



Towards Decarbonising Transport South Africa 2025

A Stocktake on Sectoral Ambition

Imprint

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A Stocktake on Sectoral Ambition

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PUBLISHED BY

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Agora Verkehrswende is a Berlin-based think tank that seeks to promote climate-friendly mobility. Non-partisan and non-profit, it works together with key stakeholders in the fields of politics, business, academia and civil society to decarbonise the transport system. To this end, the think-tank team develops evidence-based policy strategies and recommendations. Agora Verkehrswende was initiated in 2016 by Stiftung Mercator and the European Climate Foundation.

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Cover Image

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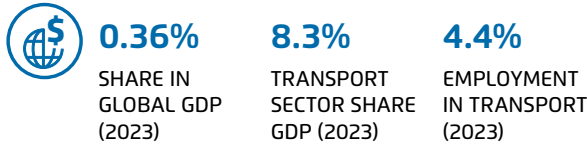
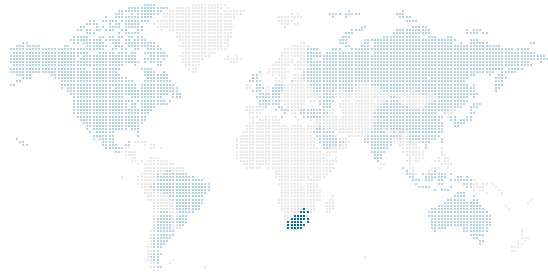
Agora Verkehrswende: *Towards Decarbonising Transport: South Africa 2025 – A Stocktake on Sectoral Ambition.*

Version: 2.0

Published: March, 2025

123-2025-EN

SOUTH AFRICA



Source: World Bank Group (2023); Trading Economics (2023); Statistics South Africa (2024)

South Africa's transport sector is dominated by road transport, but it also possesses extensive port and rail infrastructure in addition to a well-established airline industry. The country has the highest urban population share in Africa, with over two-thirds of the population living in urban areas. Some major cities including Pretoria, Johannesburg and Cape Town have adopted Bus Rapid Transport (BRT) systems and the Metrorail system operates in four regions.

In 2017, the country launched the Green Transport Strategy which aims to reduce GHG emissions from the transport sector by 50–80% by 2050 relative to 1990 levels. It also includes mode shift targets and an interim target for vehicle efficiency by 2030. These targets were adopted before South Africa announced its ambition to achieve a net-zero economy by 2050. To further strengthen efforts, a CO₂ differentiated tax is applied to motor vehicles at registration based on their CO₂ emissions, and a general CO₂ tax was introduced in 2019.



- NDC**
- LIMIT GHG EMISSIONS TO 398–510 MT CO₂e BY 2025, 350–420 MT CO₂e BY 2030
 - ACHIEVE NET-ZERO BY 2050
 - 50–80% REDUCTION OF TRANSPORT EMISSIONS BY 2050 (RELATIVE TO 1990)



- EV TARGETS**
- 10% EVS AND HYBRIDS IN FLEET BY 2030 AND 40% BY 2050.
 - CONVERT 5% OF THE PUBLIC AND NATIONAL VEHICLE FLEET TO CLEANER ALTERNATIVE FUELS, EFFICIENT TECHNOLOGY BY 2025, WITH 2% ANNUAL INCREASES



POPULATION

60.41 million people

CURRENT POPULATION (2023)

0.8%

SHARE OF GLOBAL POPULATION (2023)

EXPECTED POPULATION GROWTH: 25.3% (2023–2050)

49 people/km²

POPULATION DENSITY (2021)

61 people/km²

WORLD AVERAGE (2021)



28.2 years

AVERAGE AGE (2023)

Source: World Bank Group (2023); United Nations (2024)



URBANISATION

68.8% of total

URBAN POPULATION (2023)

77.0%

G20 AVERAGE (2022)

57.3%

WORLD AVERAGE (2023)

41.6 million people

TOTAL URBAN POPULATION (2023)

EXPECTED SHARE OF URBAN POPULATION: 79.8% (2050)

Source: World Bank (2023); Our World In Data (2023)



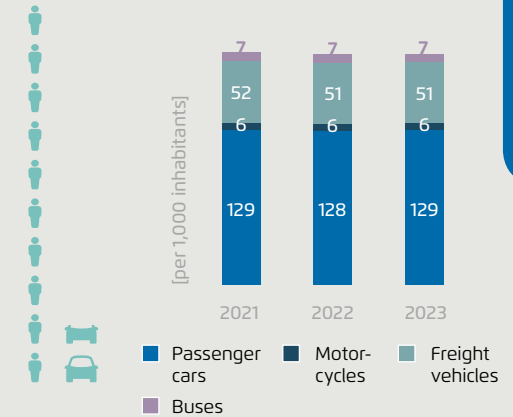
MOBILITY

192,8 road motor-vehicles per 1,000 inhabitants*

MOTORISATION RATE (2023)

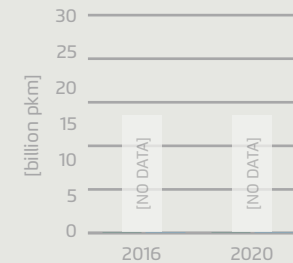
= 100 inhabitants
 = 100 motor vehicles

*Calculation based on the total live vehicle population as per the NaTIS and the population of the World Development Indicators
Source: National Traffic Information System – eNaTIS (2024); World Bank (2023)



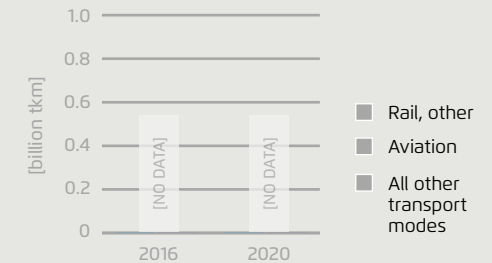
[No Data] passenger-km

PASSENGER TRANSPORT VOLUME (2022)

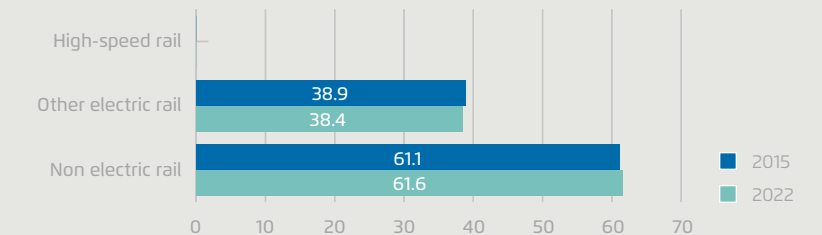


[No Data] tonne-km

FREIGHT TRANSPORT VOLUME (2022)



Rail infrastructure



Source: UIC (2023)



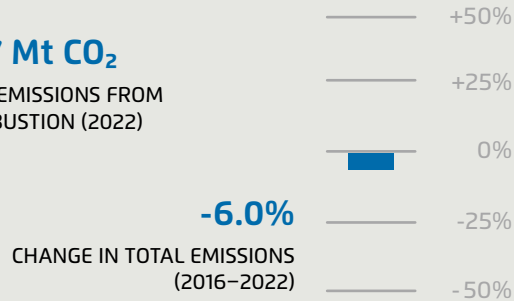
TOTAL EMISSIONS

South Africa relies heavily on coal for its energy production as coal-fired power plants are the dominant source of electricity. This makes the energy sector, the largest source of emissions in the country. It far surpasses the transport and industry sectors and makes the country one of the major emitters of CO₂ in the region. By 2022, the transport sector contributed 12% to the country's total CO₂ emissions from fuel combustion. This showed an increase of 35.7% between 2000 and 2022. Looking ahead, if no major policy changes occur, transport emissions are anticipated to rise up to 78 Mt CO₂e by 2030 and 126 Mt CO₂e by 2050, approx 90% coming from road transport, 9% from aviation and the net balance from rail transport.



394.07 Mt CO₂

TOTAL CO₂ EMISSIONS FROM FUEL COMBUSTION (2022)



TOTAL CO₂ EMISSIONS FROM FUEL COMBUSTION PER CAPITA



6.58

(2022)



7.0

G20 AVERAGE (2022)



4.3

WORLD AVERAGE (2022)



t CO₂ per capita

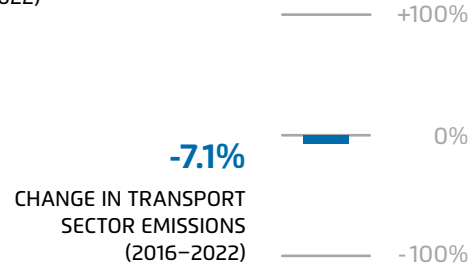
Sources: IEA (2024b)



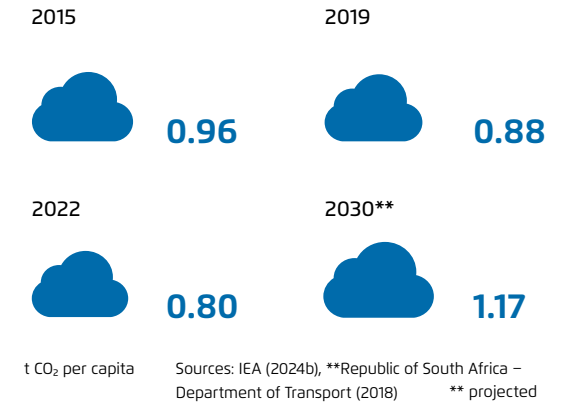
TRANSPORT SECTOR EMISSIONS

47.73 Mt CO₂

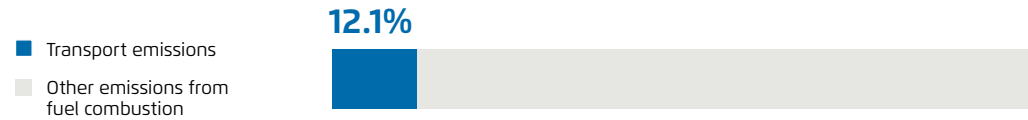
TOTAL CO₂ EMISSIONS FROM FUEL COMBUSTION IN THE TRANSPORT SECTOR (2022)



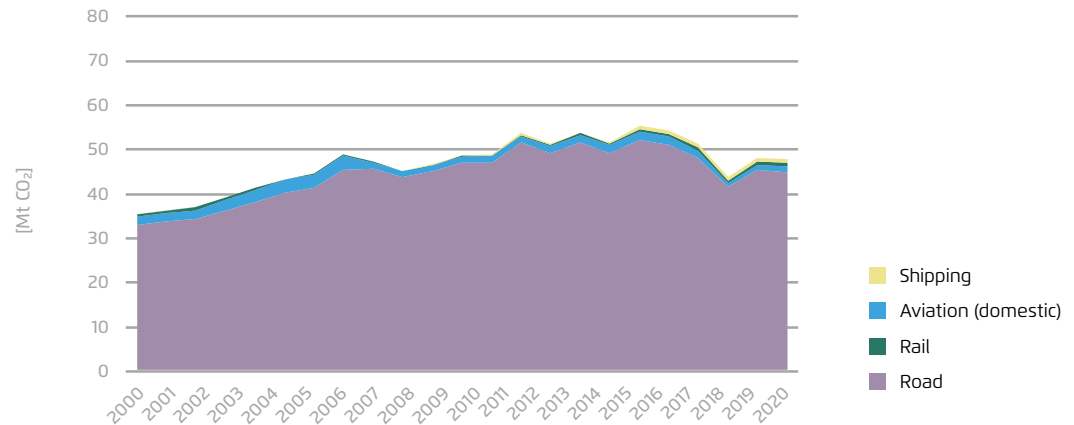
TOTAL CO₂ EMISSIONS PER CAPITA IN THE TRANSPORT SECTOR



SHARE OF TRANSPORT EMISSIONS IN TOTAL CO₂ EMISSIONS FROM FUEL COMBUSTION (2022)

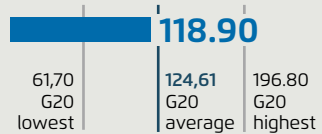


Transport sector emissions by subsector

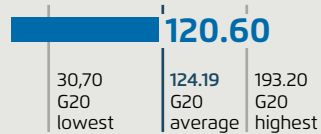


ENERGY

GASOLINE PRICE (2024)
US cents/litre

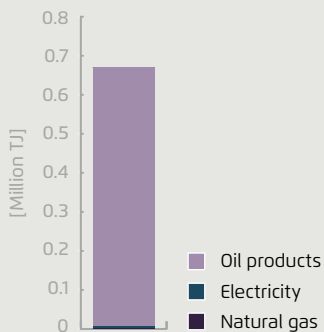


DIESEL PRICE (2024)
US cents/litre

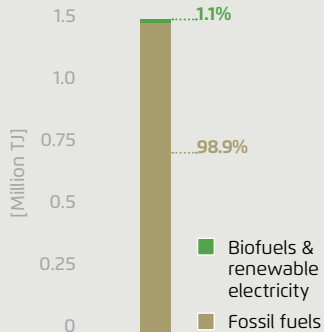


Source: Globalpetrolprices.com (2024)

Energy use in transport by fuel

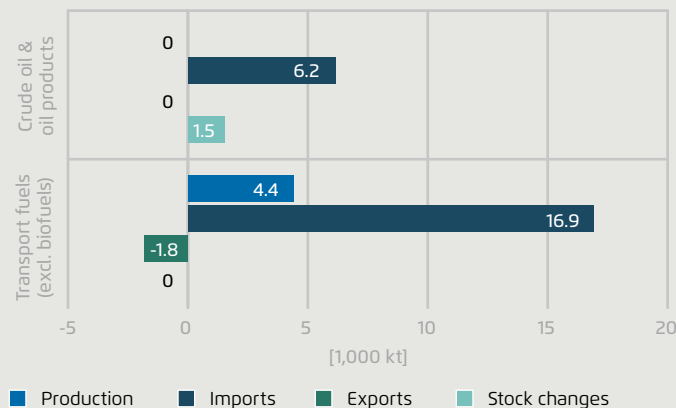


Year: 2022



Source: IEA (2024c)

Fuel supply and use



Year: 2022

Source: IEA (2024d)

ELECTRIC VEHICLES

3,500 vehicles

TOTAL STOCK OF ELECTRIC CARS* (2023)

0.29%

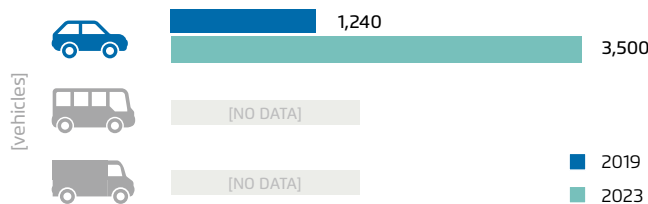
MARKET SHARE OF ELECTRIC CARS IN NEW SALES (2023)

0.04%

SHARE OF ELECTRIC CARS IN TOTAL PASSENGER CAR STOCK (2023)

*BEV & PHEV
Source: IEA (2024a)

ELECTRIC CAR FLEET BY VEHICLE TYPE (2019 VS. 2023)



+182.3%

TOTAL FLEET GROWTH (2019-2023)

Source: IEA (2024a)

PUBLICLY ACCESSIBLE CHARGING INFRASTRUCTURE (2023)



140*
SLOW CHARGE
28,789*
SLOW CHARGE
G20 AVERAGE (2021)

160*
FAST CHARGE
43,927*
FAST CHARGE
G20 AVERAGE (2021)

Source: IEA (2024a)

*number of units

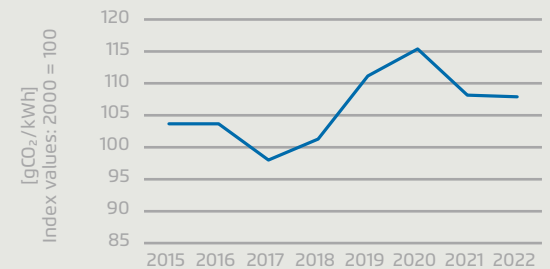
Battery reuse and recycling

- There is no regulation or policy in place that requires or promotes the re-use and recycling of batteries.

LINKAGES TO THE ENERGY SECTOR

South Africa's electricity generation remains heavily dominated by 80% coal. However, there is a shift towards a more diversified, low-carbon energy mix with a target of 41% renewable energy by 2030 (IRP2019). The Integrated Resource Plan (IRP 2023) reflects this shift with moderate targets than the IRP 2019 due to challenges such as grid expansion, high integration costs and stability concerns. Between 2009 and 2011, a feed-in tariff was the main policy instrument which the government used to incentivise renewable energy production. The tariff was replaced by a competitive bidding process, known as REIPPP, in 2011. Since 2011, six reverse auctions were held for the construction of renewable energy plants.

CO₂ intensity of power



Source: IEA (2024)

Existing targets for renewable electricity generation

- In 2023, the Integrated Resource Plan was launched with aim for new renewable energy generation capacity by 2030: 4.5 GW (wind), 3.6 GW (solar) and 6.3 GW of distributed generation. Source: Enerdata (2024)

The role of hydrogen

- Green hydrogen is projected to contribute 3.6% to the nation's GDP and to generate approximately 370,000 jobs by 2050.
- The SA-H2 Fund seeks to secure \$1 billion for hydrogen projects.
- The country aims to deploy close to 12 GW of electrolysis capacity and produce about 500 kt of hydrogen annually by 2030, with the goal of reaching 40 GW of capacity by 2040.
- In 2021, the president announced the creation of a Green Hydrogen Export Economic Zone and in 2023 the Green Hydrogen Commercialisation Strategy (GHCS) was approved for positioning South Africa as a producer and exporter of green hydrogen.

Source: TechFinancials (2023); Department of Science and Innovation – CSIS (2022)



AMBITION

NDCs and national climate targets

General NDC targets

- Limit GHG emissions to 398–510 Mt CO₂e by 2025, and to 350–420 Mt CO₂e by 2030
- Achieve Net-zero by 2050

Transport related NDC measures

- 50–80% reduction of transport emissions by 2050 relative to 1990 levels

Future targets at national level

- By 2030, the rail share of corridor freight transport will be 30%, and by 2050, 50%
- A 20% relative shift to public transport by 2030
- A minimum of 10% of the vehicle population will comprise EVs and hybrid vehicles by 2030, reaching 40% by 2050

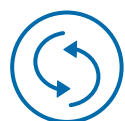
- 10% of the municipal bus fleet will be converted to gas by 2030, reaching 30% by 2050
- 10% of the minibus taxi fleet will be converted to be bi-fuelled by 2030, reaching 40% by 2050

National EV deployment targets

- 10% EVs and hybrids in fleet by 2030 and 40% by 2050.
- Convert 5% of the public and national vehicle fleet to cleaner alternative fuels and efficient technology by 2025, with annual increases of 2% thereafter

National ICE phase-out commitments

None



TRADE-OFFS

Sustainability of biofuels

[No Data]

Subsidies

41.18 billion ZAR

~2.28 BILLION USD

LEVEL OF FOSSIL-FUEL SUBSIDIES
IN THE TRANSPORT SECTOR (2023)

Source: OECD



COVID

South Africa's economy has recovered to pre-pandemic levels, but real GDP growth remains low, falling from 5% in 2022 to approximately 1.1% in 2024, according to IMF. This slowdown to several challenges, including infrastructure bottlenecks in road, rail and port sectors, low productivity and an electricity grid operating at only 50% capacity.

In 2023, the transport sector accounted for nearly 10% of South Africa's CO₂ emissions (55 Mt CO₂eq per annually), with road freight making up 63%. Passenger traffic levels for individual and public transport have recovered, but the impact of COVID-19 measures like mobile work, on mobility patterns requires further research.

Source: BCG 2023, IMF 2024, World Bank 2024, WEF 2024



IMPLEMENTATION

Mobility

✓ National programmes to support shift to public transport

- Expansion of bus rapid transit (BRT) systems across major cities; improve security, reliability, and frequency
- Develop intelligent transport systems for real-time monitoring and public information about congestion and transportation options
- Create a single ticketing system (smart tags) for seamless travel across various public transport modes

✓ Measures to support low-carbon freight logistics

- Shift long-distance freight to rail, emphasizing "Green Corridors" on road networks to promote efficient, low-emission technologies
- Collaborate with Transnet to boost investment in rail infrastructure, encouraging a shift from road to rail freight for sustainable logistics

✓ National-level measures to support new mobility services

- Develop an intelligent transport system to facilitate an integrated transit network for better mobility
- Introduce a comprehensive knowledge-sharing platform to assist municipalities in implementing sustainable mobility measures

✓ National measures to support non-motorised transport

- Develop and expand infrastructure for cycling and walking, including cycle lanes and pedestrian walkways
- Promote non-motorised transport (NMT) through legislative frameworks and incentives for green, carbon-neutral transport

Energy

✓ Energy/carbon emission standards for light duty vehicles (LDV)

On carbon dioxide emissions of motor vehicles (120 Rand per g/km CO₂ emissions exceeding 95g/km and 160 Rand per g/km CO₂ emissions exceeding 175g/km for commercial vehicles).

Energy/carbon emission standards for heavy duty vehicles (HDV)

No standards issued

✓ Pricing instruments

- Carbon Fuel Levy: A levy charged between 10 Rand cents per liter for petrol and 11 Rand cents for diesel
- Road freight permit regulations adjusted to reflect environmental costs based on vehicle load and emissions
- Registration tax based on CO₂

✓ Mandatory vehicle labelling

South African Fuel Economy Label

✓ Support mechanism for electric vehicles & charging infrastructure

- Incentives for producers to manufacture and sell affordable EVs
- Temporary reduction on import duties for batteries in vehicles
- 20% cash grant to Original Equipment Manufacturers (OEMs); 25% to component manufacturers; 30% for qualifying investments in new energy vehicle manufacturing, based on the cash needed for the specific investment project
- 20% duty credit on the value of EV batteries manufactured locally and used in the assembly of electric vehicles
- Expand electric vehicle (EV) charging stations powered by renewable sources, such as solar, with an aim to add 40 stations annually

Source: South African national and international sources