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BLUE BIO MED

D.4.1.1 STARTING METHODOLOGY REPORT



Deliverable 4.1.1 / Starting Methodology Report

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27/5/2021	David Fernández, Lourdes Reig, Martín Federico Alba, Xavier Díaz Ruiz (CREDA) With the collaboration of: Alessandro Daraio, Stefano Valentini (ART-ER) Adriana Colquechambi, Elvira González, Tatiana Fernández (PANORAMED)	1	
28/9/2021	David Fernández, Lourdes Reig, Martín Federico Alba, Xavier Díaz Ruiz (CREDA) With the collaboration of: Alessandro Daraio, Stefano Valentini (ART-ER) Adriana Colquechambi, Elvira González, Tatiana Fernández (PANORAMED)	2	

Email: bluebiomedproject@gmail.com

Web: <https://blue-bio-med.interreg-med.eu/>

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FACT SHEET

Deliverable 4.1.1 / Starting Methodology Report

The goal of this fact sheet is to have the whole picture of the methodology at a glance. The document provides exhaustive information about the common guidelines to implement the four experiments, led by ART-ER, CREDA, IFAPA and NCSR Demokritos, including (i) the common framework for the experiments, (ii) the common methodology approach, (iii) a preliminary description of the challenges selected for the experiments and (iv) the content of the corresponding deliverables

1. Which is the general approach?

New forms of cooperation between governments, academia, companies and civil society, as well as new forms of participatory governance, with flexible, open and dynamic approaches that encourage experimentation, learning and adaptability are crucial to advance towards the SDGs. Systemic challenges (SDGs) will be tackled through transformative innovation policies and strategies and by taking a systemic approach, aligning innovation actors and networks towards a shared vision of the future.

2. What do we mean by policy experiments?

The implementation of the policy experiments consists of a **series of multi-actor workshops involving stakeholders from the Euro-Mediterranean basin** (a minimum of 2 workshops) **to address a pre-defined systemic challenge** related to **sustainable development** from the **MED perspective**.

3. Which are the goals of the experiments?

- **Stimulating an open discussion** among MED key actors around the value added of a transformative innovation policy approach to address common challenges;
- **Collecting inputs for the further development of a governance model** to implement transformative innovation policies across the Mediterranean;
- **Connecting stakeholders** from the quadruple helix and from different MED regions and countries wanting to work together on the challenge with a transformative approach.

4. Which is the approach of the experiments?

1. Delimitation of the challenge and definition of a common frame for the policy experiment
2. Identification of the relevant stakeholders to be engaged in the workshops
3. Design of the workshops
4. Definition of a portfolio of actions to address the challenge
5. Design of a monitoring system

5. Which are the relevant roles in the experiments?

WP coordinator (WPC)

- **Coordinating the implementation of the experiments with the Lead partner (LP)**
- **Providing the general framework** of the policy experiments (framework, general approach on methodology)

- **Defining the contents of the starting papers** and **supporting the experiments leaders** in the process
- **Supporting the experiment leaders** in the implementation of the experiments
- **Provide criteria for the interim reports** and compile them for the deliverable 4.2.1. (Interim reports about the results obtained in each experiment drafted by experiment Leader)

Experiment leaders (EP)

- **Defining the selected challenge**
- Write and deliver a **state-of the-art document** in collaboration with experts, according to the instructions of the WPC.
- **Defining the format, the schedule and the methodology** of the corresponding experiment workshops and **coordinate them**
- **Mobilise the community for the identification of the most appropriate stakeholders** to participate in the workshops
- **Selecting the stakeholders** and contacting them to develop the workshops
- **Implement the workshops**
- **Writing the interim report** of the workshop according to the instructions provided by the WPC

Project partners (PP)

- **Contribute to the state-of-the-art** document of the challenges
- **Identify the most appropriate stakeholders** from their local ecosystem and networks according to the criteria provided by the EP
- **Follow-up of the experiments**

6. Which are the criteria to guide the identification of stakeholders?

1. Competences and expertise on the specific area of knowledge of the experiment and commitment to address the challenge cooperating at the Mediterranean scale.
2. Availability and motivation to participate actively in the workshops. In particular, the same persons should participate in all workshops of each experiment.
3. Representativeness of the quadruple helix spectrum, plus bridging organisations.
4. Capacity to capitalise current or recent MED initiatives and projects.
5. Geographical representativeness and coverage of countries from both shores of the Mediterranean.

7. Which is the main focus of the workshops?

- 1st workshop: defining a shared understanding of the challenge
- 2nd workshop: defining a portfolio of actions
- More workshops (.e.g. local workshop in the summer months) could be added, depending on experiment needs

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1. Introduction

The Mediterranean is an especially heterogeneous cooperation area with a great diversity of geographical, socio-economic and political contexts. Despite the progress registered after many years of devoting time and efforts to improving governance of policies in the Mediterranean area, this continues to be a topic of concern for all actors. The Interreg MED Transnational Cooperation Programme, through a dedicated Axis, aims at supporting the process of strengthening and developing multilateral coordination frameworks in the Mediterranean for joint responses to common challenges. In this context, BLUE BIO MED aims at improving the governance of innovation policies in the Mediterranean, which is necessary to align the efforts of the multiple actors and advance towards a more prosperous, peaceful, inclusive and sustainable region. Together with B-Blue, BLUE BIO MED also contributes to unlock the potential of the blue bioeconomy to become a driver for the prosperity of the MED Area.

Panoramed Key Policy Paper “Better governance for better innovation. Recommendations for a challenge-oriented Mediterranean innovation policy with a territorial dimension” (Panoramed, 2020) makes recommendations to improve the governance of innovation policies in the MED. BLUE BIO MED contributes in particular to the following recommendations included in the Key Policy Paper:

- Developing a common governance to better align MED, national and regional policies towards the common challenges and promote collaboration among MED R&I actors towards common objectives.
- Promoting challenge-driven missions or alliances to encourage multiple actors (public administrations, academia, clusters, companies, users and citizens) to join forces and work together, using different types of funds to achieve common goals.

BLUE BIO MED follows the emerging paradigm of transformative innovation policies (Marinelli et al., 2021; Schot et al., 2020; Schot & Steinmueller, 2018) oriented towards societal challenge and specifically toward sustainable development transition, as advocated by the UN Agenda 2030, the European Green Deal and many other related strategies at national/regional level. In this evolving policy environment, the Project aims at improving the capacity and readiness of MED actors to address societal challenges through innovation, exploring the added value of transnational cooperation to improve the impact of innovation actions. The Mediterranean countries agreed on long term sustainable development objectives, but the toolkit available to policy makers to orient innovation towards these targets and to measure the impact is still limited, although several projects and initiatives have made steps in the right direction.

BLUE BIO MED work package 4 is dedicated at elaborating a methodology/model to co-design transformative innovation policy at transnational level oriented to tackle complex sustainable development challenges. The methodology will provide evidence of governance failures and bottlenecks, starting from specific cases (i.e. Mediterranean plastic-free), and will point out the ways to align the efforts of quadruple helix stakeholders to address MED challenges related to SDGs more effectively.

The overall methodology, developed jointly with Panoramed, will benefit from learning arising by four policy experiments focused on specific and relevant common MED challenges related to SDGs. The policy experiments will be based on multi-stakeholder design workshops aimed at stimulating the emergence of shared proposals of innovative actions beyond the project perimeter.

This document provides common guidelines to implement the four experiments, led by ART-ER, CREDA, IFAPA and NCSR Demokritos.

Section 2 describes the common conceptual framework for the four experiments. This framework has been discussed and defined in two workshops organised by Panoramed, BLUE BIO MED and B-Blue in April and May 2021.

Section 3 defines a common methodological approach for the four experiments, structured in five steps: delimitation of the challenge and definition of a common frame for the policy experiment; identification of the relevant stakeholders to be engaged in the workshops; design of the workshops; definition of a portfolio of actions to address the challenge, and design of a monitoring system.

Section 4 contains a preliminary description of the theme of the challenges selected for the four policy experiments.

Section 5 describes the contents of the deliverables related to the policy experiments: the starting papers describing the challenges to be addressed and the interim reports analysing the outcomes of each policy experiment.

2. Common framework

In European society there is a consensus on the urgent need to provide effective responses to complex problems such as climate change, pollution, waste of resources, persistent unemployment and raise of inequalities. These problems are the result of the dominant model of economic and social development. To respond to them, the European Union (hereafter, the EU) is committed to achieving the Sustainable Development Goals (hereafter, SDGs) and established the objective of becoming the world's first climate neutral continent by the year 2050 (European Commission, 2019).

The COVID-19 crisis has made more evident than ever the need of transnational cooperation in research and innovation and of the alignment of policies, funds and actors to tackle the current societal challenges and to implement the SDGs. New forms of cooperation between governments, academia, companies and civil society, as well as new forms of participatory governance, with flexible, open and dynamic approaches that encourage experimentation, learning and adaptability are crucial to advance towards the SDGs (Schot et al., 2020).

This common framework has been presented and discussed in two workshops organised by Panoramед, B-Blue and BLUE BIO MED in April and May 2021. This section presents the main ideas presented and explained in the workshops which are the broader reference for the policy experiments of BLUE BIO MED.

The starting point is the recognition that there is a lack of knowledge about how to transform our systems towards more sustainable and inclusive pathways (Schot & Steinmueller, 2018). Business as usual is not an option. The recovery of the economy needs a change of direction, a new direction that can drive the discovery and the development of new business models and new value chains, but also of new social practices and new forms of collective action for transformative change.

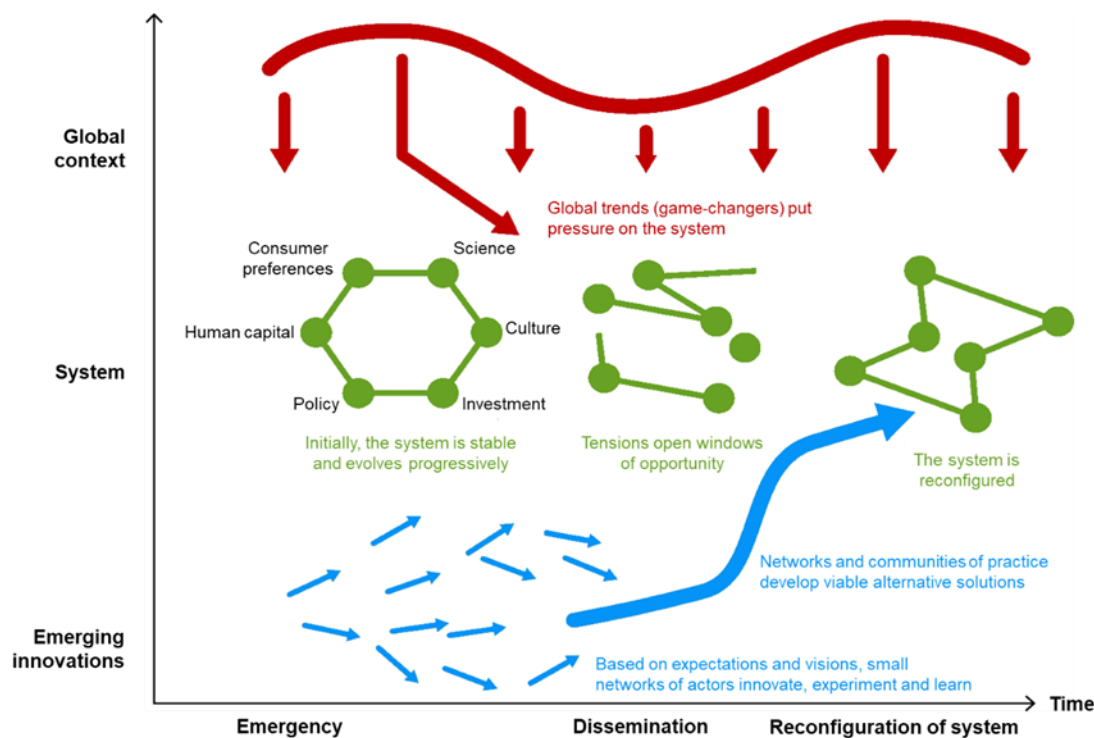
Transformative policies and strategies only can address systemic challenges (SDGs) if they take a systemic approach and if they combine actions on at least three different levels (figure 1):

- The macro level, integrating global trends and challenges such as globalisation, climate change, population aging, societal values, economic crises, pandemics and so on.
- The meso level, addressing institutions, technologies, markets, rules, norms, reforms.
- The micro level: supporting entrepreneurs, innovators and communities so that they can experiment and develop technologies and, particularly, new ways of doing and organising things.

Public policies should support the articulation of innovation networks and communities of practice with capacity to provide viable alternatives to unsustainable current practices. A key

issue is how to align all these innovation actors and networks towards a shared vision of the future (Fernández & Romagosa, 2020).

Figure 1: Transformative policies require systemic approaches



Source: Fernández & Romagosa (2020)

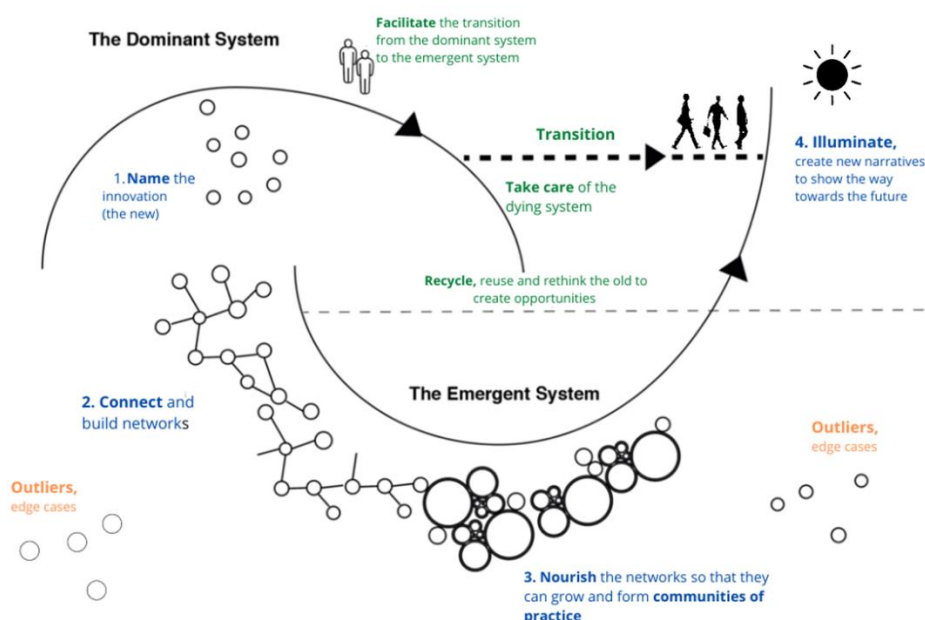
If we want public policies to contribute to the Green Deal objectives and to the SDGs, we need to work with systemic approaches and collective directionality. Most public policies are focused on improving what we have, on optimising allocative efficiency. But addressing current societal challenges requires dynamic efficiency: public policies should aim at the creation of something different and better, helping the new to grow and helping the old to adapt. The generation of new evidences and new narratives on possible alternatives are key to engage more stakeholders in the process of building a better future.

The Berkana 2 loops model (Systems Innovation, n.d.; see figure 2) illustrates how each system has a process of growth and a process of decay and when a system is decaying alternatives start emerging and giving way to the new. The two loops model is not linear, so there is not a guide with steps to manage the transition from the old to the new.

In our systems the “old” concentrates all the expertise and resources most of the investments and most of the workers. The old system maintains the way of life of many people. So it cannot be destroyed. We need to move the resources progressively from the old pattern to the new one. And we need to get the people involved in this process. Therefore,

transformative change is about supporting the old to disintegrate and to decay in a “smooth way” and it is also about supporting the emergence of the new.

Figure 2: Berkana 2 Loops Model



Source: Fernández (2021)

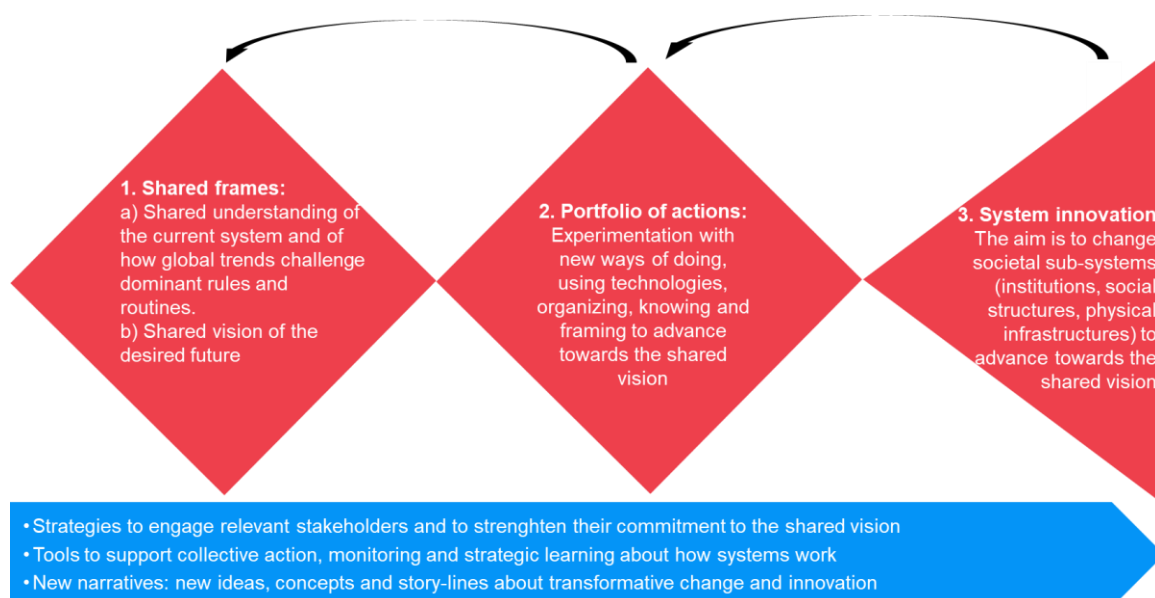
Berkana’s Two Loops is a useful tool to think about all the different roles in transitions:

1. Some organisations stabilize things in the old paradigm keeping broken things running until we have viable alternatives and letting go of that which is no longer needed. The people who are working in the old paradigm are holding a safety net under all of us. Our health, energy, food or educational systems are not the ones we would like, but we’re glad they are there, and they give space for the new.
2. Some organisations create new possibilities. Their work is about imagining, testing, developing and making new alternatives viable. It is about pointing the way to the future. It is only when the innovators start connecting, working in networks and these networks become communities of practices, that they become more visible and able to attract more people, investments and resources. Social movements can play a very important role by campaigning against the shortcomings of the dominant system and creating alternatives. For example, climate change activists challenge existing business models and consumer habits and promote alternatives based on the circular economy.

3. Other organisations facilitate the transitions. They are part of the old system, but they try to redirect resources from the old to the new contributing that the emergent becomes a valid alternative.
4. Some others build bridges which illuminate the new, making the new alternatives visible. The people building bridges are pointing out that new alternatives already exist, and it is time to cross over.

To articulate transformative action to tackle societal challenges a useful tool can be transformative shared agendas (figure 3). This concept helps us to align efforts of multiple stakeholders to address common challenges and to advance towards a shared vision of the future through transformative innovation.

Figure 3: Transformative shared agendas



Source: The authors (GENCAT (PANORAMED))

In shared agendas (Fernández & Romagosa, 2020; Marinelli et al., 2021), the first step is building a common frame for the challenge to be addressed. The different actors promoting the shared agenda need to have a shared and deep understanding of how the current system works and a shared vision for the future: what do we want to achieve together, for which kind of future do we want to work together?

In the second step the relevant question is about how to move from the current situation towards the shared vision of the future. When we are talking about complex challenges, there are not easy solutions, and no one knows what options are the best. To develop alternatives to current dominant unsustainable practices we need to experiment with new ways of doing, with new ways of using technologies, with new ways of organising. We need to understand

what works and what does not work and here technology is an important element but not always the most important one. Experimentation it is not just about exploring new technologies but also about exploring social acceptance, about exploring behavioural change about imaging new ways of organising our society.

In this process is very important not to lose perspective, the final goal is the third step: system innovation. So, it is not about designing the best solutions but about transforming the system towards the “desired future” and for that it is necessary to take account the three system’s levels (macro, meso, micro).

It is necessary to develop strategies and tools to engage the relevant players in the shared agenda and to strengthen their commitment. It is necessary to develop a participatory governance model, and tools to support collective transformative action, to monitor progress and to have a better understanding of how the system works. The creation of the new narratives and new story lines about transformative change is also very important.

Governments and public administrations have an important role to play, providing financial support, providing experimentation spaces, and very important, providing legitimacy. Also adapting regulatory frameworks and institutional practices.

3. Common methodology for the policy experiments

The implementation of the policy experiments consists of a series of multi-actor workshops involving stakeholders from the Euro-Mediterranean basin (from 2 until 5 per challenge) to address a pre-defined systemic challenge related to sustainable development from the MED perspective.

The policy experiments will contribute to different goals, such as:

- Stimulating an open discussion among MED key actors around the value added of a transformative innovation policy approach to address common challenges;
- Collecting inputs for the further development of a governance model to implement transformative innovation policies across the Mediterranean;
- Connecting stakeholders from the quadruple helix and from different MED regions and countries wanting to work together on the challenge with a transformative approach.

For each experiment, the coordinating BLUE BIO MED partner (experiment leader) will define the format, the schedule and the methodology, that will be agreed with the overall partnership. The four experiments will have a common approach and will follow five steps, which are the following:

1. Delimitation of the challenge and definition of a common frame for the policy experiment
2. Identification of the relevant stakeholders to be engaged in the workshops
3. Design of the workshops
4. Definition of a portfolio of actions to address the challenge
5. Design of a monitoring system

3.1. Delimitation of the challenge and definition of a common framework for the policy experiment

Once the challenge has been identified, the first step is to delimit the scope of the challenge and to create a shared frame for the actors engaged in the process.

Complex challenges, as the ones selected for the experiments, are closely interrelated, as they are the result of multiple interactions between consumers, producers, public policy makers, researchers, civil society, the media and other actors and, therefore, there is no optimal way of addressing them. Understanding the nature of these complex challenges is key to define effective responses to them and to decide which actors to engage in the experiments.

The three key elements to delimitate the challenge and define a common framework are:

- A guiding question
- A definition of a vision for the future
- An analysis of the current situation

The question of “How it would be if the challenge was successfully resolved?” can help to define the vision, which should define the desired final situation. The vision should be imaginative, ambitious and inspiring. The purpose of this vision is not to establish objectives, but to generate a common frame to inspire and align multi-actor efforts to co-develop new actions to respond more effectively to the systemic challenge going ahead of the status quo, breaking free from institutional thinking and current barriers.

The guiding question must be strongly related with the definition of the desired future actors want to work together for.

The question should not focus on what needs to be changed. For example, the question of “how do we improve the problem of plastics at sea?”, will probably lead to an improvement of the actions that are already in place. It is necessary to think about more open questions that open new possibilities for potential actions and approaches.

The analysis of the current situation requires making an initial study of the problems associated with the challenge and of the actors and factors most closely related to it. The analysis should also deal with the following questions guiding the investigation on the

transition from current situation to the vision of the future where the challenge is successfully tackled:

- Why (despite our efforts) have we been unable to successfully tackle the challenge?
- What are the forces that cause the current challenge?
- What are the consequences of not addressing the challenge? (economic, social, environmental costs)
- What groups capture the value of current practices? What is this value?
- What value is lost, destroyed or wasted in current practices? What are the consequences of this? What are the groups most affected by this loss of value?
- What opportunities could be generated if the challenge was addressed and the associated problems resolved? Who would benefit from this new value? Whose interests would be harmed?

To delimitate the challenge, the proposed approach is that, first, the experiment leader does some deskwork in collaboration with experts and elaborates the starting paper for the policy experiment (see section 5).

Second, based on this document, the partner leading the experiment organises a first workshop with key MED stakeholders to discuss, improve and validate the challenge analysis of the starting paper. The outcome of the workshop will be a shared understanding with the stakeholders of the challenge and a common frame for action.

This shared understanding and common frame for action are the basis to discuss in a second workshop the possibility to identify a portfolio of priority actions to address the challenge in the MED. This portfolio of actions could be the basis for the further articulation of a multi-actor MED coalition of actors to address the challenge through a shared agenda.

In-between the first and second workshops, experiment leaders should start carrying out desk research on proposals of actions -the second workshop is expected to take place one to two months after the first workshop-. In this period of time, stakeholders with common interests, and a keen interest in tackling the challenge can start working together around proposals of actions offline. In that way, they can continue defining the proposals of actions during the second workshop.

Optionally, experiment leaders could also arrange a local workshop during the summer months with local stakeholders, if they feel these workshops could contribute to the goals of the experiment.

3.2. Identification of the relevant stakeholders to be engaged in the experiments

The analysis described in step one (3.1.) is the basis to identify the group of relevant stakeholders to engage in the experiments.

Each experiment should count on the support of a core group of experts, contributing to the analysis, to the identification of categories and features of stakeholders to be involved and to the organisation of the workshops.

The group of stakeholders should include representatives of the quadruple helix that are directly related to the challenge and have capacity of influence. The key MED stakeholders must be engaged in the experiments, particularly those engaged in MED initiatives related to the specific challenges.

Five criteria will guide the partnership to identify and select the participants to invite to the multi-actor workshops:

1. Competences and expertise on the specific area of knowledge of the experiment and commitment to address the challenge cooperating at the Mediterranean scale.
2. Availability and motivation to participate actively in the multi-actor workshops. In particular, the same person from each organisation should participate in all workshops of the individual experiment (continuity).
3. Representativeness of the quadruple helix spectrum including government (public administration at different levels), research and higher education sector, business and civil society. Bridging organisations (i.e. business support organisations, innovation agencies, clusters, etc.) are envisaged as well.
4. Capacity to capitalise current or recent MED initiatives and projects.
5. Geographical representativeness and coverage of countries from both shores of the Mediterranean.

The number of stakeholders to be involved will depend on the format of each policy experiments, however a number of 50 could be considered as a rough indication of participation. Diversified degree of involvement can be also considered (i.e. a larger group to be consulted offline and a narrower group to take part in the interactive workshops).

The list of workshop participants will be the result of the proposals from the experiment leader, BLUE BIO MED Partners and the wider Interreg MED community.

The organisations in the Blue Bio Med wider community (starting from the members of the Sounding Board and Interreg MED Programme Architecture) should be mobilised to propose additional stakeholders to ensure effective connection of BBM activities with the transnational initiatives and the capitalizations of other action supported by Interreg MED in the fields relevant for the challenge. The mobilisation of the wider community will be a

coordinated effort of the experiment leader, the communication manager and the lead partner.

A broader list of stakeholders –including the actors participating in the workshops as well other actors that do not fulfil the criteria to participate in the workshops– could be, in itself, an interesting output since it can be considered a catalogue of relevant actors for each challenge at the time the project is being developed. Therefore, the previous identification can be as exhaustive as each partner wants.

3.3. Design of the workshops

Policy experiments will have two workshops. Additional workshops can be included depending on experiment needs.

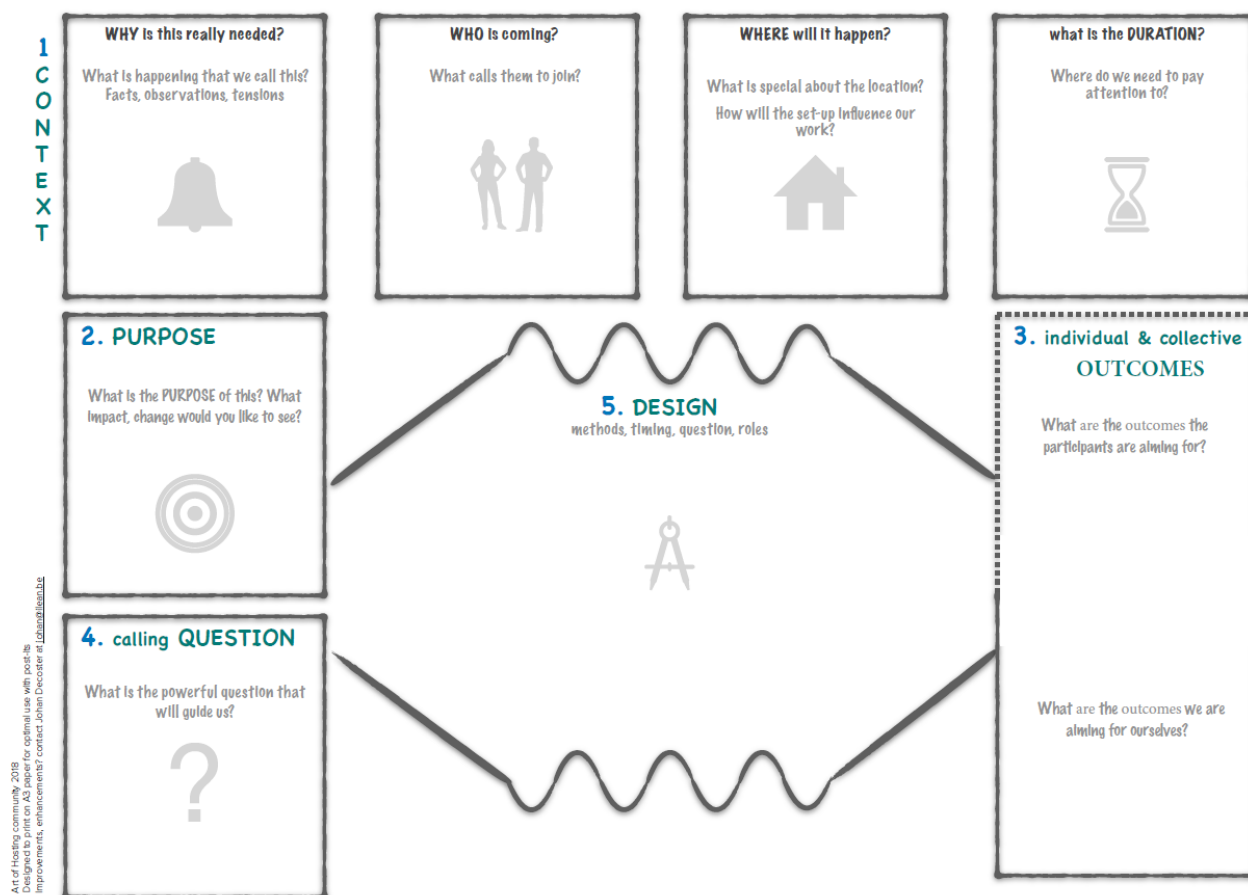
The first workshop will focus on the definition of a **shared understanding** of the challenge (section 3.1). The second workshop will focus on defining a **portfolio of actions** (section 3.4.).

The design and organisation of the workshops will be under the responsibility of each experiment leader that will ensure the availability of the necessary human and logistic resources. To design the workshops is important to take into account all the elements that are included in the template (figure 4), which have been adapted from the Art of Hosting Community. The relevant information will be included in the experiment starting paper.

In-between the first and second workshops, experiment leaders should start carrying out desk research on proposals of actions -the second workshop is expected to take place one to two months after the first workshop-. In this period of time, stakeholders with common interests, and a keen interest on tackling the challenge can start working together around proposals of actions offline. In that way, they can continue defining the proposals of actions during the second workshop.

In order to energise the desk research and the work that stakeholders could carry out in-between the first and second workshops, experiment leaders can provide stakeholders with a document outlining the main outcomes of the first workshop, and providing broad guidelines for action.

Figure 4: Aspects of workshop design



Source: Art of Hosting community

3.4. Definition of a portfolio of actions

The shared understanding of the challenge and about what the stakeholders want to achieve together (section 3.1.) is the basis to define a portfolio of possible actions to address the challenge in the MED.

In complex challenges, there are not easy solutions, and no one knows what options are the best. To develop alternatives to current unsustainable practices we need to experiment with new ways of doing, with new ways of using technologies, with new ways of organising. The 4 experiments focus precisely on that, on exploring and experimenting new approaches and pathways to address the MED complex challenges. Experimentation is not just about exploring new technologies but also about exploring social acceptance, about exploring behavioural change about imagining new ways of organising our society.

The aim of this step is to define a portfolio of actions that stakeholders participating in the experiment have the capacity to promote. The portfolio of actions is about what could be

done, either by the stakeholders themselves or by other actors to change the current situation and to advance towards the desired shared vision of the future.

The WP4 workshops would be the first steps to build multi-actor coalitions to address MED challenges that could be further shaped under the umbrella of the Blue bioeconomy Innovation Alliance (WP6) or taking advantage of other financial opportunities.

3.5. Design of a monitoring system

The monitoring approach for the policy experiments will be defined in specific workshops of BLUE BIO MED PARTNERS in collaboration with Panoramed WP10.

4. Selection and definition of the challenges

The four policy experiments focus on relevant complex challenges linked to SDGs selected as case studies to test and develop a more general approach. A challenge can be both related to an emerging problem or an untapped opportunity.

The criteria for selecting the challenges have been the following:

- They are relevant for the MED, at regional, national and transnational levels. This is very relevant since the four experiments aim at connecting regional and MED innovation priorities (continuing the work initiated in WP3).
- They are related to the SDGs
- They are complex and require the collaboration of the quadruple helix stakeholders

The description of the challenge will be proposed by each experiment leader in the starting paper, covering the three above criteria. The themes identified are described below.

4.1. Circularity in sustainable aquaculture

The policy experiment on circularity in sustainable aquaculture is led by ART-ER. This policy experiment intends to promote innovative solutions to tackle the challenge of promoting circularity in aquaculture. In particular, innovations will be pursued with an eye on supporting the development of mollusc-based integrated multi-trophic aquaculture, overcoming the bottlenecks –e.g. regulatory or technological– that prevent the development of this type of aquaculture. Mollusc-based integrated multi-trophic aquaculture can draw on the by-products of based aquaculture as a source of feeder for mollusc production, increasing the sustainability of aquaculture farming as well as its productivity. It is related to multiple SDGs, for instance SDG1 (elimination of poverty), SDG2 (zero hunger) or SDG8 (decent work and economic growth).

4.2. Recovery and recycling of macro-plastics waste

The policy experiment on recovery and recycling of macro-plastics waste is led by CREDA. More than 359 million tonnes of plastic were produced in 2018, and it is estimated that 14.5 of it entered the ocean (Wayman & Niemann, 2021). In the Mediterranean yearly intake estimates range from 230,000 tonnes (Boucher & Billard, 2020) to 570,000 tonnes (WWF, 2019), all in a sea that holds 1% of the world's waters (WWF, 2018). These characteristics make of the Mediterranean a perfect model to increase our understanding of the problem of marine plastic pollution (Boucher & Billard, 2020). Considering the coastal countries surrounding it, the Mediterranean is also a perfect place to develop shared actions through transnational cooperation. The policy experiment led by CREDA in Blue Bio Med intends to stimulate the development of innovation initiatives tackling a part of this challenge, macro-plastic pollution in the Mediterranean. As a sustainable development and social change challenge, it has direct links with SDGs such as SDG14 (Life below water), SDG8 (Decent work and economic growth), SDG9 (Industry, innovation and infrastructure) or SDG12 (Responsible consumption). SDG 17 is a common goal of the whole BLUE BIO MED project.

4.3. Reducing and eradicating the impact of invasive alien species

The policy experiment of reducing and eradicating the impact of invasive alien species is led IFAPA. Invasive alien species (IAS) represents a major social and environmental threat in Europe. IAS act as a driving force that highly distorts biodiversity and ecosystems across Europe. It is estimated that in Europe exist over 12,000 alien species, of which around 10–15% are considered as invasive. These IAS comprise from mammals to microorganisms in every type of habitat becoming a major problem for all EU Member States to a greater or lesser extent (Carboneras et al., 2018; Sundseth, 2017). IAS are a major challenge for marine and coastal environments and blue economy. BluebioMed can contribute to evaluate how the enhancement of public awareness and optimization of management through the IAS valorisation could contribute to control their expansion and mitigate their negative effects on ecosystems. This experiment tackles the challenge of how policies and innovation can be aligned to achieve a major environmental and social impact through social awareness, valorisation and control. The challenge of IAS is related to the SDG14 (Life below water).

4.4. Digitalisation of the blue bioeconomy

The policy experiment of digitalisation of the blue bio economy is led by NCSR Demokritos. Despite the potential of digital technologies –e.g. remote sensing, artificial intelligence, machine Learning, geoinformatics, automation– to promote sustainable innovation, blue bio economy industrial stakeholders have hitherto proved reluctant when it comes to their adoption. This policy experiment intends thus to promote the adoption of digital technologies across blue bio economy actors; helping stakeholders identify common grounds for collaboration and, potentially, new value chains. Additionally, it would be of great interest to identify potential correlations under the axis of the adoption of digital technologies from Blue-Bio-Economy between Mediterranean Policy, EU policy and national policy. Beyond their

potential socio-economic benefits, digital technologies can contribute to protect endangered marine life, providing a better general understanding of the state of marine life. Besides SDGs 14 and 17, the challenge is related to SDG9 (industry, innovation and infrastructure).

5. Activity deliverables

Based on the methodology discussed above, experiment leaders will coordinate the development of policy experiments for their respective challenges. These experiments will be put in practice through a series of multi-stakeholder workshops. As part of this task, each experiment leader is responsible to deliver two documents: **the challenge starting paper** and the **policy experiment interim report** (deliverable 4.2.1).

The contents of the interim reports will be defined in the next months. Whenever possible, in the interim reports should include reflections on mechanisms to measure the expected outputs, and impacts of the actions. Some of the outputs from the workshops might be intangible proposals of actions (.e.g. need for a stronger cooperation and joint work culture). Experiment leaders should be ready to detect them.

The starting papers explaining the policy experiments will be circulated among project partners and the wider Interreg MED community, so that they can make contributions.

The definition of the policy experiment is key to identify the stakeholders to be engaged. The paper will be a key document for preparing stakeholders involved in the workshops.

The starting paper should include the following sections:

- Delimitation of the challenge and definition of the common framework, including the purpose of the policy experiment (section 3.1.)
- Analysis of the linkages with other Mediterranean initiatives and identification of synergies and complementarities
- Description of the multi-stakeholder workshops and identification of relevant MED stakeholders (sections 3.2. - 3.4.).
- Description of the activities and tasks related to the experiment. Calendar and expected contribution of partners and stakeholders.

6. Annex: Explanation of the sections to be included in the starting paper

1. Delimitation of the challenge and definition of the common framework, including the purpose of the policy experiment (see section 3.1 starting methodology paper)

Delimitate the challenge through the following elements:

- A guiding question
- A definition of a vision for the future
- An analysis of the current situation

In order to build this framework, the following steps are expected from each experiment leader:

1. Desk research in collaboration with experts and elaboration of the starting paper
2. Interviews with experts and preliminary consultation held by the experiment leaders

2. Analysis of the linkages with other Mediterranean initiatives and identification of synergies and complementarities

Exploring potential synergies between the challenge, and other Mediterranean initiatives within the Interreg MED enlarged community, related to the topic. List and describe most relevant initiatives and the expected involvement/cooperation with them (for example in terms of capitalization of work already done, collection of materials and inputs, identification of stakeholders, dissemination of experiments results, etc.)

3. Description of the multi-stakeholder workshops and identification of relevant MED stakeholders (see section 3.2, 3.4 starting methodology paper)

Describe the format of the multi-stakeholder workshops (i.e. in presence or online, number of workshops, practical organisation, number of expected participants, facilitation methodologies, etc.) and the profile of relevant MED quadruple helix stakeholders that will participate in the workshops. The key MED stakeholders must be engaged in the experiments, particularly those engaged in MED initiatives related to the specific challenges. Stakeholders will be identified and selected based on the analysis of the challenge (see section 3.1 starting methodology paper), and proposals from BLUE BIO MED partners and the wider Interreg MED community. The starting paper will exemplify the translation of the five criteria listed in the general methodology in the context of each specific challenge to guide the partnership to identify and select the participants to invite to the multi-actor workshops:

1. Competences and expertise on the specific area of knowledge of the experiment and commitment to address the challenge cooperating at the Mediterranean scale.
2. Availability and motivation to participate actively in the multi-actor workshops. In particular, the same person from each organisation should participate in all workshops.
3. Representativeness of the quadruple helix spectrum including government (public administration at different levels), research and higher education sector, business and civil society. Bridging organisations (i.e. business support organisations, innovation agencies, clusters, etc.) are envisaged as well.
4. Capacity to capitalise current or recent MED initiatives and projects.
5. Geographical representativeness and coverage of countries from both shores of the Mediterranean.

4. Description of the activities and tasks related to the experiment. Calendar and expected contribution of partners and stakeholders.

Detailed planning and roadmap for the organisation and implementation of the workshops and the elaboration of the policy experiments deliverable. In particular this section highlights who does what and when, and specify the expected contribution expected by Partners and other actors at each stage of the process (i.e. contribution to the challenge description by deadline x, internal meeting scheduled by deadline y, list of proposed participants by deadline z, etc.). The dates can be adjusted depending on experiment needs, however the **1st and 2nd workshops** are expected to be carried out between September and November.

1 st week June- 3 rd week June	EPs	Searching for information on the challenge, and stakeholders related to the challenge from interviews, the academic literature and reports Completing a 1st version of the starting paper
	EPs	Filling an excel database (provide by the WPC), that should be filled with a list of stakeholders related to the challenge, identified by the EPs
	WPC	A joint call will be sent to project partners (without experiment leader responsibilities) and sounding board members (.e.g. UfM, WestMed) to fill the excel stakeholder database.
2 nd week June- 1 st week July	EPs	Define calendar for the workshops and inform the WPC

1st week July- 2nd week Sept (according to local vacation times)	EPs	Updating the starting paper , based on feedback from workshop participants
3 rd -4 th week Sept	EPS	Hosting the 1st workshop
3 rd -4 th week Oct	EPs	Hosting the 2nd workshop
4 th week Oct- 1 st week Nov	WPC+EPS	Writing a draft of preliminary interim report on the outcomes of the policy experiment, concerning the challenge and the application of the methodology
3 rd week Nov- 1 st week Dec	WPC+EPS	Completing interim reports

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