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Transforming Public Transportation

THE MOBILITY AND ACCESSIBILITY PROGRAM

Sponsored by **FedEx**®



Advancing Transportation, Improving Lives

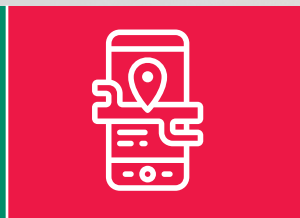
As cities from Mexico City to Beijing contend with increased congestion, pollution and sprawl, governments are searching for solutions. They seek approaches that will meet their residents' needs fairly, stabilize the climate and build more resilient communities. Through the Mobility and Accessibility Program (MAP), a dynamic, 14-year collaboration between FedEx and WRI Ross Center for Sustainable Cities, they're finding new ways to achieve these goals.

MAP is working with transportation planners and policy makers across the world to transform urban streets and public transport systems, making them safer, more efficient and more convenient for millions of users. Our successes are then shared across a global network to seed positive change: reducing carbon emissions, increasing pedestrian and road safety, and delivering more reliable, affordable service.

By focusing on improved mobility and accessibility, MAP is helping millions of residents take advantage of opportunities in jobs, education and the marketplace, building more productive local economies and more equitable societies. Together, FedEx and WRI Ross Center for Sustainable Cities are catalyzing public transportation solutions where they are needed most.



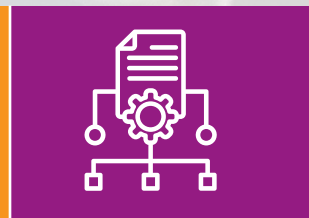
Collaboration and Innovation at Scale



Creating Smart & Sustainable Transport



Implementing Electrification



Developing Frameworks for Safety

Mobility and Accessibility Program (MAP)

2022-2023 HIGHLIGHTS

Almost **2,000 bus shelters in two Brazilian cities are now being upgraded**, thanks to the expansion of a pilot program launched by MAP in 2022. QualiÔnibus, a national forum of transportation professionals supported by WRI Brasil, was instrumental in the scale-up.

Each day, an average of 4.5 million people in China are using a new app to choose a sustainable mode of travel. More than 30 million people have booked and paid for trips since 2019, when the Beijing Municipal Commission of Transport launched the initial MaaS (Mobility-as-a-Service) pilot with support from WRI China.

The government of India is building on its pledge to put 50,000 electric-buses (e-buses) on the road by 2027. With assistance from WRI India, it's creating additional new funding sources to help **169 smaller cities shift their fleets to electric vehicles.**

Three states in Mexico adopted official standards for the safe design of school environments. The standards are based on WRI México's widely circulated *Safe and Walkable Environments Guidebook*, which explains how to build in protections for schoolchildren, cyclists and pedestrians.



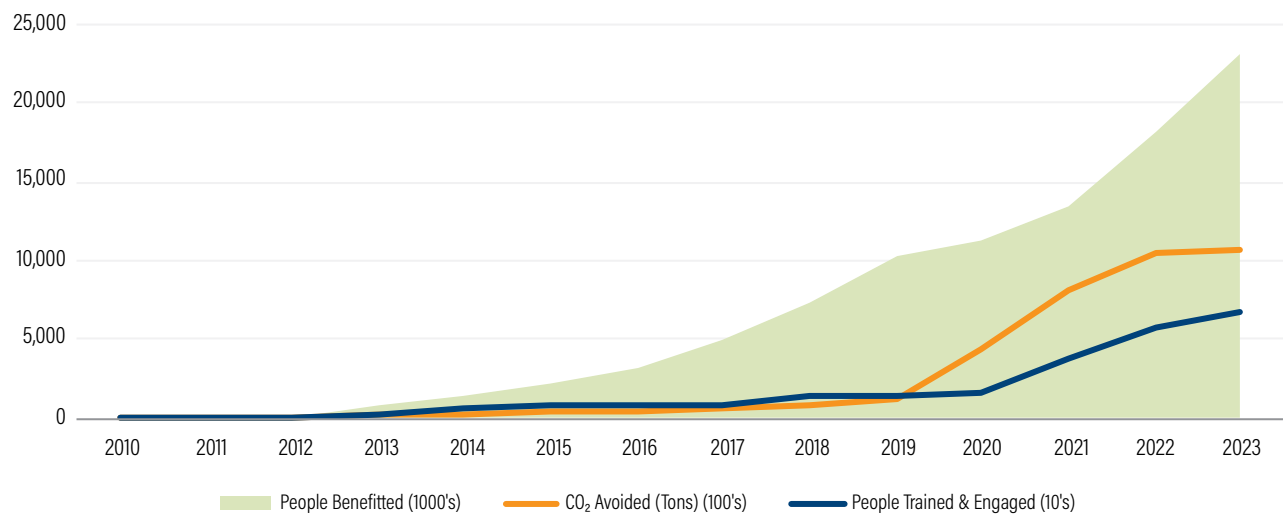
Bus riders in Recife enjoy comfortable seating.

Cumulative benefits since 2010 (CO₂ avoided, people benefitted, trained)

WRI Ross Center uses key performance indicators (KPIs) to accurately track the collective impact of our work. KPIs enable us to measure how our projects have improved human wellbeing and encourage a streamlined and effective approach to project planning. The result has been the successful growth

of our organization and impact. With steady FedEx funding, our collaboration with FedEx from 2010 to 2023 has been able to build on momentum from a strong foundation to see exponential benefits achieved via MAP.

Cumulative Benefits



2023 KPI Totals

2023 KPIS	CO ₂ e Emissions Avoided (Tons)	People Benefitted	People Trained & Engaged
TOTAL	27,080	5,029,364	8,787

Cumulative KPIs by Country

BY COUNTRY	PEOPLE BENEFITED	PEOPLE TRAINED & ENGAGED	CO ₂ e EMISSIONS AVOIDED (TONS)
Brazil	7,031,386	23,815	363
China	10,821,000	16,555	975,669
India	3,457,320	22,961	25,287
Mexico	1,764,651	2,843	70,000
Global	128,239	546	-
Grand Total	23,202,596	66,720	1,071,319

DEFINITIONS

CO₂e Emissions Avoided (tons): Greenhouse gas emissions avoided, measured as how many metric tons of CO₂ equivalent global warming potential;

People Benefitted: Accrued number of people directly benefiting from the project (e.g. through learning, improved service);

People Trained & Engaged: Annual number of people directly influenced by the project (i.e. taking action, changing behavior).

The Road Ahead

In the wake of the COVID-19 pandemic, cities face an uncertain future. Rising cost of living, exploding populations, economic mobility and a fast-moving technological revolution are reshaping the conditions of contemporary urban life. At the same time, city leaders are confronting the immense challenges of a changing climate. How will they adapt? How will they leverage a wealth of new data to solve the environmental challenges ahead?

One of the best responses that cities can make at this moment is to improve public transport, which simultaneously lowers emissions, reduces congestion, improves mobility, and provides access to jobs and services. The collective impact of safe and efficient public transit on people, places and productivity enhances the quality of life for everyone.

With vital support from FedEx since 2010, MAP has established partnerships in Brazil, China, India and Mexico that bring transportation professionals and government policy makers together to achieve these results. Our collaborations use data and analysis to help transit agencies implement new ideas and achieve new levels of efficiency and performance. Centered on the FedEx principles of quality-driven management and user satisfaction, MAP is enhancing transit systems and increasing public investment to shape the cities of tomorrow.

During 2023, MAP scaled up its impact, with cities on three continents adopting successful new mobility initiatives from their larger neighbors. MAP pilots in Brazil that focused on safer driving practices and better bus shelters took root in neighboring towns and flourished. MAP's work to expand local bus feeder systems in India will connect smaller communities to larger cities' metro rail operations. In Mexico, MAP strategies to increase accessibility and mobility around schools and other environments were incorporated into urban design guidelines in three states, ensuring improved infrastructure across the region.

In China, the four-year-old “Beijing Green Integrated MaaS Platform” (operated on the Gaode and Baidu apps) now has more than 30 million users. MaaS systems let commuters in Beijing, Guangzhou and Shanghai book and purchase trips by bus, train, bike and ride-sharing services with just a few clicks, making their transit experience seamless. WRI China has been a partner in this initiative since its beginnings in Beijing in 2020, working with government, academia and industry representatives to find new ways to encourage green travel and reduce emissions.

Thanks to the bedrock support from FedEx, MAP's influence continues to grow. Today, we have worked on four continents in over 70 cities, sharing proven technologies that help optimize transportation efficiency, electrify fuels, integrate disparate transit systems, and contribute to policy and funding priorities in their regions.

The global need is great, but we have much to contribute, and we are building a record of success. We are grateful to FedEx for their remarkable partnership and look forward to building on our achievements in the year to come.

Sincerely,



Rogier van den Berg

Global Director

WRI Ross Center for Sustainable Cities



Avenida Parana in Belo Horizonte makes room for people on bikes and buses in a verdant setting.



Brazil

Scaling Up Innovations to Boost Customer Service, Revenue

WRI Brasil's flagship program, QualiÔnibus, is a national forum of 30 Brazilian transport agencies that offer service to 25% of the population. Since 2017, its members have met to share insights and experiences, disseminating best practices and measuring their performance against established benchmarks for quality service.

Thanks to FedEx support from its inception, QualiÔnibus has spurred improvements in public transportation that range from new customer amenities (such as Wi-Fi at bus shelters) to additional

transport revenues for cash-strapped municipalities. The program has sparked innovations in safety as well, including a program to prevent bike and motorcycle collisions. The campaign reduced such accidents by 60% in its first three months in Fortaleza and has been replicated by 11 cities within the group in the last six years.

In 2023, another MAP-supported pilot from Belo Horizonte – selling advertisements on bus shelters to fund their improvement, at no cost to the municipality – took off in Porto Alegre and Fortaleza, where



The QualiÔnibus Benchmarking group poses at their annual meeting.



WRI BRASIL

GRANDES IDEIAS



The exchange of experiences among QualiÔnibus municipalities, along with the training and guidance provided by the WRI team, are the foundation for great outcomes in Novo Hamburgo that are making public transport better – more inclusive, accessible, reliable and safe.



ROBERTA GOMES DE OLIVEIRA,
Secretary of Urban Development,
Housing and Mobility,
Novo Hamburgo, Brazil

Guillermo Petzhold, WRI Brasil Urban Mobility Coordinator leads a discussion at the QualiÔnibus annual meeting.

almost 2,000 shelters are now undergoing or planned for renovation. Customer surveys developed with guidance from FedEx showed strong support for the upgrades, which deliver improved accessibility and comfort for riders. The program demonstrates how concepts developed by QualiÔnibus members are being scaled up across the country, transforming users' transportation experience.

Roberta Gomes de Oliveira is Secretary of Urban Development, Housing and Mobility in the town of Novo Hamburgo. After just three years as a member of the QualiÔnibus forum, she has helped the city deploy several of the group's most successful tactics such as: an on-street parking policy that designates the revenue to the public transport system; a new public contract with a private company that will pay to install and maintain street signs in exchange for advertising rights, with funds also going to support public transit; and, new contracts with operators that require satisfaction surveys as a measure of performance.

"The exchange of experiences among QualiÔnibus municipalities, along with the training and guidance provided by the WRI team, are the foundation for great outcomes in Novo Hamburgo that are making public transport better – more inclusive, accessible, reliable and safe," she said.

The flow of ideas continues to accelerate. In 2023, with FedEx support, WRI Brasil convened four meetings with more than 70 organizations and 100 stakeholders (from the public sector, industry, NGO and academia) to strategize transportation planning over the next three years. Meetings focused on how future contracts between cities and private bus companies can be leveraged to improve both the quality and accessibility of public transport in Brazil.

The program demonstrates how concepts developed by QualiÔnibus members are being scaled up across the country, transforming users' transportation experience.



China

MaaS Pilots Bring Smart Transportation Solutions to Millions

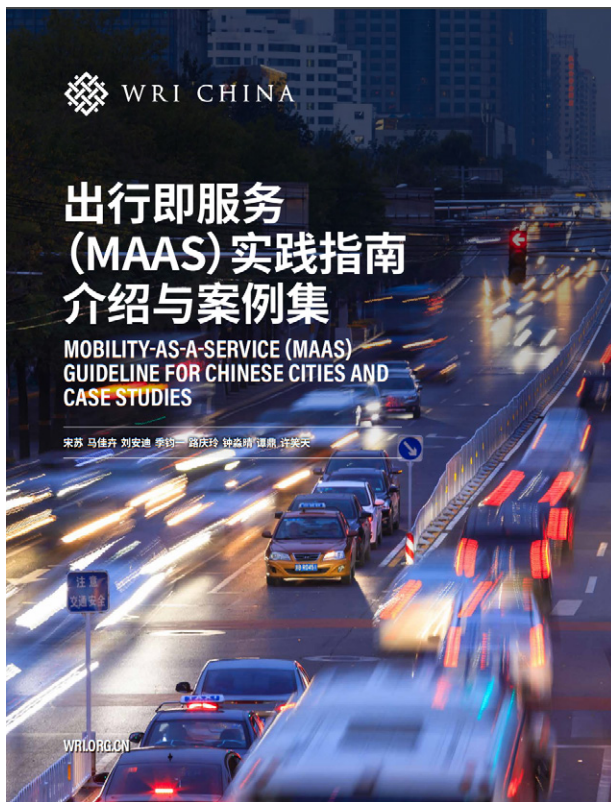
The continued growth of Mobility-as-a-Service (MaaS) platforms in Beijing, Guangzhou and Shanghai is reducing emissions, simplifying access to public transport and making users' travel options greener. As of 2023, the "Beijing Green and Integrated MaaS Platform" (operated on the popular Gaode and Baidu

apps and supported by WRI China) has serviced over 30 million users. The apps have connected riders to green transport services such as bus, metro and shared bicycles for an average 4.5 million trips daily since 2019, when the Beijing Municipal Commission of Transport launched the initial MaaS pilot.

With features such as real-time bus forecasts, public transport planning and end-to-end route guidance, MaaS provides comprehensive guidance for integrated, urban, door-to-door travel that combines various modes of transport. Like other MaaS programs across the world, it has unlocked new opportunities for riders to shift to more sustainable travel options.

To develop the second phase of MaaS in the capital in 2023, WRI China worked with the Beijing Transport Institute. Developers added incentives for customers by establishing new connections to the carbon market. Returns from those arrangements allow commuters and their employers to claim tangible rewards (like discounts on fare cards and shopping vouchers) when they use the app.

Early in 2023, MAP issued a guide to the MaaS platform and published a blue book with North China University of Technology on shared mobility, which was widely distributed to stakeholders. MAP conducted 16 workshops and other informational events throughout the year for more than 450 participants and conducted user surveys in 20 Chinese cities for more than 15,000 respondents, gathering input on shared mobilities, MaaS and public transport.



MaaS Report for Chinese Cities.

“The MaaS project provides better information sharing for transportation operation enterprises,” explains Professor Xuehong Ji of North China University of Technology. “Through it, we can achieve more efficient vehicle scheduling and infrastructure layout, reduce users’ travel costs and improve their travel experience. Thanks to MAP, there’s more communication and exchange between MaaS projects, and joint research topics are improving the operation of MaaS projects.”

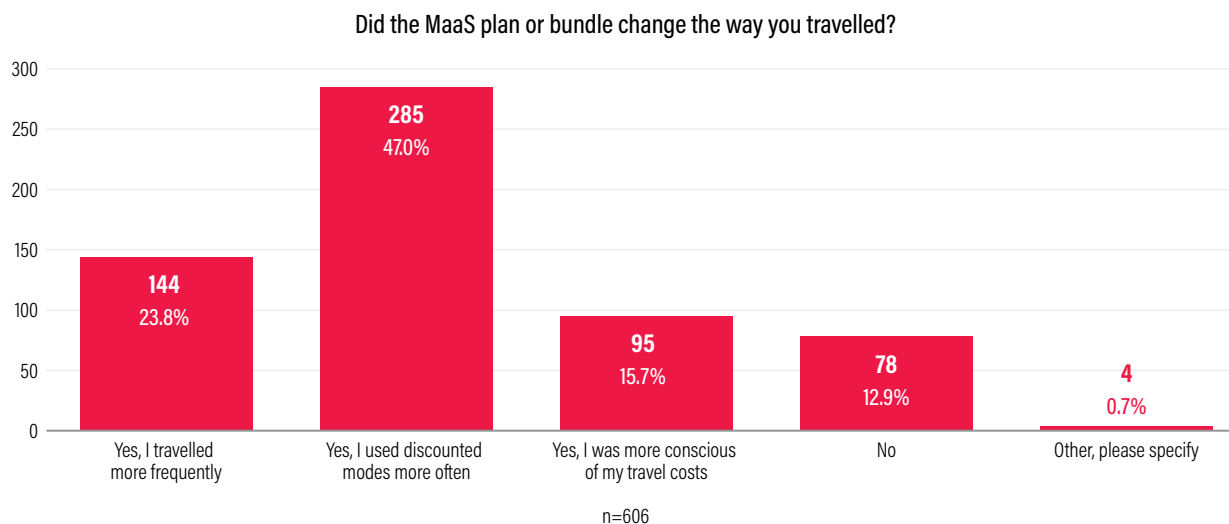
Wenjun Fei, a MaaS user and graduate student at North China University of Technology, says, “I’ve become accustomed to opening the Gaode Map when walking or taking the subway, which has accumulated some carbon credits for me. On the platform, I can exchange them for taxi coupons, movie tickets and more.”

What is Mobility-as-a-Service (MaaS)?

MaaS integrates various forms of transport services into a single, comprehensive, on-demand app. Users book and pay through one payment channel, instead of buying multiple tickets. By hosting a diverse menu of transport options – public transit, ride-/car-/bike-sharing, taxis, car rentals and leases, or a combination thereof – MaaS aims to offer the best value proposition for users, societies and the environment.

Experts say that MaaS has the potential to revolutionize public transport systems in developing countries, which tend to rely heavily on informal and unstructured modes of mobility. If tailored to the unique challenges of specific cities, MaaS could hold the key to delivering efficient, equitable and accessible transportation services in urban areas across the world.

A survey of the pilot revealed that 87% of MaaS users changed their travel habits and paid more attention to costs



Source: WRI China

Wenjun Fei, a MaaS user and graduate student at North China University of Technology, says, “I’ve become accustomed to opening the Gaode Map when walking or taking the subway, which has accumulated some carbon credits for me. On the platform, I can exchange them for taxi coupons, movie tickets and more.”



India

With Federal Support, Smaller Cities Join the E-Bus Revolution

India, which has earned acclaim for its robust national commitment to e-buses, recently announced the National Electric Bus Program's (NEBP) intent to roll out 50,000 e-buses by 2027. This has been enhanced with an ambitious plan by the Ministry of Heavy Industries to have more than 800,000 of them in service by 2030.



A fleet of BMTC buses are ready for service.

WRI India has been an active partner in this massive undertaking for the past three years. MAP provides critical research and technical assistance to transit agencies working to create new frameworks for the funding, infrastructure and technologies that e-buses require.

By any measure, the impact of the e-buses will be far-reaching. E-buses deployed under NEBP are expected to increase bus ridership by 30 million per day, reduce tailpipe emissions by 91.5 million tons over 12 years and create 275,000 new jobs – including many for women as conductors and drivers. The expanded e-bus program not only broadens the types of careers available to women but offers another benefit: it reassures potential female passengers, many of whom travel alone, that riding the bus is a safe, comfortable and reliable experience. “If a woman is driving an e-bus, then more women passengers are encouraged to travel by the bus,” noted a woman e-bus driver from Mumbai.

As they developed the e-bus plan, government administrators realized that many smaller Indian cities lacked the resources needed to procure the vehicles, putting them at risk of being left behind in the clean energy transition. In August 2023, with input from the MAP team, the Government of India announced a plan to subsidize and deploy e-buses in 169 cities with a population over 300,000. Demand from these smaller cities has boomed, with contracts for more than 3,500 e-buses floated to date; more than 10,000 buses are expected to be put in use. WRI



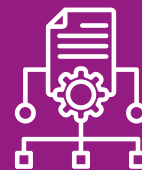
Riders enjoy a new BMTC bus.

India also supported the government on building a framework for driver training and capacity building, both essential components of e-bus operations.

In Bengaluru, WRI assisted in maximizing the reach and accessibility of the region's rapidly expanding Namma Metro by adding new e-buses for the Bengaluru Metropolitan Transit Commission (BMTC). These vehicles provide a more efficient feeder system for commuters seeking to connect to the high-speed system. At the request of BMTC, MAP is now working to identify gaps in the feeder bus network at each of

the metro stations and provide recommendations to increase efficiency, passenger convenience and accessibility. In Mumbai, which has one of the largest fleets of e-buses in the country, MAP has been instrumental in creating a new coalition, Leaders of Sustainable Mobility, developed through the Bus Karo program.

"If a woman is driving an e-bus, then more women passengers are encouraged to travel by the bus," noted a woman e-bus driver from Mumbai



Mexico

A New Framework to Make Streets Safer and Transit More Sustainable

In the states of Jalisco, Sonora and Monterrey, WRI México continued to help cities achieve steady, tangible progress in creating safe, walkable streets and increase access to public transportation. Integral to this work was the 2023 publication of a new resource for urban planners: WRI's *Safe and Walkable Environments Guidebook*. The guidebook outlines opportunities for cities to provide needed protection to vulnerable groups— schoolchildren, cyclists and pedestrians of all ages and abilities. It also offers insights from past projects on how to conduct a safety site analysis, design or revise regulatory instruments, and build the capacity of transit agencies to be advocates for active mobility (walking, cycling, etc.). After the guidebook was widely shared in dozens

of municipalities, generating a basic methodology for the analyses and diagnoses of environments, it was officially incorporated into the states' Standard for Safe Design of School Environments, issued in Spring 2024.

In tandem, WRI sponsored a series of workshops on the design of safer access to public transportation in Puerto Vallarta and Guadalajara. Participants from 15 municipalities noted the value of having experts share principles that can inform public projects from the outset and be integrated city-wide.

“It’s important that the people who are dedicated to the transformation of the city have a clear understanding of the process, from diagnosis to



Workshop participants in Guadalajara take a bike tour to observe safety conditions.



At a workshop in Puerto Vallarta, participants identify interventions to make their streets safer.



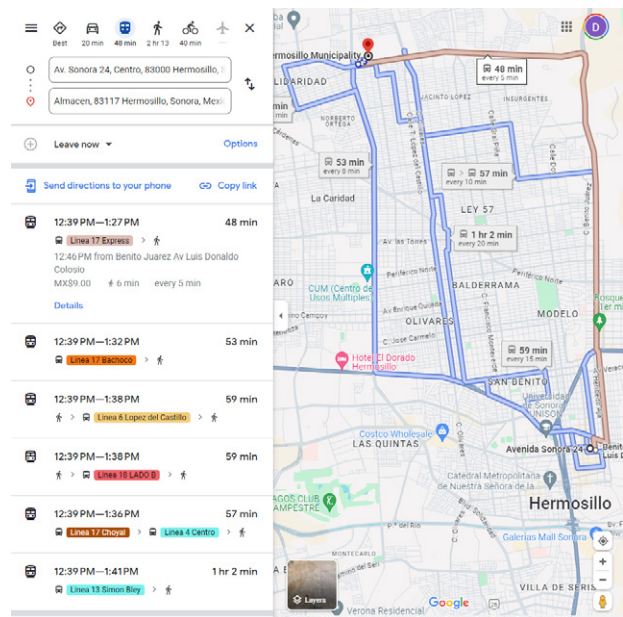
“It’s important that the people who are dedicated to the transformation of the city have a clear understanding of the process, from diagnosis to implementation, on projects that address the needs of the area.”

ABEL PANIAGUA PUGA,
Head of the Sustainable Mobility Management Unit of the Directorate of Mobility and Transportation
Zapopan, Jalisco.

implementation, on projects that address the active mobility needs of a particular area,” said Abel Paniagua Puga, who heads the Sustainable Mobility Management Unit of the Directorate of Mobility and Transportation in Zapopan, Jalisco. “The MAP workshop is a great way to share knowledge on the evaluation of different environments that we can replicate in public spaces.”

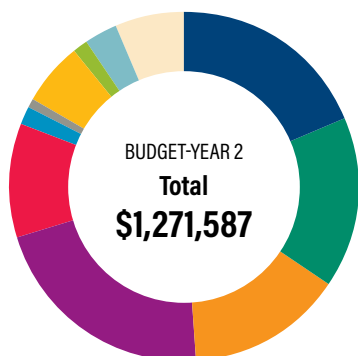
In response to a request from the city of Hermosillo, the capital of Mexico’s Sonora state, MAP designed a detailed plan for management of public transportation system routes. The team delivered guidelines for demand studies, proposed a restructuring of routes in Hermosillo’s public transport system, UNE, and built a tool to chart performance indicators using GPS data. Also in Sonora, MAP helped five cities develop transit maps and information based on General Transit Feed Specification (GTFS), an Open Standard used to distribute relevant information about transit systems to riders and enable improved transport planning.

To help the city of Guadalajara prepare for the 2024 launch of a new bus rapid transit (BRT) system in the Adolfo López Mateos corridor, MAP compiled numbers on projected demand, providing estimates on the potential number of users the system could expect under normal operating conditions.



Transit data created with the help of WRI allowed bus schedules in the state of Sonora to be available publicly on sites like Google Maps.

Financial Statement



■ Global Staff Labor and Project Management ⁴	■ Conference Expenses
■ WRI Brasil Subgrant	■ Communications (incl. communications staff labor)
■ WRI India Subgrant	■ Travel
■ WRI México Subgrant	■ Indirect Costs
■ WRI China Subgrant	■ General and Administrative Expenses
■ Research and Publication Expenses	

Full Grant 2022-2023	\$2,200,000
Year 1 Expenses (2022)	\$928,413
Year 2 Expenses (2023)	\$1,271,586

ACTUAL EXPENSES-YEAR 2	
Salaries	\$270,610
Benefits	\$116,774
Occupancy	\$27,849
Project-Related Office Services & Supplies	\$9,692
Conference Expenses	\$1,230
Publications	\$9,520
Communications	\$13,263
Travel	\$1,178
Project-Related Electronic Network	\$23,205
Research Materials & Quality Assurance	\$10,193
Subgrants ¹	\$689,843
Other Direct Costs ²	\$1,885
G & A Expenses ⁴	\$96,343
Total Expenses	\$1,271,586

1. Subgrants to WRI Mexico, WRI Brasil and WRI India.
2. Includes a small GHG tax from business travel and electricity use.
3. General and Administrative Expenses: Organization-wide shared costs including senior leadership, accounting, grant and subrecipient management, human resources, web management, audit and related services.
4. This line includes budget for the DC-based MAP project management team, which coordinates the global efforts of the in-country MAP teams.

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FedEx Corp. (NYSE: FDX) provides customers and businesses worldwide with a broad portfolio of transportation, e-commerce and business services. With annual revenue of \$88 billion, the company offers integrated business solutions through operating companies competing collectively, operating collaboratively and innovating digitally as one FedEx. Consistently ranked among the world's most admired and trusted employers, FedEx inspires its more than 500,000 employees to remain focused on safety, the highest ethical and professional standards and the needs of their customers and communities. FedEx is committed to connecting people and possibilities around the world responsibly and resourcefully, with a goal to achieve carbon-neutral operations by 2040. To learn more, please visit fedex.com/about.

ABOUT WRI ROSS CENTER FOR SUSTAINABLE CITIES

WRI Ross Center for Sustainable Cities is World Resources Institute's program dedicated to shaping a future where cities work better for everyone. It enables more connected, compact and coordinated cities. The Center expands the transport and urban development expertise and on-the-ground impact of the EMBARQ network to catalyze innovative solutions in other sectors, including air quality, water, buildings, land use and energy. Our network of more than 500 experts working from Brazil, China, Colombia, Ethiopia, India, Indonesia, Kenya, the Netherlands, Mexico, Turkey and the United States combine research excellence with on-the-ground impact to make cities around the world better places to live. More information at wri.org/cities or on X @WRIRossCities.

ABOUT WRI

WRI is a trusted partner for change. Using research-based approaches, we work globally and in focus countries to meet people's essential needs; to protect and restore nature; and to stabilize the climate and build resilient communities. We aim to fundamentally transform the way the world produces and uses food and energy and designs its cities to create a better future for all. Founded in 1982, WRI has nearly 2,000 staff around the world, with country offices in Brazil, China, Colombia, India, Indonesia, Mexico and the United States and regional offices in Africa and Europe. Learn more: [WRI.org](https://wri.org) and on X @WorldResources.

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