



Transportation and Infrastructure



Overview

The five main sectors of the United States economy that account for 84 percent of GDP – services, manufacturing, retail, agriculture and natural resources – rely greatly on a functioning transportation infrastructure for their success. Despite current investments, a generation of infrastructure is nearing the end of its useful life, threatening the vitality of the economy and its international competitiveness. From 2006 to 2011, the U.S. spent an average of 3.3 percent of GDP on transportation infrastructure, consistently ranking at the bottom of the countries in the OECD. Since 1970, OECD countries have, on average, spent considerably more of their GDP on transportation infrastructure compared to the U.S.; as a result, the overall quality of U.S. infrastructure ranked 14th globally in 2013, according to the World Economic Forum.

The efficient, safe and secure movement of people and goods is a key driver of economic growth. The economic cost of traffic congestion alone in wasted time, fuel and competitiveness of the manufacturing sector was estimated at \$135 billion in 2015. This correlates to roughly 350,000 jobs throughout the economy. Recent research on the cost of congestion at U.S. ports and railroads suggests that the congestion caused by a lack of investment in these modes may be half as much as in highways, which would inflate the total cost of substandard infrastructure to over \$200 billion a year.

Critical infrastructure projects and programs range in size, breadth and scope. They often take a long time to develop and construct, and are intended to perform over an extended period of time. They may be funded from multiple sources, over many years. On some projects, funding might be sporadic or insufficient to build the projects to adequate levels of service. Critical infrastructure systems often cross geographic, political, cultural, and organizational boundaries, can be complex and interdependent, and may require special treatment to provide the intended level of service.



Increase in transportation demand is projected across all modes. The U.S. Department of Transportation anticipates that demand for rail freight, in tonnage, will increase nearly 90 percent by 2035. Truck traffic is now growing 11 times faster than road capacity. In addition, U.S. marine freight accounts for more than one billion metric tons or nearly 20 percent of the world's ocean-borne trade. International trade is projected to triple by 2020, with more than 90 percent of this trade (by weight) projected to move by ocean. This increased demand will strain the already limited capacity of the U.S. marine transportation system.

Since 2008, U.S. productivity growth in the manufacturing sector has been less than half of what it had been during the previous fifteen years, while road congestion has reached an all-time high.

The federal government assists the major modes of transportation via several systems of user taxes and trust funds:

- **Highways:** Highway users pay several federal user taxes (mostly on gasoline and diesel fuel) that support the Highway Trust Fund from which grants are made for highway and transit programs.
- **Aviation:** Air travelers pay a tax on airline tickets, and aircraft operators pay fuel taxes, with the proceeds of these and other user taxes feeding the Aviation Trust Fund, which pays for airport grants, and for the capital costs and some of the operating costs of the air traffic control system.
- **Seaports:** Ships unloading cargo at U.S. seaports pay a harbor maintenance tax that streams into the Harbor Maintenance Trust Fund from which funds are allocated for harbor dredging projects overseen by the Army Corps of Engineers.
- **Inland Waterways:** Users of U.S. inland waterways pay a diesel fuel tax for the Inland Waterways Trust Fund, which pays for a portion of the cost of maintaining and improving waterways, locks and dams.

While this approach sounds somewhat market-oriented, it fails to direct resources to their most productive use.

- User fees are taxes. Seen as such, Congress is often reluctant to increase their levels, even though in many cases, transportation infrastructure urgently requires additional investment.
- Since many of the federal grant programs focus on new capacity, decisions made by infrastructure owners tend to favor capital-intensive projects (e.g., light rail rather than bus rapid transit) than would otherwise be the case.

Another underlying problem is that the current federal grant funding approach has encouraged state and local infrastructure owners to fund most capital projects out of annual cash flow, rather than financing them. A basic principle of public finance is that long-lived infrastructure can and should be financed (i.e., capital should be raised up-front from the capital markets) and paid for over time, as the users of that infrastructure derive benefits from it. This is analogous to the way most people acquire their homes: not by saving until they can afford to pay cash, or building the home one room at a time as cash flow permits, but by taking out a long-term mortgage and paying it off over time, so as to obtain the benefits of home-ownership much sooner.

Non-transportation infrastructure entities—electric and gas utilities, pipelines, telecommunications and water utilities—generally finance their major projects via revenue bonds, paid for by their users over many years. Railroads and toll roads do likewise, as do airports (to some extent) and air traffic control providers overseas. The U.S. is one of the few advanced developed countries that under-utilizes revenue-based financing for its transportation infrastructure.

It is important to remember that not all infrastructure spending is created equal. Projects aimed to simply create short-term employment without a strategic rationale to expand capacity and alleviate bottlenecks will not spur long-term sustainable economic growth. The U.S. needs a comprehensive vision for its infrastructure.

Highways: “The Conveyor Belt of U.S. Manufacturing”

Road congestion costs U.S. business an enormous amount of time, fuel, and money. The Urban Mobility Report, published by the Texas A&M Transportation Institute, conservatively puts that figure at \$100 billion a year. Those are significant headwinds in a global marketplace.

The current debate about infrastructure in the U.S. has been, thus far, limited to the ways in which it should be funded, and at what levels. There has been little discussion about the American vision for infrastructure in the 21st century. Unless there is a paradigm shift in this regard and policymakers begin to think strategically about how to build a system that can enable manufacturers to compete globally, infrastructure investment in the U.S. will lurch between short-term projects. The most significant opportunities to streamline our supply chains will go unresolved, and we will continue to see bottlenecks around our major urban hubs, delays in shipments, poor productivity, wasted fuel, increased maintenance costs on vehicles, and increased emissions.

The Texas Transportation Institute’s most recent survey estimates that the average American spent 34 hours idling in traffic last year, a figure that has climbed steadily since 2000.

The Federal Highway Administration estimates that unexpected delays can increase the cost of transporting goods by 50-250 percent, negating much of the productivity gains and cost savings from embracing new production methods.

Rail

Through historical legislation, industry mergers and exemption from the nation’s antitrust laws, the U.S. rail industry operates a powerful business model that has led to a reduction in the number of Class I railroads from 26 in 1981 to just seven in 2001, with four operators dominating over 90 percent of the market. This environment has set the stage for rail rates to expand 76 percent over the last decade, a significant impediment to U.S. manufacturing.

The Surface Transportation Board (STB) is the body that has regulatory oversight of railroads including rates, service, construction and acquisition of rail lines, as well as pipelines and other carrier modes. The STB has authority to govern the regulatory requirements in these industries and can limit, add and remove policy as deemed appropriate. Dow believes the current STB framework does not promote free and fair market pricing for shipping service, or offer equitable redress in rate disputes.

Chemical producers have reported that on average, 73 percent of inbound rail shipments and 65 percent of outbound rail transport are captive to a single railroad, and we paid a \$4.5 billion premium on rail shipments in 2011, more than twice the premium paid in 2005.

Ports and Inland Waterways

The U.S. marine and inland waterway transportation system encompasses a network of navigable waters, publicly and privately owned deep sea vessels, barges, port terminals, intermodal connections, shipyards, vessel repair facilities, locks and dams.

United States marine freight accounts for over one billion metric tons or nearly 20 percent of the world’s ocean-borne trade. International trade is projected to triple by 2020, and with over 90 percent of this trade (by weight) projected to move by ocean, the increase in demand will strain the already-limited capacity of U.S. marine transportation.

Improving the marine freight system necessarily must include bringing the physical infrastructure of the system, such as charts, vessel traffic services, and berths, up to world-class standards.

The larger vessels being built to accommodate increasing demands require deeper channels. Costly dredging operations are necessary for the safe operation of vessels and port facilities, as well as our inland waterway system, but they raise environmental concerns regarding the disposal of dredged material. Additional environmental challenges include control of non-indigenous species, intentional and non-intentional emission of petroleum and other toxins, and physical damage to marine habitats caused by vessel and port operations.



A 2011 congressional report noted that the U.S. Army Corps of Engineers estimated that full channel dimensions at the nation's 59 busiest ports are available less than 35 percent of the time.

The U.S. has developed an entire manufacturing supply chain dependent on the just-in-time delivery of raw materials. There is no doubt that our integrated, multimodal transportation infrastructure plays a critical part in maintaining and improving the global competitiveness of U.S. manufacturers.

Recommendations

- Implement a long-term transportation infrastructure funding strategy that defines clear objectives, prioritizes infrastructure needs and investment by greatest benefit and impact, and places economic growth at the forefront. It is unlikely that one funding mechanism will be sufficient to meet the increasing needs of the U.S. surface transportation infrastructure system. There are several specific policy options that are consistent with the three Principles of Infrastructure Investment, and can be implemented as a suite of options to satisfy the long-term needs of our passenger and freight transportation system:

- **Sustainable.** Funding sources should be sustainable and stable over a period of years, not months. Ideas could include indexing the gas tax to inflation, relaxing the current ban on tolling Interstates by no longer counting toll-financed reconstructed lanes as “tolling existing capacity,” and enabling increased use of long-term toll concessions for public-private partnerships (PPPs) by removing the current \$15 billion cap on tax-exempt private activity bonds (PABs), and continuing the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program at or above current levels.
- **Focused.** Projects should be prioritized based on their net economic cost/benefit profile with increased attention given to multimodal hubs and areas of significant congestion. We should also make serious use of benefit/cost analysis, to direct investment to projects that produce the most bang for the buck. For example, estimates show that using a benefit-to-cost ratio of at least 2.0 (benefits at least twice the cost) would reduce current highway “needs” by 40 percent.
- **Smart.** Long-lived infrastructure should be financed through revenue bonds and capital markets and paid for over time, rather than being funded through annual cash flows from the Highway Trust Fund.
- Increase rail competition and manufacturers' ability to access more than one rail carrier to reduce costs and create greater efficiencies. Dow supports legislation that creates a sustainable funding solution, modernizes freight-rail policy and reforms the STB to include processes endorsed by rail customers and a viable rate dispute process.
- Address freight shipment capacity constraints by prioritizing dredging and maintenance of the nation's most economically significant ports and harbors to meet the growing needs of ocean-borne commerce.
- Fully utilize the funds available in the Inland Waterways Trust Fund and the Harbor Maintenance Trust Fund, prioritizing the project queue based on its impact on the U.S. manufacturing sector.