



Report on ecosystem services mapping and assessment methods in ORs and OCTs

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Summary

This report presents the responses from Anchor Project leaders to the questionnaire described in the previous MOVE-ON project Deliverable D.2.2.a – *Report on ecosystem services mapping and assessment methods in ORs and OCTs*. The questionnaire was based on the operational framework for integrated MAES and was designed to assess the methodological needs for all MOVE-ON anchor regions about achieving the European Union Biodiversity Strategy's Target 2, specifically the Action 5 targets for mapping and assessment of ecosystems and their services. These answers were analysed and used to advise each Anchor Project on a multi-tiered flexible Ecosystem Services mapping methodology according to their specific situation and methodological needs. The outcomes of the mentioned analysis and the proposed methodology for each Anchor Project will be presented in a final deliverable D.2.2.c.

Table of Contents

1.	INTRODUCTION	6
1.1	OVERVIEW OF MOVE-ON ACTIVITY 2 "METHOD DEVELOPMENT AND IMPLEMENTATION SUPPORT"	9
2.	RESPONSES FROM ANCHOR PROJECTS	9
	STEP 1: QUESTION AND THEME IDENTIFICATION.	10
	STEP 2: IDENTIFICATION OF ECOSYSTEM TYPES	14
	STEP 3: MAPPING OF ECOSYSTEM TYPES	18
	STEP 4: DEFINING ECOSYSTEM CONDITION AND IDENTIFICATION OF ES DELIVERED BY ECOSYSTEMS	21
	STEP 5: SELECTING INDICATORS FOR ECOSYSTEM CONDITION AND ES	22
	STEP 6: ECOSYSTEM CONDITION AND ES INDICATOR QUANTIFICATION	23
	<i>Biophysical methods</i>	24
	<i>Economic methods</i>	24
	<i>Socio-cultural methods</i>	25
	STEP 7: MAPPING ECOSYSTEM CONDITION AND ES	27
	STEP 8: RESULTS INTEGRATION	28
3.	CONCLUSION	28
4.	IMPLEMENTATION	30
5.	DISSEMINATION AND COMMUNICATION	32
6.	REFERENCES	33
7.	ANNEX 1. QUESTIONNAIRE	36
8.	ANNEX 2. RESPONSES FROM ANCHOR PROJECTS	42

List of abbreviations

BISE	Biodiversity Information System
CICES	Common International Classification of Ecosystem Services
ES	Ecosystem Service
ESMERALDA	Enhancing ecoSystem sERvices mApping for poLicy and Decision mAking
EU	European Union
IUCN	International Union for Conservation of Nature
MAES	Mapping and Assessment of Ecosystems and their Services
MOVE	Mapping and Assessing the State of Ecosystems and their Services in the Outermost Regions and Overseas Countries and Territories: Establishing links and pooling resources
MOVE-ON	Mapping and Assessing the State of Ecosystems and their Services in the Outermost Regions and Overseas Countries and Territories: From Case Studies to Anchor Projects - Setting the ground to advance MAES in Europe's overseas
(M)PA	(Marine) Protected Area
OCT	Overseas Countries and Territories
OR	Outermost Region

1. INTRODUCTION

Action 5 of the 2nd target of the European Union's (EU) 2020 Biodiversity Strategy urged EU Member States to map and assess the state of ecosystems and their services (MAES) in their national territory. Biodiversity, ecosystems and their services remain central in the EU Biodiversity Strategy for 2030, with even more ambitious targets. Europe's Outermost Regions (ORs) and Overseas Countries and Territories (OCTs) are spread all around the globe and have exceptionally high biodiversity and multiple related values. These territories host more than 70% of all EU biodiversity and include 20% of the world's coral reefs and lagoons. They encompass the most diverse ecosystems on often very small scales, from coral reefs and mangroves, tropical rainforests, mountain ecosystems to polar - and subpolar seas, which provide multiple relevant ecosystem services (ES) from a local to global scale (Petit and Prudent 2008).

The MOVE pilot project (GA. No.07.027735/2018/776517/SUB/ENV.D2) intended to facilitate MAES and to support regional policies in the EU ORs and OCTs. The work developed highlighted the steps forward in the implementation of MAES in these territories and the need to progress with MAES.

The MOVE-ON pilot project "From case studies to anchor projects setting the ground to advance MAES in Europe's overseas" aims to advance MAES and related methodologies' implementation in European ORs and OCTs. **Figure 1** shows the structure of the project.

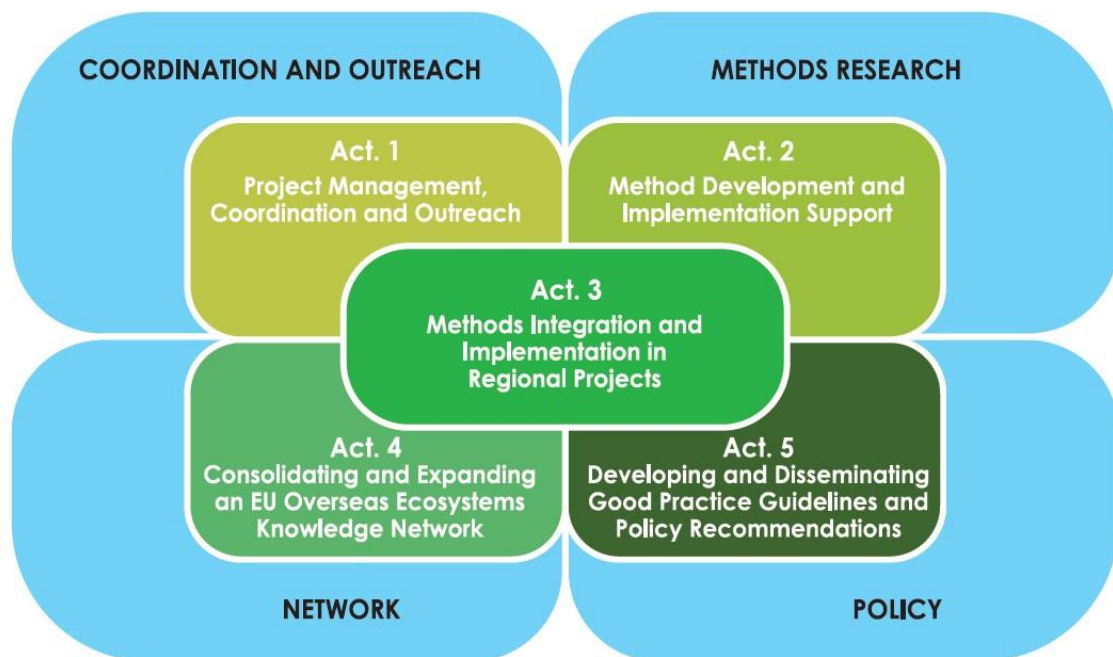


Figure 1. MOVE-ON project structure.

The project intends to create and strengthen the scientific and technical MAES communities in the territories, taking a bottom-up approach initiated in the MOVE project (2019 – 2021), demonstrating the benefits of assessments of ecosystems, their conditions, and services to support decision-making. The goal of MOVE-ON is to contribute to local, EU and international policies and objectives. At the same time, MOVE-ON aims to develop good-practice guidelines and policy recommendations for improving the health status of ecosystems tailored for overseas regions' specificities and needs, pooling resources while involving and empowering local actors. It complements and expands the activities of the MOVE project, strengthening links with the ongoing work to further test and implement MAES in different regions underpinned by four Anchor Projects in French Guiana, Macaronesia, Reunion Island and South Atlantic.

Each Anchor Project differs in its current state of MAES's implementation and needs (**Figure 2** and **Table 1**). Therefore, it is necessary to gather information concerning the overall aim of the study, geographical information available, ecosystem types and ES already identified, ES indicators known, and methods already employed. All this information helps to assess the status quo of each participating region and guides Anchor Regions through the MAES process. Ultimately, it forms the baseline against which the combination of methods that fits each Anchor Project adequately, is selected.

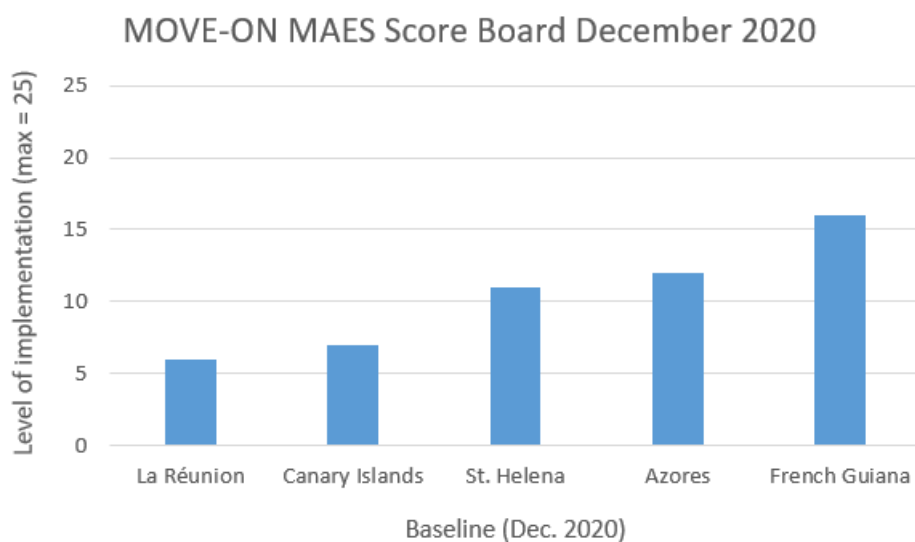


Figure 2. The different starting conditions of each Anchor Region based on MOVE-ON Score Board of December in 2020.

Table 1. Overview of the MOVE-ON Anchor Projects, their themes, relevance to the MAES process, spatial scale and stakeholder involvement (Source: MOVE-ON 2019).

	Anchor project	Theme	MAES relevance	Scale	Stakeholder involvement
3.2	French Guiana (Montsinéry-Tonnégrande)	Development of sustainable ecosystem services management plans	Ecosystem services supply, use and management assessments and applications	Local Municipality	Municipality representatives, Town council, Local scientists from CIRAD or ONF
3.3	Macaronesia (the Azores and the Canary Islands)	Marine habitat mapping and RLE classification	Marine ecosystem condition assessment and mapping	Regional and Local	Various stakeholders at different levels, local scientists and policy makers
3.4	Reunion Island (St. Phillipe)	Assessing ecosystems' functionality and services of a bio-corridor	Management plan of Mare Longue	Local	Local authorities and other stakeholders, inhabitants
3.5	South Atlantic (St. Helena)	Making MAES outputs meaningfully available for Policy and decision-makers	Implementation of ES mapping and assessment outcomes	Local	Various stakeholders at different levels, policy makers

This report presents the responses received from Anchor Project leaders to the questionnaire described in the previous MOVE-ON project deliverable D.2.2.a – *Report on ecosystem services mapping and assessment methods in ORs and OCTs* and attached Annex 1. Questionnaire. The questionnaire is based on the operational framework for integrated MAES and was designed to assess the methodological needs for all MOVE-ON anchor regions about achieving the EU Biodiversity Strategy's Target 2, specifically the Action 5 targets for mapping and assessment of ecosystems and their services. The questionnaire was circulated from November 2020 to February 2021. The answers were analysed and presented in a meeting in May 2021 (2nd Anchor Region Update Meeting). Additionally, a draft of this Deliverable D2.2b was circulated among the consortium in April 2021 and Anchor Project leaders' feedback was obtained between May and June 2021. The collected information was used to advise each Anchor Project on a multi-tiered flexible ES mapping methodology according to their situation. The outcomes of the mentioned analysis and the

proposed methodology for each Anchor Project will be presented in a final deliverable D.2.2.c.

1.1 Overview of MOVE-ON Activity 2 “Method development and implementation support”

The general objective of the MOVE-ON Activity 2 is to identify, develop and support the implementation of suitable methods relevant to the MAES advance in EU ORs and OCTs, considering specific needs and data availability. The activity gathers MAES methodologies and the assessment of ecological reference conditions of marine ecosystems in overseas territories to develop conceptual models of ecosystem services provision, in a context of climate change and anthropogenic pressures.

The activity is carried out by considering existing data and knowledge and gathering information on the needs and expectations of the relevant stakeholders in the ORs and OCTs. Different approaches for mapping and assessing ES are considered (e.g., cross-disciplinary integration of biophysical, social, and economic mapping and assessment approaches). These methods consider different levels of detail and complexity through a tiered approach that can be applied according to the purpose of the respective ES study, data and resources availability and specific needs. The work, therefore, exploits expert- and land cover-based methods, existing ES indicator data and more complex process-based ES models. Such tiered solutions allow the Anchor Projects (to be implemented in Activity 3) to work with different levels of available information and contexts. Innovative tools such as an online MAES Method Explorer¹ created under the ESMERALDA EU Projects, was updated during the project. The aim is to jointly develop and test these methods and tools as a result of the applications provided by the Anchor Project partners, that include relevant experts, networks and stakeholders from across the overseas territories.

2. RESPONSES FROM ANCHOR PROJECTS

The responses concerning the needs and methodological requirements of the Anchor Projects have been collected by the Tasks 2.2 team (URJC and LUH) in a questionnaire based on the operational framework created by Burkhard et al. (2018) and described in the MOVE-ON project deliverable D.2.2.a – *Report on ecosystem services mapping and assessment methods in ORs and OCTs*.

At least one anchor region leader answered the questionnaire. Five responses were collected corresponding to Macaronesia (the Azores and the Canary Islands), the Reunion Island, French Guiana and South Atlantic. The questionnaire (Annex 1. Questionnaire) comprises different types of questions (e.g., open

¹ <http://database.esmeralda-project.eu/home>

questions, Yes / No questions or multiple choice) to produce meaningful answers and create rich, qualitative data using the knowledge of the Anchor Project partners.

For the Anchor Project of Macaronesia, some questions were answered conjointly for the Azores and the Canary Islands. However, other questions were addressed separately as both archipelagos represent different realities. The responses are described following the structure of steps used to create the questionnaire. They were analysed, screened, and synthesized for summarization and comparison (Annex 1. Questionnaire). They also include clarifications and feedback obtained from the Anchor Project leaders via emails, calls, and informal meetings obtained from January to June 2021.

Step 1: Question and theme identification.

The first step aims to define questions that drive the MAES process. This starting point is vital to elaborate an action plan and successfully implement ES in decision-making.

The three categories of questions were defined in Maes et al. (2018) as follows:

- **Policy questions** are raised by policymakers at different levels of governance and public decision-making. Typical examples are national or regional ministries or agencies, municipalities or supra-national institutions such as the EU.
- **Business questions** are formulated by the private sector at different economic scales. Examples include individual farmers, small and medium-sized enterprises, multinationals, but also associations that represent the private sector or their interests.
- **Societal questions** are raised by individual citizens or organisations that represent civil society such as non-governmental organisations. These types of questions are closely interlinked with policy questions.

Figure 3, Figure 4, and Figure 5 show the questions driving every proposed Anchor Project and the possible ways to address them.

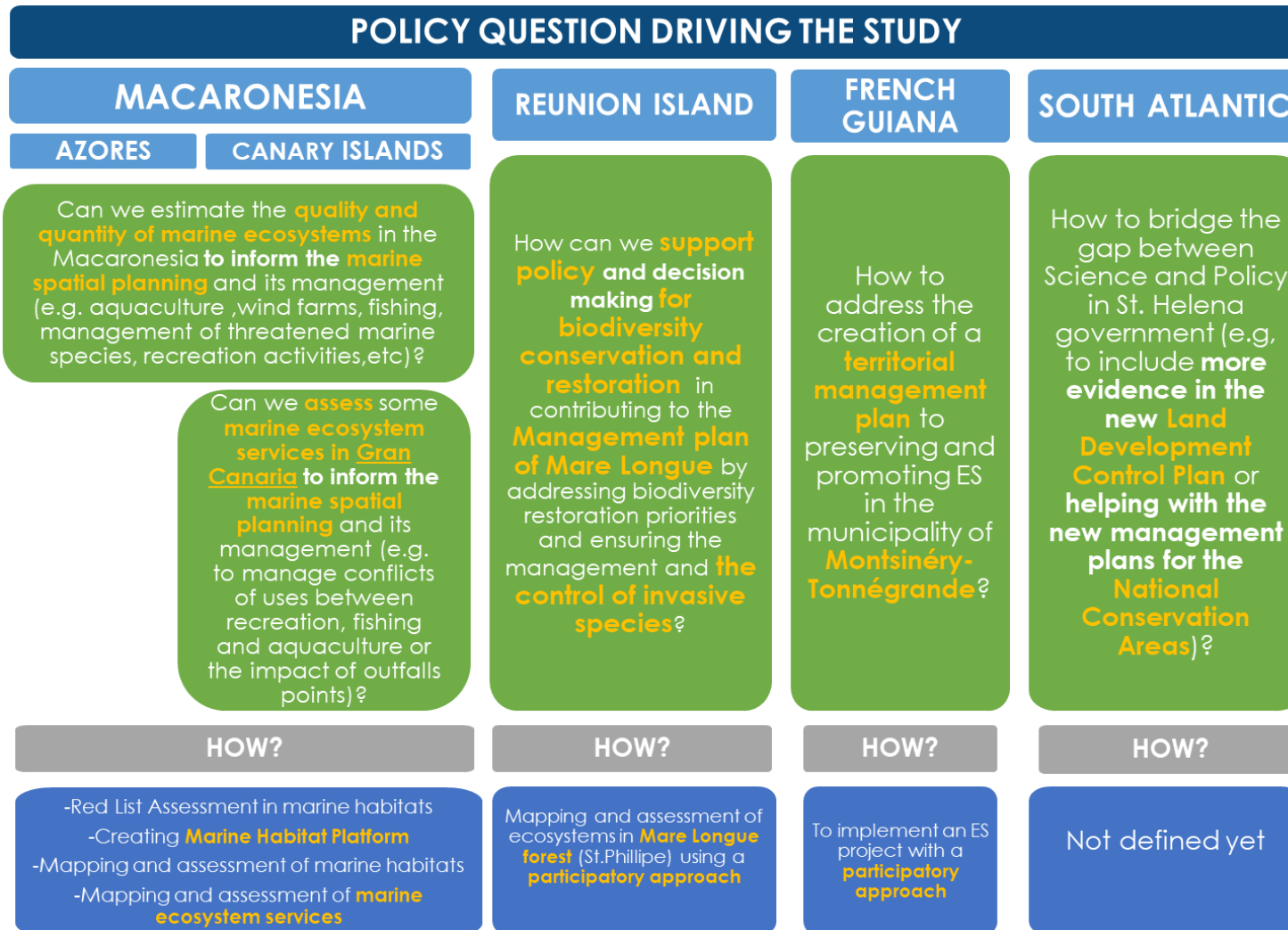


Figure 3. Policy question driving each Anchor Project.

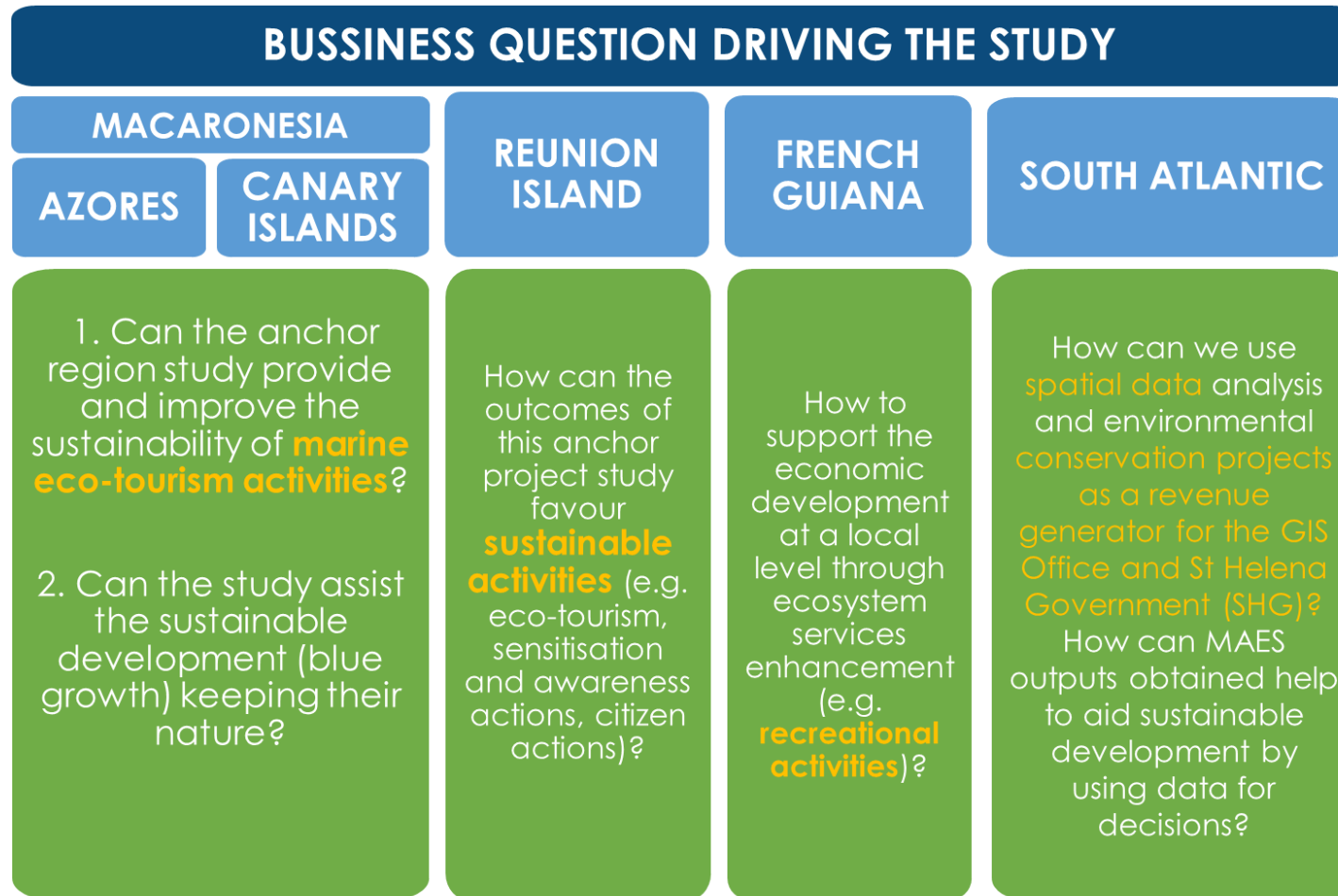


Figure 4. Business question driving every Anchor Project.

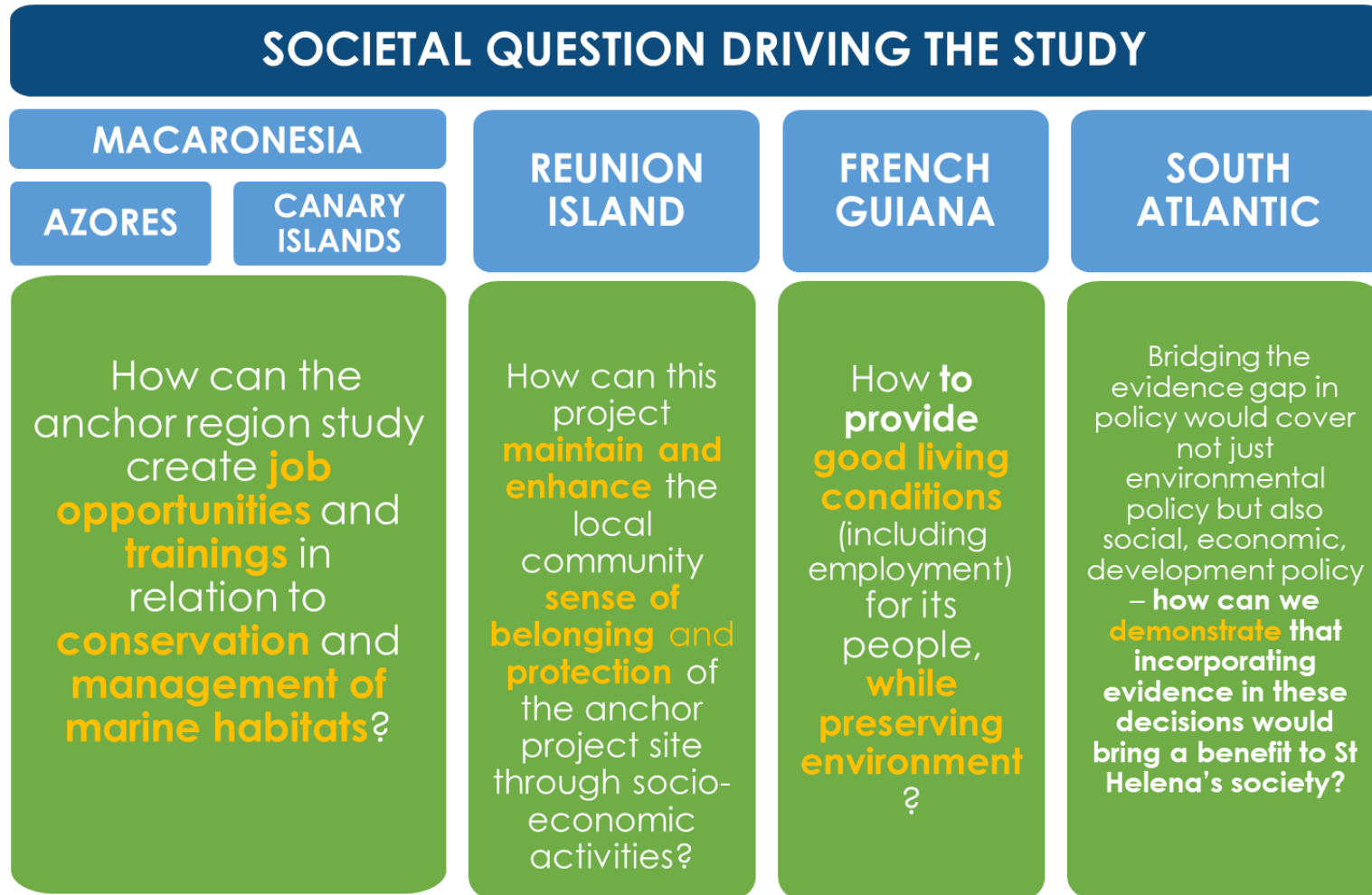


Figure 5. Societal question driving every Anchor Project.

Step 2: Identification of ecosystem types

In this step, the questions aim to know what types of ecosystems are liable to be assessed and on what scale the MAES assessment should be carried out (MAES level 1, 2 or 3).

Regarding every response, most of the Anchor Project focus on marine ecosystems, selected by four out of five regions (**Figure 6**). These responses relate to the fact that most of the anchor regions are insular territories, and the coast plays a fundamental role in humans' activities. These also highlight the fact that there is still a knowledge gap on marine ecosystems and the services they provide (Sieber et al. 2020; EC 2021).

French Guiana is the only continental Outermost Region and the only one that has exposed its intention to assess terrestrial, fresh water and marine ecosystems (**Figure 6**). According to the review of Sieber et al. (2018), at least seven MAES studies have been performed in this region. These studies addressed the aspects of these three types of ecosystems mainly from a biophysical dimension (**Figure 7**).

In Macaronesia, the Azores and the Canary Islands focus their efforts on estimating the quality and quantity of marine ecosystems up to 100 m deep. Previous investigations show a minimum of 16 and 12 studies on the MAES field, respectively, with a predominant biophysical and economical approach in the Azores, and a biophysical approach in the Canary Islands (**Figure 7**).

On the contrary, Reunion Island, despite being an island, indicates its purpose of applying MAES just to terrestrial ecosystems (**Figure 6**). At least six studies have been carried out on this region regarding mapping and assessing terrestrial, marine and freshwater ecosystems (Sieber et al., 2018)

In contrast to the rest of the regions, it is important to highlight that South Atlantic has selected the types and subcategories of ecosystems that have already been evaluated in St. Helena, instead of those identified to be assessed.

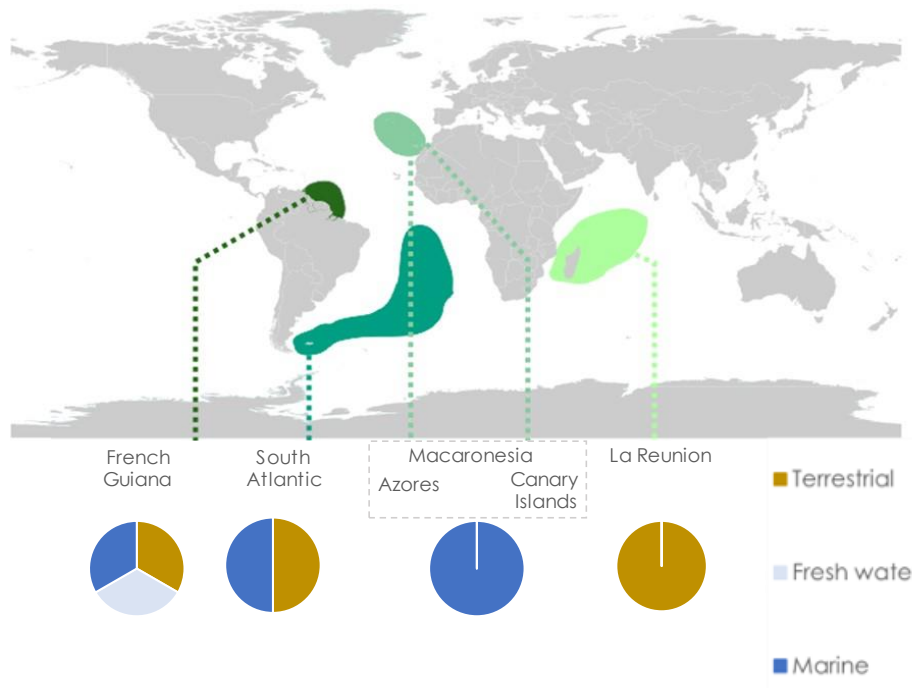


Figure 6. Types of ecosystems identified for the assessment by each region (MAES level 1).

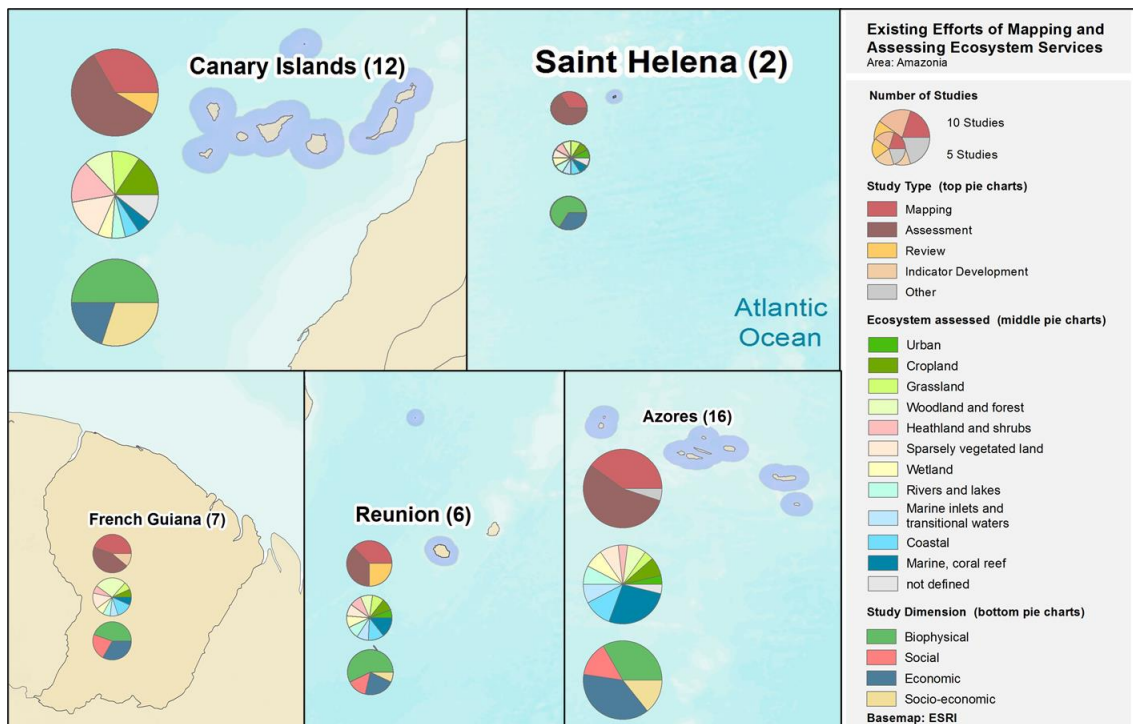


Figure 7. MAES studies carried out in each region (Source: adapted from Sieber et al., 2018).

The most common subcategories of ecosystem selected (MAES level 2) were (Figure 8):

- Coastal;
- Woodland and forest;
- Wetlands;
- Marine inlets and transitional waters.

French Guiana selected a wide range of them, covering most of the second MAES level subcategories. Macaronesia, on the other hand, selected the coastal subcategory only.

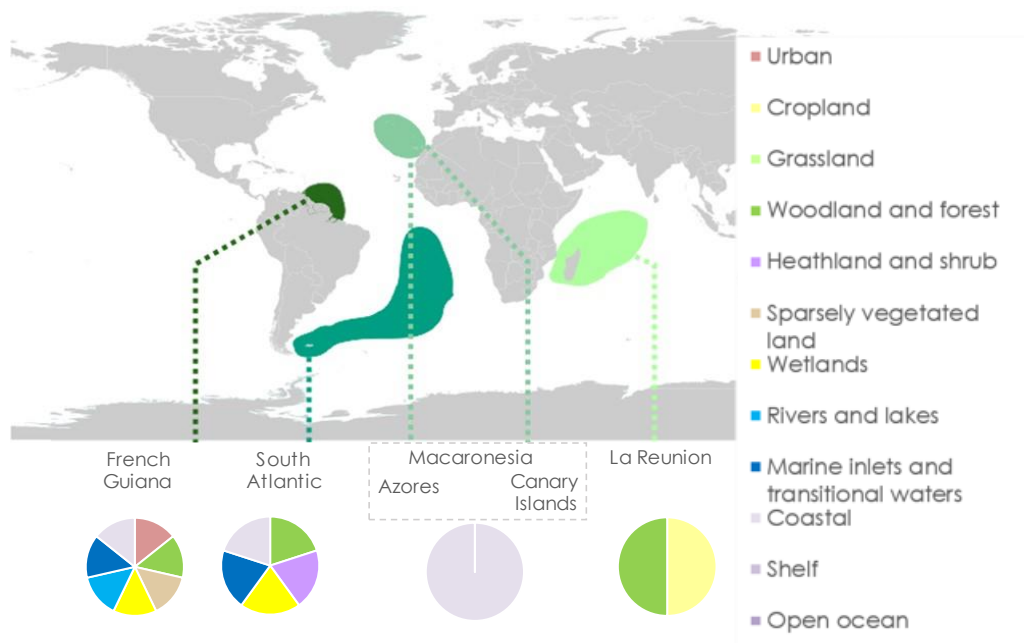


Figure 8. Subcategories of ecosystems identified by each region (MAES level 2)² for the assessment (legend from Maes J et al., (2013)).

Figure 9 displays the third MAES level subcategories identified for the assessment by each region. Only Reunion Island and the Macaronesia have answered this question. They want to assess ecosystems on a finer scale than the rest of the regions. That shows the deep level that each region wants to achieve in its ecosystem assessment.

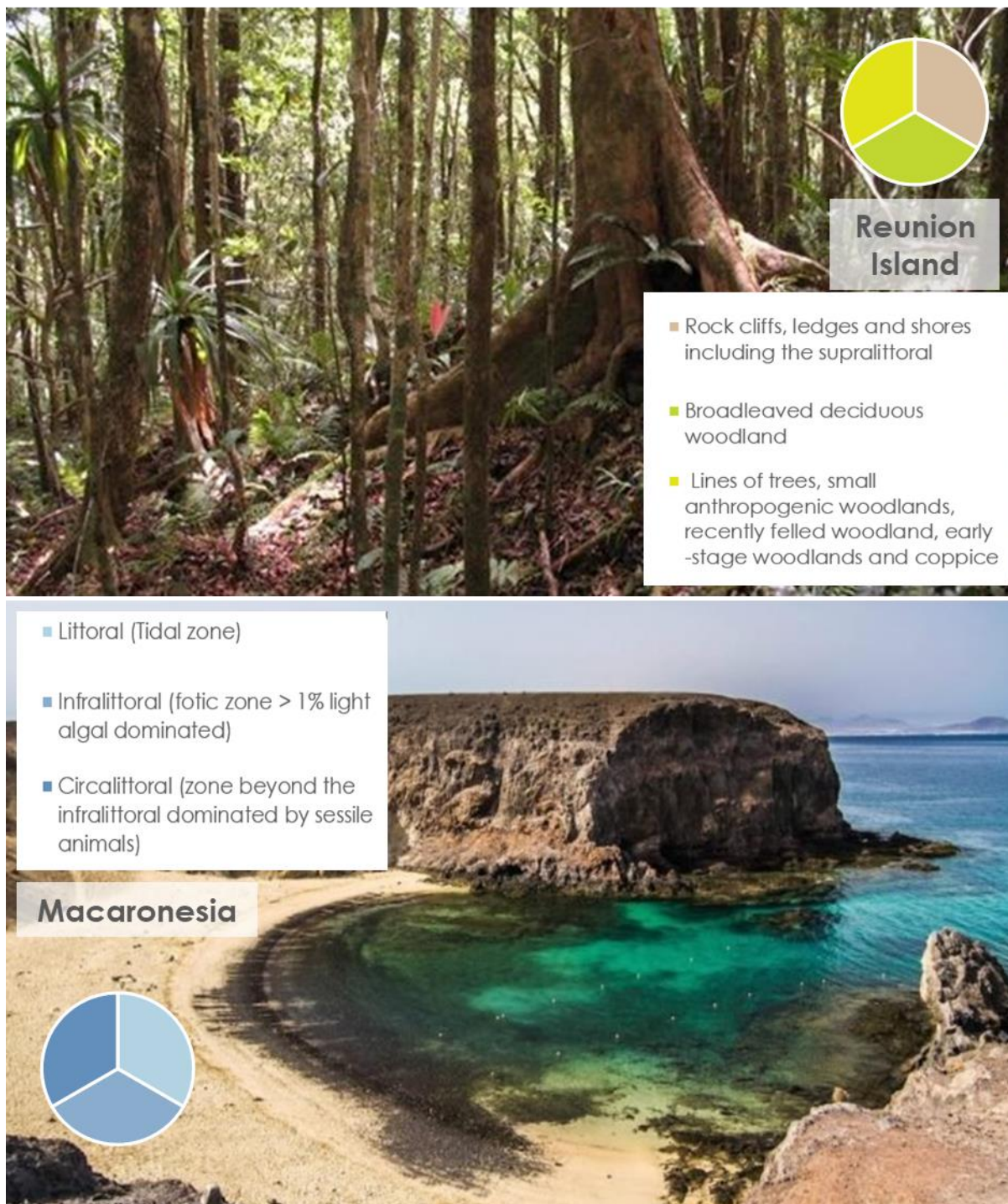


Figure 9. Subcategories of ecosystems identified for the assessment by Macaronesia and Reunion Island (MAES level 3).

In summary, Reunion Island focuses on terrestrial ecosystems like cropland, woodland, and forest, specifically:

- Rock cliffs, ledges and shores including the supralittoral;
- Broadleaved deciduous woodland;
- Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodlands and coppice.

In contrast, Macaronesia concentrates on marine and coastal ecosystems, in particular:

- Littoral (Tidal zone);
- Infralittoral (fotic zone > 1% light algal dominated);
- Circalittoral (zone beyond the infralittoral dominated by sessile animals).

Finally, French Guiana proposes to assess seven MAES subcategories (level 2), and South Atlantic has already assessed five subcategories (MAES level 2) (**Figure 8**).

Based on the Anchor Projects responses, it can be concluded that the regions have taken two different approaches: (1) the study of a wide range of ecosystems to obtain an overview of ES (French Guiana and South Atlantic), or (2) the selection of a limited number of ecosystems to examine their condition and the services they supply thoroughly (Reunion Island, the Azores and the Canary Islands).

Step 3: Mapping of ecosystem types

In this step, maps of ecosystem types, metadata and their database were requested for each Anchor Region. **Figure 10** shows the number of maps available according to the responses received.

In Macaronesia region, respondents indicated that data availability, especially maps, were scarce in the marine environment. However, it is possible to find several Land Use/Land Cover datasets and ES studies in terrestrial environment (Cruz et al. 2007; Hernâni et al. 2018; Jiménez Fernández-Palacios 2018; Madeira et al. 2007; Moreira et al. 2018; Picanço et al. 2017; Sieber et al. 2020; Vergílio et al. 2017; Vergílio et al. 2016). This contrasts the great range of maps provided by Reunion Island in the terrestrial environment (**Figure 11**).

French Guiana provided a variety of maps like protected species maps, a landscape atlas, ecosystem natural capital accounting map, ES assessment maps (Roger et al. 2016; Sieber et al. 2021), etc.

South Atlantic supplied the habitat map of Saint Helena. It was created using the IUCN habitat classification system. The map was produced through a 2-3-year project using satellite imagery (Pleiades) and ground-truth data (**Figure 12**).

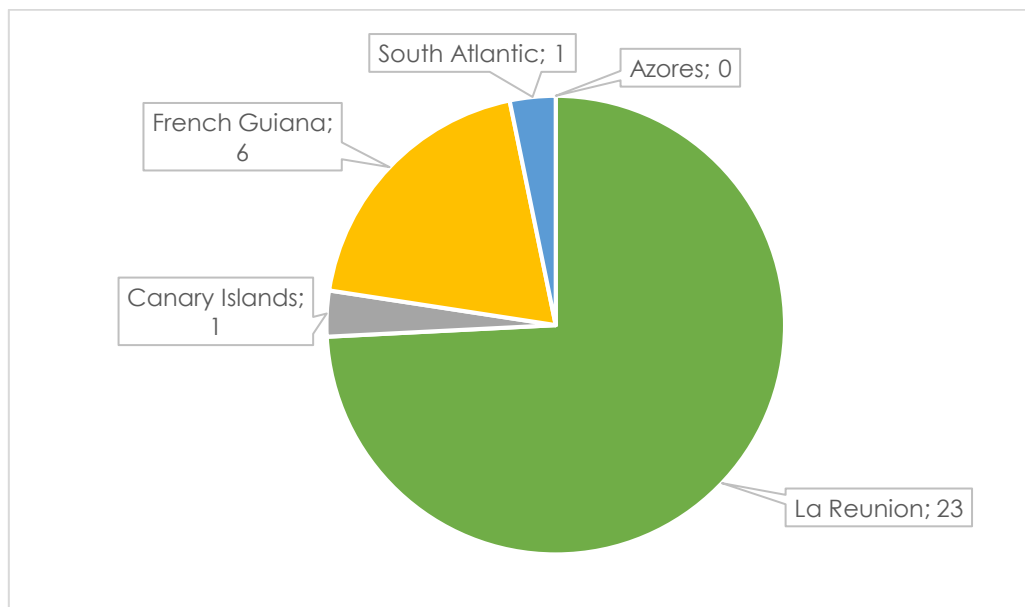


Figure 10. Number of maps available in each region.

Legend

- Canne à sucre
- Prairie pâturées
- Prairie fauchées
- Autres cultures maraichères
- Pomme de terre
- Ananas
- Culture sous serre ou sous ombrage
- Verger d'agrumes
- Verger de letchi et ou longani
- Verger de manguiers
- Plantation de cocotier
- Plantation de bananier
- Forêts et fourrés de montagne
- Autre végétation arborée
- Plantation forestière
- Végétation altimontaine
- Lande de rempart
- Savane herbacée de basse altitude
- Végétation arbustive
- Massif de vigne maronne
- Végétation naturelle sur coulée de lave
- Rochers et sol sans ou avec peu de végétation
- Ombre due au relief
- Marais
- Surface en eau
- Surface bâtie
- Panneau photovoltaïque
- Route et parking

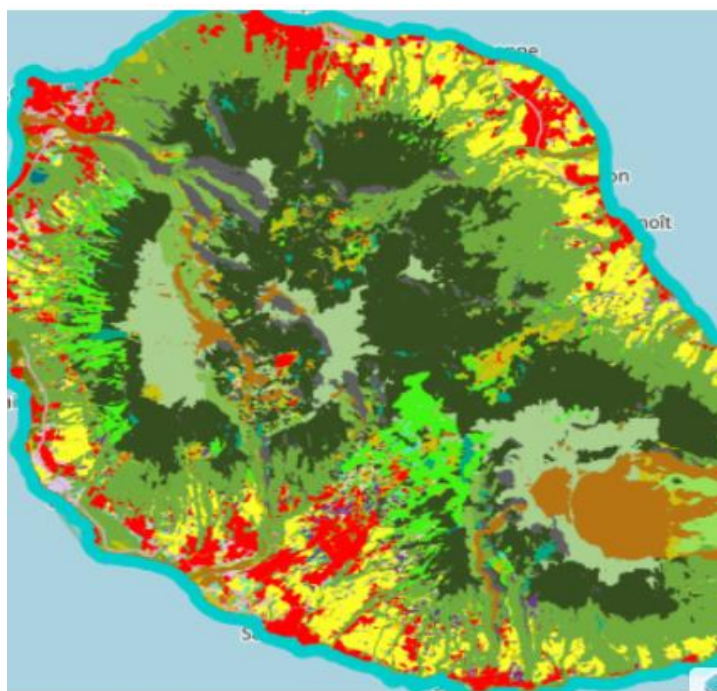


Figure 11. Example of map available in Reunion Island. Land use map 2019 Spot 6-7 - 1.5m - (level 3) – CIRAD³.

³ https://aware.cirad.fr/layers/geonode:RE_LCM_2019_level3

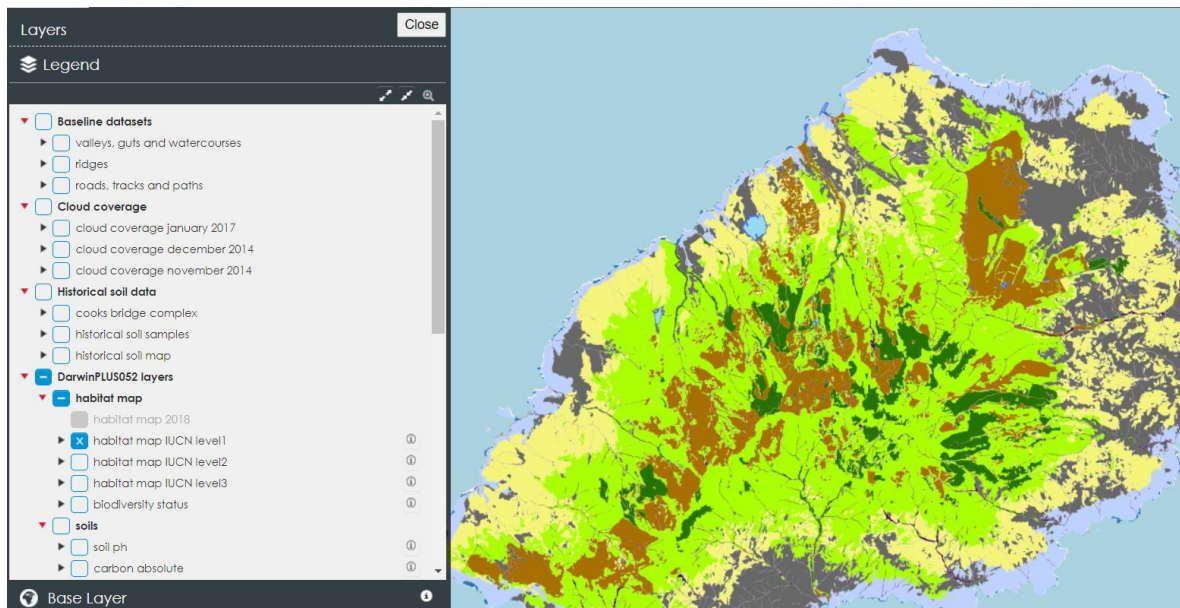


Figure 12. Habitat map of Saint Helena (South Atlantic)⁴.

⁴https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=01sh&project=saint_helena_web

Step 4: Defining ecosystem condition and identification of ES delivered by ecosystems

According to the responses, the most used ES classification was the list of CICES. One exception is South Atlantic, which mentioned that the ES classification used in its studies is "Ecosystem services cascade" (Haynes-Young and Potschin, 2009).

On the other hand, all Anchor Project leaders expressed their intention to implement the assessment on a local scale. Concretely, Macaronesia will map and assess ES in the Canary Islands at two scales: regional (the whole archipelago) and local (in Gran Canaria). The Azores will be addressed at the local scale (Vila Franca Islet, associated to S. Miguel island). The following table shows the localities under study.

Table 2. Localities under study by each region.

Region	Locality under study
Reunion Island	St. Phillipe (Mare Longue forest)
Macaronesia	Gran Canaria (Canary) and Vila Franca Islet (S. Miguel Island, Azores)
South Atlantic	St. Helena
French Guiana	Montsinéry-Tonnégrande

Following the responses obtained, **Figure 13** displays that most regions are interested in assessing regulating services (green tones) and provisioning services (yellow tones). Despite scarce interest in evaluating the cultural services (blue tones), French Guiana has selected four out of five proposed. This can probably be explained through the intangible characteristics of cultural services, which tend to attract less interest.

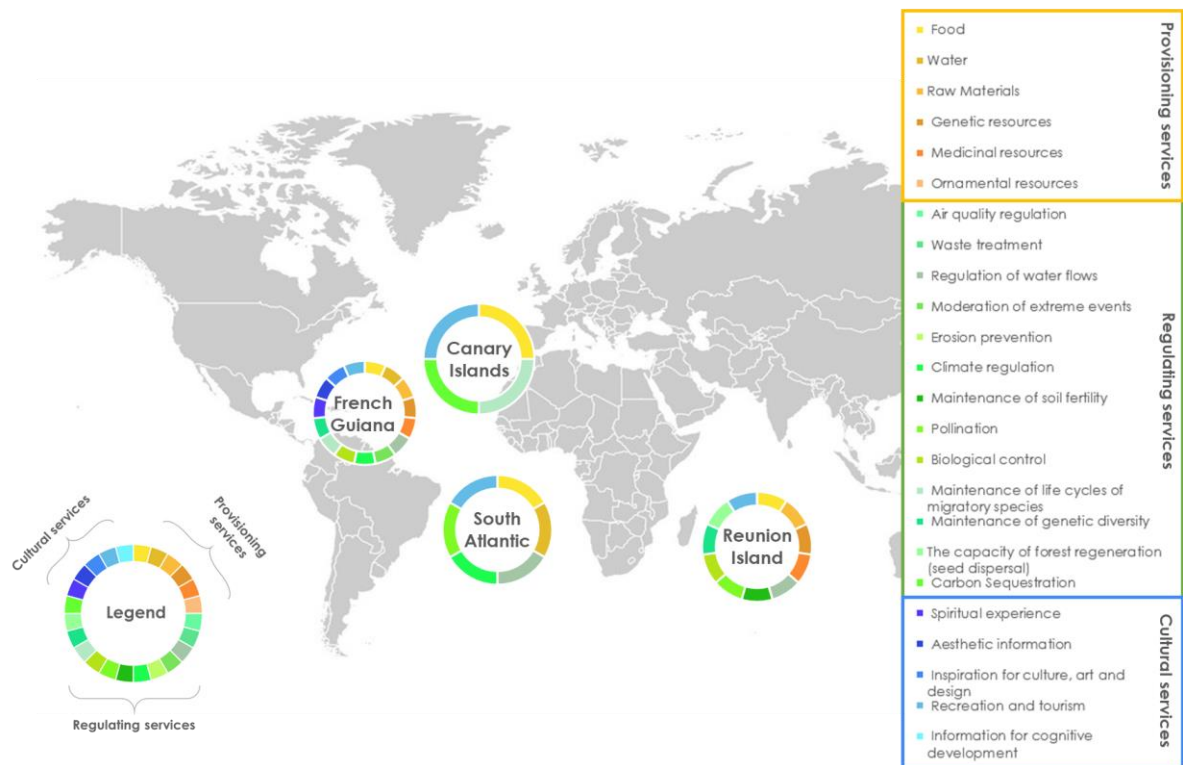


Figure 13. Selected ES by Anchor Projects (TEEB categories).

Step 5: Selecting indicators for ecosystem condition and ES

Step 5 has several questions related to the availability of indicators to assess those ES selected and their utility to assess:

- the potential of ecosystems to provide a sustainable flow of ES in the anchor region,
- the demand of that ES in the anchor region,
- and the actual use of that ES in the anchor region.

Reunion Island and French Guiana are the only ones who have answered positively to these questions, which means they already know useful indicators to assess ES.

Macaronesia has not selected indicators related to the chosen marine ES, so it responded negatively to the questions about their hypothetical uses. However, the identification of useful indicators for ecosystem condition will be addressed by the MOVE-ON project under Task 2.1. *Method development and assessment of tropical marine coastal ecosystem reference condition in EU Overseas territories.*

South Atlantic has already selected indicators for assessing ES in previous studies carried out by SAERI⁵. This last region focuses on integrating acquired knowledge during every MAES study developed in the past to actual policies.

Table 3. Availability and use of indicators to evaluate the provision, demand and use of ES.

	Indicator data available to assess those ES	Use of those indicators to assess the potential of ecosystems to provide ES	Use of those indicators to assess the demand of that ES	Use of those indicators to assess the actual use of that ES
Reunion Island				
Macaronesia				
French Guiana				
South Atlantic				

Step 6: Ecosystem condition and ES indicator quantification

All the Anchor Project leaders were asked for biophysical, economic and socio-cultural methods to quantify ES supply, use or demand.

Vihervaara et al. (2018) defined biophysical methods for mapping ES as those used to quantify ecosystems' capacity to deliver ES (also referred to as "supply") and the amount of harvested yield of such capacity for human benefit (also referred to as "use" or "demand") in physical units.

Economic methods for mapping and assessing ES involve measuring the economic value of ES, including its spatial variation. This information is structured to support decision-making and the design of policy instruments (Brander et al., 2018)

Social methods for mapping and assessing ES involve measuring individual and collective preferences to support the operationalization and further development of the ES concept. (Santos Marín et al., 2018)

⁵ Natural Capital Assessment studies can be found in the following page: <https://www.south-atlantic-research.org/research/terrestrial-science/natural-capital-assessment/nca-reports/>

Biophysical methods

Most Anchor Project leaders answered that they knew some biophysical methods to quantify ES supply, use or demand. South Atlantic selected two methods used before and mentioned that its project relates to the application of the MAES knowledge generated previously rather than assessing new ES. In contrast, Reunion Island, Macaronesia, and French Guiana have identified the potential biophysical methods shown in **Table 4**.

Field observation methods have been chosen by all the regions to quantify ES supply, use or demand in physical units. French Guiana and Macaronesia coincide that they are interested in applying surveys and questionnaires for that goal.

Reunion Island has selected ecological connectivity models and field observations because these methods are used for fine-scale data suitable for their terrestrial ecosystems.

Macaronesia indicated a limited knowledge in marine ES quantification, but field observation methods were considered useful for estimating food provided by ecosystems (e.g. Kg of fish/ha).

Finally, French Guiana has selected biophysical methods based on an ES diagnosis phase.

Economic methods

According to the Anchor Project leaders responses to the questionnaire, only Reunion Island and French Guiana know which economic methods could be applied in their respective projects (Table 4), while in Macaronesia, advice is needed to address this question.

Commonly chosen methods in the French Guiana and Reunion Island are:

- Damage cost avoided;
- Ecosystem Service Accounting;
- Ecosystem service assessment;
- Group / participatory valuation;
- Restoration cost;
- Replacement cost (Alternative cost method).

Specifically, Reunion Island chose these methods after conducting a socio-economic analysis of the management and control of invasive plant species in the Mascarene Islands, with a cost-benefit analysis of *Rubus alceifolius* and of its control (Cybèle, 2018). The cost of invasive species control is of high importance in this region. It is also relevant to evaluate the restoration costs and the value of tourism, vanilla production, and related socio-economic activities at a fine scale. After a second consultation, Reunion Island selected two economic methods: the Cost-Benefit Analysis (CBA) and the Ecosystem service assessment (shading in yellow in **Table 4**).

French Guiana has not planned to carry out an economic valuation, but potentially suitable methods were selected because they are easily understood by non-specialist (e.g., replacement costs or restoration costs). See **Table 4**.

Socio-cultural methods

Based on the responses received, Reunion Island and French Guiana agreed on which socio-cultural methods they would apply in their respective projects (**Table 4**). All the regions showed interest in developing a participatory approach such as PGIS because it allows the partners and public to take part, brainstorm and legitimize the process. Macaronesia is already using this method through the SeaSketch⁶ tool, and South Atlantic mentioned that there is a lot of local knowledge that has not been mapped and this could be a way to add it to GIS for analysis.

⁶ <https://www.seasketch.org/home.html>.













Table 4. Methods selected by Anchor Projects to assess ES.

Biophysical methods				
Biophysical methods	Macaronesia	Reunion Island	South Atlantic	French Guiana
Ecological Connectivity models (to include methods/software such as Zonation, MSPA, MatrixGreen, TerrSet (former IDRISI), FunCon, etc.),		✓		
Field Observations	✓	✓	✓	✓
Surveys and questionnaires	✓			✓
Conceptual model				✓
Remote sensing and earth observation derivatives (NDVI, land cover, surface temperature)			✓	✓
Use of statistical and socio-economic data				✓
Economic methods				
Economic methods	Macaronesia	Reunion Island	South Atlantic	French Guiana
Cost-Benefit Analysis (CBA)		✓		
Damage cost avoided		✓		✓
Ecosystem Service Accounting		✓		✓
Ecosystem service assessment		✓		✓
Group / participatory valuation,		✓		✓
Restoration cost		✓		✓
Travel cost		✓		
Value transfer (benefit transfer)		✓		
Market price		✓		
Replacement cost (Alternative cost method),		✓		✓
Socio-cultural methods				
Socio-cultural methods	Macaronesia	Reunion Island	South Atlantic	French Guiana
Deliberative assessment		✓		✓
Geo-tagged photo-series analysis		✓		
Participatory GIS	✓	✓	✓	✓
Participatory scenario planning		✓		✓

Step 7: Mapping ecosystem condition and ES

Reunion Island, French Guiana and South Atlantic declared to have maps available for ES while none is known in Macaronesia for marine ES (**Table 5**).

Table 5. Maps available for ES assessment.

	Maps available for ES	Metadata available for those maps	Methods used to create those maps
Macaronesia			
Reunion Island			
French Guiana			
South Atlantic			

Regarding the methods used to create those maps, Reunion Island used GIS mapping, rapid field assessment to add complementary information to the land-use planning, and maps of habitats of the anchor site (Marelongue Nature Reserve).

In South Atlantic, the St. Helena viewer has a wide range of ES maps and there are metadata available from clicking the "i" next to the layer in the web map legend⁷.

French Guiana mentioned two sources of ES maps available: the ecosystem profile of the Amazon region created under the BEST initiative⁸ and the maps created based on the capacity matrix assessment developed under the ECOSEO and the MOVE projects (Sieber et al., 2021).

⁷

https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=02sh&project=saint_helena_web_NCA

⁸ The ecosystem profile of the amazon region is in the part "4.3 Services écosystémiques" of the report and its source is: https://ec.europa.eu/environment/nature/biodiversity/best/pdf/best-profil_d-ecosysteme_amazonie_2016.pdf

Step 8: Results integration

The results integration will be presented in deliverable D.2.2.c after agreeing on a method proposal with the Anchor Project leaders. For this, individual meetings with each Anchor Project team, were scheduled to finalize the set of potential methods and to select the most suitable ones. These meetings took place from June to November 2021.

3. CONCLUSION

According to the responses received, among the four regions there are three main tendencies:

1. Macaronesia follows a biophysical and participatory approach focused on filling the gap of data and scarce information on marine ecosystems and ES to inform the marine spatial planning;
2. the interest of French Guiana and Reunion Island on developing a participatory approach to take into consideration stakeholders' perception, values and preferences and to build with them solutions for a territorial management plan (in the French Guiana case) and for a management plan of Mare Longue National Park (in La Réunion);
3. and finally, the aim of South Atlantic (concretely St. Helena island) is to implement all the previous studies on MAES into a policy and decision-making (e.g., land management plan).

















The MAES process has seven steps according to the framework developed in the ESMERALDA project (See ESMERALDA MAES Explorer⁹). This operational framework provides directions to map and assess ES as required by Action 5 of the EU Biodiversity Strategy to 2020. The seven steps are:

1. **What kind of questions do stakeholders have?** It is crucial to identify the driving questions driving of the study to select the best tailor-made solution to develop. This starting point is vital to elaborate an action plan and achieve a successful implementation of ES in decision-making.
2. **Identification of relevant stakeholders.** It is necessary to consider stakeholders to map and assess ecosystems and their services from a holistic approach.
3. **Network creation/Involvement of stakeholders.** To invest time in creating a national or regional network on ecosystem services can enhance considerably the successful implementation of MAES process.

4. **Mapping and assessment process.** ES mapping is a powerful tool to improve the capacity of competent authorities to achieve sustainable solutions for ecosystems (Maes et al., 2012)
5. **Mapping & assessment case study applications.** This step refers to the generation of different examples in which mapping and assessment of ES is applied to address specific decision problems.
6. **Dissemination and Communication** of scientific findings to potential users from policy and decision making is at the core of each successful science-policy-society interface.
7. **Implementation.** This step refers to the MAES process outcomes implemented into policies, business or society.

In conclusion, the following table (**Table 6**) shows the stages overcome by each region to implement MAES. The MOVE-ON logo indicates the target to achieve in this project.

Table 6. Summary of the stages travelled by each region to achieve the implementation of MAES (icons from <http://www.maes-explorer.eu/>).

	 1 What kind of questions do stakeholders have?	 2 Identification of relevant stakeholders	 3 Network creation and involvement of stakeholders	 4 Mapping and assessment process	 5 MAES case study applications	 6 Dissemination and communication	 7 Implementation
Reunion Island	MOVE-ON	MOVE-ON	MOVE-ON	MOVE-ON			
Macaronesia				MOVE-ON			
French Guiana	MOVE-ON	MOVE-ON	MOVE-ON	MOVE-ON			
South Atlantic							MOVE-ON

4. IMPLEMENTATION

Task 2.2 is being implemented in three phases:

- a) Sending the questionnaire presented in the Deliverable D.2.2.a to Anchor Project leaders
- b) Receipt of responses presented in this document - Deliverable D. 2.2.b
- c) Analysis of the responses and proposal of methods for ES mapping and assessment that can deliver the most robust and applicable results for each Anchor Project. The mentioned analysis and the set of methods will be presented in Deliverable D.2.2.c

The integration of the different results has been carried out in close co-operation with MOVE-ON Task 3.1 - *Coordination of regional anchor projects*, and with Task 2.4 – *Knowledge sharing and capacity building for ecosystem condition and ecosystem*. Task 3.1 is supporting and monitoring anchor projects implementation, and Task 2.4 is detecting the support needed (workshop, training courses, etc.) to implement methods proposed by Task 2.2.

The meetings organized in relation to Task 2.2 were the following (**Figure 14**):

- **Workshop – template co-creation;**

October 2020 – online. Task 2.2 and 3.1 leaders presented a questionnaire whose objective was to collect the methodological needs and requirements. The questions were discussed and adapted jointly.

- **Anchor Project Update Meetings (APUM);**

Every three- four month in online format, Anchor Project leaders identify progress, good practices, challenges and difficulties, Task 3.1 leaders show barometer updates and Task 2.2 leaders communicate its progress. APUMs dates so far:

- February 2021
- May 2021
- September 2021
- January 2022

- **Individual Anchor Project Advise Meetings (IAPAMs)**

The objectives of these meetings were to present the proposal of mapping and assessment methods for ecosystem services for each Anchor Project individually and detecting the support needed (workshop, training courses, etc) to implement those methods. IAPAMs dates:

- June 2021
- July 2021
- October 2021
- November 2021

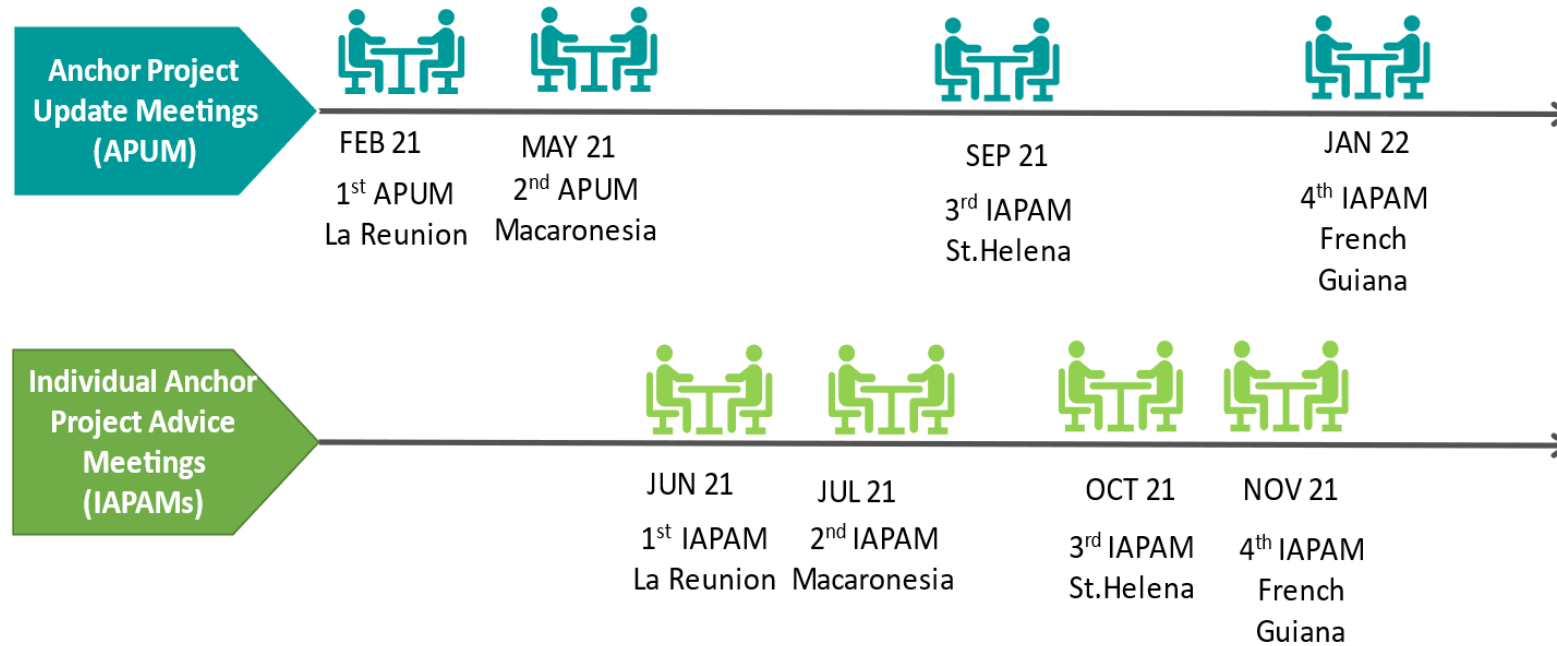


Figure 14. Meetings timeline.

5. DISSEMINATION AND COMMUNICATION

The results of Task 2.2 will be presented in the deliverable **D.2.2 - Report on ecosystem services mapping and assessment methods in ORs and OCTs**, which has three sections:

- a) Deliverable D.2.2.a shows the final version of the questionnaire sent to Anchor Project leaders to collect methodological needs of Anchor Project's implementation (delivered in March 2021).
- b) Deliverable D2.2.b presents the responses received from each Anchor Region .
 - April 2021. 1st draft of deliverable D2.2.b
 - April 2022. Final version of the present report to be reviewed by the partners
 - June 2022. Due date
- c) Deliverable 2.2.c analyses the responses and a summarizes the different methods proposed for ES mapping and assessment that can deliver the most robust and applicable results for each Anchor Project (due date in April 2023)

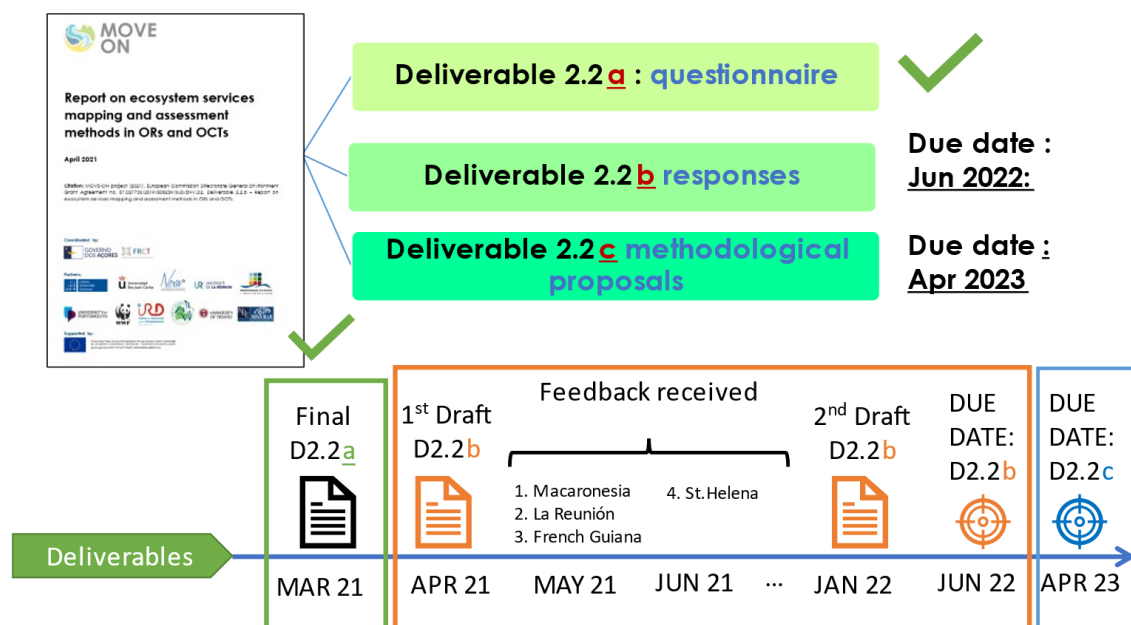


Figure 15. Deliverables timeline

6. REFERENCES

Brander, L.M., van Beukering P., Balzan, M., Broekx, S., Liekens, I., Marta-Pedroso, C., Szkop, Z., Vause, J., Maes, J., Santos-Martin F. and Potschin-Young M. (2018). Report on economic mapping and assessment methods for ecosystem services. Deliverable D3.2 EU Horizon 2020 ESMEALDA Project, Grant agreement No. 642007.

Burkhard B, Santos-Martin F, Nedkov S, Maes J (2018) An operational framework for integrated Mapping and Assessment of Ecosystems and their Services (MAES). *One Ecosystem* 3: e22831. <https://doi.org/10.3897/oneeco.3.e22831>

Burkhard, B., Maes, J., Potschin-Young, M.B., Santos-Martín, F., Geneletti, D., Stoev, P., Kopperoinen, L., Adamescu, C.M., Adem Esmail, B., Arany, I., Arnell, A., Balzan, M., Barton, D.N., van Beukering, P., Bicking, S., Borges, P.A.V., Borisova, B., Braat, L., Brander, L.M., Bratanova-Doncheva, S., Broekx, S., Brown, C., Cazacu, C., Crossman, N., Czúcz, B., Daněk, J., Groot, R., Depellegrin, D., Dimopoulos, P., Elvinger, N., Erhard, M., Fagerholm, N., Frélichová, J., Grêt-Regamey, A., Grudova, M., Haines-Young, R., Inghe, O., Kallay, T.K., Kirin, T., Klug, H., Kokkoris, I.P., Konovska, I., Kruse, M., Kuzmova, I., Lange, M., Liekens, I., Lotan, A., Lowicki, D., Luque, S., Marta-Pedroso, C., Mizgajski, A., Mononen, L., Mulder, S., Müller, F., Nedkov, S., Nikolova, M., Östergård, H., Penev, L., Pereira, P., Pitkänen, K., Plieninger, T., Rabe, S., Reichel, S., Roche, P.K., Rusch, G., Ruskule, A., Sapundzhieva, A., Sepp, K., Sieber, I.M., Šmid Hribar, M., Stašová, S., Steinhoff-Knopp, B., Stępniewska, M., Teller, A., Vackar, D., van Weelden, M., Veideman, K., Vejre, H., Vihervaara, P., Viinikka, A., Villoslada, M., Weibel, B., Zulian, G. (2018): (2018): Mapping and assessing ecosystem services in the EU - Lessons learned from the ESMEALDA approach of integration. In *One Ecosystem* 3. DOI: 10.3897/oneeco.3.e29153.

Maes J, Liekens I, Brown C (2018) Which questions drive the Mapping and Assessment of Ecosystems and their Services under Action 5 of the EU Biodiversity Strategy? *One Ecosystem* 3: e25309. <https://doi.org/10.3897/oneeco.3.e25309>

Maes J, Teller A, Erhard M, Liqueste C, Braat L, Berry P, Egoh B, Puydarrieux P, Fiorina C, Santos F, Paracchini ML, Keune H, Wittmer H, Hauck J, Fiala I, Verburg PH, Condé S, Schägner JP, San Miguel J, Estreguil C, Ostermann O, Barredo JJ, Pereira HM, Stott A, Laporte V, Meiner A, Olah B, Royo Gelabert E, Spyropoulou R, Petersen JE, Maguire C, Zal N, Achilleos E, Rubin A, Ledoux L, Brown C, Raes C, Jacobs S, Vandewalle M, Connor D, Bidoglio G (2013) Mapping and Assessment of Ecosystems and their Services. An analytical framework for ecosystem assessments under action 5 of the EU biodiversity strategy to 2020. Publications office of the European Union, Luxembourg.

Cybèle M.C, Une analyse socio-économique de la gestion et du contrôle des plantes envahissantes dans l'archipel des Mascareignes. 2018. <http://www.theses.fr/2018LARE0004>

Cruz, J. V.; Pereira, R.; Moreira, A. (2007): Carta de Ocupação do Solo da Região Autónoma dos Açores. Edited by Secretaria Regional do Ambiente e do Mar, Direcção Regional do Ordenamento do Território e dos Recursos Hídricos.

Hernâni, Jorge; Melânia, Rocha; Carlos Lima (2018): Carta de Ocupação do solo da região autónoma dos açores. COS.A / 2018.

Jiménez Fernández-Palacios, A. (2018): Land-cover/land-use mapping of Terceira Island (Azores, Portugal) by applying the Random Forest supervised classifier to 2017's Sentinel-2 multispectral remote sensing data. Final Report of the Argo Traineeship in the Azorean Biodiversity Group. Angra do Heroísmo Portugal.

Madeira, M.; Pinheiro, J.; Madruga, J.; Monteiro, F. (2007): Soils of volcanic systems in Portugal. In Ó. Arnalds, H. Óskarsson, F. Bartoli, P. Buurman, G. Stoops, E. García-Rodeja (Eds.): Soils of Volcanic Regions in Europe. Berlin, Heidelberg: Springer Berlin Heidelberg, pp. 69–81.

Moreira, Miguel; Fonseca, Catarina; Vergílio, Marta; Calado, Helena; Gil, Artur (2018): Spatial assessment of habitat conservation status in a Macaronesian island based on the InVEST model: a case study of Pico Island (Azores, Portugal). In Land Use Policy 78, pp. 637–649. DOI: 10.1016/j.landusepol.2018.07.015.

Picanço, Ana; Gil, Artur; Rigal, François; Borges, Paulo A.V. (2017): Pollination services mapping and economic valuation from insect communities: a case study in the Azores (Terceira Island). In Nature Conservation 18, p. 1. DOI: 10.3897/natureconservation.18.11523.

Roger, M.; Cohen-Nabeiro, A.; Lopez, R.; Kelle, L. (2016): Profil d'écosystème de la Guyane Française – Région Amazonie Européenne. Union européenne Régions Ultra-périphériques et Pays et Territoires d'Outre-mer. BEST, contract de service 07.0307.2013/666363/SER/B2, Commission Européenne, 2016, 167 p + 11 annexes.

Santos-Martín F. et al. (2018). *Report on Social Mapping and Assessment methods* Deliverable D3.1 EU Horizon 2020 ESERALDA Project, Grant agreement No. 642007.

Sieber, Ina M.; Santos-Martín, Fernando; van Beukering, Pieter; Hinsch, M.; Geneletti, Davide; Adem Esmail, Blal; Burkhard, Benjamin (2020): Deliverable D.3.1 - Scientific research on mapping and assessment of ecosystems and their services in the EU Overseas. MOVE project, European Commission Directorate General Environment Grant Agreement no. 07.027735/2018/776517/SUB/ENV.D2. MOVE Project.

Sieber, Ina Maren; Campagne, C. Sylvie; Villien, Clément; Burkhard, Benjamin (2021): Mapping and assessing ecosystems and their services: a comparative approach to ecosystem service supply in Suriname and French Guiana. In Ecosystems and People 17 (1), pp. 148–164. DOI: 10.1080/26395916.2021.1896580.

Vergílio, Marta; August, Peter V.; Calado, Helena; Fonseca, Catarina (2017): Ecosystem functions at the island scale: a contribution to the design of ecological structure. In International Journal of Biodiversity Science, Ecosystem Services & Management 13 (1), pp. 355–379. DOI: 10.1080/21513732.2017.1388290.

Vergílio, Marta; Fjøsne, Karen; Nistora, Adela; Calado, Helena (2016): Carbon stocks and biodiversity conservation on a small island: Pico (the Azores, Portugal). In *Land Use Policy* 58, pp. 196–207. DOI: 10.1016/j.landusepol.2016.07.020.

Vihervaara, P., Mononen, L., Nedkov S., Viinikka, A., et al. (2018). Biophysical mapping and assessment methods for ecosystem services. Deliverable D3.3 EU Horizon 2020 ESERALDA Project, Grant agreement No. 642007.

Kopperoinen, L.; Pitkänen, K.; Maes, J.; Hellgren, D. (2015): Clustering of EU Member States according to their prerequisites and needs to perform ES mapping and assessment. Deliverable 2.1. EU Horizon 2020 ESERALDA Project, Grant agreement No. 642007.

MOVE-ON (2020): Inception Report. Internal Project Report. MOVE-ON EU Project Grant Agreement n° 07.027735/2019/808239/SUB/ENV.D2

Petit, J.; Prudent, G. (2008): Climate change and biodiversity in the European Union overseas entities: IUCN.

Santos-Martín, F.; García Llorente, M.; Quintas-Soriano, C.; . Zorrilla-Miras, P.; Martín-López, B.; Loureiro, M., Montes, C.; Benayas, J. (2016) Spanish National Ecosystem Assessment: Socio-economic valuation of ecosystem services in Spain. Synthesis of the key findings. In *Food and Environment, Madrid, Spain*.

Sieber, I. M.; Borges, P.; Burkhard, B. (2018): Hotspots of biodiversity and ecosystem services: the Outermost Regions and Overseas Countries and Territories of the European Union. In *One Ecosystem* 3, e24719. DOI: 10.3897/oneeco.3.e24719.

Ina Maren Sieber, C. Sylvie Campagne, Clément Villien & Benjamin Burkhard (2021) Mapping and assessing ecosystems and their services: a comparative approach to ecosystem service supply in Suriname and French Guiana, *Ecosystems and People*, 17:1, 148-164, DOI: 10.1080/26395916.2021.1896580

The UK National Ecosystem Assessment (2014): The UK National Ecosystem Assessment Follow-on. Synthesis of the Key Findings. UNEP-WCMC, LWEC, UK.

7. Annex 1. Questionnaire

1) Theme identification

- Open question What is the overall aim of the Anchor Region Study?
- Is there a policy question driving the Anchor Region study, if yes, which? ¹
- Is there a business question driving the Anchor Region study, if yes, which? ²
- Is there a social question driving the Anchor Region study, if yes, which? ³
- Which are the main socioeconomic problems of the Anchor Region?
- How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for ecosystem management?

¹Policy questions are questions which are raised by policymakers at different levels of governance and public decision-making. Typical examples are national or regional ministries or agencies, municipalities or supra-national institutions such as the EU (e.g. How will ministries that use or influence natural capital (transport, energy, economy) uptake MAES information/scientific information in order to improve sectorial policies?).

²Business questions are formulated by the private sector at different economic scales. Examples include individual farmers, small and medium-sized enterprises, multinationals, but also associations that represent the private sector or their interests (e.g. What is the economic value of bird watching and what is its contribution to tourism management?).

³Societal questions are raised by individual citizens or organisations that represent civil society such as non-governmental organisations. These types of questions are closely interlinked with policy questions (e.g. How to facilitate education for citizens so more people are convinced of the importance of green for society?)

2) Identification of ecosystem types

- List of selectable Ecosystem types What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)
- Terrestrial
 - Fresh water
 - Marine

What are the main subcategories of ecosystem for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)

- Urban
- Cropland
- Grassland
- Woodland and forest
- Heathland and shrub
- Sparsely vegetated land

- Wetlands
- Rivers and lakes
- Marine inlets and transitional waters
- Coastal
- Shelf
- Open ocean

What are the main subcategories of ecosystem for the assessment in the Anchor Region? (Ecosystem types = MAES level 3) Please, specify only if it is necessary.

- Littoral (Tidal zone)
- Infralittoral (fotic zone > 1% light algal dominated)
- Circalittoral (zone beyond the infralittoral dominated by sessile animals)
- Offshore circalittoral (region as sandbanks or muddy habitats-dominated by sessile animals)
- Upper bathyal (depth from 1000 m to 2500 m below sea surface)
- Lower bathyal (depth from 2 500 m to 4000 m below surface)
- Abyssal (depth 4000 m below surface)
- Coastal dunes and sandy shores
- Coastal shingle
- Rock cliffs, ledges and shores including the supralittoral
- Estuaries
- Coastal lagoons
- Surface standing waters
- Surface running waters
- Littoral zone of inland surface waterbodies
- Raised and blanket bogs
- Valley mires, poor fens and transition mires
- Aapa palsa and polygon mires
- Base-rich fens and calcareous spring mires
- Sedge and reed beds, normally without free-standing water
- Inland saline and brackish marshes and reed beds
- Dry grasslands
- Mesic grasslands
- Seasonally wet and wet grasslands
- Alpine and subalpine grasslands
- Inland salt steppes
- Sparsely wooded grasslands
- Tundra
- Arctic, alpine and subalpine scrub
- Temperate and Mediterranean-montane scrub
- Temperate shrub heathland
- Maquis, arborescent matorral and thermo-Mediterranean brushes
- Garrigue
- Spiny Mediterranean heaths (Phrygana, hedgehog-heaths and related coastal cliff vegetation)
- Thermo-Atlantic xerophytic scrub

- Riverine and fen scrubs
- Shrub plantations
- Broadleaved deciduous woodland
- Broadleaved evergreen woodland
- Coniferous woodland
- Mixed deciduous and coniferous woodland
- Lines of trees, small anthropogenic woodlands, recently felled woodland, early -stage woodlands and coppice
- Screens
- Inland cliffs, rock pavements and outcrops
- Snow or ice-dominated habitats
- Miscellaneous inland habitats with very sparse or no vegetation
- Arable land and market gardens
- Cultivated areas of gardens and parks
- Buildings of cities, towns and villages
- Low Density buildings
- Extractive industrial sites
- Transport networks and other constructed hard-surfaced areas
- Highly artificial man-made waters and associated structures
- Waste deposits

3) Mapping of ecosystem types

Open questions	Are maps available at regional/territorial scale for habitats or ecosystems? If yes, provide source/link?
Open question	Is metadata available for those maps? If yes, provide source/link?
Open question	What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?

4) Identification of ES delivered by ecosystems

Open question	Which ES classification is most used in your work environment? (List of CICES, MA, TEEB, etc.)
Dropdown list	Which specific ES would you like to assess? <ol style="list-style-type: none"> 1. Provisioning services <ol style="list-style-type: none"> 1.1. Food 1.2. Water 1.3. Raw Materials 1.4. Genetic resources 1.5. Medicinal resources 1.6. Ornamental resources 2. Regulating services <ol style="list-style-type: none"> 1.1. Air quality regulation 1.2. Waste treatment (water purification) 1.3. Regulation of water flows 1.4. Moderation of extreme events 1.5. Erosion prevention

- 1.6. Climate regulation
- 1.7. Maintenance of soil fertility
- 1.8. Pollination
- 1.9. Biological control
- 1.10. Maintenance of life cycles of migratory species (incl. nursery service)
- 1.11. Maintenance of genetic diversity (especially in gene pool protection)

- 2. Cultural services
 - 2.1. Spiritual experience
 - 2.2. Aesthetic information
 - 2.3. Inspiration for culture, art and design
 - 2.4. Recreation and tourism
 - 2.5. Information for cognitive development

Dropdown list On which scale would you like to implement the assessment?

- Local
- Regional
- National

5) Selecting indicators for ES

Open question	Are indicators/indicator data available to assess those ES that you selected? If yes, provide source/link?
Yes/No	Would you use those indicators to assess the potential of ecosystems to provide a sustainable flow of ES in Anchor Region?
Yes/No	Would you use those indicators to assess the demand of that ES in Anchor Region?
Yes/No	Would you use those indicators to assess the actual use of that ES in Anchor Region?

6) Identification of methods for ES quantification

Yes/No	Do you know any biophysical methods to quantify ES supply, use or demand in physical units (such as ha, kg, m)?
Multiple choice	<p>If yes, which one would you like to use?</p> <ul style="list-style-type: none"> • Conceptual model • Ecological Connectivity models (to include methods/software such as Zonation, MSPA, MatrixGreen, TerrSet (former IDRISI), FunCon, etc.) • Field Observations • Integrated modelling framework • Macro-ecological models (includes habitat models) • Phenomenological models • Process-based models (includes: landscape function models) • Remote sensing and earth observation derivatives (NDVI, land cover, surface temperature) • Remote sensing and earth observations • Spatial proxy methods • State and transition model

	<ul style="list-style-type: none"> • Statistical models • Surveys and questionnaires • Trait-based models • Use of statistical and socio-economic data
Open question	Could you explain the reason why you select the above methods?
Yes/No	Do you know any economic methods to quantify ES supply, use or demand in economic units (such as \$, €)?
Multiple choice	<p>If yes, which would you like to apply?</p> <ul style="list-style-type: none"> • Choice modelling (choice experiment, discrete choice modelling) • Contingent valuation • Corporate Ecosystem Service Review • Cost-Benefit Analysis (CBA) • Cost-Effectiveness Analysis (CEA) • Damage cost avoided • Defensive expenditure • Ecosystem Service Accounting • Ecosystem service assessment • Group / participatory valuation • Hedonic pricing • Market price • Net factor income (residual value method) • Opportunity cost • Production function • Public pricing • Replacement cost (Alternative cost method) • Restoration cost • Social Cost of Carbon • Travel cost • Value transfer (benefit transfer)
Open question	Could you explain the reason why you select the above methods?
Yes/No	Do you know to apply any socio-cultural methods (Participatory GIS, preference assessment, photo elicitation...) to quantify ES supply, use or demand in non-economic units (such as persons, preferences)?
Multiple choice	<p>If yes, which would you like to apply?</p> <ul style="list-style-type: none"> • Deliberative assessment • Geo-tagged photo-series analysis • Participatory GIS • Participatory scenario planning • Photo-elicitation surveys • Preference assessment • Q-methodology

- Time-use assessment

Open question

Could you explain the reason why you select the above methods?

7) Mapping ES

Open question

Are any maps available for ES in the Anchor Region? If yes, provide source/link?

Is metadata available for those maps? If yes, provide source/link?

What methods were used to create those maps?

8. Annex 2. Responses from Anchor Projects

Anchor Region Name	Macaronesia (Azores)
Response time mark	1/11/2021 11:02:49
1.1. What is the overall aim of the Anchor Region Study?	The overall aim of the Macaronesia Anchor project is to fill knowledge gaps regarding the criteria required to undertake a Red List assessment in EU overseas marine habitats , namely habitats distribution, condition and trends, pressures and threats, and conservation and management, as well as to fill knowledge gaps of data and maps on ecosystem services.
1.2. Is there a policy question driving the Anchor Region study, if yes, which?	What are the consequences of the conservation status of each ecosystem type addressed and of the ecosystem condition-service interactions for human well-being in Macaronesia archipelagos?
1.3. Is there a business question driving the Anchor Region study, if yes, which?	No.
1.4. Is there a societal question driving the Anchor Region study, if yes, which?	No.
1.5. Which are the main socio-economic problems of the Anchor Region?	Some of the socio-economic problems of the Azores are related to the low levels of education and literacy, the small size and fragmentation of the local labour market, the fact that regional economic activities are concentrated in a limited set of sectors and in the larger islands, the excessive dependence on the foreign market and the insufficient investment in innovation sectors.
1.6. How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for ecosystem management?	By creating a Marine Habitat Platform (MHP), including an harmonized review of marine habitats for Canary Islands, Madeira and the Azores; by performing a marine habitat mapping and characterization campaign in a pilot zone in the Azores; the Anchor Project will contribute to deliver new and updated knowledge on the local habitats and their services that will be used by management agencies to support their decisions. The capacity building and demonstration activity for local actors (e.g. researchers and decision-makers) that will be coupled to the campaign will contribute to disseminate the ecosystem services concept and methodologies, promote knowledge exchange and increasing the know-how of management agencies.
2.1. What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)	Marine
2.2. What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)	Coastal, Shelf

Anchor Region Name	Macaronesia (Azores)
<p>2.3 What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 3) Please, specify only if it is necessary.</p>	
<p>3.1. Are maps available at regional/territorial scale for habitats or ecosystems? If yes, provide source/link</p>	<p>In the Azores, there are maps for marine habitats, but access needs to be required to the Governmental Agency with competencies in sea affairs.</p>
<p>3.2. Is metadata available for those maps? If yes, provide source/link</p>	<p>Not known.</p>
<p>3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?</p>	<p>Not known.</p>
<p>4.1. Which ES classification is most used in your work environment? (List of CiCES, MA, TEEB, etc.)</p>	<p>CICES.</p>
<p>4.2. Which specific ES would you like to assess?</p>	
<p>4.3. On which scale would you like to implement the assessment?</p>	<p>Local</p>
<p>5.1. Are indicators/indicator data available to assess those ES that you selected? if yes, provide source/link?</p>	<p>We leave this answer to ABAS (leader of the Anchor project).</p>
<p>5.2. Would you use those indicators to assess the potential of ecosystems to provide a sustainable flow of ES in Anchor Region?</p>	
<p>5.3. Would you use those indicators to assess the demand of that ES in Anchor Region?</p>	

Anchor Region Name	Macaronesia (Azores)
5.4. Would you use those indicators to assess the actual use of that ES in Anchor Region?	
6.1. Do you know any biophysical methods to quantify ES supply, use or demand in physical units (such as ha, kg, m)?	Yes
6.2. If yes, which one would you like to use?	We leave this answer to ABAS (leader of the Anchor project).
6.3. Could you explain the reason why you select the above methods?	
6.4. Do you know any economic methods to quantify ES supply, use or demand in economic units (such as \$, €)??	Yes
6.5. If yes, which would you like to apply?	We leave this answer to ABAS (leader of the Anchor project).
6.6. Could you explain the reason why you select the above methods?	
6.7. Do you know to apply any socio-cultural methods (Participatory GIS, preference assessment, photo elicitation...) to quantify ES supply, use or demand in non-economic units (such as persons, preferences)?	Yes
6.8. If yes, which would you like to apply?	We leave this answer to ABAS (leader of the Anchor project).
6.9. Could you explain the reason why you select the above methods?	
7.1. Are any maps available for ES in the Anchor Region? If yes, provide source/link?	Not known.

Anchor Region Name	Macaronesia (Azores)
7.2. Is metadata available for those maps? If yes, provide source/link?	Not known.
7.3. What methods were used to create those maps?	Not known.

Anchor Region Name	Reunion Island
Response time mark	1/11/2021 14:07:45
1.1. What is the overall aim of the Anchor Region Study?	<p>To assess the value of natural, economic and the cultural heritage of the anchor site</p> <p>To evaluate the socio-ecological systems through mapping that would assist in the conservation and restoration of the unique ecosystem of the anchor region</p> <p>To increase the habitats of the anchor region</p> <p>To help in the management of control of threats to biodiversity mainly Invasive Alien Species</p>
1.2. Is there a policy question driving the Anchor Region study, if yes, which?	<p>The recently co-created Marelongue action plan (the Anchor Region Study) has been initiated by the National Parc of La Réunion with the stakeholders working within the scope of 1. Biodiversity conservation and restoration (National Forestry Services, University of La Réunion, CIRAD), 2. Managements of the anchor Region Study (National Park), 3. Socio-economic activities (B&Bs, outdoor activities, Organic Farmers) and 4. Local authorities (Municipality of St-Philippe, Tourism Authority). This co-created action plan is an ongoing platform where stakeholders express their priorities in the development and implementation of such actions.[This answer is relevant for questions 1.2, 1.3 and 1.4]</p> <p>The municipality of St-Philippe is updating its land-use planning with a willingness to preserve areas of high biodiversity value. In addition, the municipality shows interest in developing agro-forestry sites (projects submitted by local stakeholders), adjacent to the anchor region site.</p>
1.3. Is there a business question driving the Anchor Region study, if yes, which?	<p>Increase/maintain tourism activities but also educational and informative activities</p>
1.4. Is there a societal question driving the Anchor Region	<p>The creation of job opportunities and training (mainly for the tourism sector)</p> <p>A deep sense of "protecting their forest" by the local community willing to protect and increase the value of their forest through socio-economic activities</p>

Anchor Region Name	Reunion Island
study, if yes, which?	
1.5. Which are the main socio-economic problems of the Anchor Region?	<p>A high level of unemployment A very weak economy</p>
1.6. How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for ecosystem management?	<p>To advise the local municipality by ensuring that Ecosystem services terminologies and/or the results of it mapping could be included in the land use-mapping of the municipality of Saint-PhilippePut forward the importance of natural and cultural heritage of the anchor site through mapping (that could potentially be later used in land-use mapping or used as tools to advise policy and decision makers). The mapping should not only include high biodiversity areas but also socio-economic activities (agriculture and tourism)</p>
2.1. What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)	<p>Terrestrial</p>
2.2. What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)	<p>Cropland, Woodland and forest</p>

Anchor Region Name	Reunion Island
<p>2.3 What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 3) Please, specify only if it is necessary.</p>	<p>Rock cliffs, ledges and shores including the supralittoral, Broadleaved deciduous woodland, Lines of trees, small anthropogenic woodlands, recently felled woodland, early -stage woodlands and coppice</p>
<p>3.1. Are maps available at regional/territorial scale for habitats or ecosystems? If yes, provide source/link</p>	<p>YesLand Cover maps, Reference: Dupuy, Stéphane; Gaetano, Raffaele, 2020, "Reunion island - 2019, Land cover map (Spot6/7) - 1.5m", doi:10.18167/DVN1/YZJQ7Q, CIRAD Dataverse, V1 https://aware.cirad.fr/layers/geonode:re_lcm_2019_level1 https://www.geoportail.gouv.fr/donnees/corine-land-cover-2018 https://www.geoportail.gouv.fr/donnees/corine-land-cover-2018 Invasion-level maps / level of degradation (250m) Ref: https://agritrop.cirad.fr/596376/Corinne Land Cover : https://www.geoportail.gouv.fr/donnees/corine-land-cover-2018 Natural vegetation (35 type of habitats) Ref: https://agritrop.cirad.fr/596376/ https://aware.cirad.fr/layers/geonode:RE_LCM_2019_level3 Dupuy, Stéphane; Gaetano, Raffaele, 2020, "Reunion island - 2019, Land cover map (Spot6/7) - 1.5m", doi:10.18167/DVN1/YZJQ7Q, CIRAD Dataverse, V1 Location of forests and other wooded land on Reunion Island (State of forest genetic resources in the world, French National Report, Volume 11, La Réunion 2019) location of the hydrographic network and drinking water catchments in relation to wooded land public reception in the wooded lands of Reunion (data ONF, 2020) location of areas with potential production of forests under the forest regime (data ONF, 2020) location of beehive concessions in public forests (ONF Departmental council of La Réunion, 2016) location and main types of wooded land present in Réunion (data ONF, 2020) location of the main types of native forests in Réunion (data ONF, 2020) location of the main types of anthropogenic forests in Réunion (data ONF, 2020) location of the main types of forest land ownership in Réunion (data SIGDEAL, 2019 ; CDL, 2018 ; ONF, 2020) levels of invasion of natural forests by exotic plant species (data CIRAD – National Parc, in Amy et al. 2019). location of the main types of wooded land other than forests and indigenous to Réunion (data ONF, 2020) location of the main types of wooded land other than forests and of man-made origin in Réunion (data ONF, 2020) main types of land ownership of wooded land other than forests (State of forest genetic resources in the world, French National Report, Volume 11, La Réunion 2019) levels of invasion of other woodlands of natural origin by exotic plant species (data CIRAD – National Parc, 2019) Location of endangered species, according to IUCN threat criteria (CR, EN and VU species) (data SIG CBNM, 2019) Protected areas covering the forest genetic resources in Réunion (State of forest genetic resources in the world, French National Report, Volume 11, La Réunion 2019) Priority areas for the control of invasive alien plant species (data CIRAD – National Parc, 2019) distribution of the number of individuals of native species present in ex-situ collection at the Mascarin Botanical Garden (CBNM, 2019). [please note that I received a new report with detailed maps but not available links. I am sending you the googleform now since I have to shut down my computer but not sure whether I can complete the form a second time? My apologies for that]</p>

Anchor Region Name	Reunion Island
3.2. Is metadata available for those maps? If yes, provide source/link	Dupuy, Stéphane; Gaetano, Raffaele, 2020, "Reunion island - 2019, Land cover map (Spot6/7) - 1.5m", doi:10.18167/DVN1/YZJQ7Q, CIRAD Dataverse, V1
3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?	CORINE land cover Spot 6/7 images The National Institute of Geographic and Forest Information (IGN) national database
4.1. Which ES classification is most used in your work environment? (List of CiCES, MA, TEEB, etc.)	CICES
4.2. Which specific ES would you like to assess?	Provisioning services. Food, Provisioning services.Raw Materials, Provisioning services. Genetic resources, Provisioning services. Medicinal resources, Regulating services. Regulation of water flows, Regulating services. Maintenance of soil fertility, Regulating services. Pollination, Regulating services. Biological control, Regulating services. Maintenance of genetic diversity (especially in gene pool protection), Cultural services. Recreation and tourism, Regulating services: the capacity of forest regeneration (seed dispersal)
4.3. On which scale would you like to implement the assessment ?	Local

Anchor Region Name	Reunion Island
<p>5.1. Are indicators/indicator data available to assess those ES that you selected? if yes, provide source/link?</p>	<p>Please see response from question 3.1 https://osur.univ-reunion.fr/observations/osu-r-stations/forest-station https://osur.univ-reunion.fr/observations/osu-r-stations/forest-station/les-objectifs Small equipment for field work: Forest ecology, taxonomy, ecophysiology and local climatic parameters Small long term sensors: Climatic parameters along altitudinal profiles (pressure, temperature, humidity) Researchers are at the moment working on the production of data that will favor the description of indicators namely : 1. Forest litter 2. Climate 3. Canopy Opening after Cyclones (For now no links are available but they are willing to upload online if you wish so)</p>
<p>5.2. Would you use those indicators to assess the potential of ecosystems to provide a sustainable flow of ES in Anchor Region?</p>	<p>Yes</p>
<p>5.3. Would you use those indicators to assess the demand of that ES in Anchor Region?</p>	<p>Yes</p>
<p>5.4. Would you use those indicators to assess the actual use of that ES in</p>	<p>Yes</p>

Anchor Region Name	Reunion Island
Anchor Region?	
6.1. Do you know any biophysical methods to quantify ES supply, use or demand in physical units (such as ha, kg, m)?	Yes
6.2. If yes, which one would you like to use?	Ecological Connectivity models (to include methods/software such as Zonation, MSPA, MatrixGreen, TerrSet (former IDRIS), FunCon, etc.), Field Observations
6.3. Could you explain the reason why you select the above methods?	These methods are used for fine scale data Several tools are being used by researchers for their mapping process
6.4. Do you know any economic methods to quantify ES supply, use or demand in economic units (such as \$, €)?	Yes
6.5. If yes, which would you like to apply?	Cost-Benefit Analysis (CBA), Damage cost avoided, Ecosystem Service Accounting, Ecosystem service assessment, Group / participatory valuation, Restoration cost, Travel cost, Value transfer (benefit transfer)

Anchor Region Name	Reunion Island
<p>6.6. Could you explain the reason why you select the above methods?</p>	<p>We undertook a socio-economic analysis of the management and control of invasive plant species in the Mascarene islands. We focus on the management and control of the invasive plant, <i>Rubus Alceifolius</i> with a cost-benefit analysis of its control. The cost of control of invasive species is of high importance. On the other hand, it is necessary to evaluate at fine scale not only the cost of restoration but also the value of tourism, vanilla production and related socio-economic activities</p>
<p>6.7. Do you know to apply any socio-cultural methods (Participatory GIS, preference assessment, photo elicitation...) to quantify ES supply, use or demand in non-economic units (such as persons, preferences)?</p>	<p>Yes</p>
<p>6.8. If yes, which would you like to apply?</p>	<p>Deliberative assessment, Geo-tagged photo-series analysis, Participatory GIS, Participatory scenario planning</p>
<p>6.9. Could you explain the reason why you select the above methods?</p>	<p>The methods are the most relevant to our planned activities in participatory mapping</p>

Anchor Region Name	Reunion Island
<p>7.1. Are any maps available for ES in the Anchor Region? If yes, provide source/link?</p>	<p>Plots of vanilla production</p> <p>Maps are available however available through reports without links (From the National Forestry Services). The sources are very much general but the maps available in the reports and I would could easily sent to you. The following are available but not limited to:</p> <p>Map of the ecological function Map of the social function Map of the protection function Map of wood production</p> <p>Source: Atlas des Forêts départo-domaniales et domaniales de la Coloraie du Sud 2018-2037. Office National des Forêts</p>
<p>7.2. Is metadata available for those maps? If yes, provide source/link?</p>	<p>Dupuy, Stéphane; Gaetano, Raffaele, 2020, "Reunion island - 2019, Land cover map (Spot6/7) - 1.5m", doi:10.18167/DVN1/YZJQ7Q, CIRAD Dataverse, V1</p> <p>[If needed Metadata could be available from the National Forestry Services]</p>
<p>7.3. What methods were used to create those maps?</p>	<p>GIS mapping, rapid field assessment to add complementary information to the land-use planning, maps of habitats of the anchor site (Marelongue Nature Reserve)</p>

Anchor Region Name	Macaronesia (Canary Islands)2
Response time mark	1/13/2021 12:06:16
1.1. What is the overall aim of the Anchor Region Study?	To assess the status of Marine Ecosystems in the Macaronesia and to demonstrate the benefits of combining assessments of ecosystem condition and ecosystem services for decision making
1.2. Is there a policy question driving the Anchor Region study, if yes, which?	Can we estimate the quality and quantity of coastal marine habitats in the Macaronesia?
1.3. Is there a business question driving the Anchor Region study, if yes, which?	Regarding marine eco-tourism activities, can the anchor region study provides improve the sustainability of ecosystem services exploitation
1.4. Is there a societal question driving the Anchor Region study, if yes, which?	Can we estimate the value of coastal marine habitats of Macaronesia in terms of biodiversity?
1.5. Which are the main socio-economic problems of the Anchor Region?	Sustainable development (blue growth) and management of marine coastal areas, keeping their natural
1.6. How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for ecosystem management?	The anchor region study aims to provide a more clear picture about the marine habitats "seascape" of the region, in terms of its geographical occurrence, potential or real pressures and threats and historical or future trends.
2.1. What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)	Marine
2.2. What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)	Coastal
2.3 What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 3) Please, specify only if it is necessary.	Littoral (Tidal zone), Infralittoral (fotic zone > 1% light algal dominated), Circalittoral (zone beyond the infralittoral dominated by sessile animals)

Anchor Region Name	Macaronesia (Canary Islands)2
3.1. Are maps available at regional/territorial scale for habitats or ecosystems? If yes, provide source/link	<p>There is some official coastal habitat characterization until 50m depth in the Canary Islands. For the other regions involved in the study (Azores) data available are scarce. There is a link of harmonized (EUNIS and Spanish Inventory of Marine Habitats) habitats of CI through UI-ECOQUA (University Institute of Sustainable Aquaculture and Marine Ecosystems belongs to University of Las Palmas) geoportal: http://www.geoportal.ulpgc.es/visor2/?json=catalogo3.json#</p>
3.2. Is metadata available for those maps? If yes, provide source/link	<p>Concerning IU ECOAQUA geoportal metadata can be available from this link: Main geoportal link: http://www.geoportal.ulpgc.es/portada/index.html</p>
3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?	<p>EUNIS Habitats was used to categorize habitats, however were created from the the spanish inventory of marine habitats: https://www.miteco.gob.es/es/costas/temas/proteccion-medio-marino/biodiversidad-marina/habitats-especies-marinos/inventario-espanol-habitats-especies-marinos/inventario-habitats-especies.aspx</p>
4.1. Which ES classification is most used in your work environment? (List of CiCES, MA, TEEB, etc.)	<p>CICES</p>
4.2. Which specific ES would you like to assess?	<p>Provisioning services. Food, Regulating services. Maintenance of life cycles of migratory species (incl. nursery service), Cultural services. Recreation and tourism, carbon sequestration</p>
4.3. On which scale would you like to implement the assessment?	<p>Local</p>
5.1. Are indicators/indicator data available to assess those ES that you selected? if yes, provide source/link?	<p>The Territorial information system of the Canary Islands can provide several data which can help to estimate "health status" of various marine habitats categories such outfalls points (legal and illegal) and other human activities with can potentially affect habitats and ecosystems they provide. https://visor.grafcan.es/visorweb/</p>
5.2. Would you use those indicators to assess the potential of ecosystems to provide a sustainable flow of ES in Anchor Region?	<p>No</p>
5.3. Would you use those indicators to assess the demand of that ES in Anchor Region?	<p>No</p>
5.4. Would you use those indicators to assess the actual use of that ES in Anchor Region?	<p>No</p>

Anchor Region Name	Macaronesia (Canary Islands) ²
6.1. Do you know any biophysical methods to quantify ES supply, use or demand in physical units (such as ha, kg, m)?	Yes
6.2. If yes, which one would you like to use?	Field Observations, Surveys and questionnaires
6.3. Could you explain the reason why you select the above methods?	We have limited knowledge on ES quantification, so field observations through visual observations can provide estimations of food provided by ecosystems (e.g. Kg of fish/Ha).
6.4. Do you know any economic methods to quantify ES supply, use or demand in economic units (such as \$, €)??	No
6.5. If yes, which would you like to apply?	
6.6. Could you explain the reason why you select the above methods?	
6.7. Do you know to apply any socio-cultural methods (Participatory GIS, preference assessment, photo elicitation...) to quantify ES supply, use or demand in non-economic units (such as persons, preferences)?	No
6.8. If yes, which would you like to apply?	
6.9. Could you explain the reason why you select the above methods?	
7.1. Are any maps available for ES in the Anchor Region? If yes, provide source/link?	No
7.2. Is metadata available for those maps? If yes, provide source/link?	
7.3. What methods were used to create those maps?	

Anchor Region Name	French Guiana
Response time mark	2/4/2021 17:17:39
1.1. What is the overall aim of the Anchor Region Study?	Demonstrate the feasibility of a territorial management plan preserving and promoting ecosystem services
1.2. Is there a policy question driving the Anchor Region study, if yes, which?	<p>Yes. In the territory of FG, still well preserved in comparison to similar tropical areas, or even neighboring countries, the question of the economic development is crucial. Indeed, the territory is still at the beginning of its development path, but is now booming in terms of demography. Thus, the demand for essential services (housing, water and energy supply, transportation, etc.) and of course, employment, is increasing very fast as well. In this context, the temptation to install large industrial projects is high and the environment preservation is often seen as an obstacle. Then, the idea of this case study is to show, at a local level (municipality), that we can find a trade-off, or even better, synergies between environment preservation and economic development.</p>
1.3. Is there a business question driving the Anchor Region study, if yes, which?	I would say yes, as one of the objectives of this case study is to highlight the potential economic benefits that can come from the preservation and promotion of the ecosystem services. The eco-tourism is one example.
1.4. Is there a societal question driving the Anchor Region study, if yes, which?	Again, yes, because, as explained in the first answer, one of the main challenges for the FG territory and society in the decades to come is to provide good living conditions (including employment) for its people, while preserving the environment. Some part of the civil society and most of the decision-makers are skeptical about the feasibility of such a project, hence the objective of this study.
1.5. Which are the main socio-economic problems of the Anchor Region?	See answer to question 1.1
1.6. How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for ecosystem management?	Among the OR/OCT, French Guiana is the only continental territory so it has a very specific context. Nevertheless, it shares some similar issues regarding the socio-economic context (with the French OR in particular): geographic distance from the mainland, strong dependency on imports, high costs of life and high unemployment rate at the same time. Then some lessons learned here, for instance on how to implement an ES project with elected representatives, could be useful for others.
2.1. What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem)	Terrestrial, Fresh water, Marine

Anchor Region Name	French Guiana
types = MAES level 1)	
2.2. What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)	Urban, Woodland and forest, Sparsely vegetated land, Wetlands, Rivers and lakes, Marine inlets and transitional waters, Coastal
2.3 What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 3) Please, specify only if it is necessary.	

Anchor Region Name	French Guiana
<p>3.1. Are maps available at regional/territorial scale for habitats or ecosystems? If yes, provide source/link</p>	<p>Yes, see below.</p> <p>Ecosystem profile of the amazon region: https://ec.europa.eu/environment/nature/biodiversity/best/regions/index_en.htm</p> <p>Ecosystem services assessment for French Guiana (ECOSEO, MAES). Forthcoming publication.</p> <p>Ecosystem natural capital accounting for the Guiana shield (ECOSEO, ENCA). Forthcoming publication.</p> <p>Several data sets on Geoguyane portal, especially this one: https://carto.geoguyane.fr/1/carte_esp_proteges.map</p> <p>Atlas des paysages de Guyane (Landscape Atlas of FG). https://www.data.gouv.fr/fr/datasets/atlas-des-paysages-de-guyane-decoupage-en-unites-et-sous-unites/ https://www.geoguyane.fr/geonetwork/srv/fre/catalog.search#/metadata/558c2631-222c-4af1-80c6-473f087f2e35</p> <p>Catalogue des habitats forestiers de Guyane (Forest habitats catalogue of FG). http://www1.onf.fr/lire_voir_ecouter/++oid++4cc4/@@display_media.html https://www.geoguyane.fr/geonetwork/srv/fre/catalog.search#/metadata/a5abd237-100d-4211-b8b7-2cb9cae2eba1</p>
<p>3.2. Is metadata available for those maps? If yes, provide source/link</p>	<p>Provided in the previous links.</p>
<p>3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?</p>	<p>A wide variety of data sets, among them local LULC maps, local species inventories, protected areas, geo-morphological data, tele-detection data (deforestation), etc. and a large catalog of international database (for ECOSEO, ENCA work), mainly satellite imagery, world organisation databases (UICN, FAO, WWF, etc.).</p>
<p>4.1. Which ES classification is most used in your work environment? (List of CiCES, MA, TEEB, etc.)</p>	<p>I have not a precise idea, but I would say CiCES.</p>

Anchor Region Name	French Guiana
4.2. Which specific ES would you like to assess?	Provisioning services. Food, Provisioning services. Water, Provisioning services. Raw Materials, Provisioning services. Genetic resources, Provisioning services. Medicinal resources, Regulating services. Regulation of water flows, Regulating services. Moderation of extreme events, Regulating services. Climate regulation, Regulating services. Biological control, Regulating services. Maintenance of life cycles of migratory species (incl. nursery service), Regulating services. Maintenance of genetic diversity (especially in gene pool protection), Cultural services. Spiritual experience, Cultural services. Aesthetic information, Cultural services. Inspiration for culture, art and design, Cultural services. Recreation and tourism
4.3. On which scale would you like to implement the assessment?	Local
5.1. Are indicators/indicator data available to assess those ES that you selected? if yes, provide source/link?	Mainly same data as the one provided at the 3.1 question.
5.2. Would you use those indicators to assess the potential of ecosystems to provide a sustainable flow of ES in Anchor Region?	Yes
5.3. Would you use those indicators to assess the demand of that ES in Anchor Region?	Yes
5.4. Would you use those indicators to assess the actual use of that ES in Anchor Region?	Yes
6.1. Do you know any biophysical methods to quantify ES	Yes

Anchor Region Name	French Guiana
supply, use or demand in physical units (such as ha, kg, m)?	
6.2. If yes, which one would you like to use?	Conceptual model, Field Observations, Remote sensing and earth observation derivatives (NDVI, land cover, surface temperature), Surveys and questionnaires, Use of statistical and socio-economic data
6.3. Could you explain the reason why you select the above methods?	At this stage, we still not have a precise idea of the methods that we will be using. But I selected the above methods, knowing that we will need methods for 1. ES diagnosis phase; 2. Assessing the local public policies related to ES; 3. Collectively build a local management plan integrating ES. Moreover, as we want to gain local acceptance, we will value participatory methods.
6.4. Do you know any economic methods to quantify ES supply, use or demand in economic units (such as \$, €)??	Yes
6.5. If yes, which would you like to apply?	Damage cost avoided, Ecosystem service assessment, Market price, Replacement cost (Alternative cost method), Restoration cost
6.6. Could you explain the reason why you select the above methods?	Important: so far, we did not plan to use economic valuation so far, but could use the above one if judged useful, later on. I chose methods that propose the most tangible / concrete way to calculate the economic value, as it often the most robust and the most easy understandable for non-initiated people (e.g. deciders). Replacement costs, or restauration costs for instance are relatively easy to understand and will get more consensus I presume.
6.7. Do you know to apply any socio-cultural methods (Participatory GIS, preference assessment, photo elicitation...) to quantify ES supply, use or demand in non-economic units (such as persons, preferences)?	Yes

Anchor Region Name	French Guiana
6.8. If yes, which would you like to apply?	Deliberative assessment, Geo-tagged photo-series analysis, Participatory GIS, Participatory scenario planning
6.9. Could you explain the reason why you select the above methods?	I do not know exactly those methods, but I am interested in implementing them in the case study as they allow the partners and general public to participate.
7.1. Are any maps available for ES in the Anchor Region? If yes, provide source/link?	<p>Yes. Two sources:</p> <p>Ecosystem profile of the amazon region (Part "4.3 Services écosystémiques" of the report): https://ec.europa.eu/environment/nature/biodiversity/best/regions/index_en.htm</p> <p>Ecosystem services assessment for French Guiana (ECOSEO, MAES). Forthcoming publication. Work done by Ina, that will also be published as case study for the MOVE project.</p>
7.2. Is metadata available for those maps? If yes, provide source/link?	Included above.
7.3. What methods were used to create those maps?	<p>Ecosystem profile : Deliberative assessment, Field observations, survey and questionnaire</p> <p>ECOSEO - MAES : Ecosystem services assessment (Capacity Matrix).</p>

Anchor Region Name	South Atlantic
Response time mark	2/11/2021 11:40:40
1.1. What is the overall aim of the Anchor Region Study?	Bridge the gap between Science and Policy
1.2. Is there a policy question driving the Anchor Region study, if yes, which?	Because this is 'live' analysis - the policy question has not yet been determined. It is likely that there will be multiple policy questions that will need to be answered, however these will be determined once the spatial data analyst is in post in St. Helena. We do however have a memorandum of understanding with the St Helena government for the project and the post signed by the head of government, so there is high level buy-in for the idea and therefore we expect there to be some really positive outcomes. The Director of the Department where the role will be based is also part of the interview panel.
1.3. Is there a business question driving the Anchor Region study, if yes, which?	The study will relate more to government policy - it is embedded in the St Helena Government - however the policy questions might of course (most likely will) directly relate to business
1.4. Is there a societal question driving the Anchor Region study, if yes, which?	The study will relate more to government policy - it is embedded in the St Helena Government - however the policy questions might of course (most likely will) directly relate to society
1.5. Which are the main socio-economic problems of the Anchor Region?	Salaries on island are low, employment is limited, there is a lot of outward migration - however this helps to contribute to the economy through remittances and many families are sustained in this way. The government is dependent on UK aid and not economically independent.
1.6. How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for	We are approaching this the other way round - as the project is unlikely to be able to set policy priorities - so it is more about how ecosystem management can be fed into current (relevant) policy

Anchor Region Name	South Atlantic
ecosystem management?	
2.1. What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)	Terrestrial, Marine
2.2. What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)	Woodland and forest, Heathland and shrub, Wetlands, Marine inlets and transitional waters, Coastal
2.3 What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 3) Please, specify only if it is necessary.	
3.1. Are maps available at regional/territorial scale for habitats or	https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=01sh&project=saint_helena_web

Anchor Region Name	South Atlantic
ecosystems ? If yes, provide source/link	
3.2. Is metadata available for those maps? If yes, provide source/link	<p>metadata is on the webGIS - both in the form of a document and information about the layer in the WebGIS</p> <p>https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=01sh&project=saint_helena_web</p>
3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?	<p>Habitat map was created using IUCN classification, map produced through a 2-3 year project using satellite imagery (Pleiades) and ground truthing - IUCN habitat classification system.</p>
4.1. Which ES classification is most used in your work environment ? (List of CiCES, MA, TEEB, etc.)	<p>https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=02sh&project=saint_helena_web_NCA</p>
4.2. Which specific ES would you like to assess?	<p>Provisioning services. Food, Provisioning services. Water, Regulating services. Regulation of water flows, Regulating services. Climate regulation, Regulating services. Pollination, Cultural services. Recreation and tourism, Note - see comments above re: assessment depends on the live policy question. The services ticked here are those already assessed on the island using Baysien Network modelling</p>
4.3. On which scale would you like to implement the assessment?	<p>Local</p>

Anchor Region Name	South Atlantic
5.1. Are indicators/indicator data available to assess those ES that you selected? if yes, provide source/link?	<p>https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=02sh&project=saint_helena_web_NCA</p> <p>This data is static though - there is no regular monitoring</p>
5.2. Would you use those indicators to assess the potential of ecosystems to provide a sustainable flow of ES in Anchor Region?	No
5.3. Would you use those indicators to assess the demand of that ES in Anchor Region?	No
5.4. Would you use those indicators to assess the actual use of that ES in Anchor Region?	No
6.1. Do you know any biophysical methods to quantify ES supply, use or demand in physical units (such as ha, kg, m)?	No
6.2. If yes, which one would you like to use?	would need advice on this.
6.3. Could you explain the reason why you	As above - we would need advice on this area - once person is in post.

Anchor Region Name	South Atlantic
select the above methods?	
6.4. Do you know any economic methods to quantify ES supply, use or demand in economic units (such as \$, €)??	No
6.5. If yes, which would you like to apply?	As above - we would need advice on this area - once person is in post.
6.6. Could you explain the reason why you select the above methods?	As above - we would need advice on this area - once person is in post.
6.7. Do you know to apply any socio-cultural methods (Participatory GIS, preference assessment, photo elicitation...) to quantify ES supply, use or demand in non-economic units (such as persons, preferences)?	Yes
6.8. If yes, which would you like to apply?	As above - we would need advice on this area - once person is in post.
6.9. Could you explain the reason why you select the above methods?	As above - we would need advice on this area - once person is in post.

Anchor Region Name	South Atlantic
7.1. Are any maps available for ES in the Anchor Region? If yes, provide source/link?	https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=02sh&project=saint_helena_web_NCA
7.2. Is metadata available for those maps? If yes, provide source/link?	<p>https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=02sh&project=saint_helena_web_NCA</p> <p>metadata available in the maps</p>
7.3. What methods were used to create those maps?	can find out - not sure what you mean