



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

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Summary

This report is the third and last part (D.2.2.c) of the MOVE project Deliverable 2.2. *Report on ecosystem services mapping and assessment methods in ORs and OCTs*. The first report, D.2.2.a, presented a questionnaire to identify the MOVE-ON Anchor Regions' needs for methodological support. D.2.2.b presented the response received from each Anchor Region. And this report D.2.2.c presents the analysis of the responses and the data available of each region which informed the proposals of methods for mapping and assessing ecosystem services.

For Reunion Island, a stepwise approach based on three steps was proposed starting with sociocultural methods. For Macaronesia, two scales approach was proposed: a general study in the whole archipelago and another one, at a localised scale in Gran Canaria. Coastal blue carbon, coastal recreation, and fisheries were selected to be assessed by biophysical, sociocultural, and economic methods. St. Helena was advised on two paths: how to implement the evidence already generated on ES into Urban Spatial Planning and how to improve the existing data through developing ecosystem accounts (SEEA-EA framework). Finally, French Guiana was advised to use the information on ES generated in the past as starting point to develop sociocultural studies at a local level and finally, to integrate all the previous data generated into a "Town Development Plan".

Each proposal was discussed and validated with leaders of Task 2.4 and Task 3.1 before being presented to the Anchor Project Leaders. Later, the Individual Anchor Project Advice Meetings (IAPAMs) were designed and organized for sharing and discussing the methodological proposal with Anchor Projects' leaders and detecting the support needed to implement that proposal. After IAPAMs, the URJC team also participated in the Anchor Project Update Meetings (APUMs) (Task 3.1) and in the training courses carried out under Task 2.4 to follow up and support the implementation of each methodological proposal.

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List of abbreviations

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
OCT	Overseas Countries and Territories
OR	Outermost Region
AP	Anchor Project

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 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 there is 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. Its structure is shown in **Figure 1**.

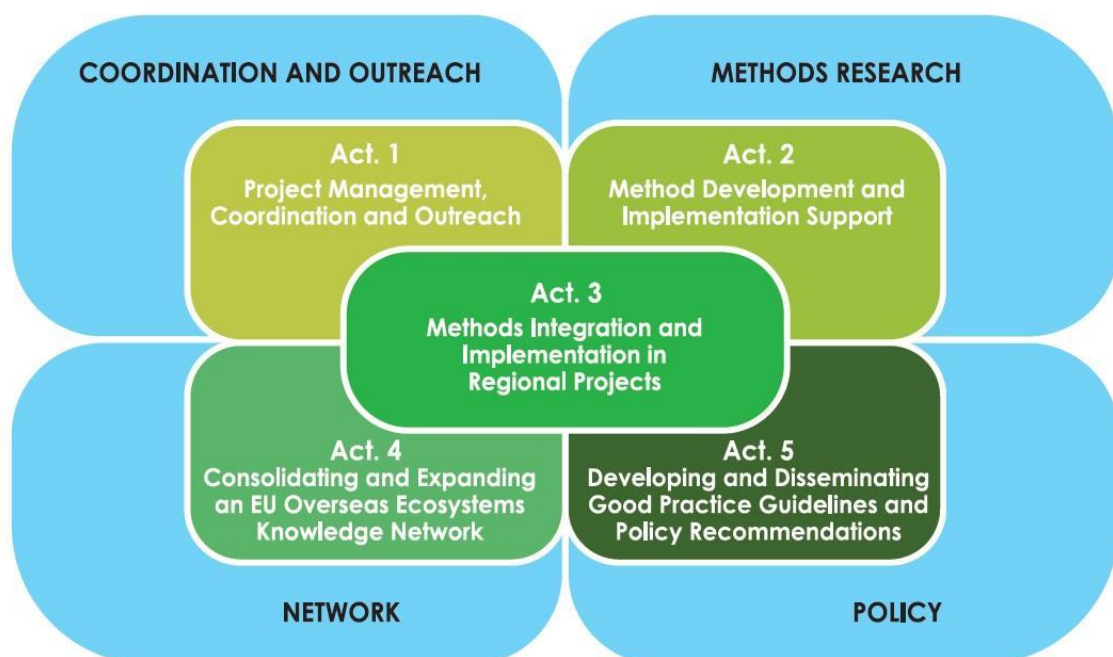


Figure 1. MOVE-ON project structure.

The project intended to create and strengthen the scientific and technical communities in the overseas territories, taking a bottom-up approach that has been initiated in the MOVE project (2019 – 2021) and demonstrated the benefits of ecosystems assessments, to support decision-making. The goal of MOVE-ON was to contribute to local, EU and international policies and goals. At the same time, MOVE-ON aimed 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 complemented and expanded the activities of the MOVE project, strengthening links with the on-going 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 differed in its initial state of MAES's implementation and needs (**Figure 2** and **Table 1**). Therefore, it was necessary to gather information concerning: the overall aim of the study, geographical information available, ecosystem types and ES indicators and methods employed. All of these, to guide Anchor Regions through the MAES, and choose the combination of methods that fits each Anchor Project adequately.

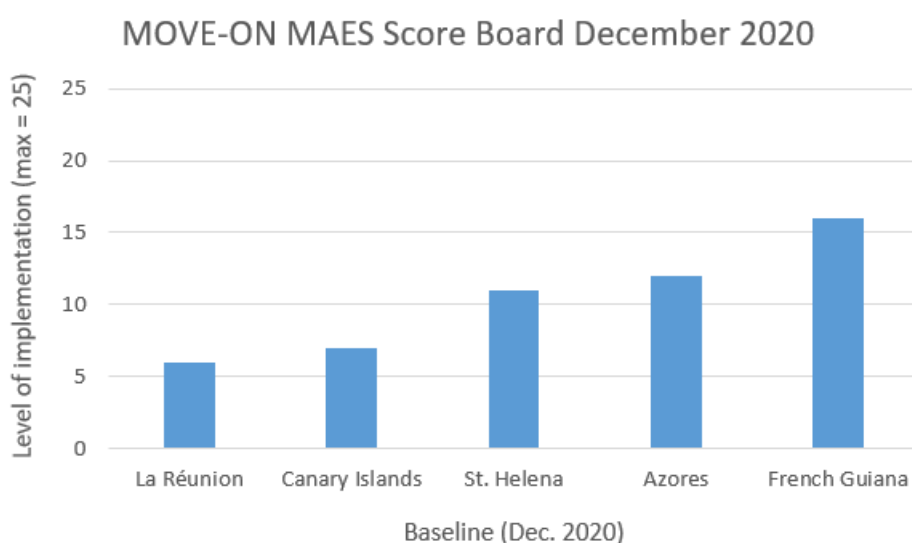


Figure 2. The different starting conditions of each Anchor Region based on MOVE ON Score Board of December in 2020

Table 1. Overview of the MOVE-ON Anchor Regions, 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	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 (Azores and Canary Islands)	Marine habitat mapping and RLE classification	Marine ecosystem condition assessment and mapping	Local	Various stakeholders at different levels, and local scientists.
3.4	Réunion Island	Assessing ecosystems' functionality and services of a bio-corridor		Local	Local authorities and other stakeholders, inhabitants
3.5	South Atlantic	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 analysis of the responses and the data available in each region that inform the proposals of methods for mapping and assessing ecosystem services.

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

The general objective of the MOVE-ON Activity 2 was 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 gathered relevant 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 has been carried out by considering existing data and knowledge as well as gathering information on the needs and expectations of the relevant stakeholders in the ORs and OCTs. A range of different approaches for mapping and assessing ES were considered (e.g. cross-disciplinary integration of biophysical, social, and economic mapping and assessment approaches). These methods took account of different levels of detail and complexity through a tiered approach that was applied according to the purpose of the respective ES study, data and resources availability, and specific needs. The work therefore exploited expert- and land cover- based methods, existing ES indicator data and more complex process-based ES models. Such tiered solutions allowed the Anchor Projects (implemented in Activity 3) to work with different levels of available information (or poor information availability in case of data absence), and in different contexts. Innovative tools such as the online MAES Methods Explorer¹ created under the ESMERALDA EU Project, was updated and adapted during this project to facilitate the OR & OCTs' access to methods, similar case studies, and examples to undertake their own projects.

2. METHODOLOGY & IMPLEMENTATION

The methodology implemented in this Task followed the next steps:

1. The design and distribution of the questionnaire about needs and methodological requirements of the Anchor Projects (D.2.2.a)
2. The analysis of the questionnaire responses and background information of each region related to MAES gathered in reports. In this step the URJC team analysed data availability, geoportals, viewers, repositories, publications, previous projects developed in each region, and the recommendations of the RLE Feasibility Study developed into the MOVE project.
3. The elaboration of the 1st Draft of methodological proposals considering all the information gathered in the 1st and 2nd step of this methodology to fulfil the objectives set in the Grant Agreement for each region.
4. The discussion and validation of each proposal with leaders of Task 2.4 and Task 3.1 before presenting it to the Anchor Project Leaders.
5. The design and organisation of the IAPAMs, where the methodological proposal was shared and discussed with Anchor Projects' leaders and detected the support needed to implement that proposal.

After IAPAMs, the URJC team participated in the APUMs (Task 3.1) and trainings carried out under Task 2.4 to follow up and support the implementation of each methodological proposal.

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

2.1 Anchor Project Advice Meetings

The main objectives of the IAPAMs were twofold: (i) to present and discuss the proposal of mapping and assessment methods for ecosystem services; and (ii) detecting the support needed to implement those methods. In this sense, the agenda of these meetings was structured in two parts. The first part was to define the start point of the Anchor Project where the background information, updates from Grant Agreement, and the Anchor Project objectives were summarised. And the second part where it showed and discussed the methodological proposal and detected the support needed to implement that proposal (**Figure 3**).

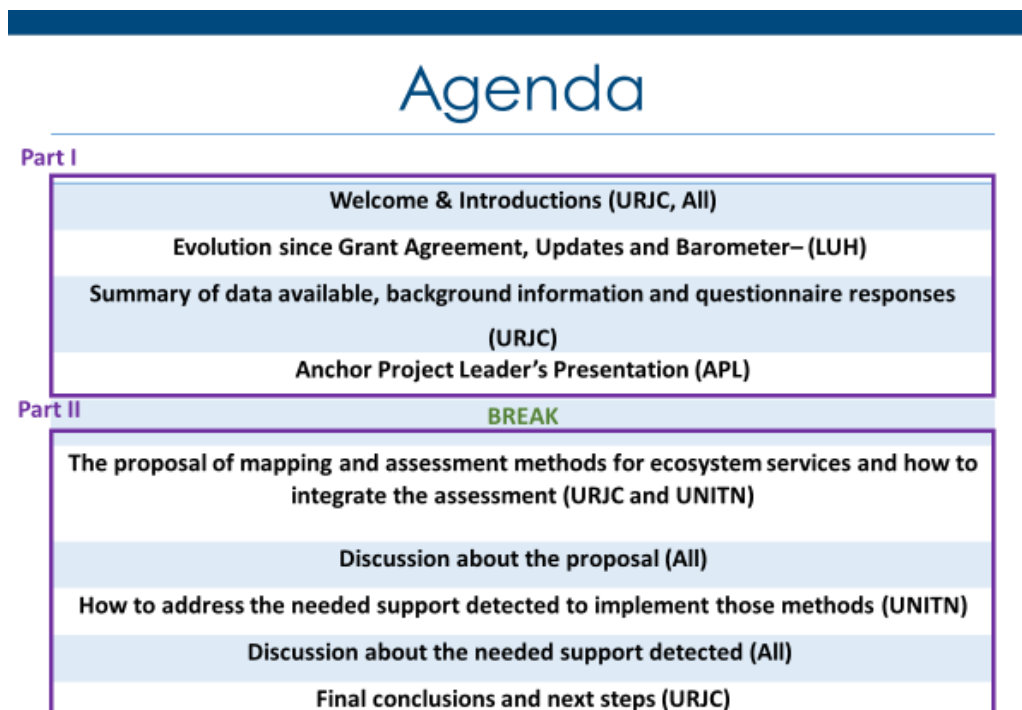


Figure 3. Example of the Individual Anchor Project Advice Meetings' agenda.

The Partners involved in these meetings were (Table 2):

- a representative of the Task 2.2, 3.1 and 2.4
- a representative of the Anchor Project: The Anchor Project Leaders and those that they wanted to invite
- And at least a member of the Coordination team (FRCT)

Table 2. Participants in the Individual Anchor Project Advice Meetings.

Title of the meeting/Workshop	Date	Organisers	Location (online/face-to-face)	Participants
Individual Advice Meeting for Reunion Island	14 th Jun 2021	URJC/ LUH/ UniTrento	Online	<ol style="list-style-type: none"> 1. NEXA: Evelyne Tarnus 2. FRCT: Marta Vergilio 3. UniTrento: Jarumi Kato 4. IRD: Rachel Bitoun 5. LUH: Paula Redon, Benjamin Burkhard 6. URJC: Fernando Santos-Martín, Miriam Montero Hidalgo 7. University of Reunion island: Dominique Strasberg, Anne-Lise Herold
Individual Advice Meeting for Macaronesia	12 th Jul 2021	URJC/ LUH/ UniTrento	Online	<ol style="list-style-type: none"> 1. ABAS: Ricardo Haroun, Francisco Otero Ferrer 2. FRCT: Marta Vergilio, Artur Gil 3. LUH: Paula Redon, Benjamin Burkhard 4. UniTrento: Jarumi Kato 5. URJC: Fernando Santos-Martín, Miriam Montero Hidalgo
Individual Advice Meeting for St.Helena	7 th Oct 2021	URJC/ UniTrento /LUH	Online	<ol style="list-style-type: none"> 1. SAERI: Tara Pelembe, Azra Gordy, Jack Ingledew. 2. St Helena Government GIS Office: Ryan Benjamin 3. FRCT: Artur Gil and Carolina Parelho. 4. UniTrento: Davide Geneletti, Davide Longato, Jarumi Kato 5. LUH: Paula Redon. 6. URJC: Fernando Santos-Martín, Miriam Montero Hidalgo
Individual Advice Meeting for French Guiana	16 th Nov 2021	URJC/ LUH/ UniTrento	Online	<ol style="list-style-type: none"> 1. WWF: Clement VILLIEN 2. LUH: Paula Redon, Benjamin Burkhard 3. UniTrento: Jarumi Kato 4. FRCT: Artur Gil 5. URJC: Fernando Santos-Martín, Miriam Montero Hidalgo

At the end of the Individual Advice Meetings, the URJC team provided a pack of information for each region which included (Supplementary material): the methods proposed factsheet, several case studies related to the methodological proposal, and in close collaboration with Task 2.4., the most suitable training courses and workshops to facilitate the proposal implementation were discussed.

2.2 Follow up and Trainings.

Every three months, APUMs were organised online to identify progress, good practices, challenges, and difficulties of all AP. These meetings were led by LUH in collaboration with URJC, and a total of 7 meetings have been organised so far, ensuring the opportunity to share knowledge, doubts, concerns, or difficulties and solve them together.

Regarding training courses, three were organized according to Anchor Project requirements: two for Reunion island Anchor Project, in September 2021 and January 2023; one for Macaronesia Anchor Project in March 2022. The training courses for Reunion island Anchor Project were directly led by trainers from the University of Trento (the Leibniz University of Hannover also participated in the last one) and the focus was 1) how to tailor Participatory GIS for ecosystem services mapping 2) the main principles and steps that characterise and need to be carried out for Participatory Scenario Planning, and 3) methods and tools for ES mapping and the use of the MAES framework to support landscape and urban planning decisions.

For Macaronesia, the focus was a SeaSketch Training organised by UniTrento, but led by two external researchers and one member of the AP. The aim of this training was twofold: the first was to show SeaSketch to applicability for Marine Spatial Planning and Participatory GIS Collaborative Geodesign, and the second to stimulate expert engagement in the Macaronesia region (Azores, Canary islands and Madeira). Local stakeholders participated in both trainings, and it was the only event that was open to the public.

St. Helena Anchor Project also received a wide description of the options proposed during its IAPAM, specifically, the description of two case studies on Urban Spatial Planning in Trento and Malta conducted by researchers from UniTrento, and the explanation of the SEEA-EA framework by a researcher from URJC. Besides, support by UniTrento was given through several meetings with the AP leads instead of individual trainings due to the advanced stage of this project.

Additionally, during the IAPAM for French Guiana the URJC and UniTrento teams gave support for the implementation of the methodological proposal. Specifically, URJC presented step-by-step how to develop each sociocultural method proposed as well as several examples and applications. Likewise, UniTrento presented how to incorporate MAES in urban planning using the case study of the city of Trento to exemplify how to carry out something similar in Montsinéry-Tonnégrande.

3. ANALYSIS OF THE RESPONSES AND BACKGROUND INFORMATION FROM EACH REGION

The responses concerning needs and methodological requirements of the Anchor Projects were collected by Tasks 2.2 team in a questionnaire based on the operational framework created by Burkhard et al. (2018) and described in [MOVE project \(2021\) D.2.2.a - Report on ecosystem services mapping and assessment methods in ORs and OCTs](#).

The questionnaire was answered by an Anchor Region Leader for each region. In total, 5 series of responses were collected corresponding to the regions of:

Macaronesia (Azores and Canary Islands), Reunion island, French Guiana and South Atlantic. The responses can be found in [MOVE project \(2022\) D.2.2.b - Report on ecosystem services mapping and assessment methods in ORs and OCTs](#) and in Annex 2 of this report.

The information that was taken into consideration to make the methodological proposals was:

- the last updates of the questionnaire responses
- the background of each region, that is the main MOVE project outcomes, previous projects on ES, recommendations of the Red List Ecosystem Feasibility Study and other local information sources
- the Anchor projects objectives described in the Grant Agreement and the main updates from the APUMs

The main keys that were extracted to generate the methodological proposals, will be exposed for each region.

3.1. Reunion Island

In the previous MOVE Project, 47 habitats were identified and delineated in the marine and terrestrial domains, the level on invasion of pristine vegetation were mapped and an economic valuation of four ES was completed. The ES assessed were: carbon stock, fishing catches, regulation of coastal erosion, and coastal tourism activities. However, in this case, the study focused on terrestrial ecosystems such as cropland, woodland, and forest, specifically, in Mare Longue Forest which belongs to the municipality of Saint-Phillipe, with a complementary study at island scale. The participatory approach was chosen in the questionnaire by Reunion Island leaders and four plausible socio-cultural methods were pre-selected: deliberative assessment, geo-tagged photo-series analysis, participatory GIS, and participatory scenario planning. This selection was considered to develop the methodological proposal for this region.

The list of data and sources of information gathered in the report on the Red List Ecosystem Feasibility Study for Reunion Island was consulted for the elaboration of the proposal and there was enough spatial data on terrestrial habitat for mapping the current ecosystem distribution.

3.2. Macaronesia

The analysis of information from previous studies and projects (i.e. MOVE Project) were consulted. [Canary Islands case study](#) carried out a value transfer methodology for fish species based on the habitat suitability of seagrass *C. nodosa*. It was detected that the assessment of the coastal Blue Carbon related to seagrasses meadows was planned but it did not finally develop. Because of that, it was proposed again to fulfil this objective in the MOVE-ON project.

According to the data availability gathered in the Red List of Ecosystems Feasibility Study, the best documented coastal habitat in the Canary Islands was seagrass meadows. Therefore, it seemed mandatory to focus the anchor project on this ecosystem.

Following the questionnaire responses and the objectives of the Anchor Project in the Grant Agreement, the first objective was mapping and assessing at least two ecosystem services for the Canary Islands through (i) the Identification of the marine ES to be studied in Canary Islands, (ii) the Identification of the best evaluation methodologies to be used for each of the selected ES, (iii) the evaluation of the status of marine ES through the different methodologies identified, and (iv) the identification of the most important impacts faced by the different ES. Besides, the ES assessment would pretend to focus on coastal ecosystems at two scales: the whole archipelago and Gran Canaria Island. Therefore, these two scales were considered to elaborate the methodological proposal.

Additionally, the ES pre-selected by Macaronesia leaders in the questionnaire were (i) food, (ii) maintenance of life cycles of migratory species (incl. nursery service), (iii) recreation and tourism, and (iv) carbon sequestration and we finally proposed to focus on 3 out of them: Fisheries, Coastal Blue Carbon, and Recreation.

Other sources of information consulted for elaboration of the proposal were:

1. The INTEMARES Project which assessed and evaluated 3 Marine Ecosystem Services in Spain. The methods used in this project were taken as examples for the methodological proposal.
2. The Eco-cartography of the Islands
3. The European union report on the blue economy in the Canary Islands (EU)
4. The Canary Islands Statistics Institute
5. And the Millennium Ecosystem Assessment in The Canary Islands

3.3. St. Helena

Among OR & OCT regions included in this project, St. Helena is one of the most advanced regions in the study of ecosystem services and natural capital and its aim was the application of the ES information already generated to support policies and decision-making processes. In the South Atlantic Environmental Research Institute (SAERI) website (Figure 4), more than a dozen studies carried out in St. Helena related to these topics were found, among which are: consultation exercise, stakeholders' workshops, ES assessment, and several cost-benefit analyses. The first report was based on questions and potential projects for the Natural Capital Assessment to address and the main output from the consultation exercise was a selection of priority areas for further study. The

second report describes the plan to develop in St. Helena taking into consideration the priority areas identified in the previous report. The third report carried out a cost benefit analysis to explore different waste management models and several suitable areas for a new landfill site were obtained. The next report described 4 future scenarios, and they were developed by stakeholders in two workshops. After that, other report described the special interest areas thanks to Flickr geolocated photographs. And at the end, the key report which presented the findings of a study that modelled St Helena's natural capital, including an exploration of different future development scenarios. They used a Bayesian network to model how St Helena's natural capital contributes to different benefits. In the seventh report Cultural Ecosystem Services in St Helena were mapped and assessed. The next report is the first natural capital accounts result for St. Helena which estimated that a 8.28% of St Helena's GDP is provided by the natural environment. The ninth and tenth reports carried out the cost benefit analyses of water security and waste management respectively, and the final one conducted a willingness to pay study (WTP) focusing on whale sharks. This region also has a viewer² with all the spatial data available on the island as well as the St. Helena Data Portal where can be consulted some statistics (Figure 5).



Figure 4. studies carried out in St. Helena by SAERI in partnership with the Joint Nature Conservation Committee (JNCC) and the St. Helena Government (SHG).

²

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

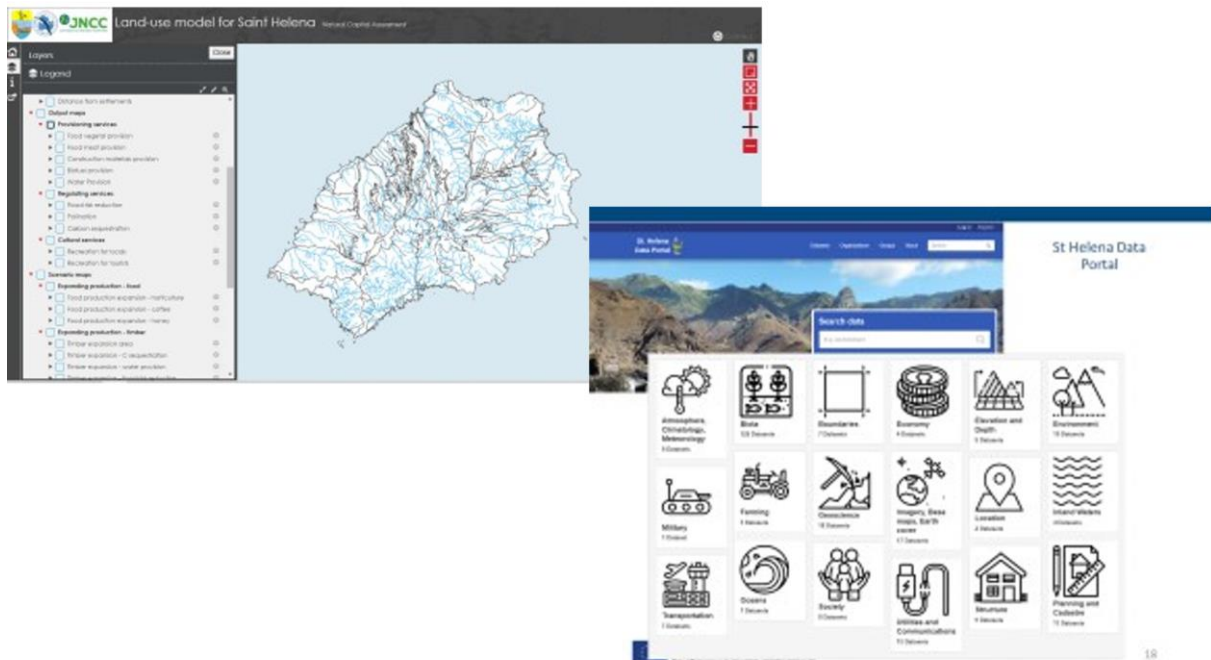


Figure 5. Screenshots of St. Helena spatial data viewer and St.Helena Data Portal.

The main goal of St. Helena's anchor project was providing evidence for decisions, and one option was to include the evidence previously generated into the new St. Helena Land Development Control Plan.

3.4. French Guiana

Regarding the background information, The MOVE and ECOSEO projects outcomes, as well as the Red List Ecosystem Feasibility Study was consulted. Among the main contributions of the MOVE Project was the case study developed which inventoried land use changes in combination with deforestation for the period between 2014 and 2019, compared the deforested areas to current land cover, and presented the first spatial ES assessments at territorial level through a capacity matrix assessment (Sieber et al., 2021). In this assessment, views and perceptions of local and indigenous people were not included, so this project presented a chance to do so.

On the other hand, the ECOSEO project (the Observatory of Ecosystem Services on the Guianas Shield) was a regional cooperation initiative coordinated by the French Guiana office of WWF. From 2019 to 2021, the project organised regional workshops on: (i) land use change on the Guiana Shield between 2000 and 2015, (ii) deforestation due to mining activity on the Guiana Shield until 2018, (iii) assessing the natural capital of the Guiana Shield, specifically, water, carbon, and biodiversity, and finally, (iv) the valuation of ecosystem services at the transboundary scale of the Maroni Basin.

Additionally, the Red List of Ecosystems Feasibility Study carried out during the MOVE project provided us a useful list of data and its sources. Three types of information were found: the current distribution of ecosystem, biotic and abiotic features, and threatening processes and pressures. Some of the sources of information were: Several GIS platforms like AMAP geoportal, the GéoGuyana and the CEBA portal. Among the threatening processes and pressures identified by this report, were:

1. Urbanisation and uncontrolled agricultural development
2. The lack of management of savannahs
3. Overfishing
4. Gold panning.

These identified drivers of change were proposed to generate future scenarios.

The main objectives of the French Guiana Project, according to the Grant Agreement were: (i) to identify and map the main and critical ecosystem services provided to the population; (ii) to consult the local inhabitants about the relevance and use of ecosystem services, and (iii) to involve local authorities and stakeholders to build integrated town development plans considering the conservation of biodiversity and ecosystem services. The study would focus on a Municipality near the capital city (Cayenne), called: "Montsinéry-Tonnégrande". In the Anchor Project Update Meeting of May 2021, four ES were mentioned according to the relevant for the territory:

1. the fresh water supply,
2. recreational activities,
3. carbon sequestration and
4. Maintaining nursery populations and habitats.

Regarding socio cultural methods, WWF declared that it needed advice on this issue and showed interest to apply them as they allow the partners and public to participate and fit with the objectives of the French Guiana Project.

4. METHODOLOGICAL PROPOSALS FOR EACH REGION

After the analysis of the questionnaire responses and background information of each region related to MAES, the URJC team elaborated the first draft of methodological proposals to fulfil the objectives set in the Grant Agreement for each region. Each proposal was discussed and validated with leaders of Task 2.4 and Task 3.1 before being presented to the Anchor Project Leaders. Finally, the methodological proposals were introduced in the IAPAMs and their suitability was discussed with the Anchor Projects' leaders as well as the support needed to implement them was detected. The proposals were described below.

4.1. Reunion Island

For Reunion Island, a stepwise approach based on 3 steps was proposed (Figure 6). Considering the intention gathered in the questionnaire to develop a participatory approach to achieve their goals, the first step proposed was to use sociocultural methods. To guide the selection of the methods that better fit with Reunion Project purposes, a decision tree for socio-cultural method based on Harrison et al. (2018) was used (Figure 7) and after discussing, the Participatory GIS and Participatory scenario planning were chosen. The second step proposed was to use biophysical methods to compare the outcomes of socio-cultural methods with biophysical models for specific ecosystem services if needed. And finally, it was recommended applying some economic methods like cost-benefit analysis.

The Individual Advice Meeting for Reunion Island focused on first step and was based on explaining the Participatory GIS and Participatory scenario planning methods. In the same sense, 3 months later the UniTrento organised a training course on those methods with the aim of facilitating their implementation.

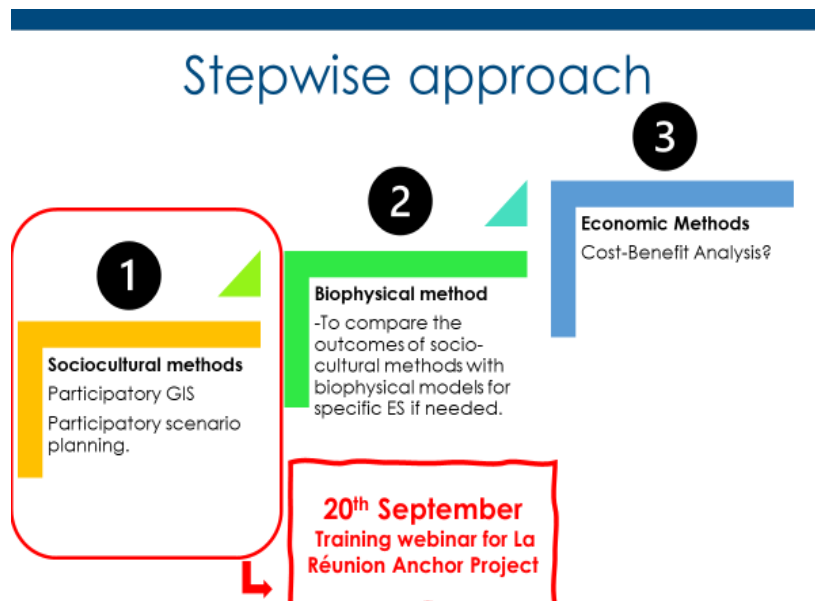


Figure 6. Stepwise approach proposed for Reunion Island Anchor Project.

(b) Socio-cultural methods decision tree⁵:

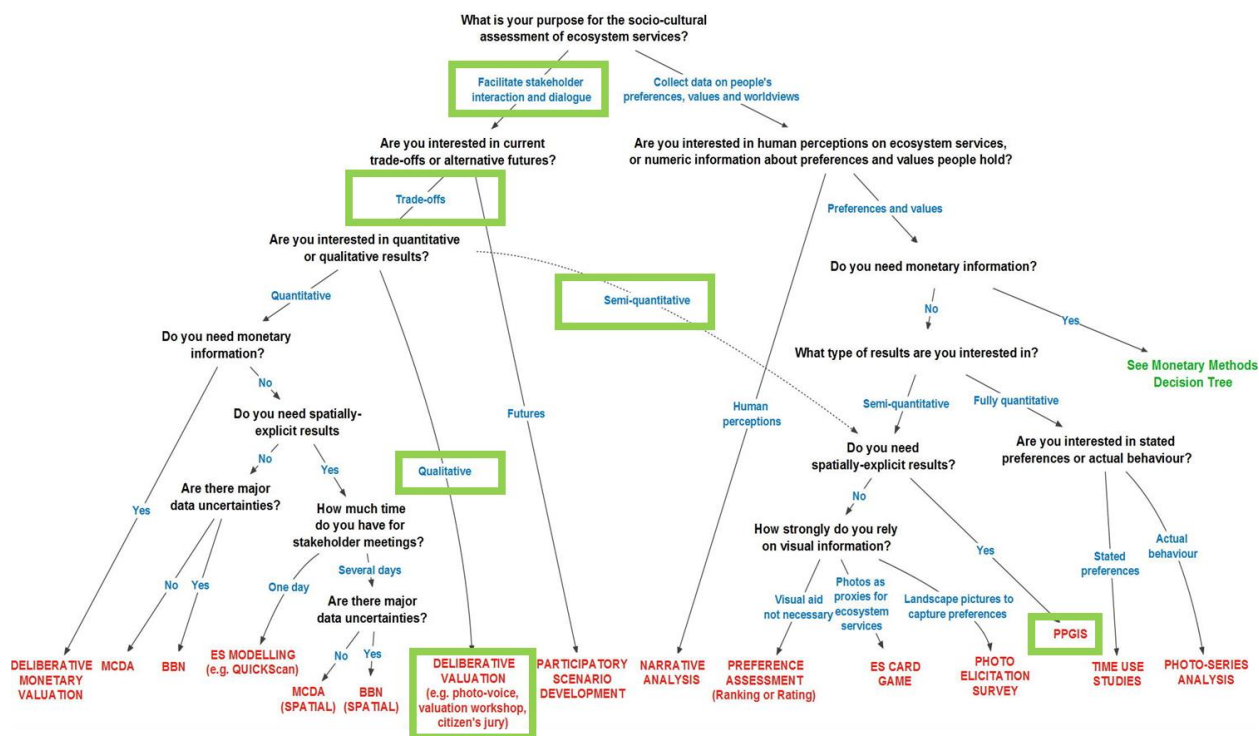


Figure 7. Decision tree for socio-cultural method with the selection of options marked in green (Source: Harrison et al., 2018).

4.2. Macaronesia

In the Canary Islands, 2 scales approach was proposed: a general study in the whole archipelago and another one, at a localised scale in Gran Canaria. Due to the seagrass beds data availability, the idea was to assess 3 ecosystem services associated directly or indirectly with seagrass meadows. The ES selected were those which gathered more attention from the Macaronesia Project leaders (questionnaire response) for their key role in the islands, and were: coastal blue carbon, coastal recreation, and fisheries. The methods chosen were the InVEST Blue Carbon model, the geo-tagged InVEST model for recreation, and the update of the value transfer model used in the MOVE project for fisheries. The reason for selecting them was their good performance in previous projects (INTEMARES project) and the experience of the research team in their implementation

3 ES associated with seagrass meadows to be assessed



Figure 8. ES to be assessed and methods selected in the Canary Islands' Anchor Project.

4.3. St. Helena

After analysing St. Helena's background information and goals, two options were proposed (Figure 9). The first was to implement existing data on ES assessments into the new St. Helena Land Development Control Plan. In this sense, the UniTrento team showed during the IAPAM two case studies about how to implement an Urban Spatial Planning. The case studies were based on La Valletta (Malta) and Trento (Italy) (Figure 10).

The second option proposed was improving the existing data through developing ecosystem accounts. For that, the SEEA-EA framework was explained (System of Environmental Economic Accounting-Ecosystem Accounting) and concretely the biophysical account (Figure 9). The SEEA-EA constitutes an integrated and comprehensive statistical framework for organizing data about habitats and landscapes, measuring the ecosystem services, tracking changes in ecosystem assets, and linking this information to economic and other human activity. The United Nations Statistical Commission adopted the SEEA Ecosystem Accounting at its 52th session in March 2021, and therefore, the adherence to this framework entails great advantages as it is an integrating and standardized framework recognized worldwide.

Tree decision approach

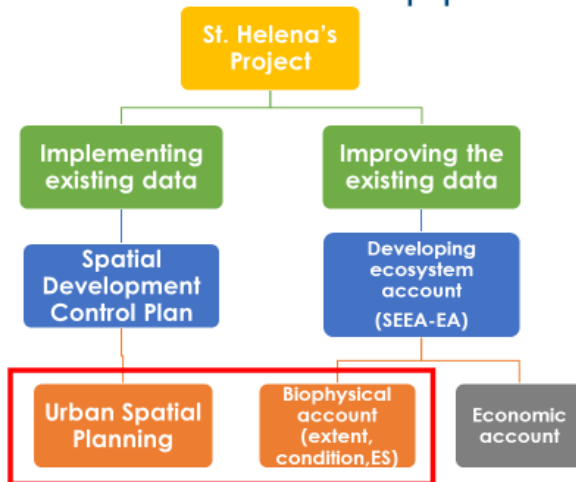


Figure 9. Tree decision approach with two possible paths proposed for St. Helena's Anchor Project.

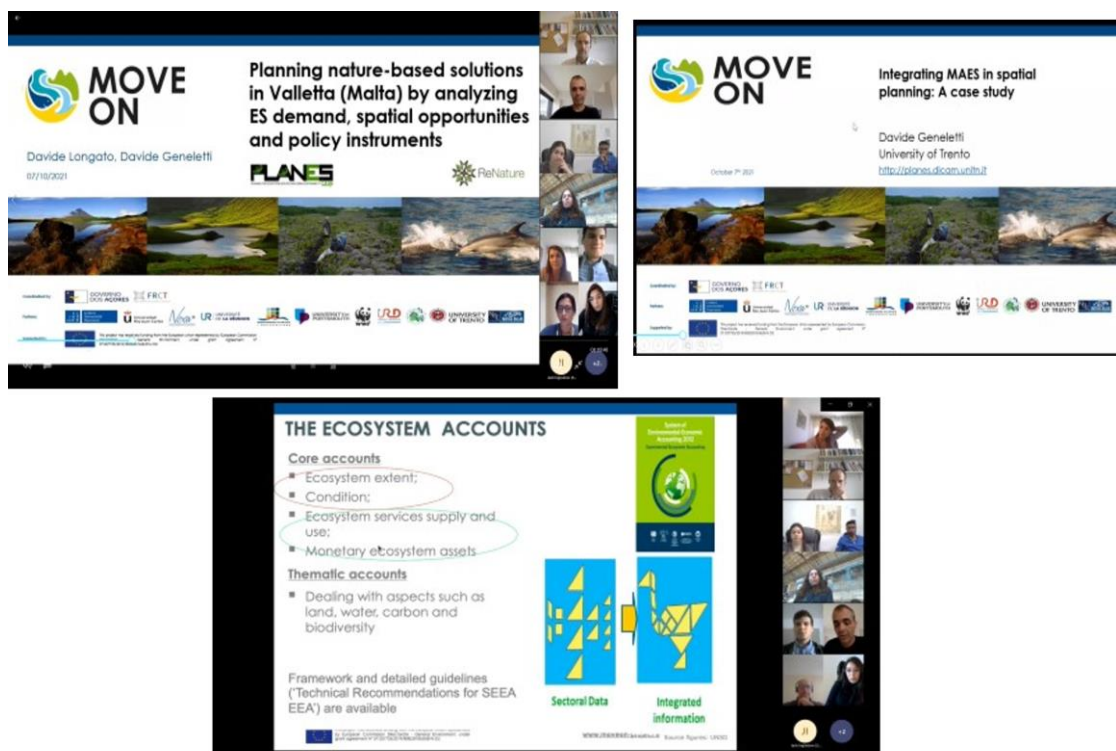


Figure 10. Screenshots of the presentation that took place during the IAPAM for St.Helena.

4.4. French Guiana

The rationale behind the methodological approach proposed was to use the information on ES generated in the past through the capacity matrix assessment

as starting point to develop sociocultural studies at a local level and finally, to integrate all the previous data generated into a "Town Development Plan" (Figure 11).

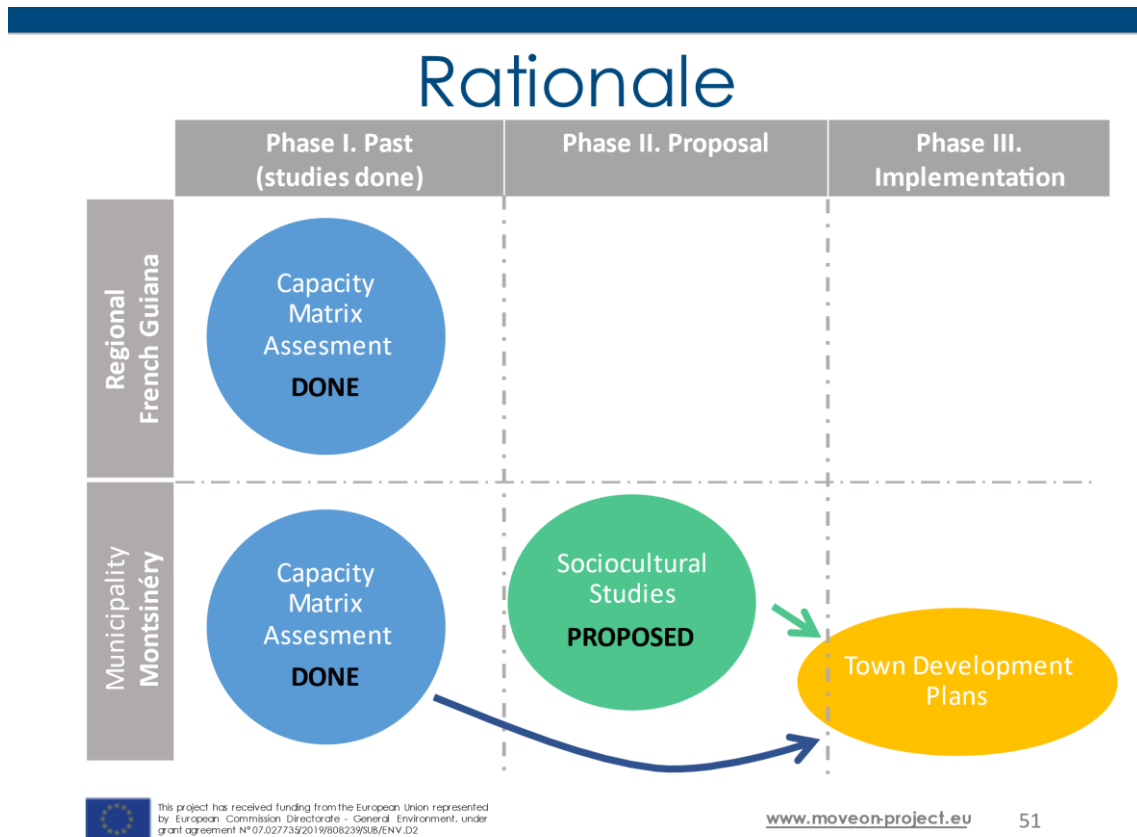


Figure 11. Methodological approach proposed for French Guiana Anchor project.

The selection of the sociocultural methods fits with the objectives mentioned in the Grant Agreement. Therefore, the three sociocultural methods proposed are: (i) a deliberative assessment to validate ES pre-selected (ii) a participatory GIS to assess ES according to stakeholders' perceptions and finally, a participatory scenario planning to create future scenarios and to implement them into the "Town Development Plan".

5. DISSEMINATION AND COMMUNICATION

The results of Task 2.2 have been presented in the **D.2.2 - Report on ecosystem services mapping and assessment methods in ORs and OCTs**, which include 3 sections:

- a) [MOVE-ON D.2.2.a](#) which show the final version of questionnaire sent to Anchor Project Leaders to collect methodological needs of Anchor Project's implementation.

- b) [MOVE-ON D.2.2.b](#), in which were exposed every response received from each Anchor Region.
- c) MOVE-ON D.2.2.c (current report) where has been presented the analysis of the responses and a proposal of methods for ecosystem services mapping and assessment that suit the objectives of each Anchor Project.

The progress of this Task has been shown in several meetings such as the APUMs, The MOVE-ON General Assemblies, and the IAPAMs.

Regarding training courses, three were finally organized according to Anchor Project requirements: two for Reunion island Anchor Project, in September 2021 and January 2023, one for Macaronesia in March 2022 (described in the section 2.2. of this report). And the results of the implementation of MOVE-ON Anchor Projects, were presented in the fourth ESP Europe Regional conference which took place in Heraklion (Crete, Greece, 2022).

6. Supplementary material

Packs of information provided to each region after the IAPAMs can be found below. They included the methods proposed factsheet, several case studies related to the methodological proposal, and the IAPAM's presentation.

- St. Helena: https://drive.google.com/drive/folders/1jkr0nLmVQj-5xT_UIXplhcsz09Lb-SYQ?usp=share_link
- French Guiana: https://drive.google.com/file/d/1vK7MHUiVtd-ldcmdKuzMFDenalGhx6pk/view?usp=share_link
- Macaronesia: https://drive.google.com/file/d/1YtKYt3bliRbIBvqXooM_7XRjCxpAIYJJ/view?usp=share_link
- Reunion Island: https://drive.google.com/file/d/1YtKYt3bliRbIBvqXooM_7XRjCxpAIYJJ/view?usp=share_link

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8. Annex 1. Questionnaire

1) Theme identification	
Open question	<p>What is the overall aim of the Anchor Region Study?</p> <p>Is there a policy question driving the Anchor Region study, if yes, which? ¹</p> <p><input type="checkbox"/> Is there a business question driving the Anchor Region study, if yes, which? ²</p> <p><input type="checkbox"/> Is there a social question driving the Anchor Region study, if yes, which? ³</p> <p>Which are the main socioeconomic problems of the Anchor Region?</p> <p>How can the Anchor Region Study assist the OR/OCT in assessing and reviewing policy priorities to be set for ecosystem management?</p> <p><i>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?).</i></p> <p><i>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?).</i></p> <p><i>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?).</i></p>

2) Identification of ecosystem types	
List of selectable Ecosystem types	<p>What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)</p> <ul style="list-style-type: none"> ● Terrestrial ● Fresh water ● Marine <p>What are the main subcategories of ecosystem for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)</p> <ul style="list-style-type: none"> ● 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
- Screes
- 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

	<ol style="list-style-type: none"> 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) <ol style="list-style-type: none"> 2. Cultural services <ol style="list-style-type: none"> 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	<p>On which scale would you like to implement the assessment?</p> <ul style="list-style-type: none"> ● 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)

	<ul style="list-style-type: none"> • Remote sensing and earth observations • Spatial proxy methods • State and transition model • 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?

9. 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 Reunion island with the stakeholders working within the scope of 1. Biodiversity conservation and restoration (National Forestry Services, University of Reunion island, 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 developping 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-Philippe Put 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_level1https://aware.cirad.fr/layers/geonode:RE_LCM_2019_level2Invasion-level maps / level of degradation (250m) Ref: https://agritrop.cirad.fr/596376/Corinne Land Cover : https://www.geoportail.gouv.fr/donnees/corine-land-cover-2018Natural vegetation (35 type of habitats) Ref: https://agritrop.cirad.fr/596376/https://aware.cirad.fr/layers/geonode:RE_LCM_2019_level3Dupuy, 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, Reunion island 2019)location of the hydrographic network and drinking water catchments in relation to wooded landpublic 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 Reunion island, 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, Reunion island 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, Reunion island 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/in dicator 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 litter2. Climate3. 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</p>	<p>Yes</p>

Anchor Region Name	Reunion island
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?	Ecological Connectivity models (to include methods/software such as Zonation, MSPA, MatrixGreen, TerrSet (former IDRISI), 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 uses 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	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#
3.2. Is metadata available for those maps? If yes, provide source/link	Concerning IU ECOAQUA geoportal metadata can be available from this link: Main geoportal link: http://www.geoportal.ulpgc.es/portada/index.html
3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?	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
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, Regulating services. Maintenance of life cycles of migratory species (incl. nursery service), Cultural services. Recreation and tourism, carbon sequestration
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?	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/
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

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 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 parts 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?	<p>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.</p>

Anchor Region Name	French Guiana
<p>2.1. What are the main types of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 1)</p>	<p>Terrestrial, Fresh water, Marine</p>
<p>2.2. What are the main subcategories of ecosystems for the assessment in the Anchor Region? (Ecosystem types = MAES level 2)</p>	<p>Urban, Woodland and forest, Sparsely vegetated land, Wetlands, Rivers and lakes, Marine inlets and transitional waters, Coastal</p>
<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>	

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/indicators for 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 supply, use or	Yes

Anchor Region Name	French Guiana
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 some 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	https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repository=01sh&project=saint_helena_web

Anchor Region Name	South Atlantic
<p>or ecosystems? If yes, provide source/link</p>	
<p>3.2. Is metadata available for those maps? If yes, provide source/link</p>	<p>metadata is on the webGIS - both in the form of a document and information about the layer in the WebGIS https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repositor y=01sh&project=saint_helena_web</p>
<p>3.3. What databases were used to create those maps (e.g. CORINE land cover, EUNIS habitats, national database)?</p>	<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>
<p>4.1. Which ES classification is most used in your work environment ? (List of CiCES, MA, TEEB, etc.)</p>	<p>https://data.saeri.org/saeri_webgis/lizmap/www/index.php/view/map/?repositor y=02sh&project=saint_helena_web_NCA</p>
<p>4.2. Which specific ES would you like to assess?</p>	<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>
<p>4.3. On which scale would you like to implement the assessment?</p>	<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	As above - we would need advice on this area - once person is in post.

Anchor Region Name	South Atlantic
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 \$, €)??	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	As above - we would need advice on this area - once person is in post.

Anchor Region Name	South Atlantic
above methods?	
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/?repositor=y=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/?repositor=y=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