



NATIONAL ADAPTATION PLAN OF **CABO VERDE**

MINISTÉRIO DA
AGRICULTURA E
AMBIENTE

GOVERNO DE
**CABO
VERDE**
A TORRAJAL HAR BADA SÁVVIC



LE GOUVERNEMENT
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DEV**
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Cooperation Agency



Credits

Elaboration

Coordination of Inês de Sousa Mourão in collaboration with Adelsia Almeida, Carlos Moniz, Francisco Correia, Jeroen Oomkens, Jeroen van der Laan, Maha Cziesielski, Nuno Ribeiro and Susana Carvalho

Revision

Alexandre Nevsky (National Directorate for the Environment)
Sandrine Thinnes (LuxDev)
Virginia Mulas (LuxDev)

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Graphic Design

Ana Paula Bouças

Credit for the Images

Inês de Sousa Mourão

SUBMITTED BY



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TARRAFAL
SANTIAGO ISLAND

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Preface



MINDELO
SÃO VICENTE ISLAND

As a Sahelian country and a Small Island Developing State that is extremely vulnerable to climate change, Cabo Verde has stood out for its good governance, degree of development and broad integration of equality issues in its policies and practices, despite the erosion that the harsh climate causes on its environment, society, and economy.

This highlights how important it is for the country to assume the climate leadership in the region, in the various spheres and latitudes in which it is positioned: an example of low carbon and resilience practices as the basis for its development through its connections with Europe and America, within the community of West Africa, and of Portuguese-speaking African Countries.

Cabo Verde's National Plan for Adaptation to Climate Change - - NAP CV, is yet another important contribution in this regard, given the submission of its Nationally Determined Contribution, which is guided by a high level of ambition.

This document thus sets the tone for further integration of issues related to increasing climate resilience into national and sectoral, private, and civil public planning and budgeting processes.

Based on an exhaustive consultation process, the NAP CV is guided by the principle of equality and participation, aiming to increase the resilience of Cabo Verde, its people and its ecosystems and assets, with an emphasis on the most vulnerable segments of society, of the environment, and the economy.

Only by being climate-resilient will we be strong.

Executive Summary



This document presents Cabo Verde's National Climate Change Adaptation Plan for the period 2022-2030 – NAP CV.

As a Sahelian country and a Small Island Developing State, with a densely populated coastline and where a large part of the social and economic activities take place, Cabo Verde is a country known to be vulnerable to the risks posed by climate change, associated with extreme weather events, such as droughts, heavy rainfall and tropical storms, and others such as rising mean sea levels.

Based on an exhaustive process of public consultation, through face-to-face consultation and digital work sessions, bilateral meetings and online questionnaires, the NAP CV is fully aligned with the Nationally Determined Contribution and with the main national and sectorial development goals, with its explicit mandate in Cabo Verde's National Development Strategy – Cabo Verde Ambition 2030 (Government of Cabo Verde, 2020).

The Strategic Vision advocated: "By 2030, Cabo Verde will minimize the impacts of climate change through planned and concerted actions at all levels and will be a safe small island state, with all the necessary capacities to take advantage of the opportunities provided by climate change to become more sustainable, innovative and resilient".

The NAP CV is guided by the principles shared with the United Nations Framework Convention on Climate Change and the Sendai Risk Reduction Framework, and the Nationally Determined Contribution, including a proactive and preventive nature, social equity with an emphasis on more vulnerable people, equal rights, parity, sustainability, transparency and participation and institutional cooperation.

The main objectives of the NAP CV are:

1. Create an enabling environment to facilitate the integration of adaptation into planning and budgeting processes
2. Improve the capacity to manage and share data and information, access to technology and finance for adaptation and
3. Implement adaptation actions for greater resilience of the most vulnerable.

The main instruments for implementing the NAP are ambitious capacity building and communication plans, which go hand in hand with a monitoring and evaluation system, with a view to mobilizing and learning about climate resilience by the various actors in the public, private and civil spheres, their ownership of the planning and budgeting processes and, ultimately, the implementation of concrete actions with a view to a greater climate resilience.

The NAP CV has an estimated cost of €30,000,000 (thirty million euros) associated with the implementation of its first phase, comprised between 2022 and 2026. After an evaluation process, an updated version may appear to implement a second phase, in the same subsequent period and until 2030.

A successful NAP is one that creates the conditions for its own extinction. It is expected that in the medium term, the various sectors, public and private organizations and civil society entities will fully and automatically integrate climate change adaptation into their planning, operations and budget and that Cabo Verde will be a resilient nation.

The strategic framework of the NAP CV is now presented.

Objective	Pillar	Strategic Adaptation Actions (2021-2026)	Measures (M)		
			National	Sectoral	Municipal
Create an enabling environment to facilitate climate change adaptation mainstreaming in planning and budgeting processes	Institutional framework	<ol style="list-style-type: none"> Establishment of the institutional arrangements for the multi-sector coordination of CCA in Cabo Verde, including the definition of its composition and mandate Testing and institutionalization of mechanisms to integrate CCA into the next "National Development Plan" or equivalent and sectoral planning instruments, including the annual sectoral budgets and guidelines 	M1.1		
			M1.2		M1.2
Improve the capacity for data and information management and sharing, and access to technology and financing for adaptation	Knowledge, technology, and financing	3. Development and implementation of a research programme on climate change impacts and CCA actions	M3.1	M3.1	M3.1
		4. Implementation of the climate education plan	M4.1	M4.1	M4.1
		5. Implementation of the climate capacity-building plan	M5.1	M5.1	M5.1
		6. Implementation of the climate communication plan	M6.1	M6.1	M6.1
		7. Operationalization of an overarching M&E framework	M7.1	M7.1	M7.1
		8. Elaboration and implementation of a resource mobilization plan	M.1	M8.1	M8.1
					M9.1
Implement adaptation actions toward an increased resilience of the most vulnerable	Resilience of the most vulnerable	9. Development of CCA planning tools tested in each of the ten islands in particularly vulnerable communities, demonstrating an integrating CCA approach in various sectors	M9.1	M9.1	
		10. Elaboration of a portfolio of CCA priority actions for the key sectors for the medium term with verification that each measure aligns with Ambition 2030 and sectoral strategies and plans in five pilot municipalities			M10.1



Acronyms

AND Autoridade Nacional Designada (FMC)

NDA National Designated Authority (GCF)

ANAS Agência Nacional de Água e Saneamento

ANMCV Associação Nacional dos Municípios de Cabo Verde

ACB Análise Custo Benefício

CBA Cost Benefit Analysis

CCC Inter-ministerial Commission on Climate Change (2009)

CCA Climate Change Adaptation

CNC Conselho Nacional do Clima

NCC National Climate Council

CQNUMC Convenção-Quadro das Nações Unidas sobre Mudanças Climáticas

UNFCCC United National Framework Convention on Climate Change

DAC Departamento de Ação Climática

CAD Climate Action Department

DGASP Direcção Geral da Agricultura, Silvicultura e Pecuária

DNA / MAA Direcção Nacional do Ambiente

NDE National Directorate Environment

AND Autoridade Nacional Designada para a CQNUMC

DNA Designated National Authority (UNFCCC)

DNP / MF Direcção Nacional do Planeamento

NDP National Directorate of Planning

DMC Departamento de Mudanças Climáticas

CCD Climate Change Department

DRR Disaster risk Reduction or Disaster Reduction and Recovery (WB)

EE Eficiência Energética

Energy Efficiency

ELECTRA Empresa Pública Nacional de Eletricidade e Água

ENRRD Estratégia Nacional de Redução de Riscos de Desastres 2017

NDRRS National Disaster Risk Reduction Strategy

PDSE Plano Director do Setor Elétrico

EMP Electricity Master Plan

MRT Marco Reforçado da Transparência

ETF Enhanced Transparency Framework

FAO Food and Agriculture Organization

FCV Fundo Climático Verde

GCF Green Climate Fund

FME Fundo Mundial do Ambiente

GEF Global Environment Facility

ICIEG Instituto Cabo Verdiano de Igualdade e Equidade de Género

INGT Instituto Nacional de Gestão do Território

NITP National Institute for Territorial Planning

INMG Instituto Nacional de Meteorologia e Geofísica

NMI National Meteorological Institute

INPS Instituto Nacional de Providência Social

INSP Instituto Nacional de Saúde Pública

INE Instituto Nacional de Estatística

INIDA Instituto Nacional de Investigação e Desenvolvimento Agrário
National Institute of Agricultural Development

ITMO (UNFCCC) Internationally transferred mitigation outcomes

PIMC Painel Intergovernamental sobre Mudanças Climáticas
IPCC Intergovernmental Panel on Climate Change

MAA Ministério da Agricultura e Ambiente
MAE Ministry of Agriculture and Environment

MAI Ministério da Administração Interna
MIA Ministry of Internal Administration

M&A Monitorização e Avaliação
M&E Monitoring & Evaluation

MRV (UNFCCC) Medição, Relato e Verificação
MRV Measurement, Reporting and Verification

NbS Nature-based Solutions

NDC Contribuição Nacionamente Determinada
NDC Nationally Determined Contribution

ODS Objetivos de Desenvolvimento Sustentável
SDG Sustainable Development Goals

PEDS Plano Estratégico de Desenvolvimento Sustentável 2017-2021
SPSD Strategic Plan for Sustainable Development

PEMDS Planos Estratégicos Municipais de Desenvolvimento Sustentável

PEID Pequenos Estados Insulares em Desenvolvimento
SIDS Small Island Developing States

PLENAS Plano Estratégico Nacional de Água e Saneamento

NAP Plano Nacional Adaptação (às mudanças climáticas) (UNFCCC_Cancun)
NAP National Adaptation Plan (to climate change) nature-based solutions (**UNFCCC Cancun**)

NAPA Programa de Acção para Adaptação às Mudanças Climáticas 2008-2012
National Climate change Adaptation Programme of Action 2008-2012

POOC Plano de Ordenamento da Orla Costeira

POSER Programa de Promoção de Oportunidades Socioeconómicas Rurais 2012-2022
RSEOP Rural Socio-Economic Opportunities Programme 2012-2022

POT Plano de Ordenamento do Turismo
SF Success Factor for the NAP (according to the SNAP tool)

SINAGERD Sistema Nacional de Gestão de Riscos de Desastres
SNAP Stocktacking for the NAP

SNPCB Serviço Nacional de Protecção Civil e Bombeiros

TdM Teoria da Mudança
ToC Theory of Change

TFD (Lux) Technical and Financial Document

UNCCD United Nations Convention to Combat Desertification

ZCIT Zona de Convergência Intertropical



Introduction

Cabo Verde is extremely vulnerable to negative impacts and the unpredictability of climate. As a Sahelian Small Island Developing State (SIDS), it has long been dealing with a hostile environment, but climate change has made climatic phenomena such as droughts or coastal storms more frequent and intense, increasing risks and vulnerability.

The adaptive capacity of communities is constrained by limited and often climate-dependent livelihoods such as rainfed agriculture or other activities as fishing and tourism, and poor capacity to absorb disasters and the bio geophysical shocks it faces.

With the main economic sectors and most communities exposed to climate risks, the country's adaptive capacity can significantly increase if adaptation to climate change is integrated into national and sectoral public, civil society and private planning and budgeting processes.

Cabo Verde has already taken steps in this direction integrating, to a certain degree, climate resilience in its Ambition 2020-2030 and approving and submitting, in early 2021, its updated Nationally

Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC). Previously, the country had also prepared and submitted its National Action Program for Adaptation to Climate Change 2008-2012 (NAPA), which led to the implementation of several projects, and has been preparing several its National Communications, including the fourth, with various vulnerability analyses.

But an increase in adaptive capacity in the medium and long term is still necessary.

To this end, Cabo Verde now presents its National Adaptation Plan – NAP CV, in an effort to implement transformative change throughout the planning and budgeting processes and in current environmental, social and economic practices, and to increase its ability to absorb climatic shocks, which are expected to be even more intense and frequent.

Based on an extensive consultation process, this document constitutes the NAP CV. It consists of characterization chapters and the Plan itself:

- Bio geophysical environment
- Present and future climate
- Climatic risks
- Gaps and needs for greater climate resilience
- NAP CV
- Vision
- Mission
- Principles
- Objectives
- Alignment with sector development and strategies
- Institutional arrangements



- Strategic adaptation actions
- Cost and benefit
- Schedule

- Implementation plan and
- References

Environmental and bio geophysical characterization

Cabo Verde's geographic location and geomorphology, together with the risks associated with climate change and variability, make sustainable management of the environment a cross-cutting theme that encompasses all social and economic sectors.

Cabo Verde's environmental profile reflects its location and insularity, which gives the country a lot of potential but also vulnerabilities. Natural features such as the diversity of ecosystems and ecological niches, landscapes scaled on bioclimatic levels, natural wealth such as geological diversity and marine resources are valued by tourism and the blue economy, among others.

Due to its geomorphological and climatic characteristics, Cabo Verde presents an environmental panorama that varies from one island to another, according to the typologies and direct influences of the climate (Figure 1). In a natural way, climatic parameters and their derivatives condition the environmental state of existing resources and the way of life of populations. On the other hand, anthropic actions and pressures on natural resources associated with fragile natural conditions severely contribute to the loss, degradation, and

reduction of fundamental resources like water, biodiversity, soil and marine, that guarantee the survival of living beings in the land.

FIGURE 1
MAP OF CABO VERDE¹



The country faces challenges that are in line with the SAMOA Roadmap commitments aimed at adjusted vulnerability and resilience management, as well as other guiding instruments such as the Strategic Plan for Sustainable Development (PEDS 2017 – 2021), Sustainable Development Goals (SDGs 2030), Cabo Verde: Ambition 2030 (Cabo Verde's Strategic Agenda for Sustainable Development) and sector plans and programs.

The strategic guidelines of the environmental sector are reflected in various policy instruments, including strategies and action plans. Thus, the sector has a National Strategy and Action Plan for the Conservation of Biodiversity, National Plan for Environmental Education, National Strategy for Protected Areas and the National Plan for Agricultural Research, National Communications on Climate Change, White Paper reporting the state Environment at the National level, among other key instruments for sustainable management of resources.

The Cabo Verde Islands have a diversity of species of fauna and flora that are endemic, which make the islands globally significant.

Terrestrial biodiversity consists of about 7000 species, 49% terrestrial and 51% marine. Marine biodiversity is very diverse and still, little known in terms of flora (Microalgae: Cyanophytes; Macroalgae: Chlorophytes, Rhodophytes and Pheophytes; seagrasses) and fauna (Porifers, Cnidarians, Molluscs, Arthropods, Echinoderms) (Livro Branco do Ambiente, 2021).

According to the National Biodiversity Strategy and Action Plan 2014-2030 “The main factors behind the alteration and/or destruction of the archipelago’s natural habitats are: (i) the intensification of agricultural exploitation through the conversion of natural areas into agricultural areas; (ii) the extraction of aggregates; and (iii) inadequate tourism development on the coastline”.

The richness of Cabo Verde’s biodiversity has been safeguarded by the ratification of the Convention on Biological Diversity, the Convention on Migratory Species belonging to Wild Fauna, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, by the creation of a National Network of Protected Areas, and for an articulation between the conservation policy and the tourism policy, favouring the interconnection between the tourist development centres and the protected areas to complement a quality and diversified offer. The management measures of ecosystems and biodiversity have proved to be effective for the *in situ* preservation of species, especially endemic ones. Despite these protection and conservation efforts, pressures continue to increase, particularly in coastal areas. The participation of Non-Governmental Organizations (NGOs) in the implementation of policies for the protection and conservation of biodiversity and ecosystems is unprecedented in the history of the islands, with many of these organizations mobilizing important resources in favour of conservation.

In 2021, the National Network of Protected Areas gained another protected area on the island of Santiago, the Natural Park of Baía do Inferno and Monte Angra, totalling 47 Areas. Currently, the protected areas of Cabo Verde have a total area of 226 520 ha, of which 76 921 ha are on land and 149 599 ha are marine. Terrestrial Areas represent 19% of the country’s total surface, while Marine Protected Areas surface represent about 7% of the territorial sea surface (up to 12 miles from the baseline).

Cabo Verde, being an archipelago with an extensive maritime area, has to value its blue natural capital for its sustainable development. The quality of the coastal and marine environment, the conservation of marine ecosystems and the planning of the coastal territory are important assets for the sustainability of the country’s development in general and for the transition and development of the blue economy. The sea is clearly one of the country’s greatest wealth and one of the essential elements of national identity. The Exclusive Economic Zone, exploration strip and responsibility for managing resources, living and non-living, located 200 nautical miles from the baseline, totals about 734 000 km², and may reach 1 000 000 km² with the extension from the respective continental shelf to 350 nautical miles.

In Cabo Verde, the random nature of rainfall and the deficient systems for mobilizing water resources associated with the increase in water consumption by the population cause strong pressure on other natural and economical resources once water is needed for various uses: human consumption, agricultural and livestock (responsible for about 80% of consumption), civil construction, tourism, industry, among others. This situation increases the shortage and quality of this resource causing repercussions on the environment

and human health. Anthropogenic pressure on resources has increased, but it cannot be attributed as the only cause of pressure as natural factors are associated, such as drought cycles, climate change and the ecological characteristics inherent in the insular and Sahelian environment. To face the pressures, responses in terms of policies, programs and projects have been implemented, namely, by the public, private and civil society sectors.

The torrential hydrological regime, which characterizes the archipelago, results in an important phenomenon of transporting solids. These phenomena are accentuated by the weak vegetation

cover, strong slopes, and shallow soils. The natural water in Cabo Verde is essentially of underground origin and is obtained in systems for capturing springs, galleries dug horizontally in the basalts, capturing aquifers through wells and transversal drains and deep holes.

Within the framework for the management of water resources, there were substantial improvements in terms of water production and distribution, creation of managing entities by islands and an increase and improvements in infrastructure for the production, storage, and transport of water for both consumption and waste.



Present and future climate

Climate is one of the fundamental conditions for determining the physiographic characteristics of a territory, since the combination of climatic variables that determine the permanent state of weather in the atmosphere, especially temperature and precipitation, directly influence the evolution of all terrestrial cycles and, consequently, the relief of a particular region.

Geographically, the Archipelago of Cabo Verde is located in a vast region of arid and semi-arid climate on the African continent, which corresponds to a transition zone between the Sahara Desert and the savannas of Sudan, characterized by a dry tropical climate, with two distinct periods, the rainy period, between mid-July to October, and the dry period, during the rest of the year (Pio et al., 2014). Cabo Verde is located in a region where the variability of high sub-tropical mobile pressures acts as a regulating factor for precipitation anomalies, controlling the seasonal oscillation of the trade winds that blow constantly during the dry months. In the rainy season, the oscillatory movement of the Intertropical Convergence Zone (ITCZ) stands out, characterized by winds from the Southeast and

the passage of disturbances from the east (Correia et al., 2010).

The average annual temperature is around 25°C, and in the coldest periods from January to April the temperature is around 20°C, and in the hottest periods of the year, from August to October, temperatures above 27°C are recorded in the country (Lopes e Ernesto, 2014).

The annual relative humidity ranges between 60-85%, the average precipitation values for the arid areas of the coast is less than 100 mm, cases of the islands of Sal, Boa Vista and Maio, for the mountainous islands the average can be around 600 mm, cases of the islands of Santiago, Fogo and Santo Antão, although recent observations show a large reduction in average rainfall due to the worsening of the prolonged drought periods that the country has been facing, mainly in the last four years.

In synoptic terms, Cabo Verde is located in a region of the Atlantic that favours the formation of tropical storms. In recent years, there has been a significant increase in the formation of these tropical systems that later evolved into hurricanes. A significant part of these storms originates near the Cabo Verde Islands, 600 kilometres west of Senegal. This happens when a tropical wave forms in the African savanna during the rainy season and heads to the Atlantic Ocean where it meets the warm waters and turns into a storm and then a tropical cyclone. Typically, these systems develop south of the Cabo Verde Archipelago, heading towards the warmer waters of the Atlantic before reaching the mainland of the Caribbean and the east of the United States, with strong winds and torrential rains. Recent records show that more cyclones are having an atypical trajectory, as was the case with hurricane Fred in 2015 (Figure 2), which originated in a tropical wave and, within hours, turned into a

tropical depression that emerged from the continent between on the 28th and 29th of August, on the Guinea Bissau side, and within 24 hours it evolved into the category of a hurricane with the centre located 50 km from Boa Vista Island, moving to NW, reaching all the Barlavento Islands, with winds above 100 km/h and heavy showers, causing great material damage.

The analysis of the climate characterization of the Cabo Verde Archipelago is based on chronological series of meteorological reference stations, with thirty years of observations of the most important climatological parameters, allowing to see their variability and trends around the climatological normal 1981 to 2010 and the average of the series under study from 1990 to 2020.

The series of the meteorological stations of Mindelo, Sal and Praia were used, corresponding to the air temperature and amount of precipitation for the period from 1991 to 2020. Analyses of other parameters were also carried out, such as wind, relative humidity, and dry mist/dust in suspension, and how these behave over time.

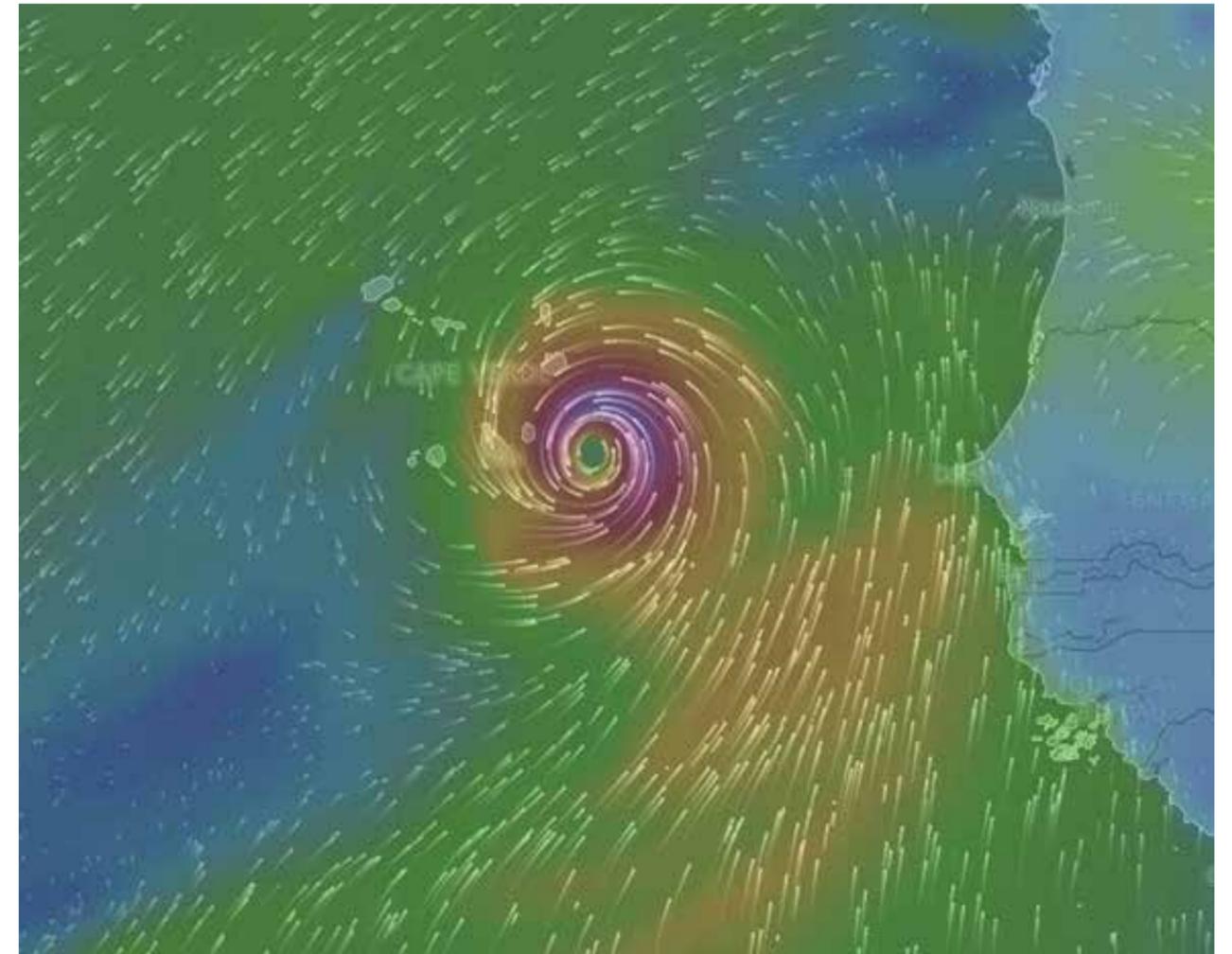
AIR TEMPERATURE

According to the World Meteorological Organization (2021), the year 2020 was one of the three warmest ever recorded, and in Cabo Verde it clearly manifested itself as the second hottest of the last thirty years in Mindelo (M) and sixth and tenth on the Island do Sal (S) and Cidade da Praia (P), respectively.

The average air temperature in Cabo Verde has a low thermal amplitude, with an average annual value between 8°C and 10°C. For the period considered (1991 to 2020), the average annual air temperature values are between 23.7°C in Sal and 25.5°C

FIGURE 2

PASSAGE OF HURRICANE FRED OVER CABO VERDE²



in Cidade da Praia, plus 0.1°C and 0.4°C more in relation to the 1981-2010 climatological normal.

The monthly average varies regularly and reaches its maximum value in September and October and its minimum in January and February (Figure 3).

The variation of extreme temperatures (maximum and minimum) presents the same behaviour as the average temperature, although the variation of the minimum temperature is less accentuated than the maximum temperature, in the last three. This

upward trend is also verified at the level of seasonal variation, with greater evidence in the warm seasons, during the months of July, August, September, and October, in the colder months, December, January and February, this increase is less accentuated (Figure 4).

FIGURE 3 EXAMPLES OF THE ANNUAL VARIATION OF THE AVERAGE TEMPERATURE IN PRAIA AND SAL (°C).

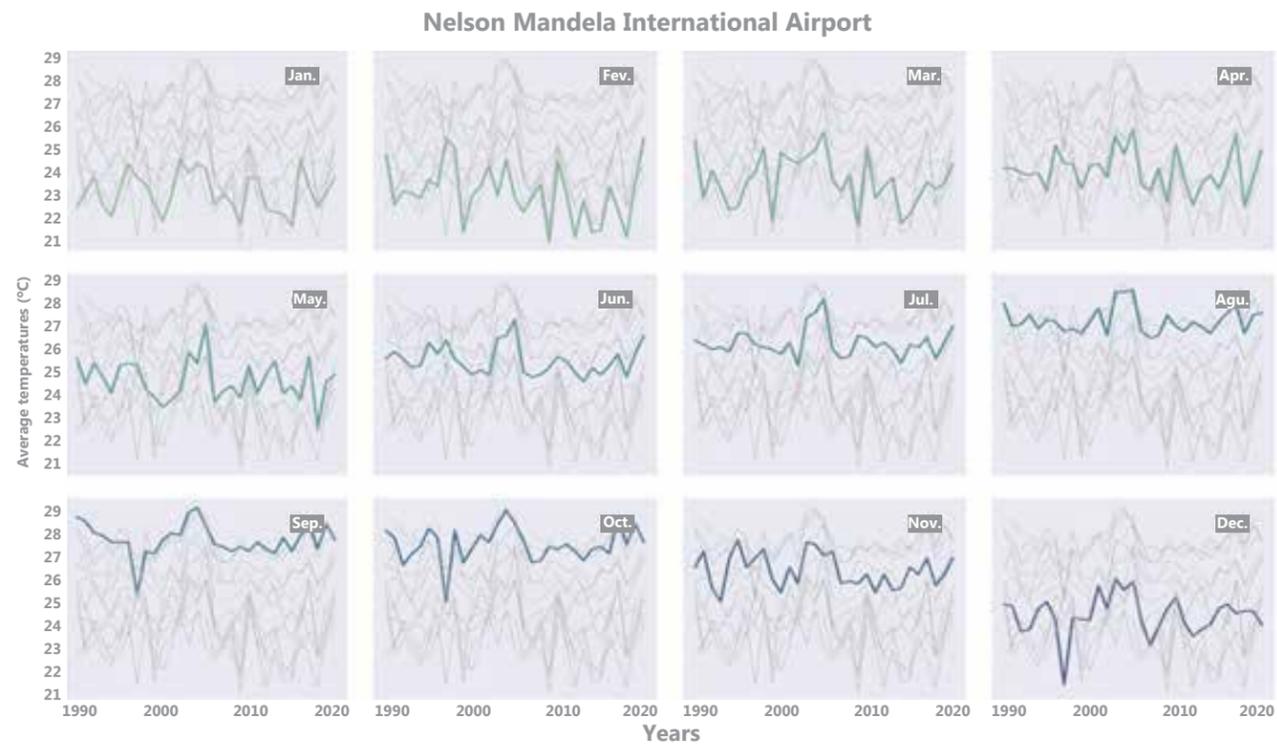


FIGURE 3 EXAMPLES OF THE ANNUAL VARIATION OF THE AVERAGE TEMPERATURE IN PRAIA AND SAL (°C).

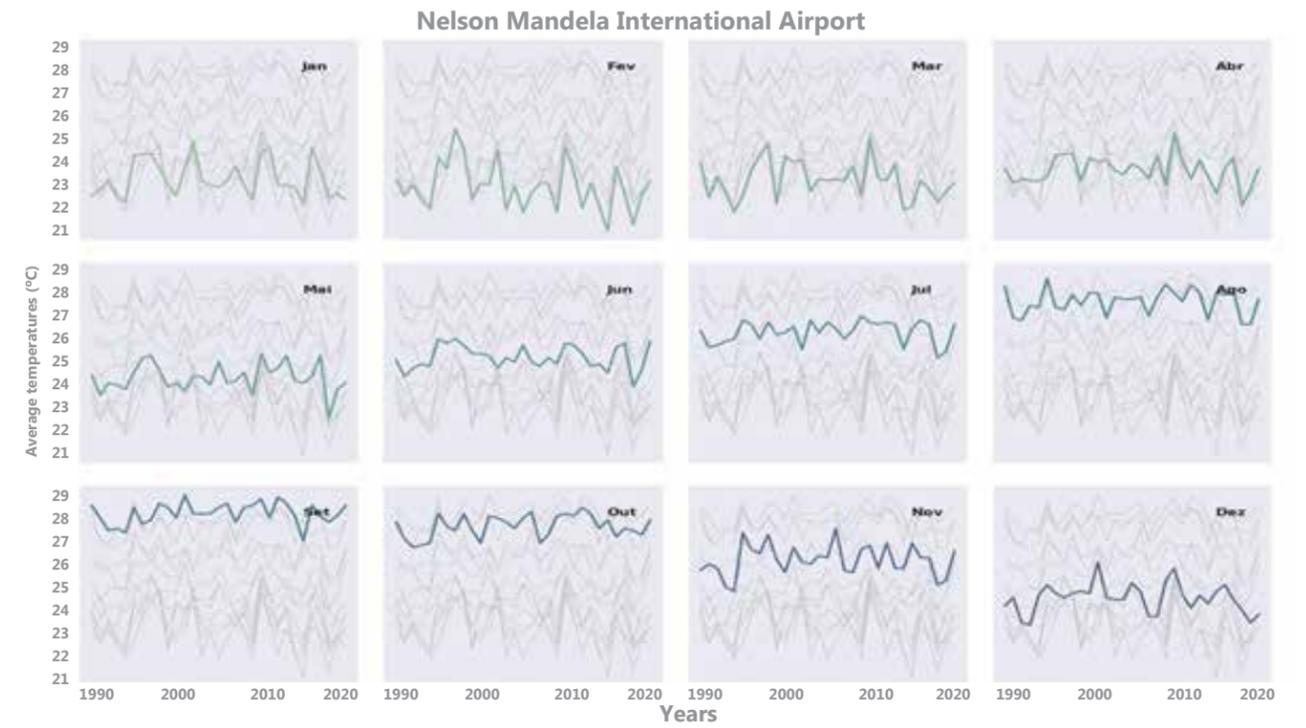
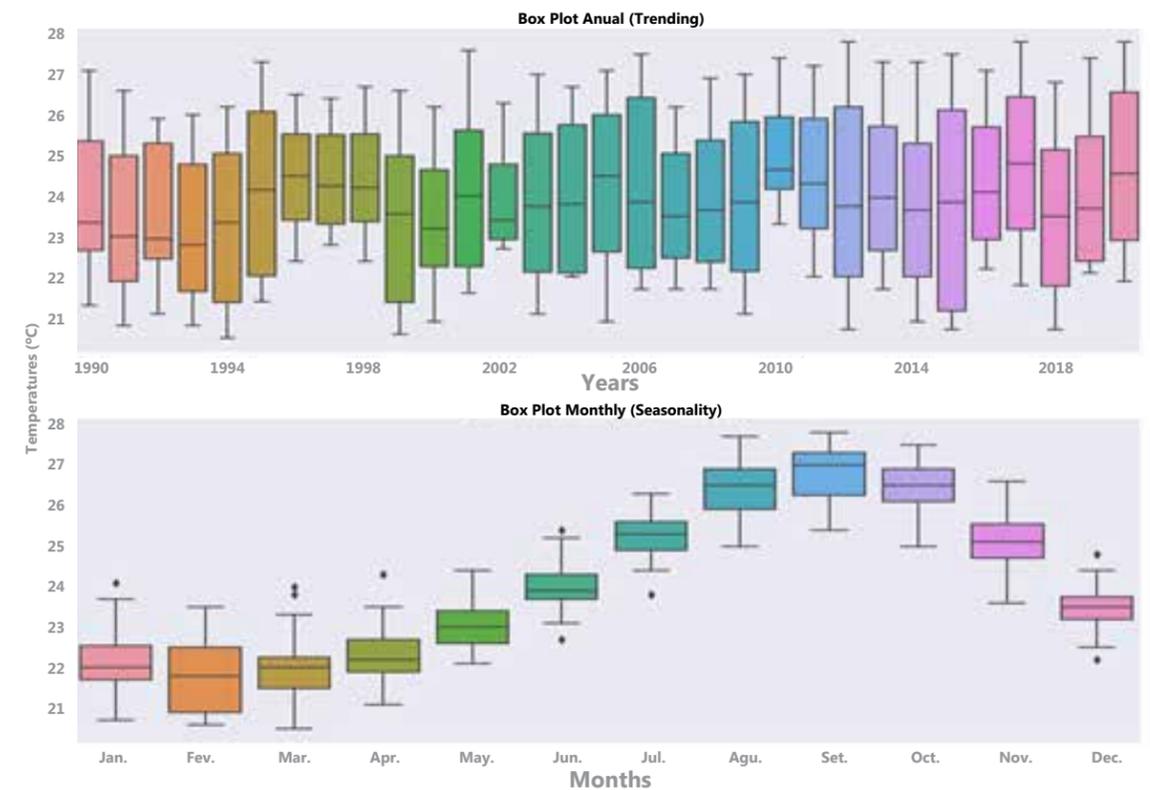


FIGURE 4 VARIATION OF EXTREME TEMPERATURES AND TRENDS



In terms of future projections, global mean annual temperature is forecasted to increase from 0.7 to 2.5°C by 2060, and from 1.2 to 3.7°C by 2090. The range of projections to 2090s in any emission scenario it is 1.0 to 2.0°C.

Temperature increases occur at a similar rate in all seasons of the year. In Cabo Verde, after 1990, the temperature increased by 0.04°C/year. The projections, using the scale-down technique with the boundary conditions of the ECHAM³, model, indicate a temperature increase of 0.4-0.7°C by 2020 and, assuming this growth rate continues, an increase of 0.5-1.0°C until 2090. Recently, projections made using the *Climaterationale*⁴ program climate model indicates a temperature increase in Cabo Verde of about 1°C during the period 2011-2040 and up to 3°C by the end of the 21st century.

All projections indicate decreases in the frequency of days and nights that are considered “cold” in the current climate. Cold days and nights do not occur at all until 2090 in any projections, and only occur in the lowest emissions scenario (B1) until 2060.

All projections indicate substantial increases in the frequency of days and nights that are considered “hot” in the current climate. Annually, projections indicate that “hot” days will occur on 16-32% of days in the 2060s, and 23-51% of days in the 2090s. Days considered “hot” by current weather patterns for your season they may increase most rapidly in August-September-October, but the gap between model projections is large, occurring on 39-100% of season days through 2090s. Nights considered “hot” for 1970-99 annual weather are expected to occur on 23-49% of nights through 2060s and 31-79% of nights through 2090s. Nights considered “hot” for each season from the year 1970-99 are predicted to occur on 37-100% of the nights for each season through the 2090s.

PRECIPITATION

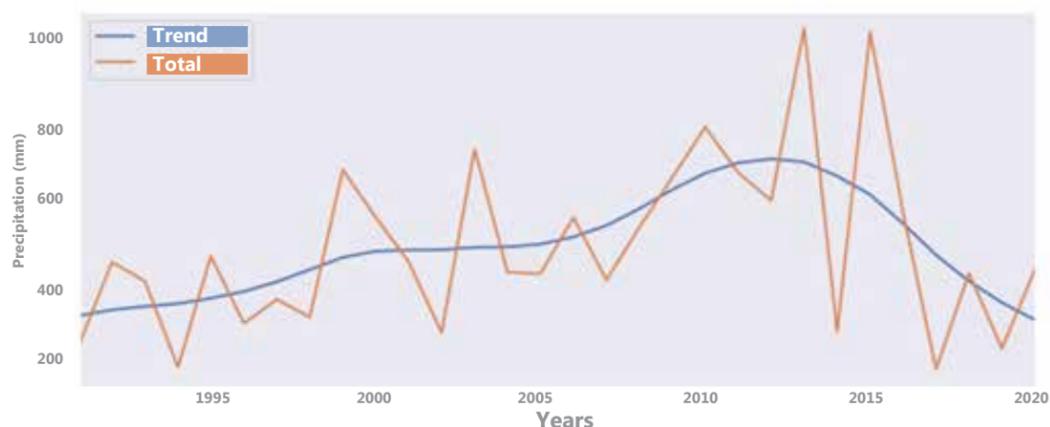
Rainfall in Cabo Verde is very irregular. In fact, there are large annual and monthly fluctuations in their values, with a very dry year often occurring right after a wet year. Even between months, the amount of precipitation can vary from one value to its triple. This irregularity is not only temporal, but also spatial, where two neighbouring areas, with the same geographic characteristics, can record very different rainfall values (Amaral, 2007). The irregularity in the distribution of precipitation can be explained by different factors such as altitude – mountainous islands have a precipitation regime that ranges from aridity on the coast to wetlands at high altitudes; and the island’s position in relation to the prevailing winds – in which the exposed slopes clearly register greater rainfall. For example, in the case of Santiago, the east coast, open to the penetration of trades, which carry moisture as they advance over the ocean, is much wetter than the west coast.

For a better analysis of the amounts of rainfall in Cabo Verde, in addition to the three main meteorological stations located at the international airports, Mindelo, Sal and Praia, udometric posts in the mountainous islands of Fogo, Santiago and Santo Antão with the highest rainfall in Cabo Verde were selected.

The period from August to October is mainly determined by the passage of waves from the east and, depending on their intensity, may be accompanied by precipitation. These waves are synoptic systems that form over the African continent in the lower troposphere in the southern part of the East African jet stream and propagate westward between latitudes 5°N and 17.5°N. Under favourable conditions, the waves intensify as they cross the west African coast south of Cabo Verde and turn into tropical depressions. In general,

they are accompanied by the intermittent formation of well-organized convective clouds, with the occurrence of showers and strong storms. From the analysis of one of the trend graphs (Figure 5), it can be seen that there is a downward trend in the amounts of rainfall, with greater evidence at the beginning of the millennium and in the last 4 years, the worst in the last forty years, only compared with the 1977 drought, which caused hunger and mortality in the country.

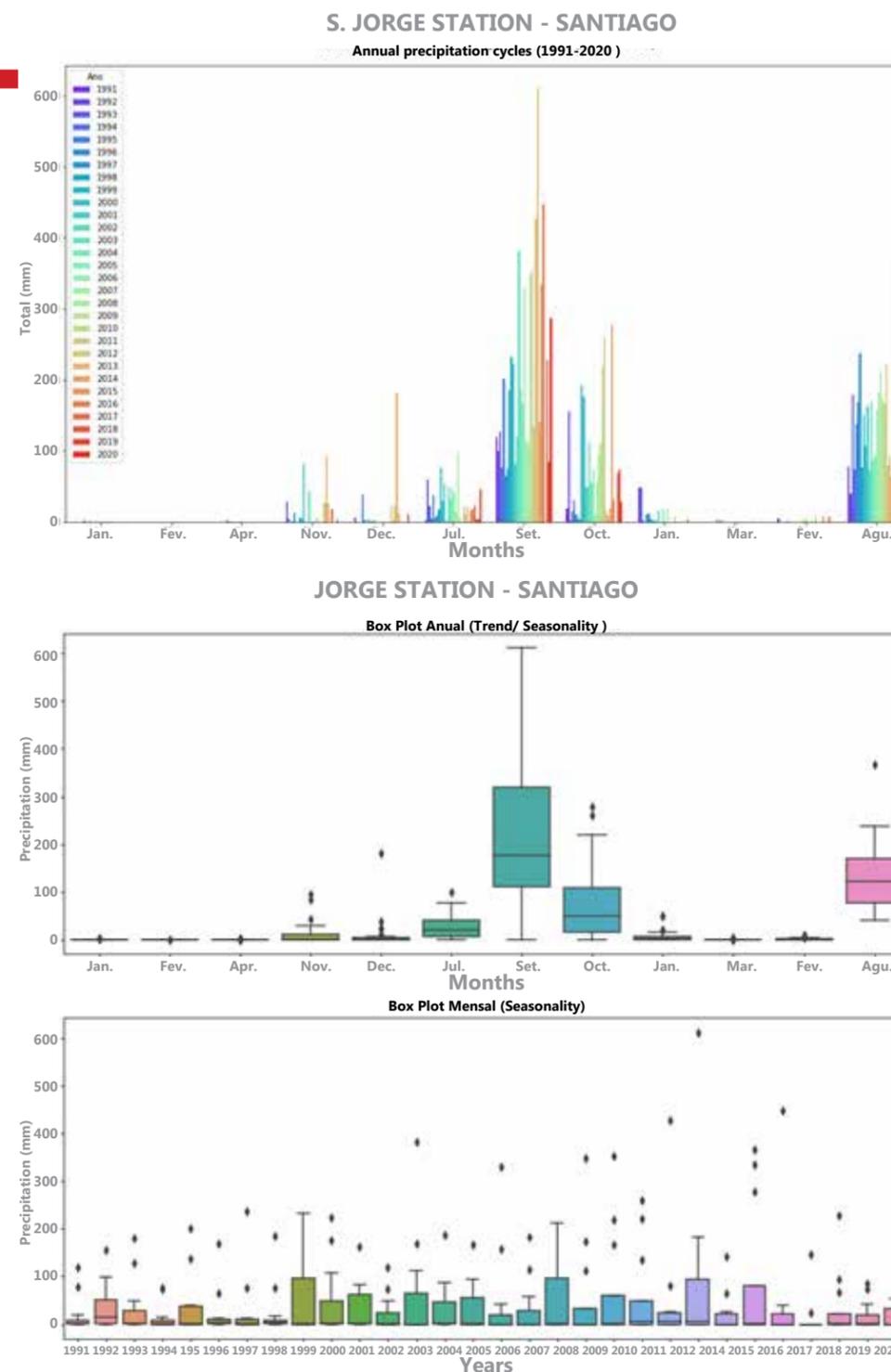
FIGURE 5
TOTAL AND ANNUAL PRECIPITATION TREND IN SÃO JORGE DOS ÓRGÃOS (mm)



The annual rainfall cycles suggest the existence of two distinct periods: one with little or no rainfall and another with rainfall records for the months of August, September, and October, represented in Figure 6.

Cabo Verde has already started to experience the impacts of climate change, manifested through cyclical droughts of great intensity and duration.

FIGURE 6
ANNUAL PRECIPITATION CYCLES IN S. JORGE DOS ÓRGÃOS IN SANTIAGO



The proportion of changes in total precipitation that falls under heavy events varies between increases and decreases in the projections of different models.

The range of changes in the one- and five-day rainfall maximums in model pool projections encompasses both increases and decreases.

More frequent episodes of intense precipitation are expected, which will increase the risk of floods and floods. Extreme rare precipitation events in dry seasons are predicted to decline. Overall, the model tends to reduce this rainfall, which is small in absolute terms, but which represents a large proportion of the total as a percentage.

WIND

Consistent with the pressure field, and with the archipelago on the periphery of the Azores anticyclone, the NE trade winds are the dominant winds, with frequencies from 60% to 80%.

SE and SW winds appear periodically with the approach of the ITCZ, during the months of July to October, when rainfall occurs. During the dry season, mainland winds predominate, being responsible for transporting dust from the desert known as "dry mist". During this period, visibility reaches values below 1000 meters and relative humidity drops below 35%.

Wind intensity tends to maintain its annual variation with an average speed ranging between 6 and 7 m/s. The seasonal behaviour of wind intensity presents periodic oscillations and there is no tendency for significant changes in variability.

The greatest intensity of the wind takes place during the months of January-February-March and April-May-June, with average speeds varying between 6 and 10 m/s, to decrease during the period of

July-August-September, where it reaches the minimum values, and increase again in intensity in the period October-November-December (*Subsídios para um Estudo Climático, 2007*)

DRY MIST

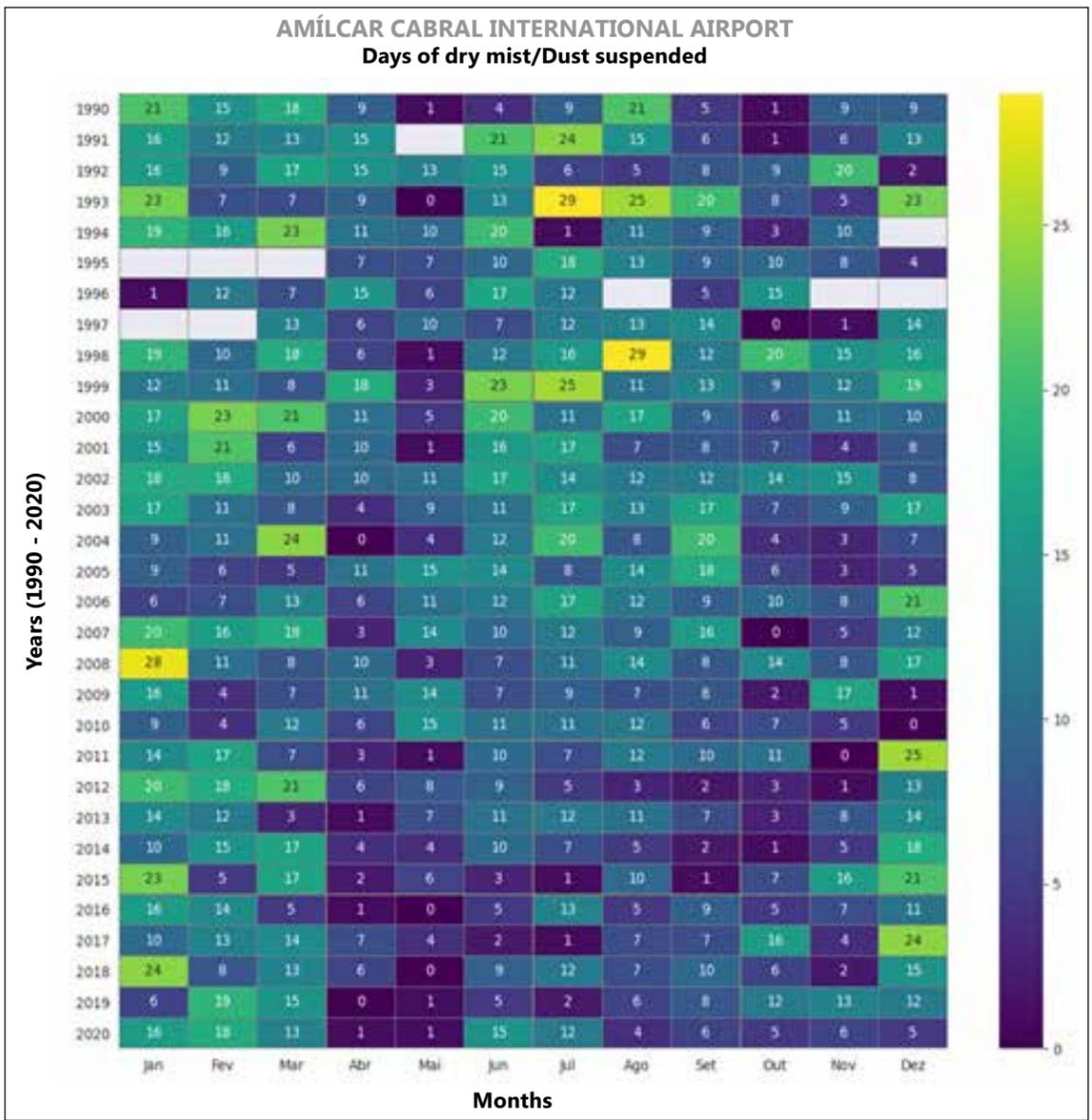
The dry haze in Cabo Verde occurs when an East- or East-Northeast current is established in the region's circulation over the African continent, between latitudes 15° to 25° North, with the formation of a depression of thermal origin, in the range from 10° to 20° North over the continent, reinforced by the intensification of the Libyan anticyclone over the North African region.

Under these synoptic conditions, the subsidence in the lower troposphere is accentuated and the inversion of the air temperature sometimes reaches 1000 to 1500 meters, blocking the upward vertical movements (Renato Carvalho, 1961).

From the analysis of the tables in Figure 7, it can be seen that the months with the highest number of consecutive days with dry mist/dust in suspension are December, January, and February.

In Cabo Verde, the authorities speak of dry mist only in terms of the consequences in terms of limited visibility, which affects air and maritime navigation, that is, the concern is focused almost exclusively on transport, with little reference to concerns public health consequences. It is known that the dry haze affects even if unnoticed, the health of people, because it is a fine dust brought by the wind, mainly affecting the respiratory system.

FIGURE 7
 NUMBER OF CONSECUTIVE DAYS OF DRY MIST/DUST
 SUSPENDED IN SAL



SEA LEVEL RISER

Cabo Verde Islands are likely to be vulnerable to rising sea levels. The sea level in this region is projected by climate models to rise to the following levels by 2090, relative to the 1980-1999 sea level:

- 0.13 m to 0.43 m under the SRES B1 scenario
- 0.16 m to 0.53 m under the SRES A1B scenario and
- 0.18 m to 0.56 m under the SRES A2 scenario



Climatic risks

There are several publications that place Cabo Verde at the top of risk rankings, including in what relates to climate, such as the World Risk Index⁵, published by the World Bank Group, or the ND-Gain Index⁶, published by the University of Notre Dame.

According to the Intergovernmental Panel on Climate Change (IPCC, 2014), risks associated with climate change arise from climate-related hazards (climate trends and extremes) and from the vulnerability of exposed society, communities, or systems (in terms of livelihoods, infrastructure, ecosystem services and governance) as illustrated in Figure 8.

Based on the above, on Cabo Verde's experience and on the perspective of the evolution of climate vectors in the country, the most significant climate risks are:

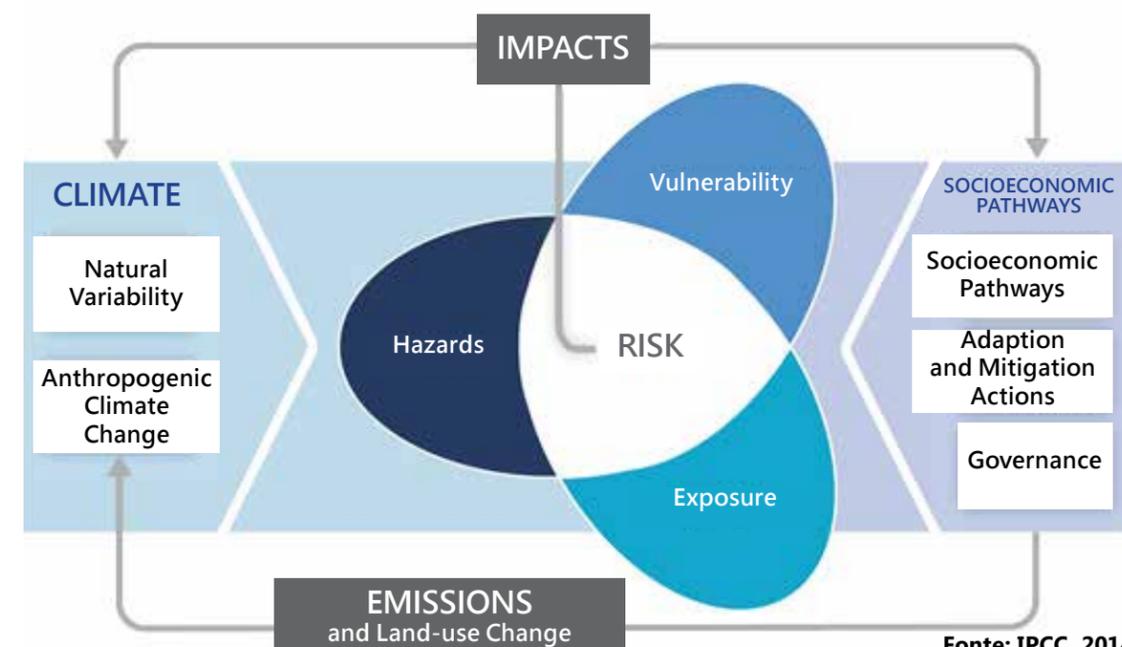
- Loss of livelihoods, built-up areas and coastal infrastructure, ecosystem services and economic stability associated with a trend of drought, storms, ocean acidification, sea-level rise, and extreme precipitation and

- Threats to the coastline in low-lying areas due to heavy storms and sea-level rise.

The report on the pilot methodology for the production of the

FIGURE 8

CONCEPTUAL FRAMEWORK OF CLIMATE RISK



cartographic sketch of climate mitigation and adaptation (National Institute for Territory Management – INGT, 2021), prepared with the support of Luxembourg cooperation, compiled and overlaid thematic spatial maps related to the risks and their mitigation in the nine inhabited islands of the archipelago with the aim of demonstrating the feasibility and relevance of producing cartography to monitor the implementation of the Determined National Contribution (NDC) and the National Adaptation Plan (NAP) itself.

Three layers were used:

- 1. Human exposure** – land use and administrative organization, basic and critical infrastructure, goods and equipment and development

zones. The layers and data used were human population, poverty, coastal occupation,

2. Geophysical risk – coastal and beach erosion, floods, landslides, forest fires, droughts, and coastal zones as an indicator for sea-level rise, and

3. Responsiveness - elements to reduce vulnerability such as water dams and desalination plants, terrestrial and marine protected areas, forest, and agricultural areas.

The preliminary identification of risks and means of reducing vulnerability will benefit from analysis at the municipal scale, which is already foreseen in the NDC and is included in this Plan.

Cabo Verde has registered a strong increase in the number and variety of disasters. According to data from OCHA (2019), during the period 2008-2017, 350 disasters of different types were registered, such as floods, droughts, forest fires, volcanic eruptions, between others.

These results show that the most significant hazard in terms of occupied area is drought, followed by landslides and coastal erosion. The hazard summary map by Island is shown in Figure 9. As evidence of the significant increase in disasters in Cabo Verde, 315 disasters were recorded in 2018, slightly less than in a decade. This significant increase in the number of disasters appears to be related to climate change.

TABLE 1
AREA OCCUPIED PER HAZARD RELATING
TO THE TOTAL AREA OF THE ISLAND (%)

Perigo	Fogo	St. Antão	Maio	Santiago	Boa Vista	Brava	São Nicolau	Sal	São Vicente
Beach erosion	45,5	IND ⁷	IND	IND	IND	IND	IND	IND	IND
Coastal erosion	IND	15,3	0,2	25,6	0,8	62,9	9,4	2,2	15,3
Floods	0,8	1,1	2,4	1,9	12,1	0,2	0,6	0,0	0,5
Slope slides ⁸	11,1	18,4	0,0	18,9	0	6,6	8,3	0,0	0,0
Forest fires	8,3	4,7	2,9	14,54	0,5	6,8	5,0	0,0	2,6
Landslides	14,8	23,8	5,3	17,7	6,1	15,7	16,1	0,72	13,1
Drought	95,0	80,1	100,0	55,5	100,0	80,0	88,4	100,0	100,0

Source: adapted from INGT, 2021

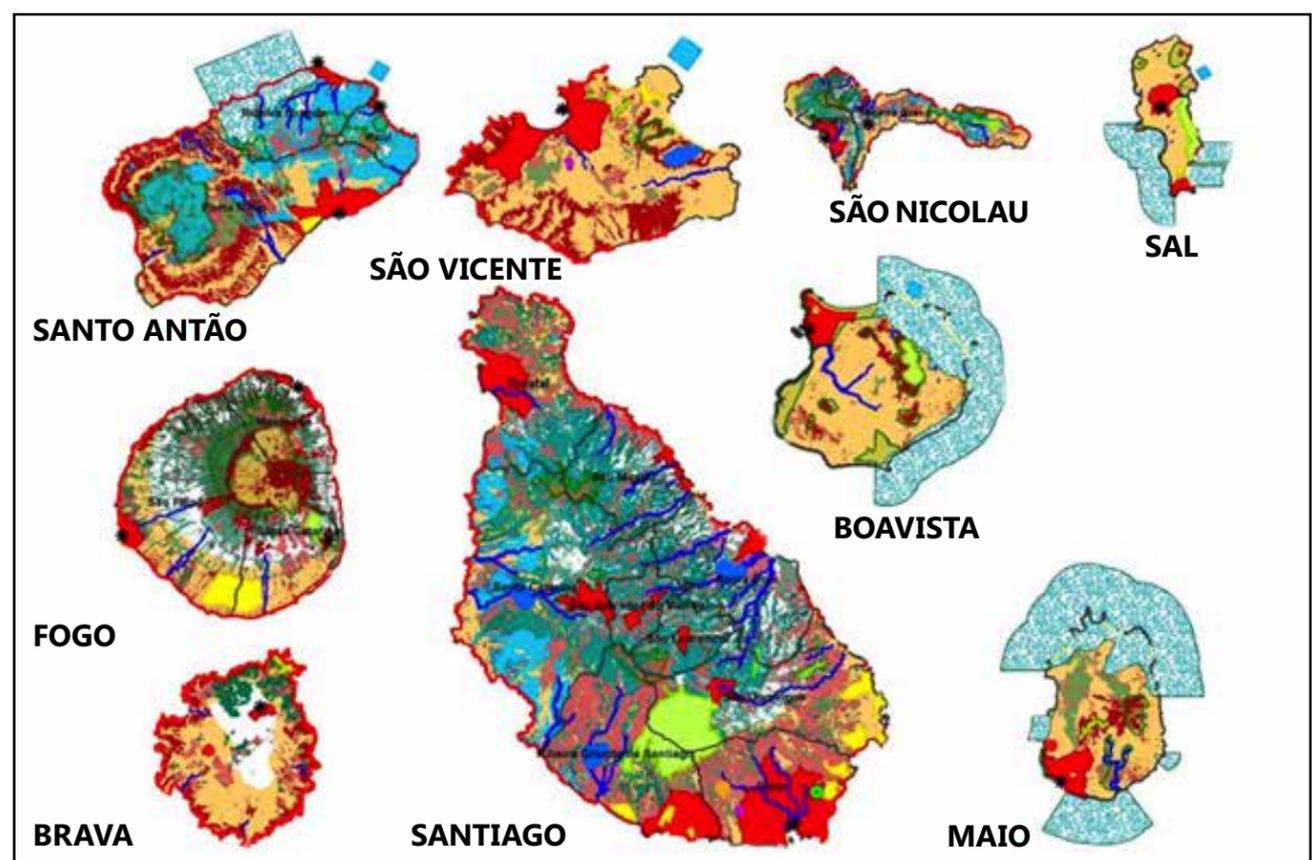
TABLE 2
TOTAL AREA OCCUPIED PER HAZARD IN THE ISLAND (Km²)

Perigo	Fogo	St. Antão	Maio	Santiago	Boa Vista	Brava	São Nicolau	Sal	São Vicente
Beach erosion	IND	IND	IND	IND	IND	IND	IND	IND	IND
Coastal erosion	IND	120,0	0,5	256,6	5,1	41,3	32,4	4,8	34,5
Floods	3,8	8,6	6,5	19,0	12,9	0,1	2,2	0,2	1,2
Slope slides ⁵	52,3	144,4	0,0	189,2	0,0	4,3	28,7	0,0	0,0
Forest fires	49,8	36,8	7,8	145,7	3,3	7,8	17,2	0,0	5,7
Landslides	69,6	186,9	14,3	177,6	33,6	10,3	55,8	1,6	29,4
Drought	446,8	628,4	273,4	556,2	631,4	52,5	304,7	219,7	225,2

Source: adapted from INGT, 2021

From the results of the INGT study and the country's climate information, the main climate risks can be inferred by socioeconomic sector and by island.

FIGURE 9
SUMMARY OF HAZARD MAPPING,
EXPOSED ELEMENTS, AND RESPONSIVENES⁹



Legend⁷

- Critical Infrastructure
- Electrical mobility
- Solar desalination
- CERMI
- Beach erosion

ZDER geothermic

ZDER maritime

ZDER wind

ZDER hydric

ZDER solid waste

ZDER solar

Marine protected area

Vegetation

Terrestrial protected area

Drought

Coastal erosion

Floods

Precipitation

Forest fires

Urban areas

Municipal limit

Source: INGT, 2021

CLIMATE RISKS AND VULNERABILITY BY SOCIO-ECONOMIC SECTOR

Climate risks are presented below for the following sectors: (i) ecosystems and biodiversity, (ii) water resources, (iii) agriculture and food and nutrition security, (iv) fisheries and coastal zones, (v) forestry, (vi) infrastructure, housing and transport, (vii) tourism and (viii) human health.

ECOSYSTEMS AND BIODIVERSITY

Situations resulting from the variability of extreme climatic events that are likely to cause degradation, damage and even loss to the biodiversity system, pose risks to species survival and entire ecosystems and habitats, including humans and human-made systems. This includes the potential loss of natural resources and ecosystem services provided.

All the climate factors affect ecosystems and its level of services.

WATER RESOURCES

The extreme variability in the amplitudes of rainfall patterns, temperatures, tropical storms, and cyclones associated with the strong floods and runoff resulting from heavy rainfall present risks to water distribution and supply systems. These can also be severely affected by the occurrence of less or insufficient rain with negative repercussions on the water balance, originating situations of conflicting use. Floods and untreated wastewater contamination, caused by high runoff associated with heavy rainfall, and the saline intrusion considerably affect the quality of water for consumption and irrigation.

The climate factors that affect the sector are *drying trend, extreme precipitation, extreme temperature, and sea-level rise.*

AGRICULTURE AND FOOD AND NUTRITIONAL SECURITY

The extreme variability in the amplitude of precipitation patterns, temperatures, tropical storms and cyclones and other climatic parameters, such as wind and sunshine, with direct influence on the increase in reference evapotranspiration, combined with environmental conditions constitute risks for agricultural systems and for food security, including adverse effects on agricultural production and productivity. This has subsequent negative impacts on food and nutritional security that affect different sections of the population due to deficient and unequal food distribution.

Storms that are the cause of floods and saline intrusion negatively affect the quality of water for irrigation. The resulting momentary strong floods and runoff also cause losses in agricultural plots located in low and coastal areas.

From the interactions between the various elements and climatic factors, in terms of the risk to the agriculture sector, new pests and invasive species may appear, capable of disturbing good production and harming food security. In addition, there is a risk of increased soil degradation and nutrient depletion.

Among the risks, drought is the one that most affects and determines the agricultural production and food security systems that exist in the country. The availability of water, for both agricultural and other associated practices, depends on the amount of rainfall recorded, which is most often insufficient and or poorly distributed over time and space.

In the short term, the needs of populations in crisis situations, due to drought and poor agricultural productivity, will have to be addressed in the areas of nutrition, access to food and livelihoods.

In terms of exposure and sensitivity, this climatic risk can affect all islands in the archipelago, including those called 'agricultural' (Santiago, Santo Antão, Fogo, São Nicolau and Brava).

The climatic factors that affect this sector are *drying trend, extreme rainfall, extreme temperatures, rising sea level.*

FISHERIES AND COASTAL ZONES

The sector may be affected by variations in the temperature of the seawater column and its acidification.

Those constitute risks for fish populations and their breeding as well as nurturing habitats, with considerable repercussions on fishing activity, economically affecting coastal communities health and well-being. It also affects the distribution of the various species, in depth and latitude, which can affect the abundance of local fish stocks.

The sector is vulnerable to flooding situations due to intense rains and rising sea levels that can cause damage to coastal infrastructure, goods, and people. Flooding can affect coastal habitats and their biodiversity. In addition, pollution from industrial activities and coastal discharges can severely affect fish populations as well as the quality of the produced nutrition.

The climate factors that affect the sector are *heavy storms, sea-level rise, ocean acidification, increase in temperature of seawater and extreme precipitation.*

SILVICULTURE

The extreme variability in the amplitudes of precipitation patterns, temperatures, tropical storms and cyclones and other climatic parameters constitute risks to silviculture and forest products due to changes in weather patterns. An increase in the

frequency of extreme weather events can lead to a higher number of forestry fires and harm the feasibility of new plantations and restoration efforts.

From the interactions between the various elements and climatic factors, in terms of risk to the forestry sector, new pests and invasive species capable of disturbing the entire forest ecosystem may arise. In addition, there is a risk of new potent pathogens arising, posing threats to human as well as ecosystems and individual species.

Os principais fatores climáticos que afetam o setor *heavy storms, sea-level rise, extreme precipitation, and drying trend.*

INFRASTRUCTURE, HOUSING AND TRANSPORT

The extreme variability in the amplitude of precipitation patterns associated with tropical storms and cyclone situations associated with sea level rise and intense rains, floods and runoff aggravated by strong winds pose serious risks to physical infrastructure – houses, buildings, roads, bridges, harbours, electricity and water distribution networks, desalination plants and others, above all, those built in places considered to be at high risk of catastrophes as slopes, low lying areas and coastal areas.

The climate factors that affect this sector are mainly *heavy rains, heavy storms, and sea-level rise.*

TOURISM

The extreme variability in the amplitude of the precipitation patterns, temperatures, tropical storms and cyclones and other climatic parameters such as wind and solar radiation with direct influences on the environmental imbalance with negative repercussions on the different sectors of production, logistics

and transport and which constitute the risks for the development of the socio-economic and sustainable components of this sector, which is seen as transversal.

Sea level rise is also concerning and associated with beach & sun tourism, being a hazard to touristic infrastructures.

Also, all the extremes that go beyond the human level of comfort, as extreme temperature, or wind, for instance, will have negative effects.

All climate factors affect the sector.

HUMAN HEALTH

The sector may be affected by variations in the patterns of precipitation, temperature, tropical storms and cyclones associated in particular with situations of floods and severe droughts as well as frequent occurrences of heatwaves and dry winds laden with dust (dry mist) with an impact on the degradation of the air quality and vectorial diseases that can translate into stressful situations constituting risks to human health and well-being, with adverse effects on the physical and mental health of populations at all levels.

The main climate factors affecting the sector are *drying trend, extreme temperatures, extreme rainfall, and heavy storms.*

MAIN CLIMATE-AFFECTED SOCIO-ECONOMIC SECTORS PER ISLAND

The affected socio-economic sectors per Island are presented in Table 3.

TABLE 3
MAIN AFFECTED SOCIO-ECONOMIC
SECTORS PER ISLAND

Affected sector	Fogo	St. Antão	Maio	Santiago	Boa Vista	Brava	São Nicolau	Sal	São Vicente	Sta Luzia
Ecosystems										
Water										
Agriculture										
Fisheries										
Silviculture										
Infrastructure										
Tourism										
Health										

Extremely affected

Affected

Poorly affected

CLIMATE VULNERABILITY AND THE PANDEMIC

The Coronavirus pandemic (COVID-19) has exacerbated climate vulnerability in Cabo Verde.

This is because the latter is deeply related to what social weaknesses are, and the pandemic was one more way to aggravate and expose them.

According to the work carried out by the NAP Global Network, the pandemic reinforced the need for adaptation in the most vulnerable countries. Thus, there is a shared priority in the fight against the

pandemic and against climate change with a view to recovery and regeneration, both environmental, economic, and social.

In the case of the health sector, for example, whether in response to COVID-19 or building its resilience to the impacts of climate change, countries recognize the importance of a greater number of well-equipped medical facilities, better risk communication strategies, more health professionals trained in crisis response, more and better disease surveillance, and need functioning early warning systems.

CALHAU
SÃO VICENTE ISLAND

Gaps and needs for greater climate resilience

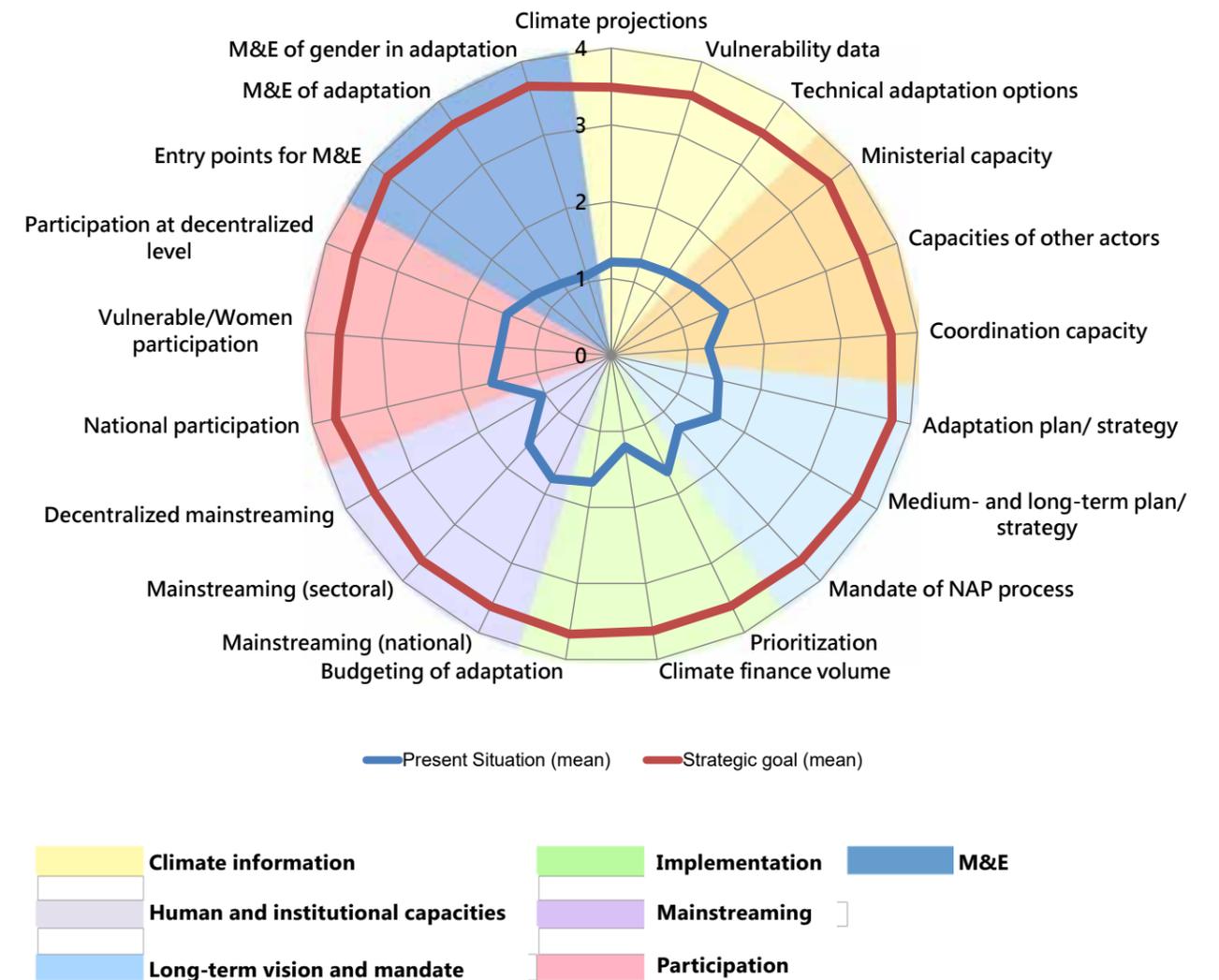
The identification of gaps and needs associated with the process of building greater climate resilience and the design of the NAP was done through stakeholder consultation using two tools: the SNAP – Balance Sheet, and the Strengths, Weaknesses, Opportunities and Threats – SWOT.

Regarding SNAP, developed by the German cooperation – GIZ, it is applied through a questionnaire that has three questions around each of the seven success factors for adaptation. This questionnaire was answered by 63 (sixty-three) representatives from various institutions who were interviewed in the context of the preparation of the NAP.

Analysing the diagram in Figure 10, the main gaps can be identified by the large distances between the current situation – represented in blue, and the strategic objective – represented in red. The main gaps identified by the interviewees are related to the capacity to integrate issues related to climate adaptation and vulnerability reduction in decentralized planning, the limited amount of existing and accessed climate finance, the lack of a medium and long-term

mandate for adaptation, poor coordination of these issues and low capacity to monitor and evaluate adaptation actions. The NAP will try to address these gaps in order to fill them

FIGURE 10
SNAP TOOL APPLICATION RESULTS



The result of this exercise is shown in Figure 11 and Figure 12. The main problems mentioned by the participants were:

1. Risks related to the drought trend and its effects in terms of availability of water in quantity and quality for agriculture and human consumption and its negative effects on gender inequality and disparities of the most vulnerable, and
2. floods caused by heavy rainfall, sea-level rise, and storms in the coastal and urban context with the loss of livelihoods, homes, human lives and energy facilities and the effects on human health associated with vector diseases and inequality of gender and the most vulnerable groups.

The activities that can contribute to the identified results and, ultimately, the intended ends are provided below in the form of strategic adaptation actions and associated measures.



FIGURE 11
TOC DIAGRAM
ON WATER SHORTAGE

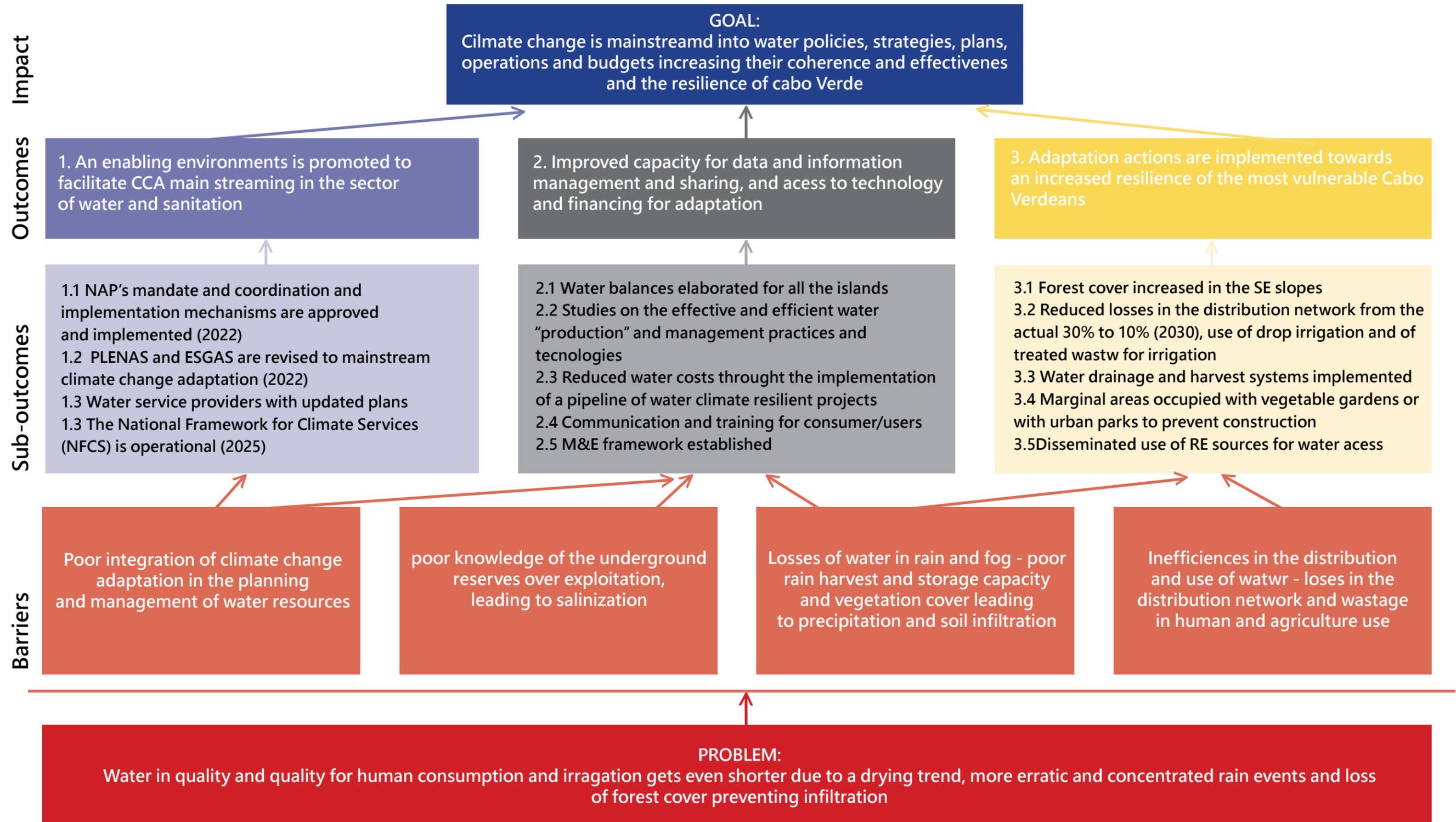
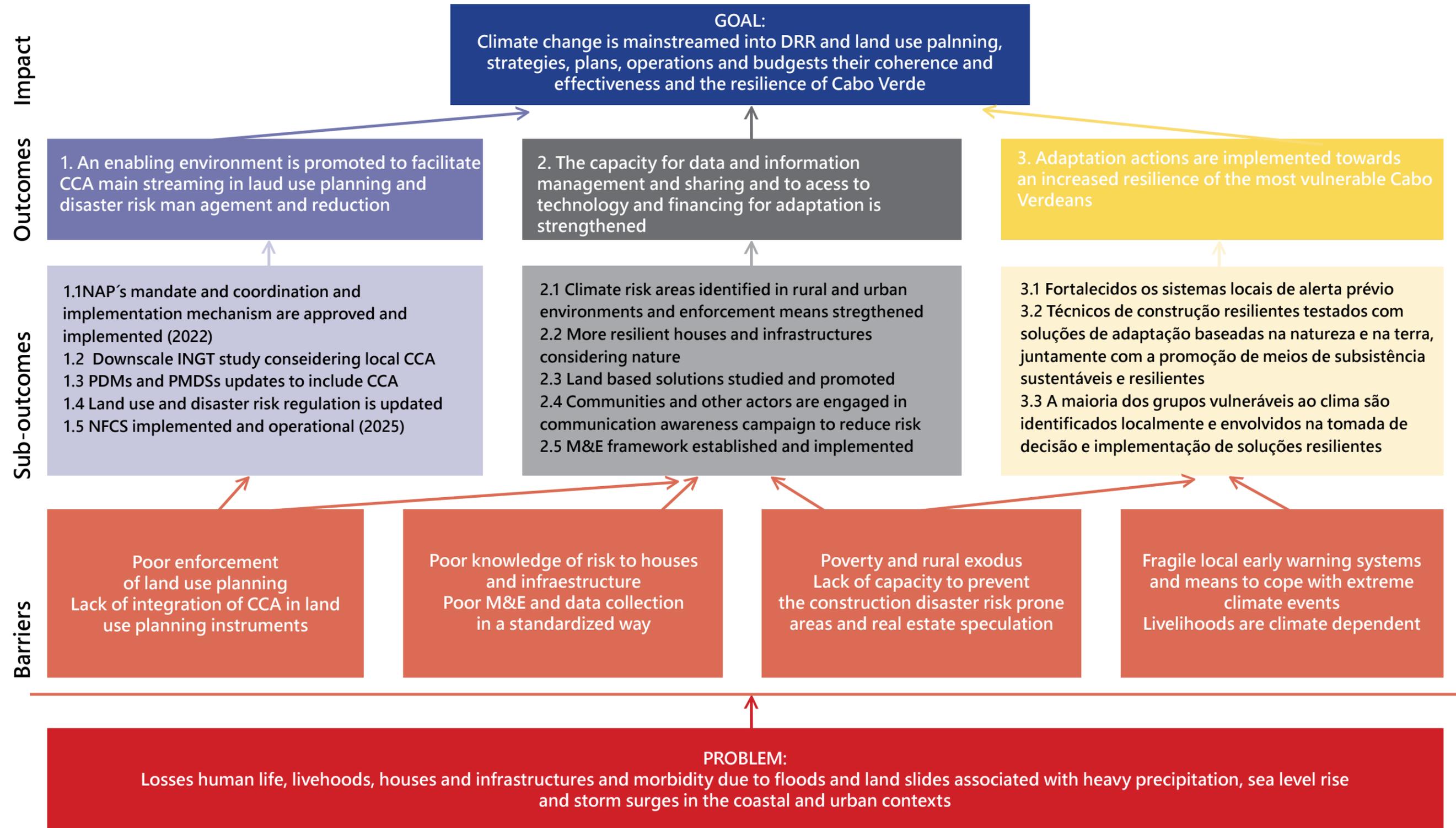


FIGURE 12
TOC DIAGRAM LOSSES OF LIFE, LIVELIHOODS, HOUSES AND INFRASTRUCTURES AND MORBIDITY



ESTROPIADA
CALHAU SÃO VICENTE ISLAND

Cabo Verde's national adaptation plan

MANDATE

The NAP' s mandate is implicit in the Cabo Verde National Development Strategy – Cabo Verde Ambition 2030 (Governo de Cabo Verde, 2020):

“Current climate scenarios point to not very significant changes in relation to other regions of the world, but the future impacts of climate change will tend to affect across the entire territory in a different way and the various strategic sectors, thus requiring the implementation of policies of mitigation and adaptation that ensures the safety of people, activities and goods, and at the same time allows for greater resilience of the national economy.

Still, climate change should be seen as an opportunity to increase the efficiency in the use of resources, namely water, energy, and soil, also to modernize the country and make it as sustainable as possible in the future.

Thus, the recommended Strategic Vision is: By 2030, Cabo Verde will minimize the impacts of climate change through planned and concerted actions at all levels and will be a safe small island state,

with all the necessary favourable capacities to take advantage of the opportunities provided by climate change to become more sustainable, innovative and resilient” .

This vision is materialized in the second axis: “Effective planning, research and adaptation action at the National and Local levels (Adaptation):

- Develop and implement coordinated responses to climate risk, when necessary, and take appropriate measures to prevent and minimize the damage that climate change can cause or take advantage of opportunities that may arise and
- National and local adaptation must immediately consider the vulnerabilities of each sector and territory, based on sectoral strategies, seeking not only to increase resilience and sectoral capacity to deal with climate change, but also to ensure that the objectives are met. of adaptation are considered more broadly, integrating them into the various sectoral and local policies of the territory.”

Accordingly, the NAP is also referred to in the Nationally Determined Contribution – NDC (Government of Cabo Verde, 2021) as Cabo Verde’ s climate adaptation and resilience priority aligned with national, sectoral, and local development policies as included in the Cabo Verde Strategy. Resilience and Climate Action 2020-2030, within the framework of Ambition 2030 and the National Strategy for Disaster Risk Reduction. In addition to the more specific adaptation goals presented below, Cabo Verde commits to submit, in 2022, a National Adaptation Plan (NAP) to climate change to the UNFCCC, based on the adaptation objectives of the NAPA (2008-2012) and of the NDC.

The National Directorate for the Environment (DNA) is the government entity in charge of coordinating and facilitating the development

of the NAP, with the support of Luxembourg Cooperation.

The process was conducted on the basis of extensive stakeholder consultations, involving public and private entities and representatives of civil society and the private sector, including the media.

An inclusive approach to the development of the NAP helped ensure that it has practical value in terms of technical validity, acceptance, and legitimacy among the many stakeholders in adaptation. It also supported institutional learning, improving the flow of knowledge from practitioners and implementers to policy makers. In addition, it supports the fulfilment of the existing policy that requires the strengthening of partnerships at all levels to build resilience and shape the future Strategic Plan for Sustainable Development (PEDS) and the implementation of the NDC, sector policies and business plans, supporting the increase country resilience through the medium-term planning process.

VISION

Cabo Verde is prosperous, happy, and resilient to climate change through an inclusive society and a regenerative economy in all sectors of activity.

According to Ambition 2030, by 2030 Cabo Verde will minimize the impacts of climate change through planned and concerted actions at all levels and will be a safe small island state, with all the necessary capacities to take advantage of the opportunities provided from climate change to become more sustainable, innovative, and resilient.

MISSION

Reduce the vulnerability of Cabo Verde’ s ecosystems and economy, improving the quality of life of its people, through the

implementation of transformative adaptation measures that also promote the regeneration of the economy towards a less polluting form, aiming at sustainable development, with participation active from all sectors of the socio-economic.

PRINCIPLES

The guiding principles of the NAP are based on the UNFCCC and were agreed in Decision 5/CP.17, reflecting an ongoing national-level planning process with updates and iterative results. This country-owned and country-driven process is non-prescriptive and flexible and based on the needs of the country.

In addition, the NAP is based on the NDC and the Sendai Risk Reduction Framework and includes the following additional principles:

- Proactive/Preventive Character – demonstrate leadership and pioneering spirit at the expense of a reactive attitude
- Social equity – recognition and respect for human rights and the fact that all citizens, regardless of their social status, must carry out specific actions to adapt and mitigate climate change, while respecting the cultural diversity that characterizes Cabo Verdean society
- Equality – of rights, opportunities and challenges between men and women in all domains of political, social, economic, and cultural life, regardless of colour, race, sexual orientation, ethnic or geographic origin, place of birth, religion, degree education, socioeconomic status, profession, party affiliation and political belief
- Parity – the Plan is based on the principle of equality between men and women, with a view to ensuring the representation of women in decision-making and climate change management bodies
- Sustainability – the need for interventions on climate change to be sustainable from an economic-financial, environmental, social, and cultural point of view

- Transparency and participation – the need to provide information, accountability, and adequate response to the different actors in the context of climate change, seeking that the Plan's implementation process is inclusive, participatory, and comprehensive
- Institutional cooperation – between public and private entities and civil society, in the exchange of information and the application of human and material resources in order to increase the country's climate resilience.

OBJECTIVES

Responding to identified gaps and needs, the NAP CV has three main objectives:

1. Create an enabling environment to facilitate the integration of adaptation into planning and budgeting
2. Improve the capacity to manage and share data and information, access to technology and finance for adaptation and
3. Implement adaptation actions for greater resilience of the most vulnerable.

A successful NAP is one that creates the conditions for its own extinction. It is expected that within a few years, the various sectors, public and private organizations, and civil society entities will fully and automatically integrate adaptation into their planning, operations and budget and that Cabo Verde will be a resilient nation.

PILLARS

The three pillars that support the objectives of the NAP CV are:

1. Institutional framework
2. Knowledge, technology, and financing and
3. Resilience of the most vulnerable.

FIGURE 13
FARMER FROM THE TCHON
D' HOLANDA' S COOPERATIVE, SÃO VICENTE



ALIGNMENT WITH DEVELOPMENT AND SECTORIAL STRATEGIE

NAP is fully aligned with development. The document considered the Ambition 2030, the PEDS, the various strategies and sectorial plans in force, having been prepared based on the identification of actions that in its calculation were already planned and the purpose of decentralization.

The country is preparing the strategic sustainable development agenda, “Cabo Verde Ambition 2030”, which has the Sustainable Development Goals (SDGs) as its main reference, and the PEDS 2017-2021 as its base, and thus values the structural choices included in that plan strategic, whose vision is consolidated in the horizon 2030.

Ambition 2030 devotes special attention to the challenges that determine the continuation of the path to sustainable development, namely Cabo Verde’s dynamic insertion into the world economic

system, energy transition, economic diversification, sustainable tourism, the blue economy, resilience country’s climate, digital economy and innovation, smart agriculture, decentralization, regional development and convergence, health and, in short, the development of human capital and new partnerships for sustainable development.

It is also a superior instrument for aligning political subjects and social actors, guiding the next national, municipal, and regional strategic plans, but above all a long-term reference for the State, the private sector, civil society, and development partners and, thus, support strategic dialogue for the sustainable development of Cabo Verde.

Ambition 2030 defines in one of its strategic objectives (objective 5) the promotion of sustainable management of the territory, facing climate change and creating resilience with a climate resilience and action strategy with a very well-defined vision so that by 2030, Cabo Verde can “minimize the impacts of climate change through planned and concerted actions at all levels and will be a safe small island state, with all the necessary capacities favourable to seize the opportunities provided by climate change to become more sustainable, innovative and resilient”.

In the context of National planning, the PEDS identifies climate resilience as one of the four main challenges to sustainable development in Cabo Verde. The PEDS, as a policy planning document based on the Government’s Program for the IX Legislature (2016-2021), identifies vulnerability to climate change and environmental fragility as constraints to sustainable development and defines supported policy guidelines to align efforts by Governments to make the country more resilient to climate change by strengthening the

institutional and legal framework to ensure risk-informed sectoral and territorial planning and increase financial capacity to manage impacts associated with climate shocks and disasters.

The policy reforms included the aim to increase long-term resilience and the ability to recover from the adverse impacts of disasters, thus helping to support the sustainability of the development program and the government's efforts to eliminate extreme poverty and increase shared prosperity.

The country intends to have three PEDS by 2030, namely 2017-2021, 2022-2026 and 2027-2031. PEDS 2022-2026 is the vehicle to carry out the first stage of the journey towards greater integration of climate resilience into development through the NAP process.

In a futuristic vision, entry points for greater climate resilience were identified in the main sectorial planning instruments (PLENAS, ES-GAS, POT and others), territory management (POOC) and local (PDMs and PMDS), proposing their review including specific recommendations for greater climate resilience.

FIGURE 14

ARCHITECTONIC DETAIL FROM TERRA LODGE,
MINDELO, SÃO VICENTE ISLAND



CLIMATE GOVERNANCE AND INSTITUTIONAL ARRANGEMENTS

Given the cross-cutting nature of climate change and specifically adaptation, various sectors participate in the planning and implementation at different levels (from local to national) of short, medium, and long-term measures to respond to the challenges they impose.

Thus, there is a need to ensure an effective coordination mechanism that guarantees the maximization of synergies and the filling of gaps between sectorial responses, enabling effective communication and information flow to meet the various needs. It is important to note that, in addition to coordination, it is necessary to facilitate the management of resources and adequate monitoring and evaluation of the progress made over time.

The NDC institutes the reform of climate governance between 2021 and 2023, and there is already support for the strengthening component of this same governance.

Notwithstanding and considering the challenges still present to ensure the implementation of the NAP's objectives, five functions are elected as priorities, namely: (i) coordination, (ii) strategy definition, (iii) operationalization, (iv) monitoring and assessment and learning and (v) support.

COORDINATION

DNA, as Designated National Authority for the UNFCCC and leader of the Climate Change Committee created in 2008, is the coordinating institution of climate change policy at the national level.

Within the Ministry in charge, there are also other entities with mandates related to the subject, such as the INMG, responsible for the climate services framework, for the collection, compilation and treatment and monitoring of meteorological, climatic, and geophysical variables and the focal point of the UNFCCC, of the IPCC and the Adaptation Fund (see monitoring and evaluation) and the Environment Fund (see support).

In the Ministry of Finance, the DNP is the Designated National Authority for the Green Climate Fund (GCF).

In the context of the NDC, the creation of a Public Authority (Agency or Institute) for Climate Change – APMC is proposed. This should also act as secretary to create the National Climate Council (CNC) and coordinate and facilitate the inter-institutional liaison on climate change and specifically on adaptation, prepare annual programs and work plans on climate change, monitor the implementation of the NAP, provide technical advice on climate change projects and

programs financed through the funds of the multilateral environment agreements and bilateral support, when requested.

The APMC is also expected to participate in the coordination of the NAP at the local level, interacting with the 22 municipalities and local DRR platforms.

APMC will work closely with the DNP to ensure that climate change and particularly adaptation is integrated into national and local level planning platforms and into budgeting processes at all levels, as well as in mobilizing resources for NAP implementation (see International support).

DEFINITION OF CLIMATE POLICY IN AN INCLUSIVE WAY

As proposed in the NDC, the nucleus responsible for defining climate policy is the CNC, co-chaired by the Ministries that have Finance and Environment in their attributions and composed of public and private sector entities and civil society representatives called to intervene in increasing climate resilience.

The Council formulates climate policy, adopts the national climate strategy, including for finance, with a view to transposing the Paris Agreement, in line with national development goals. The Council coordinates the transposition of the Agreement into national planning, sectoral policies and budgets, and into bilateral and multilateral climate cooperation programmes. It also defines support programs for international funding, sets national and local project eligibility criteria for climate finance, and selects indicators to monitor progress.

The Council articulates between the operational and civic levels of climate governance and provides guidelines for enhancing civic

climate empowerment. Its work will be based on the recommendations of the Civil Society Forum. The Council may form sub-working groups and seek support from other advisory bodies.

The Forum aims to strengthen civic action on climate and promote citizen involvement in changing social values and is mandated by the Council to participate in climate policy definition and monitoring and in the long-term development of low emissions 2050.

Participation in the Forum is open and voluntary, addressed to all citizens, such as individuals or associations, scientific and academic bodies, training institutions, cities, NGOs, parliamentary committees, press, private sector commerce, companies and professions, engineering representations and architecture, etc.

The culmination of the Forum's work is the Cabo Verde Climate Forum National Conference. This should be instituted and operationalized, being seen as an instrument to support climate governance, articulating the performance of civil society and government representatives, in a dialogue that aims to raise awareness and mobilize society to discuss and take a position on the problems, challenges and solutions regarding climate change and the country's resilience.

The Forum cultivates a pluralistic exchange in which different points of view are freely expressed and debated, based on mutual respect, with the purpose of providing citizens and, in particular, strategic agents, a space for knowledge and sharing of information about climate policies and analytical tools for the development of mitigation, adaptation and resilience policies and, inherently, sustainable development.

It is proposed that the Forum be streamlined by DNA and DNP and mandated by a National Council, which will have the role

of coordinating and operationalizing the entire structure, logistics, budget, organization of events and the monitoring and evaluation of their activities.

The Board must open doors to a broad involvement of partners who, according to their interests, competencies, and areas of action, contribute to the Forum's activities and the definition of its annual activity plan.

Regulation of the Forum must be defined and approved at the governmental level, considering all aspects of its functioning and operationalization.

The Forum should bring together representatives of different stakeholders in the climate problem such as individuals or associations, national, sectoral, or local public policy makers, scientific and academic bodies, training institutions, municipalities, NGOs, parliamentary committees, press, private sector, companies, representations of professional orders, among other actors.

Throughout the year, it is proposed that decentralized and sectoral Climate Dialogues (DC) be held on relevant issues related to adaptation (and mitigation) to different sectors, based on the action priorities defined in the activity plans. These can take place in face-to-face and digital formats.

Following the organization of the Climate Dialogues, the National Conference of the Cabo Verde Climate Forum will be organized annually, an event structured in thematic subgroups, which report to the plenary, and which will result in concrete recommendations for national public policies and targeted responses to climate change to the Government, preferably before each Conference of the Parties to the UNFCCC and in time to issue a Cabo Verdean Civil Society Manifesto on Climate Priorities.

The Forum is articulated with the other instances of climate governance in the country, aiming in a consultative manner to produce far-reaching guidelines, leaving the strategic decisions and definitions to other executive instances.

GREATER AND BETTER PARTICIPATION OF THE MOST VULNERABLE

Economic and social data indicate that climate change particularly affects women and single-parent families represented by women, children, and elderly people in disadvantaged situations, such as people with disabilities, who have less adaptive capacity, as they have more difficulties in accessing financing, market and assistance services related to entrepreneurship, access to information, and others. In the case of women, the jobs they occupied also tend to be more precarious.

This portrait highlights the need for specific and transformative programmatic interventions aimed at empowering populations in the face of possible climate crises and interventions and reforms at the level of institutions and that permeate sectoral programs aimed at a holistic participatory integration of everyone in their respective context.

Successive droughts, salinization of the soil along the coastline as a result of reduced precipitation as well as inert extraction activities, the creation of illegal neighbourhoods, partly as a result of the rural exodus, make up the large vulnerable population that certainly suffers and/or will suffer from climate change.

The government, in partnership with NGOs and with the support of international cooperation, has taken a series of interventions aimed at strengthening the capacity of populations to increase their adaptive and emergency response capacity, ranging from capacity

building and training actions as well as support for material level aimed at improving living conditions.

However, there is a need to institutionalize actions with specific programs that guide a culture of institutional intervention in relation to possible crises that serve to alleviate the vulnerability of the most vulnerable groups.

Examples include the local diagnosis of risks and those most affected, consultation to determine their specific needs in terms of climate resilience and implementation of concrete actions to meet them.

Advocacy actions should also be taken with these groups and the institutions that represent them. Integrating the needs of the most vulnerable into decision-making and, subsequently, planning and budgeting at the sectoral and local levels is thus key to greater country resilience.

Below is a set of recommendations to ensure greater participation of groups most vulnerable to climate change in Cabo Verde's adaptation process:

- Develop tools to support the mainstreaming of gender and issues related to vulnerable groups (gender assessment guides, participatory methodology, use of a gender marker, checklist of projects/programs) for technicians and train them in their use
- Train the technicians of the various institutions in the preparation, implementation and M&E of environment and disaster risk prevention projects sensitive to gender and vulnerable groups (practical training from projects in portfolio), in management based on results and development of gender-sensitive logical frameworks.
- Monitor ongoing and future planning processes (e.g., updating the NAP and others) ensuring the integration of social and gender issues

- Continue the integration of social and gender issues in programs and projects for disaster risk reduction, resilience, and mitigation of the effects of climate change
- Ensure the inclusion of gender-sensitive socio-economic analysis and vulnerable groups in crisis adaptation plans, at the macro, meso and micro levels, and clarify mechanisms, strategies, and interventions in response to identified gender challenges, and indicators/targets for monitor progress
- Generalize the assessment of social and gender impacts in post-disaster responses to all related and involved actors and sectors
- Ensure a sensitive follow-up to social and gender issues of populations in areas most exposed to risks and assessment of the impact of disasters.
- Deepen the approach to gender and vulnerable groups in initiatives to combat rural poverty and food and nutrition insecurity (gender analysis, gender-sensitive and/or targeted strategies, gender-sensitive follow-up and assessment).
- Introduce the gender and vulnerable groups approach in initiatives to promote tourism and related areas – agribusiness, creative industries, green economy, etc. including in the respective value chain studies considering rural, urban, and peri-urban areas.
- Raise awareness and train associative leaders on climate vulnerability and the participation of the most exposed and sensitive groups in decision-making
- Ensure equal opportunity for vulnerable groups to participate in adaptation and disaster prevention actions
- Strengthen the capacities of institutions responsible for and involved in post-crisis management, to consider social and gender issues in a transversal way

- O Improve social and gender mainstreaming in sectoral Policies and Plans during the next reviews
- Establish working relationships with entities promoting gender equality and inclusion of vulnerable groups and/or a working group within the scope of the Gender Commission (CG) on environment, agriculture, energy, water, sanitation, for technical inputs and participation in validation of adaptation and disaster risk reduction policies and programs
- Establish a collaboration protocol between DNA and ICIEG in the context of the implementation of social and gender dimensions within the framework of the implementation of the NAP and
- Compile practices and instruments applied to integrate social and gender concerns in adaptation projects and programs.

COMMUNICATION AND MOBILIZATION FOR CLIMATE RESILIENCE

Recognizing that communication is essential for the mobilization of various actors for action to strengthen climate resilience, a communication plan was drawn up and is now summarized.

The communication plan informs and explains the global adaptation strategy, highlighting priority measures and respective options, involving society in a common vision of the archipelago and empowering people and communities, making them part of the solution and intending to respond to the objectives, climate challenges and opportunities reflected in the country's main strategic documents, such as the reduction of social and economic distance between rural and urban environments; integration of innovation with ancestral knowledge; bioclimatic promotion, rehabilitation and construction; focus on the most vulnerable populations, leaving no one behind; increasing civic participation, helping to lay the groundwork for a

future climate forum; identification of ambassadors and guardians, national and in the diaspora.

Along with the collection and analysis of data - critical for governance, the plan reflects good practices and consultation in strategic sessions with stakeholders and should be seen as an integration tool for central government, managing information flows on the issues of climate change as a cross-cutting discipline across all ministries, bridging knowledge sharing with municipalities and other institutions at national and regional levels.

The plan uses a combination of classic and digital tools, with a creative approach, centred on the human being, extolling their individual talent, but above all stimulating the collective's potential, through strong partnerships. Cabo Verde can take the lead in building resilience among developing countries, through its culture and traditions, but also through its openness and attitude towards innovation, digital and energy transition, through the adoption of new and simple technological devices and taking advantage of technical preparation of its staff.

The strategy defined for the communication plan was to find accelerating instruments for the involvement of society as a whole, identifying innovative ways and for everyone's participation, through the integration of the various target audiences in groups and communities, and using simple, effective and credible broadcasting vehicles for the message. From activism to tactical urbanism, from ecodesign to brand building, from creative laboratories in co-working spaces to pilot experiences in communities or competitions with gaming formats and climate challenges

for learning with entertainment, so that we can find in the new generations the inspiration and visions of a promising future.

The plan was designed to reach everyone, including people with physical or mental disabilities. Tools such as sign language or Braille will be used in the main multimedia campaigns aimed at the population, as well as in participatory events with communities.

In order for the NAP to go even further, it is proposed that its executive summary be translated into Braille and sign language. A podcast can also be produced.

TABLE 4
SUMMARY OF THE MAIN INITIATIVES
OF THE COMMUNICATION PLAN

Initiatives	Target	Communication tools	Description
Manifest	Civil society Schools, universities Business-related to tourist activity Restaurants Tourists	Multimedia campaign Large format outdoor advertising Outdoors Communication by ambassadors, guardians, and influencers	Communication piece centred on 10 adaptation actions that multiply over time and in different formats, with content appropriate to different segments
Contests			
Elementary schools competition	Primary school students (8-12 years)	Educational TV National radio Community radios Regional media Local medial Social networks Outdoor advertising	Invites children to imagine a planet in balance compared to a planet affected by climate change. Reproduction of the drawings on murals, represented by local artists, in an inter- island urban art roadmap
Secondary school competition	Secondary and vocational education students		The goal is to sensitize young people to the climate emergency through a game where they will respond to various challenges and in which the involvement of the

Initiatives	Target	Communication tools	Description
Secondary school competition			entire community will be necessary
Secondary/ Vocational and Generation Youth Competition	Secondary, vocational and education students (young people who neither study nor work)		Objective to encourage young people's interest in reviving good ancestral practices with innovation, such as the areas of regenerative agriculture and fishing, allowing the winners to continue their studies through scholarships in areas crucial to the country's development, with specialized staff
Laboratories			
Creative laboratories	Start-ups Academy ADCs General population (communities)	Information brochures Official websites Campaigns on social networks Outreach and recruitment on radio and TV programs Public notices in city councils	Creation of co-working spaces, designing and testing programs that combine innovation with the most important sectors of employability in the green and blue economy:

Initiatives	Target	Communication tools	Description
Creative laboratories			regenerative agriculture and fishing; bioclimatic construction; craftsmanship; tourism; gastronomy/hotels; traditional family business
Living laboratories	Most vulnerable population with disabilities Women and youth from fishing, agricultural, coastal, and rural communities Conservationists, tour guides, fauna, and flora observers Extreme sports on land and water, artisans, chefs, architects Design, engineering, technology Health Students from all related fields	Artivism Eco-design and branding Tactical urbanism Rubric in television and radio Documentary Campaigns on social networks Outdoor advertising Exhibitions Communication by ambassadors and influencers	Implementation of innovative experiences within the adaptation measure 10-pilot projects, which may be replicated in other municipalities. Areas: biodiversity; agriculture; health, bioclimatic construction; environmental education
Events and festivals			
Climate change programming in existing events	Event organizers festival-goers	Social networks Outdoor advertising National radio, community radios	Add specific themes about climate change to the general schedule of the main events of the annual calendar, increasing

Initiatives	Target	Communication tools	Description
Climate change programming in existing events			awareness and creating a climate culture in the population
Cinema cycle on climate change	General population, focusing on young people Film directors and producers		Expand the audience through greater proximity to outdoor spaces, creating opportunities for new talents in the area of filmmaking and production, creating a greater offer, and diversifying the themes
Information sharing			
Information sharing, integration, and fluidity in communication	Policymakers	Digital platform Work sessions for presentation and training on the platform Focal points in ministries, municipalities, civil society entities Professional profiles with simultaneous competence in communication and climate change	Creation of a digital platform dedicated to climate change that ensures internal and external communication, through simple and clear procedures, integrating all political actors

Initiatives	Target	Communication tools	Description
Other forms of civil society participation			
Creating partnerships	Civil Society Organizations (CSOs) Civil society	Mobile communication units Theatre	Creating robust partnerships, maximizing financial and human resources and encouraging regular integrated and collaborative actions focusing on climate change: data collection, systematization and sharing; monitoring and measuring impacts that ensure the completion of each action. Marketing, communication, design, and digital marketing workshops to build strong brands
Creating strong brands	ADCs Small business	Workshops	Design of marketing, communication, design, eco-design, digital marketing workshops to build strong brands
Participatory budgeting	OSCs Civil society	Regional media, local media, and community radios Social networks Clarification Sessions	Bringing civil society organizations and citizens closer to political power, creating a participatory

Initiatives	Target	Communication tools	Description
Participatory budgeting			budget focused on climate change, which will establish an open diagnosis, ensuring the opportunity for active civic participation
Promotion of debates and clarification sessions	Religious leaders Community leaders	Regional media, local media, and community radios Social networks Debates and Clarification Sessions Speeches Public Policy Documents	Involve and empower religious and community leaders on the crucial issues of climate change so that they can simultaneously be an accelerating and reliable vehicle for their communities

OPERATIONALIZATION

The operationalization of the NAP will be carried out by all actors, at various spatial, sectoral, and temporal levels.

In this regard, DNP stands out, for the integration of adaptation in the planning and budgeting process of national and local development, DNA, INMG, responsible for the Climate Services Framework, the National Civil Protection and Fire Service (SNPCB) responsible by the early warning component at national and local levels and by local DRR platforms, municipalities and other sectors and actors, from the public and private sector and civil society that may integrate adaptation into their planning, budgeting, practices, routines and business plans.

To facilitate this operationalization, it is intended to strengthen through human and institutional capacity and climate communication.

The two NAP implementation plans are defined for five-year periods: 2021 to 2026, and 2026 to 2030, and it is expected that by 2030 the integration of adaptation into the various other planning instruments will be fully completed.

MONITORING AND EVALUATION TOWARDS LEARNING

DNA, as Designated National Authority for the UNFCCC and leader of the Climate Change Committee, created in 2008, is responsible for climate communication under the Convention and for the transition to the ETF. DNA is responsible, together with the National Planning Directorate (DNP), for coordinating the technical and sectoral implementation of the NDC and the NAP.

To this end and with the support of international climate partners,

the Government will create the Department of Climate Action (DAC). The Department will be structured into a mitigation arm (responsible for GHG inventories and reporting) and an adaptation arm (responsible for both planning and monitoring adaptation). It will be responsible for accounting the technical and sectoral indicators to monitor the progress of the CND and PNA, as a basis for preparing the communication/national reports to the UNFCCC. In coordination with the DNP, the Department will be responsible for the gradual implementation of the Enhanced Transparency Framework, in accordance with Article 13 of the Paris Agreement.

The DAC will closely interact with the 22 municipalities and support the technical implementation of national climate planning and policies in Municipal Master Plans (PDMs), Municipal Sustainable Development Plans (PMDS) and other planning and budgeting processes, with a view to integrating climate change and local resilience. It will also interact with local RRD platforms.

The Department will assist national agencies in their efforts to prepare for climate finance and will support project promoters with the development of climate projects or financing proposals to international climate financiers, in accordance with the strategy and criteria established by the National Council of the Climate.

The NAP M&E will be carried out in accordance with a system to be defined and will be a subsystem of the follow-up to the NDC implementation.

INTERNATIONAL SUPPORT

As mentioned in the NDC, the DNP is a central service whose mission is to support the Government of Cabo Verde in the definition and preparation of the national development planning strategy, as well as coordinating the preparation, implementation, monitoring

and evaluation of the national strategy document for development. DNP leads the Interministerial Committee for the Coordination of Climate Funds established in 2019 and is therefore responsible for coordinating the International Climate Financing (ICF). DNP is responsible, together with DNA, for coordinating the financial planning and implementation of the NDC and the NAP. DNP will integrate climate planning into the next PEDS in order to align it with the NDC and the NAP and is also responsible for the transposition of national climate planning to the municipal level.

The DNP, as the Designated National Authority for the Green Climate Fund (GCF), is the Government Directorate mandated and authorized to carry out specific financial transactions with other countries on behalf of the Government. It mobilizes ICF and negotiates specific bilateral financial transactions, coordinates their flow in alignment with national climate strategy and planning, and manages the database of projects eligible for national and international climate finance.

To this end, DNP will have its Resource Mobilization Service, an internal unit whose task is to monitor and coordinate with different government institutions the disbursement and monitoring of international funds and centralize information, making it possible to evaluate the results and monitor the implementation of the commitments.

This is not to say that other entities cannot mobilize climate resources. Table 5 shows examples of actions that the various actors can implement.

TABLE 5
EXAMPLES OF ADAPTATION ACTIONS
TO BE IMPLEMENTED BY DIFFERENT ACTORS

Organ/Sector	Actions
Government (Ministries, Municipalities)	<ul style="list-style-type: none"> Definition of policies, regulations, technical standards in line with climate change Facilitating and harmonizing the integration of the public, private, civil society sectors Project design and implementation, adaptation and climate risk reduction actions, mitigation and low-carbon development, and cross-cutting issues Promoting the coordinated implementation of impact reduction activities through the incorporation of adaptation aspects in the PEDS and PMDS
Private sector	<ul style="list-style-type: none"> Project implementation and fund mobilization Support to the Government in the implementation of activities on cross-cutting issues Technical support for the design and implementation of sectoral policies and measures It can be an example by integrating climate change risks into business plans with a view to creating greater resilience and security for investments Industry leadership role in introducing/disseminating best practices
Civil society	<ul style="list-style-type: none"> Implementation of adaptation and mitigation activities at the community level Empowerment of communities Mobilization of funds for project implementation Monitoring NAP implementation as an independent observer
Media	<ul style="list-style-type: none"> Dissemination of information on good practices for reducing vulnerability Translation of adaptation materials into common language Transmission of information from the early warning system at all levels
Community-Based Organizations	<ul style="list-style-type: none"> Transmission of local and ancestral knowledge about observations of climatic phenomena, adaptation mechanisms to extreme climatic events

Órgão/Setor	Tipo de ações a serem implementadas
Community- Based Organizations	<p>Integration of ancestral knowledge and state-of-the-art technology at low cost and maintenance to increase resilience</p> <p>Facilitating the interaction between scientific knowledge and local knowledge</p> <p>Support and cooperation in the implementation of programs and projects</p> <p>Proposing and supporting the implementation of adaptation measures</p>
Academy and Research Institutes	<p>Development and inclusion of adaptation in education curricula</p> <p>Development of research programs and systematic observation, including standardization of methods and data quality</p> <p>Systematization and documentation of scientific, technical, and local knowledge about climate change</p>



STRATEGIC ADAPTATION ACTIONS

As referred above, effective measures to adapt to climate change and reduce the risks associated with climate change can address all three aspects of risk: hazard, vulnerability, and exposure.

FIGURE 15
MAIN CLIMATE RISKS AND ADAPTATION PERSPECTIVES.

Small Islands				
key risk	Adaptation issues and prospects	Climate factors	Time frame	Risk and potential for adaptation
Loss of livelihoods, coastal settlements, infrastructure, ecosystem services, and economic stability (high confidence) (29,6 29,8, Figura 29-4)	- Significant potential exists for adaptation in Islands, but additional external resources and technologies - Maintenance and enhancement of ecosystem functions and services and of water and food security - Efficacy of traditional community coping strategies is expected to be substantially reduced in the future		Present	Very low, Medium, Very high
			Near term (2030-2040)	Very low, Medium, Very high
			Long term 2°C (2080 2100) 4°C	2°C, 4°C, Very low, Medium, Very high
The interaction of rising global mean sea level in the 21st century with high-water level events will threaten low-lying coastal areas (high confidence) (29,4, Tabela 29,1; WGI ARS 13.5)	- High ratio of coastal area to land mass will make adaptation a significant financial and resource challenge for islands - Adaptation options include maintenance and restoration of coastal landforms and ecosystems, improved management of soils and freshwater resources, and settlement patterns		Present	Very low, Medium, Very high
			Near term (2030-2040)	Very low, Medium, Very high
			Long term 2°C (2080 2100) 4°C	2°C, 4°C, Very low, Medium, Very high

Source: IPCC, 2014



The vulnerability and exposure of societies and ecological systems to climate-related hazards constantly vary because of changes in economic, social, demographic, cultural, institutional and governance circumstances (IPCC, 2014). Figure 8 illustrates the adaptation issues and broad prospects that can reduce climate risk.

The identification of the actions resulted from the overlay of the NDC with *Ambição 2030* and from national sectoral inputs.

From the NDC, adaptation contributions and the actions related to transparency and governance in what regards climate change data, services and governance and climate empowerment compiled and added to actions of the mitigation contributions that could enhance resilience and adaptive capacity. This was cross-checked with *Ambição 2030* to see which pillar needed to be climate proofed and identify those which may not have been considered in the NDC.

That computation was cross-referenced with *Ambition 2030* to see which domains needed to see their resilience increased.

The result in terms of identifying adaptation strategies for the period 2021-2026 was organized in the strategic framework presented in Figure 16.

Next, the various strategic actions and their implementation plan are described.

FIGURE 16
NAP CV STRATEGIC FRAMEWORK

Objective	Pillar	Strategic Adaptation Actions (2021-2026)	Measures (M)		
			National Measures	Sectoral Measures	Municipal Measures
Create an enabling environment to facilitate climate change adaptation mainstreaming in planning and budgeting processes	Institutional framework	<ol style="list-style-type: none"> 1. Establishment of the institutional arrangements for the multi-sector coordination of CCA in Cabo Verde, including the definition of its composition and mandate 2. Testing and institutionalization of mechanisms to integrate CCA into the next “National Development Plan” or equivalent and sectoral planning instruments, including the annual sectoral budgets and guidelines 	M1.1		
			M1.2		M1.2
				M2.1	M2.2
	M2.3	M2.3			
Improve the capacity for data and information management and sharing, and access to technology and financing for adaptation	Knowledge, technology, and financing	<ol style="list-style-type: none"> 3. Development and implementation of a research programme on climate change impacts and CCA actions 4. Implementation of the climate education plan 5. Implementation of the climate capacity-building plan 6. Implementation of the climate communication plan 7. Operationalization of an overarching M&E framework 8. Elaboration and implementation of a resource mobilization plan 	M3.1	M3.1	M3.1
			M4.1	M4.1	M4.1
			M5.1	M5.1	M5.1
			M6.1	M6.1	M6.1
			M7.1	M7.1	M7.1
			M.1	M8.1	M8.1
					M9.1
Implement adaptation actions toward an increased resilience of the most vulnerable	Resilience of the most vulnerable	<ol style="list-style-type: none"> 9. Development of climate change adaptation planning tools tested in each of the ten islands in particularly vulnerable communities, demonstrating an integrating an adaptation approach in various sectors 10. Elaboration of a portfolio of climate change adaptation priority actions for the key sectors for the medium term with verification that each measure aligns with Ambition 2030 and sectoral strategies and plans in five pilot municipalities 	M9.1	M9.1	
					M10.1



COST AND BENEFIT

The estimated cost of implementing the NAP in the period between 2022 and 2026 is approximately €30,600,000 (thirty million and six-hundred thousand Euros). The forthcoming environmental, social, and economic benefits associated with the NAPs implementation are qualitatively described. Consulted stakeholders highlighted that quantifying or monetising some of the benefits could offer

an advantage in attracting co-funding or leverage political priorities. Costs and benefits of implementing the NAP were determined using a Cost-Benefit Analysis (CBA) based on literature review and stakeholder consultations, including the completion of an online questionnaire, workshops, and targeted interviews.

The online public consultation took place over a 16-day period. During this period, a total of 81 people responded. For actions 3,

4, 5, 6 and 10, more than 20 people indicated having experience in these actions and provided information on costs and benefits. For actions 1, 2, 7, 8 and 9, less than 20 people indicated having experience. Action 2 received the lowest number of responses, 12. It should be noted that not all participants completed all sections of the questionnaire, as they were asked to answer only those questions that were within their professional capacity. For each respondent, the online survey was considered complete whenever each selected action and associated questions were answered.

The estimated costs for each measure resulting from the responses to the questionnaire have been rounded and are presented in the implementation plan.

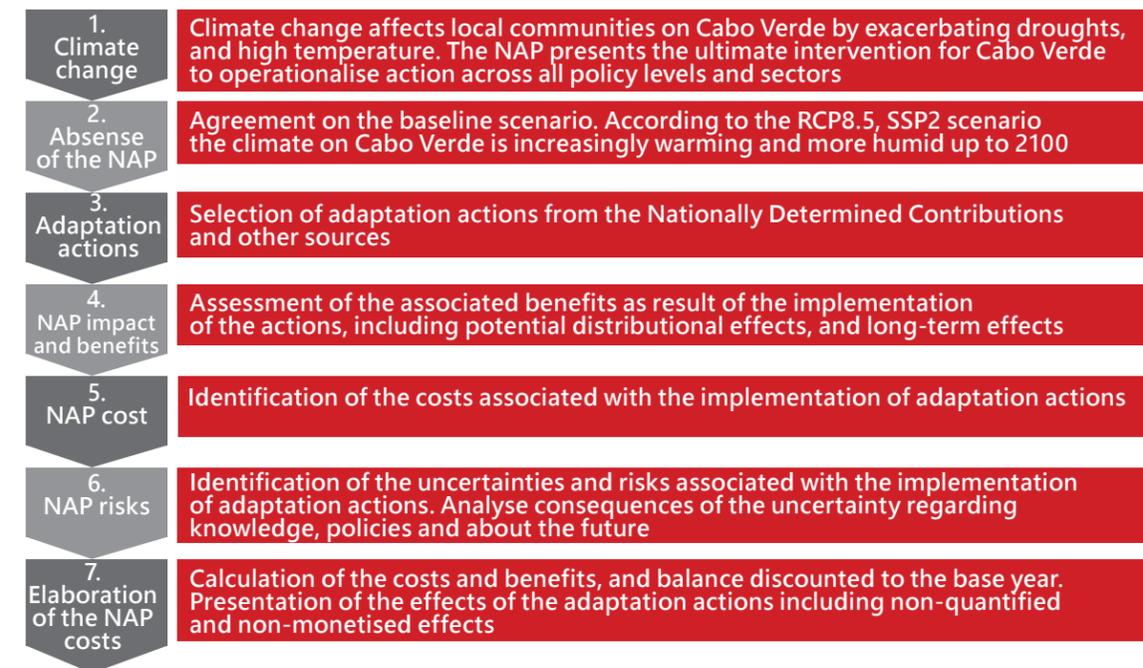
Drawing up this CBA proceeded in several steps. In general, the process can be broken down into the below steps, as depicted in Figure 17. The CBA is applied to the shortlist of actions that are proposed for the NAP and considers CVE/401 supported interventions, submission to GCF, Adaptation Fund, or other funding bodies in view of the identified adaptation needs and the capacity needs assessment.

The first three steps are the preparatory phase of the CBA. The core of the CBA is to determine the effects of the actions, its costs, and forthcoming benefits. These steps are described in steps 4 and 5. The analysis of risks and uncertainties is dealt with in step 6. The final step covers the requirements for presenting and the interpretation of the results in an overview of costs and benefits.

STEP 1: CLIMATE CHANGE

In previous chapters, *PRESENT AND FUTURE CLIMATE*, and *CLIMATE RISKS*, an assessment of the main climate vulnerabilities per island was completed preparing the ground of this CBA.

FIGURE 17
STEPWISE APPROACH
OF THE CBA



STEP 2: ABSENCE OF THE NAP

The NAP benefits are measured by comparing a baseline scenario without planned adaptation actions against a predefined climate scenario adopted from the Intergovernmental Panel on Climate Change (IPCC)⁹. The adopted IPCC climate scenario follows RCP8.5, SSP2, which is in line with the more detailed description found in chapter *PRESENT AND FUTURE CLIMATE*. In terms of interventions, the baseline scenario considers efforts made through the National Adaptation Programme of Action (NAPA) up to date. However, it does not include any implementation from the Nationally Determined Contributions (NDC)¹⁰ or other interventions.

STEP 3: ADAPTATION ACTIONS AND MEASURES

The proposed actions and subsequent measures outline the ultimate intervention to support Cabo Verde in developing adequate

planning capacity in preparing structural changes and adaptation. An elaboration of the proposed adaptation measures under each action can be found in the chapter on *IMPLEMENTATION, MONITORING AND EVALUATION PLAN*.

STEP 4: NAP IMPACT AND BENEFITS

A case study is selected to illustrate the narrative for the associated benefits resulting from implementing the NAP, aiming to link the measure's costs with its anticipated benefits, see Table 6. The case study also supports the CBA as many intangible factors like environmental externalities need to be considered, which in addition cannot be quantified. It will present an outlook and indication for the associated benefits resulting from the implementation of Measure 10.1 – the support of local adaptation, and the climate-proofing of the fisheries sector, which is the most important economic sector on Cabo Verde. It is important to note that every measure, to some extent, will have many direct and even more indirect socio-economic and environmental benefits, which at first glance may not be apparent.

SOCIO-ECONOMIC AND ENVIRONMENTAL BENEFITS ASSESSMENT FOR CABO VERDE FISHERIES: A CASE STUDY ON THE IMPLEMENTATION OF MEASURE 10.1 FOR THE MUNICIPALITY OF BRAVA

The municipal pilot study could focus on bringing added value to specific sectors like, e.g., fisheries through climate action as anticipated in Measure 10.1.

The measure is intended to support the pilot municipalities to adapt, ensuring economic and social stability while improving environmental conditions. The municipalities become more resilient to future weather extremes like droughts, heavy storms, or coastal flooding by enhancing soil health and water retention, reducing soil erosion and buffering shorelines, as well as enhancing food and nutrition security through diversified production systems and sources of income.

Investing in climate resilience, therefore, can yield a 'triple dividend' by (1) avoiding losses when disasters strike; (2) unlocking development potential by stimulating innovation and bolstering economic activity in a context of reduced climate-related background risk for investment; and (3) through the synergies of the social, environmental and economic co-benefits of disaster risk, and environmental management investments even if extreme events do not happen for many years (Tanner et al., 2015).

BENEFITS' ASSESSMENT

Investing in climate resilience can yield a "triple dividend" by (1) avoiding losses when disasters occur; (2) unlocking the potential for development by stimulating innovation and strengthening economic activity in a context of deep risk reduction climate-related fund for investment; and (3) through the synergies of the social, environmental and economic co-benefits of risk of disasters and investments in environmental management, even if extreme events do not occur for many years (Tanner et al., 2015).

BRAVA

The municipality of Brava is one of the anticipated pilots, and it has a small artisanal fisheries sector as fisheries is one of the most important sectors on Cabo Verde. Artisanal fisheries play a significant role in the socio-economic development and stability of Brava and every other (seafaring) municipality in Cabo Verde. Coastal fisheries are a key economic component of Cabo Verde, both in terms of local food security but also in international exports^{11 12} and trade relations¹³ – the development and growth of a Blue Economy for Cabo Verde has been part of the PEDS strategies since 2017¹⁴ and has most recently been included in the Nationally Determined Contributions published for 2030.¹⁵ The Coastal Fisheries Initiative (CFI), co-funded by, among others, the Global Environmental Facility (GEF) and UNEP, has two implemented pilot sites where FAO and partners are carrying out a number of activities to help make Cabo Verde's coastal fisheries more sustainable.¹⁶

The interest in investments that already exists hallmark the importance of the sector and the prospect for co-funding opportunities.

FISHERIES

Brava has a dominant handline gear fishery, with almost non-existent semi-industrial fishing happening. The fishery is dominated by tuna catches (30%), small pelagic (35%) and demersal fish (28%). Trends for the artisanal fishery in Brava have, over the period from 2009-2017, shown negative socio-economic and environmental trends in many regards. Studies¹⁷ have shown that the average catch per vessel and per fishermen have been decreasing as well as the annual income from artisanal fisheries dropping by 30% (Fortes, 2019).

The 2017 recorded income value in Brava lay below the average across islands. In addition, trends show that the average monthly salary for fishermen in Brava has been steadily decreasing and are lower than the average across islands and that poverty conditions in the sector have remained significant (World Bank, 2008). The three most economically viable catch species (yellowfin tuna, grouper, and wahoo), on which Brava's artisanal fishery is strongly dependent, have furthermore seen continuous decreasing trends. The trends of these socio-economic and environmental indicators bring concerns to the long term sustainability of the artisanal fisheries for Cabo Verde as a whole. Without sustainable interventions, the negative trends are likely to continue into the future.

To climate-proof Cabo Verde (artisanal) fisheries, fisheries management need to become more effective. Managers need to be able to respond to the dynamics of marine resources and ecosystems in a timely manner to address climate-driven impacts and challenges for local fisheries. The most common impacts of climate change on fisheries are the shifts in species distribution, changes in productivity and changes in species composition (Bahri et al., 2021). The effective management of fisheries and the associated process chain has been well documented to have positive impacts on the long-term sustainable development of the sectors: where fisheries management is less

intense, stock status and trends are worse than in those areas where effective management and implementation actions have been taken (Hilborn, 2020).

To reduce pressures on fish abundance and ensure long-term productivity, overexploitation needs to be addressed in light of climate change. The maximum sustainable yield (MSY), reflecting the catch potential that can be sustained by marine ecosystems, will gradually decrease as climate change impacts become more profound. As such, climate adaptation actions need to consider the implementation of MSY and the continuous monitoring and reporting of economically important fish stocks in order to adjust the MSY regularly to reflect changes in stocks -flexibility in the fisheries sector will be a pre-requisite for climate adaptation. Research on global fish stocks has found that the average biomass of fish stocks has shown increases in areas where fishing pressure is reduced and regulations for improved fisheries management are set in place – benefits to the stock population could on average be observed within 1-2 years¹⁹. By managing fish catch and quotas, fisheries can mitigate the impacts of climate change by allowing an opportunity for regeneration in fish stocks.

Adaptive fishery management must also take on precautionary activities to reduce impacts, including external stressors and vulnerabilities, to avoid exacerbation of climate-related impacts. Ecosystem management and protection have shown to help ecosystems and communities adapt to climate change impacts, in particular through carbon sequestration and storage, refugia for species to improve population reproductive output and population connectivity (Roberts et al., 2017). In other words, proper ecosystem management help ameliorate climate impacts and improve the outlook of continued ecosystem functioning and delivery of ecosystem services.

TRIPLE DIVIDEND

The triple dividend comes for the municipality of Brava and Cabo Verde at large through a variety of benefits for sectors and SDGs

e.g., fisheries, job security, human health, sustainable food production, and many other. In a study focused on impacts of sustainable fisheries implementation (Camera e Santero, 2019), focusing on the Spanish fleet, authors identified that investing in support for traditional fishing, the extension of marine resources and protected area networks, and controlling the contamination of marine coastlines ensures a more sustainable fishery. The model allocated 50% of funds in the control of coastal contamination, 28% to extending reserves and 17% to supporting traditional fisheries. With this distribution in investment, the study reported over a period of 10 years a 0.16% increase in fishery production, 0.30% increase in employment and -0.16% reduction in CO2 emissions, counting towards a positive environmental impact.

Investing in traditional fishing and improving the work conditions can therefore be considered as a 'no regret' option as it also benefits sectors aimed at promoting sales and tourism, especially in terms of employment. It can be expected that the transition towards a sustainable fisheries model will improve the situation of vulnerability that currently exists in fishing communities by contributing more employment to the fishing sector, more employment in other activities related to leisure and tourism and services, and employment opportunities for young people and women.

While climate adaptation actions directly in the fisheries sector will render the highest benefits, additional actions at the terrestrial level can assist in further increasing the long-term ecosystem services of marine habitats. One significant contribution to address for example, coastal contamination can come from improved water and solid waste management at the municipal level, as has been a focus of the PEDS and the NDC of Cabo Verde (*Governo de Cabo Verde, 2019*).

In the EU, stormwater and urban run-off have shown to have significant impacts on coastal and inland water habitats because these sources of untreated wastewater carry significant levels of pollutants, including pharmaceuticals, heavy metals and microplastics (EC, 2019). Transferring these impacts to Cabo Verde with its narrow shorelines containing

valuable eco-system services, climate change very likely threatens to increase these levels of pollution sources. An improved wastewater management and sewer collection systems would benefit terrestrial ecosystem, drinking water resources, human health, and help to prevent contamination of marine coastal habitats, which often act as breeding and nursing grounds for some of the economically viable fish species on which artisanal fisheries depend (e.g., tuna species).

STEP 5: IDENTIFICATION OF THE COSTS

Cost estimations derived from the targeted stakeholder consultation activity²⁰ – an online survey²¹ – requesting stakeholders – representatives from public authorities, governmental bodies, research institutes, NGO's, and experts, to provide cost estimations within a given range for each action and subsequent measures. The total cost for the implementation of planning processes and capacity building of the NAP during a period of 5 years up to 2026 is estimated at 30,6 million Euros. Table 7 presents a breakdown of the costs for each measure, including an estimation expressed in the level of confidence in the socio-economic and environmental benefits provided. The majority of measures are expected to have ample environmental benefits that exceed the lifetime of the measure itself. The stakeholders indicated that in order to maintain socio-economic benefits after 2026 and the duration of the measure, additional funds are likely to be needed.

STEP 6: IDENTIFICATION OF THE UNCERTAINTIES AND RISKS

O The NAP is based on several assumptions, driven by the uncertainty of how climate change will evolve over time. In the backdrop of COVID-19, it is expected that impacts as a result of climate change are likely to hinder socio-economic developments

and environmental sustainability. It is therefore assumed that every measure is regarded as a “no regret” measure, yielding positive impacts. The level of risks is determined to be very low since the measures are aimed to build capacity and the mobilization of resources.

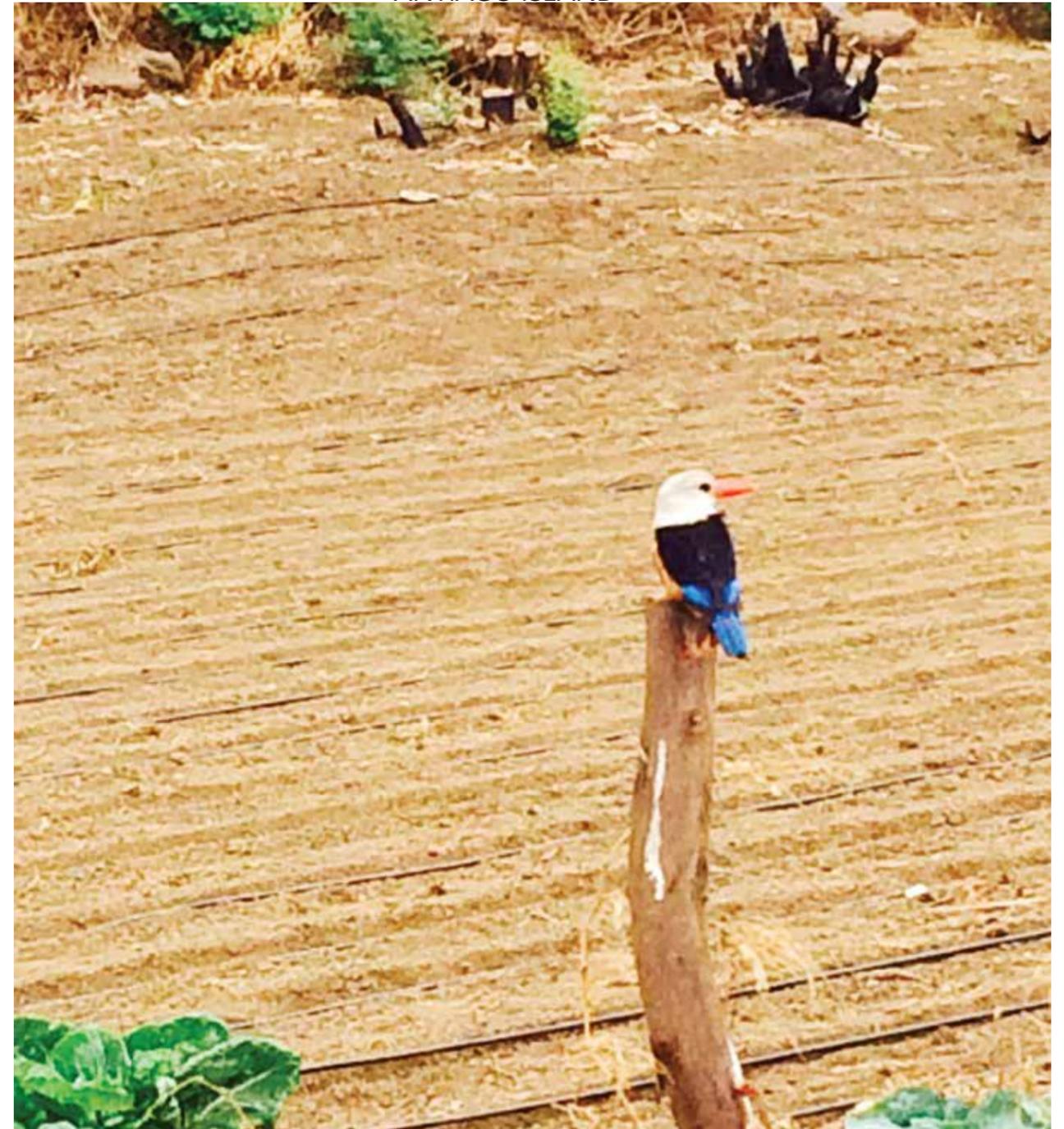
STEP 7: CALCULATION OF THE COSTS AND BENEFITS AND BALANCE

Since the costs and benefits will not occur at the same time, their value is calculated back to the year the measures are introduced (2021) by applying an annual discount rate of 4% to obtain a present value of the costs²². A limitation to this CBA is the lack of monetised benefits as they are not quantifiable and successively impossible to value and, therefore, will not be included in the balance. Successively, the estimated cost is not adequate for an economic analysis calculating net benefits (expressed in Euro) stemming from the measure differences between the with-action and the without-action situation.

ECONOMIC ANALYSIS

The economic analysis concerns the true value²³ a measure holds for Cabo Verde as a whole. It subsumes all members of society and measures the actions positive and negative impacts as a result of all previous steps. While financial analysis uses market prices to check the balance of investment and the sustainability of the measure, economic analysis uses economic prices that are converted from the market price by excluding tax, profit, subsidy, etc. to measure the legitimacy of using national resources. The NAP is favouring the economic analyses over the financial analysis as the NAP intends to present the external effects (benefits and costs), such as favourable effects on health, jobs, equity, or in broader terms sustainable development. This economic analysis attempted to value such externalities in order to reflect the true cost and value to the society.

PASSARINHA ANTIAGO ISLAND



The inclusion of externalities raises difficult questions of their identification and measurement in terms of money²⁴. However, the NAP's financial viability should not be made a concern because as long as an action is economically sound, it may be supported through government subsidies, Official Development Aid, or private sector investors.

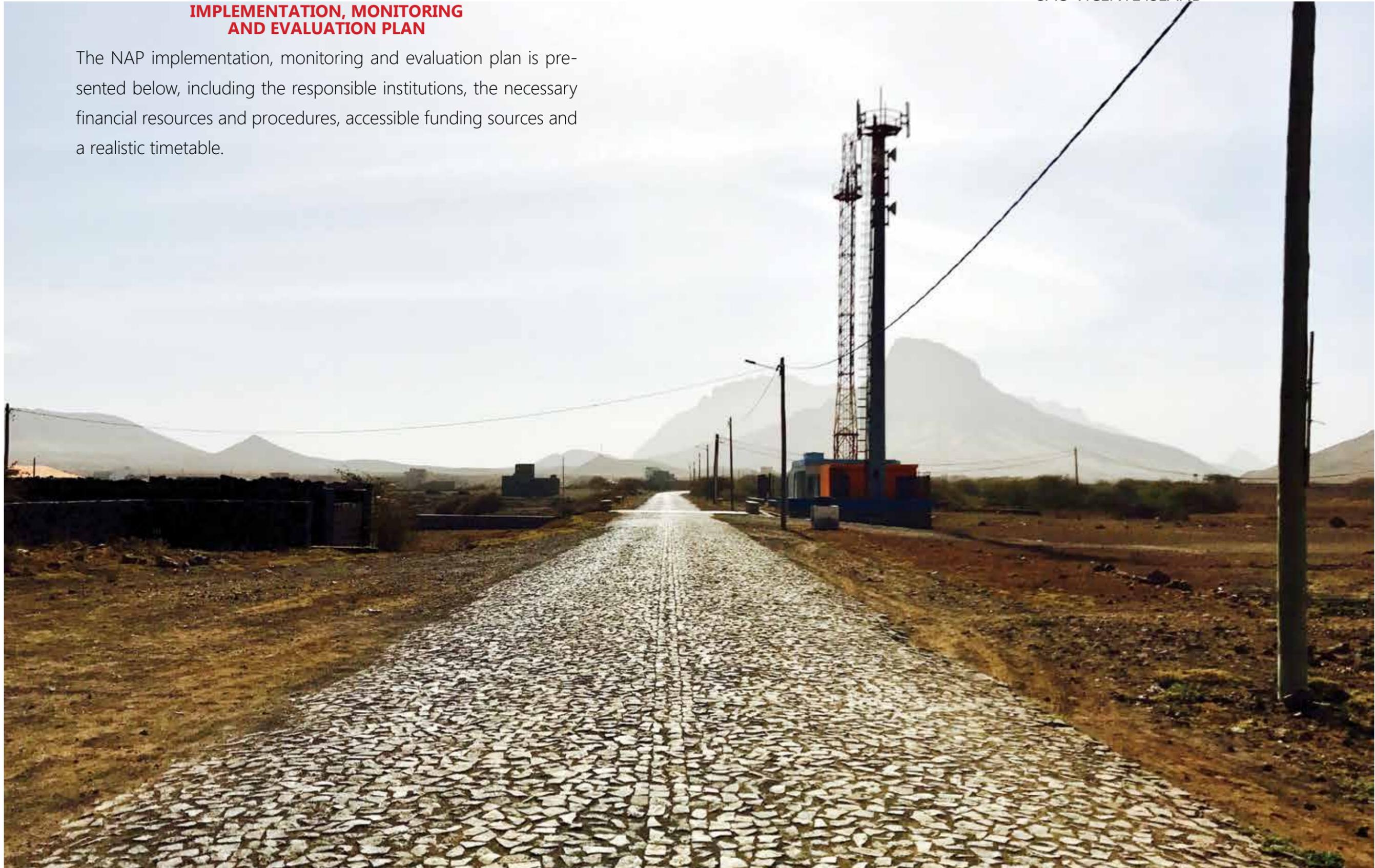
TABLE 6
ESTIMATED COST FOR THE IMPLEMENTATION
OF THE NAP MEASURES

Measure	In your opinion, what will be the estimated cost of implementing this adaptation action?	Expected significant benefits up to at least 2026, and onwards			Cost Euros/5 year
		Environmental	Social	Economic	
1.1	Establishment of the overall national and municipal institutional arrangements for the multi-sector coordination of climate change actions in Cabo Verde, including the definition of its composition and mandate, by law, based on what is established in the NDC (National level)				€ 80.000
1.2	Establishment and operationalization of the Climate Forum (National and municipal levels)				€ 330.997
2.1	Testing and institutionalization of CCA into the next "National Development Plan" or equivalent and sectoral planning instruments, including the annual sectoral budgets and guidelines (Sectorial level)				€ 134.444
2.2	Revision of five municipal plans to mainstream adaptation (Municipal level)				€ 329.472
3.1	Identification of the research needs concerning climate change impacts, vulnerabilities and actions and implementation of a research programme addressing such (National, sectorial, and municipal levels)				€ 476.066
4.1	Evaluation of the school curricula to identify entry points for climate adaptation topics, identification of educational needs concerning climate change impacts, vulnerabilities and actions and implementation of a research programme addressing such (National, sectorial, and municipal levels)				€ 245.991
5.1	Implementation of the capacity building programme on climate change impacts and CCA actions (National, sectorial, and municipal levels)				€ 1.214.911
6.1	Implementation of the communication programme on climate change resilience (National, sectorial, and municipal levels)				€ 1.332.415
7.1	NAP Definition of the M&E framework for the NAP (National, sectorial, and municipal levels)				€ 105.400
8.1	Elaboration and implementation of a resource mobilization plan for climate change investments (National, sectorial, and municipal levels)				€ 379.143
9.1	Development of climate change adaptation planning tools tested in each of the ten islands in particularly vulnerable communities, demonstrating an integrating an adaptation approach in various sectors (National, sectorial, and municipal levels)				€ 243.231
10.1	Elaboration of a portfolio of climate change adaptation priority actions for the key sectors for the medium term five pilot municipalities (Municipal levels)				€ 25.727.532
<i>Total cost of implementing the planning and capacity building activities of the NAP</i> Total cost					€ 30.599.604

Legend: Level of confidence in associated socio-economic and environmental benefits									
No significant benefits		Minor benefits			Significant benefits up to 2026			Significant benefits beyond 2026	
10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

IMPLEMENTATION, MONITORING AND EVALUATION PLAN

The NAP implementation, monitoring and evaluation plan is presented below, including the responsible institutions, the necessary financial resources and procedures, accessible funding sources and a realistic timetable.



1 Strategic adaptation action

Establishment of the institutional arrangements for the multi-sector coordination of climate change actions in Cabo Verde, including the definition of its composition and mandate

Objective

Create an enabling environment to facilitate CCA mainstreaming

Need being addressed

Poor coordination of climate change adaptation issues and urgency to have a medium and long-term vision and mandate

Pillar

Institutional framework

Implementation period

2022

1.1 Measure

Definition of the general national and municipal institutional arrangements for the multi-sector coordination of climate change actions in Cabo Verde in an inclusive manner, including the definition of its composition and mandate, by law, based on what is established in the NDC

Leading institution

DNA (MAA) e INMG (MAA) / DNP (MF) / DGOCP / ANMCV

Contributing institutions

National Climate Council (NCC)²⁵

Estimated cost

€100 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Approved and implemented legal diploma institutionalizing the coordination of adaptation issues at national and local levels

Key performance indicators

A legal diploma that establishes the institutional arrangements in an inclusive way until the end of 2022

Number of agreements transferred from high-level political ambitions, recommendations or national-level legal requirements that facilitate multi-sectoral engagement by the end of 2022

1 Strategic adaptation action

Operationalization of institutional arrangements for multisectoral coordination of adaptation, including definition of composition and mandate

Objective

Create an enabling environment to facilitate climate change adaptation mainstreaming

Need being addressed

Poor coordination of climate change adaptation issues and urgency to have a medium and long-term vision and mandate

Pillar

Institutional framework

Implementation period

2022 onwards

1.2 Measure

Creation and operation of the Climate Forum

Leading institution

DNA (MAA)

Contributing institutions

Representatives from civil society, the private sector and academia

Estimated cost

€250 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Operational Climate Forum, including civil society participation at municipal level

Key performance indicators

Decree creating the National Forum, including its mandate, procedures and constitution approved by the end of 2022

Number of meetings per year,

Number of participants by sex and vulnerable group by age group per meeting

Number of Forum activity reports per year

Number of manifests issued by the Forum per year

2 Strategic adaptation action

Testing and institutionalizing mechanisms to integrate adaptation into the next “National Development Plan” and equivalent sectoral and municipal planning instruments, including annual sectoral budgets and guidelines

Objective

Create an enabling environment to facilitate CCA mainstreaming

Need being addressed

Poor coordination of climate change adaptation issues and urgency to have a medium and long-term vision and mandate

Pillar

Institutional framework

Implementation period

2022 onwards

2.1 Measure

Testing and institutionalizing mechanisms to integrate adaptation into the next “National Development Plan” and equivalent sectoral and municipal planning instruments, including annual sectoral budgets and guidelines

Leading institution

DNP (MF), DGOCP

Contributing institutions

CNC

Estimated cost

€150 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Sustainable Development Strategic Plan fully aligned with the NAP (and NDC)

Sectoral plans aligned with the NAP

Budget available to implement adaptation actions

Key performance indicators

Next version of the PEDS with clear reference to the adaptation integration process

Number of common adaptation strategic actions between the PEDS and the NAP

Number of adaptation measures in PEDS

Budget amount available for adaptation per year (total and percentage)

Number of sector plans or strategies with reference to the NAP

Number of adaptation measures per sector plan

Amount of sector budget available for adaptation per year (total and percentage)

Number of beneficiaries by sex and vulnerable group by age group targeted for adaptation measures per year

Number of business plans with reference to NAP

Number of adaptation measures per business plan per year

Amount of private budget available for adaptation per year (total and percentage)

Number of beneficiaries by sex and vulnerable group beneficiaries of adaptation measures per year

2 Strategic adaptation action

Testing and institutionalizing mechanisms to integrate adaptation into the next “National Development Plan” and equivalent sectoral and municipal planning instruments, including annual sectoral budgets and guidelines

Objective

Create an enabling environment to facilitate CCA mainstreaming

Need being addressed

Poor coordination of climate change adaptation issues and urgency to have a medium and long-term vision and mandate

Pilar

Institutional framework

Implementation period

2022 onwards

2.2 Measure

Revision of Municipal Master Plans (PDMs) and Municipal Plans for Sustainable Development (PMDSs) to include adaptation in five pilot municipalities

Leading institution

Pilot municipalities

Contributing institutions

CNC, DGOCP

Estimated cost

€200 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Five revised PMDSs, including climate change and specifically adaptation

Five revised PDMs, including climate change and specifically adaptation

Key performance indicators

Next version of the PDMs and PMDSs with clear reference to the adaptation integration process

Number of strategic adaptation actions common between the PDMs, the PMDSs and the NAP

Number of adaptation measures in PDMs and PMDSs

Amount of municipal budget available for adaptation per year (total and percentage)

Number of municipal sector plans or strategies with reference to the NAP

Number of adaptation measures by municipal sector plans or strategies

Amount of municipal sector budget available for adaptation per year (total and percentage)

Number of beneficiaries by sex and vulnerable group by age group targeted for adaptation measures per year

Number of business plans with reference to NAP per municipality

Number of adaptation measures per business plan per municipality per year

Amount of private budget available for adaptation per year by municipality (total and percentage)

Number of beneficiaries by sex and vulnerable group targeted by municipal adaptation measures per year

3 Strategic adaptation action

Development and implementation of a research program on the impacts of climate change and adaptation actions

Objective

Create an enabling environment to facilitate CCA mainstreaming

Need being addressed

Poor coordination of climate change adaptation issues and urgency to have a medium and long-term vision and mandate

Pillar

Institutional framework

Implementation period

2022 to 2028 (minimum)

3.1 Measure

Identification of research needs related to climate change impacts, vulnerabilities and actions and implementation of a program to respond to them

Leading institution

IMAR, INIDA (MAA), INMG (MAA), IMP and Universities and other higher education institutions

Contributing institutions

CNC

Estimated cost

€400 000

Source of financing

To be defined

Result

Research, masters, and doctoral programs that integrate climate research topics including effects of climate change on biodiversity, nature and landscape-based solutions, ancient knowledge practices, innovation, affordable and low maintenance technology, nature, and nature based solutions. landscape, socio-economic impact of adaptation on the most vulnerable, among others.

Key performance indicators

Number of disciplines in research, master' s and doctoral programmes, including areas of climate research

Number of researchers by sex and vulnerable group by age group working on climate resilience themes in Cabo Verde per year

Number of scientific publications on adaptation to climate change in Cabo Verde

4 Strategic adaptation action

Implementation of the climate education plan

Objective

Improve the capacity for high-quality data and information management and sharing, and access to technology and financing for adaptation

Need being addressed

Poor knowledge of the local vulnerabilities and adaptation solutions

Pilar

Knowledge, technology, and financing

Implementation period

2022 to 2028 or beyond

4.1 Measure

Evaluating school curricula to identify entry points for adaptation topics, identifying educational needs related to adaptation impacts, vulnerabilities, and actions, and implementing changes

Leading institution

ME, DNA (MAA)

Contributing institutions

NCC

Estimated cost

€200 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Revised relevant subject curricula including adaptation, with themes related to the carbon and water cycle, climate advocacy, climate resilience and empowerment, among others, starting to introduce climate change issues into the first and second school curricula. second Cycles, in a 1st phase and then gradually cover the other levels of education as well. Students aware of climate risks and willing to contribute to change and greater family and school resilience

Key performance indicators

Number of subjects in primary and secondary school curricula, including climate vulnerability and resilience topics

Number of subjects taught with adaptation content per year
Number of students by sex per year and with access
to subjects that include climate change

5 Strategic adaptation action

Implementation of the capacity building plan

Objective

Improve the capacity for high-quality data and information management and sharing, and access to technology and financing for adaptation

Need being addressed

Poor knowledge of the local vulnerabilities and adaptation solutions

Pilar

Knowledge, technology, and financing

Implementation period

2022 to 2028 or beyond

5.1 Measure

Implementation of the capacity building programme on the impacts of climate change and adaptation actions

Leading institution

DNA / DNP

Contributing institutions

NCC, Climate Forum, municipalities, representatives of civil society and the private sector, ECCA

Estimated cost

€ 1 250 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Technicians from various sectors and municipalities, teachers from various levels of education and members of the Climate Forum with knowledge of adaptation options and able to integrate adaptation into their daily professional activities and into the planning and budgeting activity

More than 1500 people trained

Key performance indicators

Number of hours of training by topic, target group, gender, and year

Number of participants per training action by sex and year

6 Strategic adaptation action

Implementation of the communication plan

Objective

Improve the capacity for high-quality data and information management and sharing, and access to technology and financing for adaptation

Need being addressed

Poor knowledge of the local vulnerabilities and adaptation solutions

Pilar

Knowledge, technology, and financing

Implementation period

2022 to 2028 or beyond

6.1 Measure

Implementation of the climate change resilience communication programme

Leading institution

MAA Communication Office

Contributing institutions

All related

Estimated cost

€1 850 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Implementation of the communication plan in the multiplicity of initiatives to reach the various target audiences
Availability of adequate financial investment to maximize effectiveness and scope;

Reach most of the population, achieving a level of involvement and awareness that generates a catalytic effect, nationally and abroad

Key performance indicators

Number of competitions held by level of education

Number of students participating in competitions, by gender, age, geographic area, and vulnerability

Number of creative labs designed and implemented

Number of people trained in creative laboratories by gender, age, education area, professional area, region

Number of live laboratories implemented

Number of communities directly impacted, by region, age characterization, vulnerability of target groups

Number of events and festivals per municipality with climate change in the program

Number of participants by themes and municipalities, by gender, age, and vulnerability

Volume of participatory budget dedicated to adaptation

Number of people sensitized, disaggregated by age group, sex, and climate vulnerability

7 Strategic adaptation action

Operationalization of a comprehensive Monitoring and Evaluation plan

Objective

Improve the capacity for high-quality data and information management and sharing, and access to technology and financing for adaptation

Need being addressed

Poor knowledge of the local vulnerabilities and adaptation solutions

Pillar

Knowledge, technology, and financing

Implementation period

2022 to 2028 or beyond

7.1 Measure

Definition of the M&E structure for the NAP

Leading institution

DNA/ DNP

Contributing institutions

CNC, INE, representatives of civil society and the private sector and municipalities

Estimated cost

€100 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Implemented M&E system that allows monitoring the evolution of adaptation and facilitates the learning of adaptation

Key performance indicators

Number of Measures Evaluated

Number of measured indicators

8 Strategic adaptation action

Elaboration and implementation of a resource mobilization plan

Objective

Improve the capacity for high-quality data and information management and sharing, and access to technology and financing for adaptation

Need being addressed

Poor knowledge of the local vulnerabilities and adaptation solutions

Pilar

Knowledge, technology, and financing

Implementation period

2022 to 2028 or beyond

8.1 Measure

Elaboration and implementation of a resource mobilization plan for climate action

Leading institution

DNP

Contributing institutions

CNC, MAA, DGOCP

Estimated cost

€300 000

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

Resource mobilization plan implemented

Key performance indicators

Volume of funding raised for adaptation actions per year and per donor in absolute value and against the proposed target for the year

Volume of funding raised for capacity building on adaptation per year and per donor in absolute value and against the proposed target for the year

Volume of funding raised for access to technology per year and per donor in absolute value and against the proposed target for the year

Number of institutions accredited to manage international funds

9 Strategic adaptation action

Development of CCA planning tools tested in 9 pilot municipalities, each in a different island

Objective

Implement adaptation actions toward an increased resilience of the most vulnerable Cabo Verdeans

Need being addressed

Poor decentralized mainstreaming and participation at that level in CCA planning and budgeting

Pilar

Resilience of the most vulnerable

Implementation period

2022 a 2023

9.1 Measure

Development of sector-tested adaptation planning and budgeting tools for each of the 10 islands, including the as pilots Ribeira Brava (S. Nicolau), Mosteiros (Fogo), Cidade da Praia (Santiago) and Brava (Brava), which already have detailed risk maps, and the Santa Luzia Island

Leading institution

DNP (MF), DNA (MAA), SNPCB

Contributing institutions

All part of NCC, representatives of civil society and the private sector and municipalities

Estimated cost

€ 250 000

Source of financing

To be defined

Result

A tested tool to allow the assessment of vulnerability at the Island level according to its nature and its most relevant socio-economic sectors

A tested tool to apply climate lenses and identify entry points for adaptation in PMDS, POOC, POT and PDM

A tested tool to facilitate the inclusion of adaptation costs in the municipal budget

Key performance indicators

Number of tools developed

Number of tools tested in 9 municipalities and in Santa Luzia

10 Strategic adaptation action

Implementation of priority adaptation actions for key sectors in the medium term, in line with Ambition 2030 and sectoral strategies and plans in five pilot municipalities

Development and implementation of a pilot municipal climate resilience programme

Objective

Implement adaptation actions toward an increased resilience of the most vulnerable Cabo Verdeans

Need being addressed

Poor decentralized mainstreaming and participation at that level in CCA planning and budgeting

Pillar

Resilience of the most vulnerable

Implementation period

2022 to 2026 (pilot phase); with dissemination from 2026 at the latest

10.1 Measure

Climate Proof Municipalities Program in five pilot municipalities

Ribeira Brava (S. Nicolau), Mosteiros (Fogo), Praia (Santiago), Brava (Brava) and Boa Vista (Boa Vista)

The first four municipalities are proposed because it is believed that having detailed risk maps makes it easier to identify climate vulnerabilities, and that specific adaptation actions to increase resilience can subsequently be selected.

In addition to these, the municipality of Boa Vista is also proposed. This suggestion arose because it was considered that a municipality with a vocation for sun and sea tourism, which is so relevant for Cape Verde from a socio-economic and environmental point of view, should also be considered.

The municipality was then chosen based on this criterion and for having the only Coastal Ordination Plan (POOC) approved, in addition to the Tourism Ordinance Plan (POT).

Measures can be implemented in various sectors:

water and sanitation, food security and regenerative agriculture, marine and terrestrial protected areas, and ecosystems, including biodiversity, coasts and marine and terrestrial resources, infrastructure, land use planning, disaster risk reduction, human health, forestry, tourism, climate capacity building, climate services and support mobilization (climate finance, technology transfer and capacity building).

Specific adaptation activities may include:

- Increased detail of vulnerability and adaptation maps (INGT, 2021) and local consultations to identify climate risk areas and adaptation measures to address them
- Identification of the groups most vulnerable to the climate and strengthening their participation in decision-making and adaptation processes
- Creation or strengthening of local early warning systems
- Preparation of disaster recovery plans for sectors with critical infrastructure, such as water, energy, health, and communication, with analysis of redundancy options
- Promotion of adaptive management of the coastline, adapting Spatial Planning instruments to the uncertainty and evolution of climate phenomena, improving coastal zone planning in the face of climatic risks, human occupation, need for conservation versus development of economic activities, compatibility of the different uses and of the different attributions/sectorial instruments and aligning the POOC and the POT where they exist
- Strengthening coastal protection, prioritizing the maintenance / / adaptation of works to protect urban areas, transport, and port infrastructure
- Promotion of the use of solutions based on nature, ecosystem, and landscape, protecting biodiversity and the environment
- Occupation of marginal areas with urban gardens, green areas, or gardens to avoid construction
- Regulation of the POOCM Law adapted to the uncertainty and evolution of climatic phenomena

- Review PDMs and PMDS including adaptation (#2)
- Creation of a climatic unit in the Municipality' s environment and/or planning division
- Training of municipal technicians on climate change (#4)
- Adherence to the Covenant of Mayors or similar programs to access knowledge resources and exchange experiences (#4)
- Promotion of the use of renewable energy sources, energy efficiency equipment and practices, and low carbon transport systems, with easy maintenance and low operating cost
- Design and implementation of climate communication campaigns (#6)
- Implementation of an M&E framework sensitive to the most vulnerable groups (#7)
- Promotion of water and sanitation for all, equitably, efficiently, and effectively
- Promotion of green and blue jobs for young people, resilient livelihoods, access to water, sanitation
- Preparation of climate resource mobilization plan (#8) and
- Updated the local platform to include municipal adaptation planning, budgeting, and its M&E (DNP) (#9), among others.

Leading institution

Pilot Municipalities

Contributing institutions

ANMCV, CNA, DNA (MAA), DNP (MF), SNPCB, DGOCP

Estimated cost

At least € 5 000 000/year

Source of financing

Under evaluation for support under the CVE/401 Support Program for climate governance and action which is supported by Luxembourg Cooperation

Result

5 Municipalities more resilient to climate change risks

Key performance indicators

To be defined later according to the measures of each municipality



CALHAU
SÃO VICENTE ISLAND

TIME HORIZON AND CALENDAR

The first phase of NAP implementation runs until 2026.

The proposed timetable is shown in Figure 18

FIGURE 18
CALENDÁRIO DE IMPLEMENTAÇÃO
DA PRIMEIRA FASE DO NAP

Strategic Action	Measure	Years				
		2022	2023	2024	2025	2026
1. Institucional framework	1.1 Sectorial coordination					
	1.2 Climate forum					
2. Integration	2.1 Sectorial (incluindo POOC e POT Boa Vista)					
	2.2 Municipal (PDMSs e PMDs)					
3. Research	3.1 Programme development and implementation					
4. Education	4.1 Programme development and implementation					
5. Capacity building	5.1 Programme implementation					
6. Comunication	6.1 Programme implementation					
7. M&E	7.1 Programme development and implementation					
8. Suport (financing & tech)	8.1 Programme development and implementation					
9. Planning tool fot the 10 islands	9.1 Programme development and implementation					
10. Municipal pilots	10.1 Programme development and implementation					



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Resources

- 1** Available @ <http://www.africa-turismo.com/cabo-verde/mapas.htm>
- 2** Available in <https://dtudo1pouco.com/cabo-verde-e-o-seu-historico-de-furacoes/>
- 3** ECHAM é um modelo geral de circulação atmosférica desenvolvido no *Max Planck Institute for Meteorology*
- 4** <https://climaterationale.org>
- 5** Available in https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiiu7m4rMHwAhVBpIsKHZL1BFAQFjABegQIBhAD&url=https%3A%2F%2Freliefweb.int%2Fsites%2Freliefweb.int%2Ffiles%2Fresources%2FWorldRiskReport-2020.pdf&usq=AOvVaw0LMV0lvGvrcshG-_ytsA42
- 6** Available in <https://gain-new.crc.nd.edu/country/cape-verde>
- 7** Unavailable
- 8** Triggered by precipitation
- 9** Note that electric mobility is also present on the islands of São Vicente, Sal and Boavista
- 10** NDC submitted to the UNFCCC in 2021
- 11** Cabo Verde Exports (2019) <https://oec.world/en/profile/country/cpv#yearly-exports>
- 12** World Economic Outlook (April 2021) <https://www.imf.org/external/datamapper/profile/CPV>
- 13** UNCTAD' s Work Programme on International Investment Agreements (IIAs) <https://investmentpolicy.unctad.org/international-investment-agreements/countries/36/cabo-verde>
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- 19** Hilborn et al. (2020) Effective fisheries management instrumental in improving fish stock status. *Proceedings of the Natural Academy of Sciences*, 117 (4).
- 20** Agência Nacional de Água e Saneamento, BIOS, Câmaras Municipal, DNA, DNICE, Ecofemenismo, Imar, INIDA, Inspeção Geral das Pescas, Instituto do Mar, Instituto Nacional de Gestão do Território, Instituto Nacional de Saúde Pública, LuxDev, Ministério da Agricultura e Ambiente, Ministerio da Educação, Privado/ ONG, Rede de Jornalistas para o Ambiente- REJA, Serviço Nacional de Protecção Civil e Bombeiros, etc.
- 21** Survey results are available upon request at LuxDev
- 22** According to Article 19 (Discounting of cash flows) of Commission Delegated Regulation (EU) No 480/2014, for the programming period 2014-2020, the European Commission recommends that a 4 % discount rate in real terms is considered as the reference parameter for the real opportunity cost of capital in the long term.
- 23** True value measured as anticipated outcome of each measure
- 24** Measured in ECV (Escudo Cabo Verde)
- 25** Although the NCC has not yet been established, it is considered pertinent that it should be mentioned, as it appears in the NDC that has already been approved and submitted to the UNFCCC. It is assumed that the TNC integrates representation from all sectors of governance, civil society and the private sector in need of increasing their resilience