



*Investing in Our Common Future: U.S. Infrastructure*

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**Bernard Schwartz Forums on Economic Policy**

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## **The NDN Globalization Initiative and Bernard Schwartz Forums on Economic Policy**

NDN recently expanded its Globalization Initiative to include the Bernard Schwartz Forums on Economic Policy. Each forum focuses on a specific element of our globalization narrative, which makes the case that while globalization has benefited the U.S. economy in terms of GDP growth and productivity gains, many Americans have not prospered in this new economic era. NDN is committed to *making globalization work for all Americans* by offering a new economic strategy that would modernize our health care and energy policies; invest in our workers, students, and infrastructure; and foster and accelerate innovation across the economy. This strategy also includes fixing our immigration system and ensuring universal and affordable broadband access.

This new paper — the second in the Bernard Schwartz forum paper series — is by NDN Fellow Michael Moynihan, who looks at the current state of public investment in infrastructure and proposes a set of measures to restore our national political will and improve funding mechanisms to rebuild and advance U.S. infrastructure.

For more on NDN's Globalization Initiative, please visit our website at [www.ndn.org/advocacy/globalization](http://www.ndn.org/advocacy/globalization).

## *Investing in Our Common Future*

### **Executive Summary**

At a moment when America should be uniting to meet its growing challenges at home and abroad, the failure to maintain our national infrastructure testifies to an ebbing unity of purpose. As the recent bridge collapse in Minnesota, the failure of levees in New Orleans during Hurricane Katrina, and lesser traumas like the 2003 Northeast blackout have shown, the decline of America's once great physical plant and eroded national commitment to making investments towards future prosperity have reached crisis proportions.

America has the wealth at its disposal to make needed investments in roads, schools, networks, the environment, and new technologies that are critical to our future. Just as important, however, is a renewed sense of national purpose and will to make these investments. Time and again, when the United States has tackled great projects, it has succeeded — from taming rivers to conquering space to inventing cyberspace. But in every case, it has taken bold leadership to transfer vision to reality.

In this new paper, we propose the following set of measures to restore American economic greatness and make the investments necessary to rebuild and advance America's infrastructure:

- Measures to reform the budgetary process for infrastructure by creating a national infrastructure bank and introducing capital budgeting at the national level;
- Methods to improve coordination between the federal government and states and localities; and
- A proposal for Congress to pass a GREEN Act requiring that federal infrastructure and buildings meet a rising set of environmental standards that not only address issues like global warming but also establish American leadership in green technologies of the future.

Only by working together can Americans reverse the decline in infrastructure that is eroding our present economy and make the forward-looking public investments needed to ensure future prosperity. The following pages are a call to action to take the steps necessary to establish our country once more as the world's economic leader.

## *Investing in Our Common Future*

**Michael Moynihan, NDN Fellow**

At a moment when America should be uniting to meet its growing challenges at home and abroad, the failure to maintain our national infrastructure testifies to an ebbing unity of purpose. As the recent bridge collapse in Minnesota, the failure of levees in New Orleans during Hurricane Katrina, and lesser traumas like the 2003 Northeast blackout have shown, the decline of America's once great physical plant and eroded national commitment to making investments towards future prosperity have reached crisis proportions.

It is not just a matter of finding the funds to invest in upgrading our nation's infrastructure, although the American Society of Civil Engineers estimates that raising America's current overall infrastructure grade from a D to a B will cost \$1.6 trillion. Just as important — if not more so — is restoring our national and political will to invest in a shared future. Each generation inherits a responsibility not only to maintain existing infrastructure but also to make the long-term investments vital to future economic growth. Today, with more wealth at America's disposal than ever before, we are failing to make these commitments.

It was not always this way. Earlier generations faced far more pressing demands and found a way not only to sustain but also to expand the country's roads, bridges, ports and schools. From groundbreaking investments such as universal education in the 19<sup>th</sup> century and the land grant schools that propelled advances in agriculture and technology, to the GI Bill that opened up college to working class Americans, to the National Highway System that connected a sprawling country, America has grown great on the strength of its national purpose. President John Kennedy's pledge to send a man to the moon within a decade and our country's success in doing so showed that America could lead the world in technology. And as recently as the 1990s, American leadership in developing information technologies and the Internet opened new markets and vistas for people everywhere. These investments were not inexpensive. But they paid for themselves many times over, creating the world's wealthiest society.

Yet as we enter the 21<sup>st</sup> century, that sense of national purpose and pride, along with leadership in transportation, communications and education, all traditional hallmarks of American know-how, has diminished, as evidenced by our crumbling infrastructure. It is not a matter of whether we can afford the investments. Rather, it is a question of whether we can afford not to make them, given the key role that they play in economic growth and our nation's daily life.

### **The Case for Public Investment**

Economists have long noted that public investment is appropriate when the returns on an investment cannot be fully captured by private investors. This can occur when benefits accrue to non-investors as well as investors — for example, to everyone in the country in the case of national defense and basic science, or to neighborhood residents in the provision of street lights. It can also happen when benefits accrue so far in the future that they cannot be readily captured by private investors today, as in the case of educating children. Investments in national defense, fire and public safety, as well as roads, bridges dams and levees all pay huge dividends to society

— indeed make a modern society possible — but they are not easily funded by private investors. For these reasons, investments in what are called public goods — those that do not disappear with use and from which it is hard to exclude non-payers — have always been the province of government.

Indeed, study after study has found that, on average, public investments generate significantly higher returns than private investments.<sup>1</sup> An investment in a bridge linking communities on two sides of a river, for example, can benefit hundreds or thousands of firms and ultimately millions of people, as opposed to most private investments that benefit only suppliers and customers. While most economists believe that economic growth can also drive investment, it is clear that public investments in infrastructure and economic growth are inextricably linked.

Relative to other types of public expenditure, infrastructure investments are particularly attractive because they offer a defined benefit and cost. Unlike health care or welfare commitments whose costs and benefits are often difficult to quantify, Congressional appropriators can determine in advance project goals and dollar limits in the case of infrastructure funding.

Infrastructure investments also offer prompt benefits in the form of a short interval between the appropriation and shovels in the ground, as well as a strong multiplier effect in most cases. For example, public investment, on average, directly creates higher paying jobs than private investment does. This is because many infrastructure jobs are in high-paying occupations like engineering, and low skill construction jobs typically pay more than those, for example, in retail services.

Public investment can also increase demand for high-paying jobs in the private sector. New roads, for example, can increase the numbers of new homes, offices and other businesses. Ports link up towns to trade, and airports connect people to other economic centers within the global economy. One need only look at the impact of an international airport on a region's economic development and wages to see that infrastructure investment is vital to creating high-paying private jobs beyond those involved in the actual project.

A long-term public investment agenda can provide additional benefits by stimulating the development and spread of powerful, new technologies. Government enjoys a lower cost of capital than private industry and can afford long time horizons for a return on an investment. Governments also are well positioned to manage large economic risks, as in the case of basic scientific research where payoffs lie far in the future and are subject to commercialization risk. Government also can use regulatory or purchasing power to unite fledgling markets by creating a common standard, such as the IP standard underlying the Internet, that can reduce the costs of developing new products that use new technologies.

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<sup>1</sup> See Aschauer, David Alan, 1989. "Is public expenditure productive?," *Journal of Monetary Economics*, Elsevier, vol. 23(2), pages 177-200, March, and Munnell, Alicia H. and Cook, Leah M., 1990. "How does public infrastructure affect regional economic performance?," *New England Economic Review*, Federal Reserve Bank of Boston, September issue, pages 11-33.

For this reason, governments have long pioneered investments in technologies unsuited to private investment. From the Crown-directed creation of the merchant marine that led to the rise of the British Empire, to investments in atomic energy and the Internet, governments have funded a disproportionate share of advanced research and served as important customers of new technology. While some investments have failed as in the Supersonic Transport (SST) plane, others have succeeded wildly. American leadership in space led to leadership in satellite communications, and the invention of the Internet led to Yahoo, Google, Amazon and thousands of other businesses. Going forward, the government is uniquely positioned to fund basic research in nanotechnology, life sciences technology, and new environmental technologies to address such potentially life threatening developments as epidemics and global warming.

While innovation can benefit any country, it is especially critical to the economy of a wealthy country such as the United States. Unlike developing countries like China that can compete on the basis of low wages while importing technology from others, the United States, with a high cost base, must compete on the basis of know-how. Moreover, as product cycles shorten and market barriers fall, the need to develop new products and processes more quickly accelerates. A half century ago, dominance in an industry could persist for decades, but in today's global economy, research and design of a new product in a high-wage country often occurs simultaneously with manufacture in a low-wage country — as in the case of the Apple iPhone — and new technologies can be rapidly transferred. Since the United States cannot compete on wages with countries whose workers earn a few dollars a day or less, it is crucial that we continually innovate.

Private industry cannot do it alone. The long payback period of many types of high tech investment and the high quotient of knowledge required to develop new technologies place a heavy burden on education systems and research universities. Moreover, as noted above, history shows that government support of infant technologies as a purchaser — as in the case of computer hardware, software, electronics and advanced materials — has proven critical to the commercial development of these technologies.

### **America's Lagging Infrastructure**

In spite of the critical need to invest in our future, U.S. public investment is lagging by almost every measure. Until about 1960, government investment at the federal level accounted for three percent of GDP. But as shown in Figure 1, that figure has fallen to about one percent. State and local spending has remained approximately the same. This slowdown in spending has translated into a dangerous deficit in infrastructure investments. In its biannual report on the state of American infrastructure, the American Society of Civil Engineers has identified a litany of problems — affecting both safety and economic output — that are very troubling in their dimensions:

- 27.1 percent of America's 571,000 bridges are structurally deficient or functionally obsolete.
- Since 1998, the number of unsafe dams has risen by 33 percent to more than 3,500.

- Of the 257 locks on the more than 12,000 miles of inland waterways operated by the U.S. Army Corps of Engineers, nearly 50 percent are functionally obsolete.
- Poor road conditions cost U.S. motorists \$54 billion a year in repairs and operating costs while limited capacity causes Americans to spend 3.5 billion hours a year stuck in traffic, at a cost of \$63.2 billion a year to the economy.

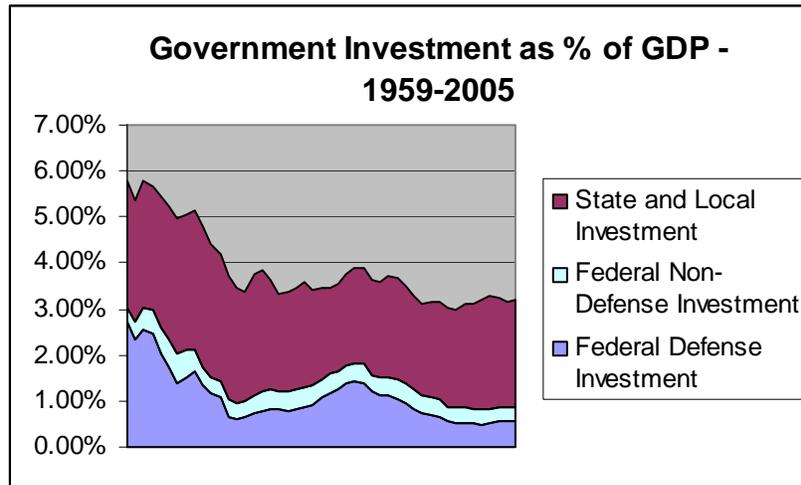


Figure 1 Source: Economic Report of the President, 2007

America's physical plant is not the only form of public investment that has suffered. Universities, research, and training have felt the pinch of tightened budgets as well. And it is not only public infrastructure but privately-funded infrastructure that has been shortchanged. For example, the U.S. broadband participation rate is currently 19<sup>th</sup> in the world, below that of most of Europe, Korea, and Hong Kong. American environmental standards also have fallen behind those of Europe, Japan and Korea, whose companies are now racing to take the lead in environmental technologies.

### Challenges Facing Public Investment in Infrastructure

With the importance of public investment in infrastructure so clear, the question naturally arises: Why is America falling behind? While the answer is complicated, it is evident that infrastructure spending carries more political burdens than other spending categories, particularly in a period of large budget deficits.

First, since public investments can generate long-term benefits but short-term costs, they face unique challenges at the federal level. Unlike state and local budgets, the federal budget has no provision for capital budgeting. This current system of federal budgeting allows only one-year funding commitments for most categories and prohibits most multi-year commitments, which complicates long-term planning efforts. Without a long-term planning process, capital investments face re-examination annually, where they must compete with short-term needs. This dynamic works against long-term investments, whose long-term benefits often lose out to the short-term demands of a particular constituency.

Second, infrastructure spending as a form of discretionary spending within the federal budget is disadvantaged relative to largely mandatory spending on entitlements, interest, and defense.

On the revenue side, budgets remain under pressure from an ideological shift that dates from passage of Proposition 13 in California, which limited tax increases, as well from stagnant or declining real incomes that make paying taxes burdensome for cash-starved households. On the cost side, spending on Social Security, Medicare, and related programs has been rising as the population ages. Figure 2 shows the relative percentages of entitlement spending and other categories of federal outlays from 1948 to 2008. Entitlement spending, notably on Medicare and Social Security, which does not require an annual appropriation, has increased while other spending has declined.

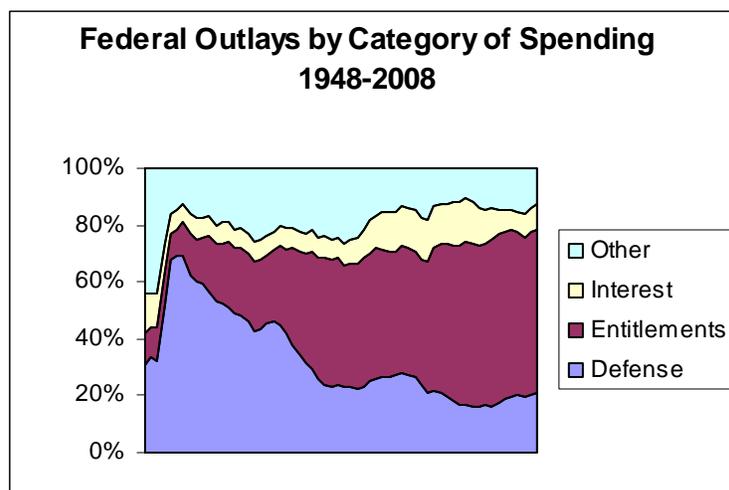


Figure 2 Source: Economic Report of the President, 2007, Table B-80. Entitlements are defined as Social Security, health and income security spending. Figures for 2007 and 2008 are estimates.

Health care spending poses a particular challenge. Not only does rising health care spending reflect demographic changes; it also reflects the rising costs of health care itself. Both health care and infrastructure spending occur largely in the non-tradable domestic sector where costs have risen faster than in the economy as a whole (since overall inflation is tempered by imports). Both types of spending also suffer from what economist William Baumol has termed “cost disease” — the process by which the price of labor-intense services that cannot be readily automated tend to rise relative to automatable services. Health care spending is also driven by the development and spread of expensive new technologies and procedures. But while most health care spending enjoys entitlement status in the budget, most infrastructure projects require an annual appropriation.

Third, infrastructure investments often lack the broad incumbent constituencies enjoyed by many other budget categories. Social Security, for example, enjoys virtually universal support from those over 65, many of whom rely on it to help pay their monthly bills. Similarly, military budgets enjoy the support of employees as well as firms that sell to the military. Moreover, in

times of war or national emergency, defense spending becomes an imperative supported by virtually everyone.

In contrast, infrastructure projects — though public goods — produce benefits that are often local. The local nature of many infrastructure investments has, arguably, accelerated the move of investments from the federal to the local level of government, fragmenting constituencies for a given type of project. While constituencies have developed around certain programs like investment in research and development and the national highway system, these constituencies are usually relatively small. In transportation, an important constituency has developed around highway funds, which in some respects have come to resemble transfer payments as an entitlement (notwithstanding the budgetary pressures that currently threaten the fund as discussed below).

Focused incumbent constituencies, however, raise equity issues of their own, with some critics calling for greater flexibility in the administration of the Highway Trust Fund to permit more flexible disposition of gas tax funds. The historic dependence of America's transportation budget on gas taxes has arguably biased transportation choices in favor of roads, eliminating the possibility of transportation decisions being “modal agnostic” as they generally are in Europe. Here, while efficiency considerations may argue for rail in a given location, the ready availability of highway funds has historically counseled for roads.

Relative to most other countries, the sheer size of America and its federal structure of government make public investment a more complex challenge. For example, greater political transparency and local review since the 1970s have subjected many infrastructure investments to dizzying degrees of political scrutiny. This has led, in part, to the proliferation of earmarks or *ad hoc* approaches that skirt the local political allocation process to meet infrastructure needs.

Finally, as infrastructure investment has moved increasingly to the states, it has suffered from an “out-of-sight, out-of-mind” mentality at the federal level. Few consistent national standards exist across agencies for infrastructure development and maintenance outside of standards for wastewater treatment and the environment. Nor is there a central office within the Executive Office of the President or coordinating council to oversee America's infrastructure investments, as there has been at various times in the past. With the responsibility for infrastructure widely distributed across and within different levels of our federal system — and with no mechanism to coordinate policy — it is not surprising the process often lacks purpose and direction.

### **Best Practices in Infrastructure Investment**

The poor state of American infrastructure today lies in stark contrast to America's leadership role in the past. Indeed, America has carried out some of the most successful infrastructure projects in human history. These projects have never been easy. They show what can happen — often against great odds — when leaders equipped with a vision persevere. Long-term vision has often driven large public investment commitments that paid off enormously. A brief review of four landmark projects reveals that each typically required a national commitment, often made by the president, and relentless efforts of many others to prevail over the many forces, including inertia, arrayed against the project.

### *The Land Grant Colleges*

Perhaps no legislative act has had greater consequences for America's educational system and leadership in agriculture and technology than the Morrill Act, which created the land grant colleges. First championed by Vermont Senator Justin Morrill in the 1850s, the Morrill Act was a complex legislative feat to create a system of state schools funded by large federal grants of land. The idea would not have succeeded without the support of President Abraham Lincoln. President James Buchanan vetoed the first legislation passed by Congress. Opposition was centered in the South, however, and following Lincoln's election and the outbreak of the Civil War, the secession from the Union of a number of states that opposed the proposal gave President Lincoln a veto-proof majority to sign the act into law. Today, some 106 land grant schools exist and have trained generations of agricultural leaders and engineers as well as other students. The relatively low price of tuition reflects, in part, the original bequests of federal land as well as ongoing aid.

### *The National Highways*

A second critical American accomplishment was the creation of the National Highway System. In 1955, President Dwight Eisenhower, who had experienced first hand the difficulty of moving an army across America along the Lincoln Highway (the first cross country road) as a young Lieutenant Colonel — and then contrasted it with the autobahns he had seen in Germany — committed his administration to building a national highway system. Eisenhower sold the program on national security grounds and appointed an infrastructure czar, Major General John S. Bragdon, to carry it out. While the network of roads was designed to be self financing, no private group could have undertaken a project of this magnitude. Today the system lies at the heart of the U.S. distribution network and is essential to the economy.

### *The Hoover Dam*

The Hoover Dam is rightly considered one of the great engineering wonders of the world. Engineers had to divert the Colorado River to build the dam and its construction literally opened up much of the American southwest for development. An extraordinarily complex political feat as well that involved the cooperation of seven states, the project was nurtured by Herbert Hoover who as Secretary of Commerce brokered the final water-sharing deal that enabled the dam to move forward. Dozens of companies cooperated on the project. The project was hardly bereft of problems, and over one hundred people died in the course of construction, yet it was completed two years ahead of schedule. Today, the dam provides much of the electricity in the region, and the country's largest reservoir, Lake Meade at the top of the dam, irrigates vast portions of the Southwest.

### *The Internet*

The U.S. role in the creation of the Internet is well known. Originally financed by the Defense Advanced Research Projects Agency (DARPA) and then the National Science Foundation (NSF), the Internet was turned over to private industry in 1997. American leadership in developing the Internet has translated into American leadership in Internet business with companies such as Google, Yahoo, Ebay, Amazon, and others emerging as leading global competitors employing hundreds of thousands of highly-paid workers. Through the economic ecosystem of Silicon

Valley, those companies have, in turn, spawned thousands of other companies that have become important players in their own right.

Despite this record of U.S. leadership in infrastructure, most of the world's major infrastructure projects have taken place abroad in recent years. Japan is building a new island for its Tokyo airport, following the example of Hong Kong, which built a new island for its Chek Lap Kok airport. The United States has not built a new international airport in 14 years. In China, two German firms, Siemens AG and ThyssenKrupp AG, built the world's first commercial MagLev (magnetic levitation) train in 18 months. Maglev service between Shanghai and Beijing is scheduled to start up in time for the 2008 Olympics. This year China will pave more than 50,000 miles of road, bring 66 gigawatts of electrical generating capacity online — the amount generated annually in the United Kingdom — and build 7.5 billion square feet of commercial real estate — the equivalent of all the mall space in the United States. Nor is America still the unquestioned leader in private investment. In Dubai, real estate developers are building islands in the shape of countries for wealthy clients and planning the world's tallest building.

It is not just lower labor costs that have allowed other countries to build showpiece projects. It is also political will. The lessons that emerge from America's most ambitious infrastructure projects are that success requires a sense of national commitment, national budgetary support, a program for sound financial management, and some insulation from the local political process. Indeed, some of our largest and most needed proposed infrastructure projects in recent years have been shipwrecked by local politics. The celebrated Westway project in New York that would have built an underground highway along the Hudson River, created hundreds of acres of riverfront parkland, and brought billions of dollars in jobs to New York City was blocked, largely, by one anti-development activist. Most of that money was lost to the city and years later, there is still no highway where the old West Side Highway fell into disrepair. Likewise, local officials in New Orleans failed to upgrade the levee system. The poor state of maintenance of bridges, highways and tunnels, as reported biannually by the ACSE, too often falls on deaf local ears, due in part to municipalities' lack of funding and expertise to tackle large projects. Moreover, the multiplicity of jurisdictions and authorities at the local level — each with competing objectives — can complicate projects.

Finally, infrastructure investments have different payback profiles; some investments such as a bridge may be easily monetized, while other investments like those in basic science are not so readily monetized. Federal or regional oversight and budgeting can help to smooth out these differences, for example, by using the revenues from a toll bridge to fund maintenance of the highways that lead to the bridge. The Port Authority of New York and New Jersey used this system of regional cross subsidies throughout the 20<sup>th</sup> century in building critical New York infrastructure such as the George Washington Bridge, the Lincoln Tunnel, Kennedy Airport, and the East Coast's largest container port in Elizabeth, New Jersey.

All told, an analysis of best practices suggests that political leadership, along with national or at least regional oversight and coordination, will be vital to re-establish American infrastructure leadership and rebuild a physical plant worthy of the world's largest economy.

Indeed, repairing existing infrastructure is only part of the challenge. To lead in the 21<sup>st</sup> century, America will need to make trillions of dollars in new investments, among them:

- New environmental technologies to address global warming and other critical issues of sustainability;
- New energy technologies to replace fossil fuels;
- A new electrical transportation infrastructure to charge electric vehicles;
- Clean transport investments, e.g. intracity rail;
- Anti-congestion technologies to reduce traffic and speed movement over crowded roads, perhaps through the expansion of rail, the development of new smart highways and the use of congestion pricing;
- Expanded and upgraded airports to process a rising volume of passengers;
- Advanced communications technologies such as Internet II and the universal extension of online access to low-income and rural Americans, particularly children;
- Nanotechnology and new health care technologies; and
- Schools, hospitals and other essential services to meet the needs of a population projected to double in the next half century.

Fortunately, America's wealth and annual product are certain to grow as well. At a real growth rate of 2.5 percent annually, our Gross Domestic Product will grow by close to \$4 trillion in current dollars over the next 10 years alone. This increase is more than enough to pay for needed investments. However, it is important that the political case is made and that processes are put in place to ensure that needed long-term investments are not sacrificed for short-term exigencies

### **Rebuilding America's Infrastructure: An Activist Agenda**

Rebuilding America's infrastructure will not be easy. But it is critical not only to public safety and security but to ensure continuing increases in our standard of living. The following steps can help restore America's ability and will to rebuild our infrastructure:

#### *Carry Out Budgetary Reform and Create a National Infrastructure Bank*

Infrastructure faces a structural budget problem that will persist for the foreseeable future unless dramatic action is taken. It is vitally important, therefore, that Congress act to modernize the process for funding infrastructure so that it is not disadvantaged relative to competing budget priorities.

One proposal that can help achieve this goal is the creation of a National Infrastructure Bank. Congress could create such a bank chartered specifically for the purpose of funding public investments in infrastructure along the lines proposed in legislation introduced by Senators Chris Dodd and Chuck Hagel and Congressmen Keith Ellison and Barney Frank. This legislation creates a bank that would accept loan requests from public authorities and, depending on the merit of the request, offer financing through general purpose and special project infrastructure bonds as well as guarantees of state and local bonds. These self-financing vehicles would not increase current government outlays but rather leverage the government's borrowing power to attract private funds for investment.

A National Infrastructure Bank would give public authorities means to capitalize federal investment in new infrastructure projects. It would also create a new center of knowledge and expertise on infrastructure with the ability to intermediate between the public and investors. On the other hand, concentrating responsibility for federal infrastructure finance in a bank might reduce the flexibility of some agencies (and the authority of some congressional committee chairmen). Care should be taken to ensure that the bank works in harmony with branches within the federal government.

A bank or similar mechanism to create a special class of long term infrastructure bonds would have the effect of sequestering critical long-term capital investments from short-term budgetary pressures. As states and local municipalities have long recognized, long-term financing provides a way to match the costs of these investments with their benefits.

Congress also should examine ways to create dedicated revenue sources for certain infrastructure investments, modeled on the gasoline tax that supports the National Highway Trust Fund. That fund is the major source of funds for road investments, and is kept separate from the ordinary appropriations process. Many states have established dedicated funding sources for infrastructure investments. Iowa, for example, uses excess gaming revenues to fund infrastructure. Besides generating funds, a dedicated revenue source can make funding more predictable, facilitating better planning.

However, the venerable Highway Trust Fund, itself, faces insolvency. The gas tax that replenishes the fund, currently equal to 18.4 cents per gallon, has not been raised since 1993 and after adjusting for inflation has only half the purchasing power it had in 1965. Absent an increase in taxes, at current income and spending rates, the Highway Trust Fund will effectively "sunset" in 2009 when it is projected to become insolvent. Replenishing the fund through a tax increase will be an important test of the country's infrastructure resolve next year.

Congress and the president should also recognize that good infrastructure is a necessity, not a luxury, and that budgetary limits should take account of the critical nature of these investments. Moreover, there are other, ample sources of funding available. A variety of industry subsidies currently drain resources from investments, benefiting special interests at the expense of the public as a whole. By cutting obsolete or unnecessary subsidies and closing tax loopholes, Congress can free up funds for needed infrastructure investments.

Finally, Congress should reform the earmark process to ensure that projects funded in individual districts are necessary and not bridges or roads to nowhere.

### *Better Coordinate Infrastructure Efforts*

Second, infrastructure investments have suffered in recent years from a lack of national attention and purpose. To move infrastructure investments to the fore of national policy, a new sense of urgency is needed. To help bring this about, the president should appoint a special assistant for infrastructure within the Executive Office of the President analogous to President Eisenhower's Coordinator of Public Works. This new advisor should not only advise the president on infrastructure matters, but should also coordinate efforts with the director of the above referenced infrastructure bank, agencies responsible for different forms of infrastructure investments, and other concerned officials.

### *Extend GPRA to Infrastructure Investments*

As a way to drive improvements in maintaining infrastructure, the Office of Management and Budget (OMB), which administers the annual President's Management Agenda review and scorecard under the Government Performance and Results Act (GPRA), should incorporate standards for rebuilding infrastructure in metrics used to measure agency performance. Currently, federal agencies are required to conduct self evaluations on a range of metrics, which OMB then uses to help agencies improve performance. OMB should charge agencies with developing infrastructure metrics, then conduct an annual review to measure progress toward well-defined infrastructure goals. For example, in the case of roads and physical assets, the metrics would include adequate levels of maintenance.

### *Engage in a Dialogue with States on Infrastructure Development*

State and local governments play a major role in infrastructure finance and development by issuing much of the debt for infrastructure projects and co-funding many infrastructure projects, even when the federal government bears the bulk of the cost. Some of the largest U.S. infrastructure projects such as the Lincoln Tunnel have been carried out by local or regional authorities.

Often, state and local governments lack the resources, authority and funding to do the job on their own. Moreover, competing objectives at the local level can obstruct regional or national solutions to infrastructure problems. Currently, there is no standing mechanism for the federal government to engage with state and local governments on the full range of infrastructure issues. Accordingly, the new infrastructure adviser in the White House should develop processes for the federal government to coordinate activities with state and local government.

### *Use the Power of Federal Dollars to Drive Reform*

The federal government holds a powerful lever to drive change across state and local governments: the ability to withhold federal funding to states that do not meet goals set by Congress. This approach has been used successfully in withholding highway funds from states

that fail to enact seat belt laws, comply with federal open-container requirements that restrict drinking and driving, or meet minimum educational standards. In each of these cases, the threat of lost funds has generally led states to make changes promoting the federal government's desired results.

The federal government should use this mechanism to link federal funds for infrastructure to maintenance performance, standards of fitness, and other measures of ongoing readiness.

### *Pass the GREEN Act to Guarantee American Leadership in Environmental Technologies*

The government has often played a role in stimulating technology development through direct support of R&D, as an early adopter, and as a prime customer and standards setter for new technologies. At various times, the government has taken bold steps that have paid immense returns, such as the land grant colleges, the National Highway System, and the Internet. As the world prepares to confront the challenge of global warming, environmental technologies hold out the promise of being among the world's most critical and highly-rewarded technologies over the next half century.

Accordingly, the president should commit America to a series of environmental goals that will simultaneously *green* America's infrastructure and drive important advances in environmental technologies, which can help ensure American leadership in these industries in coming decades.

The GREEN Act would require that every government-funded infrastructure project going forward meet a series of standards related to energy efficiency and to reducing America's carbon footprint. States and projects that do not meet these requirements would forfeit a percentage of federal funds. These penalties could be combined with credits for energy savings and positive performance, to help drive the deployment of environmental technologies across the economy. The greening of American infrastructure can improve America's environment and the health of Americans, save money in the long run on energy, environmental compliance and health costs, as well as mark U.S. leadership in this important new area. The GREEN Act would establish a single principle — green infrastructure — and help move the country forward in this direction.

Early initiatives have borne fruit. Since 1980, government-sponsored improvements in energy efficiency have provided more than 50% of U.S. growth in energy use.<sup>2</sup> Executive Order 13423, signed by President Bush earlier this year, commits federal agencies to adopt green building standards for all new federal buildings and major renovations and to a goal of 15% of buildings meeting sustainable standards by 2015. While the order does not affect existing buildings or projects in the pipeline, it is an important step in the direction of energy efficiency and sustainable building.

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<sup>2</sup> Testimony of Donald D. Gilligan, President, National Association of Energy Service Companies at full committee hearing on "Green Jobs Created by Global Warming Initiatives," Committee on Environment and Public Works, United States Senate, September 25, 2007.

But the greatest benefits of environmental investments lie ahead. Smarter energy technologies could save business and consumers \$22 billion by 2017<sup>3</sup> while investments in energy efficiency and renewable technologies could create up to five million new jobs by 2025.<sup>4</sup> Indeed, in some states, the demand for environmental know-how exceeds the number of trained workers. In this regard, the Sanders-Clinton amendment to the Senate energy bill, passed in June of this year, to train up to 20,000 new "green collar workers" can accelerate the rollout of new green technologies and cut energy use while jumpstarting a new employment sector.

Other countries are rapidly going "green." The British government recently announced plans to establish ten new "eco-towns" comprised entirely of low and zero-carbon homes. Scandinavia has pioneered the development of green rooftops to reduce heating and cooling requirements, wind farms to generate electricity, advanced solar technology, and the recycling of building waste into biogas. Indeed, with the advent of economical co-generation technologies for buildings, recycling of storm water and grey water for use in bathrooms, and the use of new energy efficient materials and exotic underground heating and cooling techniques, construction is undergoing a green revolution. Sustainable construction has already proved itself economically so much that the private sector is, in many cases, leading the public sector. In Denver, for example, every office building now under construction will have a gold or platinum LEED rating.<sup>5</sup> Cities such as Seattle and San Francisco have mandated LEED ratings for municipal construction and are considering a mandate for commercial construction.

It is now a matter of spreading the information about how to implement new green technologies – and creating the mandate of the GREEN Act to drive implementation.

### *Streamline the Process for Infrastructure Investments*

Finally, the president and Congress should explore ways to reduce the jurisdictional jumble and administrative burdens that subject many infrastructure projects to a blizzard of competing goals and regulations.

Sometimes, the problem is politics. When people play politics with infrastructure investment, the result can be poor investments or no investment at all. Some of the most successful infrastructure projects in American history have succeeded precisely because mechanisms were in place to insulate them from special-interest interference. As noted previously, the Lincoln Tunnel and George Washington Bridge were built by the New York and New Jersey Port Authority, an entity that grew out of the Good Government movement of the early 20<sup>th</sup> century that strove to bring professional competence and freedom from politics — where it interfered with efficiency — to the provision of public services and goods.

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<sup>3</sup> See *National Action Plan for Energy Efficiency: A Plan Developed by More than 50 Leading Organizations in Pursuit of Energy Savings and Environmental Benefits Through Electric and Natural Gas Energy Efficiency*, July 2006, [http://www.epa.gov/solar/pdf/napee/napee\\_report.pdf](http://www.epa.gov/solar/pdf/napee/napee_report.pdf).

<sup>4</sup>25x'25 ACTION PLAN: Charting America's Energy Future, University of Tennessee, 2006, [http://www.25x25.org/storage/25x25/documents/IP%20Documents/actionplanfinalweb\\_08-27-07.pdf](http://www.25x25.org/storage/25x25/documents/IP%20Documents/actionplanfinalweb_08-27-07.pdf).

<sup>5</sup> The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ assesses buildings on a variety of measures to determine an overall LEED rating. The system is maintained by the U.S. Green Building Council through an open process that draws on the expertise of members of the building and construction industry.

France, Japan, and Singapore are among other countries that have had success in carrying out large infrastructure projects by making them important national priorities and then insulating them from intrusive politics. While our democracy imposes high standards of transparency and political input — through land review processes, for example, and public hearings — we nonetheless have an obligation to prevent projects from getting bogged down in petty political disputes. Where collective action problems hinder projects from moving forward, the states in conjunction with the federal government should not hesitate to empower authorities to proceed on the basis of professional judgment. Mechanisms to achieve this objective may include, for example, non-partisan public authorities and procedures to direct engineering issues to engineers. At the same time, bureaucratic rules designed to guard against politics can themselves tie up projects. The federal government needs to streamline its processes for greenlighting infrastructure projects, leveraging private sector practices when appropriate.

Finally, governments should continue to explore, within reason, situations where the private sector can do a better job than government. However, these choices should be made on the basis of sound evidence and debate, not ideology.

While fixing America's infrastructure will not be easy, it is essential if America is to ensure its ongoing global security and economic leadership. President Kennedy often told the story of French Marshall Lyautey, who asked his gardener to plant a tree. The gardener objected that the tree would not bloom for a hundred years. Marshall Lyautey replied, then in that case, plant it immediately. So it is with infrastructure investment. While rebuilding America's infrastructure is a long term process with no simple, fixed goal, it is vital to America's future.

### *About Michael Moynihan*

NDN Fellow Michael Moynihan is currently a William Bowen Merit Fellow at The Woodrow Wilson School of Public and International Affairs at Princeton University and on the faculty of New York University's Real Estate Institute. In 1999, Mr. Moynihan founded the first Internet video sharing community and website, AlwaysonTV, pioneering such innovations as personal video channels and video greetings. From 1996 to 1999, he served in the Clinton Administration where he held the Internet portfolio and advised Secretaries Rubin and Summers as Senior Advisor for Electronic Commerce. While in the Clinton Administration, he led successful efforts to pass the Internet Tax Freedom Act, helped negotiate e-commerce agreements on payments, taxation and other issues with the EU and Japan and oversaw the e-commerce efforts of Treasury's 140,000 employees. Prior to assuming the Internet portfolio, he advised Secretaries Rubin and Summers on a variety of other issues including managing debt crises, reforming the global financial architecture, balancing the budget and modernizing the IRS.

Mr. Moynihan has been a fellow of the Center for Strategic and International Studies and was the Robert C. Seamans Fellow in Technology and Public Policy at Harvard University's John F. Kennedy School of Government. He holds degrees from Columbia and Harvard and is currently a PhD candidate at Princeton.

He is the author of the critically acclaimed book, *The Coming American Renaissance* (Simon & Schuster) and other books. His writing has appeared in *Harper's*, *The New York Times*, *The Washington Post* and other publications.