REFLOR-CV: BUILDING ADAPTIVE CAPACITY AND RESILIENCE OF THE FORESTRY SECTOR IN CABO VERDE

Component 1

- Capacity Development -

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Food and Agriculture Organization of the United Nations

Ministério da Agricultura e Ambiente

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ACRONYMS

ADAD	Associação para a Defesa do Ambiente e Desenvolvimento
AFOLU	Agriculture Forest and other Land Uses
AR4	4th Assessment Report
AR5	5th Assessment Report
CD	Capacity Development
SISQA	Serviço de Informação e Seguimento da Qualidade Ambiental
DGASP	Direcção-Geral da Agricultura, Silvicultura e Pecuária
DNA	Direcção Nacional do Ambiente
DSEREA	Direcção de Serviços de Extensão Rural e Economia Agrícola
DSSER	Direcção de Serviços Silvicultura e de Engenharia Rural
DSAPV	Direcção dos Serviços de Agricultura e Proteção Vegetal
ECAA	Escola de Ciências Agrárias e Ambientais
ETN	National Technical Team
GCM	Global Circulation Model
ICIEG	Instituto Cabo-Verdiano para Igualdade e Equidade de Género
INGT	Instituto Nacional de Gestão do Território
INIDA	Instituto Nacional de Investigação e Desenvolvimento Agrário
INMG	Instituto Nacional de Meteorologia e Geofísica
IPCC	International Panel on Climate Change
MAA	Ministério da Agricultura e Ambiente
MI	Ministério do Interior
MIOT	Ministério de Infraestruturas e Ordenamento do Território
NGO	Non-Governmental Organization
RCP	Representative Concentration Pathway
REFLOR-CV	Project -Building adaptive capacity and resilience of the forestry sector in Cabo Verde
SFM	Sustainable Forest Management
SNPC	Serviço Nacional de Protecção Civil
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office for Project Services

1 INTRODUCTION

Climate change mitigation and adaptation through sustainable forest management

Strengthening the ability of institutions, organizations, and individuals for climate resilient land use constitutes both a need and an opportunity to improve the sustainability of forests and of the entire Agriculture, Forestry, and Other Land Use (AFOLU) sector in Cabo Verde. To this end, one of the main ambitions of REFLOR-CV is the mainstreaming of climate change into policies and practices for Sustainable Forest Management (SFM), which, in addition to the revision of strategic documents, requires that adequate core capacities and participatory plans be developed. Such developments will motivate stakeholder participation in forestry and land use decision-making, also fostering collaboration between individuals, institutions and regions, while promoting data and knowledge sharing. Hence, REFLOR-CV is committed to significantly contribute to the development of SFM capacities while, simultaneously, improving communication and facilitating the establishment of networks and discussion *fora.*

Box 1 – Capacity development is a multi-dimensional concept

It is a about:
- promoting learning
- boosting empowerment
- building social capital
- creating enabling environments
- integrating cultures
- orientating personal and societal behavior

It can be:
- a tool, a means to an end
- a process that evolves over the long-term
- an objective to be achieved.

It is important to note that the strategy adopted in REFLOR-CV is one of Capacity Development (CD), as opposed to classical capacity building. This entails that, in addition to the customary training formats with technical workshops and on-the-job sessions, there is a process through which individuals, organizations, institutions, and the civil society shall develop abilities to perform functions, to solve problems, and to set and achieve objectives.

As illustrated in Box 1, a transition from a strictly top-down (trainers to trainees) model to a multidimensional "two-way street" between trainers and actors is pursued. Moreover, since capacity development promotes a cross-sector learning approach, there will be a contribution to enhance the involvement of the science and technology community. The latter can have a crucial role in decision-making processes related to sustainable forest management and environmental conservation, namely for establishing the guidelines underlying forest management plans.

The objective of this document is to provide a structured strategy for the capacity development activities of REFLOR-CV, which involves the following items in Component 1:

a) An analysis of climate change risks and threats to the forestry sector;
b) A needs assessment for SFM in Cabo Verde;
c) A revision of existing forest-related strategies, policies and programs;
d) The development of cross-sector collaborative land use plans for sustainable forest management in Santiago, Fogo and Boa Vista;
e) The design and implementation of effective and cost-efficient trainings; and
f) Contributions to the communication strategy through the climate change *fora.*

In addition to improving technical capacities and societal participation, REFLOR-CV aims at contributing to a political setting that facilitates the future achievement of payments for performance. For that, the project encourages networking and strategic partnerships among a wide set of key-stakeholders, including; ministries; public institutes; NGOs, academia; forest users and owners; international agencies; and the UNFCCC secretariats related to forests, wood energy, and climate change. By inspiring a landscape approach to land use and forest management, REFLOR-CV works to reinforce the connections and work ties between the agriculture, forests, hydrology and the energy sectors.

2 METHODOLOGY

A participatory strategy for capacity development

2.1 Approach

The approach envisioned for the capacity development activities is fully participatory, and it will be implemented in two phases. The first phase involves a restricted group, comprised of elements of the project team and of staff of partner institutions. This phase aims at providing the foundations for the organization and subsequent implementation of the capacity development process during a longer-lasting second phase. It will produce an analysis of the risks and threats of climate change and a pilot assessment of needs for SFM. Nevertheless, both phases rely on the same principles and procedures.

The implementation of both phases follows a classical step-wise structure but relies on the novel concepts of CD. There are three primary guidelines driving the critical path. The first is to progressively increase stakeholder participation, the second is to collaboratively compile, produce and validate relevant information and plans, and the third is to improve knowledge and capacity related to climate change and the forest sector. However, despite its advantages, this process also entails a longer implementation period when compared to the classic one-way capacity building.

2.2 Data and information gathering strategy

Data collection is mostly based on techniques and tools derived from participatory diagnostics, such as those of Strategic Environmental and Social Assessments or Participatory Rural Appraisals, illustrated in APPENDIX I. It will comprise topic-specific or cross-sector group meetings, as well as bilateral work sessions, where information is both conveyed, e.g. through presentations, and collected, e.g. through questionnaires or collaborative exercises.

Participation of technical staff will be initially organized according to the four cross-sector themes shown in Box 2. These themes will anchor a self-assessment of the institutional elements, who will at the beginning of the process allocate themselves to one or, at most, two of the themes. Such a procedure will generate a geometrically variable organization of individuals from different backgrounds and will clearly define those cross-sector discussion meetings to which each individual is assigned. The work of each cross-sector group will

Box 2 – Themes SFM

1. Forest governance;
2. Land use strategies and plans;
3. Forest Monitoring Systems;
4. Benefits, safeguards and grievances.

then be guided by targeted technical presentations, discussions, and materials focused on climate change and SFM.

For the consultation and bi-lateral meetings of both the first and the second phases there will be fliers (with climate change, SFM, and project specific information) or other relevant, but synthetic, documentation as a basis for non-structured discussions and interviews prepared case by base. The project team organizes and attends these meetings, preferably with at least two elements to facilitate annotations.

For the cross-sector and group sessions in the second phase, informative and theme-specific presentations are prepared, as well as group exercises and / or didactic questionnaires. During these sessions the project team delivers information and receives feedback using specific data gathering instruments, which are selected and developed case by case as the process unfolds. From this two-way process the needs assessment derived during first phase can be matured into a final product, as will the analysis of climate change risks and threats to the forest sector and the training program.

3 ANALYSIS OF CLIMATE CHANGE RISKS AND THREATS TO THE FORESTRY SECTOR

Summary of current knowledge

3.1 Predicting climate change in small islands

Biophysical impacts and social vulnerability to manifestations of the climate system differ strongly from global to local scale, and from one region to another. Thus, climate change-related risks information should suit specific decision-making scales and processes.

Projections of the air surface temperature and relative precipitation changes until 2100 are given by IPCC in its 5th Assessment Report (AR5) under the Representative Concentration Pathway (RCP) scenarios for the globe and for several different sub-continental regions. In total, 35 regions are considered, which includes the 26 sub-continental regions (IPCC, 2012) augmented with polar regions and the Caribbean, two Indian Ocean and three Pacific Ocean regions.

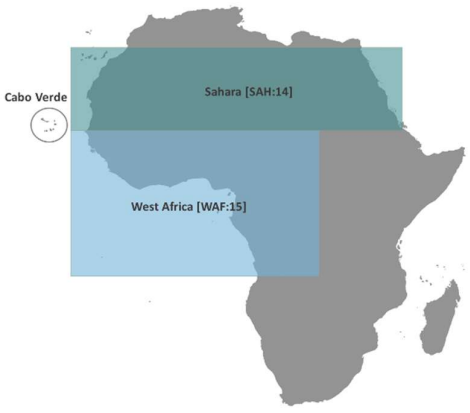

Figure 1 - Location of Cabo Verde in relation to the closest sub-continental regions.

As illustrated in Figure 1, Cape Verde is in the confluence zone between two large sub-continental regions: Sahara (SAH:14) and West Africa (WAF:15). While a reduction in rainfall over northern Africa is *very likely* by the end of the 21st century, West African precipitation projections show inter-model variation in both the amplitude and direction (IPCC, 2013; Biasutti *et al.*, 2008; Druyan, 2011; Fontaine *et al.*, 2011; Roehrig *et al.*, 2013). Both annual minimum and maximum temperature are

likely to increase for both regions. A synthesis of these projections for SAH:14 and WAF:15 regions, along with their confidence level is presented in Table 1.

Nevertheless, small island states as Cabo Verde represent a distinct category of location due to their small size and highly maritime climates, which means that their concerns and information needs in relation to future climate change differ in many ways from those of the sub-continental regions (IPCC, 2012). Additionally, the role of climate change-related processes on small islands is difficult to identify and quantify, mostly because there is a general absence of credible regional socioeconomic scenarios relevant at the adequate spatial scale (Nurse et al., 2014).

It is important to acknowledge that small islands are much smaller than the resolution of the global climate models, such as the Global Circulation Models (GCMs). In fact, the Special Report on Emissions Scenarios (Nakićenović and Swart, 2000) is applicable to spatial resolutions between 200 and 600 km^2 and the recently improved RCPs scenarios (IPCC 2015) are adequate to resolutions between 100 and 200 km^2. Only a few studies (Charlery and Nurse 2010; Keener *et al*., 2012) provide projections for small islands at finer scales through downscaling techniques, namely in the Caribbean Sea, Pacific and Indian Oceans, and the Mediterranean islands. However, no projections are currently available for the Atlantic African islands.

An additional note regards the fact that, even if current projections show concordance with previous IPCC assessments (e.g. AR4) for small island regions, important spatial and topographic differences between islands are described, as illustrated in Table 2 . For instance, projections for the Mediterranean islands differ significantly from those for the tropical small islands (Nurse *et al*., 2014). As reported in the AR5, the Pacific Islands equatorial regions are likely to become wetter and the subtropical belts, drier. Nevertheless, this rainfall outlook is uncertain (IPCC, 2013). In conclusion, there is insufficient evidence to assess observed trends and future projections in rainfall across the small island regions (IPCC, 2012). Projected air temperature in the Caribbean region is of *medium* confidence, while for Pacific and Indian Oceans the confidence is *low* (IPCC, 2012).

It is certain that global mean sea level rise, coupled with extreme sea level events, are of relevance for tropical small island states with low elevation. Moreover, many islands are subject to processes originating in faraway locations, like ocean swells, dust storms, and invasive species. Thus, the unique situation of small islands states entails a need of long-term local records and oceanic information to understand the impacts of climate change. Moreover, small islands do not have uniform climate change risks profiles and thus, improvements in baseline monitoring of island systems and downscaling of climate model projections, would improve the confidence in assessing projected impacts.

Table 1 : Summary of projected climate changes for the West Africa and Sahara sub-regions (adapated from Working Group II AR5 Table 21-7).

Region	Trends in daytime /nightime temperature extremes (frequency of hot and cool days/nights)		Trends in heat waves/warm spells		Trends in heavy precipitation (rain)		Trends in dryness and drought	
	Observed	Projected	Observed	Projected	Observed	Projected	Observed	Projected
West Africa	Significant increase in temperature of hottest day and coolest day in some parts. Increasing frequency of warm nights. Decrease in cold nights in western Africa.	*Likely* increase in hot days (decrease in cool days). *Likely* increase in warm nights (decrease in cold nights).	Insufficient evidence for most of the region.	*Likely* more frequent and/or longer heat waves and warm spells.	Rainfall intensity increased.	Slight or no change in heavy precipitation indicators in most áreas. Low model agreement in northern areas.	Likely increase but 1970s Sahel drought dominates the trend; greater interannual variation in recent years.	Inconsistent signal.
Sahara	Increase in warm nights.	*Likely* increase in hot days (decrease in coll days) *Likely* increase in warm nights (decrease in cold nights).	Insufficient evidence.	*Likely* more frequent and/or longer heat waves and warm spells.	Insufficient evidence.	*Low agreement.*	Limited data, spatial variation of the trends.	Inconsistent signal of change.

Increasing trend or signal | Decreasing trend or signal | Inconsistent trend or signal or insuficiente evidence | No change or only slight change | *Low confidence* | *Medium confidence* | *High confidence*

Given this context, and while there are no significant advances in the long-term projections for Cabo Verde, the best approach for the construction of a risk matrix of climate change threats to the forest sector is an expert-based approach. Therefore, for developing the matrix we initially use the information available in national documents as well as consultations with national experts.

Table 2: Climate change projections for the Representative Concentration Pathway 4.5 (RCP4.5) scenario for the main small island regions: Median for surface temperature and precipitation and mean net sea level change (adapted from II AR5, Table 29-1).

SMALL ISLAND REGION	RCP4.5 Annual Projected Change for 2081-2100 compared to 1986-2005		
	TEMPERTATURE (ºC)	PRECIPITATION (%)	SEA LEVEL (m)
Caribbean	1.4	-5	0.5-0.6
Mediterranean	2.3	-6	0.4-0.5
Northern tropical Pacific	1.4	1	0.5-0.6
Southern Pacific	1.2	2	0.5-0.6
North Indian Ocean	1.5	9	0.4-0.5
West Indian Ocean	1.4	2	0.5-0.6

3.2 Developing a climate change risks and threats matrix for the forest sector

The risk matrix analysis of climate change threats to the forestry sector is developed according to Brundell *et al.,* 2011 using the following steps:

1. definition of the timescale boundaries
2. identification of important climate change variables
3. assignment of likely changes in climate change patterns
4. identification of relevant elements of the forest sector
5. completion of the Framework for the Impact Risk Matrix
6. expected climate change impacts
7. determination of the likely category for the impact
8. determination of the consequence category for the impact
9. assigning impact risk

The draft outcome of step 6 is presented in Table 3 below, and the remaining steps (7 to 9) are under development. An explanation of all intermediate steps is presented in APPENDIX 2. However, it should be noted that despite the application of published good practices (AGO, 2006; Salim *et al*., 2012), this matrix is based exclusively on expert judgment and it does not include statistical analysis of national data or specific climate projections and vulnerability scenarios for the Cabo Verde islands. Additionally, it also does not yet include the visions, opinions and priorities that may be devised through a wider consultation of national experts in the bi-lateral meetings or group workshops as a result of the participatory activities.

Table 3- Climate change risks and threats to the forest sector in Cabo Verde- Draft risk matrix to be completed by national stakeholders following the steps included in APPENDIX 2.

Climate Change Variable	Forest type and area	Forest productivity	Biodiversity	Water availability and quality	Soil quality	Food security and livelihoods	Human Health	Poverty
Sea Level Rise	Shifts in forest types and forest areas contractions; Coastal forests transitioning to more saline-tolerant species.	Impacts on coastal forests driving location and/or species shifts.	Species horizontal shifts and range decline; Increased salinization and rising groundwater.	Salt water infiltration.	Soil salination from inundation; Soil erosion.	Loss of agricultural production; Damage to facilities of economic, social or cultural importance; Increased migration;	Threat to life.	Loss of property and livelihoods.
Increasing air surface temperature	Shifts in forest types; Desertification; Increased fire risk.	Reduced tree growth; Reduced yields of forest products; Increase in pests and pathogens; Tree mortality;	Decline and altitudinal species range shifts and contractions; Increasing exotic and pest species range and invasions;	Increased evaporation; Increased evapotranspiration.	Loss of soil organic matter; Disruption of the forest nutrient cycling.	Increased fire intensity, Loss of forest foods, medicines, other NWFPs and timber. Loss of marketable goods.	Smoke from forest fires; Heat diseases; Threats to the elderly and children; Increased mortality.	Loss of cropping suitability.
Decreasing rainfall	Shifts in forest types; Conversion of forest to other land cover; Desertification.	Reduced tree growth; Reduced yields of forest products; Increase in pests and pathogens; Tree mortality;	Shallow freshwater contracts landward and ocean water infiltrates;	Reduced freshwater availability; Compounded stress on water resources.	Soil erosion; Disruption of the forest nutrient cycling;	Loss of agricultural production; Loss of “criação” and cattle; Forced changes in human feeding habits; Loss of fodder.	Drought stress; Less drinkable water; Increased mortality.	Loss of cropping suitability.
Increasing storm frequency	Damage to forest structure.	Damage to forest structure.	Damage to coastal vegetation; Saline intrusion into freshwater lenses.	Water pollution.	Loss of top soil.	Loss of subsistence crops; Losses in commercial agriculture. Increased migration;	Damage to health and safety infrastructure; Increased exposure to epidemic diseases; Threat to human life.	Loss of property and livelihoods; Loss of subsistence means.

4 NEEDS ASSESSMENT

A basis for the participatory activities and trainings of REFLOR-CV

As a first step of the CD plan, an assessment of needs is performed. Moreover, since the procedures for this assessment serve as an organizational basis for the continuation of all other participatory activities, they are described here.

4.1 Procedures

The procedures follow the steps illustrated in Figure 2, which are not necessarily sequential and may be subject to iterations in both phases of the approach. First, a set of key project partners is consulted. Then, this set is progressively complemented as a function of the outcome and knowledge gained through the initial interchanges.

During the first phase, the focus is on obtaining reliable information regarding stakeholders and on collectively deriving a capacities baseline. Then, based on these elements, a gap analysis is produced by the project team. Such analysis supports the assessment of needs and is used as a starting point for the group discussions in the second phase, which will allow participatory discussions of the priorities. Finally, there will be a shorter discussion period supporting the design of the technical training program.

4.2 Stakeholders mapping

The MAA is the main institutional stakeholder and is also the organization where most forest and agriculture decisions are taken and where the most representative set of technical staff is found. Therefore, the consultation process starts there and unfolds with a tentative initial calendar presented in APPENDIX 3. As such, the methodology strongly relies on the collaboration of the project´s national technical team (ETN) and on the national project coordinator. Additionally, the *Instituto Nacional de Meteorologia e Geofísica* (INMG) is a main actor regarding the compliance with international and national climate agreements and will thus also play major role.

The core project partners are listed in Table 4. This table lists the elements of the ETN, while the current stakeholders map is shown in APPENDIX 4. This mapping exercise is not closed and will evolve to include more organizations from the civil society as the development of the CD activities of REFLOR-CV evolve in phase 2.

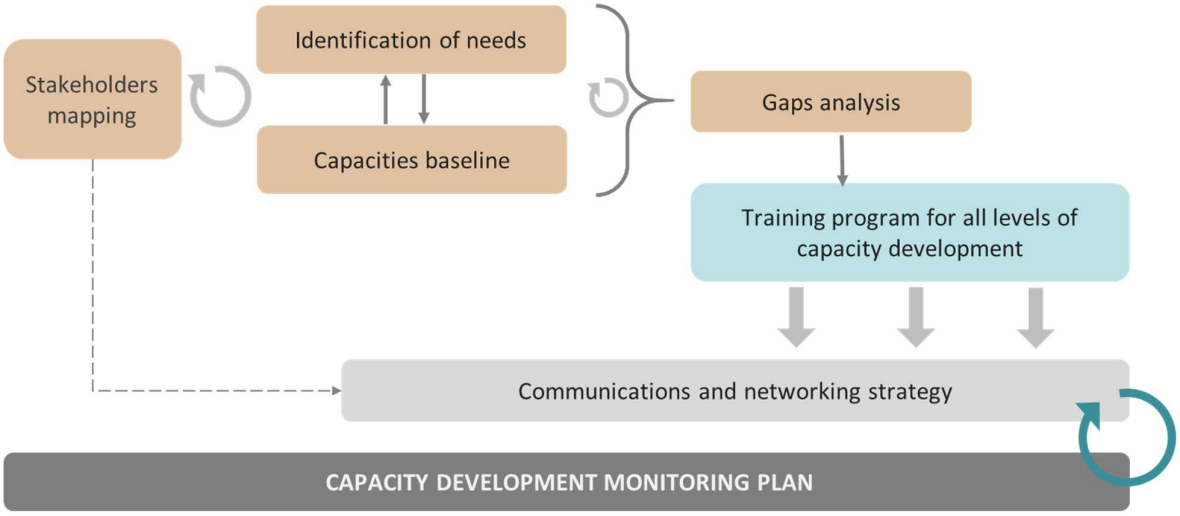

Figure 2 – Illustration of the iterative, top-down /bottom-up needs assessment steps (light brown) as a basis for the subsequent participatory and training activities.

Table 4: Core project partners of the MAA

Key Units	Key Staff	Email
Gabinete Ministro	Ethel Rodrigues – Directora de Gabinete	ethel.rodrigues@maa.gov.cv
	Eneida Rodrigues – Assessora Especial	eneida.rodrigues@maa.gov.cv
	Ester Brito- Assessora para Meteorologia e Ambiente	ester.brito@maa.gov.cv
Direcção-Geral da Agricultura, Silvicultura e Pecuária	José Teixeira- Diretor Geral	jose.Teixeira@maa.gov.cv
	Leopoldina Furtado, assistente do diretor geral	leopoldina.Furtado@maa.gov.cv
Direcção de Serviços de Engenharia Rural e Florestas	Jacques Tavares, Diretor de Serviços	Jacques.Tavares@maa.gov.cv
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	Alexandre Centeio, Equipa Técnica Nacional REFLOR-CV	alexandre.centeio@maa.gov.cv
	Domingos Barros, Ponto Focal da CC à Desertificação	domingos.Barros@maa.gov.cv
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	Daniel Xavier Equipa Técnica Nacional REFLOR-CV	daniel.xavier@maa.gov.cv
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	Paula Mendes Equipa Técnica Nacional REFLOR-CV	paula.Mendes@maa.gov.cv
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Delegação do MAA na ilha da Boavista	Xisto Baptista - Delegado, Equipa Técnica Nacional	Xisto.F.Baptista@maa.gov.cv
Direção Nacional do Ambiente	Alexandre Nievsky – Director Nacional	nevskyrodrigues@gmail.com

	Sónia Araújo, , Diretora de Serviços de conservação da natureza e Ponto Focal da Convenção de Biodiversidade	sonia.araujo@maa.gov.cv
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	Paula Monteiro - Equipa Técnica Nacional REFLOR-CV	paula.d.monteiro@maa.gov.cv
Instituto Nacional de Metereologia e Geofísica- INMG	Maria da Cruz Soares - Presidente	mariac.soares@inmg.gov.cv
	Denise Pina- Delegada da Praia	denise.pina@inmg.gov.cv
	Carlos Moniz, Ponto Focal UNFCCC	camoniz@yahoo.com.br
Instituto Nac de Investigação e Desenvolvimt Agrário	Ângela Moreno, Presidente	angela.Moreno@inida.gov.cv
	Samuel Gomes - Equipa Técnica Nacional REFLOR-CV	samuel.Gomes@inida.gov.cv
Agência Nacional de Água e Saneamento - ANAS	Miguel Moura- Presidente	miguel.moura@anas.gov.cv
	Marize Gominho- Directora	marize.gominho@anas.gov.cv

4.3 Identification of needs and establishment of the capacities baseline

Consultation with the core partners is a means of organizing a primary set of bi-lateral visits to key-stakeholders and of defining the initial cluster of cross-sector meetings. Simultaneously, the availability for collaboration at political and technical level is gauged.

The identification of needs applies the interconnected top-down / bottom-up and step-wise procedure illustrated in Figure 1 and relies on structured, semi-structured or non-structured interviews. Additionally, a set of presentations is prepared to guide the development of the participatory process focusing on the four SFM themes listed in Box 2. APPENDIX 5 includes examples of draft materials for the bi-lateral meetings and APPENDIX 6 examples for the group meetings of the participatory CD process.

A description of aspects required in SFM and a list of the respective skills is presented in Table 5, while Table 6 identifies the associated challenges. These two tables, together with the assumed overall lack of climate change knowledge, serve as a basis for guiding the assessment of needs in the two phases of the approach. The four thematic groups will serve as pillars for the discussions, also subsequently serving as a reference for defining the training priorities. Many of the skills presented in the tables are required in the four themes.

Table 5: Aspects of the CD process: required skills (adapted from Kleine et al., 2005)

SMF ASPECTS	SKILLS	Notes
technical, managerial and organizational skills	• field operations • forest management planning • monitoring and evaluation • marketing and commercialization • accounting, administration and enterprise development • developing common visions and conflict resolution.	These capacities can be quickly built at project level.

capacities to formulate, implement and evaluate policies	• knowledge of participatory methods for policy options • communication: matching means and messages to audience • how to build trust and influence policy • networking and information sharing.	Political, institutional and organizational conditions take longer to achieve.
research and development	• research partnerships enhancing capacity and networking • integration in the international R&D community • research methods, planning, implementation of R&D projects • preparation of high-quality proposals for funding agencies.	These capacities improve understanding between the scientific community and policy makers.
forest-related education for awareness	• incorporate various disciplines into forest-related curricula • network, communicate, share experiences for mobilization • integrate field experiences for on the fly problem solving.	Forestry education is increasingly integrated with agriculture and natural resource management.
networking, communication, and information exchange	• upgrade knowledge and skills in information sharing • experience in communication techniques, conflict resolution, mobilization of community knowledge, increasing awareness • knowledge of participatory planning and decision-making processes.	These prepare stakeholders for greater participation in an increasingly connected and interactive society.
expanding capacities	• achieve long term sustainability • incorporate feedback from demonstration areas, model forests and pilot projects to the policy level.	Impacts of CD can be limited by constraints in the enabling environment. Try to promote a creative engagement.

Table 6 - Aspects of the CD process: challenges (adapted from Kleine et al., 2005)

SMF ASPECTS	CHALLENGES	Notes
communication and information exchange	• improving public relations to communicate forest agenda to society • increasing public awareness and participation of an informed public in forestry matters • improving compatibility between research agendas and the needs of policymakers and field practitioners.	Enhancing the future contribution of forestry to sustainable development requires change in attitudes of individuals, institutions and entire social systems over time.
building and maintaining partnerships	• partnerships and networking require face-to-face meetings, joint field trips, working sessions, etc. • partnerships should be enhanced through better integration of existing networks.	Adequate financing should be allotted to these activities and to network management.
broader strategies for mutually reinforcing and demand driven CD	• advancement in the knowledge of biological processes and management systems must not be neglected • multi-stakeholder learning processes and partnership development are essential to mobilize and expand scientific knowledge and technical skills for SFM.	Successful CD can be achieved through the involvement of networks at local, regional, and global levels.

4.4 Gaps analysis

The needs identified and the capacities available in the country are summarized in APPENDIX 7. These elements, collected during a structured discussion supported by filled-in questionnaires, are integrated with technical knowledge; climate change information (IPCC, 2012; IPCC, 2013; Nurse et al., 2014) and

information in official national documentation (Republic of Cabo Verde, 2015; 2017; 2018) for further analysis by the project team. The results of the analysis are summarized in Table 7 and will be discussed, adjusted, and validated by stakeholders during the second phase as an entering element for the preparation of the training program. This program will pay special attention to the cross-cutting gaps in climate change knowledge and gender issues.

Table 7: Capacity gaps for sustainable forest management in Cabo Verde

Capacity Gap	Justification
Development of common visions and resolution of conflicts	This aspect was highlighted as a major bottleneck in the discussions. It is felt that the lack of capacity to develop integrated visions, and to successfully steer different objectives and points of view, undermines several of the aspects needed in SFM.
Forest management planning	Even though the capacities for planning did not appear in the highest urgency category in the discussion (appeared in the second highest category), this is a are very important for the project. At the same time, the experience of the project team during prior interchanges with technical staff shows that, even though basic capacities are available, there is a pressing need for methodological and technological updating.
Monitoring and evaluation	This aspect was highlighted as a major bottleneck in the discussions. Given the recent technological advances with the availability of large data repositories online (including satellite imagery) and simple, but powerful tools for monitoring (e.g. FAO *Openforis*), it is very important to address this need. Moreover, monitoring and reporting skills are crucial for effective demonstration of performance targeting payments for ecosystem services.
Research partnerships, enhancing capacity and networking	This aspect was highlighted as a major bottleneck in the discussions. The reported lack of participation of the research community in land use decisions and in development projects, as well as the insufficiency of well designed, long-term experimental trials, preclude the improvement of research output directly usable in development plans, such as sustainable forest plans.
Integration in the international community	Lack of integration is perceived both in R&D and in the sub-regional development and thematic communities and networks. From the discussion it apparent that, even though some individuals are well connected, there is a weak internal transmission and sharing of knowledge and opportunities.
Knowledge of participatory planning and decision-making processes.	The lack of experience in participatory decision-making procedures was highlighted as a major capacity gap during the discussions. Difficulties in passing important technical messages to the policy makers is also highlighted as a major capacity gap.

5 REVISION OF FOREST RELATED STRATEGIES AND POLICIES

Working with strategic, programmatic and legal frameworks to create enabling environments

Domestic strategies, with their respective sectoral policies and legal frameworks, outline a country's goals and set the 'rules of the game', thus defining the spectrum of acceptable/desirable behaviors. In parallel, national commitments to international policies and agreements, such as those under the UNFCCC, incentivize the conformity of national rules with global sustainable development goals. Therefore, since the legal context can have a crucial impact on the effectiveness, efficiency, and equity of REFLOR-CV implementations and on people depending on forests, it is essential that the strategies, policies, plans and

legislation governing the forest sector be revised. Figure 3 illustrates the key components of an SFM governance system.

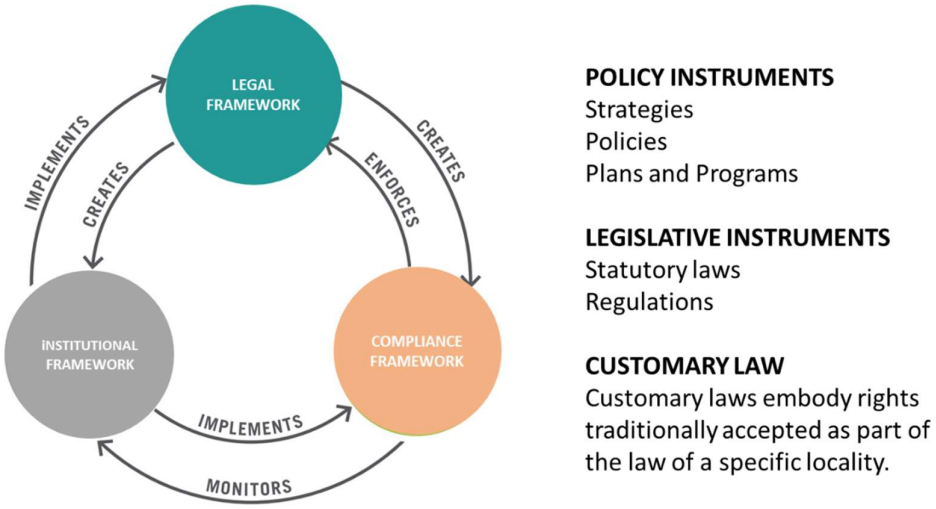

Figure 3 - A simplified illustration of the three components of the governance system (left) and the key elements of the legal framework (right). Reality is more complex, and, for instance, the compliance framework is mostly a function of the institutional framework. Adapted from Denier et al. (2014).

Since forests are governed within a broad range of land use objectives, it is important to ensure that greater cohesiveness and coordination across different land use sectors is attained. To this end, REFLOR-CV is in the process of recruiting a consultant team capable of providing a deep analysis of cross-sector national strategies and legislations, as well as of the legal, institutional, and compliance frameworks governing the AFOLU sector.

Notwithstanding, the work developed in the thematic group meetings during the second phase, namely that related to the governance group, will ensure the integration of participatory developments with the technical basis provided by the recruited consultant(s). Such efforts will assist in defining the most adequate institutional arrangements and information sharing protocols for SFM and will contribute to clarify the most pressing policy needs. In the meantime, as a kick-off step, a list of the main existing governance instruments related to the forest sector is under compilation by the project´s ETN. This list is presented in Table 8 below.

Table 8: Preliminary draft list of strategic, policy, and programmatic instruments relevant for SFM, as identified by stakeholders

Name of policy instrument	Year	Level	Notes
Programa do Governo IX Legislatura	2016	National	
Plano Estratégico de Desenvolvimento Sustentável- PEDS	2017-2021	National	
Documento de Crescimento e Redução da Pobreza III - DCERP III	2011-2016	National	
Plano Nacional de Investimento Agrícola - PNIA II	2018	National	
Lei Florestal de Cabo Verde	1998	National	
Plano de Ação Florestal Nacional	-	National	

Plano Nacional de Adaptação -NAP	2008-2012	National	
Third National Communication on Climate Change	2017	National	Submitted to the UNFCCC
Intended Nationally Determined Contribution	2015-2030	National	Submitted to the UNFCCC
NAMAS Support project - Promotion of Electric Mobility	2018-2030	National	Ministry of Industry, Commerce and Energy (MICE) / GIZ
Plano de Ação Nacional para o Ambiente	2004-2014	National	

6 CROSS-SECTOR COLLABORATIVE LAND USE PLANNING FOR SUSTAINABLE FOREST MANAGEMENT

A landscape approach to forests - addressing watersheds and ecosystem protection

6.1 Climate vulnerability and land use planning

The natural suitability of lands for forestry and agriculture is of crucial importance where vulnerable populations largely rely on rain-fed agriculture for food and cash, as well as on wood for energy. These conditions entail high exposure to the impacts of climate change and at the same time induce unsustainable land uses and practices, further increasing the consequences of such impacts. Vulnerability to climate change can be reduced, and resilience increased, by minimizing exposure and improving the adaptive capacity through sustainable land use practices and transformative behaviors.

In Cabo Verde, the main limiting factor to land productivity has been the availability of fresh water due to decreasing, and mostly insufficient, precipitation. Thus, ecosystem-based adaptation and mitigation activities largely depend on the sustainable management of watersheds and on protection of soil quality, avoiding erosion and increasing infiltration for the replenishment of aquifers. It is therefore vital, that adequate regional planning can serve as a guiding instrument for installing the most adequate land use in each location, considering both current and future climate conditions, and considering the main natural factors determining land use suitability. Simultaneously, human aspects, such as population density and land use history, determine the possibility and the interest of fulfilling the natural potential of the land. This potential should be analyzed in the context of development scenarios and climate change projections, which, given policy directives, reinforce the establishment of planning guidelines at island level. These guidelines can be supported by the work of the cross-sector collaborative group for Zero Land Degradation (*Neutralidade para a Degradação das Terras*).

The trade-offs between different uses of land and ecosystem services must therefore be carefully analyzed, intersecting natural and anthropogenic factors. This analysis supports the development of regional instruments capable of correctly guiding the more detailed local land use plans, including the forest management plans sought in REFLOR-CV.

The activities of the project will thus produce two types of planning products:

1. Forest strategic plans at island level; and
2. Sustainable Management plans at forest level.

The draft profile of each of these two products is shown in Box 3. Moreover, to address the requirements for planning, analysis, replicability and information display of territorial governance of the three target islands, baseline data and information needed to support regional planning is stored and manipulated in a geographic information system (GIS). This data will subsequently be enriched with the higher resolution local cartography for the detailed forest management plans.

Box 3 – Profiles of planning products

1. Forest strategic plans at island level

- Biophysical and socioeconomic characterization
- Definition of general objectives for conservation and production
- Elaboration of thematic cartography
- Classification of forest areas into agro-ecological strata
- Definition of critical areas
- Relationship between forest plans and environmental, urban and territorial planning
- Establishment of protection, conservation, and enhancement of forest and other natural resources
- Identification of forestry and forest resource management models
- Identification of threatened areas: fire hazard, erosion, ecological, social and cultural risks
- Socioeconomic and environmental impacts
- Monitoring and evaluation plan

2. Sustainable Management plans at forest level

- Definition and mapping of management units
- Historical evolution of reforestation and exploitation of forest resources
- Elaboration of thematic cartography
- Potential for wood or PFNLs production
- Socioeconomic assessment
- Identification of forestry and forest resource management models per unit
- Forest fire prevention directives
- Watershed management directives
- Monitoring and evaluation

6.2 Procedures for producing sustainable forest management plans

The methods and the outputs of the planning process were discussed in the last two meetings of the ETN and were also clarified with the project formulators. As a result of the said discussions, and given the current insufficiency of strategic basic instruments, the two types of planning products described above were considered as adequate and necessary.

The conceptual model envisioned for the core regional analysis is presented inFigure 4 and will support the forest strategic plans at island level. The model is based on natural and human factors: a) physiography; geomorphology/soils; and bioclimatology; and b) location of communities / infrastructure; population density; and land use history, respectively. It will produce a zoning framework identifying areas suitable for:

- Forests for production;
- Forests for protection;
- Forests for biodiversity;
- Forests for recreation;
- Agro-forestry

Additionally, the most suitable species for each of the forest functions listed above will be identified and ranked. Both forest function and species composition contribute to contextualize the Sustainable Management Plans at forest level for the selected forests. The latter are chosen by the ETN, and four of them are already located as depicted in Figure 5.

Further revision of studies describing and inventorying natural resources of the three islands will be performed. However, the scarcity and generality of the existing information must be acknowledged, especially for the Fogo and Boa Vista islands. Nevertheless, for vegetation, information on endemic and agricultural species is now available and can be usefully analyzed. Additionally, the work sessions with the four thematic groups established in the project´s participatory strategy will assist in the development of most adequate SFM plans.

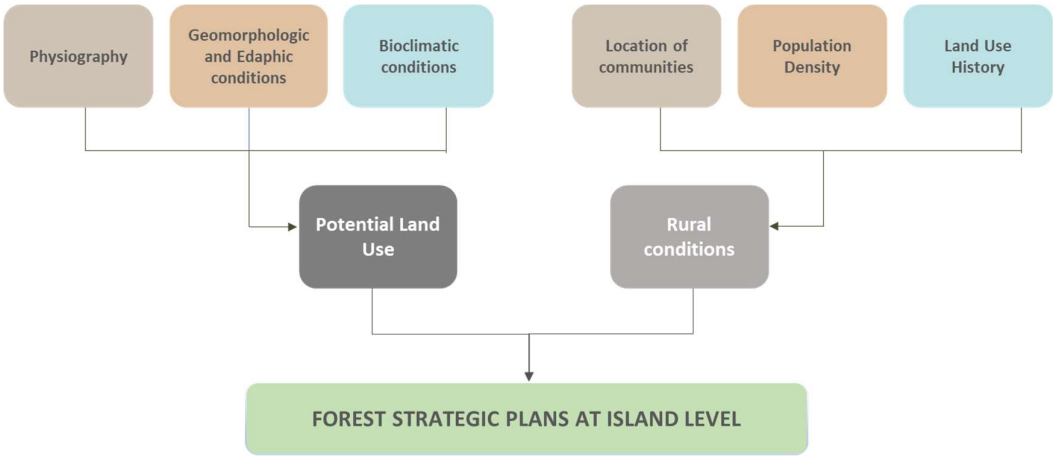

Figure 4 - Conceptual model for regional forest plans

In addition to the scarcity of climatic and vegetation data, the information regarding the current status of the selected forests is also insufficient and will have to be collected by an external service provider. In this context, a forest inventory will be implemented comprising:

- Forest cover zoning and mapping;
- Forest structure and biomass assessment;
- Selection of forest growth models.

Three work groups within the ETN were constituted to direct the development of each of the inventory tasks above, supporting the work of the project team. The main management interventions will consist of: clearance of invasive vegetation; planting of tree species suitable for predicted climate change; thinning actions, and wood harvesting.

The Sustainable Management plans at forest level will include yearly maps of the forest areas for management interventions and the corresponding guidelines for the period of 2021-2030. Such guidelines will also address procedures dedicated to adding value to alternative forest products and services, such non-timber forest products or recreation.

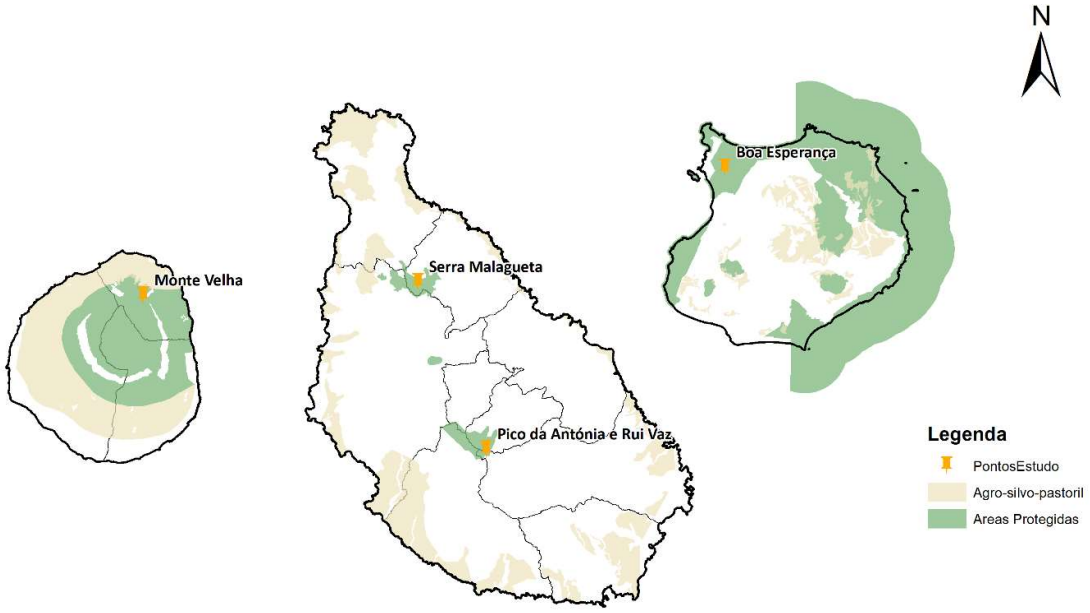

Figure 5 - Location of four of the six forests (PontosEstudo) in Fogo (left), Santiago (center), and Boa Vista (right), respectively

7 DESIGN AND IMPLEMENTATION OF THE TRAININGS

A training program addressing the gap analysis and supporting the four themes of the participatory process

The development priorities of REFLOR-CV and the most relevant capacity gaps identified will support decisions regarding the emphasis given to specific items of the technical training program. Nevertheless, some generic preparatory activities for this program are already undergoing and include the development of materials regarding climate change mitigation and adaptation through sustainable forest management in dryland areas, as well as a draft layout of the possible training sessions and their contents. Connections with the local awareness-raising activities of the project, namely those targeting NGOs, will also be explicitly included in the finalized training program, which will be revised during the second phase of the participatory process. This revision will have a direct and strong participation from academia and research bodies with the objective of integrating more knowledge in the preparation of materials and also with the purpose of installing long-lasting and continuous collaboration channels with the University. This collaboration can contribute to include students in the project activities and to provide research topics and contexts, including data collection and analysis opportunities for research and teaching objectives.

The trainings will mostly take place during the second phase of the CD program and will initially have a strong focus on institutional and technical aspects. However, they will always be framed by ecological, socioeconomic, and climate change concerns, which, together with parallel consultations and participatory activities, will unfold as a contribution to the awareness-raising objectives of REFLOR-CV.

The organization of the technical training sessions to be delivered in the second phase will be finalized once the participatory needs assessment is completed during the initial stages of the second phase.

Nevertheless, the priorities and the respective audiences are discussed during the bi-lateral meetings that take place during the first phase of the CD activities.

8 CONTRIBUTIONS TO THE COMMUNICATION STRATEGY

National and island climate change fora

Based on the participatory activities that start with the needs assessment procedures and continue with the group meetings and with training sessions, entangled with awareness-raising activities, various sub-groups and communication networks will progressively assemble. At the same time, dissemination and communication will be enhanced through an online platform, which will gain wider impact as the web-based GIS is made operational and geographical, as well as alpha-numerical, data are shared and progressively made available to the general public.

One important step for increasing transparency and information sharing is the constitution and operation of the regional and national *fora*. The discussions within each *forum* will contribute to shape the information content and interactive characteristics of the digital dashboard under development, which will serve as an information portal for the project activities and will include a repository of press and media releases. The portal will comprise both the marketing materials and information on the project activities and their results in a web site format. The geographical data component of the project will serve as a form of centralizing, archiving, and distributing official data according to pre-established release rules (e.g. through the work of the Governance sub-group).

9 CAPACITY DEVELOPMENT MONITORING PLAN

Monitoring the skills to perform functions, to solve problems, and to set and achieve objectives

During the implementation of the participatory procedures described above, indicators for monitoring the improvement of capacities (and their means of verification) will be collectively selected, validated and included in the CD monitoring plan. This plan will also include procedures for updating the needs and capacities assessment. In any case, the discussions will be based on didactic presentations and on a framework of items prepared by the project team.

The monitoring and demonstration of performance in capacity developments through REFLOR-CV will be a within-project responsibility and will be included in the final report. By the end of the capacity development program the ability of Cabo Verde to develop, implement, and use sustainable forest management as a response to the risks and impacts of climate change, either by mitigation and/or adaptation, should be significantly reinforced and local livelihoods improved.

10 CALENDAR

	Steps	2019								2020												2021						% actividade por cada ano		
		5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6			
1. Analysis of climate change risks and threats to the forestry sector;	Draft matrix of climage change risks and threats to SFM in Cabo Verde																											100%	0%	0%
	Final matrix of climage change risks and threats to SFM in Cabo Verde																											100%	0%	0%
2. Needs assessment for SFM	Needs Assessment Phase 1																											100%	0%	0%
	Needs Assessment Phase 2																											100%	0%	0%
3. Revision of existing forest-related strategies, policies and programs	Draft revision by stakeholders																											100%	0%	0%
	Final revision and analysis of legal frameworks including land tenure																											90%	10%	0%
	Proposal, discussion and approval of institutional arrangements for SFM and rules for data sharing																											10%	90%	0%
4. Development of cross-sector collaborative land use plans for sustainable forest management in Santiago, Fogo and Boa Vista	Data collection and compilation of geodatabase																											100%	0%	0%
	Consultation process (oficial institutions and civil society)																											30%	70%	0%
	Technical analysis																											0%	100%	0%
	Santiago Forest Strategic Plan																											100%	0%	0%
	SFM Plans for Santiago																											30%	70%	0%
	Fogo Forest Strategic Plan																											100%	0%	0%
	SFM Plan for Fogo (Monte Velha)																											20%	80%	0%
	Boa Vista Forest Strategic Plan																											10%	90%	0%
	SFM Plan for Boa Vista (Boa Esperança)																											10%	90%	0%
5. Design and implementation of effective and cost-efficient trainings	Consultation process																											60%	40%	0%
	Design of training programme for official entities																											100%	0%	0%
	Design of a training program for civil society entities																											50%	50%	0%
	Implementation of trainings																											60%	40%	0%
6. Contributions to the communication strategy through the climate change *fora*	Constitution of the national *forum*																											100%	0%	0%
	Constitution of the regional *forum*																											100%	0%	0%
	Operation of the *fora*																											10%	70%	20%
Participatory process official entities	Bilateral meetings - nacional and regional																											20%	60%	20%
	Cross-sector group sessions																											20%	60%	20%
	Capacity Development Monitoring Plan																											0%	60%	40%

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APPENDIX 1: Methods and data gathering instruments

ESTRATÉGIA DE RECOLHA DE DADOS - MATERIAIS

ESTRATÉGIA DE RECOLHA DE DADOS - MATERIAIS

QUANDO UTILIZAR QUESTIONÁRIOS

Objetivo da análise muito concreta;
Necessidade de resultados quantitativos (estatisticamente representativos);
Maioritariamente respostas fechadas.

QUANDO UTILIZAR ENTREVISTAS SEMI-ESTRUTURADAS

Análises exploratórias e conhecer o funcionamento da comunidade;
Quando o objetivo é obter respostas abertas de carácter exploratório;
Útil para os informadores-chave.

QUANDO UTILIZAR GRUPOS FOCAIS

Captar visão de vários atores em simultâneo;
Para procurar consenso e validar respostas de/em grupo;
Possibilidade de separar os atores por grupos.

ESTRATÉGIA DE RECOLHA DE DADOS - MATERIAIS

QUESTIONÁRIOS

- Construir cuidadosamente as questões individuais;
- Apresentação clara e agradável do questionário;
- Explicação clara do resultado do questionário;
- Implementação de um teste piloto;
- Aplicação bem planeada;
- Procurar a melhor execução.

Como construir?

Identificar os temas a investigar → Identificar as variáveis necessárias → Quais são os detalhes de cada dado a recolher → Construir as questões (preferencialmente por categorias)

ESTRATÉGIA DE RECOLHA DE DADOS - MATERIAIS

ENTREVISTAS SEMI-ESTRUTURADAS

Para construir um guião de entrevista semi-estruturada e grupos focais é necessário ter em conta:

- o objetivo da análise;
- a necessidade de estabelecer contato pessoal;
- a natureza das questões de recolha de dados;
- o tempo a dedicar.

GRUPOS FOCAIS

Vantagens específicas na utilização de grupo focal:

- captação de várias visões ao mesmo tempo;
- quando existe necessidade de grupos;
- opiniões de grupo podem trazer resultados mais ricos.

ESTRATÉGIA DE RECOLHA DE DADOS - MATERIAIS

Algumas técnicas que podem ser utilizadas nos materiais de recolha

MAPAS COMUNITÁRIOS · LISTAS · CLASSIFICAÇÃO
CALENDÁRIOS SAZONAIS · CATEGORIAS · QUANTIDADE
DIAGRAMAS DE VENN · ORDENAR · MATRIZ

ESTRATÉGIA DE RECOLHA DE DADOS – TÉCNICAS

ERROS E VALIDAÇÃO

ERRO DO ASSUNTO

No dia de observação o grupo estava focado noutro assunto que não o alvo de análise

(por ex. ocorreu um acidente ou uma catástrofe natural)

ERRO DO TEMPO

Procurar que a recolha de dados ocorra no tempo mais oportuno

(por ex. longe da hora de almoço)

ESTRATÉGIA DE RECOLHA DE DADOS – TÉCNICAS

ERROS E VALIDAÇÃO

ERRO INTERPERTAÇÃO

Realmente quis dizer isso?

Que outras interpretações eu poderia retirar?

EFEITO OBSERVADOR

A observação do comportamento pelo observador muda a natureza desse comportamento devido ao sujeito estar consciente de estar ser observado.

(pode ser minimizado se a observação ocorrer em segredo, minimizar a interação, ou ocorrer múltiplas vezes)

ESTRATÉGIA DE RECOLHA DE DADOS – TÉCNICAS

ÉTICA

A ética do estudo refere-se à adequação do seu comportamento em relação aos direitos daqueles que se tornam sujeitos do seu trabalho ou são afetados pelo estudo

A mensagem introdutória é vital sendo muito importante clarificar o objetivo do estudo, evidenciar a natureza voluntária da participação e a privacidade dos participantes.

A língua e a linguagem deve ser apropriada e adaptada ao tipo de participante que está a ser inquirido, sem qualquer tom paternalista, ameaçador ou aborrecido.

ESTRATÉGIA DE RECOLHA DE DADOS – TÉCNICAS

ÉTICA

F FREE · C CONSENTIMENTO
P PRIOR · L LIVRE
I INFORMED · P PRÉVIO
C CONSENT · I INFORMADO

CONSENTIMENTO LIVRE PRÉVIO E INFORMADO:

O **direito** de dizer um definitivo "não" ou "sim", com ou sem condições. O processo de acordo deve ser compatível e consistente com o processo de tomada de decisão das pessoas afetadas

Livre de sofrer intimidação, coerção ou pressão por alguém (governo, empresa ou qualquer organização)

O consentimento deve ser procurado **antes** do projeto começar. Os afetados devem ter tempo suficiente para compreender e tomar uma decisão informada.

Todas as informações relevantes devem ser disponibilizadas aos afetados, incluindo os recursos necessários para permitir qualquer pesquisa adicional necessária para avaliar adequadamente os riscos e benefícios em potencial.

APPENDIX 2: Development of the matrix with climate change risks and threats to the forest sector

The process presented here is based in the Brundell, J.; Cobon, D.; Stone, G.; Cliffe, N. Climate Change Risk Management Matrix: A Process for Assessing Impacts, Adaptation, Risk and Vulnerability; Workbook; Queensland Climate Change Centre of Excellence (QCCCE), Department of Environment and Resource Management: Brisbane, Australia, 2010; pp. 1–2

STEP 1. DEFINE AREA OF INTEREST AND TIMESCALE BOUNDARIES

- Physical area: Cabo Verde
- Timescale: 2020 – 2100

STEP 2. IDENTIFY IMPORTANT CLIMATE CHANGE VARIABLES FOR YOUR SITUATION.

- Record the six most relevant climate change variables and rank

Table 1. List of climate change variables and the level of confidence in projections.

Level of Confidence	Climate Change Variables	Priority
Virtually Certain	Sea Level Rise	
	Increasing storm frequency	
	Increasing air surface temperatures	
	Decreasing rainfall with extreme rain events	
	…	

STEP 3. ASSIGN LIKELY CHANGES IN CLIMATE PATTERNS

- Determine the likely changes in the climate change variables;
- Describe the likely changes for the 3 most important climate change variables.

Table 2. Confidence and Likelihood of the Cape Verde experiencing the Climate Change Variables in Table 1.

Level of Confidence	Likelihood of the Outcome	Equivalent Priority Level	Color Code
Virtually Certain	99-100% probability	1	
Extremely Likely	95-99% probability	2	
Very Likely	90-95% probability	3	
Likely	66-90% probability	4	

STEP 4. IDENTIFY RELEVANT ELEMENTS OF THE FOREST SECTOR

- List the elements of the forest sector that may be affected by the changing climate, and then prioritise the three most important (1 being the highest and 3 the lowest importance).

Table 3. Elements of the Forest sector that are affected by Climate Change

Drivers of the forest sector	Elements	Priority
Production drivers	Forest type and area Forest productivity	
Natural resource drivers	Biodiversity Water availability and quality Soil quality	
Social drivers	Food security and livelihoods Human health Poverty	

STEP 5. COMPLETE FRAMEWORK OF THE IMPACT RISK MATRIX

- Add the climate variables in lines and the elements in columns to a Risk Matrix table.

Table 4. Threats and Risks Matrix

Climate Change Variable	Forest type and area	Forest productivity	Biodiversity	Water availability and quality	Soil quality	Food security and livelihoods	Human Health	Poverty
Sea Level Rise	Shifts in forest types and forest areas contractions; Coastal forests transitioning to more saline-tolerant species.	Impacts on coastal forests driving location and/or species shifts.	Species horizontal shifts and range decline; Increased salinization and rising groundwater.	Salt water infiltration.	Soil salination from inundation; Soil erosion.	Loss of agricultural production; Damage to facilities of economic, social or cultural importance; Increased migration;	Threat to life.	Loss of property and livelihoods.
Increasing air surface temperature	Shifts in forest types; Desertification; Increased fire risk.	Reduced tree growth; Reduced yields of forest products; Increase in pests and pathogens; Tree mortality;	Decline and altitudinal species range shifts and contractions; Increasing exotic and pest species range and invasions;	Increased evaporation; Increased evapotranspiration.	Loss of soil organic matter; Disruption of the forest nutrient cycling.	Increased fire intensity, Loss of forest foods, medicines, other NWFPs and timber. Loss of marketable goods.	Smoke from forest fires; Heat diseases; Threats to the elderly and children; Increased mortality.	Loss of cropping suitability.
Decreasing rainfall	Shifts in forest types; Conversion of forest to other land cover; Desertification.	Reduced tree growth; Reduced yields of forest products; Increase in pests and pathogens; Tree mortality;	Shallow freshwater contracts landward and ocean water infiltrates;	Reduced freshwater availability; Compounded stress on water resources.	Soil erosion; Disruption of the forest nutrient cycling;	Loss of agricultural production; Loss of “criação” and cattle; Forced changes in human feeding habits; Loss of fodder.	Drought stress; Less drinkable water; Increased mortality.	Loss of cropping suitability.
Increasing storm frequency	Damage to forest structure.	Damage to forest structure.	Damage to coastal vegetation; Saline intrusion into freshwater lenses.	Water pollution.	Loss of top soil.	Loss of subsistence crops; Losses in commercial agriculture. Increased migration;	Damage to health and safety infrastructure; Increased exposure to epidemic diseases; Threat to human life.	Loss of property and livelihoods; Loss of subsistence means.

STEP 6. DESCRIBE CLIMATE CHANGE IMPACTS

- Consider and record in the Impact Risk Matrix worksheet the expected impact of each climate change variable for each element of the organisation. Do this independently of other influences.

STEP 7. DETERMINE LIKELIHOOD CATEGORY FOR THE IMPACT

- Using Table 5, consider the likelihood of the climate change event occurring being in one of the following categories either almost certain, likely, possible, unlikely or rare;
- Record the likelihood category in Impact Risk Matrix table.

Table 5. Likelihood Categories Describing the Occurrence of Each climate change Impact.

Rating	Recurrent Events	Single Event
Almost Certain	Could occur several times per year	More likely than not. Probability greater than 50%
Likely	May arise about once per year	As likely as not. 50/50 chance of happening
Possible	May arise once in 10 years	Less likely than not but still appreciable. Probability less than 50% but still quite High
Unlikely	May arise once in 10 years to 25 years	Unlikely but not negligible. Probability Low but noticeably greater than zero
Rare	Unlikely during the next 25 years	Negligible. Probability very small, close to zero

STEP 8. DETERMINE CONSEQUENCE CATEGORY FOR THE IMPACT

- Consider the consequence of the impact if the climate change event occurred. Consequence categories range from catastrophic to minor;
- Write the consequence category in each cell of the Impact Risk Matrix worksheet.

STEP 9. ASSIGN IMPACT RISK IN THE IMPACT RISK MATRIX

- Record the impact risk in the Impact Risk Matrix worksheet

Likelihood	Consequence				
	Minor	Moderate	Major	Severe	Catastrophic
Rare	Low	Low	Low	Low	Low
Unlikely	Low	Low	Medium	Medium	Medium
Possible	Low	Medium	Medium	High	High
Likely	Low	Medium	High	High	Extreme
Almost Certain	Low	Medium	High	Extreme	Extreme

Definitions of the impact risk categories:

Extreme – This level of impact risk demands urgent attention at the most senior leadership levels of industry and government. Effective responses are always transformational and not part of routine action.

High – This level of risk needs attention at senior levels of industry executives, agency management and policy development. More senior industry and government representatives need briefing. Effective responses are usually transformational and not generally incremental routine action.

Medium – This level of impact risk needs close monitoring and reporting at senior levels (industry executives, agency senior management, pastoral company boards, NRM group executives). Effective responses may be incremental and part of routine action.

Low – This level of impact

APPENDIX 3

Calendar of bilateral meetings

Date	Entity	Staff
23.04.2019	Equipa técnica nacional (ETN) do projeto REFLOR-CV, MAA	**Luísa Morais -** Coordenadora Nacional Representantes da DGASP, INIDA e DNA
03.05.2019	Direção Geral de Agricultura, Silvicultura e Pecuária	**José Teixeira** – Diretor-Geral and Steering Committee member **Jaques Tavares** – Director of Serviços de Silvicultura e Engenharia Rural **Maria João do Rosário** – Director of Serviço de Agricultura e Proteção Vegetal **Ana Lina Olende** – Diretor of Serviços de Pecuária **Carmen Costa**– Director of Serviço de Extensão Rural e Economia Agrícola
29.04.2019	Instituto Nacional de Meteorologia e Geofísica - Praia extension	**Maria da Cruz Soares** – President **Denise Pina –** Administradora executiva **Carlos Moniz** – UNFCCC focal point **Antonino Pereira** - Director do Departamento de Agrometeorologia e Mudanças Climáticas **Francisco Correia** - IPCC focal point
30.04.2019	Direção Geral de Planeamento Orçamento e Gestão do MAA	**Elida Barbosa –** Director general and Steering Committee member **Arilde Teixeira** - Director of Serviço de Estudos Planeamento e Cooperação **Nadia de Pina –** Technical staff working with the Green Climate Fund
30.04.2019	Direção Nacional do Ambiente	**Alexandre Nevsky – Diretor Nacional** and Steering Committee member **Sónia Araújo** -Director of Serviço de Conservação da Natureza **Manuel Leão de Carvalho** – Coordinator of project BIOTUR (Projeto de integração do turismo na biodiversidade em sinergia com o sistema de áreas protegidas de Cabo Verde) **Paula Monteiro** – Technical staff of the Departamento de Informação e Seguimento da Qualidade Ambiental and REFLOR-CV National Technical Team member.
02.05.2019	Instituto Nacional de Investigação e Desenvolvimento Agrário	**Ângela Moreno** – President **Samuel Gomes** – REFLOR-CV National Technical Team member **Amarildo dos Reis** – Research staff - working group for forest fire prevention plans
02.05.2019	Universidade de Cabo Verde /ECAA	**Isaurinda Baptista** – President of the Escola Ciências Agrárias e Ambientais (ECAA) **Rosa Rocha** – Professor of Biophysical and environmental Planning, SIG, and Territorial planning.
03.05.2019	Instituto Nacional de Gestão do Território, MIOT	**Isa Amarante Fernandes** - President **Wagner Nogueira** –REFLOR-CV focal point and Steering Committee member

06.05.2019	UNDP Cabo Verde	**Celeste Benchimol** – Head of the Energy, Environment and Climate Change Portfolio (Programme Specialist) **Ricardo Monteiro** – Manager of the Small Grants Programme do Global Environment Facility
06.05.2019	Direção Nacional do Planeamento - MFP	**Carla Helena Santos da Cruz** – Diretora Nacional **Arciolindo Conceição Pinheiro** - Technical staff Direção de Serviço de Seguimento e Avaliação
TBA	Direção Nacional de Indústria, Comércio e Energia	**Rito Évora** – Diretor Nacional **Mário Oliveira** – Technical staff
TBA	Gabinete do Ministro da Agricultura	**Ethel Rodrigues** – Directora de Gabinete **Eneida Rodrigues** – Assessora Especial **Ester Brito** - Assessora para Meteorologia e Ambiente **Cláudio dos Santos** – Assessor para água e saneamento
09.05.2019	Agência Nacional de Água e Saneamento	**Miguel Ângelo Moura** – President **Marize Gominho** – Director of Departamento de Gestão de Recursos Hídricos e Saneamento
TBA	Delegação do MAA na ilha do Fogo	**Jaime ledo de Pina** – Delegate and ETN REFLOR-CV member **Lourenço Gomes** – Technical staff
TBA	Delegação do MAA na ilha da Boavista	**Xisto Baptista** – Delegate and ETN REFLOR-CV member **Sónia Barros dos Santos** – Technical staff **Juliana de Jesus Brito** – Technicala staff
TBA	Plataforma das ONGs	**Jacinto dos Santos** – Presidente **Adelcides Barros** – Technical staff and Steering Committee member

APPENDIX 4: Stakeholders mapping

CENTRAL OFFICIAL ENTITIES

Ministry	Key Units	Key Staff	Email
MAA	Gabinete Ministro	Ester Brito- Assessora para Metereologia e Ambiente	Ester.Brito@maa.gov.cv
		Eneida Rodrigues – Assessora Especial	Eneida.rodrigues@maa.gov.cv
		Ethel Rodrigues – Directora de Gabinete	ethel.Rodrigues@maa.gov.cv
	Direcção-Geral da Agricultura, Silvicultura e Pecuária	José Teixeira- Director Geral	jose.Teixeira@maa.gov.cv
		Leopoldina Furtado, assistente do diretor	leopoldina.Furtado@maa.gov.cv
	Direcção de Serviços de Engenharia Rural e Florestas	Jacques Tavares, Diretor de Serviços	Jacques.Tavares@maa.gov.cv
		Luísa Morais, Coordenadora do REFLOR-CV	luisalomba@gmail.com
		Maria de Monte Gomes	Maria.M.Gomes@maa.gov.cv
		Alexandre Centeio	Alexandre.Centeio@maa.gov.cv
		Domingos Barros, Ponto Focal da Convenção de Combate à Desertificação	Domingos.Barros@maa.gov.cv
	Dir Servi Extensão Rural e Econ Agrícola	Carmen Costa, Diretora de Serviços	Carmen.Costa@maa.gov.cv
	Direcão de Serviços da Pecuária	Daniel Xavier	Daniel.xavier@maa.gov.cv
		Analina Barros	Analina.barros@maa.gov.cv
	Direção de Serviços de Agricultura	Solange Ferreira	Solange.Ferreira@maa.gov.cv
		Maria João –Directora de Serviços	
MI	Serviço Nacional de Proteção Civil	Renaldo Rodrigues, Presidente	Renaldo.Rodrigues@mai.gov.cv renaldo.rodrigues@snpc.gov.cv
		Valdir Rodrigues, Comandante Regional Santiago Sul e Maio	Valdir.Rodrigues@mai.gov.cv
MIOT	Instituto Nacional Gestão do Território	Wagner Nogueira	Wagner.Nogueira@ingt.gov.cv
Civil Society	Rede de Jornalistas para o Ambiente	Joana Lopes	joanalopes@hotmail.com JJ9765059@gmail.com
	Plataforma das ONGs	Jacinto Santos, Presidente	jacintoabreusantos@yahoo.com.br
	Associação para a Defesa do Ambiente e Desenvolvimt	Januário Nascimento, Presidente	adad.cv@gmail.com
MFP	Directora Nacional do Planeamento	Carla Helena Santos da Cruz	Carla.Cruz@mf.gov.cv
	Direção Nacional do Orçamento e da Contabilidade	Lidiane Nascimento - Directora	Lidiane.Nascimento@mf.gov.cv
MFIS	ICIEG	Rossana Almeida -Presidente	Rossana.M.Almeida@icieg.gov.cv
Parlamento	Grupo Parlamentar Meio Ambiente	Moises Borges	rpalcdp@parlamento.cv moises.borges@paicv.parlamento.cv

Academia	UNICV	Judiht Nascimento – Reitora	carmen.paris@adm.unicv.edu.cv
		Sónia Silva - Investigadora	sonia.silva@adm.unicv.edu.cv

LOCAL OFFICIAL ENTITIES AND ASSOCIATIONS

DELEGAÇÃO	NOME	EMAIL
Boavista	Xisto Baptista	Xisto.F.Baptista@maa.gov.cv
	Juliana	Djulybrito08@gmail.com
	Sónia	Soniabarrosdossantos.cv@gmail.com
Fogo	Jaime Pina	Jaime.pina@maa.gov.cv
Tarrafal	José Luís Elba	Jose.Elba@maa.gov.cv
S. Domingos	Ermelindo Barros	Ermelindo.Barros@maa.gov.cv
S. Catarina	Gracelino Semedo	Gracelino.Semedo@maa.gov.cv
S. Cruz	Afonso Barbosa	Afonso.Barbosa@maa.gov.cv

FOCAL POINTS OF REFLOR-CV

DELEGAÇÃO	NOME	EMAIL
Boavista	Juliana Brito	Djulybrito08@gmail.com
Boavista	Sónia Santos	Soniabarrosdossantos.cv@gmail.com
Fogo	Herculano Dinis	Pnfogo.segecol@gmail.com
	Lourenço Gomes	
	Emanuel	
Tarrafal	José Afonso Fidalgo	Jose.fidalgo@maa.gov.cv
S. Domingos	Jorge Pedro	Jorge.p.silva@maa.gov.cv
S. Catarina	Adriano Borges	Adriano.Borges@maa.gov.cv
	Celestina	
S. Cruz	António Andrade	Antonio.t.andrade@maa.gov.cv
	Ernestina da Veiga	

APPENDIX 5: Examples of the contents of bi-lateral meetings

OBJECTIVOS DAS REUNIÕES A REALIZAR:

1. Apresentar o projeto e falar sobre o seu enquadramento nas prioridades, estratégias de desenvolvimento e acordos internacionais. Mostrar a importância das florestas e falar sobre a necessidade de criar condições para uma abordagem integrada do uso do solo;

2. Explicar a ideia de criação dos grupos temáticos e descrever a sua importância no suporte a uma gestão participativa e inclusiva no setor florestal;

3. Realizar uma consulta estruturada com preenchimento das tabelas para apoio à avaliação de necessidades e de capacidades.

MATERIAIS E MÉTODOS A UTILIZAR:

As reuniões são apoiadas por uma ficha informativa sobre o projeto e por uma introdução técnica preparada e adaptada caso a caso.

SITUAÇÃO FLORESTAL EM CABO VERDE

- Situação florestal em Cabo Verde
- A cobertura florestal é de 85 000 hectares, ou seja, 21% do território nacional
- Os principais produtos florestais são a lenha, o carvão, a forragem e a madeira
- A produção de lenha é de 268 000 toneladas por ano e 35% das famílias dependem da lenha para cozinhar
- Incêndios frequentes causados por negligência humana destruíram centenas de hectares de floresta nos últimos anos
- Grande parte da madeira, mais de 400 toneladas por ano, é colhida com escasso respeito pelos métodos sustentáveis

Precisamos de uma floresta mais forte, para se adaptar e resistir às alterações do clima, para proteger os nossos solos para a nossa agricultura, para drenar e infiltrar a água nas nossas barragens, e fazer uma paisagem de que todos gostemos e nos orgulhemos!

E VAMOS CONSEGUIR:

Mais de 1000 hectares de nova floresta!

- Com mais espécies endémicas e nativas;
- Com novas áreas florestais para pastoreio sustentado;
- Com mais protecção contra os incêndios;
- Com gestão participada pelas comunidades;
- Com intervenções planeadas e sistematizadas;

Mais e melhor conhecimento da nossa floresta!

- Com mais informação sobre como funciona e como se trata;
- Com mais atenção às alterações do clima;
- Com partilha da experiência apreendida;
- Com novas lições sobre a floresta, para aprender e ensinar;

Melhor gestão da nossa floresta!

- Com novos Planos para uma gestão sustentada dos seus recursos;
- Com políticas revistas para um território bem adaptado às alterações do clima;
- Com capacitação dos decisores e dos intervenientes no espaço florestal;
- Com discussão das causas e das consequências das alterações do nosso clima;

Fortalecer a Floresta, Cultivar o Futuro!

Para isso, a FAO, a União Europeia e o Governo de Cabo Verde juntam esforços no Projeto "Reforço da capacidade de adaptação e resiliência no setor florestal em Cabo Verde" GCP/CVI/046/EC.

PRINCIPAIS OBJETIVOS

- Aumentar a resiliência e a capacidade de adaptação às alterações climáticas das comunidades rurais nas ilhas de Santiago, Fogo e Boa Vista;
- Promover a gestão participativa da floresta contra a desertificação;
- Contribuir em 10% para o compromisso nacional de florestação;
- Preservar a biodiversidade, diminuindo a perda de habitat e incentivando a regeneração natural dos ecossistemas terrestres;

RESULTADOS ESPERADOS

- Reforço do quadro institucional, a nível nacional e local, na elaboração e implementação de políticas florestais adaptadas às alterações climáticas e sensíveis ao género;
- Redução da desertificação e da degradação do solo através da reflorestação e do fortalecimento da gestão participativa dos recursos florestais;
- Recolha, análise e divulgação do conhecimento sobre boas práticas de gestão florestal sustentáveis, resilientes ao clima e sensíveis ao género;

BENEFICIÁRIOS

- Agricultores e associações de comunidades rurais das ilhas-alvo;
- Organizações não governamentais, instituições de investigação e estruturas de extensão rural;
- Técnicos e funcionários do Ministério da Agricultura e Ambiente;
- Representantes dos Municípios e de organizações da sociedade civil;

APPENDIX 6: Draft presentations and materials for the group meetings

SUBGRUPOS: Plano; Monitorização; Salvaguardas; Governança

OBJECTIVOS DOS WORKSHOPS:

1. Criar e dinamizar grupos **multidisciplinares** com elementos que representem as instituições oficiais relacionadas direta ou indiretamente com o sector AFOLU;

2. Garantir a consulta de todos os **atores oficiais** num processo bi-direcionado de fluxo de informação que facilite a criação de valor acrescentado aos esforços de sustentabilidade do país e permita otimizar o trabalho do REFLOR-CV, alinhando prioridades;

3. Constituir nós estruturantes para a redes de atores a desenvolver e para os *fora* nacional, regionais e locais a dinamizar, criando plataformas organizadas. Estas enquadrarão a interação dos atores a todos os níveis e facilitarão uma **abordagem integrada da paisagem** para suporte ao ordenamento e planeamento florestal resilientes às alterações climáticas.

ATIVIDADES A DESENVOLVER:

As atividades estão pensadas para serem desenvolvidas em duas ou três sessões de grupo conforme o andamento dos trabalhos.

Sessão 1	• Veicular conhecimento sobre as alterações climáticas e o papel das florestas e distribuir informação sobre o REFLOR-CV; • Discutir, estabilizar e aprovar o mandato de trabalho e a composição do grupo, e distribuir tarefas. Discussão dos conteúdos de trabalho relevantes para este grupo; • Receber informação sobre as estruturas de funcionamento e detalhes dos processos de decisão nos setores agrícola e florestal, estabelecendo formas de otimizar a participação de todos os atores interessados: • Completar o mapa de atores-chave: apresentação do mapa em desenvolvimento e preenchimento de lacunas.	apresentações, documentação e discussão workshop (ver matérias de recolha de dados)
Sessão 2	• Discutir e trabalhar a matriz de riscos e ameaças sobre o setor florestal; • Discutir quais os requisitos para o bom funcionamento dos assuntos tratados neste grupo (*needs*) e quais as capacidades instaladas (*capacities baseline*);	Apresentação e discussão e edição da matriz e da tabela de requisitos e capacidades em desenvolvimento
Sessão 3	• Discutir a utilidade / viabilidade de distribuir questionários online para maior abrangência; • Discutir e propor trabalho subsequente; • Construir um pequeno relatório sobre o trabalho realizado.	apresentação de exemplo.

REFLOR-CV: REFORÇO DA CAPACIDADE DE ADAPTAÇÃO E RESILIÊNCIA NO SETOR FLORESTAL DE CABO VERDE

Building adaptive capacity and resilience of the forestry sector in Cabo Verde

Abril.2019

Ministério da Agricultura e Ambiente

REFLOR-CV | Objetivos e Resultados

Objetivo geral

Aumentar resiliência e capacidade de adaptação às alterações climáticas em Cabo Verde

Objetivos específicos

- Desenvolver **gestão participativa da floresta** para adaptação à desertificação
- Contribuir com cerca de 10% do alvo de **reflorestação e remoção de CO2**
- Reforçar ecossistemas desfragmentados com **regeneração natural**

Resultados esperados

- Capacitação de quadros em políticas de adaptação às alterações climáticas
- Redução da desertificação através de gestão florestal sustentável e participativa
- Desenvolvimento de conhecimento de práticas resilientes em Cabo Verde

REFLOR-CV | Componentes do Projeto

COMPONENTE 1

Inclusão da questão das alterações climáticas nas políticas, planos e atividades institucionais e sociais

COMPONENTE 2

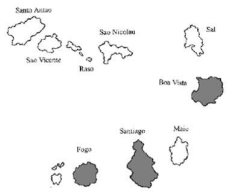
Redução da desertificação e degradação através da reflorestação e renaturalização

COMPONENTE 3

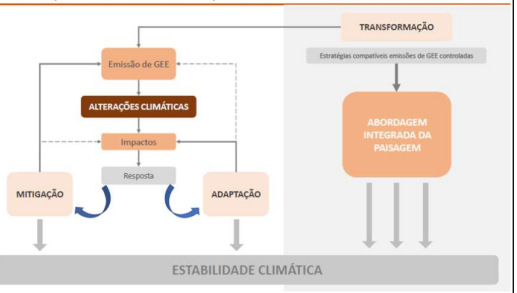
Análise e disseminação de conhecimentos e lições aprendidas.

REFLOR-CV | Ambição do Projeto

Floresta ocupa ~ 84000 ha aprox 26% do território nacional
Floresta, Floresta aberta, vegetação arbustiva, agrofloresta



ALTERAÇÕES CLIMÁTICAS | Mitigação vs Adaptação



ALTERAÇÕES CLIMÁTICAS | Abordagem Integrada da Paisagem

ABORDAGEM INTEGRADA DA PAISAGEM

ALTERAÇÕES CLIMÁTICAS | Abordagem Integrada da Paisagem

ENTIDADES PÚBLICAS

ALTERAÇÕES CLIMÁTICAS | Abordagem Integrada da Paisagem

PRESSÕES EXTERNAS

ALTERAÇÕES CLIMÁTICAS | Abordagem Integrada da Paisagem

STAKEHOLDERS

ALTERAÇÕES CLIMÁTICAS | Abordagem Integrada da Paisagem

ALTERAÇÕES CLIMÁTICAS | Abordagem Integrada da Paisagem

REFLOR-CV | Grupos de Trabalho | Planeamento

- Compilar informação e descrever os agentes (diretos e indiretos) de desflorestação e degradação florestal (por região ou tipo de floresta)
- Rever as abordagens existentes que afetam as causas e agentes de desflorestação e degradação florestal
- Identificar estratégias, metodologias e abordagens para dar resposta no futuro aos agentes e causas identificados
- Identificar necessidades de reforço de capacidade dos agentes-chave para estratégias capazes de lidar com as causas e agentes de degradação

Planeamento

REFLOR-CV | Grupos de Trabalho | Salvaguardas

- Identificar todos os atores com interesses diretos e indiretos no sector florestal (públicos e privados, individuais e coletivos) e propor um plano para o seu engajamento nas atividades de gestão sustentável das florestas;
- Analisar os processos participativos que são presentemente aplicados no sector florestal e sectores relacionados;
- Analisar as lacunas e avaliar a possibilidade de se utilizarem os instrumentos mais recentes para envolvimento de atores (e.g. SESA) e monitorização de salvaguardas;
- Planear novos processos de consulta e validação de planos e decisões.

Salvaguardas

REFLOR-CV | Grupos de Trabalho | Monitorização

- Descrever os sectores florestal e de uso da terra
- Avaliar e descrever as metodologias e abordagens atualmente utilizadas para: inventário florestal, monitorização florestal, deteção remota e análise de imagem, MRV, SIG
- Avaliar a capacidade técnica nacional e os arranjos institucionais existentes relevantes para as atividades de inventário florestal, e para as funções de sistema de monitorização e de medição, reporte e verificação (MRV)
- Identificar fragilidades nos arranjos institucionais existentes para as atividades de monitorização e MRV
- Identificar potenciais estratégias para o desenvolvimento de linhas de referencia de emissões de CO2

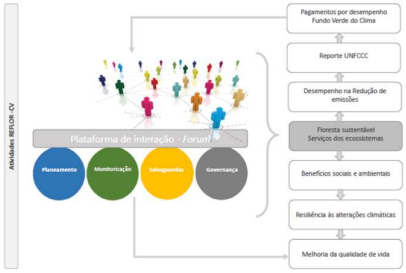
Monitorização

REFLOR-CV | Grupos de Trabalho | Governança

- Identificar os mandatos e responsabilidades das instituições centrais, regionais e locais;
- Analisar o quadro legal e identificar lacunas, conflitos, e sobreposições nas leis de uso e posse da terra;
- Analisar o enquadramento das florestas na governança social e ambiental no presente e para o futuro;
- Analisar e planear aspetos de gestão financeira e possíveis adaptações futuras;
- Propor melhorias nas estruturas de gestão florestal.

Governança

REFLOR-CV | Grupos de Trabalho | Estratégia



Necessidades para gestão sustentável das florestas

Temas	Capacidades necessárias	Notas
Técnicas de gestão, planeamento e organização	• Operações de terreno • Planeamento para de gestão florestal • Monitorização, verificação e reporte (MRV) • Marketing e comercialização • Contabilidade, administração e empreendedorismo	Estas capacidades podem ser rapidamente adquiridas ao nível do projeto
Formulação, implementação e avaliação de políticas	• Conhecimento de métodos participativos para opções políticas • Comunicação: adequação de meios e mensagem para a audiência • Construção de confiança e influência política • Criação de redes (networking) e partilha de informação.	Condições institucionais, políticas e de organização levam mais tempo a alcançar.
Investigação e desenvolvimento (I&D)	• Parcerias de investigação para mais e melhor conhecimento • Integração na comunidade de I&D internacional • Métodos de investigação, planeamento, e implementação de projetos de I&D • Preparação de propostas para as agências de financiamento.	Estas capacidades melhoram a compreensão entre a comunidades académica e os decisores políticos.

Necessidades para gestão sustentável das florestas

Temas	Capacidades necessárias	Notas
Sensibilização e educação para o setor florestal	• Incorporação de variadas disciplinas nos currículo florestais • Comunicação e partilha de experiências através da criação de redes para mobilização social • Integração de experiência de terreno para decisões "na-hora".	A educação florestal está cada vez mais integrada com a agricultura e gestão de recursos naturais renováveis.
Criação de redes, comunicação e troca de informação	• Melhoria das possibilidades de partilha de informação; • Experiência em técnicas de resolução de conflitos, com mobilização do conhecimento local e aumento da consciencialização; • Conhecimento de planeamento e processo de decisão participativos	Assim se preparam os atores para um maior envolvimento numa sociedade cada vez mais conectada e interativa.
Expansão de capacidades	• Atingir sustentabilidade a longo prazo • Incorporar a retroação resultante de áreas de demonstração, modelos florestais e projetos pilotos ao nível da decisão de políticas.	Impactos no desenvolvimento de capacidades podem ser limitados por limitações do ambiente facilitador.

Capacidades existentes e prioridades de formação

Desenvolver em papel

RISCO DE IMPACTO

Variável de Alteração Climática	Tipo e área de floresta	Produtividade da Floresta	Biodiversidade	Disponibilidade e qualidade da água	Qualidade dos solos	Segurança alimentar e qualidade de vida	Saúde humana	Pobreza
Subida do nível médio do mar	Mudança de tipo de floresta e contração de área; Florestas costeiras transitam para espécies mais tolerantes ao sal.	Impactos nas florestas costeiras implicam alteração de espécies e sua localização.	Desvios na localização de espécies e declínio da extensão do habitat; Incremento do nível das águas subterrâneas salinizadas.	Infiltração de água salgada.	Salinização de solos por inundação; Erosão.	Perda de produção agrícola; Estragos em infraestruturas com importância económica, social ou cultural. Migração de população.	Ameaça à vida	Perda de propriedades e modos de vida.
Aumento da temperatura do ar	Mudanças no tipo de floresta; Desertificação; Aumento do risco de incêndio.	Diminuição da taxa de crescimento das árvores; Menos rendimento dos produtos florestais; Aumento de pestes e patógenos; Mortalidade de árvores;	Declínio de espécies de altitude e alterações da abrangência das espécies; Invasão de exóticas e de pestes.	Aumento da evaporação; Aumento da evapotranspiração.	Perda de matéria orgânica; Perturbação do ciclo de nutrientes nas florestas.	Aumento da intensidade dos incêndios; Perda de alimentos, medicamentos, e outros PFNLs e madeira. Perda de produtos comercializáveis.	Fumos de fogos; Doenças por calor; Ameaças aos mais velhos e a crianças; Aumento da mortalidade.	Perda de adequabilidade para produção agrícola.
Decréscimo de precipitação	Alteração de tipos de floresta e desvios de habitat; Desflorestação; Desertificação.	Redução do crescimento das árvores Perda de produtividade de produtos florestais; Aumento de pestes e elementos patogénicos; Mortalidade de árvores;	Água doce contrai para o interior com infiltração de água salgada;	Diminuição da disponibilidade de água doce; Stress acrescido nos recursos hídricos	Erosão; Perturbação do ciclo de nutrientes nas florestas;	Perda de produção agrícola; Perda de pequena criação e de gado; Mudanças forçadas de hábitos alimentares; Perda de forragem.	Stress hídrico; Menos água potável; Mais mortalidade.	Perda de adequabilidade para produção agrícola

RISCO DE IMPACTO

Variável de Alteração climática	Tipo e área de floresta	Produtividade da Floresta	Biodiversidade	Disponibilidade e qualidade da água	Qualidade dos solos	Segurança alimentar e qualidade de vida	Saúde humana	Pobreza
Aumento da frequência de tempestades	Danos nas florestas	Danos nas florestas	Danos na vegetação costeira; Intrusão de água salgada.	Poluição da água.	Perda de solo superficial.	Perdas na agricultura de subsistência Perdas na agricultura comercial. Aumento de migração	Perda de seguranças e danos em infraestruturas; Aumento de exposição a epidemias; Ameaças à vida.	Perda de propriedades e meios de vida. Perda de meios de subsistência.

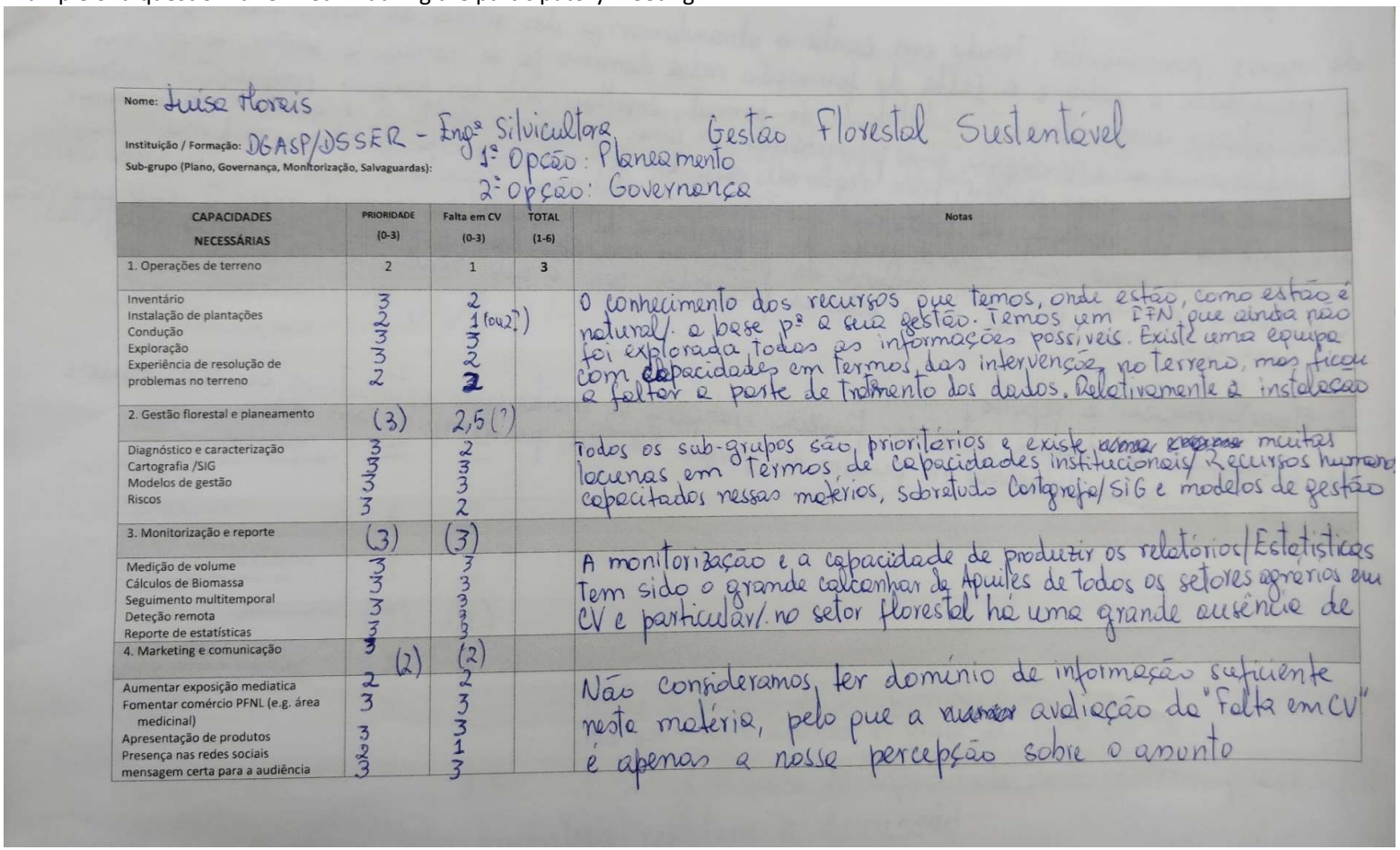
RISCOS DE IMPACTO

Verosimilhança	Consequência				
	Menor	Moderada	Relevante	Severa	Catastrófica
Rara	Baixo	Baixo	Baixo	Baixo	Baixo
Pouco provável	Baixo	Baixo	Médio	Médio	Médio
Possível	Baixo	Médio	Médio	Alto	Alto
Provável	Baixo	Médio	Alto	Alto	Extremo
Quase certo	Baixo	Médio	Alto	Extremo	Extremo

APPENDIX 7: Needs assessment for Sustainable Forest Management in Cabo Verde

Needs from less relevant (0) to most significant (3) and capacities baseline from fulfilled (0) to non-existing (3)

Example of a questionnaire filled-in during the participatory meeting.



Nome: Luisa Moreis

Instituição / Formação: DGASP/DSSER - Engª Silvicultora

Sub-grupo (Plano, Governança, Monitorização, Salvaguardas): Gestão Florestal Sustentável
1ª Opção: Planeamento
2ª Opção: Governança

CAPACIDADES NECESSÁRIAS	PRIORIDADE (0-3)	Falta em CV (0-3)	TOTAL (1-6)	Notas
1. Operações de terreno	2	1	3	
Inventário	3	2		O conhecimento dos recursos que temos, onde estão, como estão é natural. a base pª a sua gestão. Temos um IFN, que ainda não foi explorada todas as informações possíveis. Existe uma equipa com capacidades em termos das intervenção no terreno, mas ficou a faltar a parte de tratamento dos dados. Relativamente à instalação
Instalação de plantações	3	1 (ou 2?)		
Condução	3	3		
Exploração	3	2		
Experiência de resolução de problemas no terreno	2	2		
2. Gestão florestal e planeamento	(3)	2,5 (?)		
Diagnóstico e caracterização	3	2		Todos os sub-grupos são prioritários e existe ~~uma~~ ~~carência~~ muitas lacunas em termos de capacidades institucionais/ Recursos humanos capacitados nessas matérias, sobretudo Cartografia/SIG e modelos de gestão
Cartografia /SIG	3	3		
Modelos de gestão	3	3		
Riscos	3	2		
3. Monitorização e reporte	(3)	(3)		
Medição de volume	3	3		A monitorização é a capacidade de produzir os relatórios/Estatísticas Tem sido o grande calcanhar de Aquiles de todos os setores agrários em CV e particular/ no setor florestal há uma grande ausência de
Cálculos de Biomassa	3	3		
Seguimento multitemporal	3	3		
Deteção remota	3	3		
Reporte de estatísticas	3	3		
4. Marketing e comunicação	3 (2)	(2)		
Aumentar exposição mediatica	2	2		Não consideramos ter domínio de informação suficiente neste matéria, pelo que a ~~nossa~~ avaliação de "falta em CV" é apenas a nosso percepção sobre o assunto
Fomentar comércio PFNL (e.g. área medicinal)	3	3		
Apresentação de produtos	3	3		
Presença nas redes sociais	3	1		
mensagem certa para a audiência	3	3		

Summary of the needs assessment: this table was developed after all questionnaires were completed.

Nome: TODOS

Instituição: MAA

Sub-grupo (Plano, Governança, Monitorização, Salvaguardas): Todos

CAPACIDADES NECESSÁRIAS	PRIORIDADE (0-3)	Falta em CV (0-3)	TOTAL (1-6)	Notas
1. Operações de terreno	3	2	**5**	Prioridade média. Existe equipa com capacidade, mas é muito limitada, faltando ainda o tratamento de dados
2. Gestão florestal e planeamento	3	2	**5**	Prioridade média. Faltam sobretudo capacidades institucionais e tecnológicas (cartografia, SIG, imagens).
3. Monitorização e reporte	3	3	**6**	**Prioridade mais alta para a formação - Falta quase tudo**
4. Marketing e comunicação	2	2	**4**	Baixa prioridade. Acresce que há pouca sensibilidade/experiência neste grupo para esta questão
6. Resolução de conflitos e construção de consensos	3	3	**6**	**Prioridade mais alta para a formação - Falta quase tudo**
7. Métodos participativos	3	2	**5**	Prioridade média. O problema principal é o de implementação porque houve já formações nesta matéria
8. Confiança e influência política;	3	3	**6**	**Prioridade mais alta para a formação - Falta quase tudo**
9. Partilha de informação e networking	3	2	**5**	Prioridade média. Existem arquivos de inventário florestal mas não há cultura de partilha de dados.
10. Parcerias de I&D	3	3	**6**	**Prioridade mais alta para a formação - Falta quase tudo**
11. Integração na comunidade de I&D internacional	3	2	**5**	Prioridade média. Verificar os pontos focais das convenções e animar a interação.
12. Métodos de investigação e desenvolvimento	3	2	**5**	Prioridade média. Comunidade académica pouco envolvida. Poderiam participar na implementação das formações
13. Preparação de propostas de alta qualidade p financiamento	3	2	**5**	Prioridade média. Existe conhecimento técnico que não é usado devido a questões de língua.
14. Multidisciplinaridade incluída os curricula florestais	2	1	**3**	Baixa prioridade. Considera-se que este é um assunto pouco premente dado só haver um curso de florestas e recente.
1. Processos de decisão e planeamento participativo	3	2	**5**	Prioridade média. Fazem falta sobretudo a nível institucional.