

Light Rail Transportation Systems Are Built in Ethiopia

Context

After decades of sustained economic and population growth coupled with rapid urbanization, cities in Sub-Saharan Africa are experiencing growing problems with traffic congestion. Poor road networks, underinvestment in infrastructure, and a lack of mass transit systems exacerbate the problems and negatively affect economic activities and human health. Even though countries in the region have only 2 percent of the world’s registered vehicles, these countries have some of the highest road mortality rates in the world (Marquez 2012).

Addis Ababa, the capital of Ethiopia, is a clear example of the challenges of traffic congestion. As one of the fastest-growing metropolises on the continent—with an annual population growth of 3.8 percent (UITP 2014)—the city is struggling to meet transportation demands. It is also struggling with road safety. Available data from 2015 show more than 10,000 traffic accidents nationwide, with about 418 deaths resulting from traffic accidents in Addis Ababa alone (Kassa 2015).

Development Challenge

The challenge for Addis Ababa was to build cost-effective public transportation systems to reduce traffic congestion and improve road safety.

Intervention

The Addis Ababa Light Rail Transit (LRT) project is a modern transportation system designed to improve mass transit options and reduce congestion in Ethiopia’s capital. The project was launched by the Ministry of Transportation in 2008 and received 85 percent of its funding from a loan by the Export-Import Bank of China. When fully operational, the LRT system will be able to transport 60,000 passengers per hour through two lines connecting the city on a north–south and east–west axis. The first of these lines—a 17-kilometer north–south section connecting industrial areas and the city center—was completed in 2015 and has carried approximately 50 million passengers in its first two years of operation. The network runs entirely on electricity supplied by hydropower dams across the country. Studies estimate that the network will reduce 1.8 million tons of carbon dioxide emissions by 2030 (C40 Cities 2016). It is Sub-Saharan Africa’s only light rail system outside of South Africa, and it was awarded the C40 Cities Award in the transportation category in 2016 for its commitment to clean energy. The award is sponsored by Bloomberg Philanthropies and BYD, a Chinese automobile manufacturer, and recognizes innovative city programs to tackle climate change.

Delivery Challenges

This delivery note analyzes the key implementation challenges and examines how they were overcome.

- **Skills transfer.** A challenge during the planning and building of the LRT system was the government’s ability to successfully operate and manage the system. Given the central role played by China, which funded and built the



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PROJECT DATA

SECTOR:

Infrastructure, transportation

DEVELOPMENT CHALLENGE:

Building cost-effective public transportation systems to reduce traffic congestion and improve road safety in Addis Ababa, Ethiopia

DELIVERY CHALLENGES:

Skills transfer, weak stakeholder engagement, inter- and intragovernment relations

COUNTRY:

Ethiopia

PROJECT DURATION:

2007–present

PROJECT AMOUNT:

US\$475 million

REGION:

Sub-Saharan Africa

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system and provided the technical expertise, critics worried that the Ethiopia Railways Corporation (the entity in charge of the LRT) lacked sufficient knowledge to operate the system independently once it was completed.

- **Stakeholder engagement.** Before the LRT project, mass transit systems in Addis Ababa consisted of buses managed by the state-owned company Anbessa and minibus taxis operated by private operators. Integrating transportation routes with the LRT system (39 stations, including main terminals and final stops) was critical to reducing travel times and costs and to improving the overall connectivity of the network.
- **Inter- and intragovernment relations.** Despite the success of the LRT system, Addis Ababa lacked an urbanism plan to successfully integrate different transportation services to improve pedestrian and road safety. Moreover, approximately 65 percent of the road network in Addis Ababa lacks pedestrian walkways or sidewalks (World Bank 2016a), and many intersections lack traffic signals. These conditions hamper the project's development goals and limit the effectiveness of the LRT system.

Addressing the Delivery Challenges

The following steps were taken to mitigate the delivery challenges related to **skills transfer**:

- To effectively manage the operation of the LRT system, the Shenzhen Metro Group (the company in charge of operating the system during its first years) and the Ethiopia Railways Corporation negotiated a five-year skills transfer agreement to provide ongoing technical support and training for local technical and managerial staff.
- The Shenzhen Metro Group has trained 250 Ethiopians, including drivers and maintenance workers, to manage day-to-day operations of the LRT line (UITP 2014).
- An additional 10 members of the LRT management team, including project engineers and trainmasters, have worked in China for periods of 10 to 15 months to manage the system's launch and supervise its operation. These individuals will eventually take over the system's day-to-day operations from the Shenzhen Metro Group.
- The training conducted by the Shenzhen Metro Group covers topics of railway track construction, signaling systems, project management, and maintenance techniques in the railway sector.

The following steps were taken to mitigate the delivery challenges of **weak stakeholder engagement**:

- To integrate the new LRT system with existing transportation options, the project coordinated with Anbessa, the public bus operator in Addis Ababa, to align routes and to improve the coverage of the city's transportation network.
- The arrangement included the purchase of a fleet of modern buses fitted with security cameras and GPS, which expanded transportation routes and connections in heavily used LRT stations.
- To incorporate private taxi operators into the new LRT network, the government has indicated its intention to build more official taxi stands near stations, which should concentrate pedestrian demand and taxi supply.

The following steps were taken to mitigate the delivery challenges related to **inter- and intragovernment relations**:

- The government of Ethiopia and the World Bank have signed a US\$300 million credit to improve transportation safety and mobility in Addis Ababa and nationwide. The project is intended to help the Addis Ababa Land Development and Management Bureau, among other institutions, coordinate different mass transit systems through a revised urban development plan. The revised plan includes the integration of the LRT system and a newly planned bus rapid transit network.
- The project also seeks to align fares, services, and facilities of the multiple transportation operators and small-scale private bus enterprises to improve the efficiency of their operations (World Bank 2016b).

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