Creating an American Infrastructure Investment Strategy
(by Henry M. Goldberg, March 2009)

The Situation We Face

The U.S. economy during the Bush administration years was driven by frenzied spending and borrowing in the housing sector. This masked major structural problems from the huge transfer of wealth to Asia accruing from large trade surpluses and to the oil exporting countries from consumption of high-priced oil imports. Inevitably, massive numbers of homeowners defaulted on inappropriately-originated mortgages, the artificially-created housing bubble burst, and the U.S. and world economy fell into a deep, potentially long-term, recession.

The Obama administration and Congress's response to this has been bailouts of financial institutions and the automobile industry, funding to help homeowners modify mortgage payments, and the $787 billion American Recovery and Reinvestment Act to stimulate the economy. While some assistance is needed from the federal government to prevent a spiraling downturn, the focus should be on developing a strategy that puts the American economy on a sustainable, long-term growth path. Borrowing trillions of dollars from our children and future generations is only justifiable if we can build an economy that will benefit them over the long term more than the costs incurred now.

A New Strategic Direction

The foundations of a long-term economic strategic vision for the U.S. economy should be preservation of the environment, efficient use of natural resources, and the development of major new domestic and export business opportunities. The most critical global environmental challenge is halting the long-term global warming created from the burning of fossil fuels. The most critical resource challenge is transitioning away from scarce, conventional oil supplies that are stretched thin by the growth of global demand, particularly from developing countries, like China and India. Meeting these challenges through a sound economic strategy is the solution that government and business officials should be seeking.

Three key benefits would arise from this strategy. The first is the abatement of the long-term detrimental economic impacts of climate change. The second is the elimination of the outflow of money from the country to oil exporting countries and reduction in energy costs by substitution away from high-priced oil. The

third involves the creation of major new, long-term, export markets for U.S. goods and services.

Quantifying The Benefits

The British government's "Stern Review on the Economics of Climate Change", published in October 2006, quantified the long-term economic costs of climate change. Major costs would result from such impacts as flooding of coastal areas from rising sea-levels due to the melting of Arctic ice, numerous intense storms/hurricanes, droughts leading to declining crop yields, increased wildfires, heat waves, and spreading of diseases. If the world were not to alter its energy-consumption patterns, a so-called "business-as-usual scenario", global carbon-dioxide (CO_2) emissions would double and reach 60 billion metric tons per year by 2050. This scenario would increase CO_2-equivalent greenhouse gas concentrations in the atmosphere to a level that would likely cause average global temperatures to rise at least 2°C as early as 2035 and by over 5°C by the next century. The Stern review looked at an alternative target scenario that gradually reduces CO_2 emissions to 18 billion tons per year by 2050, which would be sufficient to avoid the worst effects of climate change. This is estimated to result in a savings of 5% - 20% of global GDP now and forever. If we assume conservatively that the U.S. would save 5% of its GDP per year by adopting the target scenario for greenhouse-gas emissions (assuming the rest of the world adopted the same scenario), it would save about $700 billion per year with the current GDP level.

The United States currently consumes about 7.7 billion barrels per year of crude oil, of which about 4.9 billion barrels per year are imported. About 3.4 billion barrels per year of U.S. oil consumption comes from non-North American sources. The U.S. would substantially reduce wealth flowing out of the country by eliminating these oil imports. Assume conservatively, the price of oil were $70 per barrel, which is where it stood for a time before the recession but much less than the peak of over $140 per barrel. Then, this oil-import elimination policy would save the U.S. about $250 billion per year in outflows from the country. In addition, the reduction in the demand for oil would significantly reduce the world oil price for the oil it and other countries consume.

So far, a strategy that abates climate change and eliminates non-North American oil imports would yield economic benefits of almost $1 trillion per year to the United States. The Stern Review estimates that it will cost an average of about $22 to

eliminate one ton of CO_2 emissions per year, which translates to about 1% of global GDP per year to achieve the target climate change scenario. Assuming the U.S. spent 1% of its GDP, the cost would be about $140 billion per year. The Stern Review does not focus on the elimination of oil imports in the transportation sector, so the U.S. would have to design a policy which achieves both the climate change and oil import elimination objectives simultaneously. If the U.S. achieved both objectives at a cost of $140 billion per year, the net benefits to the U.S. economy would be about $800 billion per year.

Infrastructure Solutions

The third major area of benefits would arise from exporting the infrastructure solutions that abate climate change and oil consumption to the rest of the world, as other countries strive towards similar transitions. There are three classes of infrastructure the United States should develop: 1) energy infrastructure, 2) transportation infrastructure, and 3) telecommunications infrastructure. Energy infrastructure consists of such elements as wind power, solar power, a new smart and high-capacity national electric power network, capture and storage of CO_2 from coal-fired power plants, and energy conservation through retro-fitting of homes/buildings and new appliances. Transportation infrastructure consists of manufacturing plants for efficient alternative-fuel vehicles based on natural gas, hybrid, electric, biofuel, and hydrogen technologies; new multi-fuel service stations supporting the alternative-fuel vehicles; and public transit solutions such as light-rail systems and buses.

Telecommunications infrastructure along with the right organizational management strategies can effectively substitute for transportation by increasing telecommuting for work, distance learning, and tele-shopping. One component of advanced telecommunications infrastructure solutions is ubiquitous high-capacity broadband wireline/wireless access networks. The other development is little known to the general public but has the potential to transform the way telecommunications networks are architected and the range of services that are offered in the future. It is called IMS, and is an overall IP Multimedia System that provides a single Internet-Protocol based architecture to support any multimedia (voice, data, video) communications between any set of wireline or wireless end-users. For example, users will be able to easily set up high-quality videoconferences with collaborative applications, and have presence information displayed to show which members of a

group are available for such conferences. There are many challenges that service providers face in evolving to IMS, but U.S. leadership in this area would enable a huge range of business opportunities worldwide in the future.

An American Infrastructure Investment Corporation

The U.S. government should establish an infrastructure investment organization, say the "American Infrastructure Investment Corporation (AIIC)", to partner with the private sector in developing and marketing the infrastructure solutions around the world to address the global energy and environmental crisis. The purpose of the AIIC would be to share in investments where the private sector did not have the capital to develop the solutions on its own or where the benefits to society could not be otherwise captured. In such cases, the AIIC would share in the profits from the operations of these joint ventures in domestic and foreign markets.

Following is a rough argument to estimate the size of the third area of benefits that arise from development of new export markets for U.S. infrastructure solutions. If the AIIC and U.S. private sector were to invest say $300 billion per year in infrastructure solutions to abate climate change and eliminate oil imports, the rest of the world might be expected to spend at least twice as much, that is $600 billion per year, since the U.S. accounts for about 25% of world GDP. Since the U.S. would be the world leader in developing such infrastructure solutions, it might reasonably capture a 33% market share, particularly if it promoted balanced-trade policies with countries like China. This would result in $200 billion per year of new export revenues. The total benefits from climate-change abatement, elimination of non North-American oil imports, and new export revenues would be about $1.2 trillion per year and the net benefits would be $900 billion per year.

Moving to the Right Long-Term Plan for the U.S. Economy

The Obama administration is allocating some funding to renewable energy development, conservation, and infrastructure, but the spending is too little relative to other areas. The current U.S. government policy puts too much emphasis on immediate, short-term relief in the form of bailouts, tax credits, unemployment benefits, and so on. These do not create a strategic vision for the future economy and do not bring benefits to future generations.

A fully-developed and well-designed infrastructure strategy would provide valuable, long-term jobs to numerous individuals

in production and design/management services. Auto manufacturing plants would be transformed to build alternative-fuel vehicles and mass transit systems. Instead of shutting down factories, the U.S. automobile industry would expand dramatically in a whole new direction. Banks would not be forced to give out loans to risky individuals and businesses, but rather, these financial institutions would see real opportunities for lending in a growing, sustainable, "green" economy. College students would have new opportunities for jobs in the alternative energy, transportation, and high-technology sectors. The government would be spending on infrastructure solutions rather than bailouts, unemployment benefits, and food stamps.

Along with the infrastructure investment strategy, the government must develop matching regulatory policies. The government should place carbon taxes and/or caps on emitters of greenhouse gases. It should mandate the production of alternative-fuel vehicles, the building of multi-fuel service stations, and the use of clean energy for new power plants. It needs to enable rights-of-way for the new electric power, transportation, and telecommunications networks.

This is the intelligent way for the U.S. to look at its predicament, and it requires a bold, innovative, and well-managed plan to reap the long-term benefits for the country. The global energy/environmental crisis and global recession is the current generation's World War II, and it should be met with the same resolve and level of investment.

Henry Goldberg wrote this article on a freelance basis. Goldberg has a Ph.D. in Operations Research from Cornell University. He spent half of his career as a university professor researching energy policy and production management, and the other half as a strategic planner and market analyst in the telecommunications industry. He is currently a consultant and resides in Scottsdale, Arizona.

Contact Information:
Henry Goldberg
11680 E. Sahuaro Dr., Unit 1022
Scottsdale, AZ 85259

Ph: 480-609-9279
E-mail: hgold52@aol.com