Asia and Europe. But this time the war would be waged with mass destruction weapons and the United States would be blamed because it is the center of global capitalism. Furthermore, if the anti-capitalist party gains power in Washington, we can expect to see policies of appeasement and unilateral disarmament enacted. American appeasement and disarmament, in this context, would be an admission of guilt before the court of world opinion. Russia and China, above all, would exploit this admission to justify aggressive wars, invasions and mass destruction attacks. A future financial crash, therefore, must be prevented at all costs. But we cannot do this. As one observer recently lamented, “We drank the poison and now we must die.”

#### Economic decline causes nuclear and biological war

**Kerpen ‘08** [Oct. 28 policy director for Americans for Prosperity, Phil, From Panic to Depression?, <http://article.nationalreview.com/?q=OWQ3ZGYzZTQyZGY4ZWFiZWUxNmYwZTJiNWVkMTIxMmU=>]

It’s important that we avoid all these policy errors — not just for the sake of our prosperity, but for our survival. The Great Depression, after all, didn’t end until the advent of World War II, the most destructive war in the history of the planet. In a world of nuclear and biological weapons and non-state terrorist organizations that breed on poverty and despair, another global economic breakdown of such extended duration would risk armed conflicts on an even greater scale.

#### Collapse of the economy risks end of the planet

T. E. **Bearden, 2000** LTC, U.S. Army (Retired), CEO, CTEC Inc., Director, Association of Distinguished American Scientists (ADAS), Fellow Emeritus, Alpha Foundation's Institute for Advanced Study (AIAS)

June 24, 2000 (HYPERLINK "http://www.seaspower.com/EnergyCrisis-Bearden.htm" <http://www.seaspower.com/EnergyCrisis-Bearden.htm>)

As the collapse of the Western economies nears, one may expect catastrophic stress on the 160 developing nations as the developed nations are forced to dramatically curtail orders. International Strategic Threat Aspects History bears out that desperate nations take desperate actions. Prior to the final economic collapse, the stress on nations will have increased the intensity and number of their conflicts, to the point where the arsenals of weapons of mass destruction (WMD) now possessed by some 25 nations, are almost **certain to be released**. As an example, suppose a starving North Korea {[7]} launches nuclear weapons upon Japan and South Korea, including U.S. forces there, in a spasmodic suicidal response. Or suppose a desperate China — whose long-range nuclear missiles (some) can reach the United States — attacks Taiwan. In addition to immediate responses, the mutual treaties involved in such scenarios will quickly draw other nations into the conflict, escalating it significantly. Strategic nuclear studies have shown for decades that, under such extreme stress conditions, once a few nukes are launched, adversaries and potential adversaries are then compelled to launch on perception of preparations by one's adversary. The real legacy of the MAD concept is this side of the MAD coin that is almost never discussed. Without effective defense, the only chance a nation has to survive at all is to launch immediate full-bore pre-emptive strikes and try to take out its perceived foes as rapidly and massively as possible. As the studies showed, rapid escalation to full WMD exchange occurs. Today, a great percent of the WMD arsenals that will be unleashed, are already on site within the United States itself {[8]}. The resulting great Armageddon will destroy civilization as we know it, and perhaps most of the biosphere, at least for many decades.

## Impacts- Hegemony

#### A prolonged recession will undermine US leadership

Bruce **Crumley, 2009** (staff writer, February 25, 2009. Online. Internet. Accessed, April 1, 2009. (<http://watchmannewsletter.typepad.com/news/2009/02/is-the-economic-crisis-a-security-threat-too.html>)

Part of the strategic challenge posed by the downturn lies in the realm of the economy itself. Emerging powers such as China or India could **take the opportunity presented by U.S. economic weakness to extend their own influence in regions traditionally dominated by the U.S.** China, in particular, has already established itself as a major player in Latin America and Africa, and it is investing heavily in extractive industries across the globe right now, procuring energy supplies — most recently in new oil deals inked with Russia, Venezuela and Brazil — and other natural resources for its industrial economy.

#### Global nuclear war

Zalmay Khalilzad, 1995 RAND, The Washington Quarterly, Spring

Under the third option, the United States would seek to retain global leadership and to preclude the rise of a global rival or a return to multipolarity for the indefinite future. On balance, this is the best long-term guiding principle and vision. Such a vision is desirable not as an end in itself, but because a world in which the United States exercises leadership would have tremendous advantages. First, the global environment would be more open and more receptive to American values -- democracy, free markets, and the rule of law. Second, such a world would have a better chance of dealing cooperatively with the world's major problems, such as nuclear proliferation, threats of regional hegemony by renegade states, and low-level conflicts. Finally, U.S. leadership would help preclude the rise of another hostile global rival, enabling the United States and the world to avoid another global cold or hot war and all the attendant dangers, including a global nuclear exchange. U.S. leadership would therefore be more conducive to global stability than a bipolar or a multipolar balance of power system.

## Impacts- China war

#### The loss of US competitiveness leads to military confrontations and demonization of China:

James Petras, 2005 (former Professor of Sociology at Binghamton). October 22. “Statism or Free Markets?”

<http://www.counterpunch.org/petras10222005.html>

The Myth of the "China Threat" Instead of accepting the economic challenge from China and recognizing the need for re-thinking the misallocations of resources and the over-reliance on the paper economy, retrograde business elites and overpaid trade union bosses have joined forces with neo-conservative ideologues in promoting the idea of China as a national security threat which needs to be confronted militarily. The fusion of militarism abroad and protectionism at home has gained many adherents in Congress and in the executive branch ­ setting the stage for a self-fulfilling prophecy. Faced with increasingly bellicose rhetoric from Washington, China looks eastward toward strengthening its military and economic ties with Russia and Central Asia while diversifying its trade with Asia, Latin America, the Middle East and Africa. US militant "protectionist militarism" with its confrontational approach to China threatens to block the free market of knowledge and technology. China's dynamic growth is not primarily based on "cheap labor" ­ it relies on the production of millions of highly trained scientific and professional workers each year. Each year tens of thousands of Chinese students, professors and scientists train abroad ­ many in the US. Very few US students pursue advanced degrees in science and engineering, with the result that foreign students ­ including Chinese ­ are increasingly critical to the US science workforce. In this free flow of ideas and scientists, both China and the US theoretically benefit ­ from a "free market" perspective. But as we have argued the US is opposed to the free market ­ especially in the free flow of scientific 'know-how'. The US is doing everything possible to restrict the exchange of scientists, technology and knowledge ­ by a wide-ranging definition of "national security". Given their military definition of the China challenge, Washington argues that Chinese students and scholars should be restricted in what they study, what they learn as well as their access to technology. Universities, under Pentagon and Department of Commerce ruling, would have to secure special licenses and mark restricted areas within laboratories to prevent foreign students from using supercomputers, semiconductors, lasers and sensors in their research. The Department of Commerce plans to tighten controls in the export of commercial technologies (Financial Times Sept. 1, 2005 p 11). From a free market perspective US export controls to China are self-defeating, lessening exports thus increasing the trade deficit, and have little impact on China's access to technology via Japan, Korea and Europe. In contrast, in July 2005 the European Union signed contracts with China to develop commercial usages of the Galileo satellite navigation system. From a militarist-protectionist perspective the restrictions on ideas and the free circulation of scientists and students can be seen as part of a campaign of political and perhaps military confrontation and encirclement. 'China bashing' is merely a response to the loss of competitiveness. Nationalist demagogy in a declining global power is a compensatory mechanism for the failure of US capitalism to keep up with the competition ­ at least from its locus in the US economy.

#### That risks a nuclear war:

Ivan Eland, 2005 (Senior Fellow and Director of the Center on Peace & Liberty) May 31, 2005. Accessed August 21, 2010 @ <http://www.independent.org/newsroom/article.asp?id=1515>

At a recent hearing on Capitol Hill, senators of both parties berated the Bush administration’s failure to ratchet up the pressure on China to reduce the value of its currency, the yuan, by branding that nation as a “currency manipulator.” The lawmakers also complained that the value of Japan’s yen is too high. But such U.S. government interference in overseas commerce is ultimately counterproductive and could lead to a greater risk of conflict with other nations. On foreign currencies, as with many issues, members of Congress respond to the needs of powerful, but narrow, special interests at the expense of the general public, whose power and interests are more diffuse. Influential U.S. industries that sell overseas face competition from Chinese and Japanese exports made cheaper by the yuan and yen, currencies that many economists say are held below market value by their respective governments. Since 1995, the Chinese government has fixed the yuan’s value at 8.28 per dollar. The Japanese central bank, with more subtlety, purchased large quantities of dollars in 2003 to drive up the value of the dollar vis-à-vis the yen. Although Japan quit that practice in March 2004, Japanese officials have threatened to resume it if the yen continues to rise against the dollar. In addition to being disadvantaged in world markets against cheaper Chinese and Japanese products, the artificially low yuan and yen make U.S. exports more expensive in the large home markets of China and Japan. Although U.S. export industries are hurt by the lower yuan and yen, American consumers here at home enjoy cheaper imports from China and Japan. Less is heard about the advantages to consumers of lower foreign currencies because consumers have far fewer lobbyists in Washington than do large export firms. Nonetheless, the world would be a better—and richer—place if the Chinese and Japanese governments avoided trying to influence the value of their currencies and instead allowed them to float in international currency markets. By distorting their own economies, those governments, like members of the U.S. Congress, are supporting prominent export industries at the expense of the common consumer. And while they’re at it, China and Japan could further help their consumers by more fully opening their markets to U.S. goods and services by easing tariff and non-tariff barriers. That said, the U.S. government should set a better example by avoiding the kind of pressure on the Chinese and Japanese governments (and any other government using similar practices) that members of Congress are demanding. If those governments want to shoot themselves in the foot, there is no reason why the United States needs to shoot itself in the head. Setting a precedent for U.S. government interference in overseas commerce could generate further pressure by domestic groups—for example, domestic industries that compete with imports from China and Japan—to retaliate for Chinese and Japanese currency manipulation by resorting to import barriers against products from those countries. Some senators are already threatening to raise tariffs against Chinese goods unless China raises the value of the yuan. And according to the Financial Times, the Bush administration is privately passing along that threat to the Chinese, warning that the value of the yuan must be raised at least 10 percent to avoid that protectionist anger in Congress. (The 10 percent figure is an example of government bureaucrats inventing an arbitrary number and applying it to complex international currency markets.) Thus, government interference in the international marketplace can ultimately lead to a trade war among nations. In the 1930s, the Smoot-Hawley legislation that increased tariffs in the United States was followed by retaliation from other nations. Such protectionism deepened the worldwide depression, and that global economic crisis was a contributing factor to the causes of World War II. The United States has enough tension with a nuclear-armed China over the Taiwan issue and dual military buildups without interjecting a trade war into the mix. In fact, a healthy level of international commerce between the two countries could create a peace lobby in each nation and a greater incentive to avoid military confrontation.

## AT: Past recession disproves

#### Despite the past recession, it could be much worse if we can’t stave off another downturn

**Reich 7-13**-10 [Robert, professor of public policy at the University of California at Berkeley and former secretary of labor during the Clinton administration, “The root of economic fragility and political anger,” http://www.salon.com/news/great\_recession/?story=/news/feature/2010/07/13/reich\_economic\_anger]

**The crash of 2008 didn’t turn into another Great Depression because the government learned the importance of flooding the market with cash, thereby temporarily rescuing some stranded consumers and most big bankers. But the financial rescue didn’t change the economy’s underlying structure — median wages dropping while those at the top are raking in the lion’s share of income. That’s why America’s middle class still doesn’t have the purchasing power it needs to reboot the economy, and why the so-called recovery will be so tepid—maybe even leading to a double dip. It’s also why America will be vulnerable to even larger speculative booms and deeper busts in the years to come**.

#### Continued worsening of the recession increases likelihood of war- naïve and foolish to think we can sit back and enjoy the recession:

Mead ‘09 [Walter Russell, Senior Fellow in U.S. Foreign Policy at the Council on Foreign Relations, New Republic, February 4, <http://www.tnr.com/politics/story.html?id=571cbbb9-2887-4d81-8542-92e83915f5f8&p=2>]

So far, such half-hearted experiments not only have failed to work; they have left the societies that have tried them in a progressively worse position, farther behind the front-runners as time goes by. Argentina has lost ground to Chile; Russian development has fallen farther behind that of the Baltic states and Central Europe. Frequently, the crisis has weakened the power of the merchants, industrialists, financiers, and professionals who want to develop a liberal capitalist society integrated into the world. **Crisis** can also **strengthen the hand of religious extremists, populist radicals, or authoritarian traditionalists** who are determined to resist liberal capitalist society for a variety of reasons. Meanwhile, the companies and banks based in these societies are often less established and more vulnerable to the consequences of a financial crisis than more established firms in wealthier societies. As a result, developing countries and countries where capitalism has relatively recent and shallow roots tend to suffer greater economic and political damage when crisis strikes--as, inevitably, it does. And, consequently, financial crises often reinforce rather than challenge the global distribution of power and wealth. This may be happening yet again. None of which means that we can just sit back and enjoy the recession. History may suggest that financial crises actually help capitalist great powers maintain their leads--but it has other, less reassuring messages as well. **If financial crises have been a normal part of life** during the 300-year rise of the liberal capitalist system under the Anglophone powers, **so has war.** **The wars of the League of Augsburg and the Spanish Succession; the Seven Years War; the American Revolution; the Napoleonic Wars; the two World Wars; the cold war**: The list of wars is almost as long as the list of financial crises. **Bad economic times can breed wars**. Europe was a pretty peaceful place in 1928, but **the Depression poisoned German public opinion and helped bring Adolf Hitler to power. If the current crisis turns into a depression, what rough beasts might start slouching toward Moscow, Karachi, Beijing, or New Delhi to be born?** **The United States** may not, yet, decline, but, if we can't get the world economy back on track, we **may still have to fight.**

## AT: US not key to global economy

#### US is key to the global economy

**Yomiuri ‘09** [Daily, 1-3-9, Editorial (Tokyo), "Global economic revival hinges on U.S. recovery," Lexis]

The International Monetary Fund predicts that the global economy will further slow this year, with global economic growth rate in real terms to be only about 2 percent. It is the first time since the end of World War II that Japan, the United States and European countries will all register negative economic growth at the same time. China meanwhile is expected to see single-digit economic growth for the second consecutive year. Rise together, fall together The so-called decoupling theory, which posits that the economic doldrums of developed countries can be covered by the high growth of the newly emerging economies, has crumbled like cookies. The world cannot find a way out of simultaneous recessions in the absence of an economic engine. When will recovery of the global economy come? Even optimistic economists say the latter half of 2010 or later. The key factor is the recovery of the U.S. economy. In the United States, housing market conditions continue to deteriorate and the number of unemployed is sharply increasing. Consumer spending, which accounts for 70 percent of U.S. gross domestic product, also remains sluggish.

#### Past bubble burst proves: US is key to global economy

David **Kampf, 2009** (former communications director for PEPFAR. May 7, 2009. Online. Internet. Accessed May 7, 2009 at <http://www.worldpoliticsreview.com/article.aspx?id=3717>)

The worldwide economic turmoil underlines the importance of the United States -- for better or worse -- to the global market. **As the U.S. goes, so goes the world**. When the American bubble burst, the speed with which the contagion spread beyond its borders is an illustration.

#### Efforts to stabilize US financial markets will bolster the global economy by reassuring markets:

David **McCormick, 2008** (former under secretary for International Affairs in the U. S. Treasury Department, May 12, 2008, Newsweek. Online. Lexis/Nexis. Accessed, May 4, 2009).

Our friends around the world should gain confidence from the fact that U.S. policymakers and their international counterparts are taking aggressive, targeted actions **to stabilize the financial markets**, to reduce their impact on the economy and the individuals negatively affected by the turmoil and to protect against the same mistakes' being repeated. There are already some early indicators that these actions are beginning to have the desired effect, as markets appear to be gaining confidence and the availability of credit has improved modestly. Flexibility and resilience in the face of such unexpected financial-market turmoil and economic hardship are among America's greatest strengths. Our objective is to help individuals and markets recover as quickly as possible, while avoiding actions that cause new problems that would hurt our economy in the long run. This storm, too, shall pass, and the United States will emerge, as it always has, as a driver of growth and innovation for the global economy.

#### Other nations can’t pick up the slack for the US economy- global investors will freak

David **Berman, 2007** (staff writer, Financial Post, October 30, 2007. Online. Lexis/Nexis. May 4, 2009)

If the U.S. economy slips into recession-- a very real possibility given the terrible state of the housing market there and its likely impact on consumer spending -- investors are betting that strong growth in places like China, India and Europe will pick up the slack. **But this remains to be seen**, since the global economy in past business cycles **has relied upon the United States as its primary driver**. Chinese authorities are raising interest rates in an effort to slow down an overheating economy that relies heavily on U.S. consumption. Despite strong growth in China's own consumer spending, exports remain a key element of the country's economic growth. Should that growth dip sharply from its current pace of 11%, investors could become alarmed that the global economy is not as impervious to a U.S. slowdown as they had originally believed.

#### Without a reformed and recovered U.S. economy, the global economy will plunge into instability

Stiglitz ‘06 [Joseph E., 2001 recipient of Nobel Prize in economic science, the *New York Times*, 10/3, http://www.nytimes.com/2006/10/03/opinion/03stiglitz.html]

THE International Monetary Fund meeting in Singapore last month came at a time of increasing worry about the sustainability of global financial imbalances: For how long can the global economy endure America’s enormous trade deficits — the United States borrows close to $3 billion a day — or China’s growing trade surplus of almost $500 million a day? These imbalances simply can’t go on forever. The good news is that there is a growing consensus to this effect. The bad news is that no country believes its policies are to blame. The United States points its finger at China’s undervalued currency, while the rest of the world singles out the huge American fiscal and trade deficits. To its credit, the International Monetary Fund has started to focus on this issue after 15 years of preoccupation with development and transition. Regrettably, however, the fund’s approach has been to monitor every country’s economic policies, a strategy that risks addressing symptoms without confronting the larger systemic problem. Treating the symptoms could actually make matters worse, at least in the short run. Take, for instance, the question of China’s undervalued exchange rate and the country’s resulting surplus, which the United States Treasury suggests is at the core of the problem. Even if China strengthened its yuan relative to the dollar and eliminated its $114 billion a year trade surplus with the United States, and even if that immediately translated into a reduction in the American multilateral trade deficit, the United States would still be borrowing more than $2 billion a day: an improvement, but hardly a solution. Of course, it is even more likely that there would be no significant change in America’s multilateral trade deficit at all. The United States would simply buy fewer textiles from China and more from Bangladesh, Cambodia and other developing countries. Meanwhile, because a stronger yuan would make imported American food cheaper in China, the poorest Chinese — the farmers — would see their incomes fall as domestic prices for agriculture dipped. China might choose to counter the depressing effect of America’s huge agricultural subsidies by diverting money badly needed for industrial development into subsidies for its farmers. China’s growth might accordingly be slowed, which would slow growth globally. As it is, however, China knows well the terms of its hidden “deal” with the United States: China helps finance the American deficits by buying treasury bonds with the money it gets from its exports. If it doesn’t, the dollar will weaken further, which will lower the value of China’s dollar reserves (by the end of the year, these will exceed $1 trillion). Any country that might benefit from China’s loss of export market share would put its money into a strong currency, like the euro, rather than the unstable and weakening dollar — or it might choose to invest the money at home, rather than holding more reserves. In short, the United States would find it increasingly difficult to finance its deficits, and the world as a whole might face greater, not less, instability. Nothing significant can be done about these global imbalances unless the United States attacks its own problems. No one seriously proposes that businesses save money instead of investing in expanding production simply to correct the problem of the trade deficit; and while there may be sermons aplenty about why Americans should save more — certainly more than the negative amount households saved last year — no one in either political party has devised a fail-proof way of ensuring that they do so. The Bush tax cuts didn’t do it. Expanded incentives for saving didn’t do it. Indeed, most calculations show that these actually reduce national savings, since the cost to the government in lost revenue is greater than the increased household savings. The common wisdom is that there is but one alternative: reducing the government’s deficit. Imagine that the Bush administration suddenly got religion (at least, the religion of fiscal responsibility) and cut expenditures. Assume that raising taxes is unlikely for an administration that has been arguing for further tax cuts. The expenditure cuts by themselves would lead to a weakening of the American and global economy. The Federal Reserve might try to offset this by lowering interest rates, and this might protect the American economy — by encouraging debt-ridden American households to try to take even more money out of their home-equity loans to pay for spending. But that would make America’s future even more precarious. There is one way out of this seeming impasse: expenditure cuts combined with an increase in taxes on upper-income Americans and a reduction in taxes on lower-income Americans. The expenditure cuts would, of course, by themselves reduce spending, but because poor individuals consume a larger fraction of their income than the rich, the “switch” in taxes would, by itself, increase spending. If appropriately designed, such a combination could simultaneously sustain the American economy and reduce the deficit. Not surprisingly, these recommendations did not emerge from the International Monetary Fund meetings in Singapore. The United States retains a veto there, making it unlikely that the fund will recommend policies that aren’t to the liking of the American administration. Underlying the current imbalances are fundamental structural problems with the global reserve system. John Maynard Keynes called attention to these problems three-quarters of a century ago. His ideas on how to reform the global monetary system, including creating a new reserve system based on a new international currency, can, with a little work, be adapted to today’s economy. Until we attack the structural problems, the world is likely to continue to be plagued by imbalances that threaten the financial stability and economic well-being of us all.

#### The successes of the U.S. and global economies are inextricably linked

Fleckenstein ‘08 [Bill, president of Fleckenstein Capital, MSN, 7/7, http://articles.moneycentral.msn.com/Investing/ContrarianChronicles/GlobalEconomyWontBailOutTheUS.aspx]

Global economic and financial problems have been the subject of many newspaper articles lately, and rightly so. Take "Falling prices grip major stock markets around the world," which appeared in a recent edition of The New York Times. That synchrony to the downside shouldn't seem shocking, given how intertwined world markets (and economies) were on the way up. But the folks here who believe in [Goldilocks](http://articles.moneycentral.msn.com/Investing/ContrarianChronicles/AGuideToFleckisms.aspx#Goldilocksters) have tried to convince themselves that while the U.S. may suffer [some sort of drive-by recession](http://articles.moneycentral.msn.com/Investing/ContrarianChronicles/WhyWeCantCruisePastARecession.aspx), the rest of the world will somehow be immune, helping offset the effects of our downturn. I think that's quite unlikely, as we are the consumer for the world, and the whole world is in the late stages of an economic up-cycle. Thus, it should come as no shock that the United States economy is hardly alone in experiencing a slowdown.

## \*\*\*Warming Advantage\*\*\*

## Warming- Aviation key

#### Aviation emissions uniquely contribute to warming

**Hodgkinson et al ‘07** [David Hodgkinson was formerly Director of Legal Services at IATA, the organisation of the world’s international scheduled airlines, in Montreal; Alex Coram is Professor of Political Economy, Aberdeen Business School, Robert Gordon University, Scotland. Renee Garner is a lawyer at Freehills in Melbourne, Australia, “Strategies for Airlines on Aircraft Emissions and Climate Change: Sustainable, Long-Term Solutions,” June, <http://www.hodgkinsongroup.com/documents/Hodgkinson_airline_emissions.bak.pdf>]

**Aviation is one of the fastest-growing sectors of the world economy**. Over the next 20 years more than 27,000 new aircraft will be delivered; the number of air travelers will double to 9 billion over the same period. Against this background of significant growth in air travel, and as a result of increasing awareness on the part of governments and the public with regard to climate change and its possible consequences, **pressure is being placed on the aviation industry** - and airlines in particular - **to address the climate impacts of aviation**. A number of organisations such as the Intergovernmental Panel on Climate Change (IPCC), Oxford University, the Massachusetts Institute of Technology (MIT) and the Tyndall Centre, for example, have studied the impacts of aviation on the global atmosphere. These studies, together with reports from Royal Commissions and other inquiries, make the following points clear: x the climate change impacts of aviation are significantly worse than those of its carbon dioxide emissions alone. Further, **reference to aviation being responsible for 2% of global carbon dioxide emissions is misleading as the figure (a) is based on total anthropogenic carbon dioxide emissions in 1992** (as determined by the IPCC), **not 2007**; (b) **does not take into account aviation’s non-CO2 greenhouse gas** (GHG) **emissions which significantly contribute to the climate change impacts of aviation; and** (c) **ignores growth in air travel**; x **air travel demand is growing at unprecedented rates, yet substantial reductions of aviation GHG emissions are not possible in the short to medium term**; not only are emissions from air travel increasing significantly in absolute terms but, against a background of emissions reductions from many other sources, their relative rate of increase is even greater. Put another way, “if the [recommended] reductions in carbon dioxide emissions from groundlevel activities … are achieved, and **the growth in air transport projected by the IPCC materialises, then air travel will become one of the major sources of anthropogenic climate change by 2050**;” development of alternative jet fuels and aircraft technological developments, together with the development of more efficient operational practices and more efficient air traffic management systems and processes, will only partially offset the growth in aviation emissions; x there is presently no systematic or compulsory incentive to reduce international aviation emissions; x without government action to significantly reduce aviation growth within the UK, for example, aviation emissions may be greater than those forecast for all other sectors of the economy. As a result, **aviation may exceed the carbon target for all sectors by 2050**; x as another example, “[i]f the aviation industry is allowed to grow at rates even lower than those being experienced today, the EU could see aviation accounting for between 39% and 79% of its total carbon budget by 2050, depending on the stabilisation level chosen. For the UK, the respective figures are between 50% and 100%;” x the level of any carbon price faced by aviation should reflect the full contribution of emissions from aviation to climate change; and x all other sectors of the economy would have to significantly decarbonise to allow the aviation industry to grow and to continue to use kerosene. This last point is of particular concern as it raises the very real possibility of economic – and, thus, political – conflict between the airline industry and other sectors. **This has the potential for unpredictable and destabilising outcomes**.

#### Aviation emissions will snowball- becoming a large source of emissions

**GAO ’09** [Government Accountability Office, “Aircraft Emissions Expected to Grow, but Technological and Operational Improvements and Government Policies Can Help Control Emissions,” June, <http://www.gao.gov/assets/300/290594.pdf>]

**IPCC compared aviation and overall emissions for the future and found that global aviation carbon dioxide emissions could increase at a greater rate than carbon dioxide emissions from all other sources of fossil fuel combustion**. For example, for **the medium GDP growth rate scenario**, IPCC assumed a 2.9 percent annual average increase in global GDP, which **translated into almost a tripling** (a 2.8 times increase) **of aviation’s global carbon dioxide emissions from 1990 to 2050**. For the same medium GDP growth scenario, IPCC also estimated a 2.2 times increase of carbon dioxide emissions from all other sources of fossil fuel consumption worldwide during this period. Over all, using the midrange scenario for global carbon dioxide emissions and projections for emissions from other sources, IPCC estimated that in 2050, carbon dioxide emissions from aviation could be about 3 percent of global carbon dioxide emissions, up from 2 percent. **IPCC further estimated that, when other aviation emissions were combined with carbon dioxide emissions, aviation would account for about 5 percent of global human-generated positive radiative forcing, up from 3 percent**. 27 IPCC concluded that the aviation traffic estimates for the low-range scenario, though plausible, were less likely given aviation traffic trends at the time the report was published in 1999. IPCC’s 2007 Fourth Assessment Report included two additional forecasts of global aviation carbon dioxide emissions for 2050 developed through other studies. 28 Both of these studies forecasted mid- and high-range aviation carbon dioxide emissions for 2050 that were within roughly the same range as the 1999 IPCC report’s forecasts. 29 For example, one study using average GDP growth assumptions that were similar to IPCC’s showed mid- and high-range estimates that were close to IPCC’s estimates.

## Warming- NextGen solves

#### NextGen would substantially reduce emissions

**Dillingham ’08** [Gerald L., PhD, Director, Physical Infrastructure Division, Government Accountability Office, “NextGen and Research and Development Are Keys to Reducing Emissions and Their Impact on Health and Climate,” May 6, <http://www.gao.gov/assets/120/119976.pdf>]

I appreciate the opportunity to testify before you on aviation emissions, one of the key sources of concern about the environmental effects of aviation**. Over the past 30 years, the federal government, the aviation industry, and other private parties have worked collaboratively to achieve steady reductions in aircraft emissions**. 1 Nevertheless, increases in air traffic, which have enhanced the nation’s productivity and mobility, have partially offset these reductions, as more flights have produced more emissions and congestion has led to flight delays. According to the Federal Aviation Administration (FAA), **this growth in air traffic will continue, with the number of flights increasing 20 percent by 2015 and 60 percent by 2030**. 2 In light of these developments, concerns about the environmental effects of aviation emissions have persisted. Moreover, better scientific understanding of the potential health effects of certain aviation emissions and their contribution to climate change has intensified the public’s concerns. To accommodate the expected growth in air traffic, FAA is leading a multipronged, multiagency effort to increase the efficiency, safety, and capacity of the national airspace system. This effort includes transforming the current air traffic control system into the Next Generation Air Transportation System (NextGen) 3 and will require airport and runway expansion. The **NextGen** initiative **incorporates research and development (R&D) on emissions-reduction technologies, alternative fuels, and cleaner and quieter air traffic management procedures. This R&D is necessary both to meet anticipated domestic and international environmental standards and to reduce the environmental impact of aviation. Meeting environmental standards can limit the adverse effects of aviation emissions on air quality and climate, and addressing public concerns about aviation emissions is necessary to avoid constraints on the expansion of aviation operations and airport infrastructure planned under NextGen**. 4

## Warming happening now

####  (--) We’re warming now: 2010 is the hottest year on record:

Brad Johnson, 12/31/2010 (“Hottest Year In History Ends With Freak Climate Disasters” <http://wonkroom.thinkprogress.org/2010/12/31/new-year-boiling/>)

As greenhouse pollution continues to build in the atmosphere, 2010 is entering the history books as the hottest year on record. A year of unprecedented extreme weather disasters, 2010 is ending with yet more climate disasters, from floods in Australia to winter tornadoes across America: Parts of Arkansas, Illinois, Indiana, Kentucky, Missouri and Tennessee were on the lookout for more twisters after several touched down Friday — including one that killed three people in an Arkansas town. Two more people died in southern Missouri. Three people died in Cincinnati, a hamlet of about 100 residents about three miles from the Oklahoma border. An elderly couple died in their home, while a dairy farmer was killed while milking his cows. The tornadoes are part of an “unusual” storm front fed by “warm, moist air in place over the region.” On the colder edge of the front, “the storm responsible for the deadly tornado is also bringing a dangerous winter storm to the West and Midwest,” with up to three feet of new snow from California to Idaho. Meanwhile, Australia is being ravaged by unprecedented flooding, following tremendous rainfall for months, compounded by the Christmas Day landfall of Cyclone Tasha. Floods now cover an area “the size of France and Germany combined.” Australian Prime Minister Julia Gillard announced millions of dollars of relief funding as she described the record-breaking floods: Some communities are seeing floodwaters higher than they’ve seen in decades, and for some communities floodwaters have never reached these levels before [in] the time that we have been recording floods. For many communities we haven’t even seen the peak of the floodwaters yet, that’s a number of days away. “Some sections of coastal Queensland received over four feet of rain from September through November,” meteorologist Jeff Masters reports. The floods, which have wiped out crops, drowned livestock, and disrupted the largest coal ports in the world, are expected to cause at least $1 billion in damage. It’s looking like 2011 will thus continue the disturbing trend of rising disaster from our fossil-fueled climate.

#### Observational data, temperature records, and a ton of scientists say the earth is unequivocally warming now:

JOHN COLLINS RUDOLF, 7/28/2010 (“State of the Climate: Hottest Decade on Record”

<http://green.blogs.nytimes.com/2010/07/28/state-of-the-climate-hottest-decade-ever/>)

Experts say that sea ice is melting, heavy rainfall is intensifying and heat waves are more common, among other indicators. Green: Science The past decade was the hottest recorded, part of an unequivocal pattern of warming dating back 50 years, a National Oceanic and Atmospheric Administration report declared on Wednesday. The annual “State of the Climate” report drew on the findings more than 300 climate scientists in 48 countries who measured 10 separate planetwide features, including air and sea temperatures, humidity, Arctic sea ice, glaciers, and spring snow cover in the Northern hemisphere. “The records come from many institutions worldwide,” Dr. Jane Lubchenco, the agency’s administrator, said in a statement. “They use data collected from diverse sources, including satellites, weather balloons, weather stations, ships, buoys and field surveys. These independently produced lines of evidence all point to the same conclusion: our planet is warming.” The findings do not include data from 2010, which is on pace to exceed the highest annual average global temperature ever recorded, NOAA said. This summer’s weather has been defined by extreme heat events in the eastern United States, Europe, Russia, China, Japan and the Middle East. According to the report, each decade since the 1980s has been progressively warmer than the last, with an average warming of about one-fifth of a degree Fahrenheit per decade. “The temperature increase of one degree Fahrenheit over the past 50 years may seem small, but it has already altered our planet,” said Deke Arndt, co-editor of the report and chief of the Climate Monitoring Branch of NOAA’s National Climatic Data Center. “Glaciers and sea ice are melting, heavy rainfall is intensifying and heat waves are more common.” The report also suggests that more than 90 percent of the warming over the past 50 years may have gone into the oceans.

## Impacts- Extinction

#### **(--) Global warming leads to extinction- highest probability**

Roach 2004 (John, http://news.nationalgeographic.com/news/2004/01/0107\_040107\_extinction.html , *National Geographic*, July 12.4)

As global warming interacts with other factors such as habitat-destruction, invasive species, and the build up of carbon dioxide in the landscape, the risk of extinction increases even further, they say. In agreement with the study authors, Pounds and Puschendorf say taking immediate steps to reduce greenhouse gas emissions is imperative to constrain global warming to the minimum predicted levels and thus prevent many of the extinctions from occurring. "The threat to life on Earth is not just a problem for the future. It is part of the here and now," they write.

#### (--) Climate change causes extinction

**Henderson**, 8-19-200**6**

[Bill, "Runaway Global Warming - Denial," http://www.countercurrents.org/cc-henderson190806.htm, accessed 2007]

The scientific debate about human induced global warming is over but policy makers - let alone the happily shopping general public - still seem to not understand the scope of the impending tragedy. Global warming isn't just warmer temperatures, heat waves, melting ice and threatened polar bears. Scientific understanding increasingly points to runaway global warming leading to human extinction. If impossibly Draconian security measures are not immediately put in place to keep further emissions of greenhouse gases out of the atmosphere we are looking at the death of billions, the end of civilization as we know it and in all probability the end of man's several million year old existence, along with the extinction of most flora and fauna beloved to man in the world we share. Runaway global warming: there are 'carbon bombs': carbon in soils, carbon in warming temperate and boreal forests and in a drought struck Amazon, methane in Arctic peat bogs and in methane hydrates melting in warming ocean waters. For several decades it has been hypothesized that rising temperatures from increased greenhouse gases in the atmosphere due to burning fossil fuels could be releasing some of and eventually all of these stored carbon stocks to add substantually more potent greenhouse gases to the atmosphere.

## Impacts- Disease

#### **A) Warming causes disease- destroys the healthcare industry**

IPCC 7 (*Intergovernmental Panel on Climate Change*, “ 12/12-17, p. 26)

The health status of millions of people is projected to be affected through, for example, increases in malnutrition; increased deaths, diseases and injury due to extreme weather events; increased burden of diarrhoeal diseases; increased frequency of cardio-respiratory diseases due to higher concentrations of ground-level ozone in urban areas related to climate change; and the altered spatial distribution of some infectious diseases. {WGI 7.4, Box 7.4; WGII 8.ES, 8.2, 8.4, SPM} Climate change is projected to bring some benefits in temperate areas, such as fewer deaths from cold exposure, and some mixed effects such as changes in range and transmission potential of malaria in Africa. Overall it is expected that benefits will be outweighed by the negative health effects of rising temperatures, especially in developing countries. *{WGII 8.4, 8.7, 8ES, SPM}*

#### **B) Causes extinction**

Dutta-Roy 7 (Debajyoti, software technician, 5/31, <http://globalstudy.blogspot.com/2007/05/coming-pandemic-threat-of-human.html>)

As we are relying more and more on antibiotics, modern medical marvels, IMHO…we humans, the hairless apes who are now dominating this Blue Planet….are living on an “artificial life support system”. This might sound shocking to you, but many experts agree this is the TRUTH. Look around us……observe closely those “inferior” creatures who are around us – starting from the domesticated animals to the creatures of the wild. Let’s say, bird flu or a dangerous strain of the ebola virus hits us. WHO DO YOU THINK HAS A BETTER CHANCE OF SURVIVING? The so-called “inferior” animals, through millions of years, developed a robust immune system…..they have been through hundreds of such bacterial & viral outbreaks…..the weakest have died in the beginning….much the stronger ones have survived. Now, they are much equipped to fight off a pandemic like the Bird Flu. Sure, millions would die. But the majority will survive. But, I don’t think humans have much chance. Man of today, though much advanced in his “cranial capacity” is, from a biological point of view, a much poorer specimen than the Man of, say, 10,000 years back.

## Impacts- Environment

#### (--) Warming leads to environmental collapse through biodiversity loss, natural disasters, and destruction of water and food supplies.

IPCC 7 (*Intergovernmental Panel on Climate Change,* , 12/12-17, p. 26)

The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g. flooding, drought, wildfire, insects, ocean acidification) and other global change drivers (e.g. landuse change, pollution, fragmentation of natural systems, overexploitation of resources). {WGII 4.1-4.6, SPM} \_ Over the course of this century, net carbon uptake by terrestrial ecosystems is likely to peak before mid-century and then weaken or even reverse16, thus amplifying climate change. {WGII 4.ES, Figure 4.2, SPM} \_ Approximately 20 to 30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5 to 2.5°C (medium confidence). {WGII 4.ES, Figure 4.2, SPM} \_ For increases in global average temperature exceeding 1.5 to 2.5°C and in concomitant atmospheric CO2 concentrations, there are projected to be major changes in ecosystem structure and function, species’ ecological interactions and shifts in species’ geographical ranges, with predominantly negative consequences for biodiversity and ecosystem goods and services, e.g. water and food supply. {WGII 4.4, Box TS.6, SPM}

#### **(--) Environmental collapse means human extinction.**

Irish Times 02 (*Irish Times,* 7-27)

Such pleasure is probably the least important reason why biodiversity is a good thing: human survival is more to the point. Conservationists insist that biodiversity is basic to the Earth's life-support system and that the progressive loss of species - as in the current destruction of natural forest - could help destabilise the very processes by which the planet services our presence and wellbeing. Most ecologists, probably, go along with the idea that every species matters. Like rivets in an aeroplane, each has its own, small importance: let too many pop and things start to fly apart. But some are now arguing that since so many species seem to do much the same job, mere "species richness" may not be essential: so long as "keystone species" are identified and cared for, their ecosystems will probably still function.

## Impacts – War

#### Warming is the main driver of conflict- this is especially true in Africa and the Middle East

Aldhous ’09 [Peter, The New Scientist “African conflicts spurred by warming;” Lexis]

AFRICA is poised to experience a surge in civil wars, causing nearly 400,000 additional battle deaths by 2030 - all as a direct result of rising temperatures. This bold prediction is one of the most alarming results yet to emerge from attempts to discover how climate change will affect patterns of human conflict. It is already proving controversial. Previous attempts to model the effects of climate on patterns of conflict in Africa have mostly concentrated on rainfall. But now researchers led by Marshall Burke at the University of California, Berkeley, and David Lobell of Stanford University in Palo Alto, California, have studied both rainfall and temperature. They found that warming was much more strongly associated with civil strife than precipitation was (*Proceedings of the National Academy of Sciences* , DOI: 10.1073/pnas.0907998106). Burke and Lobell analysed data on the incidence of African civil wars alongside local temperature and rainfall measurements from 1981 to 2002. They found a strong relationship between spikes in temperature and the likelihood of civil war. Because climate models give fairly consistent predictions for warming across Africa, the researchers were able to forecast a 54 per cent rise in the incidence of civil conflict by 2030, resulting in an extra 393,000 combat deaths. The prediction assumes that global carbon dioxide emissions are not curbed in the short term. Other researchers agree that temperature changes may affect conflict, but some are sceptical that the effect will be as large as Burke and Lobell claim. "I'm just not convinced," says Peter Brecke of the Georgia Institute of Technology in Atlanta, who has previously found a global link between increased conflict and the Little Ice Age, which lasted from around 1400 to the late 1800s. One issue is that the two-decade period studied by Burke and Lobell may have been unusually conflict-prone, amplifying the apparent effect of temperature. Cullen Hendrix, a political scientist at the University of North Texas in Denton, points out that some countries were destabilised when the superpowers withdrew aid to African dictators as the cold war ended. "This is probably going to wind up being the first salvo in a pretty significant debate," he says. "We're very willing to be proven wrong," says Lobell. But the link with temperature remained even after the researchers controlled for measures of wealth and democracy. "The result seems remarkably robust," adds Burke. If the link stands up under further scrutiny, policy-makers will need to know how warming triggers conflict. Burke and Lobell say the most likely explanation is that warmer temperatures reduce crop yields or other aspects of economic productivity, increasing social tension. But some studies have suggested that it's inherent in people to become more violent when the mercury rises. Rich nations can provide economic aid or share plant-breeding technologies that allow crops to withstand extremes of climate, says Hendrix, "but we can't change human nature".

## Impacts- Plankton

#### **(--) Warming kills plankton**

Brahic 6 (Catherine Brahic (December, <http://environment.newscientist.com/channel/earth/dn10743-warming-oceans-produce-less-phytoplankton.html>)

As the Earth’s oceans warm, the masses of tiny plants growing at their surface is declining, say US researchers. Their results show that the productivity of global oceans is tightly linked to climate change and has steadily decreased between 1999 and 2004. The team was led by Michael Behrenfeld, at Oregon State University, US, and used a sensor on NASA’s SeaWiFS satellite to measure different shades of green in the ocean (watch an animation of the satellite at work, mpeg file). This allowed them to watch how chlorophyll in the oceans ebbed and flowed over the past 10 years. They looked at how these changes fitted changes in ocean temperatures and the predictions of computer models. Their research, published in Nature, revealed two phases. Between 1997 and 1998, the amount of phytoplankton in the seas rose. At this time, the oceans were cooling after the strongest ever El Niño, which had warmed ocean temperatures. From 1999 to 2004, there was a general warming of the oceans and, the images from space revealed, a persistent decrease in phytoplankton. In some regions, the drops in ocean productivity were often over 30%. Globally, the reductions meant that, between 1999 and 2004, about 190 million tonnes of carbon per year were not absorbed by the tiny plants and converted into organic matter. After 2004, there was a small upturn in productivity (see *Cooling oceans buck global trend*).

#### **(--) Plankton key to human survival**

Cribb ‘06 (Julian Cribb Sep 16, [http://www.theaustralian.news.com.au/story/0,20867,20398844-5003900,00.html](http://www.theaustralian.news.com.au/story/0%2C20867%2C20398844-5003900%2C00.html))

THEY are the most numerous and least considered beings on the planet, yet humanity cannot survive without them. Invisibly, they form the air we breathe and serve as the fount of life in oceans, rivers and lakes. Plankton have existed for 3.5 billion years, quietly making our planet habitable for people, plants and animals. These minute architects are the true builders and shapers of Earth's beauty and diversity. Yet individuals are palaces as elegant as Versailles itself: filigreed, roseate, fluted, crenellated, striated, stellate, spinose, perforated, multifoliate, ornamented more wildly and beautifully than a human mind could conceive. And like many beautiful things, some are deadly, either as the producers of lethal nerve poisons or as the raw material used in explosives. In Plankton: a Critical Creation, University of Tasmania marine biologist Gustaaf Hallegraeff has brought the microscopic world of these creatures into vivid focus with a breathtaking selection of electron microscope images. These are accompanied by a fascinating, and gently reproachful, essay on the wonders of the planktonic universe. It is the privilege of science to reveal the world we thought we knew in startling and unexpected ways, causing us to view it differently thereafter. Hallegraeff has done just this here, introducing us to creatures as exquisite as any sculpture and as fit for purpose as any instrument. It is a voyage through the Earth's inner space, depicting organisms as small as a few millionths of a millimetre and their elaborate structures. These range from the "familiar" blue-green algae, microscopic filaments often toxic, to the vanished fossils of millions of years ago that built the White Cliffs of Dover and, indeed, much of the world's sedimentary rocks and soils. He explores plankton with skeletons of calcium and silica in wild and alien or eerily familiar forms. Here is one that resembles the leaning Tower of Pisa, down to the very columns. Here, others like a radiant star, a sunburst, a vol-au-vent, a Catherine wheel, a flower, a host of trumpets, a loufa ... It all raises the question: does the shape of man-made devices hark back to some ancestral patterning perfected and implanted a billion years ago? Plankton are certainly providing inspiration for modern architects and, increasingly, the question of how they grow these elaborate and robust structures is being explored by nanotechnologists, eager to unlock their biochemical secrets in order to revolutionise the way we makethings. Besides their role in producing oxygen, processing CO2, absorbing nutrients and underpinning the global food chain, these microscopic plants serve in other ways: their mildly abrasive skeletons are used in toothpaste, to make concrete and filter swimming pools. Perhaps most importantly, they help to regulate the Earth's climate, producing the chemicals that allow clouds to form. Of great concern, says Hallegraeff, is the thought that if the gradual acidification of the oceans by human production of CO2 destroys these creatures, the results could be catastrophic both for the climate and the global food web. At present, it is thought plankton absorb half the world's CO2 from the atmosphere. Hallegraeff traces his own journey of fascination with this microscopic world from his childhood in The Netherlands, growing up a few kilometres from where Anton van Leeuwenhoek invented the microscope in 1673 and revealed the invisible world that engulfs us. Gazing at the whirling green creatures in a drop of pond water, the young Hallegraeff was hooked for life, pursuing his studies into the largely unexplored biological realm of Australia and the southern seas. Here most people's awareness was restricted to periodic panics about algal blooms in drinking water, toxic red tides and the risks of paralytic shellfish poisoning or ciguatera. He decided to redress the balance, revealing planktonic life in all its diversity, wonder and beneficial -- as well as risky -- aspects. "In the past 30 years," he writes, "scientific appreciation of the global importance of single-celled microscopic plants and animals has escalated. It is now obvious that most of the action on our planet is in the plankton. "Life originated in the primeval fluid of the plankton world. The microbial engine of the plankton plays a key role in our planet's ability to adapt to climate change. It is perilous to our own survival to ignore this critical creation."

## Impacts- Economy

#### **A. Global warming makes huge weather problems- collapses economy**

Brown 8 (Lester R., founder of the Worldwatch InstituteEarth Policy Institute , *Earth Policy Institute*, p. 64)

As the climate changes, more extreme weather events are expected. Andrew Dlugolecki, a consultant on climate change and its effects on financial institutions, notes that damage from atmospherically related events has increased by roughly 10 percent a year. “If such an increase were to continue indefinitely,” he notes, “by 2065 storm damage would exceed the gross world product. The world obviously would face bankruptcy long before then.” Few double-digit annual growth trends continue for several decades, but Dlugolecki’s basic point is that climate change can be destructive, disruptive, and very costly.69

#### B. Climate extremes in major cities will cause economic shutdown

National Geographic News 6 ( National Geographic, 5-19, http://news.nationalgeographic.com/news/2006/05/060519\_hurricanes.html)

Forecasters are warning that a hurricane making landfall at or near New York City could cause catastrophic damage in the U.S.'s largest urban center. While a storm is unlikely to make direct landfall on Manhattan, a nearby storm would cause extensive flooding and heavy storm surges, experts say. Major Hurricane Threat Seen for Northeast U.S., Experts Warn Even a minimal hurricane could put the runways at John F. Kennedy Airport underwater, and the battering action of wind-driven waves could cause significant damage to buildings, says Stephen Baig, a storm surge specialist with the National Hurricane Center in Miami. A minor hurricane could also cause flooding throughout Lower Manhattan, depending on how the storm approached and whether it arrived at high or low tide. Making matters worse, many New York residents may not realize how severely they could be affected by a hurricane. Scott Mandia, a professor of physical sciences at Suffolk County Community College in Selden, says Long Island's 4 million residents could be surprised by the aftermath of a storm. "What I think they don't understand is how many days and weeks after a hurricane that their lives will be completely changed," Mandia said. "People who live away from the water think a hurricane will mean one day away from work, then back to normal." "There will be an economic shutdown for a few weeks, if not a month," he said. "The economic standstill will be the biggest surprise for people."

## Impacts- Sea Level Scenario

#### **(--) Warming is causing huge increases in sea levels**

Gornitz 7

(Dr. Vivien, NASA Goddard Institute for Space Studies scientist, , Jan., http://www.giss.nasa.gov/research/briefs/gornitz\_09/)

Twentieth century sea level trends, however, are substantially higher that those of the last few thousand years. The current phase of accelerated sea level rise appears to have begun in the mid/late 19th century to early 20th century, based on coastal sediments from a number of localities. Twentieth century global sea level, as determined from tide gauges in coastal harbors, has been increasing by 1.7-1.8 mm/yr, apparently related to the recent climatic warming trend. Most of this rise comes from warming of the world's oceans and melting of mountain glaciers, which have receded dramatically in many places especially during the last few decades. Since 1993, an even higher sea level trend of about 2.8 mm/yr has been measured from the TOPEX/POSEIDON satellite altimeter. Analysis of longer tide-gauge records (1870-2004) also suggests a possible late 20th century acceleration in global sea level. Recent observations of Greenland and the West Antarctic Ice Sheet raise concerns for the future. Satellites detect a thinning of parts of the Greenland Ice Sheet at lower elevations, and glaciers are disgorging ice into the ocean more rapidly, adding 0.23 to 0.57 mm/yr to the sea within the last decade. The West Antarctic Ice Sheet is also showing some signs of thinning. Either ice sheet, if melted completely, contains enough ice to raise sea level by 5-7 m. A global temperature rise of 2-5°C might destabilize Greenland irreversibly. Such a temperature rise lies within the range of several future climate projections for the 21st century. However, any significant meltdown would take many centuries. Furthermore, even with possible future accelerated discharge from the West Antarctic Ice Sheet, it highly unlikely that annual rates of sea level rise would exceed those of the major post-glacial meltwater pulses.

#### (--) Sea level rise kills biodiversity by destroying wetlands, changing water salinity, and increasing hazardous waste leakage

Titus 84 [James G., EPA, p. 1, <http://yosemite.epa.gov/oar/GlobalWarming.nsf/content/ResourceCenterPublicationsRisk_of_rise.html>]

Like the physical effects, the environmental impacts of sea level rise fall into the categories of shoreline retreat, salt intrusion, and increased flooding. Perhaps the most serious environmental consequence would be the inundation and erosion of thousands of square miles of marshes and other wetlands. Wetlands (areas that are flooded by tides at least once every 15 days) are critical to the reproductive cycles of many marine species. Because marsh vegetation can collect sediment and build upon itself, marshes can "grow" with small rises in sea level. But for faster rates of sea level rise, the vegetation will drown. Its resulting deterioration may significantly erode land previously held together only by the marsh vegetation. Relative sea level rise of one meter per century is eroding over one hundred square kilometers (about fifty square miles) per year of marshland in Louisiana. Salt intrusion is a threat to marine animals as well as vegetation. Many species must swim into fresher water during reproduction. In response to sea level rise, fish might swim farther upstream, but water pollution could prevent such an adaptation from succeeding. Some species, on the other hand, require salty water, such as the oyster drill and other predators of oysters. Consequently, salinity increases have been cited for the long-term drop in oyster production in the Delaware Bay (U.S. Fish and Wildlife Service, 1979; Haskin and Tweed, 1976), as well as recent drops in the Chesapeake Bay. Salt intrusion could also be a serious problem for the Everglades. Flooding could have a particularly important impact on environmental protection activities. As Chapter 9 indicates, regulations for hazardous waste sites promulgated under the Resource Conservation and Recovery Act currently impose special requirements for sites in 100-year flood zones. Another EPA program, Superfund, has responsibility for abandoned waste sites, some of which are in low-lying areas such as Louisiana and Florida that could be inundated. There are over one thousand active hazardous waste facilities in the United States located in 100-year floodplains (Development Planning and Research Associates, 1982) and perhaps as many inactive sites. Sea level rise could increase the risk of flooding in these hazardous waste sites. For example, if a hazardousSea Level Rise: Overview of Causes and Effects waste facility is subjected to overwash by strong waves or simply to flooding that weakens the facility's cap, the wastes can be spread to nearby areas, thus exposing the population to possibly contaminated surface water. Moreover, by intruding into clay soils (which are often used as liners for hazardous waste disposal) saltwater can increase leaching of wastes.

####  **(--) Loss of biodiversity causes extinction**

Diner 94

(David, JD Ohio State, *Military Law Review*, Winter)

4. Biological Diversity. -- The main premise of species preservation is better than simplicity. As the current mass extinction has progressed, the world's biological diversity generally has decreased. This trend occurs within ecosystems by reducing the number of species, and within species by reducing the number of individuals. Both trends carry serious future implications. Biologically diverse ecosystems are characterized by a large number of specialist species, filling narrow ecological niches. These ecosystems inherently are more stable than less diverse systems. "The more complex the ecosystem, the more successfully it can resist stress... [l]ike a net, in which each knot is connected to others by several strands, such a fabric can resist collapse better than a simple, unbranched circle of threads -- which is cut anywhere breaks down as a whole." By causing widespread extinctions, humans have artificially simplified many ecosystems. As biologic simplicity increases, so does the risk of ecosystem failure. The spreading Sahara Desert in Africa, and the dustbowl conditions of the 1930s in the United States are relatively mild examples of what might be expected if this trend continues. Theoretically, each new animal or plant extinction, with all its dimly perceived and intertwined affects, could cause total ecosystem collapse and human extinction. Each new extinction increases the risk of disaster. Like a mechanic removing, one by one, the rivets from an aircraft's wing, mankind may be edging closer to the abyss.

## Impacts- Starvation

#### **(--) Warming decreases global food production, causing worldwide starvation.**

IPCC 07 (Intergovernmental Panel on Climate Change, 12/12-17, p. 26)

At lower latitudes, especially in seasonally dry and tropical regions, crop productivity is projected to decrease for even small local temperature increases (1 to 2°C), which would increase the risk of hunger (medium confidence). {WGII 5.4, SPM} \_ Globally, the potential for food production is projected to increase with increases in local average temperature over a range of 1 to 3°C, but above this it is projected to decrease (medium confidence). {WGII 5.4, 5.5, SPM}

#### **(--) Insufficient production causes world resource wars and famine- WW3**

Calvin 98 ( William, Prof @ U of WA, *Atlantic Monthly*)

The population-crash scenario is surely the most appalling. Plummeting crop yields would cause some powerful countries to try to take over their neighbors or distant lands-if only because their armies, unpaid and lacking food, would go marauding, both at home and across the borders. The better-organized countries would attempt to use their armies, before they fell apart entirely, to take over countries with significant remaining resources, driving out or starving their inhabitants if not using modern weapons to accomplish the same end: eliminating competitors for the remaining food. This would be a worldwide problem-and could lead to a Third World War-but Europe's vulnerability is particularly easy to analyze. The last abrupt cooling, the Younger Dryas, drastically altered Europe's climate as far east as Ukraine. Present-day Europe has more than 650 million people. It has excellent soils, and largely grows its own food. It could no longer do so if it lost the extra warming from the North Atlantic. There is another part of the world with the same good soil, within the same latitudinal band, which we can use for a quick comparison. Canada lacks Europe's winter warmth and rainfall, because it has no equivalent of the North Atlantic Current to preheat its eastbound weather systems. Canada's agriculture supports about 28 million people. If Europe had weather like Canada's, it could feed only one out of twenty-three present-day Europeans. Any abrupt switch in climate would also disrupt foodsupply routes. The only reason that two percent of our population can feed the other 98 percent is that we have a well-developed system of transportation and middlemenbut it is not very robust. The system allows for large urban populations in the best of times, but not in the case of widespread disruptions to adapt to climate change. It is perilous to our own survival to ignore this critical creation."

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##  Impacts- Water Wars

#### **(--) Warming causes huge water shortages**

Pauchari 7 (R.K., IPCC chairman, “Acceptance Speech for the Nobel Peace Prize Awarded to the [IPCC]”, 12/10, p. 5-6, http://www.ipcc.ch/)

Climate change is expected to exacerbate current stresses on water resources. On a regional scale, mountain snowpack, glaciers, and small ice caps play a crucial role in fresh water availability. Widespread mass losses from glaciers and reductions in snow cover over recent decades are projected to accelerate throughout the 21st century, reducing water availability, hydropower potential, and the changing seasonality of flows in regions supplied by meltwater from major mountain ranges (e.g. Hindu-Kush, Himalaya, Andes), where more than one-sixth of the world’s population currently lives. There is also high confidence that many semi-arid areas (e.g. the Mediterranean Basin, western United States, southern Africa, and northeastern Brazil) will suffer a decrease in water resources due to climate change. In Africa by 2020, between 75 and 250 million people are projected to be exposed to increased water stress due to climate change.

#### **(--) Water scarcity will cause World War 3**

Stonehill 8 (Alex, co-founder of Common Language Project for humane international journalism, *Z Magazine*, 08, http://209.85.141.104/search?q=cache:ezAcQF4xJZMJ:www.globalpolicy.org/security/natres/water/2008/0619ethiopconflict.htm+water+scarcity+world+war+3&hl=en&ct=clnk&cd=13&gl=us)

Water is the new oil. While western politicians and consumers fret over the declining economy and increasing oil prices, the news from East Africa is that with a growing majority of the world living on less than a dollar a day, the liquid that fuels bodies is becoming even more contentious than the liquid that fuels cars. I've spent the last four months reporting stories about water from Ethiopia and Kenya, two countries at the forefront of the world's coming water crisis. The director of a local water NGO told me a few days after I arrived in Ethiopia in January 2008, "As you may know, Alex, the coming World War III will be fought over water, not oil." Variations on that refrain were echoed by aid workers and researchers across the region over the next several months. Women walk for miles each day to collect drinking water; farmers are pushed into deadly conflict by dwindling river flows, and city water supplies are drained by overzealous irrigation. The bigger picture that the smaller stories hint at is one of ecological disaster and conflict over resources that will affect millions and have repercussions around the world.

## Impacts- AT: Not man-made

####  Peer reviewed research proves: current climate change isn’t natural—it’s caused by humans:

James Wight, 8/20/2010 (<http://www.skepticalscience.com/climate-change-little-ice-age-medieval-warm-period.htm>)

Climate reacts to whatever forces it to change at the time; humans are now the dominant forcing. A common skeptic argument is that climate has changed naturally in the past, long before SUVs and coal-fired power plants, so therefore humans cannot be causing global warming now. Interestingly, the peer-reviewed research into past climate change comes to the opposite conclusion. To understand this, first you have to ask why climate has changed in the past. It doesn't happen by magic. Climate changes when it’s forced to change. When our planet suffers an energy imbalance and gains or loses heat, global temperature changes. There are a number of different forces which can influence the Earth’s climate. When the sun gets brighter, the planet receives more energy and warms. When volcanoes erupt, they emit particles into the atmosphere which reflect sunlight, and the planet cools. When there are more greenhouse gases in the atmosphere, the planet warms. These effects are referred to as external forcings because by changing the planet's energy balance, they force climate to change. It is obviously true that past climate change was caused by natural forcings. However, to argue that this means we can’t cause climate change is like arguing that humans can’t start bushfires because in the past they’ve happened naturally. Greenhouse gas increases have caused climate change many times in Earth’s history, and we are now adding greenhouse gases to the atmosphere at a increasingly rapid rate. Looking at the past gives us insight into how our climate responds to external forcings. Using ice cores, for instance, we can work out the degree of past temperature change, the level of solar activity, and the amount of greenhouse gases and volcanic dust in the atmosphere. From this, we can determine how temperature has changed due to past energy imbalances. What we have found, looking at many different periods and timescales in Earth's history, is that when the Earth gains heat, positive feedbacks amplify the warming. This is why we've experienced such dramatic changes in temperature in the past. Our climate is highly sensitive to changes in heat. We can even quantify this: when you include positive feedbacks, a doubling of CO2 causes a warming of around 3°C. What does that mean for today? Rising greenhouse gas levels are an external forcing, which has caused climate changes many times in Earth's history. They're causing an energy imbalance and the planet is building up heat. From Earth's history, we know that positive feedbacks will amplify the greenhouse warming. So past climate change doesn't tell us that humans can't influence climate; on the contrary, it tells us that climate is highly sensitive to the greenhouse warming we're now causing.

## Impacts—AT: Ice Age Impact Turn

#### (--) Any temperature decrease coming from declining solar activity is massively overcompensated for by current warming—a huge emissions decline would still stave off an ice age while preventing runaway warming:

Georg **Feulner, from the Potsdam Institute for Climate Impact Research 2010** (Potsdam Institute for Climate Impact Research, GEOPHYSICAL RESEARCH LETTERS, VOL. 37, L05707, 5 PP., 2010, http://www.agu.org/pubs/crossref/2010/2010GL042710.shtml)

The current exceptionally long minimum of solar activity has led to the suggestion that the Sun might experience a new grand minimum in the next decades, a prolonged period of low activity similar to the Maunder minimum in the late 17th century. The Maunder minimum is connected to the Little Ice Age, a time of markedly lower temperatures, in particular in the Northern hemisphere. Here we use a coupled climate model to explore the effect of a 21st-century grand minimum on future global temperatures, finding a moderate temperature offset of no more than −0.3°C in the year 2100 relative to a scenario with solar activity similar to recent decades. This temperature decrease is much smaller than the warming expected from anthropogenic greenhouse gas emissions by the end of the century.

#### (--) Their argument is predicated on our ability to predict solar activity over the long-term: this is an impossible task—

G. Usoskin, from the Sodankyl Geophysical Observatory, et al, 2007 (Sodankyl¨a Geophysical Observatory, “Grand minima and maxima of solar activity: New observational Constraints” http://arxiv.org/PS\_cache/arxiv/pdf/0706/0706.0385v1.pdf)

Using the above results we can formulate additional constraints on a dynamo model aiming to describe the longterm evolution of solar magnetic activity. 1. The Sun spends around 3/4 of the time at moderate magnetic activity levels (averaged over 10 years). The remainder of the time is spent in the state of a grand minimum (about 17%) or a grand maximum (9% or 22% for the SN-L or SN-S series, respectively). The solar activity during modern times corresponds to the grand maximum state. 2. The occurrence of grand minima/maxima is not a result of long-term cyclic variations but is defined by stochastic/ chaotic processes. This casts significant doubts on attempts of a long-term prediction of solar activity using multi-periodic analyses. 3. The observed waiting time distribution of the occurrence of both grand minima and grand maxima displays a deviation from an exponential distribution. A relative excess of short and long waiting times indicates that the occurrence of these events is not a time independent ”memoryless” Poisson-like process, but tends to either cluster events together or produce long event-free periods. Similar waiting time distributions are typical for many processes with, e.g. self-organized criticality or processes related to accumulation and release of energy (see Sect. 3.3). 4. We distinguish between grand minima of two different types: short minima of Maunder type and long minima of Sp¨orer type (cf., Stuiver & Braziunas 1989). This suggests that a grand minimum is a special state of the dynamo. Once falling into the grand minimum as a result of a stochastic/chaotic but non-Poisson process, the dynamo is ”trapped” in this state and its behaviour is driven by deterministic intrinsic features. 5. The duration of grand maxima follows an exponential distribution, in accord with the earlier finding of Solanki et al. (2004). This indicates that leaving a grand maximum is a random process, in contrast to the grand minimum case. In conclusion, we have presented an analysis of the occurrence of grand minima and maxima of solar activity on time scales up to 11,000 years. The results put important observational constraints upon the long-term behaviour of the solar dynamo. In view of the solar paradigm for the magnetic activity of cool stars, we expect these results to be applicable also to stellar dynamo models.We note, however, that the current results depend on the reliability of the reconstruction of the sunspot numbers, which in turn depends on the reliability of the employed geomagnetic field and other factors. This mainly affects the definition of grand maxima, while the statistics of grand minima occurrence remain fairly robust against these uncertainties.

#### (--) Turn: Warming Causes an Ice Age

William Calvin, Whole Earth Review, 12/22/91; LEXIS

RECURRENT NIGHTMARE for some scientists is to imagine Europe suddenly deprived of its customary, wintertime bonus of tropical heat, traditionally delivered courtesy of the North Atlantic Current. As it happens, that shutoff scenario doesn't require a catastrophe-prone imagination: it has already happened many times in the past.1 What's new is the fear that **global warming might paradoxically** trigger **yet another abrupt episode of continental cooling**.

####  (--) Melting ice sheets prove—no ice age is around the corner:

John Cook, 7/9/2010 (http://www.skepticalscience.com/heading-into-new-little-ice-age-intermediate.htm)

So we can rest assured, there is no ice age around the corner. To those with lingering doubts that an ice age might be imminent, turn your eyes towards the northern ice sheets. If they're growing, then yes, the 10,000 year process of glaciation may have begun. However, currently the Arctic permafrost is degrading, Arctic sea ice is melting and the Greenland ice sheet is losing mass at an accelerating rate. These are hardly good conditions for an imminent ice age.

#### (--) More evidence…human made warming massively outstrips any natural Ice Age effect:

John Cook, 7/9/2010 (http://www.skepticalscience.com/heading-into-new-little-ice-age-intermediate.htm)

The warming effect from more CO2 greatly outstrips the influence from changes in the Earth's orbit or solar activity, even if solar levels were to drop to Maunder Minimum levels. Just a few centuries ago, the planet experienced a mild ice age, quaintly dubbed the Little Ice Age. Part of the Little Ice Age coincided with a period of low solar activity termed the Maunder Minimum (named after astronomer Edward Maunder). It's believed that a combination of lower solar output and high volcanic activity were major contributors (Free 1999, Crowley 2001), with changes in ocean circulation also having an effect on European temperatures (Mann 2002). Solar Activity - Total Solar Irradiance (TSI) including Maunder Minimum Figure 1: Total Solar Irradiance (TSI). TSI from 1880 to 1978 from Solanki. TSI from 1979 to 2009 from Physikalisch-Meteorologisches Observatorium Davos (PMOD). Could we be heading into another Maunder Minimum? Solar activity is currently showing a long-term cooling trend. 2009 saw solar output at its lowest level in over a century. However, predicting future solar activity is problematic. The transition from a period of 'grand maxima' (the situation in the latter 20th century) to a 'grand minima' (Maunder Minimum conditions) is a chaotic process and difficult to predict (Usoskin 2007). Let's say for the sake of argument that the sun does enter another Maunder Minimum over the 21st century. What effect would this have on Earth's climate? Simulations of the climate response if the sun did fall to Maunder Minimum levels find that the decrease in temperature from the sun is minimal compared to the warming from [sic hu]man-made greenhouse gases (Feulner 2010). Cooling from the lowered solar output is estimated at around 0.1°C (with a maximum possible value of 0.3°C) while the greenhouse gas warming will be around 3.7°C to 4.5°C, depending on how much CO2 we emit throughout the 21st century (more on this study...).

## \*\*\*Agriculture Advantage\*\*\*

## Agriculture- NextGen solves

#### NextGen benefits would spread through the entire aircraft industry

**FAA ’11** [Federal Aviation Administration, “NextGen Implementation Plan,” March, NAS=National Airspace System, <http://www.faa.gov/nextgen/media/ng2011_implementation_plan.pdf>]

**Many airports will benefit from substantial improvements in efficiency, access, surveillance, environment and safety. Surveillance, situational awareness and safety will improve at airports with air traffic control** (ATC) **radar services** as we deploy ADS-B ground stations across the NAS and update our automation systems, and as operators equip their aircraft for it. The FAA also plans to publish Wide Area Augmentation System (WAAS) Localizer Performance with Vertical Guidance (LPV) approach procedures for all suitable runway ends by 2016. Additional Performance Based Navigation capabilities in busy metroplex areas will provide efficiency and reliability improvements during inclement weather, and will relieve or eliminate conflicts among routes into or out of airports that are close to one another. At the busiest airports, air traffic controllers, operators and airport personnel will share surface situational awareness information to reduce taxi times collaboratively. And **NextGen will make the entire system more flexible, enabling it to respond to changing demands on flight operations, including the continued evolution of space transportation operations, and of unmanned aircraft systems operating in the NAS**. FLIGHT OPERATIONS **All aircraft operators in the NAS will benefit from two major categories of improvements – efficiency and capacity, and access**. Much of the time, efficiency and capacity go together. When we reduce the distance needed for the safe separation of aircraft, reduce delays from weather and other disruptions, and increase flight-path and procedures options for controllers as they maintain the flow of traffic, we improve capacity as well. **Surface initiatives like the ones we describe below make important contributions across the board – they improve situational awareness and safety, they reduce fuel consumption and carbon dioxide emissions and they reduce tarmac delays. And by improving the efficiency of surface operations, they increase capacity**.

#### NextGen bolsters the overall aviation sector

**Eno Center for Transportation ’12** [The Eno Center for Transportation is a neutral, non-partisan think-tank that promotes policy innovation and leads professional development in the transportation industry, “NextGen Aligning Costs, Benefits and Political Leadership,” April, <http://www.infrastructureusa.org/wp-content/uploads/2012/04/nextgen-paper.pdf>]

**General aviation users will benefit from NextGen through improved approach capability at small airports that currently do not qualify for precision navigation aids, and improved safety. There may also be benefits in the form of shorter stage lengths and resulting fuel savings. The** following **analysis attempts to quantify these benefits for general aviation, starting with the reduced travel time and fuel savings**. These can be estimated based on the FAA’s database on general aviation and part 135 activity surveys for 2009.

## Agriculture- Brink

#### Recent agricultural slowdowns put us on the brink of global food insecurity

**Pardey and Alston ’10** [Philip G. Pardey is professor of science and technology policy in the Department of Applied Economics at the University of Minnesota, where he also directs the university’s International Science and Technology Practice and Policy Center and former senior research fellow at the International Food Policy Research Institute, and Julian M. Alston is a professor in the Department of Agricultural and Resource Economics of the University of California, Davis Washington D.C., “U.S. Agricultural Research in a Global Food Security Setting,” <http://csis.org/files/publication/100111_Pardey_USAgriRes_Web.pdf>]

Correcting for market failures is a primary justification for government action. Past efforts to correct for the pervasive tendency of private markets to underinvest in agricultural R&D have had high social payoffs, both within the United States and globally, and have certainly been instrumental in alleviating hunger for many of the world’s poor. But **global food security concerns are again on the rise while the pace of agricultural productivity growth is slowing**. Moreover, **recent developments in the amount and orientation of agricultural R&D are likely to exacerbate the slowdown in agricultural productivity growth and add to environmental stresses and food security concerns in the decades ahead**. Several options for changes in U.S. policies and institutional arrangements for providing agricultural R&D are briefly canvassed here, with an eye to the shifting domestic and global landscape within which those options will play out.

## Agriculture- US key

#### US agriculture innovation solves globally- we’re an agricultural leader

**Pardey and Alston ’10** [Philip G. Pardey is professor of science and technology policy in the Department of Applied Economics at the University of Minnesota, where he also directs the university’s International Science and Technology Practice and Policy Center and former senior research fellow at the International Food Policy Research Institute, and Julian M. Alston is a professor in the Department of Agricultural and Resource Economics of the University of California, Davis Washington D.C., “U.S. Agricultural Research in a Global Food Security Setting,” <http://csis.org/files/publication/100111_Pardey_USAgriRes_Web.pdf>]

**The United States has played a pivotal role in global agricultural R&D, not only in terms of the size of the U.S. investment in agricultural R&D compared with the rest of the world, but also in terms of the knowhow and new technology arising from research done in the United States that spills over to promote agricultural productivity growth in other parts of the world**. Worldwide public investment in agricultural R&D increased by 35 percent in inflation-adjusted terms between 1981 and 2000; from an estimated $14.2 billion to $20.3 billion in 2000 international dollars. 6 It grew faster in developing countries (from $5.9 billion to 10.0 billion, a 53 percent increase), and the developing world now accounts for about half of global public sector spending—up from an estimated 41 percent share in 1980. However, developing countries account for only about one-third of the world’s total agricultural R&D spending when private investments are included. Public spending on agricultural R&D is highly concentrated, with the top 5 percent of countries in the data set (that is, 6 countries in a total of 129) accounting for approximately half of the spending. **The United States alone constituted almost 20 percent of global spending on publicly preformed agricultural research**. The Asia and Pacific region has continued to gain ground, accounting for an ever-larger share of the world and developing country total since 1981 (25.1 percent of the world total in 2000, up from 15.7 percent in 1981). In 2000, just two countries from this region, China and India, accounted for 29.1 percent of all expenditure on public agricultural R&D by developing countries (and more than 14 percent of public agricultural R&D globally), a substantial increase from their 15.6 percent combined share in 1981. In stark contrast, subSaharan Africa continued to lose ground—its share fell from 17.9 percent of the total investment in public agricultural R&D by developing countries in 1981 to 11.9 percent in 2000. **The intensity of agricultural R&D—that is, agricultural R&D spending relative to the economic size of the agricultural sector it serves—is also much lower in developing countries**. In 2000, developing countries spent just $0.50 on public agricultural R&D for every $100 of agricultural output, compared with $2.36 for developed countries as a group (in this case, agricultural R&D spending expressed as a percentage of agricultural gross domestic product, AgGDP). The public agricultural R&D intensity in developed countries grew from $1.62 per $100 of output in 1980 to $2.33 per $100 of output in 1991, but has barely risen since. In contrast, the overall agricultural R&D intensity was static in developing countries over the entire period.

#### Ag solutions must start with the US- we have the best investment climate

**Pardey and Alston ’10** [Philip G. Pardey is professor of science and technology policy in the Department of Applied Economics at the University of Minnesota, where he also directs the university’s International Science and Technology Practice and Policy Center and former senior research fellow at the International Food Policy Research Institute, and Julian M. Alston is a professor in the Department of Agricultural and Resource Economics of the University of California, Davis Washington D.C., “U.S. Agricultural Research in a Global Food Security Setting,” <http://csis.org/files/publication/100111_Pardey_USAgriRes_Web.pdf>]

**Beginning in 1971, the United States and other agencies financed a collectively conceived international undertaking called** the Consultative Group on International Agricultural Research (or **CGIAR** for short). The CGIAR system has captured the attention of the international agricultural R&D and aid communities because of its scientific achievements and its pivotal role in the Green Revolution. The main priorities of the CGIAR system are to overcome, to some extent at least, the global agricultural R&D underinvestment problem and to help the food-poor. In 2008 the CGIAR conducted research in 15 international research centers located throughout the world and spent $542 million. **The United States contributed $58 million in funding**, or 10.7 percent of the total, which is substantially less than the share of support coming from the United States in earlier years (for example, U.S. funds accounted for well over 20 percent of the total funding to the CGIAR for almost two decades until the early 1990s, after which the U.S. share shrank and has since never recovered).pardey and alston | 15 The CGIAR is important, but only one of several options for leveraging U.S. agricultural R&D capacity and funding worldwide. In recent years, new international initiatives supported by U.S.based entities (including the Bill and Melinda Gates Foundation (BMGF), McKnight Foundation, Warren Buffet Foundation, Rockefeller Foundation, and others) have directed significant funding and effort to revitalizing productivity growth in sub-Saharan Africa and South Asian agriculture. Creative cofinancing or other options could be used to achieve multiplier effects from the targeted, possibly joint, deployment of public and private funds. The BMGF is pursuing an evidence-based approach, directing the funds to areas with the likely highest productivity and development payoffs. Preserving flexibility and seeking new, perhaps sometimes experimental, ways of doing business will be key to success. Currently, U.S. funding to the CGIAR is overseen by USAID personnel in the State Department. Recognizing that funding science for development is quite different in scope and mode of action than most other forms of development, placing oversight of these funds in the hands of science agencies with experience in large collaborative international R&D undertaking (such as the National Science Foundation) might engender better outcomes. Linking the allocation of U.S. funds to international research (be it research undertaken by international efforts such as the CGIAR or national research systems in developing countries) with the federal funds allocated to domestic agricultural R&D also has merit, and perhaps a series of industry-oriented U.S. Agricultural and Food Research and Development Corporations (AFRDCs) extending the Australian model would be one useful approach. The industry-based structure to these disbursal mechanisms might also help better align and mobilize farm industry and agribusiness support to food and agricultural R&D. Reducing the Cost of Regulating Technologies Beginning in the 1980s, the U.S. Congress gave much legislative attention to expanding the scope of intellectual property protection in ways that substantially affected the incentives to innovate in agriculture. This was supported by significant jurisprudence activity and other legislation designed to streamline the commercialization of public innovations and encourage public-private partnerships in (agricultural) research and technology development. Other countries and international agencies (such as the World Trade Organization) also moved to “harmonize” international approaches to intellectual property over the past few decades. **Much less attention has been given to streamlining regulatory regimes concerning the release and use of new agricultural technologies. The United States has arguably done the most in this regard** (although the technical and administrative costs of compliance in the United States are high and rising and need continued vigilance), **opting for science-based approval approaches that facilitate innovation and technical change while seeking to objectively assess and manage the human and environmental risks associated with those changes**. However, many parts of the developing world still have inefficient or dysfunctional technology assessment, release, and oversight systems, whether in reference to modern biotechnologies or less contentious technologies like conventionally bred crop varieties. There are a myriad of reasons for these institutional failures, but one key aspect is a lack of local technical expertise to conduct or evaluate the necessary prerelease trials and steward the technologies once they are in use. Lowering the costs of access to the necessary technical (often research-informed) information would likely play a key role in spurring local innovation in developing countries and facilitate the transfer in and adaptation of technologies developed elsewhere.

## Impacts- Extinction

#### (--) Food insecurity causes extinction:

Douglas S. Winnail, 1996 (Ph. D., “On The Horizon: FAMINE” The World Ahead, Oct, http://www.vnnforum.com/showthread.php?t=77732)

Perhaps you have been too busy to notice, but the concern about our global food supply is real! Major news magazines are reporting that after a quiet few decades, talk of a world food crisis is again in the air. Government leaders, economists and scientists are seriously pondering such sobering questions as: Does the world face a global shortage? and Will the world starve? There is a growing sense of urgency. In November 1996 the United Nations Food and Agricultural Organization will convene a World Food Security Summit in Rome. The conference was called due to growing concerns that shrinking world food reserves, rising prices and the declining production of food grains could be the precursors of an imminent food security crisis. Dr. Jacques Diouf, the FAO Director-General, has stated, "The very survival of humanity depends on world food security ". Just what does the future hold for humanity? Will there be enough food to go around? What does a look at all the evidence indicate? And how will this issue affect your life in the months and years ahead? HOW LONG BEFORE THE CUPBOARD IS BARE? Numerous sources document that global supplies of rice, wheat, corn and other key commodities have dwindled to their lowest levels in years . The U.N. recently warned that food stocks stand far below the minimum needed to provide for world food security. The world's grain harvest has not increased in any of the last five years, and since 1992 world grain consumption has exceeded production... this year--for the first time since World War II--there are basically no surplus stocks in government-owned reserves. The tight supplies have led to steep price increases for wheat, rice, and corn. Grain stockpiles have fallen particularly fast in the U.S. and the European Union as a result of agricultural reforms that have focused on reducing overproduction and selling off surpluses--primarily to China--to gain revenue from exports. Bad weather and a string of poor harvests in grain producing areas of the world have also contributed to the dwindling reserves. A CRISIS AHEAD? Opinions are sharply divided over what the future may hold. The world's food economy may be shifting from a long-accustomed period of overall abundance to one of scarcity and that food scarcity will be the defining issue in the future. The lack of growth of the world grain harvest since 1990 coupled with the continuing growth in world population and the increased likelihood of crop-damaging heat waves in the years ahead at least carries the potential of severe food shortages . U.N. sources suggest that with grain stocks dangerously low serious food shortages could result if there are major crop failures in 1996. These pessimistic predictions for the future are countered by voices claiming to be more rational and optimistic. They argue that present shortages in food reserves are merely a temporary blip on the food charts and that relief will probably come with this year's harvest. The optimists believe returning idled land to production will assure enough food for growing populations. They also have faith that biotechnology will develop new varieties of plants, boosting production. Julian Simon, a business professor at the University of Maryland, downplays doomsayers and the fears of famine. In Simon's opinion, "For some 25 years they have been wrong, and they have not changed their minds. Why should they be believed?" From Simon's perspective the record of history is progress, and life has never been better. Who should you believe? Is there really an impending global food crisis? Has anything changed in 25 years since the doomsayers began sounding the alarm? Are there reasons for concern? POPULATION PRESSURES INCREASE A prime concern is that, in spite of falling grain reserves and the leveling off of production, worldwide grain consumption continues to grow. This increase is driven by two factors: growing populations and improving lifestyles. Both are placing increasing strains on world food supplies. Since 1950 world population has more than doubled--surging from about 2.5 billion to more than 5.8 billion people. Globally, it continues to grow (by any historical benchmark) with extraordinary speed . As populations grow, demand is certainly rising fast. Every year there are 90 million more mouths to feed in developing countries. As consumers become richer, they develop a taste for meat, and it takes a lot of grain to fatten livestock. The basic question is: Will we be able to feed 90 million more people each year when grain production seems to be leveling off ? Keep in mind this is in addition to the biblical scale of hunger that exists already. About 800 million people in poorer countries are chronically undernourished right now ! SHIFTS TO DEPENDENCY Another worrisome trend is described by Stanford University biologists Paul and Anne Ehrlich. Fifty years ago "most regions of the world were self-sufficient in food production, and many exported grain. Since then, for various reasons, the pattern has dramatically changed; more than 100 nations now import grain from the United States, Canada, Western Europe, Australia and a few other surplus producers.... Nearly all developing nations have become dependent on grain imports to keep their populations adequately fed.... This growing worldwide dependency on a mere handful of suppliers for basic foodstuffs could itself spell trouble for global food security ". This shift to dependency has ominous implications for the future. As nations industrialize, people move from rural farms and villages to the cities, leaving fewer laborers to produce food. Agricultural skills are lost and more people become dependent on distant food supplies. Prime agricultural land is permanently lost to urban development, reducing the acreage available to grow food. In just two years, China turned from exporting grain to Japan (8 million tons) into the world's second largest grain importer (16 million tons). Some are concerned that, if this ominous trend is not reversed, China would need to import virtually all the grain available for export in the world. TECHNOLOGY--A PLAYED-OUT SAVIOR? Optimists are quick to point out that a major reason why pessimists were wrong in their predictions for widespread famine in the 1960s was their failure to anticipate the arrival of the "green revolution" with its new strains of high-yield seeds, chemical pesticides, increased use of fertilizers and improved irrigation. These four factors kept grain production ahead of the doubling population. The predicted worldwide famine did not materialize. But were the doomsayers wrong--or only premature? Paul and Anne Ehrlich, among others, suggest that yield increases from green-revolution technology may now be playing out. Worldwide fertilizer use, which increased over 1,000 percent during the green revolution years, has been declining for several years in a row. Insects are developing resistance to pesticides. Underground aquifers used for irrigation are being depleted. While plant scientists talk of continuing to boost grain production through biotechnology, the Ehrlichs--both biologists--suggest, no promising new technology appears on the horizon that could carry the process (green-revolution technology) further on a global scale. From their perspective, a big jump in agricultural productivity resulting from advances in biotechnology is not foreseen . With the green revolution apparently running out of gas, numerous observers are warning that the globe is on the brink of a new era of food scarcity. In fact, the growing dependency on bioengineered crop varieties may contain the seeds of our own destruction. FRAGILE FOOD CHAIN Today our food supply depends upon a few hybridized varieties of a very limited selection of plant species--primarily wheat, corn, rice and potatoes. These plants are genetically bred for uniform qualities of color, size and texture while other traits are eliminated. What many do not realize is that reducing the genetic base in this way may boost efficiency, but it also increases the risk that one type of pest will infest a whole harvest. When entire fields or regions are planted with just one hybrid variety of a single crop--such as Russet Burbank potatoes that McDonald's prefers to make French fries with--you have a potential disaster waiting to happen. It has happened before! The Great Irish Potato Famine in the late 1840s developed during a series of wet growing seasons when a fungus from Europe spread through many fields planted with a single variety of potato. The collapse of this crop was catastrophic. Over a million Irish died and millions more emigrated to escape the horrible conditions spawned by a "sinister trend toward monoculture," oppressive political decisions and unusual weather. Now a new strain of this same fungus has reappeared in the 1990s and is sweeping through potato fields in much of Europe and North America and parts of South America, Africa, Asia and the Middle East. The aggressive new strain is resistant to commonly used pesticides and has been called one of the worst crises to ever strike the U.S. potato industry. It has the potential of causing serious problems to our food supply if wet weather develops. However, the potato blight is only one part of a very disturbing picture. Karnal bunt fungus has turned the 1996 durum wheat harvest in the southwestern U.S. into a nightmare. A soybean fungus, for which there is no known treatment, has appeared in Hawaii. Reports are also surfacing that genetically engineered plants designed to withstand herbicides can pass those new genes to nearby weeds. The European Union recently refused to approve the sale of a genetically engineered variety of corn, fearing the genes for antibiotic resistance might be passed on to cattle and humans. The impressive methods of modern grain production rest on a very narrow and fragile genetic base. Our future harvest could be likened to delicately balanced houses of cards--highly susceptible to sudden changes. However, there is one more unpredictable factor that is capable of dramatically affecting the size and quality of global food supplies. WEATHER--A WILD CARD! What is seldom stated is that optimistic forecasts for increasing grain production are based on critical long-term assumptions that include normal (average) weather. Yet in recent years this has definitely not been the case. Severe and unusual weather conditions have suddenly appeared around the globe. Some of the worst droughts, heat waves, heavy rains and flooding on record have reduced harvests in China, Spain, Australia, South Africa, the United States and Canada--major grain growing regions of the world--by 40 to 50 percent. As a result grain prices are the highest on record. Worldwatch Institute's president, Lester Brown, writes, "No other economic indicator is more politically sensitive that rising food prices.... Food prices spiraling out of control could trigger not only economic instability but widespread political upheavals"-- even wars.

## Impacts- Resource wars

#### **(--) Wars over resources are deadly, and lead to Armageddon**

Lendmen 7 ( Stephen,Progressive Radio Newshour host, 6-6-7, *global research.ca*, http://www.globalresearch.ca/index.php?context=va&aid=5892 )

The new "Great Game's" begun, but this time the stakes are greater than ever as explained above. The old one lasted nearly 100 years pitting the British empire against Tsarist Russia when the issue wasn't oil. This time, it's the US with help from Israel, Britain, the West, and satellite states like Japan, South Korea and Taiwan challenging Russia and China with today's weapons and technology on both sides making earlier ones look like toys. At stake is more than oil. It's planet earth with survival of all life on it issue number one twice over. Resources and wars for them means militarism is increasing, peace declining, and the planet's ability to sustain life front and center, if anyone's paying attention. They'd better be because beyond the point of no return, there's no second chance the way Einstein explained after the atom was split. His famous quote on future wars was : "I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones." Under a worst case scenario, it's more dire than that. There may be nothing left but resilient beetles and bacteria in the wake of a nuclear holocaust meaning even a new stone age is way in the future, if at all. The threat is real and once nearly happened during the Cuban Missile Crisis in October, 1962. We later learned a miracle saved us at the 40th anniversary October, 2002 summit meeting in Havana attended by the US and Russia along with host country Cuba. For the first time, we were told how close we came to nuclear Armageddon. Devastation was avoided only because Soviet submarine captain Vasily Arkhipov countermanded his order to fire nuclear-tipped torpedos when Russian submarines were attacked by US destroyers near Kennedy's "quarantine" line. Had he done it, only our imagination can speculate what might have followed and whether planet earth, or at least a big part of it, would have survived.

## \*\*\*Solvency\*\*\*

## Solvency- Loan guarantees

#### Loan guarantees are vital to NextGen investment- airlines want federal action

**Carey ’11** [Bill, senior editor with Aviation International News, “Public-Private Partnerships Among Proposals to Advance NextGen,” August, <http://www.ainonline.com/aviation-news/aviation-international-news/2011-07-27/public-private-partnerships-among-proposals-advance-nextgen>]

Although there is consensus about its ultimate benefits, **NextGen faces a cost conundrum. Airlines emerging from years of recession and coping now with high fuel prices are reluctant to invest in the necessary suite of airborne equipment–costing an estimated $150,000 to $1 million per aircraft–without proof of a timely return on investment in the form of fuel savings and operational efficiencies made available by the FAA. Some contend government should pay for the equipment**. “We have an ATC system today that is largely ground based. All we’re doing when we’re talking about NextGen is we’re taking a known technology, GPS technology, and moving part of the equipment in the air and part of the equipment will be on the ground,” said Will Ris, senior vice president of government affairs for American Airlines, speaking at the FAA Forecast Conference earlier this year. “**It is our view that that ATC system should continue to be financed and supported by the federal government because that’s, after all, where all the ticket taxes are going**.” The FAA is advancing on one major pillar of NextGen. The agency awarded a contract to ITT in August 2007 to deploy the ground infrastructure for automatic dependent surveillance-broadcast (ADS-B) nationwide by 2013, and last year mandated that aircraft operators equip for ADS-B out position reporting by 2020. A rulemaking on ADS-B in equipage–the ability to display air traffic in the cockpit–is in the works, with initial recommendations of an Aviation Rulemaking Committee due this fall. The FAA’s investment in ADS-B and other infrastructure will languish, however, until a “tipping point” is reached of properly equipped aircraft that can benefit from NextGen system efficiencies. **The NextGen Equipage Fund aims to kick-start NextGen by assisting airlines in acquiring some of the necessary equipment**. The fund would leverage $1.5 billion raised through commercial borrowing and private equity to finance new avionics for an estimated 75 percent of the U.S. airline fleet. **It also reportedly is seeking $150 million in federal loan guarantees**. In the works since about 2009, the fund was revealed at an RTCA conference last fall by Steve Loranger, ITT chairman, president and CEO. While “other aerospace companies” are referenced in background material, ITT to date is the only named strategic investor of the fund, which is managed by Nexa Capital Partners, of Washington, D.C. Principals of ITT and Nexa Capital provided an overview of the fund at the Paris Air Show in June. Russell Chew, managing partner with Nexa Capital Partners and a general partner of the NextGen fund, said the fund would procure “a basic NextGen suite of avionics,” enabling functions such as ADS-B and data communications, which airlines would lease. They would make payments on the equipment based on the FAA’s achieving agreed milestones for supporting infrastructure. In turn, the FAA would be bound by performance guarantees “in a contractual way.” Participating airlines would realize a return on their investment sooner as a result of airspace system efficiencies such as preferred routings delivered by the FAA on the principle of “best equipped, best served,” closing the equipage “business case” that confronts NextGen. “The NextGen Equipage Fund was founded to bring real money to bear on the problem,” Chew said. “It will allow airlines to afford, in spite of their weakened balance sheets, the actual investment in avionics they need to put together to take advantage of this new system [which] requires that all airplanes be equipped with new avionics. So the airlines in their equipage decisions have become the gatekeepers of this function.” The fund was negotiating “participation agreements” with several airlines, which he declined to identify. While a loan guarantee from the government technically is not necessary, **Chew said,** “**in a public/private partnership…the loan guarantee is a perfect place for government to say, given the right amount a risk, I could really kick start this by lowering the cost of capital**.”

#### Federal loan guarantees solve best- gets operators and investors on board

**Eno Center for Transportation ’12** [The Eno Center for Transportation is a neutral, non-partisan think-tank that promotes policy innovation and leads professional development in the transportation industry, “NextGen Aligning Costs, Benefits and Political Leadership,” April, <http://www.infrastructureusa.org/wp-content/uploads/2012/04/nextgen-paper.pdf>]

**Operators and investors need a clear set of incentives to make use of this financing opportunity and expedite equipage. Federal loan guarantees and a “best equipped best served” approach have been proposed as means of incentivizing airline equipage and mitigating risk for investors**. In fact, the recent reauthorization bill FAA Modernization and Reform Act of 2012 authorizes the FAA to use loan guarantees. **A loan guarantee could use revenues collected from users as cover if a borrower operator defaults on its payments to the NextGen Equipage Fund**. Under a “best equipped best served” measure, equipped operators could be given take off and landing priorities, thus a financial incentive to equip. **As a further incentive for operators, any repayments can be deferred until expected benefits emerge in the short run. The federally guaranteed loans from the NextGen Equipage Fund is a mitigation of the financial risk of NextGen from operators and private investors by ultimately transferring the risk to taxpayers**. This can actually be equitable and justified if some of the risk is transferred to operators and passengers through a transparent funding mechanism. Operators 23 should be liable to pay their share of equipage costs, while revenues collected from passengers can form the basis for a loan guarantee.

#### Signal of the plan is key to NextGen success

**International Business Times ’11** [“Fed’s NextGen: Air Traffic Control for the 21st Century,” July 5, <http://www.ibtimes.com/articles/174672/20110705/faa-nextgen-air-traffic-control-gps-airlines-travel-business-travel-leisure-travel-airports-airlines.htm>]

In a nutshell, **NextGen is a long-overdue, tech-based system that will save time, money, and energy. And any system that reduces the amount of fuel a commercial plane burns per flight is good for the environment**. So who could possibly complain against a system that's roughly the equivalent of replacing a 1960s Buick with a 2011 Porsche 911? Airline companies, that's who. **Airlines favor NextGen, but they're concerned about the FAA's history of changing directions after they've made costly new investments. That's one reason the arilines want the federal government to help pay for the equipment they're required to buy. Loan guarantees may represent one compromise between the feds and airlines**, The Washington Post reported Tuesday. **Airlines also want proof that NextGen is ready to produce tangible benefits. That's why the FAA's goal is to leverage current GPS technology, before adding more technology, and, by extension, raising cost**.

#### Federal loans spur NextGen adoption

**Associated Press ’11** [“Airlines should get government loans, committee says,” Sept. 29, <http://www.cleveland.com/business/index.ssf/2011/09/airlines_should_get_government.html>]

**The government should help airlines install billions of dollars' worth of equipment in their planes necessary to use a new air traffic control system through loans or loan guarantees**, an industry-government advisory committee recommended Thursday. **Repayment of the loans, which could involve public-private partnerships, would be triggered by the Federal Aviation Administration achieving promised benefits from the new system**, the committee said. The financing recommendation was one of a half dozen related to FAA's Next Generation Air Transportation System -- also called NextGen -- that were approved at a meeting of the committee. The FAA is replacing World War II-era radar technology with a control system based on GPS technology, a process that is expected to take more than a decade to complete. The agency says planes will be able to safely fly closer together, reducing flying time, saving fuel and achieving better on-time performance. The program is forecast to be as revolutionary for civil aviation as was the advent of radar six decades ago. It is also critical to FAA's plans to accommodate growth in airline traffic, which is expected to rise from over 700 million passengers a year to more than 1 billion a year in the next 10 years. Although they have the most to gain, **airlines are wary of FAA's track record of changing directions after investments have been made. They point to cases where airlines have purchased new equipment at FAA's urging and wound up never using it**. FAA Deputy Administrator Michael Huerta, the FAA's top representative on the committee, cautioned that the agency needs industry to be much more specific about which benefits must be produced and how they would be measured before the government could act on the financing recommendation. "We're at the point right now where we have a very excellent teeing up of the issue," Huerta told the committee. But **specifics are needed, he said, before FAA can decide "how do we rearrange our work programs to deliver these things**." Airlines and other aircraft operators may have different expectations of benefits, Huerta said. And benefits may vary by location, he said. For example, it may be more difficult to achieve NextGen benefits in the New York area, where a variety of factors make air traffic control extraordinarily complex, than in Atlanta, even though Hartsfield International Airport there is one of the world's busiest airports. Paying the tab for NextGen -- estimated at as much as $22 billion for the government and another $20 billion for the airline industry through 2025 -- is one of the program's biggest hurdles. The equipment and other expenses necessary to use the system are being put in place in layers. FAA hopes to complete the installation of most of its hardware on the ground by 2013. About 40 percent of airliners and 30 percent of private planes already have the onboard equipment necessary to take off and land using more precise, fuel-saving procedures, said committee member Ed Bolen, president of the National Business Aviation Association. But none have the equipment necessary for a plane to continually broadcast to controllers and other aircraft its precise location because manufacturers aren't making the equipment yet, he said.

## Solvency- Uncertainty

#### Funding certainty is key to NextGen adoption

**Eno Transportation Foundation 4-5**-12 [The Eno Transportation Foundation is a neutral, non-partisan think-tank that promotes policy innovation and provides professional development opportunities across the career span of transportation professionals, “NextGen: Aliging Costs, Beneftis, and Political Leadership,” <http://www.infrastructureusa.org/nextgen-aliging-costs-beneftis-and-political-leadership/>]

**In order for NextGen to succeed, there must be greater certainty about potential benefits and costs. In the highly competitive low profit-margin airline industry, few want to take on the burden of paying for something that spreads speculative benefits so widely. It will also be essential to have a mechanism that raises sufficient capital for NextGen infrastructure in a transparent and equitable manner, while imposing minimal burdens on those who pay for it**. Without a sustainable, stable, and reliable strategy for both continued infrastructural improvements and incentives for equipage, there is no guarantee that NextGen can be implemented in a timely and cost-effective manner. **Without strong political leadership, a clear and unbiased delineation of costs and benefits, a transparent source of funds, and incentives for operators to equip, it is unlikely that NextGen benefits can be delivered in a timely manner if at all**.

## Solvency- NextGen effective

#### NextGen would effectively revamp US airlines- generates tons of savings

**Captain ’11** [Tom Captain is Vice Chairman and Principal, Aerospace & Defense Sector Leader, Deloitte LLP, “NextGen Benefits – An Open and Shut Business Case,” August, <http://www.aia-aerospace.org/newsroom/publications/aia_eupdate/august_2011_eupdate/nextgen_benefits_an_open_and_shut_business_case/>]

In May, **Deloitte published a detailed study on the business case for air transportation system transformation for NextGen and other global programs**. We presented our findings at the Aviation Week NextGen Ahead conference that same month. The study was prepared to add an objective voice to the ongoing dialogue about costs, benefits and challenges associated with transforming the air transportation system by compiling a bottoms-up cost benefit study of the investment value for airlines, governments and passengers to contemplate. **It should be no surprise that the business case appears to us as a classic open and shut case for proceeding** – a common observation of many knowledgeable on the issues. However, the real challenge is to structure a mechanism for investors to see a clear and committed path towards investment return—not an easy thing to do when the value of being an early adopter may not bring an investment return soon enough to meet the expectations of most chief financial officers. Findings – **On a global basis, our study estimated annual savings to include three billion gallons of fuel, elimination of 29 million metric tons of carbon emissions and reduction of four million hours of delay. These savings amount to $29 billion of net benefits in the U.S. alone each year and $135 billion globally, in the first year of full system deployment in 2026. These significant fuel savings, lower carbon emissions, time saved and economic benefits should result from the transition to advanced satellite based navigation, positioning and timing technologies as well as new air traffic control procedures. This transition should help in overcoming most weather induced and air traffic control based delays, allowing for direct flight paths and closely spaced aircraft operations**. Specifically, **we found the projected net present value of global transformation programs through 2035 is $897 billion**. The estimated regional break-down is as follows: U.S. NextGen program $281 billion, EU SESAR program $266 billion and rest of world $350 billion. Globally, estimated savings accrued by different beneficiaries of implementation are as follows: passengers 34 percent, airlines 31 percent, overall economy 30 percent and ANSP/Airports/Air Traffic Control Organizations 5 percent of the total benefits. Program acceleration - In addition, **our study assessed the opportunity to accelerate the implementation by five years as well as to quantify the impact of a five year delay. We found that in the U.S., accelerating NextGen for completion by 2020 could be worth an additional $20 billion in value and $100 billion globally**.

## Solvency- Airlines want NextGen

#### Airlines want NextGen- new initiatives prove

**Schofield 5-14**-12 [Adrian, Aviation Week & Space Technology, “NextGen Emerges,” Vol. 174, Issue 17, EBSCO]

**Initial benefits will soon emerge in a NextGen program aimed at delivering near-term operational improvements. The FAA is examining certain metropolitan areas to optimize their airspace design around advanced flight procedures. The agency has identified 21 metro areas for this initiative, many of which have multiple airports**. There are two phases for each location: a study and planning phase, followed by a design and implementation phase. Airlines and the National Air Traffic Controllers Association are partners in the program. Several studies have been conducted by the agency, and so far six have advanced to design and implementation. They cover Washington; North Texas; Charlotte, N.C.; Atlanta; Northern California; and Houston. South Florida will be added to this list later this year. The first results are likely to be seen in the Washington project, says Dennis Roberts, the FAA's director for airspace services. Two new optimized profile descent (OPD) procedures will be introduced at Reagan Washington National Airport in August. The OPDs will take eastbound aircraft from cruise altitude to runway approach, using a continuous speed and rate of descent. This will allow aircraft to remain at idle power levels for nearly 100 mi., says Roberts. New procedures will also be introduced at the other two major airports in this metropolitan area. The FAA is working with one lead carrier at each airport: US Airways at Washington National, United Airlines at Washington Dulles International Airport and Southwest Airlines at Baltimore-Washington International Airport. **US Airways is excited about the potential of the metropolitan initiatives**, says Brian Townsend, head of the carrier's flight technical operations. "They allow us to build the airspace around the procedures, instead of building the procedures around the airspace," he says. **The potential savings are large enough that there is "a sense of urgency" among airlines to kick-start the initiatives**.

## \*\*\*2AC Blocks\*\*\*

## AT: No skilled workers

#### The plan solves skilled workers

**DiMascio ’11** [Jen, Staff writer for Aviation Daily, ‘Senate Spending Bill Fully Funds NextGen Air Traffic Modernization”, 9-21-11, http://www.aviationweek.com/Article.aspx?id=/article-xml/avd\_09\_21\_2011\_p01-02-372369.xml)

**The FAA did not escape entirely unscathed. Senators are proposing to cut $100 million from the FAA’s facilities and equipment account. Given high-profile incidents of air traffic controllers sleeping on the job, the subcommittee provided money to improve air traffic management. It also directs the FAA to implement “data-driven performance standards to make certain that towers nationwide are properly staffed by controllers with the skill set and the discipline needed to fulfill their duties**,” Ranking Member Susan Collins (R-Maine) says. That means additional training and implementing recommendations made by the Department of Transportation Inspector General in response to the recent lapses. More details should emerge today; the full Senate Appropriations Committee meets at 3 p.m. to approve the bill.

## 2AC Elections DA

#### Most Americans support the plan

**Sterling ’11** [Cord Sterling, Vice President, Legislative Affairs at the Aerospace Industries Association, “Budget Deal Raises Concerns on Defense, NextGen Cuts,” May, <http://www.aia-aerospace.org/newsroom/publications/aia_eupdate/may_2011_eupdate/hill/>]

Federal Aviation Administration accounts for facilities and equipment and research, engineering and development also were reduced. These accounts are responsible for critical R&D and acquisition of NextGen enabling technology, so AIA is heavily engaged with congressional appropriations committees and FAA on the implications of these reductions. **NextGen implementation is at a critical juncture, and a majority of Americans favor investment in our nation’s airspace infrastructure**.

## 2AC States CP

#### Perm- do both

#### Doesn’t solve investment- our Fried evidence says that airlines need federal loan guarantees before they’ll adopt it, otherwise they won’t think it’s beneficial-

#### Federal action is key to NextGen adoption

**Eno Center for Transportation ’12** [The Eno Center for Transportation is a neutral, non-partisan think-tank that promotes policy innovation and leads professional development in the transportation industry, “NextGen Aligning Costs, Benefits and Political Leadership,” April, <http://www.infrastructureusa.org/wp-content/uploads/2012/04/nextgen-paper.pdf>]

Equipage. **Operators have shown little progress towards equipping their aircraft. This is primarily due to the first two problems discussed above- uncertainty regarding NextGen’s benefits and a lack of clear incentives to invest, and uncertainty about the FAA’s ability to deliver efficiently**. There is a concern that equipping early will cost them more in the long run due to technological obsolescence. Operators want to see more “skin in the game” from the FAA than promises of benefits. However, **airlines have lobbied in the past for federal stimulus funds to cover equipage costs**. While revenues generated from the system have been and should continue to be used to fund **NextGen’s infrastructure and capital needs, operators will eventually have to invest in equipage particularly if there are benefits involved**. This paper provides evidence that NextGen benefits, even at low levels, could yield significant tangible benefits to users. It is inevitable that NextGen will require additional funds to become a reality. **The decision about funding sources will ultimately be a complex political decision reached by negotiation and compromise with government and industry**. This paper has attempted to outline some criteria and initial analysis to aid in that conversation. The next step will be to convene the appropriate stakeholders, and conduct more independent research on costs and benefits, in order to begin these negotiations and generate the impetus for the political leadership necessary to make NextGen happen.

## 2AC Spending DA

#### Turn- the plan saves tons of money

**Jansen 4-4**-12 [Bart, USA Today, “Report: Air traffic control improvements would save money,” <http://travel.usatoday.com/flights/post/2012/04/nextgen/664954/1>]

**Improvements to the air-traffic control system could save hundreds of millions of dollars each year by consuming less fuel and reducing flight delays, according to an industry analyst's report released Wednesday**. But airlines remain leery that the Federal Aviation Administration will follow through on improvements that justify buying more expensive equipment for planes, according to the report by Sakib bin Salam, a fellow at the Eno Center for Transportation, a nonpartisan Washington think tank. FAA has estimated that its program for improving air-traffic control, which is nicknamed NextGen, will make flight routes more precise by tracking planes with a satellite global-positioning system. Routes that are more precise could be shorter, reduce congestion and burn less fuel, saving airlines and passengers money. But according to bin Salam, FAA hasn't released how it estimated that the program would cost $15 billion to $20 billion to build through 2025, or how it estimated potential savings that eclipse those figures. To nail down estimates, bin Salam calculated that burning 1% less fuel would have saved U.S. airlines $229 million in 2010, when fuel was much less expensive than today. **Reducing flight delays by 1% would save $39 million per year, based on the cost of flights and the length of delays, bin Salam said. The FAA projects much larger savings in fuel and delays. "Even at a minimum, the savings could be significant,**" bin Salam told industry experts at the Bipartisan Policy Center.