



# NETBIOME-CSA

STRENGTHENING EUROPEAN RESEARCH COOPERATION FOR SMART AND SUSTAINABLE MANAGEMENT OF TROPICAL AND SUBTROPICAL BIODIVERSITY IN OUTERMOST REGIONS AND OVERSEAS COUNTRIES AND TERRITORIES

## CHALLENGE OUTLINES

*Synthesis of NetBiome-CSA's four main common challenges for sustainable management of Biodiversity in tropical and subtropical ORs and OCTs*

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**Publishable Summary**

The present document entitled “D4.1 Challenge Outlines” is a deliverable of the NetBiome-CSA project, funded by the by the European Commission under its 7th EU Framework Programme for Research and Technological Development (FP7).

The document provides an outline of the four main common challenges identified by the project, through a large iterative consultation of biodiversity stakeholders from tropical and subtropical ORs and OCTs, in order to conciliate biodiversity conservation with sustainable development. Each challenge outline contains priority topics that will be further elaborated and discussed during the continuation of transregional and multistakeholder dialogues. A synthetic description of each challenge is presented below.

### **Challenge 1- Integrated Biodiversity conservation through spatial planning**

In order to promote integrated approaches for spatial planning, this challenge deals with two proprietary topics:

- Technical, democratic and financial tools that could ease the collective definition of plans for area's allocation and management. Such strategies need to integrate the different issues and sectorial priorities as well as the recognition and enhancement of ecosystem services.
- Understanding and mapping of the various types of ecosystem services (notably climate change mitigation), as well as the large dissemination of those concepts and principles in order to feed the collective decision making processes.

### **Challenge 2 - Sustainable agriculture and forestry practices**

This challenge deals with the enhancement of the large diversity and richness of agricultural practices existing in the various European overseas entities, in order to advice green growth strategies. It is characterized by the search of equilibrium between yields maximization and use of the properties and assets of biodiversity. In this context, this challenge focuses on two major topics:

- The research efforts needed in agro-ecology, notably on ecology and cultural practices that underlined such approaches.
- The recognition of local scales specificity, both for adapting European policies to local context and for capitalizing on empirical knowledge and practices for economic and social sustainability and equity.

### **Challenge 3 - Sustainable management and effective conservation of biodiversity**

The challenge addresses ways to achieve sustainable management and effective conservation of biodiversity. Main topic to be addressed deals with Biodiversity Governance. EU guidelines and indicators for biodiversity management and monitoring are available for continental Europe, but not necessarily fit the conditions of Europe's OCTs and ORs. Within this challenge key EU guidelines and indicators for biodiversity will be revisited. This will facilitate (i) matching the specific requirements for OCTs and ORs, and (ii) developing guidelines and regulations that support (international and interregional) consistent and prolonged strategies for monitoring programmes on which sustainable exploitation schemes can be based.

### **Challenge 4- Knowledge base decision making in marine and coastal issues**

This challenge brings particular attention to the marine component of European overseas, whose large size and important role in European sectorial strategies is not matched in investment and attention at the political level. This has serious consequences, such as a reduced capacity to control and mitigate anthropic impacts (e.g. overfishing and pollution) and to effectively manage MPAs. Two main topics are proposed to be addressed:

- How to mobilize a knowledge base wide enough to enable the identification of ecological processes, and to use this knowledge to build the capacity to manage and conserve biodiversity
- Adaptations in regulatory and taxation frameworks in order to recognize and preserve the marine natural capital of European overseas which will support an important part of the new blue economy.

The last section of this report, presents the next steps to be taken by the project in order to produce the policy briefs and recommendations. key principles and actions for efficient advocacy and concrete update of the recommendations to be produced for improved research cooperation and policy landscape.

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## CONTENTS

<b>FIGURES</b>	<b>4</b>
<b>Abbreviations</b>	<b>5</b>
<b>Acknowledgements</b>	<b>5</b>
<b>1. INTRODUCTION</b>	<b>6</b>
<b>2. OUTLINE OF CHALLENGES</b>	<b>8</b>
2.1. CHALLENGE 1: Integrated biodiversity conservation through spatial planning	8
2.2. CHALLENGE 2: Sustainable agriculture and forestry practices (land management)	12
2.3. CHALLENGE 3: Sustainable management and effective conservation of biodiversity	15
2.4. CHALLENGE 4: Knowledge-based decision making in marine and coastal issues	18
<b>3. CONCLUSIONS</b>	<b>20</b>
<b>APPENDIX 1 – Methodology for the definition of the four challenges</b>	<b>21</b>
<b>APPENDIX 2 – Participants of the four challenge-specific workshops</b>	<b>24</b>
<b>APPENDIX 3 – Participants in the challenge identification process</b>	<b>26</b>

## FIGURES

Figure 1: Mind mapping chart of challenge 1 workgroup's conclusions	9
Figure 2: Mind mapping chart of challenge 2 workgroup's conclusions	13
Figure 4: Characteristics of the Stakeholders Panel	21
Figure 3: Characteristics of the Stakeholders Database	21
Figure 5: Synthetic description of the three levels of field expertise in the NetBiome-CSA project	21
Figure 6: Schematic visualization of the methodological approach and main steps	22

## Abbreviations

AB: Advisory Board  
ADECAL: Economic Development Agency of New Caledonia  
CSA: Coordination and supporting action  
EBS: European Biodiversity Strategy to 2020  
EC: European Commission  
EU: European Union  
FRC: Azores Regional Fund for Science  
NGO: Non-Governmental Organization  
OCT: Overseas Countries and Territories  
OR: Outermost Region  
PLOCAN: Oceanic Platform of the Canary Islands  
RG: Regional Council of Guadeloupe  
RR: Regional Council of Reunion  
SP: Stakeholders Panel

## Acknowledgements

Particular thanks are given to:

- the 130 stakeholders from various ORs and OCTS for their inputs and commitments all along the consultation process implemented for the definition of the 4 main challenges, and particularly the members of the stakeholder panel for their reactivity during the various iterations of the process and the first session of the workgroups.
- the participants of the NetBiome-CSA's first International Conference (which took place on the 27th of May 2014, Canary Island, Spain) for their insights and participation in the debates
- the Advisory Board of the NetBiome-CSA project, in particular Colin Hindmarch, for his valuable inputs on the four challenges.

## 1. INTRODUCTION

In order to strengthen research partnerships and cooperation in tropical and subtropical Outermost Regions (ORs) and Overseas Countries and Territories (OCTs), the NetBiome-CSA project has been fostering trans-regional dialogues with stakeholders from the various ORs and OCTs. .

The main objectives of this participative approach are, to i) boost the NetBiome network mobilization and stimulate dialogue and cooperation between fields, disciplines and regions. and ii) build on stakeholders' knowledge and resources to identify four shared focused challenges; it is expected that trans-regional and multidisciplinary collaborations will contribute to the sustainable development of ORs and OCTs, based on a sustainable use of tropical and subtropical biodiversity.

Under the lead of dedicated facilitators<sup>1</sup>, 4 challenge-specific platforms will facilitate the sharing of knowledge and experiences between various stakeholders and disciplines from ORs and OCTs, in order to:

- Build communities of concerned actors around specific topics, to ease the sharing of capacity and the implementation of joint activities (notably constituting consortia for research calls).
- Formulate research recommendations, notably to guide debates during national and ERA programme committees, advising their uptake as call topics in forthcoming calls in H2020 or future programmes dedicated to European ORs and OCTs. More direct uptake will be sought through biodiversity related ERA-Nets and the implementation of joint research calls.
- Address the gaps in knowledge transfer in order to improve the uptake of research results;
- Raise recommendations for improving the policy environment at the relevant scales. Depending on the challenge or the topics within each challenge, the policy level to be stimulate can be local, national, regional or European. The content and communication strategy will be adapted to the most relevant target audience.
- Raise the European Commission awareness on the convergence, in the tropical and subtropical overseas, of biodiversity related assets and visions for sustainable development. In this perspective, specific efforts will be dedicated to mutual exchange of information to strengthen the coherence and impact of an overseas common message to be addressed to the national and European political and financial audience and to feed with structured priorities the ongoing debates and initiatives for the implementation of a funding mechanism dedicated to ORs and OCTs at the EU level, for biodiversity notably.

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<sup>1</sup> Regional Council of Guadeloupe; Regional Council of La Reunion; Naturalis and FRC are the four partners in charge of facilitating the multi-stakeholder and trans-regional dialogue that will be conducted to address the four challenges

In the past seven months, field expertise from 130 members of the civil society, the industry, policy makers and practitioners as well as from the scientific community was shared and enhanced during an iterative consultation process (for detailed information on the methodology being used please see Appendix 1).

As a result of these dialogues, four priority challenges have been identified. The challenges outlines are presented in the present report, and will be further addressed by the project during the next months.

## 2. OUTLINE OF CHALLENGES

### 2.1. CHALLENGE 1: Integrated biodiversity conservation through spatial planning

#### Justification

A clear planning framework help to create sustainable communities and an ecosystem perspective is increasingly recognized as key to effective spatial planning. Plan-led urbanization and rural development can contribute significantly to more sustainable economic growth and environmental justice<sup>2</sup>.

Spatial planning is a democratic, review-lead process that can address the long-term impact of change on local communities and their wider environment. It offers an ecosystem-led, participatory approach to the management of change in ways that can explore opportunities for economic development that strengthen the resilience of the environment. As such, spatial planning has the capacity to deliver sustainable economic growth in ways that foster public engagement, ensure environmental justice and avoid social unrest, and through the review process, inform the development of strategic policy.

In small territories, like most ORs (apart from French Guiana) and OCTs in tropical and subtropical areas, consequences of human pressure are particularly important. These pressures may come from different land uses and territorial conflicts (agriculture/urban areas, preserving type of ecosystem/building business facilities).

The lack of a large scale vision on the use/function of the territory may lead to fragmentation of natural habitats and loss of connectivity. Some investments intended to foster economic development produce quick (and often chaotic) economic growth in the short term, but may not be sustainable in a long term approach.

Meanwhile, the economies of ORs and OCTs mainly rely on the use of their biodiversity for agriculture, fisheries and tourism, among other activities. Losing their biodiversity may jeopardize their socioeconomic development. Therefore, there is a need to better integrate ecologic and economic considerations in spatial planning and take into account landscapes structure on ecological functioning. However in most cases teams of technical staff in local government are small and may lack the capacity to address multi-dimension land use.

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2 TEEB for local and regional policy makers



## Priorities

Integrated biodiversity conservation through spatial planning relies on a functional governance, meaning to optimizing the management of human and financial resources, as well as understanding and following up the biodiversity and ecosystem functioning and their valuation.

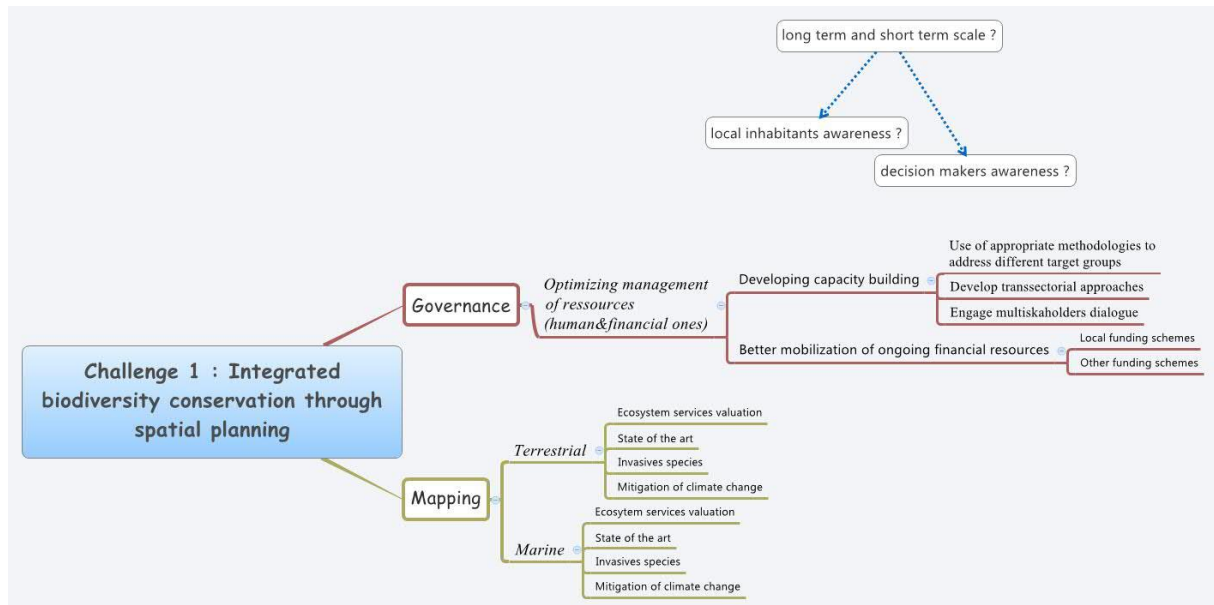


Figure 1: Mind mapping chart of challenge 1 workgroup's conclusions.

### A. Governance

Spatial planning involves different groups of stakeholders with different interests, expertise and skills. Implementing effective spatial planning needs adequate tools, taking into account local socio-economic variable, constraints and sustainable biodiversity management approaches.

#### A.1 *Developing capacity building*

In order to set up suitable governance and draft an effective spatial planning which may foster a sustainable development, specific expertise is required.

Developing a spatial planning strategy implies taking into account activities that are already implemented. The impacts and consequences of each activity and the articulation between them have to be well designed. Developing trans-sectorial approaches for spatial planning is therefore a need.

Meanwhile, each kind of economic activity and type of use often represents different stakeholders with their own views and interests. Therefore, a commitment of different types of stakeholders to obtain a holistic view on different land uses is a key point, and requires a multi-stakeholders' dialogue engagement. Otherwise, different interests, views, and understandings on the role of spatial planning on ecosystem functioning and the concerns about biodiversity conservation will hinder the process. Based on this and stakeholders' own expertise, adequate tools and approaches to engage dialogue have to be identified to well involve each category of stakeholders in spatial planning strategy design process. In this

sense identification and use of appropriate/adaptable methodologies to engage multistakeholders is necessary.

Thus, developing capacity building at local governance level embracing its complexity (vertically and horizontally) and capable of designing an effective strategy is crucial. Furthermore, this also raises the point of decision makers' awareness.

#### *A.2. Better mobilization of ongoing financial resources*

Parallel to human resources capacity building, financial issues need to be addressed as well.

Firstly, if a good local funding scheme already exists, there is still a need to optimize how and when to use it, in order to benefit from implemented and adequate methodologies.

Secondly, biodiversity management and conservation is of high priority at the international level; different funding mechanisms finance climate change mitigation projects. Thus, efforts are needed to understand which tools are eligible for ORs and OCTs, as well as eligible expenditures, deadline for applications, etc.

### **B. Mapping**

To design the right governance, the mobilization of the appropriate financial tools is a step in the spatial planning process. However, in order to ensure that decisions to be made and actions to be implemented are the most effective ones, some key knowledge and follow up processes are required.

#### *B.1 State of the art and Ecosystem services*

In both terrestrial and marine ecosystems, a good understanding of ecosystem functioning, such as the status of the biodiversity, is a preliminary step. Indeed, to measure the impact of spatial planning strategies, a base line is required. This base line also allows to identify (potential) invasive species, and to follow their expansion and impact linked to certain land-use practices.

It is quite usual to estimate financial benefit when designing an industry plant or other business facility, following a business plan. To balance a decision-making process in order to foster a sustainable growth based on biodiversity conservation, some crucial figures are necessary. Exposing key arguments during the multi-stakeholder dialogue and having a broad view of the impacts of the spatial planning strategy on ecosystem valuation, is a way to illustrate either good or bad environmental consequences. A better understanding of ecosystem valuation and the way to use it is therefore a key point, in order to better integrate biodiversity conservation through spatial planning in decision making process.

#### *B.2 Mitigation of Climate Change*

OR and OCT suffer from high exposure to climate change: i.e. rising sea level, heavy rains, long dry seasons, coral reef bleaching, etc. Some decisions taken without a spatial planning perspective may hugely increase these consequences. For instance, heavy rain linked to river bed diversion may lead to flooding or land slide, deforestation may increase the duration of

dry season. Sewage may damage coral reef and reduce their restoration capacity and make them more fragile to any sea temperature change (resilience).

At the same time, spatial planning decision may mitigate Climate Change impact. Therefore, mitigation of climate change should be taken into account at the beginning of the process. This also means to develop a foresight approach.

## 2.2. CHALLENGE 2: Sustainable agriculture and forestry practices (land management)

### Justification

The working group identified clusters of challenge themes, determined a range of causal relationships and devised a number of remedies, which if implemented could help to both support the continuation of sustainable land management systems throughout the ORs and OCTs and encourage locally appropriate forms of green growth.

1. Sustainable land management systems exist in considerable variety throughout the ORs and OCTs. They are important socioeconomic resources capable of maximizing production within local constraints, while raising biodiversity through the selection of new plants as well as increasing the productive base of the environment. These locally adapted systems of production have also shaped the structure of the managed landscape, broadened the range of locally distinctive goods and services and provided an attractive environment for local recreation and international tourism.

2. Locally adapted management systems have a long record of sustainable production; they are also resilient and have a capacity to adapt to changing circumstances. This adaptive interaction over time has helped to reveal the natural limits of production, making them ideal base-line models for green growth initiatives.

3. Throughout the ORs and OCTs, locally adapted systems of production and the knowledge and natural resources that support them, are at risk for a number of reasons. These include:

- Local and global pressures involving climatic, economic, demographic and land-use change, together with the changing aspirations of local communities;
- Inadequate information about the characteristics and distribution of locally adapted land-use systems and their relationship with the wider environment, also due to the poor evidence base;
- The risk of 'one size fits all' policy responses, which fails to meet the long-term needs of local conditions and community aspirations and disrupts traditional landscape management practices.

The working group also highlighted the need to support sustainable growth by developing policies and technologies that reflect local circumstances and meet local needs.

Forestry and agricultural intermesh with one another and interact at different spatial scales. Their interactions are most easily discerned and most critical in effect at lower spatial scales where they determine the form and function of the small, mixed production systems that define the character of many OR and OCT regions. Over generations, these distinctive land management systems have:

- Optimized production by integrating elements of farming, forestry and other land uses, as well as by interacting with the wider landscape through seasonal activities such as fishing and hunting. In this way many of them have;

- Become highly adapted to local environmental, economic and social circumstances, even to the extent of developing novel methodologies, specialized land races and locally relevant systems of land tenure and land use rights.

The complex, highly integrated nature of these land management systems means that they are highly vulnerable to policies influenced by outside models or driven by specialist interests such as forestry and agriculture, especially where these involve incentives for growth. In order to keep these fundamentally important dangers in mind and help shift the policy emphasis from what the land produces (product) to how local communities actually manage the land (process), this report will group the commonly used administrative terms ‘forestry’ and ‘agriculture’ under the more inclusive and practically relevant heading of ‘land management’.

### Priorities

Given the threats to locally adapted management systems and their importance to the socio-economic fabric of the ORs and OCTs, measures to promote green growth should be precautionary, evidence-based and emerging from an integrated plan to revitalize the managed landscape as a whole. This approach will need to be supported by a range of enabling measures that are presented in the figure below.

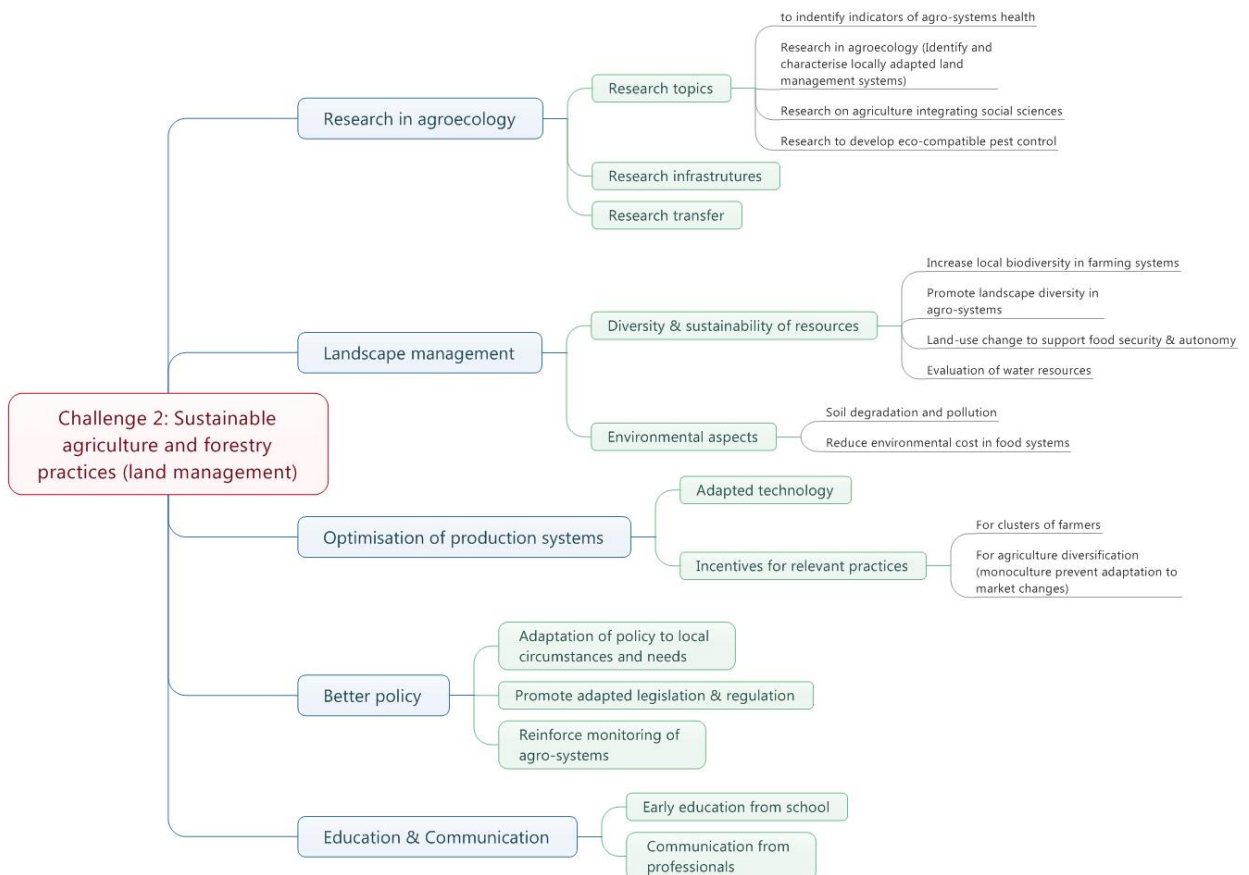


Figure 2: Mind mapping chart of challenge 2 workgroup’s conclusions.

In summary, these include the need for:

Policy frameworks that recognize the importance of the locally adapted management systems in the context of the wider landscape, and the role of evidence-based decision-making in securing sustainable production.

Agro-ecosystem research that would identify land management typologies throughout the ORs and OCTs, establishing the relation between these and their local environment and human communities; moreover, assess the risk of economic, cultural and biotic challenges and the scope for adaptive responses, including opportunities for green growth.

Land management practices that are adapted to local conditions, minimize adverse environmental impacts, promote food security and increase ecological diversity and environmental resilience.

Policy incentives that meet local needs rather than pressure locally adapted management systems to adopt external models of production that may disturb long established, sustainable equilibria and undermine the basis of production through, for example, soil degradation, loss of biodiversity and social dislocation.

Optimized production methods that take a precautionary approach to green growth, foster sustainable patterns of evolutionary change, secure an equitable share of the proceeds of biodiversity for local population, promote the sustainable use of natural resources and encourage community involvement and the development of cooperative trading structures.

Education and communication programmes that inform specialist interests, include interdisciplinary conversations and inform the wider public about land management issues and their implications for the environment, public health and well-being. Crucially, these initiatives should include contributions from the science community through targeted public engagement exercises.

The above entries are subject to an ongoing review, and will in due course inform the development of the Agriculture and Forestry policy brief.

## 2.3. CHALLENGE 3: Sustainable management and effective conservation of biodiversity

### Justification

This challenge consists of three components: Using Biodiversity, Biodiversity Governance and Management, and Appreciating Biodiversity. These items are closely interrelated and hence, need to be addressed simultaneously to achieve sustainable management and effective conservation of biodiversity.

#### 1. Using Biodiversity

Sustainable use of biodiversity requires thorough understanding of the ecological functioning of biological resources and the services provided by the ecosystems that support these resources. In addition, using biodiversity within the concept context of biodiversity conservation and management also involves economic and societal sustainability, especially in ORs and OCTs. This requires an inclusive approach that addresses cultural background, societal equity and legal security, public awareness, preservation and building of traditional and contemporary knowledge, and cost-benefit considerations. Policies for the sustainable use of biodiversity therefore also involve strategies for poverty alleviation and effective education.

#### 2. Biodiversity Governance and Management

Biodiversity governance and management requires inputs at the policy and governance level, as well as implementation level.

##### *a. Governing Biodiversity*

For successful biodiversity management and conservation, the value of biodiversity needs to be demonstrated in socio-economic terms of effective governance of living resources. This also has many dimensions, ranging from direct market value of products through associated livelihoods and well-being to resilience value, as a hedge against the uncertainty of nature. Governance structures that provide the right incentives for entrepreneurs to generate income based on ecosystem services while securing their biodiversity must be in place; coalitions involving the local governments and economic partners to ensure sufficient protection of the ecosystems are necessary too.

Biodiversity issues need to be made central to high-level policy decisions. All government bodies should reflect this need by instituting mechanisms that ensure consistent legislation on biodiversity issues. This degree of integration will require participatory and inclusive decision making, and integrated spatial planning that promotes sustainable development and encourages economic sectors to include ecosystem values into their decision-making. This paradigm shift is currently gaining support in many European countries and should also be fostered in European ORs and OCTs.

At the policy and governance level, guidelines and regulations need to be developed aiming to support (international and interregional) consistent and prolonged strategies for monitoring programmes, on which sustainable use schemes can be based. EU guidelines and indicators for biodiversity management and monitoring are available for continental Europe, but not necessarily fit the conditions of European ORs and OCTs; hence, EU guidelines and indicators need to be revisited in order to match the specific requirements for ORs and OCTs.

The development of policies, guidelines and strategies focusing on the conservation of single key or flagship species out of their ecological context do not contribute to the concept of ecosystem-based management, and carry the risk of disturbing fragile ecological relationships between species and between different ecosystems, especially in small and insular areas. An ecosystem-based approach for biodiversity management requires guidelines with ecosystem-based indicators. The development of policies, guidelines and strategies requires investment in human capacity at governance level with sufficient local ecological knowledge and insight in the (economic) benefits of the local ecosystem services.

#### *b. Management Implementation*

The second level of biodiversity management involves human and institutional capacity for the implementation of the management policy. Local NGOs (and other organisations), that will have the responsibility for implementing the management policy, need to be consulted in drafting the management plans together with the government.

Both governance and implementing organisations need strengthening their cooperation, as to increase their efficiency in acquiring the necessary government budget allocations and to access funding organisations for financing several actions; among them, monitoring guidelines development, ecosystem-based indicators development (research programmes) such as to predict the consequences of biodiversity loss, monitoring programmes and capacity building.

Enhanced human capacity and ecological knowledge also increases the effectiveness of biodiversity management and conservation. Knowledge about the biology of species (e.g. their life-cycles) and ecosystem functioning is essential when designing protected areas, as an input to integrated spatial planning. Protected areas are only effective if they are situated at the right locations, and if their dimensions and/or interconnectivity are relevant to the life-cycles of species that need protection.

### 3. Appreciating Biodiversity

Successful biodiversity management and conservations requires the support of the entire social community. It starts with building appreciation of biodiversity by understanding biodiversity as a socio-economic asset, and not just for its intrinsic value and beauty. The value of biodiversity should be promoted throughout the society, starting at basic education and continue in higher education, in governmental bodies and in companies and industry.

The appreciation of biodiversity requires a holistic consideration of the species of an ecosystem and their interdependencies and interactions. It also requires understanding in the functioning of the entire ecosystem that supports the life-cycle of species that are considered for their socio-economic



value, and that support other important services provided to society, such as water purification, protection against erosion and flooding, tourism, etc.

Appreciation of biodiversity is fostered by communication of coherent and consistent messages, including clear communication of research results from the scientific community to government bodies and the general public. Mutually opposing information leads to losing interest from society and lack of cooperation with programmes that are designed to manage and conserve biodiversity, e.g. waste management and recycling, pest control, and invasive species management. The public understanding of science carries an obligation on the scientific community and its outputs (papers, reports and interviews) to be simple and policy-relevant. This need should be a cross-cutting feature of all the four challenge policy briefs and recommendations to be produced by the NetBiome-CSA project.

Societal appreciation of biodiversity will lead to active participation in attempts to conserve and manage the environment and will ensure effective environmental legislation.

### **Priorities**

EU guidelines and indicators for biodiversity management and monitoring are available for continental Europe, but not necessarily fit the conditions of Europe's OCTs and ORs. We suggest to focus further work on this challenge by revisiting key EU guidelines and indicators for biodiversity. This will facilitate (i) matching the specific requirements for OCTs and ORs, and (ii) developing guidelines and regulations that support (international and interregional) consistent and prolonged strategies for monitoring programmes on which sustainable exploitation schemes can be based.

In order to address this priority, possible synergies and complementarities with the SEBI initiative (Streamlining European Biodiversity Indicators) will be explored.

## 2.4. CHALLENGE 4: Knowledge-based decision making in marine and coastal issues

### Justification

The sea is at the center of European policies, either environmental<sup>3</sup> or for research and innovation<sup>4</sup>. If the overseas entities (which are mostly islands and scattered across all the oceans) were considered, the European Union would have the largest maritime domain in the world. This fact, however, is seldom acknowledged in official documents, with notable exceptions such as the Limassol Declaration<sup>5</sup>. It has even been pointed out that “there is currently no global vision and structuring policy framework for marine conservation issues in 60% of the EU maritime domain”<sup>6</sup>.

It is recognized that marine and coastal biodiversity plays a key role (via ecosystem services) in the resilience of insular regions to extreme events and to climate change. Paradoxically, the unwillingness of many policy makers to adopt an evidence-based approach to biodiversity conservation and management was also noted.

This is further complicated by the general lack of a systematic monitoring of the management decisions, which are nevertheless taken. The management of marine and coastal biodiversity is made even more difficult by the fact that often the scale of the decision making does not match the scale of the ecological processes.

In addition, the procedures of European science funding programmes are not appropriate to the reality in ORs and OCTs.

### Priorities

Regional insufficiencies in the knowledge base about ecological processes, in connectivity and in management capacity have serious consequences for two main areas:

- Overfishing and destructive fishing which, together with land-derived pollution, are the main sources of negative impacts on marine biodiversity.
- Properly designing, networking and enforcing marine protected areas, a situation which is far from fully satisfying international targets.

The difficulty to identify and to mobilize expertise in these areas, and to increase public engagement in biodiversity management and conservation require specific attention. ORs and OCTs need to mobilize a knowledge base wide enough to enable the identification of the ecological processes, and sufficient capacity to manage and conserve biodiversity. This knowledge and capacity should be built

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<sup>3</sup> Directive 2008/56/EC, Marine Strategy Framework Directive

<sup>4</sup> Innovation in the Blue Economy: realizing the potential of our seas and oceans for jobs and growth, Communication COM(2014) 254 final of 8 May 2014

<sup>5</sup> Declaration of the European Ministers responsible for the Integrated Maritime Policy and the European Commission, on a Marine and Maritime Agenda for growth and jobs

<sup>6</sup> Olivier Laroussinie, Caroline Vieux and Carole Martinez, 2012. How does the EU support marine biodiversity conservation in its Outermost regions, Overseas Countries and Territories?

locally or be easily identified and mobilized. The public needs to be actively engaged in biodiversity monitoring, management and conservation, and not only informed.

The dominant economic framework is not sustaining natural capital and is a root cause of most conservation problems. Biodiversity is presented as an asset, but very little of the income that generates is applied to its management and conservation: the taxation framework has to be changed in this regard. Other sources of economic revenue are also uncertain: the legal ABS (Access and Benefit-sharing) framework has to be developed for ORs and OCTs, and these regions are uncertain about the impacts and benefits of the new ocean economy (the so called blue growth).

The science community in particular must endorse the responsibility of making science accessible to the wider community. Relevant scientific papers or reports should be accompanied by policy-relevant digest that set out the evidence base and suggest how the new evidence can improve management measures or regulatory frameworks. On the other hand, the scale of the scientific EU programmes require adaptation to the realities and capacities of ORs and OCTs.

In summary, biodiversity management decisions should be adopted following an evidence-based approach which matches the scale of the relevant ecological processes and is adaptive, supported by a well designed monitoring process.

### 3. CONCLUSIONS

The geographic dispersal of European ORs and OCTs require adaptive dynamics to mobilize panels of expertise and build bridges between regions and types of stakeholders, in order to continue the dialogue with stakeholders and produce the policy briefs and recommendations (deliverable due in month 31) based on the four challenges that have been identified by the project.

Synergies with related initiatives will be pursued, with the objective to guarantee mutual exchange of information and complementarity among fora that are dealing with a challenge-related topic at regional scale (*Macaronesia, Pacific, Indian Ocean, and Caribbean*). This systematic search of synergies is essential to strengthen the coherence and impact of an overseas common message to be addressed to the national and European political and financial audience. It will also avoid the confusion and weariness that any audience is experiencing when witnessing multiple initiatives without explanations on complementarity and acknowledgement of other investments.

The consortium will organize physical workshops in combination with international conferences organised by other projects (e.g. International Conference on Biodiversity and Climate Change, organized in Guadeloupe 22-24 October 2014), and participate in brainstorming sessions organized by other projects on related topics (e.g. Pacific or Caribbean INCO-Nets for R&I networks)

## APPENDIX 1 – METHODOLOGY FOR THE DEFINITION OF THE FOUR CHALLENGES

From August 2013 to June 2014, several interactions and analytical steps were conducted to build a consensus on the four challenges, which could be common denominators for research cooperation and joint activities in ORs and OCTs.

Firstly, strategic frameworks related to biodiversity were collected at various scales and geographic areas. They were analysed for a preliminary mapping and match-making between common biodiversity management issues and the type of actions recommended to address them.

This preliminary level of analysis was consolidated and refined through a stakeholder-driven approach, based on a large consultation of 130 stakeholders; there was contribution from all oceans and from the various branches of the helix, amounting to 102 stakeholders consulted through a network questionnaire and 26 members of the Stakeholders Panel consulted through several rounds of more focused interactions. All names are listed in Appendix 3.

### The stakeholders community in the field of tropical and subtropical biodiversity:

Key actors (experts and organizations) identified (thanks to WP2-T2.1 dedicated questionnaire) and brought together in order to mobilize the relevant knowledge and resources connected to biodiversity management in support of sustainable development in ORs and OCTs. Their expertise, competences, location and branch of the helix were identified through a dedicated questionnaire in which a specific question was related to their perceived opinion on the four main challenges for tropical and subtropical biodiversity management in support of sustainable development in ORs and OCTs.

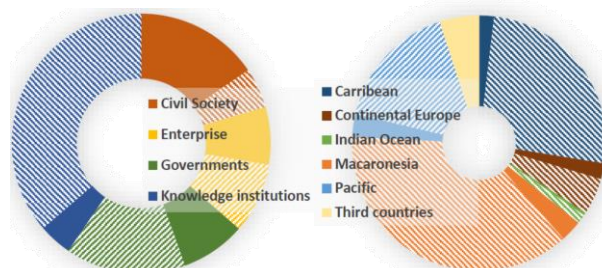


Figure 3: Characteristics of the Stakeholders Database (129 entries) by branch of the helix (left) and geographic region (right). The shaded pies represent the part that participated to the consultation (102 stakeholders).

### The Stakeholders Panel:

A formally structured short list of experts and representatives of relevant organizations in the field of tropical and subtropical biodiversity. Composed of 52 members from European, national and local levels and from the different branches of the helix. The SP is considered as a legitimate and willing sample of field expertise which underpins the project societal consultations.

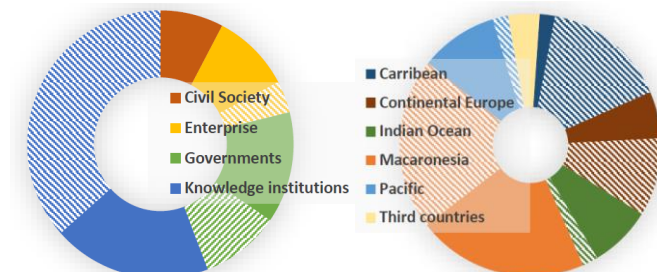


Figure 4: Characteristics of the Stakeholders Panel (52 members) by branch of the helix (left) and geographic region (right). The shaded pies represent the part that participated to the consultation (26 members).

### The Advisory Board:

Composed of 5 independent external experts from the international science and policy context. Their role is to provide advice and shape NetBiome's research agenda.

Figure 5: Synthetic description of the three levels of representation of field expertise in the NetBiome-CSA project

The results of this wide consultation were submitted for discussion during the international events<sup>7</sup> organized by the project partner from the Canary Islands (PLOCAN); the aim being to pursue the participative process and mobilize a larger panel of expertise for the final definition of four common challenges that are relevant from a scientific and societal point of view.

The Advisory Board, invited members of the Stakeholders Panel, external experts and consortium members were invited to share their views on the results during a plenary debate and parallel working group sessions.

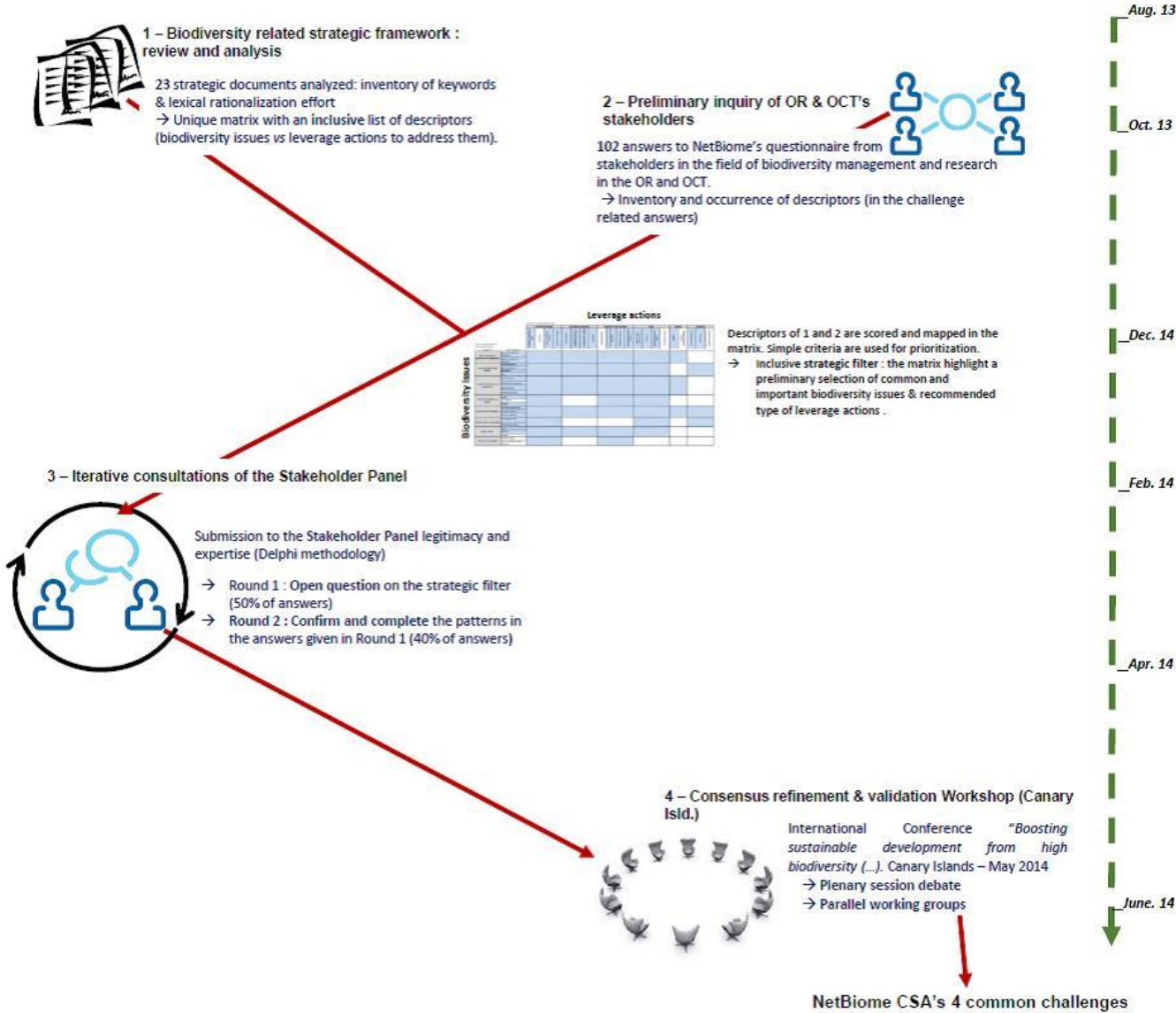


Figure 6: Schematic visualization of the methodological approach and main steps

<sup>7</sup> International Conference "Boosting sustainable development from high biodiversity: Prospects for green and blue growth in ORs and OCTs", 27<sup>th</sup> of May 2014. And the first Thematic Workshop "Addressing the challenges for biodiversity management in support of sustainable development in ORs and OCTs", 28<sup>th</sup> of May 2014, Gran Canaria (Spain). See Deliverable 3.2 (Conference report)

The use of simple visualization techniques enables interactive and friendly exchanges to build a common understanding of the similar highlighted problems and ensure that the four challenges will:

- contribute to the sustainable development of ORs and OCTs and respond to societal needs,
- require research coordination and joint activities, as well as improvement in the policy landscape,
- be relevant for international and regional frameworks and initiatives, notably the European Biodiversity Strategy (EBS).

Participants' opinions were written on coloured cards and then displayed and organized on a board following different steps arbitration on the results of the stakeholders' consultation, problems mapping and hierarchy and finally objective formulation and prioritization.

The first step was implemented in a plenary session, while the two others were conducted in four challenge-specific sub-groups, facilitated by four dedicated project's partners.

The general principle of breaking down the global topic of sustainable management of biodiversity into more focused challenges required explanations from the consortium and task leader, as well as mind adaptation from the participants.

It was argued that the objective of having concrete challenges responding to socio-economic needs was essential. Indeed, it was recalled that the main role of the challenges is to bring together specific expertise from the various stakeholders' categories that could work together, at the ORs and OCTs scale, to brainstorm and carry out joint activities under clearly defined thematic boundaries.

Those requirements were accepted for the definition of the four specific challenges. It was first commonly decided that themes like climate change, anthropic impacts and invasive species had to be considered as cross-cutting drivers of changes that are affecting all the challenges related to biodiversity. For strategic and operational reasons, the need to emphasize the huge marine component of ORs and OCTs as source of assets for Europe was acknowledged, and translated into a dedicated challenge.

In a second phase, experts and facilitators worked intensively during four challenge-specific parallel workshops, to fine-tune previous agreements and define the outlines of the four challenges in terms of problems and most pressing topics.

## APPENDIX 2 – Participants of the four challenge-specific workshops

### CHALLENGE 1- Integrated biodiversity conservation through spatial planning

**Facilitator: Vanessa Weck (RG)**

<b>Hendriks</b>	Rob	Dutch Ministry of Economic Affairs	Netherlands
<b>Hoetjes</b>	Paul	Dutch Ministry of Economic Affairs	Netherlands
<b>Patrão Neves</b>	Maria	European Parliament	Portugal
<b>Abreu</b>	António D	Biologist	Portugal
<b>Abreu</b>	Cristina	University of Madeira	Portugal
<b>Raes</b>	Niels	NATURALIS Biodiversity Center	Netherlands
<b>Arango M</b>	Jimena	OCTA - Association of the Overseas Countries and Territories of the EU	Belgium

Additional contributors to the challenge outline: Dr Colin Hindmarch

### CHALLENGE 2- Sustainable agriculture and forestry practices

**Facilitators: Josiane Irassin-Mangata (RR) and Michael Stech (Naturalis)**

<b>Hindmarch</b>	Colin	E.L.P.D	United Kingdom
<b>MINATCHY</b>	Nathalie	Kap Gwadeloup	France
<b>Archimède</b>	Harry	INRA - Institut National de la Recherche Agronomique	France
<b>Borges</b>	Paulo A V	University of the Azores	Portugal
<b>Martin</b>	Victor	Universidad de La Laguna	Spain
<b>Panton</b>	Janice	OCTA - Association of the Overseas Countries and Territories of the EU	United Kingdom

Additional contributors to the challenge outline:



### CHALLENGE 3- Sustainable management and effective conservation of Biodiversity

Facilitator: Soraya Sierra (Naturalis)

<b>LE SCAO</b>	Rozenn	Parc Naturel Regional de Martinique	France
<b>Caujapé-Castells</b>	Juli	Jardín Botánico Canario	Spain
<b>Gabriel</b>	Rosalina	University of the Azores	Portugal
<b>Gamo Campos</b>	Diego	PLOCAN - Oceanic Platform of the Canary Islands	Spain
<b>Horrocks</b>	Julia	University of the West Indies	Barbados
<b>Martins</b>	António	Universidade dos Açores	Portugal
<b>Stapel</b>	Johan	CNSI - NIOZ Caribbean Netherlands Science Institute	Netherlands

Additional contributors to the challenge outline: Dr Colin Hindmarch

### CHALLENGE 4 - Knowledge-based decision making in marine and coastal issues

Facilitator: José Azevedo (FRC)

<b>Farman</b>	Richard	Aquarium des Lagons de Nouvelle Calédonie	New Caledonia
<b>Martinez</b>	Carole	IUCN - International Union for Conservation of Nature	Switzerland
<b>Carvalho</b>	Telmo	EurOcean - European Centre for Information on Marine Science and Technology	Portugal
<b>Hawkins</b>	Stephen	University of Southampton	United Kingdom
<b>Martins</b>	Albertino	INDP - Instituto Nacional de Desenvolvimento das Pescas	Cape Verde
<b>Villagarcía</b>	Marimar	PLOCAN - Oceanic Platform of the Canary Islands	Spain
<b>Nascimento</b>	Gisela	FRC - Fundo Regional para a Ciência	Portugal

Additional contributors to the challenge outline:

### APPENDIX 3 – Participants in the challenge identification process

Name	Part of the helix	Region	Cat
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António Frias Martins	Knowledge institutions	Macaronesia	SP
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Ruben Heleno	Knowledge institutions	Macaronesia	SP
Claudie Pavis	Knowledge institutions	Caribbean	SP
Colin Clubbe	Knowledge institutions	Continental Europe	SP
Susana Fontinha	Knowledge institutions	Macaronesia	SP
Frederico Cardigos	Government	Macaronesia	SP
Marc Taquet	Knowledge institutions	Pacific	SP
Gilberto Carreira	Government	Macaronesia	SP
Harry Archimede	Knowledge institutions	Caribbean	SP
Nathalie Minatchy	Enterprise	Caribbean	SP
Ameenah GURIB-FAKIM	Knowledge institutions	Indian Ocean	SP
Brent Emerson	Knowledge institutions	Macaronesia	SP
Cécile Debitus	Knowledge institutions	Continental Europe	SP
Johan Stapel	Knowledge institutions	Caribbean	SP
Juli Caujapé-Castells	Knowledge institutions	Macaronesia	SP
Hélène Souan	Government	Caribbean	SP
Rob Hendriks	Government	Continental Europe	SP
Ricardo Haroun	Knowledge institutions	Macaronesia	SP
Manuela Sim-Sim	Knowledge institutions	Macaronesia	SP
Stéphane Garnier	Knowledge institutions	Continental Europe	SP
Sylvain Capo	Enterprise	Caribbean	SP
Jean Raphael Grosdesormeaux	Knowledge institutions	Caribbean	SP
Julia Horrocks	Knowledge institutions	Caribbean	SP
Victor Martin	Knowledge institutions	Macaronesia	SP
Richard Farman	Government	Pacific	AB

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Frédéric JACQ	Enterprise	Continental Europe	NetBiome StakeholderDatabase (WP2 questionnaire)
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sandrine Job	Enterprise	Pacific	NetBiome StakeholderDatabase (WP2 questionnaire)
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