



# CLIMATE CHANGE VULNERABILITY ASSESSMENT OF CAPE VERDE

SUMMARY FOR POLICY MAKERS

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**Climate Change Vulnerability Assessment  
of Cape Verde - Summary for Policy Makers**

# Foreword





Cape Verde is vulnerable to climate change as a small island country and a dry Sahelian country. That is why this study, into how climate change could impact our country, is a key contribution to the solid science that will inform and prompt sound policy actions.

Climate change is not just a scientific issue for Cape Verde; it is a social and economic issue and ultimately it is about development and survival. People need to generate income to make their living, and in doing so, often use natural resources in an unsustainable way. One clear example is removing sand from beaches to generate income from construction, but with little awareness about how this increases the vulnerability of coastal communities to severe weather, natural disasters and sea-level rise.

Economic damage and even loss of life from flooding and disasters is not just caused by weather extremes, it is also caused by the way we manage land and occupy it. Our approach to developing low-lying areas and other areas at risk could also increase the level of vulnerability. We also need to revitalize the campaign- that was initiated soon after independence- to increase the amount of green space on Cape Verde.

This report helped us realize how gaps and inconsistencies in our legal framework can be a source of vulnerability to the country. Laws are essential to encourage good practices and discourage actions that put people at risk. We need to approach the legal framework, and land management in Cape Verde, in a very systematic and sound way.

This study focuses on three areas that are vital for the people and economy in Cape Verde: agriculture, water and tourism. Climate change will, however, affect all sectors in Cape Verde, so it is important to have strong commitment to tackle this issue across national development plans and strategies. We need policy solutions that respond to the multi-dimensional challenges identified in this study, as a matter of urgency. We need to make sure that the people of Cape Verde, and all sectors of our economy, are well prepared for climate change.

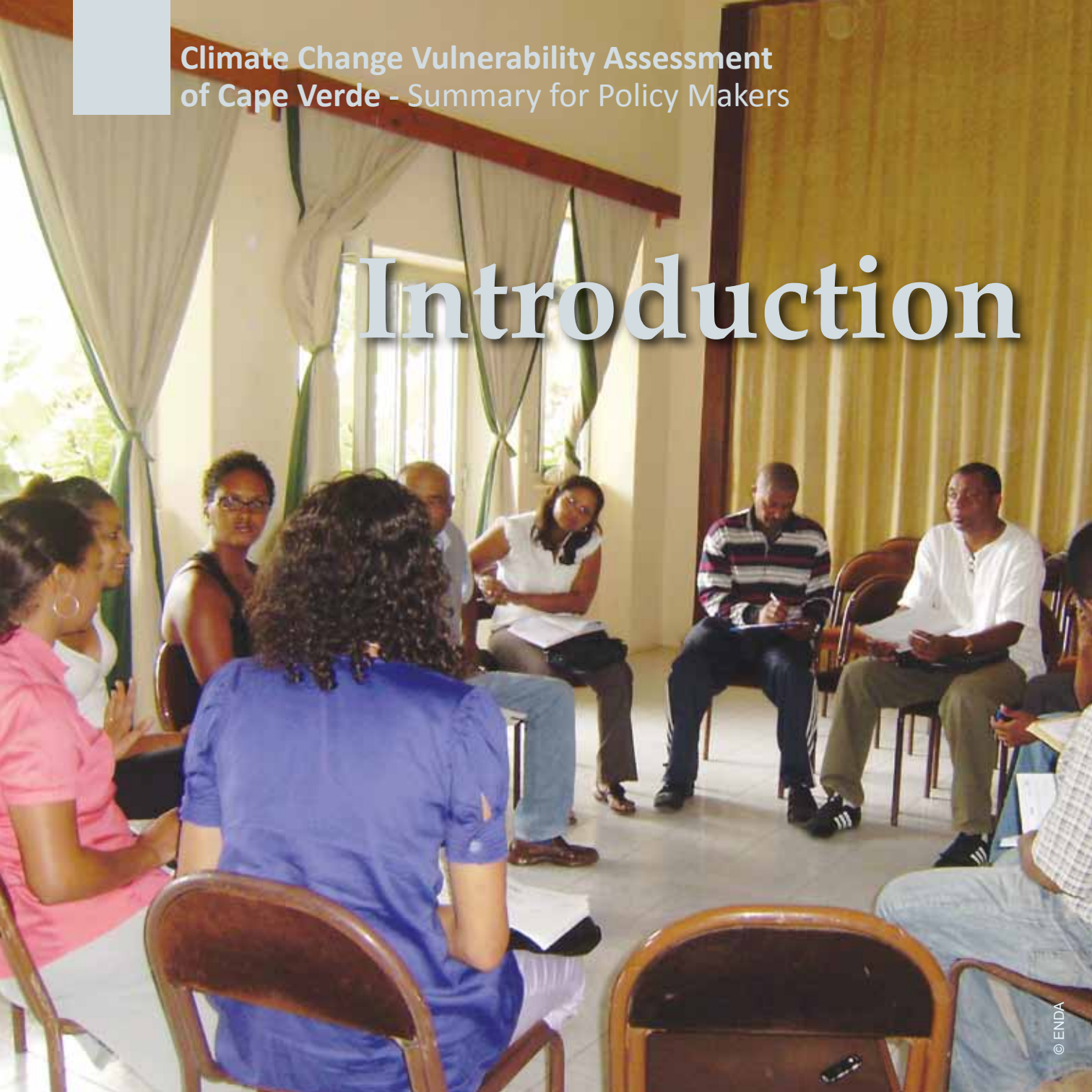
I would like to thank the UN Environment Programme, the entire UN Country Team in Cape Verde, Enda Tiers-Monde as well as all other partners for their contribution in preparing this report, which could serve as case study for other Small Island Developing States.

*Sara Duarte Lopes*

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# Introduction





This Summary for Policy Makers presents the main findings and policy options identified by a report on climate change vulnerabilities in Cape Verde. The study was led by the Government of Cape Verde, with support from the United Nations country team, the United Nations Environment Programme and Enda Tiers-Monde. The exercise was made possible, thanks to resources from the ONE UN FUND in Cape Verde allocated to UNEP to carry out the study which falls under the subprogram 5 of the UN joint programme.

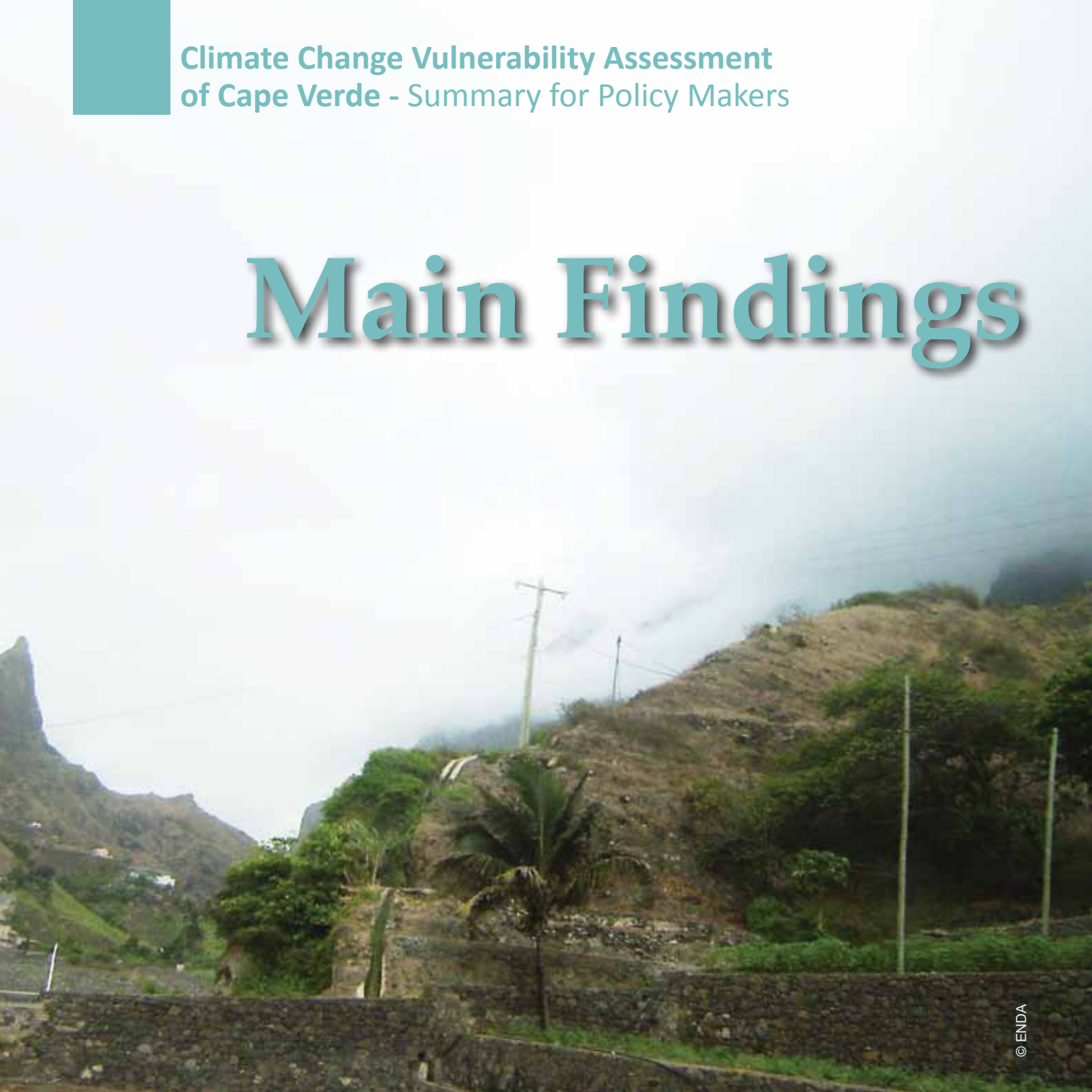
Climate change is one important factor that is likely to affect the environment, economy and society on Cape Verde in the years ahead. This study follows the “DPSIR” (Drivers-Pressures-State-Impact-Responses) framework, looking at drivers of environmental change (including climate change), pressures on the environment, the state of the environment, socio-economic impacts, and reviewing existing and possible responses. In this way, it aims to review how climate change and other human factors are likely to change the environment,

and how, in turn, the changing environment is likely to affect the people of Cape Verde.

A wide range of stakeholders including the UNCT, government partners, civil society organizations as well as private sector in Cape Verde participated in developing and reviewing this report, in particular at an Inception Workshop on April 19th, 2011 which set up the priority areas and geographical focus and a Validation Workshop on 3 November 2011 where participants provided inputs and observations on the draft report but also on the way forward.



# Main Findings

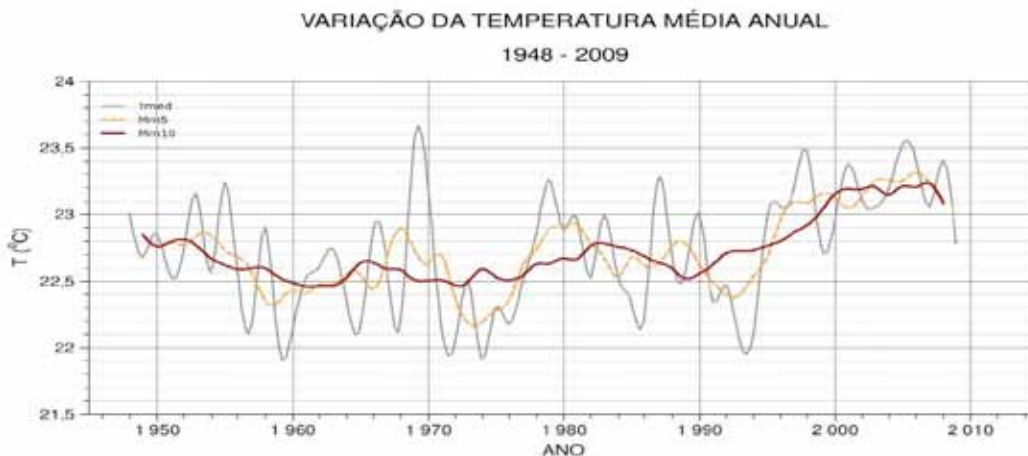






- Cape Verde has dual vulnerability to climate change, both as a Small Island Developing State, and as an arid country in the Sahel region.
- Water resources are already extremely scarce with pressures increasing. Renewable water availability is only 537m<sup>3</sup> per person per year in Cape Verde, the second lowest of any country in sub-Saharan Africa. Cape Verde's volcanic soils, steep terrain, limited vegetation cover and irregular rainfall mean a high proportion of water is lost as runoff during

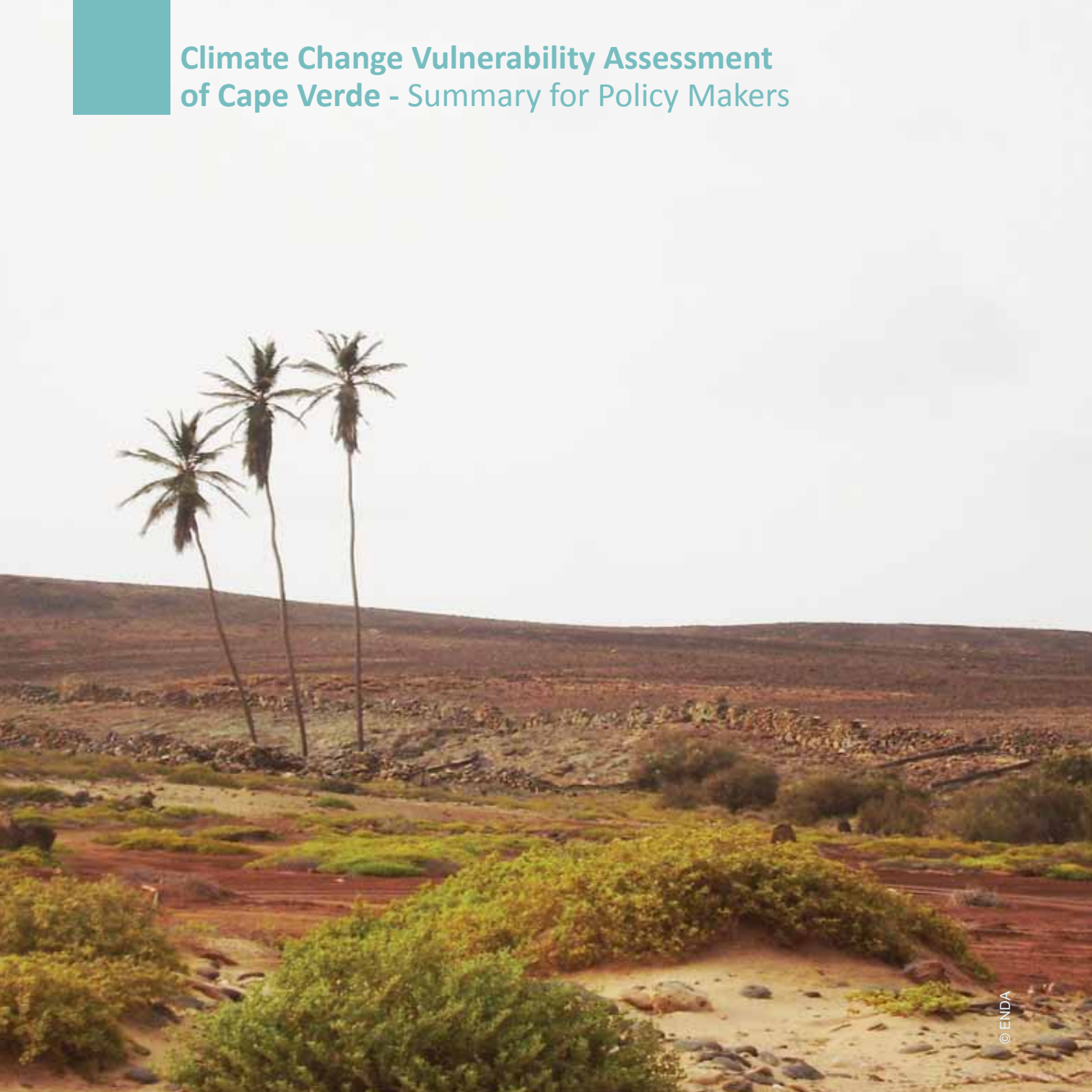
periods of heavy rain. Future rainfall trends are uncertain—increases and decreases are projected by different models. At the same time, pressures are increasing. Tourist numbers are rising, from 24,000 visitors per year in 1990 to 333,000 in 2008. The population of Cape Verde has more than doubled in the past 50 years, and is estimated to include 491,875 inhabitants in 2010. At present, nearly half of the population lacks access to a public water supply, and over half lacks access in rural areas.



Variation of annual average temperature in Cape Verde from 1948-2009

Source: Cape Verde National Action Plan for the Environment (PANA II), using data from the Cape Verde National Institute for Meteorology and Geophysics (INMG)

# Climate Change Vulnerability Assessment of Cape Verde - Summary for Policy Makers





- The average annual temperature in Cape Verde has increased by 0.6°C since 1960, and more significant increases are projected this Century.
- Extreme events have increased in frequency in Cape Verde. The Intergovernmental Panel on Climate Change (IPCC) has found it is very likely that heavy precipitation events will increase in frequency globally in the future, with associated impacts including increased risk of deaths, and damage to property and crops.
- 80% of Cape Verde's population lives in the coastal zone. Many houses are constructed with non-resistant materials and are vulnerable to coastal hazards and sea-level rise. Unregulated removal of sand from beaches for construction is eliminating one of Cape Verde's most important natural defenses.
- The service sector has been the main engine of growth in Cape Verde, but is vulnerable to climate change. The country has enjoyed rapid economic growth, with GDP increasing 6% on average between

2000 and 2009. The service sector accounts for over 70% of GDP, with over 21% of GDP (and over 80% of foreign direct investment) from tourism. Tourist facilities are concentrated in the coastal zone of low-lying islands such as Sal and Boavista and many are vulnerable to sea-level rise and coastal hazards. Beaches—on which the industry depends—are threatened by sea-level rise and sand extraction.

- Agriculture, the main source of livelihood in Cape Verde, could be impacted by variability in rainfall and rising temperatures. Agriculture is especially important for the 26.6% of Cape Verde's population that live in poverty. At the same time, agriculture accounts for the large majority of water use in Cape Verde. Water use is highly inefficient, the vast majority of agricultural land using rain-fed agriculture or outdated irrigation methods. Aquifers near the coast have been overexploited, leading to saltwater intrusion into wells and salinization of farmland. IPCC projects rising temperatures to result in lower yields and an increasing frequency of pest outbreaks in tropical regions.

# Selected Policy Options for Action



### Increasing water use efficiency

- Implement an institutional and legal framework to achieve a rational use of water resources, including increased access to water and reduced pressure on Cape Verde's limited water resources.
- Introduction of renewable energy in pumping irrigation water from wells to improve energy efficiency, reducing greenhouse gas emissions to the atmosphere and reducing operating costs of agriculture.
- Implementation of the Strategic Plan for Agricultural Development and the National Investment Plan, whose objectives are the conversion of rainfed agriculture to drip irrigation schemes and use of cultural practices appropriate to agro-ecological conditions.
- Adoption of the watershed as a unit of planning, organization, management and development of rural areas by the Ministry of Rural Development (Government), making water the centre of the approach, thereby enhancing water use efficiency.
- Reinvigorate programmes (such as "Green Cape Verde") to increase vegetation and forest cover, especially on steep slopes, to reduce runoff.
- Promote water use efficiency in the tourism sector and "green tourism", including by implementing a tax on water and other tax incentives, and through sustainable tourism certification schemes.

### "No regrets" climate change adaptation, focused on poor and vulnerable populations

- Boost technical support for agricultural practices that conserve soil and water quality, such as crop rotation and diversification, reduced ploughing, vegetation buffers, organic farming, and crop-livestock and crop-fish systems.
- Since 50.9% of landowners in Cape Verde are women, ensure that women farmers have access to technical and financial support.
- Reinforce organizational abilities and technical support for farmers, and improve their access to markets (e.g., in tourist zones), based on agreements with hotel operators, as well as information on the agricultural calendar and product availability throughout the year.
- Development of income generating activities as alternatives for people who live from illegal extraction of sand from beaches.
- Implementation of the Management Plan of the Beaches of Cape Verde, which aims to reduce the pressure on beaches from illegal sand mining.
- Strengthen more reliable climate information and early warning systems.
- Improve water management and treatment systems in urban areas.

### Reducing vulnerabilities in coastal zones

- Protect Cape Verde's natural barriers against disasters and climate change through more effective regulation and control of sand removal from beaches, and by strengthening the protected area network in coastal areas.
- Preparation of a Coastal Land Use Plan in Cape Verde that will allow the regulation of the use of these areas.
- Consolidation of the protected areas system of Cape Verde through greater participation of local communities and civil society and strengthening the national network of protected areas with dedicated management teams.
- Mainstreaming environmental licensing within the General Directorate of Environment that will focus on greater control of the occupation of the most vulnerable areas and on the efficiency of water and energy use.
- Require environmental impact assessment (EIA) of tourism facilities to consider future climate change impacts.

### Making climate change a part of development planning

- Consider establishing an Inter-Ministerial Committee on Climate Change so that integrated decisions on climate change can be made at the highest level, taking into account the views of local communities.
- Development and implementation of the National Action Plan for the Environment (PANA II), whose review process in 2011 allowed the issue of Climate Change to be incorporated across the Municipal Environmental Plans and Inter-sectoral Environmental Plans.
- Development and implementation of the Strategic Plan for the Renewable Energy Sector, whose goals are 25% penetration of renewables in 2011 (already achieved), and 50% in 2020 with one of the 10 islands of Cape Verde completely provided by renewable energy.
- Strengthen integrated decision-making at the municipal level by incorporating climate change into municipal development plans and legal frameworks.
- Development and implementation of a National Action Plan for Adaptation to Climate Change, with particular focus on communities living in coastal areas and communities that have water as the main constraint to agricultural and livestock production.
- Development and implementation of the Management Plan for Fishery Resources, whose main objective is to rationalize the use of fishery resources in a scenario of global climate change.
- Strengthen integrated decision-making by incorporating climate change into national development and sectoral plans, including the legal framework for Integrated Tourism Development Areas.





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