

Transport Starter Data Kit: Historical socio-transport data for Togo

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Abstract

Togo is a Sub-Saharan country located in the western region of Africa. Togo covers a land area of 57 000 square kilometres, with an estimated population of 8 million inhabitants (majority (65 %) of the population live in rural areas). Togo borders the Bight of Benin in the south; Ghana to the west; Benin to the east; and Burkina Faso to the north. Togo is identified as one of the [least developed countries](#) in the world, with an economy that is predominantly agricultural. The agricultural sector contributes approximately 42 % of the country's Gross Domestic Product (GDP).

There is little information available on transport in Togo. There are over 500 km of railways and around 7500 km of roadways, of which a third is paved.¹ Togo wants to reduce fossil fuel consumption in road transport by 20% until 2030. It will be achieved by introducing vehicle taxes, electric mobility, better maintenance and expanding port infrastructure.²

Transport demand modelling can be used to assess the implications of different scenarios and support improved policymaking. Data on transport activity is an important element for the development of national transport decarbonisation strategies. By having freight and passenger transport information, the impacts on vehicle and fuel consumption changes from replacing internal combustion engine vehicles with electric vehicles can be calculated. The development of a national decarbonisation strategy requires significant efforts. However, access to data is often a barrier to starting transport system modelling in developing countries, thereby causing delays. This article provides data that can be used to support a model for Togo, which may act as a starting point for further model development and scenario analysis. The data are collected entirely from publicly available and accessible sources, focusing on national reports, statistical yearbooks and academia.

¹ https://en.wikipedia.org/wiki/Transport_in_Togo

² https://changing-transport.org/ndc_country/togo/

Keywords

U4RIA

Transport data

Transport modelling

MAED

Togo

Specifications Table

Subject	Transport
Specific subject area	Transport Data
Type of data	Tables Graphs
How data were acquired	Literature survey (databases and reports from international organisations; journal articles)
Data format	Raw and analysed
Parameters for data collection	Data collected based on inputs required to create an energy system model for Togo
Description of data collection	Data were collected from the websites, annual reports and databases of international organisations, as well as from academic articles and existing modelling databases.
Data source location	Not applicable
Data accessibility	With the article and in a repository. Repository name: Zenodo. Direct URL to data: https://doi.org/10.5281/zenodo.7998501

Value of the Data

- These data can be used to develop national transport demand models to inform national transport investment outlooks and policy plans, as well as provide insights on the evolution of total final energy demand.
- The data are useful for country analysts, policy makers, and the broader scientific community, as a zero-order starting point for model development.
- These data could be used to examine a range of possible transport pathways, in addition to the examples given in this study, to provide further insights into the evolution of the country's power system.
- The data can be used for conducting an analysis of transport activity and capacity-building activities. Additionally, the methodology of translating the input data into modelling assumptions for a demand projection tool is presented in this article, which is useful for developing a zero-order national transport demand model. This is consistent with the U4RIA goals.

- The data can also be used as a call to action in addressing transport data gaps and establishing parameters for data collection to improve the consistency of transport-climate research in these countries.

1. Data Description

The data provided in this paper can be used as input data to develop transport demand models for Togo. The data provided in this paper can be used to support the development of a transport model for Togo. The data provided were collected from publicly available sources, including statistical yearbooks, transport ministry reports, statistics from national authorities and affiliated research institutions, academia and journal articles. Global datasets (primarily from the World Bank) were only consulted if severe data gaps existed. The dataset includes parameters on passenger and freight transport activity, disaggregated by transport mode (road, rail, aviation etc.) and geographic scale (inter-city or inner-city), if available. The dataset also covers the size of the vehicle fleet, disaggregated by vehicle types. The data coverage and sub-types vary among the parameters. The overall ambition is to include the most recent available year(s).

<i>Item</i>	<i>Description of Content</i>
Figure 1	A graph showing total population (million people), as well as the share of urban and rural population in Togo.
Figure 2	A graph showing total GDP (million USD in 2015), as well as the share of the different sectors contributing to GDP in Togo: agriculture, construction, mining, manufacturing, service, and energy.
Table 1	An table showing passenger transport activity in Togo based on UN DESA Statistics Division data (see explanation below). The data feature information for 2018.
Table 2	A table showing freight transport activity in Togo based on UN DESA Statistics Division data (see explanation below). The data feature information for 2018.
Table 3	A table showing the energy intensity levels (MJ per passenger-km) for urban transport in 2013. It is based on a study for Cape Town (South Africa) and it is intended to support estimations for this parameter in the country.
Table 4	A table showing load factors (average number of people per vehicle) for urban transport in 2013, based on the same study for Cape Town (South Africa).
Table 5	A table showing vehicle fleet data in Togo for the most recent year data were available.

For the parameters on passenger and freight transport activity, an additional dataset was included in Table 2 and Table 3. The UN DESA Statistics Division modelled passenger activity and freight activity for every country in support of SDG Indicator 9.1.2³. Passenger activity data provide information for

³ UN DESA (2020), Indicator 9.1.2: Freight volume by mode of transport (tonne kilometres), https://unstats-undesa.opendata.arcgis.com/datasets/4a5d7189e27148c48f045729ef9e40c8_0/about;
UN DESA (2020), Indicator 9.1.2: Passenger volume (passenger kilometres) by mode of transport, <https://hub.arcgis.com/datasets/undesa::indicator-9-1-2-passenger-volume-passenger-kilometres-by-mode-of-transport->

road, rail and air transport. Freight data cover road, rail and inland water, aviation. The passenger-km and tonnes-km data originate from the Open SDG Data Hub. In this dataset only the data for International Transport Forum (ITF) (representing mostly OECD countries) and UNECE countries (mostly European countries) are based on national reporting. For non-ITF/UNECE countries, the data are estimated using the ITF model, which uses several covariates such as GDP, population and transport network coverage. A description of the model can be found in the ITF Transport Outlook 2017.

1.1 Population

Population data including total population, population growth, and split by rural or urban was gathered from The World Bank Open Data platform⁴. Figure 1 displays the total population disaggregated by urban and rural in Togo.

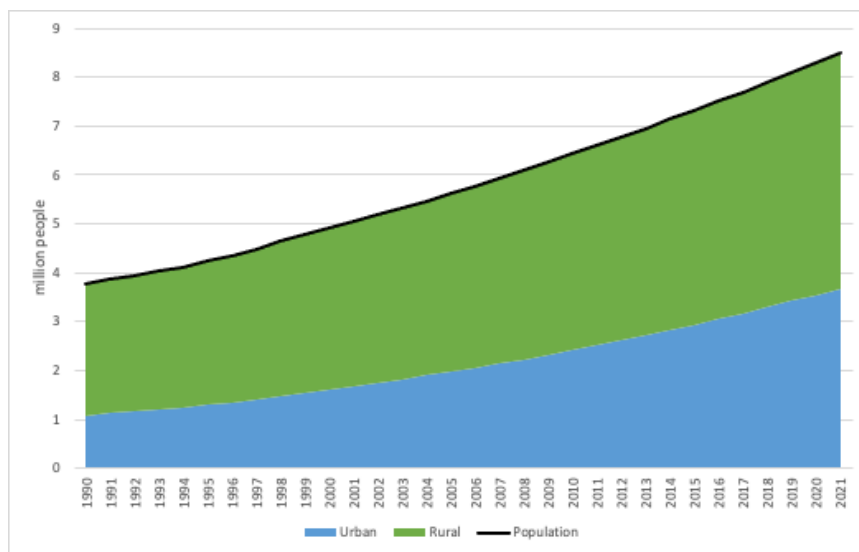


Figure 1: Total population (million people) disaggregated by urban and rural in Togo

1.1 Gross domestic product (GDP)

GDP data including total GDP, GDP growth, and GDP share by sector (agriculture, manufacturing, service) was collected from The World Bank Open Data platform⁴. Where data was not available, data processing was done. Figure 2 shows the total GDP, as well as the share by sector, in Togo.

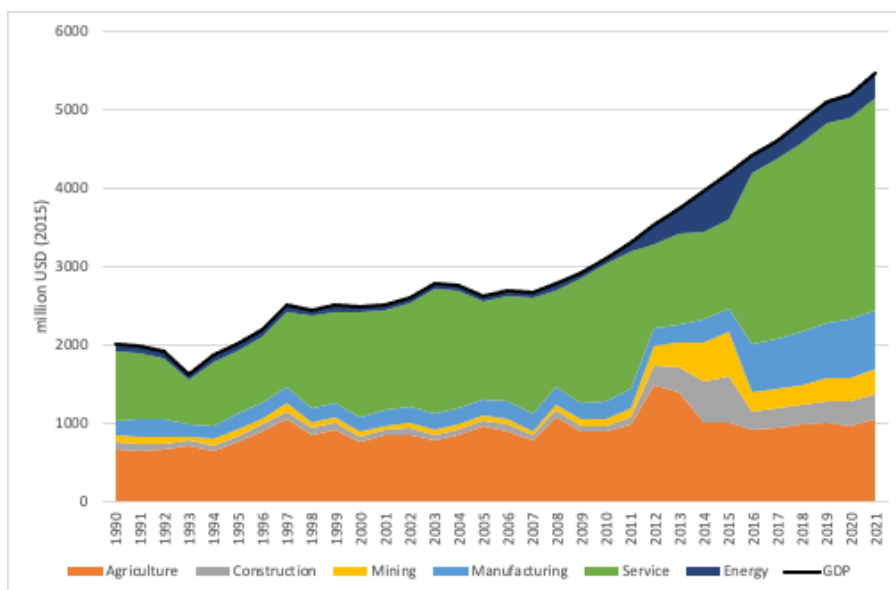


Figure 2: Total GDP (million USD in 2015) disaggregated by share in Togo

1.3 Passenger transport activity

Togo has severe data gaps. The country reporting does not cover any of the data points. Information on passenger transport activity in Togo is not released by country statistics. The World Bank Data Portal does not either provide information on any passenger activity. The country has a road network of 7520 km, with two major highways connecting the capital from Burkina Faso (northwards) and Mali (north-west). Togo also has a rail network of 568 km.

According to the 2019 UN DESA modelled data, it is estimated that the passenger activity in Togo recorded over 8550 million passenger-km for road, 464 million passenger-km for rail and 851 million passenger-km by aviation. The large majority of passenger activity is conducted through road transport.

Table 1: Modelled passenger transport activity (million passenger-km) in Togo

Mode	2019
Aviation	851.005964
Rail	464.4
Road	8550.066667

Source: UN DESA (2020), Indicator 9.1.2: Passenger volume (passenger kilometres) by mode of transport, <https://hub.arcgis.com/datasets/undesa::indicator-9-1-2-passenger-volume-passenger-kilometres-by-mode-of-transport-5/about>, last accessed April 2022.

1.4 Freight transport activity

Information on freight activity for Togo has been retrieved for aviation only. Aviation was recorded to have transported 10 million tonnes-km in 2020, by the Statistical, Economic and Social Research and

Training Centre for Islamic Countries ([SESRIC](#)). Road and Rail freight transport activity is not reported by any of the relevant sources.

The UN DESA modelled data estimates that freight activity through roads surpasses 972 million tonnes-km for 2019. Aviation is estimated to transport 14 million tonnes-km in 2019. Rail is assumed to transport 120 million tonnes-km in 2018.

Table 2: Modelled freight transport activity (million tonnes-km) in Togo

Mode	2018	2019
Aviation	-	14.865775
Rail	120.638489	-
Road	-	972.2

Source: UN DESA (2020), Indicator 9.1.2: Freight volume by mode of transport (tonne kilometres), https://unstats-undesa.opendata.arcgis.com/datasets/4a5d7189e27148c48f045729ef9e40c8_0/about, last accessed April 2022.

1.5 Energy intensities for transport

To further understand the efficiency of the transport system, information on the transport energy intensity is relevant. It is together with load factors (see *1.4 Load Factors*) inputs to MAED. However, such information is difficult to retrieve and there were no values available for this country. A study on urban transport in Cape Town (South Africa) provides estimates for some road transport modes.⁵

Table 3: Energy intensity levels (MJ per passenger-km) for urban transport

Mode	MJ per passenger-km for 2013
Electric Car	0.55
Hybrid Car	1.56
Petrol Car	2.22
Minibus taxi (petrol)	0.66

Source: Kane, L. (2016), What do we mean by low carbon transport: Understanding how people move in Cape Town, https://www.researchgate.net/publication/308899067_What_do_we_mean_by_low_carbon_transport_Understanding_how_people_move_in_Cape_Town

1.6 Load factors

The load factors in the Starter Data Kits for Transport focuses on the average number of people transported by one unit in each transport mode. For example, for a bus, it is the average number of people per trip. In some cases, it might be also referred to as 'occupancy levels' for passenger transport. There were no values available for the country, but a study for urban transport in Cape

⁵ Kane, L. (2016), What do we mean by low carbon transport: Understanding how people move in Cape Town, https://www.researchgate.net/publication/308899067_What_do_we_mean_by_low_carbon_transport_Understanding_how_people_move_in_Cape_Town

Town (South Africa) provides some insights that can support estimating values in other cities or countries.

Table 4: Load factors

Mode	Load factors for 2013
Electric Car	1.4
Hybrid Car	1.4
Petrol Car	1.4
Minibus taxi (petrol)	7.8

Source: Kane, L. (2016), What do we mean by low carbon transport: Understanding how people move in Cape Town, https://www.researchgate.net/publication/308899067_What_do_we_mean_by_low_carbon_transport_Understanding_how_people_move_in_Cape_Town

1.7 Vehicle fleet

Togo has a total of 24341 road vehicles, as of 2019. Available information covers the years 2015 to 2019. During this period, the total vehicle fleet grew by 20%. The vehicle fleet data is sourced from the IRF World Road Statistics 2022.

Table 5: Vehicle fleet in Togo

Parameter	Year	Number of vehicles
Total Vehicles In Use	2015	20149
Total Vehicles In Use	2016	18779
Total Vehicles In Use	2017	19782
Total Vehicles In Use	2018	21283
Total Vehicles In Use	2019	24341

Source: IRF (2023), World Road Statistics 2022, International Road Federation, <https://worldroadstatistics.org/>

2. Experimental Design, Materials, and Methods

The above data were gathered through extensive desk research. This included material from international organisations, journal articles, and media reports. The World Bank's data platform provided GDP share by sector for agriculture, manufacturing, and services. However, GDP share by construction, mining, and energy was also needed to align the data structure with the MAED tool. To address the lack of data available for these sectors, the authors assumed that construction, mining, manufacturing, and energy all fall within the industry sector. Thus, to obtain data for the three remaining sectors, the remaining percentage after considering agriculture, manufacturing, and services from The World Bank's data platform, was divided by three. It is therefore assumed that the GDP share of the construction, mining, and energy sectors are the same. The transport data was also compiled, presented, and discussed with local stakeholders to reach a consensus on the main data and assumptions.

3. Ethics Statement

Not applicable.

4. CRediT Author Statement

Naomi Tan: Investigation, Conceptualisation, Methodology; Data Collection; Visualization, Writing and Editing; **Robert Ambunda:** Data Collection; Investigation; Writing and Editing; **Nikola Medimorec:** Conceptualisation; Methodology; Data Collection; Investigation; Writing, Review & Editing; Supervision; **Angel Cortez:** Data Collection; **Agustina Krapp:** Data Collection; **Erin Maxwell:** Data Collection; **John Harrison:** Supervision; **Mark Howells:** Supervision

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Declaration of Competing Interests

The authors declare that they have no known competing financial interests or personal relationships which have or could be perceived to have influenced the work reported in this article.