

# Arequipa, Peru

Partner city

Status of the project: Completed Sustainable Urban Mobility Plan



## Basic Information

Urban area: 3,700,00 km<sup>2</sup>

Population: 910,000 | Growth rate: 1.09%

Region capital city

GDP per capita: USD 10,277

Modal Share:

Formal public transport: 46%

Private cars: 18%

Taxis: 13%

Walking: 17%

Cycling: 1%

Private motorbikes or 2-wheelers: 1%

Other: 4%

National GHG emissions per capita: 2.82 (tCO<sub>2</sub>eq)

Exposure to climate change: HIGH

## Context

Urban mobility in Arequipa presents challenges according to transport data from 2016, which reports 52,877 infractions, 5,410 accidents, 128 fatalities and 5,282 non-fatal victims. In 2008, public buses' modal accounted for 63% of the modal share, while walking represented 16.6%. By 2017, on the main north-south and south-north axis of the city, which traverse the historic centre, 47% of journeys were made by public transport, 30% by private vehicle and 23% by taxi.

Several factors explain the modal choice, including:

- Growth of the vehicle fleet without consideration of service and demand; as of 2016, there are 261,600 vehicles present (25% taxis and 46% private cars).
- Low quality public transport service. Users perceive public transport as unsafe due to its low capacity, poorly maintenance units operating 240 routes with an average age of over 20 years.
- Disjointed urban infrastructure between the activity centres, road discontinuity and the variation of sections within continuous corridors. The overlay of the urban centrality and the historic centre exacerbates urban mobility challenges.

Transport and mobility challenges in Arequipa were key elements that prompted the development of the SUMP. The lack of an integrated and agreed-upon vision for mobility in the city has compromised the system's quality and coverage, leading to isolated actions and significant investments in infrastructure without significant returns for residents' quality of life.

Developing Arequipa's SUMP constituted an essential step toward improving mobility in the metropolitan region. This process included fundraising activities to achieve implementation and cooperation efforts between the municipality with various institutions to develop and implement sustainable urban mobility measures with a comprehensive vision.

In this context, the National Government and the Provincial Municipality of Arequipa have entered into technical cooperation agreements to enhance mass public transport and sustainable urban mobility in an integral and consensual manner. Agreements exist between the Ministry of Transport and Communications (MTC), the Agence Française de Développement (AFD) and CODATU, with the Provincial Municipality of Arequipa (MPA, its acronym in Spanish) as a primary beneficiary of the project. Another agreement is between the MTC and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to implement the project 'Sustainable Urban Transport in selected cities in the north and south of Peru' (DKTI). The third agreement is between the MPA and the MTC to finance Arequipa's Integral Transport System (SIT) project.

AFD has been working with the MPA since 2016 on urban mobility within the framework of the AFD-MTC-MPA Cooperation Agreement. In recent years, AFD worked with the MPA on direct cooperation and joint work projects, including the development of Arequipa's Sustainable Urban Mobility Plan - SUMP (2020-2022). Arequipa did not have a SUMP or a comprehensive policy strategy on urban mobility for the metropolitan area, making it challenging to implement actions with a shared vision.

Arequipa lacks a mass rapid transit system, but the city has planned a first light rail on the central 15 km NW-SE corridor. Currently, its public transport system relies on non-integrated bus lines. There is an existing transport master plan or similar document (Route Regulatory Plan 2016).

The Municipality of Arequipa, the local counterpart, has the mandate and responsibility to finance mass public transport infrastructure. However, it lacks the authority to borrow from international finance sources. Systems and procedures are partially in place to monitor, evaluate and report on urban transport.

This SUMP project aims to develop a city model that promotes more sustainable travel modes (walking, cycling, and mass public transport). The main expected results are:

- Improving the urban mobility system and incorporating new technologies to reduce travel times and road accidents and implementing the Integrated Transportation System
- Reducing the effects of transport on climate change and non-renewable energy consumption
- Improving urban social equity by ensuring universal accessibility, promoting alternative use of the road system and encouraging healthier modes of transportation
- Developing institutional capacities for the various stakeholders involved in urban mobility issues

The technical assistance provided to Arequipa contributes to institutional strengthening by regulating sustainable urban mobility management, promoting projects to be executed by the municipality, and establishing financing mechanisms for infrastructure, equipment and monitoring systems.

## Support from the Partnership

**Technical assistance:** Sustainable Urban Mobility Plan (SUMP)

**Funded by:** European Union

**Funding amount:** EUR 500,000

**Implemented by:** AFD through the EUROCLIMA+ Programme

**Local counterpart:** Municipality of Arequipa, Municipal Planning Institute (IMPLA)

**Supported activities:**

- Development of the integrated public transport network
- Strategic programmes and projects to optimise the operation of freight transport and urban logistics
- Implementation plan
- Monitoring system

## Status of the SUMP process

**Project start date:** 2020 November**SUMP adoption projected date:** 2024 Q1**Completed outputs:**

- Forum on challenges and opportunities for Sustainable Urban Mobility
- Participation plan
- Communication plan
- Expectations survey
- Diagnostic workshop
- Mobility assessment
- Definition of the vision strategic objectives, and scenario construction
- Action plan, budget, and financing
- Follow-up, reporting and implementation support
- Publication

**Next expected outputs:**

- SUMP adoption

## SUMP key measures and cost estimates

The following table highlights the most significant measures identified in the SUMP.

Measure	Cost Estimate
01. Promote greater participation in Pedestrian and Bicycle Mobility	USD 170,088,068.32
02. Promote a transformation of public transport towards a massive, integrated, and multimodal system	USD 885,787,428.01
03. Promote more rational and efficient use of private transport	USD 427,779,033.66
04. Promote more sustainable management of freight transport and urban logistics	USD 8,703,246.07
05. Promote intelligent traffic management for regulation, monitoring, and control	USD 39,248,638.74
06. Promote a reduction in the environmental impacts of mobility and traffic crashes	USD 37,150,133.09
07. Promote an improvement in universal accessibility, inclusion, equity, and gender	USD 145,920,411.78
08. Promote institutional strengthening, governance, and civic culture	USD 6,188,481.68
09. Promote a financial sustainability scheme for sustainable mobility	USD 1,842,931.94
010. Promote a mobility model that supports sustainable urban development in the metropolitan area	USD 0.00

The following table summarises the total capital expenses (CAPEX) estimates for different types of measures in the SUMP.

Urban transport investment measures	CAPEX Estimate (€M)
Public transport and NMT	USD 727,661,666.5
Street shaping urban roads and traffic management	USD 472,892,695.9
Other measures	USD 3,956,919
Total	USD 1,204,511,281.44

## Core impact indicator baselines

Indicator	Baseline – 2017-2021	Projected 2042 SUMP scenario
<b>Total annual GHG emissions (t CO<sub>2</sub>eq)</b>	360,200t CO <sub>2</sub> eq	252,140 t CO <sub>2</sub> eq
<b>Annual transport related GHG emissions per capita (kg CO<sub>2</sub>eq)</b>	1923.6 kg CO <sub>2</sub> eq / capita	Not available
<b>Access</b>		
Increase of the proportion of the population living within 500 meters or less from a public transport stop	61%	70%
<b>Air pollution</b>		
Decrease in the mean urban air pollution of particulate matter (in µg PM2.5) at road-based monitoring stations	9 µg/m <sup>3</sup> of PM2.5	Not available
<b>Modal share</b>		
Increase of the modal shares of trips by public transport, walking, and cycling	Formal public transport: 46% Informal public transport: No data Walking: 17% Cycling: 1% TOTAL : 62%	Not available
<b>Road safety</b>		
Decrease of traffic fatalities in the urban area, per 100,000 inhabitants	0.91 fatalities / 100,000 hab	≤5 fatalities / 100,000 hab
<b>Affordability of public transport</b>		
Percentage of disposable household income spent on public transport for the second quintile household income group	12%	Not available

## Perspectives for implementation

### Although not adopted yet, the SUMP moves forward by securing funding for its implementation

The SUMP undergoes consideration by plenary councillors, culminating into its approval by the Municipal Council through a Municipal Ordinance. Transitioning towards sustainable urban mobility systems necessitates both initial financing for capital investments and ongoing revenue streams over time to ensure the system's long-term sustainability.

Meeting the high infrastructure endowment requirements entails financial contributions, not only from the State but also from other sources. The allocation of funds from each source will ultimately hinge on technical feasibility, project inclusion in the Multiannual Investment Programming (subject to meeting their requirements), and alignment of SUMP objectives with the Development Plan, including Metropolitan and Master Plans, and other technical instruments. The ultimate goal is for the SUMP to evolve into a comprehensive mobility planning tool with a sustainability approach. Primary financing sources, categorized into central and complementary sources, are developed by program, implementation horizon, and potential funding sources.

## Insights from practice: lessons learned from the SUMP process

### SUMPs offer an opportunity to prioritise limited resources based on a collectively agreed upon long-term perspective

Addressing urban mobility from a sustainable approach amid significant challenges in the transport sector and resource constraints necessitates a strategic roadmap with a forward-looking vision. Arequipa's SUMP proposes an ordering and prioritisation framework with robust opportunities for adoption. While the project exhibits scalability potential, local political dynamics may complicate the adoption process.

## Highlights of the past year

As of July 2023, the project is in the final stage. However, due to the municipal's processes and political shifts, the schedule, for finalising, presenting, and approving the SUMP by the Municipal Council has been delayed. Additionally, the timing of the closing event and the printing and distribution of the SUMP have been affected. Given the change in municipal administration, the consultant will facilitate engagement and communication with the new administration to ensure the continuation and completion of the approval and closure process, including presenting the project's formulation and results.