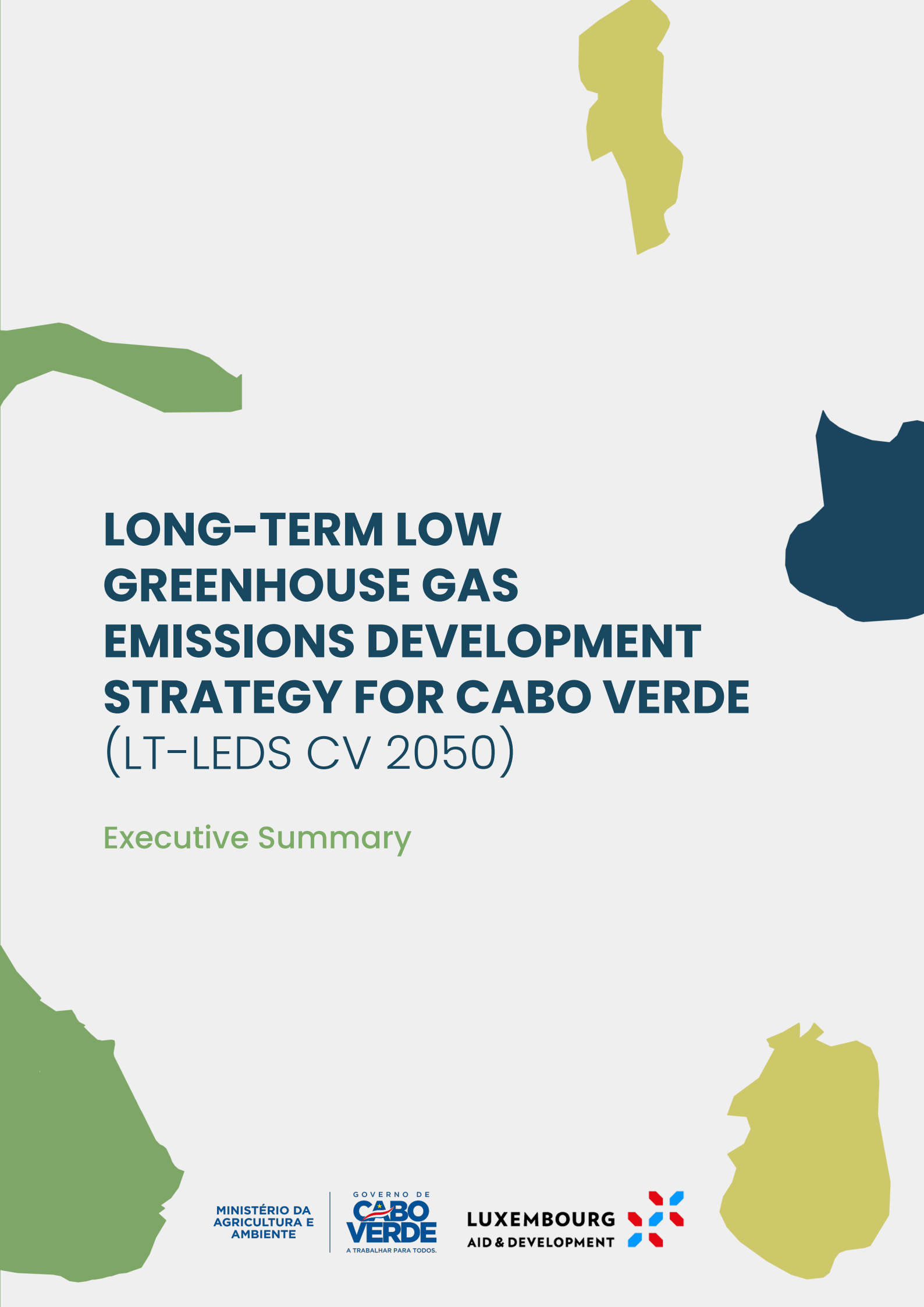




LONG-TERM LOW GREENHOUSE GAS EMISSIONS DEVELOPMENT STRATEGY FOR CABO VERDE (LT-LEDS CV 2050)

Executive Summary

MINISTÉRIO DA
AGRICULTURA E
AMBIENTE

GOVERNO DE
**CABO
VERDE**
A TRABALHAR PARA TODOS.

LUXEMBOURG
AID & DEVELOPMENT



Cape Verde, 2024

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Acronyms and Abbreviations

ACCF	African Climate Change Fund
AdR	Água de Rega
AF	<i>Adaptation Fund</i>
ANAS	National Water and Sanitation Agency
BAU	Business as usual
BECCS	Bioenergy with Carbon Capture and Storage
BTR	Biennial Transparency Report
BUR	Biennial Update Report
CA	Corresponding adjustments
CAD	Development Assistance Committee
CDR	Carbon Dioxide Removal
CEEE	Energy Efficiency in Buildings Code
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
CoM SSA	Covenant of Mayors for Sub-Saharan Africa
COP	Conference of the Parties
CRDF	Financing Climate-Related Development
CRT	Common Reporting Tables
CSO	Civil Society Organisation
CTF	Common Tabular Formats
DACCS	Direct Air Carbon Capture and Storage
DGASP	Directorate-General for Agriculture, Forestry and Livestock
EDEC	Cabo Verde Electricity Distribution Company

ESCO	Energy Services Company
ETF	Enhanced Transparency Framework
EV	Electric Vehicle
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GHGI	Greenhouse Gas Inventory
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
HFO	Heavy fuel oil
ICF	Luxembourg International Climate Finance
ICTU	Information necessary for clarity, transparency and understanding
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IPPU	Industrial Processes and Product Use
ITMO	Internationally Transferred Mitigation Outcome
LT-LEDS	Long-term Low Emission Development Strategy
LULUCF	Land Use, Land Use Change and Forestry
M	Million
M&E	Monitoring and evaluation
MACC	Marginal Abatement Cost Curve
MEPS	Minimum Energy Performance Standards
Mol	Means of Implementation
MPG	Modalities, procedures and guidelines
MRV	Monitoring, Reporting and Verification
MW	Megawatt

MWh	Megawatt hours
NDC	Nationally Determined Contribution
NIR	National Inventory Report
NMT	Non-motorised transport
ODA	Official Development Assistance
ODS	Ozone Depleting Substances
PENGeR	National Strategic Plan for Waste Management
PISCCA	Cabo Verde Sustainable Waste Management plan
PNAER	National Action Plan for Renewable Energy
PNSE II	National Program for Energy Sustainability (Second edition)
REFLOR-CV	Cabo Verde Reforestation Project
SAF	Sustainable aviation fuel
SDGs	United Nations Sustainable Development Goals
SIDS	Small Island Developing States
t	Tonne
T&D	Transport and Distribution
TACCC	Transparency, accuracy, integrity, consistency and comparability
UAE	United Arab Emirates
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	US Dollar
VRE	Variable Renewable Energy



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Executive Summary

Vision and principles

The Government of Cabo Verde (GoCV) is committed to taking urgent action to mitigate and adapt to the effects of climate change. As a party to the United Nations Framework Convention on Climate Change (UNFCCC), the country seeks to contribute to the goals of the Paris Agreement to limit global warming to 1.5°C, as reaffirmed by the Glasgow Climate Pact and the UAE Consensus. Although Cabo Verde's contribution to climate change in the form of greenhouse gas (GHG) emissions is relatively small, the country is determined to play its part in achieving the goals of the Paris Agreement, in a manner consistent with its status as a developing country and the need to provide sustainable economic growth.

As part of global efforts to reach net-zero emissions by mid-century, the Paris Agreement and the Glasgow Climate Pact invite parties to develop and communicate long-term low-emission development strategies (LT-LEDS). After submitting its first Nationally Determined Contribution (NDC) to the UNFCCC and its update, Cabo Verde has developed its LT-LEDS, setting out the country's vision for a just transition to a low-carbon economy. This includes the country's goal of becoming net zero¹ by 2050.

Cabo Verde's long-term strategy has been developed according to its national circumstances and is guided by the following five principles:

- 1. Ensure alignment with national policy objectives and priorities:** The transition to a low-carbon path must be consistent with Cabo Verde's policies, programmes and strategic priorities, both at national level and at sectoral planning level. This includes the overall framework provided by the Strategic Plan for Sustainable Development (PEDS) as well as sectoral strategies such as the Electricity Sector Master Plan 2018-2040, the National Strategic Plan for Waste Management (PENGeR), and the strategic plan for the development of sustainable tourism.
- 2. Contributing to the fulfilment of the United Nations Sustainable Development Goals (SDGs):** The Paris Agreement recognises that achieving the ambitions of the UN SDGs will require collective and concerted action on climate change. Similarly, climate change measures adopted by all Parties should seek to be closely aligned with the seventeen SDGs to ensure that they are environmentally sustainable, equitable and aligned with the goals of reducing poverty and gender inequality.
- 3. Prioritise the implementation of cost-effective measures that maximise co-benefits for communities:** Given Cabo Verde's development priorities, there is a need to focus first on implementing those projects, policies and programmes that are most efficient and least costly (on a socio-economic basis), and which can have important co-benefits such as revenue and green job creation, and reduced foreign fuel imports.
- 4. Securing financing conditions and increasing investment levels:** The realisation of the measures contained in the long-term strategy will require significant levels of investment with the right conditions to unlock private and public funding sources. The successful implementation

¹ The concept of net zero means to achieve a balance between the amount of GHGs emitted and the amount removed from the atmosphere.

of the measures will need to be accompanied by adequate sources and volumes of funding and international support through appropriate national structures and incentives.

5. Contribute to national resilience and capacity to adapt to the vulnerabilities and impacts of climate change: Cabo Verde is highly vulnerable to the impacts of climate change, and climate modelling indicates that this vulnerability is likely to increase in the coming decades. Its long-term low-carbon pathway and choice of mitigation measures must therefore be closely aligned with its adaptation planning and seek to reinforce and support its priorities for increasing national resilience.

The Glasgow Climate Pact reiterates the important role of countries’ long-term strategies in global efforts to tackle climate change and calls for them to be updated regularly. The long-term strategy outlined in this document will therefore be reviewed and updated in response to changing national and international circumstances, the increased availability of information, data and scientific evidence, and the ongoing development and implementation of Cabo Verde’s projects, plans and policies.

Cabo Verde’s GHG emissions

Cabo Verde’s total net emissions² in 2019 are estimated at 0.91 million tonnes of carbon dioxide equivalent (tCO₂e), contributing less than 0.002% to the global total. Under a business-as-usual (BAU) scenario, total emissions are expected to more than double in the 2019–2050 period, rising to 1.97 MtCO₂e (Figure ES-1).

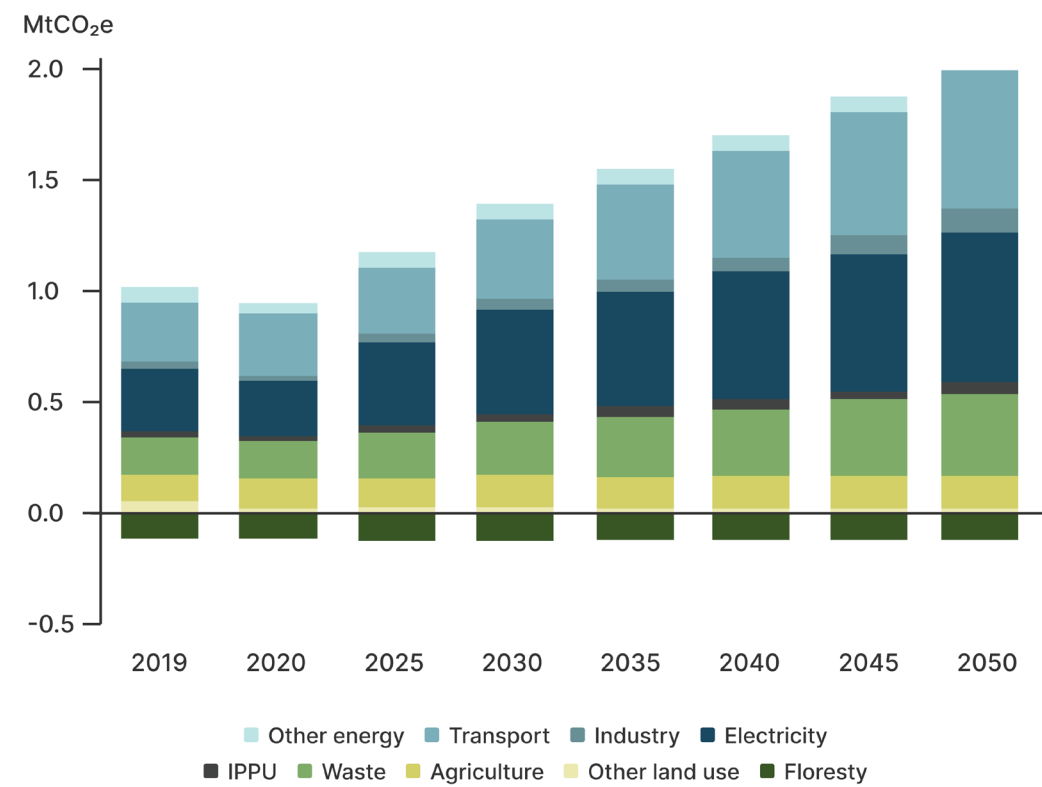


Figure ES-1: BAU reference case: GHG emissions and removals 2019–2050

2 Net emissions correspond to total emissions from sources minus total emission removals from forestry.

The main points are as follows:

- **Energy** use is by far the largest current source of national emissions and is also expected to grow the fastest, increasing its contribution to total emissions from 65% in 2019 to 68% in 2030 and 72% in 2050. Most energy-consuming sectors will see substantial growth, although the increase in demand for electricity produced from fossil fuels and road vehicles over the coming decades will contribute the most to the total projected increase.
- **Waste** and **Industrial Processes and Product Use (IPPU)** emissions are expected to increase roughly in line with the overall growth in total emissions, as rising urban population rates boost waste production and expectations of new post-COVID19 growth lead to an increase in IPPU emissions.
- In contrast, emissions from **agriculture** show only a small increase over the forecast period, resulting in a decrease in the percentage of global emissions from 11% in 2019 to 8% in 2050. Despite the expected increases in emissions from livestock and crop management, this trend reflects the limited potential for increasing domestic production due to land restrictions.
- **Land use land use change and forestry (LULUCF)** registers a modest increase in expected removals, largely reflecting the assumptions regarding the conservation of Cabo Verde’s existing forest areas and the gradual decrease in carbon emissions resulting from changes in land use.

The expected increase in national GHG emissions forecast over the period, combined with changes in sectoral contributions, can be understood primarily in terms of the assumptions made around economic and population growth. Together with the assumption of a continued post-COVID-19 recovery, gradually increasing urbanisation rates and the growth of the tourism sector, these factors are expected to create an ever-increasing demand for services such as transport and reliable energy supply as Cabo Verde continues to develop. These trends have also been observed in several emerging economies in recent decades, resulting in economic growth and rising living standards, but also resulting in significant increases in GHG emissions globally. The central challenge underlying the development of an LT-LEDS for Cabo Verde is therefore how to sustain long-term economic growth along a low-carbon pathway.

Mitigation measures and decarbonisation pathway

A comprehensive list of potential emission reduction projects and measures was developed through a thorough analysis of national documents and mitigation studies, and discussions and consultations with government officials, sector experts and other partners in Cabo Verde (Table ES-1).

Table ES-1: Mitigation measures

SECTOR	AREA	MITIGATION MEASURES	SHORT DESCRIPTION	MITIGATION EFFECT
Energy	Decarbonised electricity supply	Wind energy	240 MW of new wind capacity additions, as provided for in the Electricity Sector Master Plan, including through large-scale IPP wind farms and small-scale distributed generation.	Replacing electricity production from fossil fuels
		Photovoltaic (PV) solar energy	315 MW of new solar photovoltaic capacity additions, as provided for in the Electricity Sector Master Plan, namely through large-scale IPP solar photovoltaic projects accompanied by battery and pumped storage and small-scale distributed generation.	
		Reducing transport and distribution losses (T&D)	Investment in a series of cost-effective measures to improve the efficiency of the national electricity transmission system, reducing losses from around 20% to 10%.	
	Low-carbon transport	Electric mobility	Increase the share of the national road vehicle fleet from electric vehicles (EVs) to replace conventional internal combustion engine (ICE) vehicles, aiming for 100% of all vehicle registrations by 2050. Accompanied by a range of on-grid and off-grid solar photovoltaic charging infrastructure.	Replacement of ICE vehicles in all types of vehicles, reducing the use of fossil fuels in transport (diesel and petrol); accompanied by an increase in the use of electricity from the grid.
			Transition to electric mobility in artisanal fishing	Transition to vessels powered by renewable energy in artisanal fishing.
		Modal shift	Modal shift from private vehicles to non-motorised transport (NMT) and public transport through new investments in urban infrastructure and public campaigns.	Diversification of energy sources, making fishermen less vulnerable to fluctuations in fossil fuel prices.
				Switching from journeys with higher emissions to journeys with lower greenhouse gas emissions (per km)
		Sustainable aviation fuels (SAF)	Increasing the mix of imported SAF with conventional aviation paraffin, in line with the European Union's objectives, from 5% in 2030 to 63% in 2050.	Gradual reduction in paraffin for jet engines used in domestic aviation.

Energy	Energy efficiency measures	Measures in the residential sector	Range of measures, including the Code for Energy Efficiency in Buildings (CEE), the Minimum Energy Performance Standards (MEPS) and the creation of energy service companies (ESCOs).	Reducing electricity production from fossil fuels
		Measures in the tourism sector	Programme for Energy Efficiency in Industry and Tourism, together with the implementation of CEE, MEPS and ESCOs.	
		Energy-efficient street lighting	Energy Efficiency in Public Lighting Programme (replacement of public lighting with LEDs); Energy Efficiency in Public Administration and Sustainable Schools Project.	
		Efficient water use and supply	Improving energy efficiency in water use and supply, including energy-efficient renewable pumping and desalination units.	
Waste	Sustainable waste management	Recycling and reusing waste	Waste reduction, recycling and reuse in line with the National Strategic Waste Management Plan (PENGeR), resulting in a reduction in the disposal and burning of plastics, paper and glass.	Avoided emissions from solid waste disposal and open burning of waste
		Sustainable composting	Diversion of organic waste to community composting in order to reduce the use of imported chemical fertilisers such as urea.	Emissions avoided due to the use of chemical fertilisers
		Biogas for energy	Introduction of small-scale biogas plants on livestock farms, waste disposal sites and wastewater treatment facilities with the potential to produce electricity, in accordance with the National Strategic Plan for Waste Management (PENGeR).	Avoided methane emissions and grid-based electricity generation
IPPU	Reduction of high GWP gases	Replacing fluorinated gases with low-GWP alternatives	Replacement of imported fluorinated gases with alternative substances with lower global warming potential (GWP), in accordance with the Kigali amendment to the Montreal Protocol.	Reduction of fluorinated gas emissions (industrial process).
Agriculture and LULUCF	Forestry and land use	Reforestation and restoration	Long-term afforestation of 7,500 hectares and reforestation of 3,250 hectares using diversified, resistant and adapted tree and shrub species, namely through REFLOR-CV and other initiatives.	Increased carbon removal (C-stock) by planting trees and shrubs.
		Agroforestry	Establishment of 3,250 ha of new agroforestry systems using fruit tree species adapted to arid and semi-arid zones.	

The figure below shows the emissions projections for the BAU reference scenario and an alternative long-term mitigation scenario which includes the mitigation measures (Figure ES-2).

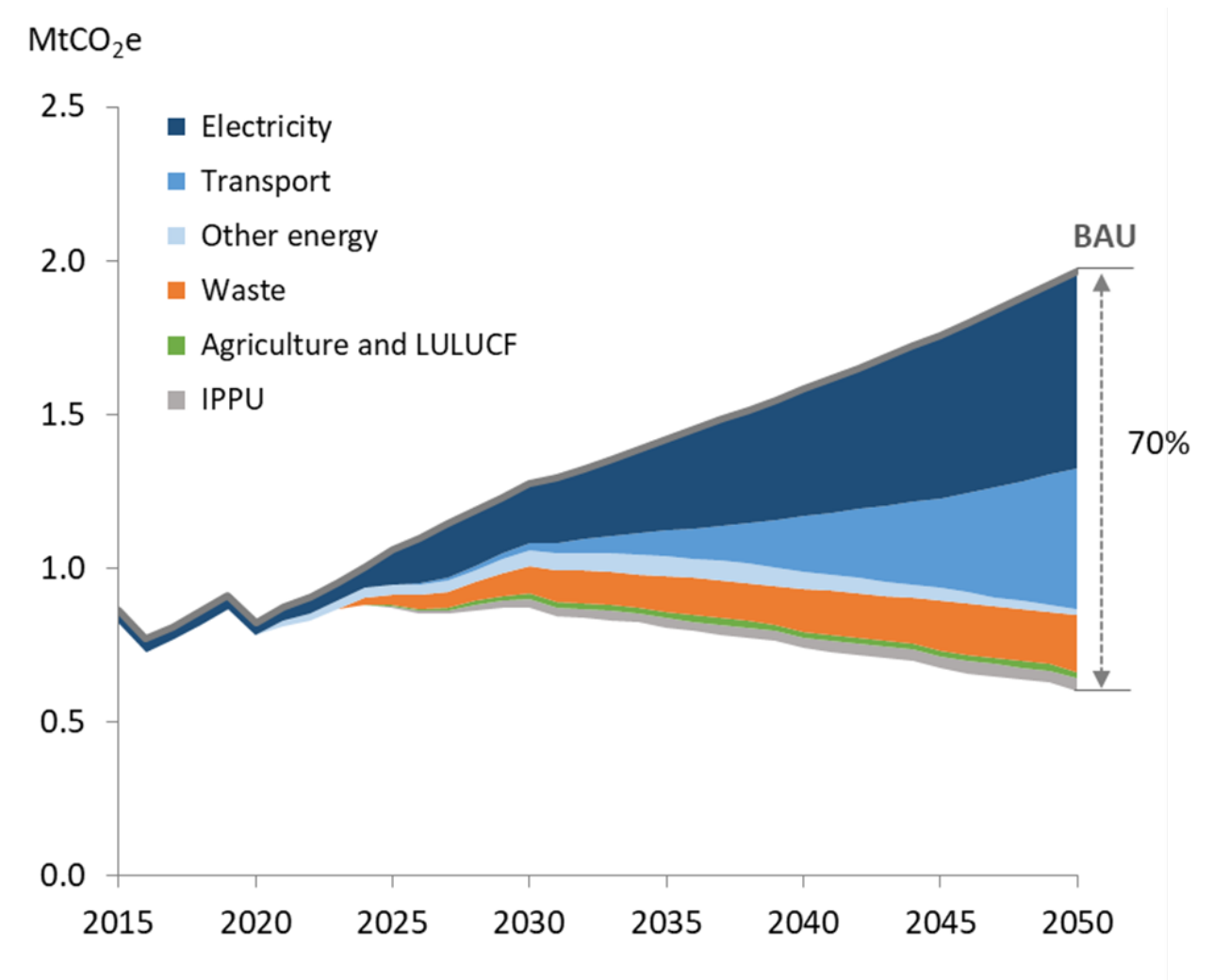


Figure ES-2: GHG reduction pathway of mitigation measures by 2050

The projection shows that in the BAU scenario, emissions are expected to more than double in the long term, from around 0.82 million tonnes of CO₂e in 2020 to 1.97 million tonnes of CO₂e in 2050. According to the alternative low emissions trajectory, with the application of the mitigation measures identified, it is estimated that emissions would increase to around 0.61 million tonnes of CO₂e in 2050. This is a much lower level than today and represents a very significant reduction of around two thirds compared to the current situation.

The analysis shows how the vast majority of emission reductions are expected to come from changes in energy use. By 2030, around two-thirds of the mitigation potential is attributed to low-carbon energy interventions, of which low-carbon transport and electricity production from renewable sources represent the largest percentages. The importance of these actions increases even more in the long term, accounting for more than 80% of the total mitigation potential by 2050. The projections clearly show how the relative contributions are expected to change over time, with energy efficiency actions having the greatest benefits over the next decade and low-carbon transport sector measures playing an increasing role in the longer term, with the gradual expansion of electric vehicles, modal shift and the use of sustainable aviation fuel.

Although low-carbon energy measures dominate the predicted mitigation potential, actions taken to increase the sustainability of the waste sector also contribute an important part of the total effort. Sustainable waste management, including reuse and recycling, composting and biogas energy, accounts for 22% of reductions in 2030 and 14% in 2050. The reduction of fluorinated gases and forestry measures account for the remainder.

The analysis shows how it is possible to make deep and ambitious cuts in the country's emissions over the coming decades. However, it also shows how additional actions are likely to be needed to reach net zero. Like many other countries that have adopted net-zero emissions targets as part of global climate policy efforts, Cabo Verde will have to make difficult choices about how any remaining or "hard to abate" emissions can be offset by carbon removals. The potential scale and feasibility of many of these removal options remain highly uncertain at present, both globally and for Cabo Verde.

For Cabo Verde to achieve net zero, whereby its remaining emission sources are offset by an equal amount of carbon removals, more efforts will be needed to assess the potential for carbon dioxide removal (CDR) in greater detail. This would help identify potential projects and provide the basis for a CDR roadmap of actions designed to help the country achieve its long-term goal.

Financing the transition

Financing plays a crucial role in the transition to a low-carbon economy that is resilient to climate change. The transition to sustainable practices and climate change mitigation in the context of Small Island Developing States (SIDS) requires significant investments in clean energy, green infrastructure and adaptation measures. Without effective targeting of finance, climate goals will not be achieved. The Paris Agreement emphasises that financial flows must be consistent with a trajectory that leads to low GHG emissions and climate-resilient development³.

The total financing needs for the mitigation measures in this strategy are estimated to amount to around 3.4 billion dollars by 2050.⁴ These represent the additional investment costs in the mitigation scenario compared to the BAU scenario required for new plants, facilities, equipment and assets, as well as additional ongoing costs such as training, maintenance and support needs. Estimates show that mitigation measures in the energy sector are expected to dominate funding needs, accounting for more than 95% of the total. Despite the efforts made to date, the scale of the gap between existing flows and the estimated levels needed to implement the mitigation measures in this strategy is very large. The size of the gap is particularly noticeable in the renewable energy and electric mobility sector, where mitigation projects typically require large sums of upfront investments to fund infrastructure and new equipment and technologies.

A number of barriers are restricting the country's ability to access existing and emerging sources of finance and create an enabling environment for low-carbon and climate-resilient investments. There is an urgent need for action involving all stakeholders. The long-term strategy identifies eight action points to improve access to climate finance and its implementation:

3 Paris Agreement. Article 2 (UNFCCC, 2015)
4 Financing needs are estimated in real terms (i.e. 2023 USD) and represent initial investments and running costs additional to the BAU baseline scenario

- 1. Strengthen coordination and integration of key actors:** More efforts need to be made to ensure better coordination between government institutions, donor partners and the private sector in order to support the programme implementation of climate finance.
- 2. Create a working group to mobilise support mechanisms for climate action:** The gaps in institutional and human capacity represent a major obstacle to mobilising support mechanisms for climate action in Cabo Verde, particularly during the project identification and development phase. Assisted by donor support, such a group can provide an invaluable supportive role in developing high quality proposals aligned with national priorities and representing viable projects to funders.
- 3. Developing a project portfolio and a cross-sectoral approach to project prioritisation:** A strategic approach is needed to prioritise projects in various mitigation sectors that have important co-benefits in terms of adaptation. Capital investment should be incentivised in technological and implementation choices that support a long-term development path compatible with the Paris Agreement.
- 4. Strengthening the private sector's contribution to financing climate action:** The government's institutional capacity limitations and lack of budget mean that private sector financing will be needed to boost funding levels, especially for renewable energy projects. Private sector participation and investment can best be encouraged by raising awareness and advocating for public-private partnerships (PPPs).
- 5. Promoting a strong national climate fund and leveraging domestic climate finance:** Cabo Verde has created the Climate and Environment Fund (FCA). But in addition to facilitating the transfer and management of funds from bilateral and multilateral mechanisms, the FCA must be structured in such a way as to mobilise domestic resources to finance climate projects in Cabo Verde.
- 6. Explore alternative funding sources and opportunities:** Cabo Verde, as a middle-income country, may face challenges in accessing traditional grant-based financing due to its classification. However, the country can explore alternative financing mechanisms, such as access to international carbon markets, to mobilise resources for climate change mitigation and adaptation projects.
- 7. Developing systems to track and report financial flows and outcomes:** It is important to improve transparency, accountability and data sharing in order to give potential funders confidence and to assess results and the contribution to meeting climate goals.
- 8. Unlocking the potential of climate (including green and blue) bonds:** For Cabo Verde, being a SIDS vulnerable to the impacts of climate change, climate bonds can play a crucial role in financing sustainable and resilient initiatives. It is essential to align bond issuance with the country's sustainable development goals and, at the same time, fulfil international standards to attract a diverse range of investors.

Monitoring and evaluating progress

Finally, a robust Monitoring and Evaluation (M&E) framework is essential to track and report on the progress of Cabo Verde's mitigation actions and targets, consistent with the country's long-term goal of achieving net zero. In order to monitor global progress on climate change, the Paris Agreement established certain monitoring and reporting requirements for all signatory Parties, which have since been elaborated through a set of agreed rules and procedures including the Enhanced Transparency Framework (ETF). In addition, evaluating the performance of policies and progress in their implementation is key to designing and reviewing best practices.

This long-term strategy therefore establishes a framework for monitoring Cabo Verde's progress. It builds on existing national institutional arrangements and the climate governance framework and ongoing efforts to improve transparency and MRV systems, including in relation to Cabo Verde's NDC under the Paris Agreement. The framework builds on existing provisions and indicators, such as those in the updated NDC, but aims to provide a more comprehensive and long-term approach aligned with sectoral strategic planning, as well as international requirements and best practice.



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