San Juan, Guatemala

Pilot Project | Completed

Basic information

Urban area	→	76 km²
Population	→	48,597
Growth rate	→	2.4 %
Country capital city		
GDP per capita	→	USD 1,158
Modal share		
Formal public transport	→	10%
Tuk Tuks	→	14%
Walking	→	42%
Cycling	→	12%
Private cars	→	7%
Private motorbikes or 2-wheelers	→	9%
Other	→	6%
National GHG emissions per capita	→	2.40 (tCO2eq)
Exposure to climate change	→	MEDIUM

Context

San Juan Comalapa is a municipality in the department of Chimaltenango, Guatemala, with a population of 48,597 inhabitants. Most of the population (94%) belongs to the indigenous Kaqchikel Maya group, and Kaqchikel is widely spoken locally. San Juan Comalapa is a predominantly rural area with low-income areas and includes the city and 20 surrounding villages. The population density is 639 people per km².

San Juan Compala is a compact municipality with many slopes, which can make access to transport modes frequently difficult. In this context, tuk-tuks have emerged as a feasible transport solution for the community. Traditional family roles are highly gendered; women mainly fulfil household and care activities, which implies different mobility needs and solutions for women and men.

Public transport operates informally through tuk-tuks, which function similarly to taxis and do not follow fixed routes or stops. A contract between tuk-tuk providers and local authorities regulates service provision and sets a flat fare of GTQ 3.00 (~USD 0.39). Currently, around 200 tuk-tuks are registered in the municipality, with roughly half of the fleet operating every other day. In addition, most of the vehicles are in poor condition and have exceeded their expected service life. Buses only operate in the municipality's outskirts, and 11% of the population has difficulty accessing urban mobility services. Women travel significantly more often by tuk-tuk (25%) than men (6%), while men use bicycles for 20% of their trips. There is no formal mass transit system beyond the

informal tuk-tuk services and peripheral buses, and no comprehensive transport master plan or similar guiding document has been reported.

At the institutional level, there is a contract between tuk-tuk providers and local authorities that regulates the provision and fares of tuk-tuk services in the municipality. There is no transport authority or mobility secretariat in San Juan Comalapa. At the national level, Guatemala has regulatory initiatives related to electric vehicle import incentives and electromobility; however, these remain under consideration and have not yet been fully ratified. But the remaining are under consideration and have not yet been fully ratified. Several incentives exist to reduce implementation costs, although most apply only in three regions of the country. Two regulations are currently under development: the Law on Incentives for the Import of Non-Conventional Energy Automobiles (2018) and the Law on Electromobility (2019), but neither of them has been approved.

The project documentation does not specify whether the local counterpart has the mandate and responsibility to finance mass public transport infrastructure, nor whether it has the authority to borrow from international finance sources. In addition, it does not provide details on the existing systems and procedures in place to monitor, evaluate, and report on urban mobility.

Key challenges include the municipality's steep topography, which limits access to transport modes, and its rural, low-income context. Additional challenges include an ageing tuk-tuk fleet beyond its life cycle, the informal nature of public transport provision, gendered mobility patterns, and limited access to urban mobility services for some parts of the population. In response to these challenges, the Electric Tricycle Pilot project, implemented under the EUROCLIMA+ programme, aimed to introduce electric transport to support the renewal of old petrol-powered tuk-tuks and improve accessibility. During the first phase of implementation, nine electric tricycles and their associated charging infrastructure were deployed: two for public transport services, four for waste collection, and three for social transport, serving people with limited mobility or disabilities.

Support from the Partnership

Technical Assistance: Pilot Project development
Funded by: European Union
Funding amount: EUR 250,000
Implemented by: Gesellschaft für Internationale Zusammenarbeit (GIZ) through the EUROCLIMA+ Programme
Local counterpart: Municipality of San Juan Comalapa, Commission for Urbanity, Security and Infrastructure

Supported activities:

Implementation of the pilot project of the BRT's Margarita terminal: implementing bicycle parking infrastructure and equipment, and a potential fee system. The project has three components:

- Implement two electric tuk-tuks to increase sustainable public transport options for the municipality
- Increase accessibility by implementing three tuk-tuks for people with mobility difficulties
- Provide rubbish collection in areas that are difficult to access by implementing four electric tricycles
- Empower women through their participation in tuk-tuk owners' meetings.
- Provide technical training on maintenance, operation and management of tuk-tuks.

Status of pilot project implementation

Project start: 20218 Q3
Project completion: 2022 Q3

Completed outputs:

- Base studies: Analysis of the current mobility situation, state-of-the-art and market survey
- Training strategy
- Communication and dissemination strategy
- Definition of technical specifications
- Management, business and operation model. Implementation Roadmap
- Implementation of the communication strategy and impact stories
- Procurement of units: launch of tender and procurement of nine electric tuk-tuks
- Implementation of the pilot project: nine electric tuk-tuks and the start of the project test phase

Source: Changing Transport

The pilot project does not include a projection of future impact, and only baseline data are presented in the following table.

Indicator	Baseline - 2016
Total annual transport-related GHG emissions (Mt CO2eq)	9,234.15 Kt CO2 eq
Annual transport-related GHG emissions per capita (kg CO2eq)	0.01191 kg CO2eq / capita
Air pollution Mean urban air pollution of particulate matter (in µg PM2.5) at road-based monitoring stations	36-43 µg/m³ of PM2.5
Road safety Annual traffic fatalities in the urban area per 100,000 inhabitants	19 fatalities/ 100,000 habs (data of 2013)

Insights from practice: key pilot project takeaways

The introduction of new technologies in the transport system requires a deep review of the institutional political context

Introducing electric tuk-tuks into San Juan Comalapa's transport system required a detailed review of the market's institutional political context in which it operates. Local authorities faced operational barriers that were difficult to solve despite their good intentions, such as:

- The widespread rejection of unknown technologies, even in a pilot phase,
- The incorrect selection of the implementation strategy based on "giving away" units without solid award criteria, which was discouraged from the beginning by GIZ,
- The non-adherence of drivers in a local association reflected the political differences between the various stakeholders that make up the local transport system.
- Differences in criteria and objectives between federal and local authorities added complexity to the project.

While these barriers could have been identified in the early design stages, GIZ adopted various strategies to address them.

- Development of a communication and awareness strategy
- Development of a training strategy aimed at local administration personnel, drivers and mechanics
- Definition of the units' technical specifications to be incorporated with local actors to avoid mistakes from previous experience.
- Develop alternative management and operation models to empower local authorities and traditional tuk-tuk drivers (creating municipal management companies, public-private participation models, and introducing promotion models based on the result of financing, among others)

Electric mobility is a feasible solution for local transport systems

The project aimed to promote sustainable urban mobility in San Juan Comalapa by introducing electric Tuc Tucs in the local transport system. The project's managers considered using this technology to provide social services, such as daily transfers for older people and children with special needs to rehabilitation therapies, and waste collection in difficult-to-access areas.

The project integrated a gender perspective to empower women and ensure their participation.

The project aims to address greenhouse gas and local emissions in San Juan Comalapa from the operation of tuk-tuks powered by fossil fuels, while empowering women and strengthening their participation in transport services. Including a gender component in the project aims to improve women's perceptions of security and safety when using the new electric units. The project also aims to increase women's influence in the city's decision-making processes, highlight the need to consider gender balance in any policy, programme, or project, and define its objectives and activities.

Early interinstitutional coordination and capacity development are crucial for project completion

Interinstitutional coordination needs to be enhanced when implementing this type of project, as many stakeholders are involved and may not be familiar with mobility projects. Other dependencies of the municipality and the national government had to be involved in earlier stages of the project to obtain the required endorsements or approvals. Education, waste collection, and other sectors are linked to the project execution, which adds complexity to its management. Capacities in the management and execution of mobility projects enable the full involvement of some local authorities that might not have sufficient staff or experience.

Legal limitations were an opportunity to support the national industry

The project focused solely on purchasing vehicles manufactured in Guatemala to overcome regulatory limitations on importing tuk-tuk units, thereby supporting the national industry and showcasing the project's multiple benefits.

Results and perspectives for scaling

Other cities and manufacturers have expressed interest in replicating the experience

Although the project participants did not define adequate operational management models for San Juan Comalapa, they were able to generate interest among federal and local authorities in other cities in the benefits of electromobility. Excellent results were also achieved, working hand in hand with local suppliers during a market development phase, for which this experience provided visibility and concrete results. It was also possible to strengthen local consultants who accompanied this project and became true promoters of sustainable mobility.

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