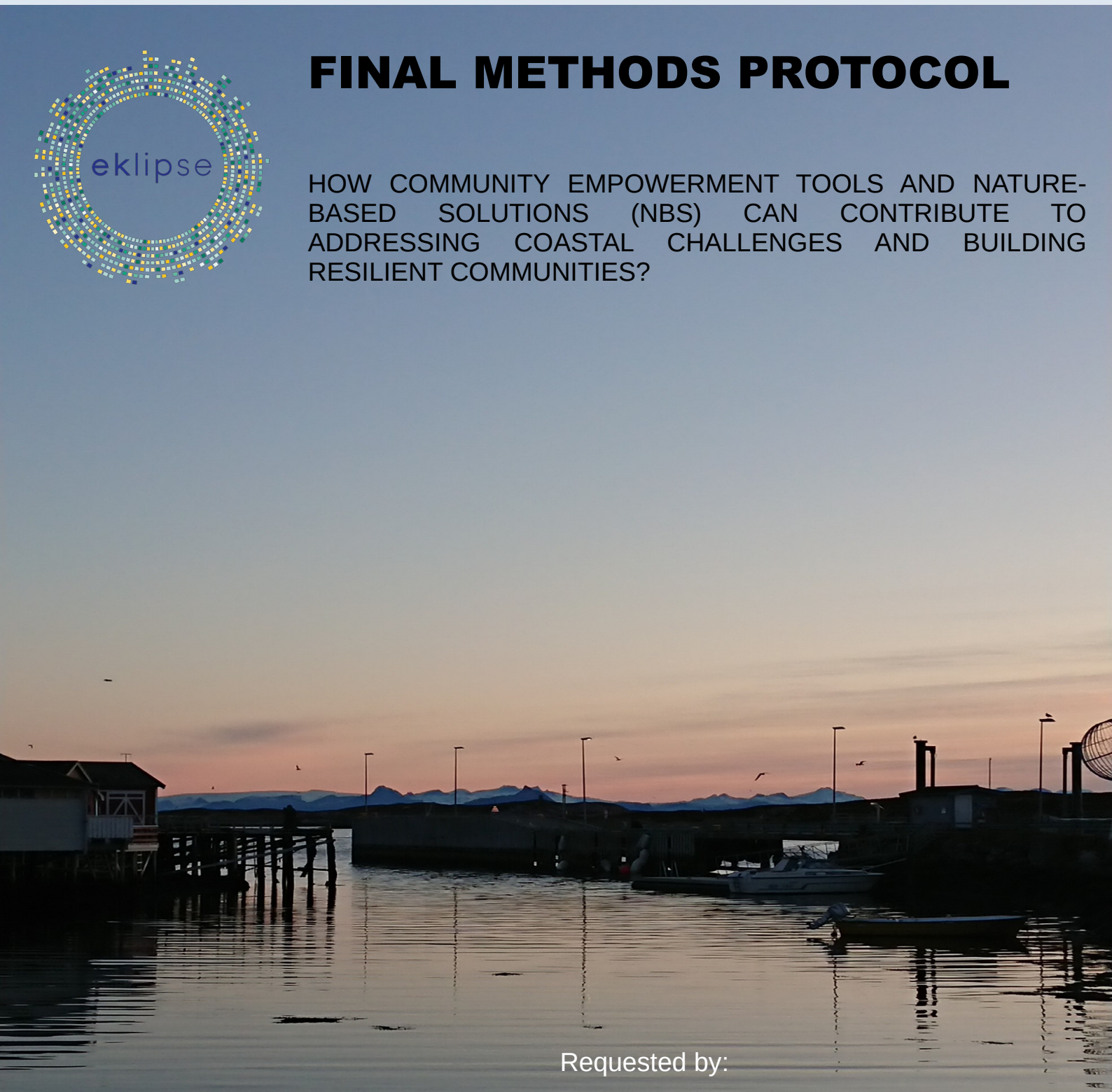
FINAL METHODS PROTOCOL

HOW COMMUNITY EMPOWERMENT TOOLS AND NATURE-BASED SOLUTIONS (NBS) CAN CONTRIBUTE TO ADDRESSING COASTAL CHALLENGES AND BUILDING RESILIENT COMMUNITIES?



Requested by:

Project EmpowerUs
“Socio-economic EMPOWERment of Coastal communities as Users of the sea to ensure sustainable coastal development”

February 2024
Eklipse Expert Working Group

Methods protocol of the Eklipse Expert Working Group on Empowerment Tools and Nature-Based Solutions (NBS) - Final version - February 2024

Members of the Expert Working Group:

- Ina Sieber, Kassel Institute for Sustainability, Kassel University, Germany (Co-chair)
- José Pontón Cevallos, Ghent University, Belgium & Universidad de las Américas, Ecuador (Co-chair)
- Ananya Tiwari, Atlantic Technological University, Ireland
- Cecilia Gañán de Molina, Independent international consultancy & University of Córdoba, Spain
- A. Rita Carrasco, CIMA-University of Algarve, Portugal
- Mia Prall, Aalborg University & the Danish Coastal Authority, Denmark

Members of the Methods Expert Group:

- Nils Bunnefeld, University of Stirling, UK
- Spyridoula Ntemiri, Green Fund, Greece

Knowledge Coordination Body focal points:

- Simo Sarkki, University of Oulu, Finland

Eklipse Management Body contact points:

- Candice Pouget, Helmholtz Centre for Environmental research - UFZ, Germany
- Olya Ivlieva, Helmholtz Centre for Environmental research - UFZ, Germany
- Marie Vandewalle, Head of Eklipse Management Body; Helmholtz Centre for Environmental research - UFZ, Germany
- Diana Dushkova, Helmholtz Centre for Environmental research - UFZ, Germany

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The request has been put forward by the Project EmpowerUs “Socio-economic Empowerment of Coastal communities as users of the sea to ensure sustainable coastal development”

EmpowerUs
Socio-Economic Empowerment of Coastal Communities

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GLOSSARY

Term	Definition	Key References
Biodiversity	The variability among living organisms from all sources including, *inter alia*, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.	Convention on Biological Diversity (1992)
Blue economy	A marine-based economic development that leads to improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities.	Everest-Phillips (2014)
Circular economy	An economy based on a spiral loop, i.e., a system that minimises matter, energy flow and environmental deterioration without limiting economic growth or social and technical advancement.	Geng et al. (2009)
Co-creation	A collaborative approach to engagement that allows stakeholders to collectively design and build more inclusive and sustainable mechanisms for change. EmpowerUs will adopt a multi-actor co-creation approach, developed via a network of six Transition Coastal Labs (TCL), to empower coastal communities to act for change (i.e., transformation through co-creation of coastal resilience). Co-creation in EmpowerUs began before the project by bringing in non-academic partners and building on previous collaborative work in the TCLs.	EmpowerUs grant agreement, p. 102
(Community) Empowerment	An intentional ongoing process centred in the local community, involving mutual respect, critical reflection, caring, and group participation, through which people lacking an equal share of valued resources gain greater access, decision authority and power over those resources and on their lives. Although empowerment is considered both a process and an outcome, is most consistently viewed in the literature as a process in the form of a dynamic continuum, involving: (i) personal/psychological empowerment; (ii) the development of small mutual groups; (iii) community organisations; (iv) partnerships; and (v) social and political action.	Adapted from: Cornell Empowerment Group (1989) in Perkins & Zimmerman (1995) & Labonte (1994) in Laverack & Wallerstein (2001)

Community engagement	The active, voluntary involvement of individuals and groups in changing problematic conditions in communities and influencing the policies and programs that affect the quality of their lives and the lives of other residents	Ohmer (2007)
Ecosystem services	The benefits people obtain from ecosystems. These include provisioning, regulating, and cultural services that directly affect people and supporting services needed to maintain the other services.	Millennium Ecosystem Assessment (MEA) (2005)
Empowerment tools	Encompass a diverse set of strategies, resources, or mechanisms tailored to augment the self-efficacy, autonomy, and active participation of individuals or communities in decision-making processes. They should be differentiated from participatory tools, which promote the involvement and contribution of people to a programme, which in turn may build their capacities, skills and competencies; yet do not necessarily assist communities to gain or seize more power through collective social and political action.	Adapted from: Laverack & Wallerstein (2001)
Nature-based solutions (NBS)	Actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits. Ecosystem-based adaptation (EbA), presents a nature-based solution approach that harnesses biodiversity and ecosystem services to reduce vulnerability and build resilience to climate change.	IUCN (2016)
Participatory processes	Specific methods employed to achieve active participation by all members of a group in a decision-making process.	Chatty et al. (2003)
Resilience	The capacity of a social-ecological system to sustain desired outcomes in the face of disturbance and change, by either buffering or withstanding a shock, or by adapting or transforming in response to change.	Adapted from: Chandler (2014), Turner et al. (2022), and Folke (2006)
Sustainability	The persistence over an apparently indefinite future of certain necessary and desired characteristics of both the ecosystem and the human subsystem within.	Hodge (1997)

1. INTRODUCTION

BACKGROUND

The interdependence between humanity and the world's oceans, seas, and inland waters is undeniable. They serve as the lifeblood of our planet, sustaining life in myriad direct and indirect ways. Recognizing, safeguarding, and restoring these natural ecosystems stand as pivotal missions of our era (UNESCO-IOC, 2022). Healthy, resilient societies hinge upon affording nature the requisite room to thrive (European Commission, 2019). Addressing pressing challenges like ecological degradation, extreme weather events, sea-level rise, pollution, and coastal erosion is an urgent mandate for European Coastal Regions (Moraes et al., 2022). Achieving the EU's Mission: Restore our Ocean and Waters and the UN's Sustainable Development Goals demands a paradigm shift that addresses the environmental, societal, and financial crises confronting coastal communities. The aspirational goals outlined in the EU Green Deal and related policies hold promise for catalysing transformation toward sustainable, equitable coastal development and resilience (European Commission, 2020). Nonetheless, the prerequisites, obstacles, and success factors for such changes and necessary innovations remain insufficiently understood at local, regional, national, or European levels (Malhi et al., 2020; Seddon et al., 2020). Community empowerment tools (ET) and nature-based solutions (NBS) present an avenue to harmonize environmental and resilience objectives amidst global budget constraints and potential conflicts between short-term needs and long-term goals (Moraes et al., 2021).

Nature-based Solutions (NBS) constitute a range of actions aimed at conserving, sustainably managing, and restoring natural and modified ecosystems, effectively addressing societal challenges, and bolstering both human well-being and biodiversity (IUCN, 2016). Ecosystem-based adaptation (EbA) exemplifies this approach, fortifying the sustainability and resilience of social-ecological systems by implementing strategies to mitigate climate-related risks (e.g., Vignola et al., 2009; Vasseur, 2021). Especially within urban settings along coastlines, NBS (including EbA) offer multifaceted benefits, such as ameliorating air quality, mitigating flood risks, countering heat island effects (Loos et al., 2016), providing green spaces, and contributing to public health and well-being (Croeser et al., 2021). In coastal regions, where the interface between land and sea shapes unique ecosystems and human activities, community engagement is integral to the effective implementation of such ecosystemic solutions. NBS implementation might inadvertently lead to negative consequences for vulnerable populations, making community involvement critical (Vignola et al., 2009; Sieber et al., 2018). Such engagement requires testing across diverse community contexts (Tiwari et al., 2022). Coastal communities, operating at the nexus of land and sea, emerge as "Living Labs" uniquely positioned to catalyse NBS efforts. They epitomize the demand for transformative actions toward sustainability, which assumes critical importance amidst the convergence of climate, biodiversity, and pollution crises (UNEP, 2020; Gerritsen et al., 2021). Through their intrinsic connection to marine and terrestrial environments, coastal communities serve as living examples of the potential and efficacy of NBS and ET in addressing pressing environmental and societal challenges.

Transitioning from the discussion of coastal communities' pivotal role in NBS implementation, it is imperative to recognize that communities are not passive recipients of nature's benefits; rather, they should actively shape their environments (Reed et al., 2009). Empowering key actors within communities allows them to proactively influence ecosystems, thereby fostering resilience and economic development (Vignola et al., 2009). Empowering coastal communities represents a pathway to effect meaningful change in practices and lifestyles, bridging the gap between scientific advancements and sustainable societal applications, particularly in the context of circular and blue economies and NBS. Integrating NBS with ET can significantly enhance the uptake of NBS by coastal communities while mitigating potential adverse effects, leading to positive social outcomes in these regions. ET serves as a bridge, amalgamating bottom-up (community-focused) and top-down (political) interventions to instigate beneficial societal transformations. For instance, in addressing climate-related urban challenges, community interventions advocating early action on urban governance and climate change should be coupled with

integrated policies and participatory processes involving diverse stakeholders. This collaborative approach, known as co-creation, enhances resilience through empowerment (Salvador Costa et al., 2022; Chatty et al., 2003). Therefore, designing participatory processes that engage stakeholders across various decision-making contexts is essential for making informed, sustainable environmental decisions and fostering beneficial social outcomes (de Vente et al., 2016).

The present endeavour is advanced by the EmpowerUs project, funded under the European Union's Horizon Europe program. The EmpowerUs project seeks to empower coastal communities as active users of the sea, fostering more resilient, inclusive, and sustainable coastal development. Led by the Nordland Research Institute in Norway, the project comprises 16 partners across 9 countries. Methodologically, the three-year project explores Transition Coastal Labs (TCLs).

Figure 1. The EmpowerUs EU Project at a glance.

A TCL is a living lab, a real-life testing environment which allows stakeholders to co-create and co-design solutions alongside scientists, researchers, engineers and policymakers in order to build resilient coastal regions. By facilitating leading approaches to multi-actor collaboration, different types of solutions will be chosen to build Tailored Empowerment Programs (TEPs) adapted to each TCL. The project aims to achieve a better empowerment of the TCLs -empowerment is the process through which actors gain the capacity to mobilise resources and institutions to achieve a goal, by improving the access to resources and institutions, strategies to mobilise them and the willingness to do so (EmpowerUs grant agreement).

The TCLs will then choose the most appropriate option to be developed in a pilot phase. This approach will empower coastal communities to tackle “wicked problems”, sustainability challenges and create solutions together for sustainable, resilient, and inclusive coastal regions. The six TCLs in EmpowerUs are located as follow: 1. Connemara, Ireland; 2. Traena, Lofoten, Norway; 3. Aland Islands, Finland; 4. Burgas, Bulgaria; 5. East Limassol, Cyprus; and 6. Cap de Creus, Spain (Figure 2).

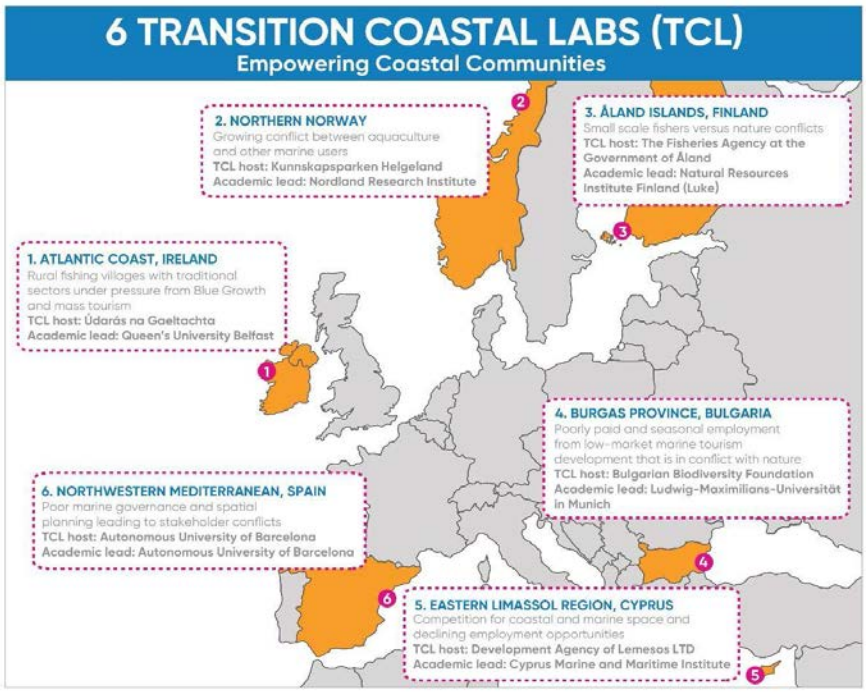

Figure 2. EmpowerUs TCL map – It provides information on each of the 6 TCLs, including their main challenges and the TCL Hosts and Academic Leads working at each TCL.

PROCEDURE

More information can be found on the DoW of the request "Building resilient coastal communities through Nature-Based Solutions (NBS) and Empowerment Tools". Eklipse is a knowledge brokering mechanism created in 2016 to help governments, institutions, businesses, and NGOs make better-informed decisions. Eklipse is recognised by the European Commission as a key actor in developing the scientific pillar of the Knowledge Centre for Biodiversity (EC-KCBD), the Science Service for Biodiversity. Since 2022, Eklipse has been a self-sustaining mechanism, managed by the non-profit organisation Alternet. Eklipse answers requests related to biodiversity and ecosystem services. The different steps of the Eklipse process are shown in Figure 3.

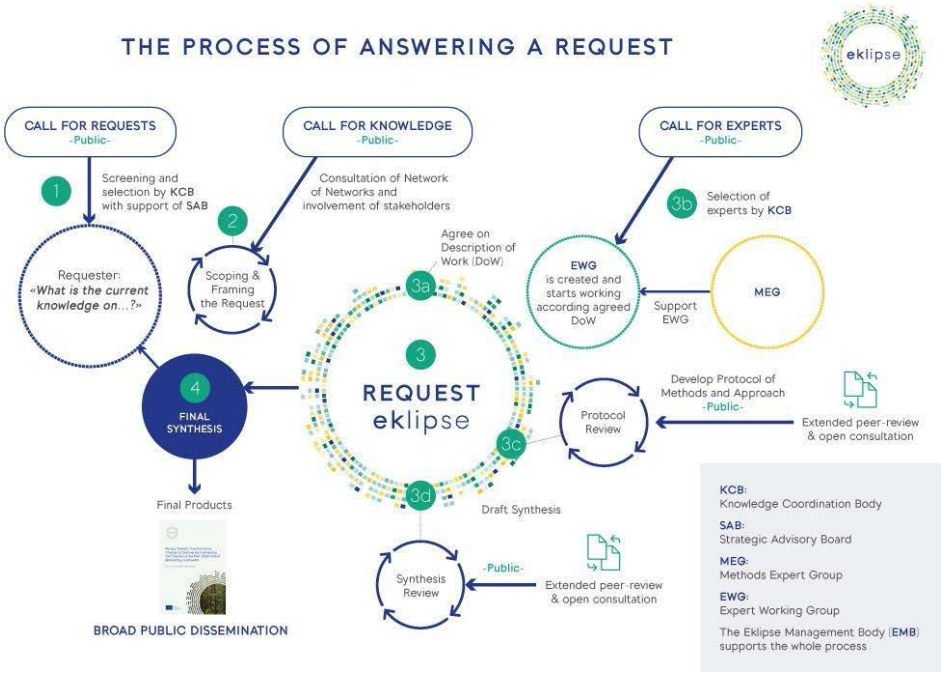

Figure 3. Eklipse process to answer a request.

Each step supports the next:

- <u>Scoping phase</u>

A scoping group is put in place composed of at least a Knowledge Coordination Body (KCB) Focal point, a Deputy, a Methods Expert Group (MEG) representative and an Eklipse Management Body (EMB) contact point. The scoping group liaises with the requester during the scoping phase in order to refine the question and identify how Eklipse could provide an added value. The MEG supports the scoping group, advising on methods and approaches for answering the request. This scoping phase usually also involves looking for knowledge and expertise on the refined question. Once the KCB and the requester agree on the reformulation, the request can move forward and the answering process can start.

In the case of this request, following the survey sent to the Transition Coastal Labs (TCLs) and the discussions that took place among the scoping group, it was decided to merge both requests in a first proposal. But after meeting with the requesters, the scoping group concluded that the request should be reformulated to better address their needs. As a result, the following revision was suggested: “How community empowerment tools and nature-based solutions can contribute to addressing coastal challenges and building resilient communities.”

Also, Eklipse organised another meeting with a representative of the European Environment Agency (EEA) which supported the fact that the outputs of the request would be useful for other coastal communities in Europe.

- Answering phase

Based on the work during the Scoping Phase, a Document of Work (DoW) is developed under the supervision of the scoping group in close collaboration with the requester (see 3a in Figure 3). The DoW provides the background, aims, time frame and relevance of the request, describing in particular: why the request has been put forward, what the requester wants from the process, the European policy relevance of the request, the resources, and the potential methods identified to answer the request. Depending on the type of request and the advised method(s), different types of approaches can be considered.

To answer this request, Eklipse sent out a Call for Expertise (CfE), from which 7 experts were selected in April 2023. In order to complete the EWG, a second targeted call for experts (CfE n. 13/2023) took place in July 2023, from which 3 new members joined the EWG (Figure 4). These experts cover a broad range of transdisciplinary expertise in natural & social sciences, policy & planning, coastal resilience, governance & participation; and also, geographical representation (10 countries) to form the Eklipse Expert Working Group (EWG). As of February 2024, only six experts remain actively involved in the answering process for this second draft.

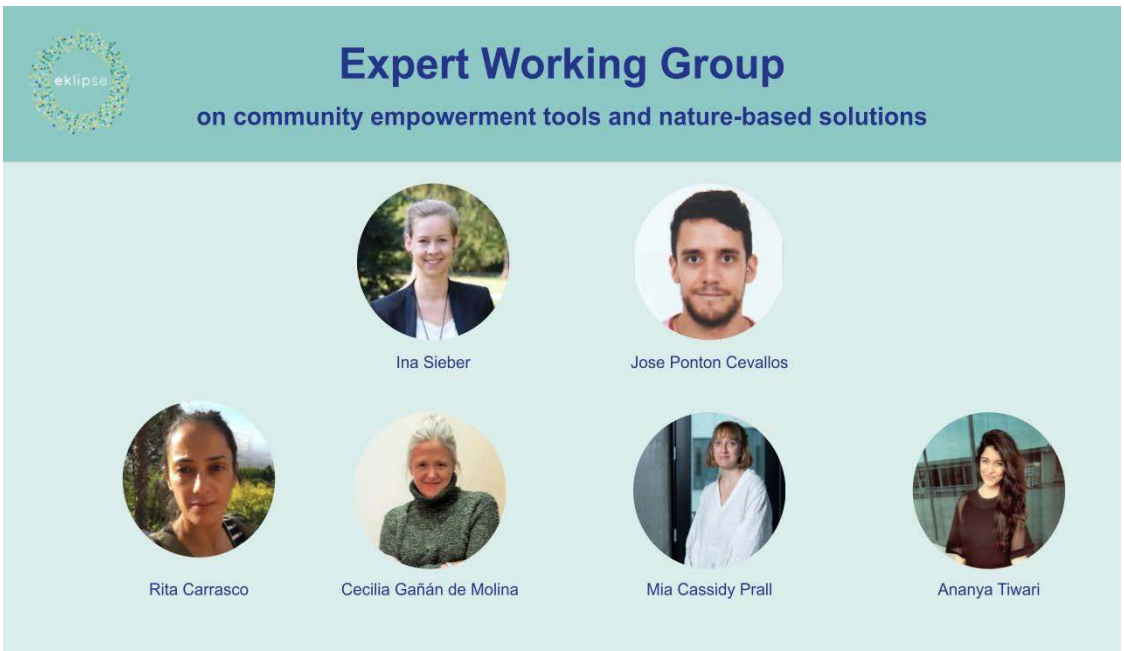

Figure 4. Schematic representation of the EWG on NBS and community empowerment tools.

2. OBJECTIVES

After considering the request, the EWG and the Eklipse team interacted iteratively during virtual meetings and agreed that the process of responding to the request will include two specific objectives:

- **Objective 1.** Rapidly review and summarise the current state of the existing evidence concerning the role of nature-based solutions (NBS) and other community empowerment tools in addressing coastal challenges across Europe, as well as critically assess the impact/outcomes of these interventions in fostering empowerment and therefore resilience within these communities.
- **Objective 2.** Provide inclusive and participative decision-support tools and community engagement scenarios to facilitate the co-creation process of empowerment programs tailored for each TCL.

Following a meeting in September 2023 in Belfast (North Ireland, UK), in which the EWG presented their methodological approach and preliminary results to the EmpowerUs project consortium, it was decided that only the first objective would be needed to suitably answer this request. Therefore, we split this main objective into three specific objectives:

- **Specific Objective 1.** Rapidly review and summarise the scope and characteristics of the existing evidence on the application of nature-based solutions (NBS) and other empowerment tools to build coastal resilience in Europe and other high-income countries and territories.
- **Specific Objective 2.** Rapidly review and summarise the scope and characteristics of the existing evidence on the application of empowerment tools (ET) to build coastal resilience in Europe and other high-income countries and territories.
- **Specific Objective 3.** Conduct a critical assessment of this body of evidence regarding the outcomes/impacts of such interventions in fostering empowerment, in order to identify opportunities and challenges in the integration of NBS with ET.

3. METHODOLOGY

This section describes the methodology proposed by the EWG in a two-step approach. In the first step – the methodological framework – we describe the methods in general, in relation to the objectives. The second section will describe the methods proposed in more detail.

METHOD SELECTION WORKSHOP

The EWG met online with the Eklipse MEG in June 2023 to select a set of knowledge synthesis methods and outline steps towards delivering the report on NBS and ET. Using the MAGICKS toolbox developed by the Eklipse MEG and based on the 21 potential knowledge synthesis methods. Two distinct and complementary methods were initially selected based on the needs of the contracting EmpowerUS project. However, considering the time required for the development of two methods in parallel, after the meeting in Belfast, it was decided to proceed with the most expedient method, which will be explained below.

INITIAL METHODOLOGICAL FRAMEWORK

In pursuit of the overarching and specific objectives outlined previously, we collectively determined that employing a Rapid Evidence Assessment (REA) would serve as an effective literature-based method to swiftly review, synthesise, and evaluate the existing body of evidence concerning nature-based solutions (NBS), empowerment tools (ET) and their integration to the enhancement of coastal resilience and empowerment processes in coastal communities. A comprehensive understanding of the current state of evidence in this domain will furnish the EmpowerUs project with well-informed conclusions and recommendations to install solid interventions in their TCLs. A more detailed connection between objectives and the implementation of the method can be found in the below table (Table 1).

Table 1. Relationships between the request objectives and proposed implementation of the knowledge synthesis method.

Specific Objectives	Implementation of Rapid Evidence Assessment
Nexus between NBS and coastal resilience (Specific Objective 1)	*Exploratory focus* Synthesis of volume and characteristics of evidence body about coastal/marine NBS interventions in Europe and other high-income countries in relation to type of study, societal challenges addressed, type of intervention, geographic scale, direction of governance process, community engagement level, project cycle phase, etc.
Nexus between ET and coastal resilience (Specific Objective 2)	*Exploratory focus* Synthesis of volume and characteristics of evidence body about ET (both related and unrelated to NBS) in Europe and other high-income countries in relation to type of study, societal challenges addressed, type of intervention, geographic scale, direction of governance process, community engagement level, etc.
Nexus between NBS and ET and impact on empowerment (as dimension of resilience) (Specific Objective 3)	*Evaluation focus* Critical assessment of evidence about impacts/outcomes of NBS and ET in addressing coastal challenges and building resilience, including the facilitation of empowerment processes.
	Analytical focus Identification of opportunities/challenges in NBS-ET integration within Europe, including a list and clustering of ET in relation to their characteristics.

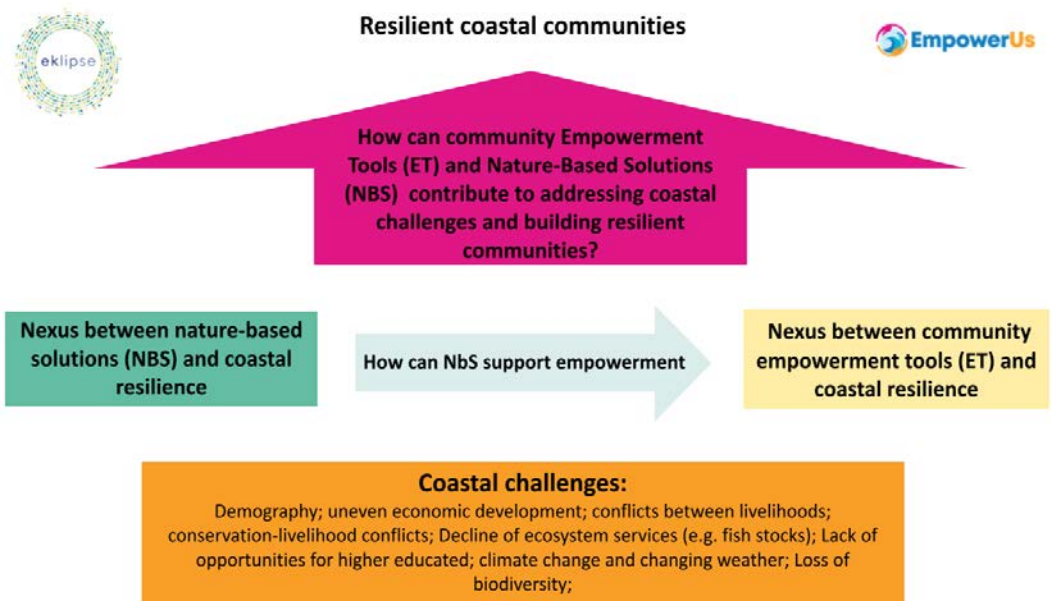

Figure 5. Conceptual framework linking nature-based solutions (NBS) and empowerment tools in the context of coastal resilience.

RAPID EVIDENCE ASSESSMENT

Description of the method

A Rapid Evidence Assessment (REA) is a type of evidence review that describes the volume and characteristics of an evidence base, provides a synthesis of what that evidence indicates and critically assess such evidence. Whilst being less resource and time intensive compared to a full systematic review, REAs (as well as other methods like Quick Scoping Reviews) are designed to be transparent and to minimise bias and are typically used to understand the impact either of a 'pressure' or a policy intervention (Collins et al., 2015).

Our REA will be conducted in four phases (Figure 5). The first phase will be a structured search of the scientific, internationally peer-reviewed (scientific/academic) literature and additional grey literature (*sensu* Adams et al., 2016) produced by organisations outside of the traditional commercial or academic publishing, including project reports, case studies and information booklets available on Google and other databases. The search is based on keywords, titles and/or abstracts of these records to assess their relevance. In the case of the scientific literature, we will use two prestigious academic databases (Web of Science, Scopus), while for the grey literature, a mix of search engines (Google) and specific repositories (World Bank, TIM-Joint Research Center & Nature Network). Duplications are removed at this stage (Figure 5). Based on the identification of potential publications, a first screening (second phase) is conducted, checking abstracts for suitability, reducing the number of publications. In a third phase, retrieved records are assessed by conducting a full content analysis for further removing irrelevant articles, and extracting evidence relevant to the case studies. The final fourth phase will consist of a synthesis and evaluation of the selected literature, as well as provision of derived conclusions and recommendations for the requester. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) technique (Liberati et al., 2009) will be used to report the results obtained in each of the phases of the REA process for both scientific and grey literature (see Figure 5 below for example of flow diagram).

Advantages and Limitations of REA

Rapid Evidence Assessments (REA) provide relevant syntheses of evidence, carried out in a short period of time (3-6 months). They allow an overview of the evidence on a particular issue able to support programming decisions on key topics. As such, REAs are typically quicker to complete than a gold-standard equivalent systematic review. Methods are documented transparently and shortcuts are clear to see.

With regard to limitations, in order to be "rapid", REAs are not as exhaustive and comprehensive as a systematic review, and therefore they make concessions in relation to the breadth, depth and comprehensiveness of the search. For that reason, it is not usually suitable for very broad topics, including for clinical and policy decisions (Ganann et al., 2010). Risk of bias is variable.

Errors associated with the development of the REA include misinterpretations related to individuals (i.e., subjectivity), misinterpretations linked to term analysis (i.e., content analysis), and misinterpretations driven by the content of the publication and external to the individual (i.e., external errors).

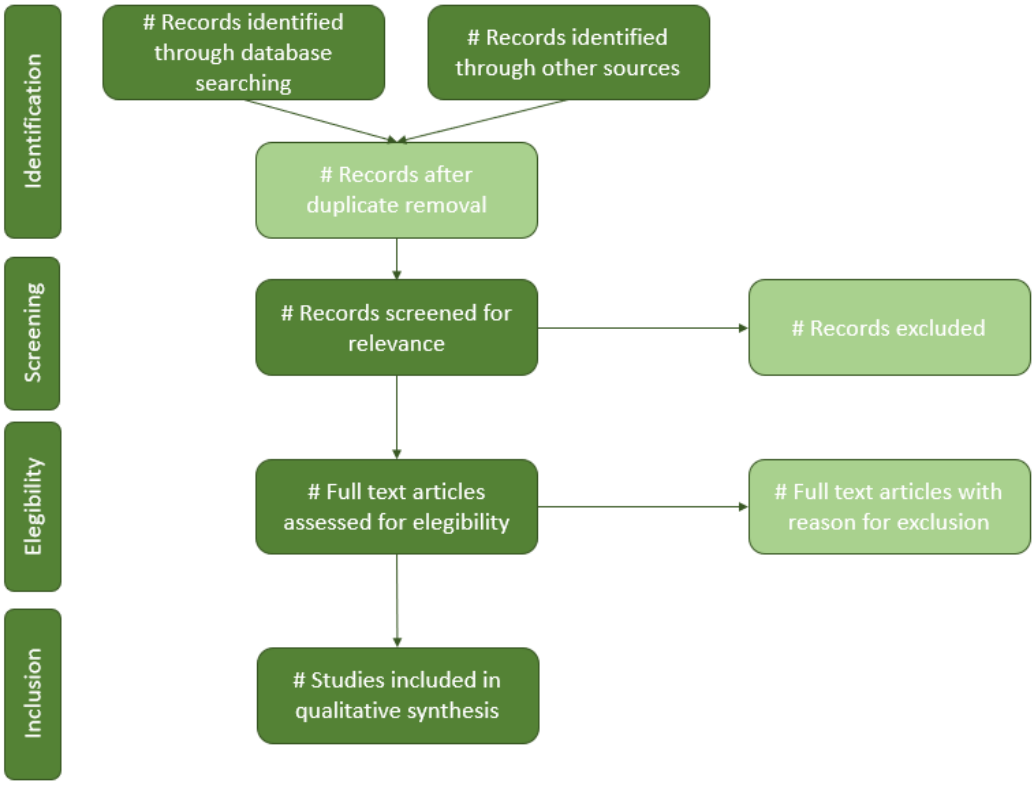

Figure 5. Flow scheme of the process of a Rapid Evidence Assessment based on PRISMA technique (Liberati et al., 2009).

REA process

1. Search strategy

An initial scoping search was first performed to test for specificity and sensitivity using the online academic databases Web of Knowledge and Scopus. Search queries were constructed by connecting individual terms with Boolean operators as follows, to analyse the relationship between nature-based solutions, empowerment tools, resilience, and coastal/marine environments:

- (NBS OR empowerment tools) AND resilience AND coastal

Additionally, whenever the scientific and grey literature databases allowed it, synonyms/related terms for each of the main terms of the search query (connected by OR) were employed to increase the breadth of the evidence (Table 2). The number of keywords used will be carefully selected to ensure that the results remain relevant and manageable.

Table 2. List of keywords used for structured searches in the two academic databases (Web of Science and Scopus).

Nature-based solutions	Empowerment tools	Resilience	Coastal
"nature-based solution*" OR "nature based solution*" OR "nature-based approach*" OR "nature-based intervention*" OR "ecosystem-based solution*" OR "ecosystem-based adaptation" OR "ecosystem-based mitigation" OR "ecological restoration" OR "ecosystem-based management" OR "green infrastructure*" OR "blue infrastructure*"	"community empowerment" OR "empowerment" OR "social empowerment" OR "social innovation*" OR "community action*" OR "empowering" OR "empowerment tool*"	"resilience" OR "coastal resilience" OR "coastal adaptation" OR "community resilience" OR "social-ecological resilience"	coast* OR marine

Although the term "nature-based solutions" was coined by the IUCN in 2016, the focus of the search are case studies documenting nature-based and/or ecosystemic interventions (e.g., EBA) operationalizing the ecosystem service concept and a social-ecological systems approach to address coastal resilience. Thus, to increase the breadth of the evidence, we will include articles after the year 2012. This is the first year after the completion of the UK National Ecosystem Assessment (NEA), one of the most complete NEAs in Europe (Schröter et al., 2016), and the first year of full economic recovery among major economies (UN, 2012). For the scientific literature, articles, reviews, book chapters and conference proceedings will be considered for analysis. For the grey literature any report, policy brief, white paper, thesis, and other documents from political organisations, NGOs, research institutions, etc. All records will be checked to avoid double counting and minimise bias, and will be screened based on the following PICO (population, intervention, comparison, outcome)/topic statement (see Liberati et al., 2009) for relevance:

- **Population:** studies conducted in European continent and overseas territories; though other high-income countries (i.e., OECD countries) will also be included due to their similarity in socio-economic conditions. The addition of non-EU countries will allow for the incorporation of a richer set of experiences among advanced economies, including disputed seas (Alexander & Graziano, 2017).
- **Intervention:** studies documenting the design/implementation/evaluation of NBS interventions and/or the application of ET for addressing coastal challenges.
- **Comparator:** if possible, studies documenting empowerment/resilience status before and after the intervention.
- **Outcome:** if possible, quantitative indicators of empowerment and/or coastal resilience impacts/outcomes and qualitative indicators (e.g., narratives about creation of placeness).
- **Types of study:** quantitative ecological studies using observational, experimental or modelling-based

approaches, or qualitative social (interviews, expert elicitation), socio-economic (e.g. cost-benefit/effectiveness/surveys, etc.), or conceptual or review studies. Main focus will be in scientific empirical studies and later in scholarly reviews and reports/documents from the grey literature.

- **Language:** English

2. Data extraction

First, all eligible records from the scientific and grey literature will be organised for data extraction and further analysis in an Excel spreadsheet. To extract the data in a structured manner, the following classification scheme will be included (when applicable):

a. **General descriptors:** country(ies) of case study(ies), year of publication
b. **Type of study:** e.g., quantitative, qualitative, review, socio-economic analysis, conceptual
c. **Ecosystem:** e.g., urban, coastal, marine, wetland, grassland, forest, cropland
d. **Coastal challenges addressed** (after IUCN, 2016): climate change mitigation/adaptation, social and economic development, disaster risk reduction, human health, food and water security, biodiversity loss and ecosystem degradation, environmental justice (added)
e. **Intervention typology** (after IUCN (2016) for NBS, and after Salvador Costa et al. (2022) for empowerment tools):
    - For NBS approaches: creation/infrastructure approaches (e.g., natural, green and/or blue infrastructure, ecological engineering), management (e.g., ecosystem-based management), restoration (e.g., ecological restoration, forest landscape restoration), protection (e.g., protected areas, area-based conservation), and issue-specific (e.g., ecosystem-based adaptation, ecosystem-based mitigation, ecosystem-based disaster risk reduction)
    - For ET scopes of action (non-exclusive): political, community-based, public and environmental health, resource management, science and research, economy-based, funding-related, others
f. **Scale:** city/local, sub-national/regional, national/country, supranational, global (and others=
g. **Project/intervention cycle phase:** design, implementation, evaluation
h. **Direction of governance process:** top-down (political scope), bottom-up (community scope), or hybrid
i. **Evidence of co-creation and level of stakeholder engagement:** inform, consult, involve, collaborate, empower
j. **Definition of resilience**
k. **Policy recommendations**
l. **Relation to TCL challenges:** specific challenges classified as socio-economic, ecological/ecosystemic, law/regulation, or knowledge/well-being/culture

Following, those selected records from the scientific literature that include a comparator and/or outcome, as well as those eligible records from grey literature will be organised for data extraction using the following scheme:

a. **Method/approach used to evaluate impact/outcome on empowerment:** preferably using defined categories
b. **Main outcomes of empowerment process:** qualitative
c. **Main challenges in reaching positive empowerment outcomes:** qualitative
d. **Relationship between empowerment outcomes and coastal resilience building:** qualitative
e. **Quality of evidence:** based on robustness of study design/type and relevance

3. Evidence classification cross-analysis and validation

The REA, like any other literature review conducted by various individuals, involves a certain level of subjectivity in the analysis. Cross-check analysis will be conducted by having at least two independent KCB and/or MEG members scanning at least three papers from the original database, and comparing the obtained papers' classification with the classification obtained by the expert working group. The percentage of "similarities" (%TRUE) and "dissimilarities" (%FALSE) between the two classifications will be then evaluated. When the percentage of dissimilarities surpasses 50%, the classifications are considered ambiguous, and a decision will be made to thoroughly review the contents of the publications to discern the reasons behind the ambiguous classifications. This validation will enhance the confidence in the classifications obtained during the screening of publications.

4. Data analysis

Evidence will be analysed by (1) extracting prevalences, through both qualitative and quantitative analyses, and (2) correlating/clustering variables/variable levels through quantitative analyses to support the creation of science-based classification maps.

4. EXPECTED RESULTS

EXPECTED PRODUCTS

Following the methodology explained under the previous chapters, the expected products (EPs) and their formats should be as follow:

- **EXPECTED PRODUCT 1:** Rapid evidence assessment of contributions of NBS and other empowerment tools in addressing coastal challenges in Europe and other high-income countries, and their impact in empowerment and resilience of coastal communities, including a list of challenges and opportunities to integrate these approaches for coastal resilience building in Europe. *Format: Summary report of findings (EP1.1) and Executive summary report of findings (for wider public) (EP1.2)*.

- **EXPECTED PRODUCT 2:** Catalogue of EU-wide case studies of the application of NBS/empowerment tools and practices, classified by typology and impact (if available). *Format: Excel database with geographic information for easy mapping (EP2)*.

FORMAT AND VISUALISATION OF RESULTS

The main output of the REA process will be a synthesis of evidence found in the literature about the contribution of NBS initiatives and ET for addressing coastal challenges and building resilience, as well as a critical assessment of the robustness and relevance of the evidence documenting (positive) impacts of these interventions. PRISMA flow diagram will be used to document the literature search process and volumes of records at distinct stages of the REA. In addition, volumes (i.e., prevalences) and characteristics of the evidence base will be presented in tables and charts, and interventions will be organised by geography, predominant contributions (e.g., benefits, impact of interventions), and other descriptors (e.g., scale, direction of governance process), and by using geospatial identifiers for easily mapping the cases. Contributions will be

summarised and graphically clustered according to their similarities in these characteristics using science-based classification maps. These practices are in line with existing approaches for describing outputs from bibliometric analyses and critical literature reviews (see e.g. Secinaro et al., 2020; Minghui Gui & McGill, 2018).

Additionally, a catalogue and classification system of ET will be developed to support the EmpowerUs requesters' objectives of empowering the different TCLs by the co-creation of Tailored Empowerment Programs.

5. UPDATED TIMELINE

The following key activities with milestones and proposed duration is described in the Table 3 below.

Table 3. Overview of the process indicates the different tasks, milestones, and timelines.

Task / Milestone	**Description**	**Duration / Deadline**
Task 1	Method protocol	2.5 months after the EWG Kick-off meeting
Milestone 1	**Final Method protocol**	**November 21st, 2023**
	Methods protocol finalised draft	July 24th, 2023
	Open Call for Methodological Protocol Peer Review and Open Consultation	July 25th - August 15th, 2023
	Method protocol reworked and final version	November 21st, 2023
Task 2	Literature - based method: Rapid Evidence Assessment (REA)	August - December, 2023
	REA search phase	August, 2023
	REA screening phase	September - November, 2023
Milestone 2	**Rapid Evidence Assessment - preliminary results**	**January, 2023**
Task 3	Report writing	January - March, 2024
Milestone 3.1	**Draft report ready for peer review**	**March, 2024**
Milestone 3.2	**Report finished**	**End of March - beginning of April, 2024**

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