Stanford SOCIAL INNOVATION REVIEW

Networking for Sustainable Transport

By Brandon Keim

Stanford Social Innovation Review
Fall 2011

Networking for Sustainable Transport

EMBARQ, a network of sustainable transportation experts, has grown quickly, thanks to impressive fundraising and the design of a model program

BY BRANDON KEIM

Most brand-new organizations start with small projects and then work their way up. But EMBARQ, a network of sustainable transportation experts founded in 2002 by energy and transportation maven Lee Schipper, went right to the top. Its debut project was in Mexico City, megalopolis home to 18 million people and a flagship example of urbanization's problems.

As of 1992, Mexico City had the world's dirtiest air—and that was before its automobile boom. Between 1996 and 2006, the nation's vehicle fleet nearly tripled to 21 million. Nearly a third of those cars could be found in Mexico City, leading to debilitating gridlock and even worse pollution. Those problems are not fully fixed, but a significant solution is on the road: two modern bus lines, running down what had been the city's most congested traffic corridors.

Designed and implemented with EMBARQ's help, the Metrobus system currently serves 440,000 passengers a day. The buses occupy dedicated lanes, cutting travel times in half. The result: The number of cars on Mexico City's streets has dropped by 6 percent, and the system has become a model for other cities around the world.

EMBARQ has grown as well, now employing more than 100 people—civil and transport engineers, sociologists, scientists, and architects—in five Centers for Sustainable Transport in Mexico, Brazil, India, Turkey, and Peru. They've helped design transportation programs in each country—but their success isn't rooted only in technical recommendations and traffic flow models, or even in the organization's considerable funding. It's as much about process: building relationships, catalyzing connections among multiple stakeholders, and helping develop the baselines of raw information necessary to make informed decisions.

"My belief is there's no shortage of money to do transportation right. There's a shortage of will, and a shortage of glue—something to make the shareholders stick together," says Schipper.

Risk Assessment and Data

Of course, any discussion of EMBARQ's lessons necessarily starts with the group's unusually fortunate funding circumstances. Schipper worked at petroleum giant Shell during the 1980s, followed by positions at Lawrence Berkeley National Laboratory and then the International Energy Agency. He parlayed those connections and his vision into a $7.5 million Shell Foundation startup grant, with EMBARQ operating as the sustainable transport arm of the World Resources Institute, the Washington, D.C.-based high-profile environmental think tank. Mexico City became EMBARQ's pilot project because Mexico's secretary of the environment had been a student of Schipper's at Berkeley. It was easy to get a seat at the table, though a seat didn't guarantee success. "You can't just pop in and say, 'What's the story?'" says Schipper. "You need to make long-term relationships." EMBARQ established a headquarters in Mexico City, its staff on hand at a moment's notice.

After devising a transportation plan—inspired in great part by the bus rapid transit of Curitiba, Brazil—the EMBARQ team mapped out the anticipated permitting process. They used an in-house risk analysis tool to evaluate the potential fallouts faced by the project's various stakeholders: politicians, bus drivers, businesses on existing routes, all the people who would be affected by a massive project in a megalopolis.

Metrobus's dedicated lanes cut travel times in half on Mexico City's longest and most crowded street.

PHOTOGRAPH COURTESY OF EMBARQ

Brandon Keim is a freelance journalist and associate editor of *Wired Science* based in Brooklyn, N.Y., and Bangor, Maine. For the *Stanford Social Innovation Review*, he has written about green building, Indian environmentalism, and the global coffee trade.

"The engineering part is in some ways easier" than navigating competing social interests, says Luis Gutiérrez, EMBARQ's Latin America director. "You have to create a bridge of information." The team helped arrange meetings among stakeholders and managed delicate negotiations and compromises, especially with transport providers that no longer would be allowed to work the Metrobus corridor.

When the dust settled around the initial 20-kilometer line down the Avenue of the Insurgents, Mexico City's longest and most crowded street, Metrobus ownership was divvied up in an unusual public-private partnership. The city-operated Passenger Transport Network would be responsible for one quarter of all runs. The rest went to Corridor Insurgentes SA, an independent cooperative formed by microbus owners who had run the buses displaced by Metrobus.

It's precisely these factors that often impede well-designed transport development plans, said Ralph Wahnschafft, a sustainable transport officer at the United Nations. "The participatory decision-making process is often overlooked," he says.

Three years after EMBARQ arrived, the first Metrobus ran. A second line started in 2009. Similar projects are planned in 18 other Mexican cities—not necessarily with EMBARQ's guidance, but with Mexico City as inspiration. "It took a lot of bargaining. All the concessionaires, the informal sector, the bus companies, they hated that. But now they have a model," says World Bank energy specialist Todd Johnson. "The Metrobus is the best bus system I've seen in Latin America. The hard part was getting everyone to agree on it."

Aside from Schipper's personal connections, EMBARQ's choice of Mexico City was fortunate in another way. Thanks to the city's struggle with air pollution, solid data existed on pollutants, vehicle use, and other information needed to evaluate various Metrobus scenarios.

EMBARQ doesn't have the institutional resources to perform these measurements itself, but it defines the parameters: investment leveraged, people served, travel time saved, carbon dioxide emissions avoided, air pollution reduced, road fatalities avoided, and increased physical activity. Sometimes the data are collected but scattered among institutions or private consultancies, in which case EMBARQ encourages sharing. Sometimes the capacity to gather data exists, but it isn't used. "It's not just about getting data; it's also getting institutions to care about it and collect it," says Schipper.

Being able to measure one's own impact is a strategy "that can be applied to any organization regardless of resources," says EMBARQ information director Rhys Thom. "It seems simple and even obvious, but it's amazing how many organizations don't have indicators to help them evaluate whether or not they are successful."

In addition to its 440,000-person daily ridership and halved travel times, Mexico City's EMBARQ-designed Metrobus lines have reduced accidents on its main thoroughfare by 30 percent. Air inside the Metrobuses contains 30 percent fewer pollutants than the buses before; outside the buses, 80,000 fewer tons of carbon dioxide are avoided each year, along with 690 tons of nitric oxide, 144 tons of hydrocarbons, and 2.8 tons of fine particulates. In absolute terms, those numbers represent a tiny proportion of all transportation pollution in Mexico City—but extrapolated to the anticipated 10-line service, the Metrobus "would have a huge impact on pollution savings," Gutiérrez says.

DESIGNING FOR MULTIPLE SHAREHOLDERS

- Create a bridge of information
- Evaluate potential fallout and processes
- Measure project impact

NO SHORTAGE OF FUNDERS

Thom noted that EMBARQ's ability to measure project impact is a selling point to donors, of which there has been no shortage. The Shell Foundation has renewed its initial $7.5 million grant, a figure matched in 2006 by the Caterpillar Foundation. Other sources provide about $2 million per year, and in 2009 Bloomberg Philanthropies pledged $30 million over five years.

As its means and experience have increased, so has EMBARQ's scope. The nonprofit is working beyond transportation—on, for example, a housing program in Aguascalientes, Mexico, where EMBARQ helped design a low-income housing development for 40,000 people; that project shaped an ongoing slum-upgrading project in Rio de Janeiro. EMBARQ is also active at national policy levels, helping governments develop white papers, action plans, and other technical minutiae that help vague development intentions become concrete plans. In India, EMBARQ helped India's Ministry of Urban Development write the National Urban Transport Policy, which established bus-promoting guidelines for cities applying for federal sustainable transportation funds.

India's per capita rates of private automobile usage are growing fast; in the next two decades, India's urban population will rise from 28 percent to 40 percent. Cities like Indore, population 1.5 million, where EMBARQ started working in 2008, will absorb most of that growth, likely doubling in size. Indore represents an opportunity to solve transportation problems before they start. When EMBARQ arrived, the city's public transport demand was met mostly by a loose mix of minibuses and taxis with no fixed schedules. EMBARQ started by launching a study, to learn residents' transportation patterns and demands. As in Mexico, the network helped bring public and private stakeholders together, a crucial task given India's entrenched bureaucracy. An EMBARQ-designed bus rapid transit system is expected to start operating this year.

In the absence of transport solutions, the transportation needs of what Prabhu calls India's "exploding cities" will be met with gas-guzzling cars and sprawl. But in the United States, the home of gas-guzzling sprawl, there's generally little hope for the sort of progressive, large-scale sustainable transportation projects being built in Indore and Mexico City. Private enterprise alone can't provide the necessary investment; city and state budgets are tight; and at the federal level, the notion of sustainable transportation—with its implicit critique of pollution and wastefulness and explicit monetary investment—is anathema to many Republicans.

Perhaps most important, fossil fuel prices in the United States are still relatively low. It's unlikely that new taxes or tariffs, or an end to oil subsidies, will raise prices enough to make green transportation a US requirement in the near future. So long as oil is cheap, says Schipper, "it's really easy to do nothing." And no amount of insider contacts, good intentions, and better planning is likely to change that. ■