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A Better Approach to Infrastructure Planning

by Chris Caplice and Shardul Phadnis | 11:00 AM July 10, 2014

We know in the U.S. that the nation's transportation infrastructure urgently needs investment. The same is true in many other parts of the world. Why aren't more projects underway?

Many assume it's for lack of funding. More often, however, it's for lack of agreement on what should be done. For proposed projects to gain traction, various stakeholders must be aligned; chief among these are the companies that rely on transportation systems to connect them to customers and suppliers, and the government planners responsible for building these trade arteries. But in terms of their objectives and planning horizons, there is often a yawning gap between these private and public sector players.

It is not hard to see why the two sides find it challenging to confer about infrastructure needs – much less participate in each other's planning processes. Businesses are beholden to quarterly profit targets and product life cycles that span several years or less, whereas government planners focus on assets that can take a decade to build and remain in active service for many decades. Shippers pursue clear (if hard to obtain) cost, profit, and service objectives, while the public sector's objectives are always in flux, given the conflicting interests of constituents (including active opposition to new infrastructure projects). It's difficult for the public sector to coordinate planning across regions and modes. It's hard for shippers, even when they have integrated their transportation planning groups and are able to devise 20-25 year capital programs, to decide to share that strategic thinking freely and transparently.

For all these reasons, we know the lack of alignment is not a new problem. A 2005 survey of more than 500 freight interests from the public and private sectors carried out by the MIT Center for Transportation & Logistics (MIT CTL) revealed deep divisions on freight traffic congestion causes and solutions, and an alarming lack of communication between the two sides.

But we can now offer a new solution. The product of an MIT CTL research initiative called Future Freight Flows, it is a method of convening conversations and achieving alignment, based on the practice of scenario planning.

Scenario planning has typically been used as an aid to strategy formulation by businesses that must develop a point of view about a distant future in order to make decisions about capital investments today. Pioneered by Shell (http://hbr.org/2013/05/living-in-the-futures/ar/1?utm_source=google&utm_medium=post&utm_content=10_harvard-business-review_google-plus-post&utm_campaign=CX_Global_Innovation), it's a way of acknowledging great uncertainty without being paralyzed by it. The method allows users to prepare for a range of plausible futures rather than place a huge bet on one specific prediction of what will be true 20 or 30 years out.

This makes scenario planning an effective approach for long-range freight transportation planning. In the past, planners have tried to map future demands for infrastructure capacity by creating point forecasts (i.e., single, definitive answers (http://wiki.answers.com/Q/What_is_the_difference_between_point_forecast_and_prediction_interval_forecast)) based on macro factors – a deeply flawed approach, since it simply projects historic experience without paying due regard to future technological and economic changes.

Scenario planning is uniquely suited to bringing disparate parties together to evaluate long-range projects. By creating a set of outcomes, the participants can “live” in the future worlds and make decisions based on situations they can “feel” and not just talk about. Also, exposing the participants to each other's responses to the scenarios promotes a better understanding of their different viewpoints.

MIT CTL took this very useful tool of scenario planning and adapted it into a new approach toward prioritizing freight infrastructure investments. We designed a one-day workshop for planning and, in 2011, took it on the road to venues across the country. In each case, the workshop participants included government planners (federal, state, and local), shippers (retailers, manufacturers, distributors, etc.), carriers (rail, air, road, ocean), typical third parties (brokers, IMCs, 3PLs), and non-government organizations. Now, two years later, we're seeing the fruit of those discussions.

Take, for example, the experience of the Washington State Department of Transportation (WSDOT), which is using scenario planning to challenge the point forecasts it is mandated to use to predict freight growth in Washington's new State Freight Plan. "The method has generated a more profound understanding of the importance of some corridors," says WSDOT's Barbara Ivanov. For example, the workshop caused participants to grasp how demand on the state's east-west freight rail, intermodal, and waterway systems will come to the forefront of planning needs no matter which scenario materializes in the next 20 years. "Six years ago transportation professionals weren't thinking about the new grain seed technologies that are now sending bumper grain crops through our state to global markets, or the dramatic growth of energy products by rail," said Ivanov. "We were watching the drop off of inbound intermodal." Now, the various stakeholders are united in their understanding of what is coming down the pike, and can take concerted action to prepare.

Another of our original workshop participants, the Delaware Valley Regional Planning Commission (DVRPC), is now doing even more to bring stakeholders to a common understanding of infrastructural challenges. DVRPC has created a web-based mapping application called PhillyFreightFinder (<http://planphilly.com/articles/2013/04/26/new-phillyfreightfinder-app-maps-seven-categories-of-regional-cargo-network>) that lets users see how freight moves through the region's airports, highways, railways, and waterways, and with what impact on transportation systems. Much of the inspiration for the tool came from the scenario planning workshop, said Ted Dahlburg, manager of DVRPC's Office of Freight and Aviation Planning. This fall, the DVRPC will also launch a working group of regional stakeholders, including businesses, to provide insights and perspectives on specific infrastructure projects. They will vote on their preferred options and on "game-changer" projects that could have a major impact on the region's economy. "We hope this will be part of our planning process that drives our decisions on how we invest transportation dollars," said Brett Fusco, Senior Transportation Planner, DVRPC.

Use of MIT CTL's scenario planning methodology is expected to grow; because its development was sponsored by the National Cooperative Highway Research Program, it is freely available. Any transportation planning agency in the United States can use it to help guide the allocation of (scarce) funds to freight infrastructure projects. The toolkit includes sample scenarios, guidebooks for facilitators and participants, and material such as brochures and videos that bring these futuristic worlds to life.

For decades, the difficulty of convening multi-stakeholder conversations has been a major road block to developing the freight transportation systems U.S. companies need to stay competitive in world markets. The scenario planning method offers a way around that obstacle. All of us share an interest in building the infrastructure to support a vibrant economy. With a common understanding of what trends will shape future demand, and how they might combine to make the world look very different from today, we can also work together to turn the best scenarios into reality.