DAKAR

SENEGAL

Land area (km²)	**Population density** (per km²)	**Population size**	**Total final energy demand** (million GJ)
83	15,278	1.3 million	28.6

4
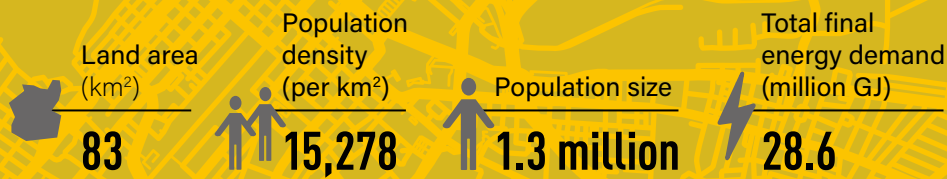
Dakar is the capital of Senegal in West Africa and is located at the western tip of the country. It is an Atlantic port city covering an area of 83 square kilometres with an estimated population of more than 1.3 million inhabitants. As of 2016, the greater Dakar region was home to 50% of Senegal's urban population, 95% of its industrial and commercial companies, 80% of its infrastructure and services and 87% of its formal employment; as a consequence, Dakar contributed an estimated 68% of the country's gross domestic product (GDP).

As of 2019, Senegal had around 864 MW of total installed electricity capacity, 13% of which was renewable (7% from hydropower and 6% from solar PV). The National Energy Development Plan (Lettre de Politique de Développement du Secteur de l'Energie, or LPDSE), signed in 2012, targets increasing the renewable share in power generation from 10% in 2016 to 15% in 2020[i]. The country's national economic and social development plan (Plan Senegal Emergent, PSE 2025) aims for a 23% share of on-grid renewables in power generation by 2030.

The City of Dakar reinforces these objectives through municipal policies and strategies such as the Environmental Action Plan (P.ACT.E.) and the Master Plan for Urban Development of Dakar and Its Surroundings (PDU 2035). The PDU aims to achieve 15% local electricity production from renewables by 2035 and to reduce reliance on diesel power generation from 90% in 2013 to 5% in 2035. The City intends to finalise (by March 2021) its Plan Climate Energie Territorial (PCET), which will be the integrated energy and climate change development plan informing Dakar's short- and long-term renewable energy roadmap. The PCET is being developed as a result of Dakar's commitment under the C40 Cities Leadership Programme to be net-zero carbon by 2050.

The transport sector dominates the city's energy demand – accounting for 55% of total energy consumption – followed by the industrial (34%) and residential (8%) sectors. Despite Dakar's high electrification rate of more than 95%, household electricity use remains low at around 153 kWh per capita annually (compared to 10,649 kWh per capita in the United States), with lighting as the main end-use application. Liquefied petroleum gas (LPG) is the primary energy source for cooking (averaging 12 kilograms per month per household), followed by charcoal (0.2 kilograms per person per day) and some use of firewood.

The high energy demand for transport reflects Dakar's deteriorating road infrastructure, inefficient public transport networks and ageing vehicle fleet, with 80% of on-road vehicles estimated to be more than five years old. This has led to urban mobility challenges, including permanent traffic jams at peak hours that contribute to high air pollution and negatively affect residents' economic competitiveness, health and well-being, and quality of life. In response, the national transport entity, Conseil Exécutif des Transports Urbains de Dakar (CETUD), piloted the city's mobility and urban planning strategy, the PDUD 2008-2025. The plan articulates three ambitious infrastructure projects – the Express Transit Train (TER), bus rapid transit and renewal of the on-road transport fleet – with a common goal of increasing the share of electrification and reducing fossil fuel dependence across these three transport modes while also reducing air pollution from on-road transport emissions by 2030.

Although the local authority has control over municipal buildings only, the City recently completed a pilot energy audit of all municipal and public buildings, as the first phase of an ambitious target to equip more than half of municipal buildings with grid-connected distributed rooftop solar PV by 2030, as envisaged in the PCET.

See endnote 60 through 74 in the *Feature: Renewable Energy in Sub-Saharan African Cities* chapter.

i As of late 2020, no reporting had been identified to verify that this renewable energy target had been met.

HEIDELBERG
GERMANY

Land area (km²)
108

Population size (2019)
160,000

5

Heidelberg is a German frontrunner on energy and climate issues. The city aims to become climate neutral by 2050, and in 2019 it was one of the first cities in the country to declare a climate emergency. In part in response to this climate emergency declaration, Heidelberg passed its Climate Action Plan, complementing the city's 2014 masterplan for 100% climate protection.

The Climate Action Plan sets out 30 actions for the city to achieve its climate protection goal. These actions include a focus on energy-efficient buildings and on renovation of old building stock; passive house standards and renewable energy requirements for new neighbourhoods; scaling up renewables in district heating and the municipal power utility; improving public transport and increasing green spaces; and sustainable consumption.

Despite facing challenges from the COVID-19 pandemic, Heidelberg was able to realise several of these actions in 2020.

Since early in the year, the municipal district heating network has run on 50% renewable energy, with the goal of achieving climate-neutral district heating and phasing out the use of coal by 2030. In addition, the city aims to produce a third of its heating capacity locally by 2025.

Due to land scarcity within Heidelberg, in 2020 the municipal utility started co-operating with utilities in other municipalities to expand the city's solar PV and wind power supply. Thanks to this co-operation, Heidelberg plans to achieve its goal of adding 25 MW of renewables by 2030, with an interim goal of 14 MW by 2024.

To further scale up solar PV within city boundaries, in late 2020 the city council passed a policy to provide financial support for distributed solar PV on all residential and commercial buildings (up to EUR 250, or USD 307, per kW-peak, depending on the building size and type). In addition, the city government passed a mandate requiring solar PV on all new buildings built on municipal plots, and requiring it on existing buildings in some neighborhoods. With this mandate, Heidelberg joins other German cities such as Amberg, Freiburg, Hamburg, Konstanz and Waiblingen that have similar solar PV requirements.

To decarbonise the transport sector, Heidelberg has joined the C40 Fossil Fuel-Free Streets Declaration and pledged to reduce the number of polluting vehicles on its streets and to transition away from fossil fuel vehicles. The city offers financial support for hydrogen vehicles as well as electric and hybrid vehicles. In 2020, the municipal utility started building up EV charging infrastructure throughout Heidelberg. To further support decarbonisation, the city also has expanded bike infrastructure and bike parking facilities.

Source: See endnote 126 in the *Urban Policy Landscape* chapter.