



FutuResilience

Building sustainable futures together

Grant Agreement number: 101094455

Project acronym: FUTURESILIENCE

Project title: Creating future societal resilience through innovative, science-based co-creation labs

Type of action: Coordination and Support Action (CSA)

Deliverable 2.1 Guidelines for Pilot Cases

Deliverable leader	Fraunhofer ISI
Authors	Philine Warnke, Benjamin Lehn (Fraunhofer ISI), Martin Kruse (CIFS), Tea Danilov, Uku Varblane (Foresight Centre)
Due date	30/09/2023
Actual submission date	03/11/2023
Dissemination Level	PUBLIC

Abstract: This document serves as a guideline for the FUTURESILIENCE labs, supporting them in conducting a participatory foresight process to test possible policy solutions for their specific challenge and context. After presenting overarching guidelines on the timing and roles for the experimentation phase, the document provides a detailed step by step guide through the three main phases of each lab: diagnosing and framing the problem, scenario development and policy testing. The Appendix comprises templates supporting the process including the participant information sheet which is to be used in all participatory activities.



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101094455.

Document Revision History

Date	Version	Author/Editor/Contributor	Summary of main changes / Status
06/09/2023	0.1	Philine Warnke	Structure of the report
30/09/2023	0.2	Philine Warnke, Tea Danilov, Martin Kruse, Benjamin Lehn, Uku Varblane	Contribution to various sections
15/10/2023	0.3	Philine Warnke and Benjamin Lehn	Second draft
21/10/2023	0.4	External Independent Ethics Board	Review
24/10/2023	0.5	Matias Barberis	Quality review
28/10/2023	0.6	Philine Warnke	Final draft
02/11/2023	1	Christine Neve	Editing and submission

Disclaimer

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

Copyright

This document may not be copied, reproduced, or modified in whole or in part for any purpose without written permission from the FUTURESILIENCE Consortium. In addition, an acknowledgement of the authors of the document and all applicable portions of the copyright notice must be clearly referenced.

All rights reserved.

This document may change without notice.



Contents

1	Introduction	7
2	Overarching aspects	8
2.1	Set-Up and Timeline	8
2.2	Roles	9
2.3	Things to keep in mind	9
3	The process in detail	10
3.1	Phase 1 Diagnose and framing	10
3.1.1	Timing	10
3.1.2	Roles	11
3.1.3	Step 1 Problem Framing	12
3.1.4	Step 2 Stakeholder analysis	13
3.2	Phase 2 Scenario Development	18
3.2.1	Timing	18
3.2.2	Roles	19
3.2.3	Step 1 System Analysis	19
3.2.4	Step 2 Factor Selection & Projection	25
3.2.5	Step 3 Scenario Building	29
3.2.6	Things to keep in mind	31
3.3	Phase 3 Policy Testing	32
3.3.1	Timing	32
3.3.2	Roles	33
3.3.3	Policy Identification and wind-tunnelling	33
3.3.4	Combined policy identification and windtunneling workshop	33
3.3.5	Things to keep in mind	39
4	References & Further reading	40
	Stakeholder analysis	40
	Weak Signals/Biases	41
5	Appendix	43
5.1	Informed Consent Form	43
5.2	MIRO design	46



List of tables

Table 1 Roles of Diagnose and Framing phase	11
Table 2 Template for initial capturing of Stakeholders	15
Table 3 Roles of the Scenario Development phase	19
Table 4 Template for factor assessment	21
Table 5 Example Agenda for Scenario Workshop 1	25
Table 6 Example Agenda for Scenario Workshop 2	30
Table 7 Roles of the Policy Testing phase	33
Table 8 Example Agenda for Policy Testing workshop	36
Table 9 Thematic oriented tools to build resilience (examples from mapping policy documents via Overton.io)	48



List of figures

Figure 1 Indicative Pilot Timeline	8
Figure 2 Brainstorming template for problem framing	13
Figure 3 Template for Stakeholder Categorisation (simplified) (Adapted from Reed et al 2009).....	16
Figure 4 Template for the stakeholder categorisation (sophisticated) (Adapted from Mitchel et al 1997)	17
Figure 5 Impact Uncertainty Matrix	21
Figure 6 Template for tetralemma exercise.....	28
Figure 7 Policy Sheet	34
Figure 8 Policy Card.....	35
Figure 9 New Policy Card	35
Figure 10 Windtunneling matrix.....	36
Figure 11 Threats and weakness identification	37
Figure 12 Policy identification	37
Figure 13 Windtunneling Rotation	38
Figure 14 Plenary Discussion	39
Figure 15 Cover image toolbox for website	46
Figure 16 Process Tools – overall process (based on MIRO)	47
Figure 17 Example of specific tool for the scenario phase (based on MIRO)	47



Executive summary

The FUTURESILIENCE project aims to strengthen European economic and social resilience through an enhanced ability to adapt and quickly respond to future crises. To this end, the project will facilitate the fast and effective use of policy relevant research and innovation (R&I) findings through 10 pilot cases called ‘FUTURESILIENCE labs’. During the experimentation, multiple stakeholders will discuss and test evidence-based strategies tailored to their specific context and matching their local needs, in a co-creation environment and applying Foresight and participative methodologies.

This document serves as a guideline for the FUTURESILIENCE labs supporting them in conducting the participatory foresight process to test possible policy solutions for their specific challenge and context. After providing overarching guidelines on the timing and roles in section 2 the document provides a detailed step by step guide through the three main phases of each lab: diagnosing and framing the problem (section 3.1), scenario development (section 3.2) and policy testing (section 3.3). In the Appendix we provide the templates supporting the process including the participant information sheet which is to be used in all participatory activities. This guideline is accompanied by the [FutuResilience Toolbox Miro Board](#) that also provides the most important templates for online use.



1 Introduction

This document serves as a guideline for the ten pilot FUTURESILIENCE labs supporting them in conducting the participatory foresight process to test possible policy solutions for their specific challenge and context. The common guideline ensures consistent methodology across the context specific cases and allows the consortium to draw overarching conclusions that will help us to further improve the process for others. **Still each pilot will be flexible to tailor the approach to their specific needs.**

The guideline explains all steps in detail including timing, resources, roles and provides tips and tricks as well as practical supporting material. Each section ends with a set of questions that serve to capture the learnings. While this guideline serves as a workbook and common reference, pilot actors are highly welcome to approach the authors and supporting project partners with any question or need that may arise during the experimentation phase.

This guideline goes hand in hand with the [FutuResilience Toolbox Miro Board](#) where all templates and links to further supporting material and sources can be found.

The main content of the MIRO is the explanation of the foresight process within one large frame in dark purple. On top is a flow diagram of the overall process. Below you will find nine individual frames with explanations and templates for the individual process steps. Clicking on the respective step in the flow diagram will directly lead to the associated frame. In addition, the board comprises a frame with links to additional foresight and co-creation tools and another one with links to a wide variety of tools supporting community resilience.

In this document, we provide the links to the respective material in the common Miro Board for all pilots. We recommend that each pilot copies this MIRO board and creates its own working version. You may also choose to print out the material provided in the Annex and work entirely offline.

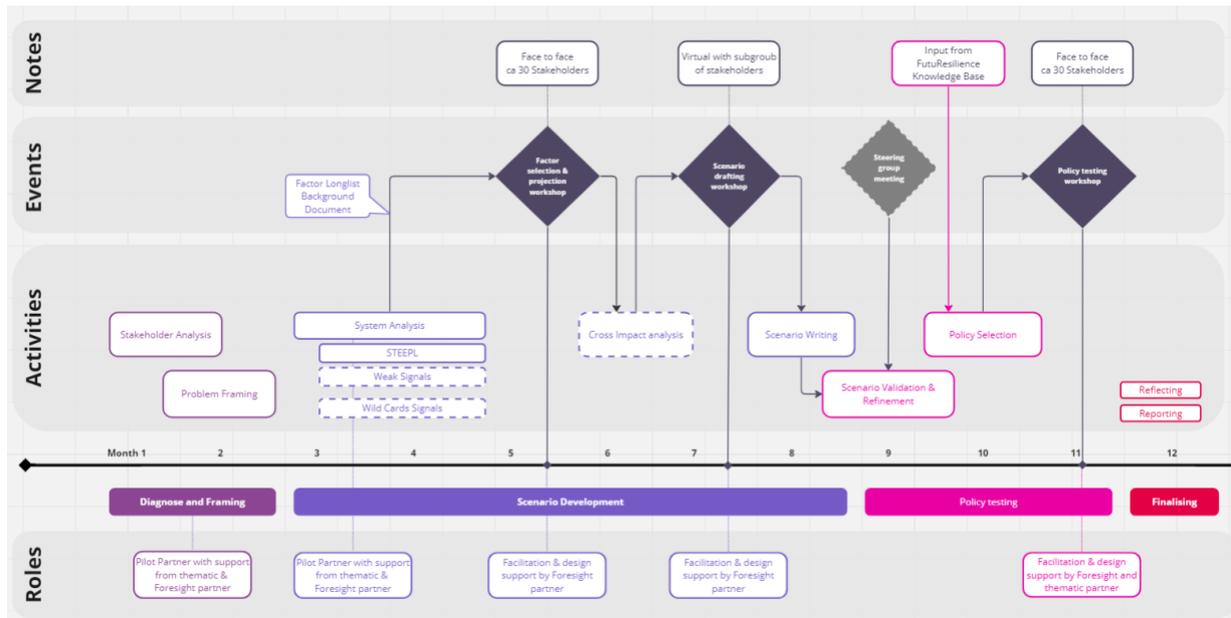
Important: While we describe the co-creation process as a sequence of steps, in reality it will be iterative going back and forth between the steps. In particular, new stakeholders who may be identified in later phases will bring in different perspectives to the initial problem framing.



2 Overarching aspects

2.1 Set-Up and Timeline

Figure 1 Indicative Pilot Timeline



As indicated in Figure 1, the Lab process is running roughly one year and evolves in three core phases:

1. **Diagnose and Frame:** Describing the problem and identifying the stakeholders (Week 1-10)
2. **Scenario development:** Understanding how frameworks conditions may evolve (Week 11-30)
3. **Policy Testing:** Selecting policy options and testing their robustness against the scenarios (Week 31-45)

These phases are roughly scheduled as shown in Figure 1, but **each pilot is of course free to adapt the timeline to their needs within the overall duration of one year**. Each pilot's core team will generate its own timeline at the very beginning of the process based on the template provided by the project. The process involves at least two face-to-face workshops each with around 30 stakeholders, one virtual workshop with a smaller core team and thorough analysis e.g. through interviews or additional workshops in-between the stakeholder interactions.



2.2 Roles

Each pilot will be guided by a group of three consortium partners:

- One local community lead
- One local research lead who will provide additional thematic expertise
- One partner specialised in foresight who will support the Foresight methodology.

The **local research lead** partner leads the process in close interaction with the **local community partner**. The **Foresight support partner** advises them on all parts of the process and in particular helps to set up and facilitate the three Foresight workshops.

2.3 Things to keep in mind

- Keep the stakeholders engaged, always reflect what is in it for them.
- Maintain open communication - foster an environment where questions, concerns, and ideas can be freely shared
- Regularly collect feedback from all participants, ensuring that the process remains dynamic, relevant, and aligned with the objectives and concerns of stakeholders.
- Take notes throughout the process to capture and preserve relevant ideas and insights.
- Whenever involving participants make sure to respect their right on data privacy and autonomy as laid down in the General Data Protection Regulation (GDPR). The informed consent form is provided in the Annex and should be signed by all participants involved in the lab. In all workshops introduce Chatham House Rules and emphasise participants obligation not to share personal data of other participants, if needed secure compliance through a Memorandum of Understanding.
- This is a mutual learning journey; nothing will go exactly according to the plan
- Remain flexible to adjust methodologies based on real-time findings or unforeseen challenges
- Last, but not least: **Foresight is not about predicting the future but about dealing with its uncertainty.**



3 The process in detail

3.1 Phase 1 Diagnose and framing

Each of the FUTURESILIENCE pilots is facing particular challenges linked to one or more crises situations. The foresight process will help to strengthen the resilience of the respective community in the face of these crises. As a first step it is important to achieve a shared understanding of the problem at stake and including the main stakeholders.

This problem framing will be useful for the later steps – Factor identification, Scenario Building – and entails following a systemized approach. On the one hand, considering a wide spectrum of facets, on the other hand, filtering out the main essence of the problem. This sub-chapter is dedicated to guiding the way to that.

3.1.1 Timing

The “Diagnose and Frame” phase is in practice intertwined with the “Stakeholder analysis”, as stakeholders need to be involved in the consensus-building around the problem statement. The joint process is also **iterative**, with several possible revisions of the problem statement, as new angles and facets are added.

The proposed sequence and timing of the steps:

1. Drafting the problem description (Duration: 3 weeks)

- **Week 1:** The leading research partner initiates the process by developing an initial draft of the problem description.
- **Week 2:** This draft is then shared with the local **community** partner for initial feedback and discussion.
- **Week 3:** Based on the feedback received, the leading research partner further refines the description in collaboration with the local community partner, ensuring that the problem is accurately depicted and contextually relevant.

2. Stakeholder identification and analysis (Duration: 3 weeks)

- **Week 1:** A comprehensive list of all potential stakeholders is compiled. These are individuals, groups, or organizations that have a direct or indirect interest or influence over the problem in question.
- **Week 2-3:** A stakeholder analysis is conducted to understand the relevance, influence, and interests of each stakeholder regarding the problem.

3. Refinement of the problem description (Duration: 1 week)

The initial problem description is revisited in light of the stakeholder analysis findings. Insights are integrated regarding how relationships between key stakeholders may be influencing or exacerbating the problem.



4. Problem framing exercise with stakeholders (Duration: 3 weeks)

- Organizing a series of workshops or meetings, inviting the identified stakeholders to discuss the problem. Presenting the revised problem description to gather their input and perspectives.
- Identifying areas of consensus and disagreement. The ultimate goal is to achieve a shared and consensual definition of the problem, ensuring that it's both comprehensive and actionable.

TOTAL of 10 weeks for problem framing & stakeholder analysis.

3.1.2 Roles

It is reasonable to establish a clear division of work, to fasten the process and ensure smooth operation. While partners in each pilot project retain the flexibility to determine their own agreements, the suggested role distribution of roles is as follows:

Table 1 Roles of Diagnose and Framing phase

Partner	Role
Local research lead	<ul style="list-style-type: none"> • Prepares first version of the problem description, following the methodological guidelines below. • Asks for feedback to the first version from local community partner, and based on the feedback, revises the draft. Feedback can be provided in written form or in a meeting, given that its outcome is being thoroughly documented. • Assists local community partner in identification of stakeholders. • Leads the conduct of stakeholder analysis, ideally through a collaborative brainstorming session with the local community partner (see guidance below). • Validates the problem framing with 3-5 most relevant stakeholders, preferably applying the same methodology used in crafting the initial version, and revises the draft based on the feedback received.
Local community partner	<ul style="list-style-type: none"> • Gives feedback to the first draft of the problem description, prepared by the local research lead. • Leads the process of stakeholder identification (see guidance below), participates in the stakeholder analysis led by local research lead. • Attends the validation of problem framing with stakeholders.
Foresight Support	<ul style="list-style-type: none"> • Gives written feedback to the first draft of the problem description, prepared by the local research lead. • Provides additional exercises or tools for conducting problem framing, if needed. • Gives written feedback to the outcome of stakeholder analysis. • Gives written feedback to the final version of the problem description. • Explains and tutors the steps and methods, if needed.



3.1.3 Step 1 Problem Framing

The methodology for problem framing is based on a well-proven **STEEPL framework**, where the aspects of the problem are revealed in a variety of domains: social, technological, environmental, economic, political, and legal. Each pilot is free to consider the relevance of each of STEEPL domains and focus on the most relevant ones. Attention should be paid to identifying the biggest gaps in the resources for tackling the problem vis-à-vis the appropriate level of resources. Finally, the dynamics of key indicators over time is tracked to assess the speed and magnitude of changes most relevant for the problem.

The (research) questions to be answered are the following:

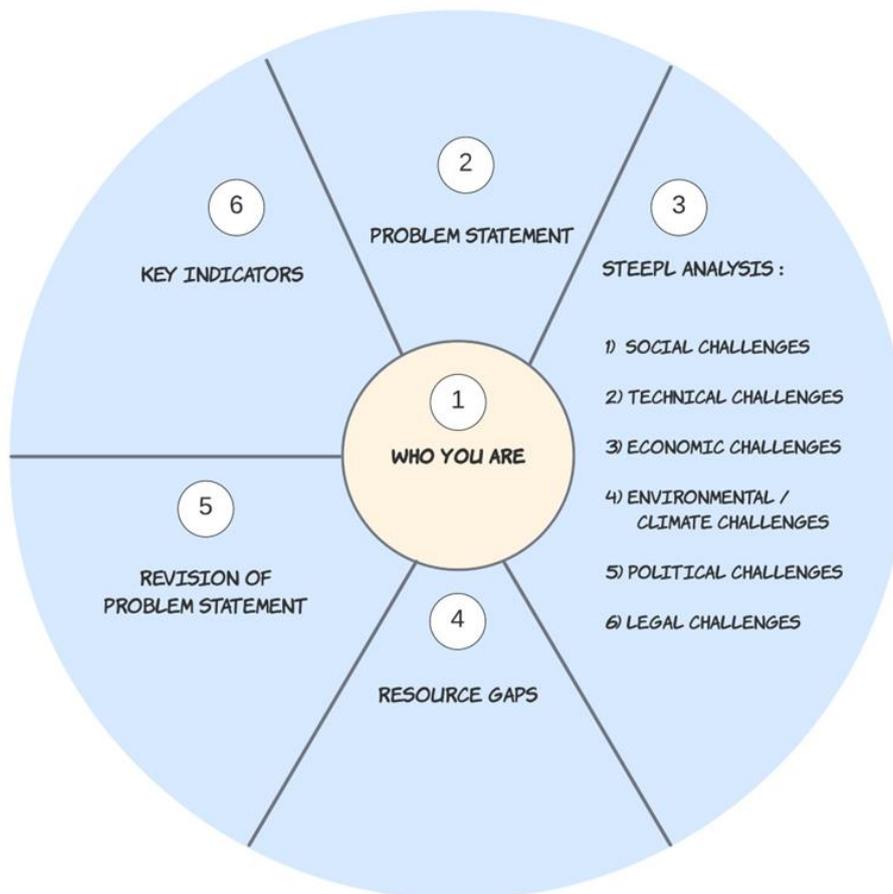
- Self-definition. Who are you as a team? What factors influence your point of view? The same problem will be perceived differently, depending on who is looking at it.
- Problem statement. Try to describe the main issue in one short sentence or paragraph. Be concise and leave specifics for later fields. It is necessary to avoid getting overly fixated on existing problems; next to the current issues, keep the future in mind and consider the **emerging challenges**. It could be helpful to categorize the challenges as intensifying (problems that are becoming more severe in the future), easing (issues that are becoming less significant or are resolving), focus shifts (challenges where the main concern or the core of the problem is changing) and new challenges (be prepared for entirely new and unexpected obstacles or issues).
- Application of STEEPL analysis. Identifying and contextualizing problems within the broader external environment:
 - Social challenges. How does society and its behaviour impact the problem? Can or should certain groups play a specific role? Which ones?
 - Technical challenges. What are the technical challenges you engage with? Where are technological bottlenecks (including processes) to be overcome?
 - Economic challenges. How do the economic factors relate to the problem? What are the relevant economic factors and their outlook?
 - Environmental / Climate challenges. How does the problem interact with challenges related to the environment and climate change?
 - Political challenges. How does the political environment relate to the problem, including the effects of government policies, stability of the political environment and so forth?
 - Legal challenges: This refers to the effects of laws and regulations.
- The gaps. Identify the areas where your issue is lacking resources the most. Where are gaps in the current approach?
- Revision of the problem statement. After answering the questions above, go back to the initial problem statement and consider how the various angles have changed your understanding of it. Does the description contain more than necessary, might it have to include more information? What role do the different facets play?
- Key indicators and their dynamics in the last 5-10 years. Come up with approximately five key indicators that best represent the evolution of your problem. Key indicators can span a range of domains, tailored to the main challenge of the specific case (if the central issue is related



to the environment and climate change, the indicators could for instance measure the number of wildfires, number of weather-related power outages, number of climate migrants etc.). Analyse the quantitative trend of key indicators over the past 5-10 years to better understand the issue and establish a measurable benchmark. These indicators could be later used as a reference point for comparing scenarios.

- Desired feasible futures (normative visioning). As an optional extra, each case study can engage in normative visioning to envision a preferred future. Imagine an ideal future state without the limitations of the present. Consider how success would look like for your case. The outcome could be a brief description of the preferred future.

Figure 2 Brainstorming template for problem framing



3.1.4 Step 2 Stakeholder analysis

Stakeholders are individuals or groups that have a role **in the problem**, meaning they are in some way **affected by or have an influence on** the way it evolves. Often stakeholders will be both influencing and affected by the problem. For instance, in the case of droughts farmers are highly affected but they can also influence the way the problem develops (e.g., by using more or less water / planting crops that better keep the water).



Although this is a vital first step in any participatory exercise, stakeholders are often identified and selected on an *ad hoc* basis. This has the potential to marginalise important groups, bias results and jeopardise long-term viability and support for the process.

Stakeholder analysis consists of methods for: i) identifying stakeholders; ii) differentiating between and categorising stakeholders; and iii) investigating relationships between stakeholders (Reed et al 2009, Clausen et al 2020).

Engaging with stakeholders offers a multitude of advantages:

- The better stakeholders know each other and their perspectives, the better they can deal with a crisis effectively.
- With access to competencies and resources distributed better, the system can become more resilient.
- Enriching the knowledge and perspectives around the table increases chances of high-quality outcomes and a successful process.
- Reduces the number and the severity of conflicts between different involved or affected parts.
- Diminishes the chances for absent stakeholders to spoil the process.
- Builds a sense of ownership and belonging to the process, to the objectives, as well as the solutions proposed.
- Outcomes are more accepted and tend to be more sustainable.
- Due to the “multiplier” effect of the network, outcomes can more easily trigger system changes.

All this enhances the capacity of a city or region to react to unexpected developments in a concerted manner, thus contributing to resilience.

How to work with stakeholders?

Step 1: Stakeholder identification

Stakeholder identification is crucial because it ensures informed decision-making, effective risk management, and successful project outcomes by recognizing and addressing the needs, concerns, and contributions of all relevant parties.

The **two key questions** for brainstorming stakeholders are the following:

- Who can influence our problem and its solution?
- Who is affected if our problem is (not) resolved?

The starting point for brainstorming the potential stakeholders can be the categories of problem identification – which individuals, groups, or organizations can be related to different domains of the problem (e.g. environmental, social...). To complement your collection, it is useful to conduct additional analysis such as screening media, consultations for groups who raise their voice, screening scientific publications and to extract the groups mentioned. Also, in some cases it might be relevant to conduct surveys and questionnaires and distribute them to a broader audience to gather information on potential stakeholders and their interests.



Interviewing key external experts can also be a relevant source for gathering insights about potential stakeholders. To guarantee thorough coverage, each case study should pinpoint approximately 20 distinct stakeholder groups.

Step 2 Stakeholder categorisation

Stakeholder categorisation is the process of classifying stakeholders based on specific criteria, such as **influence, interest, or impact**. Stakeholder categorisation matters because it prioritises and tailors engagement strategies, ensuring effective communication and collaboration based on stakeholders' relevance and influence. The process of stakeholder categorisation could follow these steps:

1. List the stakeholders and note down what type they are and which aspect they relate to (see Table 2).
2. In case there is a type that is not represented by the stakeholders identified by you, double check whether there may be stakeholders in this category (e.g. NGO).
3. Locate the stakeholders in the Venn Diagram (see Figure 3).
4. *If possible*: Get in touch with representatives of stakeholder groups from the inner circle, ask them whom they perceive as stakeholders and revise the Venn diagram, taking their feedback into account.

Table 2 Template for initial capturing of Stakeholders

Stakeholder Group	Type <i>P - Policy</i> <i>S - Civil/Society</i> <i>R - Research</i> <i>I - Industry/Business</i> <i>O - Other/Mixed</i>	Aspect of the system the stakeholder group has a "role" in
Local Government	P	Improve living conditions, contribute to improve local regulations ...
XYZ		
XYZ		
... add more rows as needed		

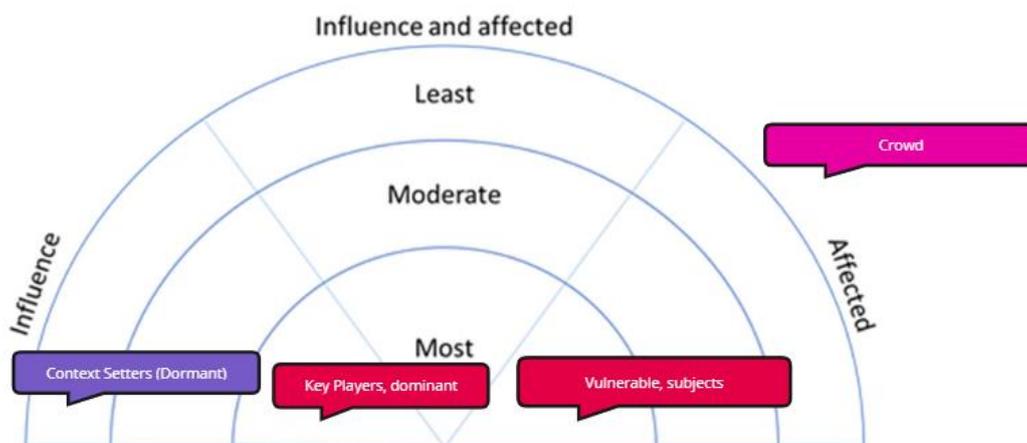
Stakeholder management

Stakeholder management is closely related to the previous stage of categorisation. It ensures that the **interests and concerns of all involved parties are addressed**. The process of stakeholder categorisation could follow these steps:



1. Generate a stakeholder database for the groups located in the inner circle of the Venn diagram.
2. Identify concrete persons who could represent these groups and list them in your database (Make sure to respect the data protection regulation (GDPR)). Collect several persons and keep an eye on diversity regarding age, gender, discipline and other criteria relevant for your case (e.g., regional location, cultural background) this will help you later to compile a group of participants that brings the diversity of perspectives required to the table.
3. For the context setters with high influence but currently not much affected you may want to establish some sort of observation as they may see themselves as affected at some point and change the whole landscape with their powerful intervention.

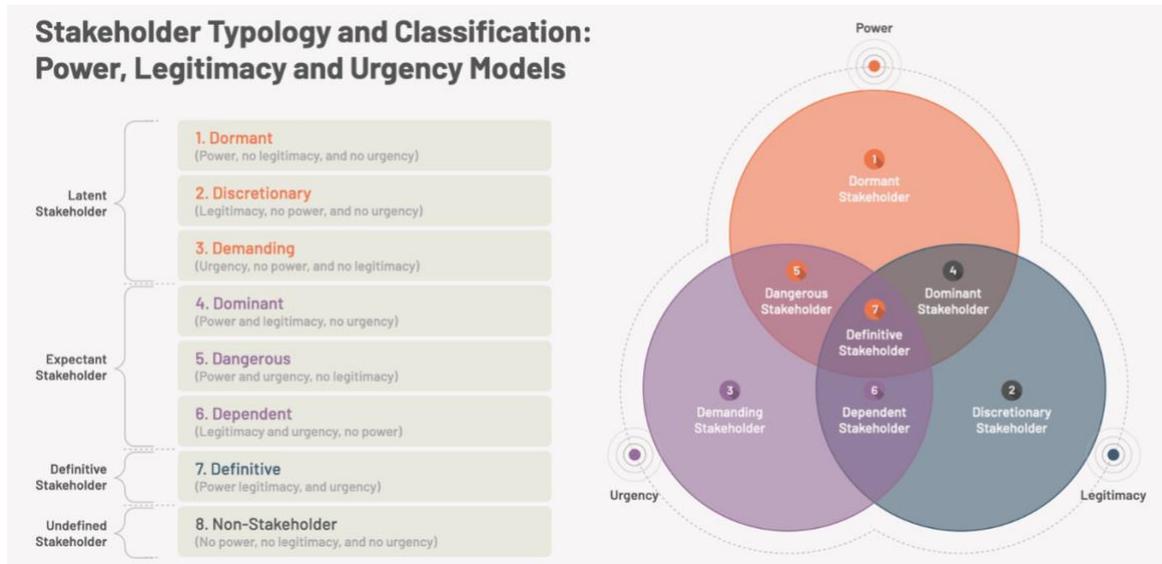
Figure 3 Template for Stakeholder Categorisation (simplified) (Adapted from Reed et al 2009)



Stakeholder identification and management are inherently iterative, often unfolding in continuous loops. It should also be noted that stakeholders' interests and roles can shift in time, necessitating repeated assessments and adjustments in engagement strategies. You could also consider whether the identified stakeholders are relevant to the current situation, or they are stakeholders of the situation that will arise in the future.

For a more thorough stakeholder classification, consider adopting a detailed approach that categorises stakeholders based on three domains: power, legitimacy, and urgency (Figure 4). This method allows for a nuanced understanding of each stakeholder's significance and influence in the context of the specific FUTURESILIENCE lab.

Figure 4 Template for the stakeholder categorisation (sophisticated) (Adapted from Mitchel et al 1997)



A crucial aspect of stakeholder management is the establishment of a **steering board**. This board should be comprised of approximately 5-8 members, representing the most pivotal stakeholder groups. It's imperative to contact these steering board members at an early stage to ensure their smooth onboarding, facilitating their active participation and alignment from the outset. Having this board involved throughout the entire year ensures consistent alignment and feedback. At a minimum, even if not all are part of the steering board, stakeholders from the primary groups identified in the analysis should actively participate as co-creators in every phase, particularly emphasising their involvement in the two main workshops. This collaborative approach ensures diverse perspectives are considered and integrated throughout the process.

Questions for Reflection

- What did you observe or experience during the problem definition and stakeholder identification process? What was the most difficult?
- Did the problem become clearer to you as we went through the process, and if so, in what ways?
- Were there any surprising insights or perspectives shared by stakeholders that you hadn't considered before?
- What did you learn from creating the stakeholder map and analysing their interests and influence?
- Did you encounter any ethical dilemmas or challenges during the process, and if so, how did you handle them?
- Were there any challenges or successes in working together as a team?
- How can we apply the lessons learned from this experience to future projects or challenges?



3.2 Phase 2 Scenario Development

In phase one the FUTURESILIENCE pilots have gained a shared understanding of the problem at stake and the key stakeholders affected by it and influencing its evolution. In order to increase community resilience, we now need to explore jointly how the problem could develop in the future. This means we need to extend our investigation towards the context that will influence how our problem evolves. Moreover, in this step we do not only move from the system itself to its external environment but also from the present to the future. Given the inherent uncertainty of the future we use a scenario approach to investigate different possible pathways. Such an approach helps to strengthen community resilience in two ways. On the one hand, we can use the context scenarios to test the robustness of policies against different possible future situations as described in phase 3. At the same time going through the scenario process together sharpens participants ability to observe the present more carefully, to notice emerging signs of crisis earlier and most importantly to mobilise collective intelligence from a wide range of perspectives to make sense of the change.

The cornerstones of the scenario development phase are **two foresight workshops**, the first one being the “factor selection & projection workshop”. It takes place in person with around 30 stakeholders. The second one, labelled the “scenario building workshop” takes place virtually and is conducted with a smaller group composed of the core team plus 5-10 stakeholders willing and able to engage more intensively with the scenario development. In preparation for the first workshop, influencing factors are identified in interaction with the stakeholders. Additional activities serve to refine the analysis and the scenarios.

3.2.1 Timing

We expect the scenario development phase to last around 5-6 months in total with the following three steps:

Step 1 System Analysis (Duration ca. 7 weeks)

- STEEPL factor analysis
- Weak signals scanning
- Wild card analysis

Step 2 Factor Selection & Projection (Duration ca. 3 weeks)

- Preparation, implementation & documentation of factor selection workshop (in person)
- Cross-impact analysis

Step 3 Scenario Building (Duration ca. 13 weeks)

- Preparation, implementation & documentation of scenario building workshop (virtual)
- Scenario validation & refinement

Depending on the conditions of the pilot case and the people involved, some activities of Steps 2 and 3 can also be conducted independently by the local research and partners before as well as after the online workshop (concretely, this involves e.g. the cross-impact analysis, scenario elaboration, refinement, and validation).



3.2.2 Roles

The research activities outside of the workshops will be executed by the local research lead in close collaboration with the local community partner, with methodological guidance by the foresight support.

Table 3 Roles of the Scenario Development phase

Partner	Role
Local research lead	<ul style="list-style-type: none"> The local research partner prepares the first draft of the factor analysis and engages with the local community partner to collect feedback. They then involve stakeholders to jointly conduct the STEEPL analysis. The weak signals and wild cards are developed analogously, if convenient this can be done together with the factor analysis, otherwise in a separate step. The local research lead also organises the scenario workshop in close interaction with the foresight support and the local community partner.
Local community partner	<ul style="list-style-type: none"> The local community partner participates in all steps of the factor analysis and supports in particular the gathering of input and feedback from stakeholders both on the factors and the scenario cores. The face-to-face factor workshop will rely on the local community partners to identify and organise the local conditions for the physical workshops.
Foresight Support	<ul style="list-style-type: none"> The foresight support partner advises the local research partner in conducting the system analysis steps as required. They co-develop the agenda of the scenario core workshop together with the local community partner and facilitate the two workshops (either directly or in a ‘train the trainer’ setting, depending on language barriers). Online sessions are hosted and orchestrated through the respective organisation’s software. At the same time, the foresight support team is available to answer any questions that may arise during the full year of activities.
Stakeholders	<ul style="list-style-type: none"> Ideally, a steering board that is representing the most important stakeholder groups would accompany the process throughout the whole year. At the least however, stakeholders from the key groups identified in the analysis will act as co-creators in all steps, especially the two main workshops.

3.2.3 Step 1 System Analysis

STEEPL Factor Analysis

The first step in getting familiar with the system under question is the factor analysis. In this phase we collect “influencing factors” with relevance to the problem defined in the first phase. These factors influence how this problem and potential engagements with it may develop. This could be, e.g., barriers that keep you from achieving certain goals, but also framework conditions that influence the nature of the problem. The factors often stem from



different areas. To make sure that our analysis is balanced without neglecting certain areas of influence, it is common in Foresight to apply a structure to the factor analysis. Often the domains are Society, Technology, Environment, Economy, Policy and Legal aspects (STEEPL). Depending on the case, this is extended by V for Values.

We suggest the following proceeding:

1. Start from potential sources for factors you have already identified in the problem description.
2. Review the scientific literature and existing Foresight studies around the problem at stake. Extract the forces that influence how this problem and approaches to it may develop. Also consult existing lists of “Megatrends”, e.g., the ones provided in the [Megatrend Hub of the JRC Competence Centre for Foresight](#).
3. Conduct a key factor collection session with the extended core team, including participants from the local research and the local community partner. To avoid priming effects, you may want to start with an individual brainstorming and then merge the results into a shared list. Collect the factors using a STEEPL classification using, e.g., the template in Table 4 or the stakeholder analysis frame on the MIRO Board. If any categories remain empty, discuss whether you may have overlooked something.
4. Include the stakeholders into the conversation in any way most suitable for your community through, e.g., interviews, surveys or workshops. Collect as many views as possible and add their suggestions to the list.
5. Consolidate the list and assess each factor with respect to the respective uncertainty of its development and its impact on the system. Again, we suggest starting in the extended core team and then including as many views as possible, ideally e.g., from the steering group. If you conduct a group discussion, you may want to use individual voting (through Online or Dots) and then joint discussion of the results to avoid priming biases.
6. Select around 10 key factors with the highest uncertainty and impact to be fed into the workshop. Prepare a document where you list these factors with a very brief description as an input to the factor selection and projection workshop.
7. Factors with high impact and low uncertainty should be identified as “Givens” and considered in all scenarios. Your final outcome may look similar to Table 4. Alternatively, you may work with a graphical representation as shown in Figure 5.

Tips

- The factors should be external forces, not elements of the system itself – this may sometimes be tricky to distinguish, refer back to your original problem description to decide what is internal and what is external.
- Formulate the description of the factors neutrally. Avoid descriptions that indicate that the direction is already given. Example: NOT Rising inequality BUT degree of inequality; NOT Lack of funding BUT availability of funding
- Before voting make sure everybody has a shared understanding of the factors, Alternatively, you can directly use a visual uncertainty/impact graph for the voting, see Figure 5– choose whatever works best for you and your group.

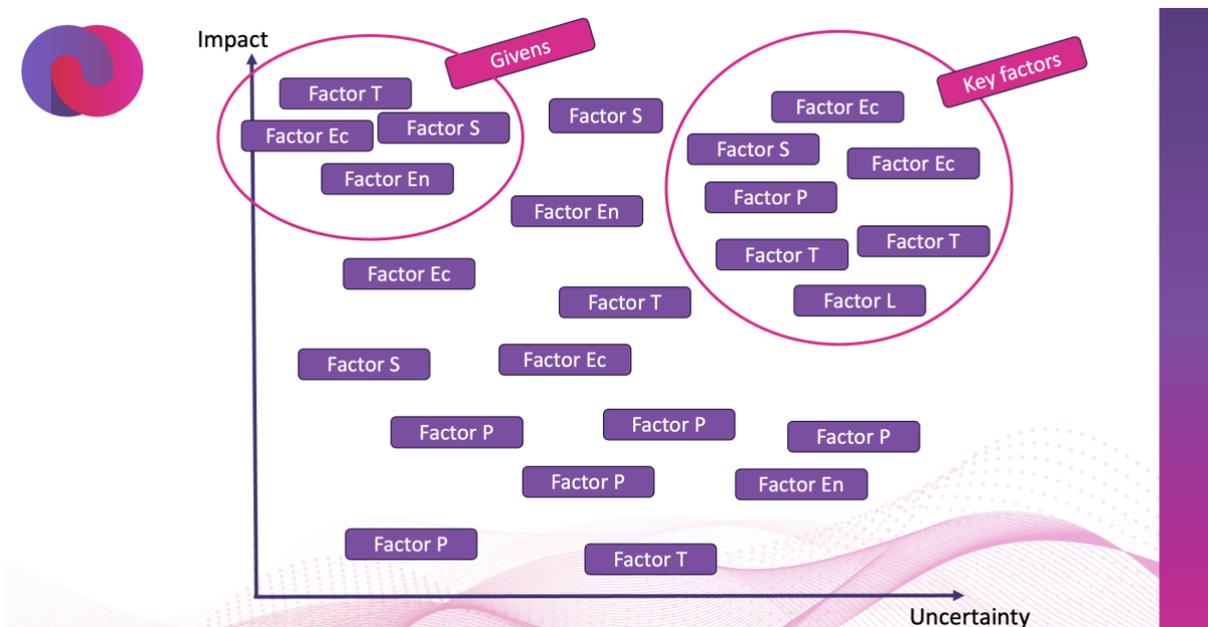


- When you discuss the factors, formulate as specifically as possible and select titles that are easy to grasp and very clear (rather than sophisticated), to simplify the subsequent work with them.

Table 4 Template for factor assessment

Factor Name	Domain <i>S-Society</i> <i>T-Technology</i> <i>En-Environment</i> <i>Ec- Economy</i> <i>P-Policy</i> <i>L-Legal</i>	Impact (on our problem) <i>1-low</i> <i>2-medium</i> <i>3-high</i> <i>4-Very high</i>	Uncertainty <i>1-low</i> <i>2-medium</i> <i>3-high</i> <i>4-Very high</i>	Conclusion Key Factor (High Uncertainty & High Impact) Given (High Impact, Low Uncertainty)

Figure 5 Impact Uncertainty Matrix



Weak Signal Analysis

Weak signals are small or seemingly insignificant observations in the present that can indicate an upcoming change in the future. Actively searching for weak signals, monitoring and interpreting them is an important part of what is called "horizon scanning" in Foresight. This can help in anticipating future events and thus becoming more resilient towards them when they do happen.

There is no standard proceeding for weak signal scanning. At the core however is the screening of insightful sources with a high diversity of perspectives beyond what is currently recognised. These sources can be:

- people (e.g. pioneers, activists, artists, extreme users, critical thinkers, community antennas such as social workers ...)
- media outlets such as blogs, books, magazines, newspapers
- artworks i.e. literature, exhibitions, movies, theatre plays.

The renowned Foresight group Policy Horizon Canada put it like this:

"Perhaps the hardest problem for scanners is to be aware of our own assumptions, which act like blinders. Scanning forces you to challenge and break out of every professional, cultural, experiential and generational framework that you have learned over your lifetime. You have to be open to surprise. When something does not fit your existing mental models, take a second look at it. If you hear someone saying, "we will be really challenged if that happens," then that might be a weak signal." (Source Policy Horizons Canada)¹

We suggest the following proceeding:

1. Form a team of scanners
2. Reflect on possible biases and assumptions in your group's perception of the problem (see Bias Box below for inspiration). Review the things you have discarded in the key factor selection, are there any aspects that may become relevant under certain conditions?
3. Compose a set of sources that could widen some of the biases
 - Fringe Sources: From the fringes of what you are currently observing (For example a youth blog, homeless magazine, art exhibition, or science fiction novel)
 - Antennas: Voices that note changes early, e.g., because they have extreme needs in this area (such as vulnerable groups, DIY activists, extreme sports) or because they talk to many people with a particular need (e.g. teachers, social workers, priests, nurses)
4. Scanning: Over a certain period, team members collect whatever the selected sources say about the topic. In addition, they record their own observations as openly as possible using all

¹ <https://horizons.gc.ca/en/our-work/learning-materials/foresight-training-manual-module-3-scanning/>



sorts of sources including hobbies, family, sports, garden etc. Anything you notice that could indicate an interesting change is of relevance. Capture the findings in an easily accessible way.

5. Sense making: Review the results together in the team and cluster similar findings. What are aspects we want to include into our scenario exercise? Choose around 10 things to be included.

Bias Box

Biases emerge from the way we process information, from our beliefs, from the way we work together in teams and from the structure of our organisations (Kahnemann 2012).

You may want to consider some of the following biases that are especially relevant in foresight (Schirrmeister et al 2020):

- Availability Bias: Unfamiliar information is more easily discarded as irrelevant
- Confirmation Bias: Information that confirms previous assumptions is assessed as more relevant
- Groupthink: Group members try to minimise conflict and reach consensus decisions by avoiding controversial issues, actively suppressing dissenting viewpoints, and isolating themselves from outside influences.
- Silo Mentality: We exclude something from our consideration because other units are responsible for it
- Belief Bias: A person is more likely to accept an argument that supports a conclusion that aligns with her/his values, beliefs and prior knowledge, while rejecting counter arguments to the conclusion.
- Taboo Topics: something that is not acceptable to say, mention, or do. It is possible that the existence of taboos prevents important topics to be put on the agenda and be addressed adequately.
- End of History Illusion (Quoidbach et al 2013): We tend to think that the changes in ourselves and our environment we have witnessed in the past are now coming to an end and we have reached a stable situation.

Tips

- When identifying sources ask yourself: Who will notice early if things are changing in this domain, who will be most affected? Where will these voices be recorded?
- Regularly reflect on the biases you identified: What do we [not] see? Which sources are in the centre of our observation and which ones in the periphery?
- Don't merge things too early but keep individual findings until directly before the sense making.
- This is not about trends. A good indicator for a relevant weak signal is the diversity of sources talking about it rather than the number of sources.
- Be aware that any event in your observation period may influence the discourse.



- This exercise is useful for resilience, even independently from the scenario process. You may want to discuss whether to establish ongoing weak signal scanning routines!

Wild Card Analysis

Wildcards are **sudden** future developments or events that seem relatively unlikely to happen but have a drastic impact when they do happen (see BIPE et al. 1992, p. v). Think of September 11 or Chernobyl as examples that were surprising yet hugely disruptive. In other words, wildcards materialise so quickly that the underlying social systems cannot respond quickly enough - therefore being surprising and presenting a complete break in how people think and plan (Hiltunen, 2006). They challenge our mental map of the world, as they do not fit into our usual frame of reference (Steinmüller, 2003). By being forced to think through extreme changes and disruptions, you may realise that seemingly insignificant or mundane mechanisms contain critical risks or opportunities under different circumstances.

Working with wildcards thus trains your (planning) capacities towards a greater variety of conditions and unexpected changes, which is a great tool for increasing resilience in its own right.

Furthermore, the results can be used in various other foresight activities. For example, you can use them as a trigger point for the creation of a new scenario or even a policy option. Vice versa, it can be a good exercise to consider what would happen in a variety of finished scenarios if a certain wildcard were to unfold in each situation.

Ways to search for wildcards:

The preceding exercises, such as the STEEPL Analysis or weak signal scanning can already provide inspiration or a baseline from which to form wildcards. Think about what could happen if you took a certain development to an extreme, or a seemingly unlikely or (to date) impossible event were to take place.

The Tetralemma exercise (See below) is also a natural source for events that may be formed into a wildcard, with a category of developments that make the issue in question obsolete or change it completely. Equally valid is a dedicated brainstorm in groups, however, where you can try to, e.g., think of how surprising and devastating crises could happen in the past or where their impacts were felt the most. Vice versa, you may consider your system under question: Which components does it rely on the most, and how may it thus be disrupted by a wildcard? (Barber, 2006)

Keep in mind that the wildcards you come up with may be inspired by others yet should be case-specific to be most valuable to your process. For example, a financial crisis may play an especially critical role in a scenario taking place on a global scale or revolving around a lot of economy-related issues but might not be as impactful on a small-scale topic.

In any case, according to Steinmüller (2003), good wildcards are:

- Appropriate to the problem (Not stem from topical area, but associated with it)
- Original (not considered in other forms), consequences not immediately apparent



- At the far edge of what is possible

3.2.4 Step 2 Factor Selection & Projection

The core element of this step is a workshop with around 30 stakeholders selected from the groups identified as “core stakeholders” in the stakeholder analysis. The longlist of possible factors together with the list of wild cards and weak signals (if available) serves as an input into the workshop.

The workshop agenda will be co-designed in close collaboration between the local partners and the foresight partner. It will involve mainly two steps, i.e., selecting the factors to be tackled in the scenarios and developing possible future projections for each selected factor using the Tetralemma approach. A possible agenda is shown below.

Preparation involves:

- Enrolling and informing stakeholders early on about the workshop and its purpose. Emphasise where they contribute and what their added value from participating is
- Make sure to respect the data protection regulation (GDPR), secure participants’ signature to the information sheet. Introduce Chatham House Rules and emphasis participants obligation not to share personal data of other participants.
- check for special requirements (building access, food allergies, etc.)
- If you send the longlist with the pre-selected factors to candidates in advance, make sure to send it early enough so people can take time to process it
- Defining a date and secure a suitable venue with enough space for work in a plenary and 4-5 small groups
- Taking all possible measures for positive working conditions (food, light, interesting site, possibility to work outside, activities before or after ...).
- Creating templates to support & inspire the work
- Securing facilitation & documentation (if you want to record make sure to ask permission)
- Checking availability of the material you would like to use (post its, pens, tape, whiteboards, flipcharts ...) & infrastructure (WIFI access)

Table 5 Example Agenda for Scenario Workshop 1

Activity	Time (h)	Components	Setting
Introduction	1	Welcome, introductory round, explanation of Foresight, review of expectations & agenda, rules of the conversation	Plenary (including warm up exercises in small teams of 2-3)
Break	0,5		
Key Factor Selection	1	Joint review of preparatory factor work & impact/uncertainty matrix	Plenary (including joint work in front of whiteboard etc. Or online voting (Menti or similar)



Activity	Time (h)	Components	Setting
Break	1		
Factor Projection	2,5	Tetralemma exercise, selection of projections (coffee break included between rounds)	Small groups a 5-6 people, world café arrangement, supported by template
Review of results	0,5	Participants review and comment groupwork results	Open Gallery break included
Cross impact analysis	0,5	Brief assessment of factor interaction	Plenary
Closing	0,5	Reflection round, outlook on next steps	Plenary (written evaluation sheet provided)

Key factor selection

The goal of this workshop activity is to finalise a set of key factors that will ultimately become the basis for the scenario development.

The selection criteria are the same as described under “STEEPL Factor Analysis”, namely the impact on the problem at stake and the degree of uncertainty in each factor’s development.

Depending on the conditions of the workshop and the participants’ capacities, the factors prepared by the local research lead may be discussed and adapted in more detail, or alternatively, a pre-selection of key factors is presented and reviewed for simplicity’s sake. The former option has the advantage of everyone being able to suggest additional factors they deem important and form a more coherent understanding, while the latter avoids unnecessary discussions and generally allows for a leaner process. Ultimately, the exact workshop design will be derived in conjunction with the foresight support on a case-by-case basis.

In the workshop we invite participants to assess both impact and uncertainty using suitable means (smartphone survey, dot voting, discussion of placement in impact uncertainty graph). The goal is to select the 8-10 factors with the highest uncertainty and impact respectively (e.g. using the product as a proxy) but also, if possible, well balanced with respect to the STEEPL areas. The final outcome may look similar to Table 4. Alternatively, you may work with a graphical representation as shown in Figure 5. as already described in the STEEPL Factor Analysis above.

Tips:

- To avoid priming (i.e. everybody is putting their dots where the first voter has put it) try to have people vote individually first or if you use online voting show the results only after everybody has voted.
- If several factors have similar votes, take into account also the diversity of STEEPL domains or group specific criteria (e.g. the expertise you have in the room) don’t be too strictly numerical in the final choice but always transparent as participants may question the selection at some point.



Elaboration of factor projections (Tetralemma exercise)

The next step is to develop possible future developments for the selected set of key factors, the so-called factor projections. For this purpose, we suggest using the Tetralemma method. This approach stems from professional coaching, where it is used to support dealing with uncertain situations. In the context of scenario development, we deploy it to help groups think through different possibilities for the evolution of the selected highly uncertain factors in their system. In breakout groups of 5-8, participants fill in one Tetralemma Template (as depicted in Figure 6) per factor. It is important to remember that there are no wrong assumptions here. Participants are free to develop as many options as they want under C (C1, C2, C3 ...). Most groups tend to converge at a maximum of five alternatives.

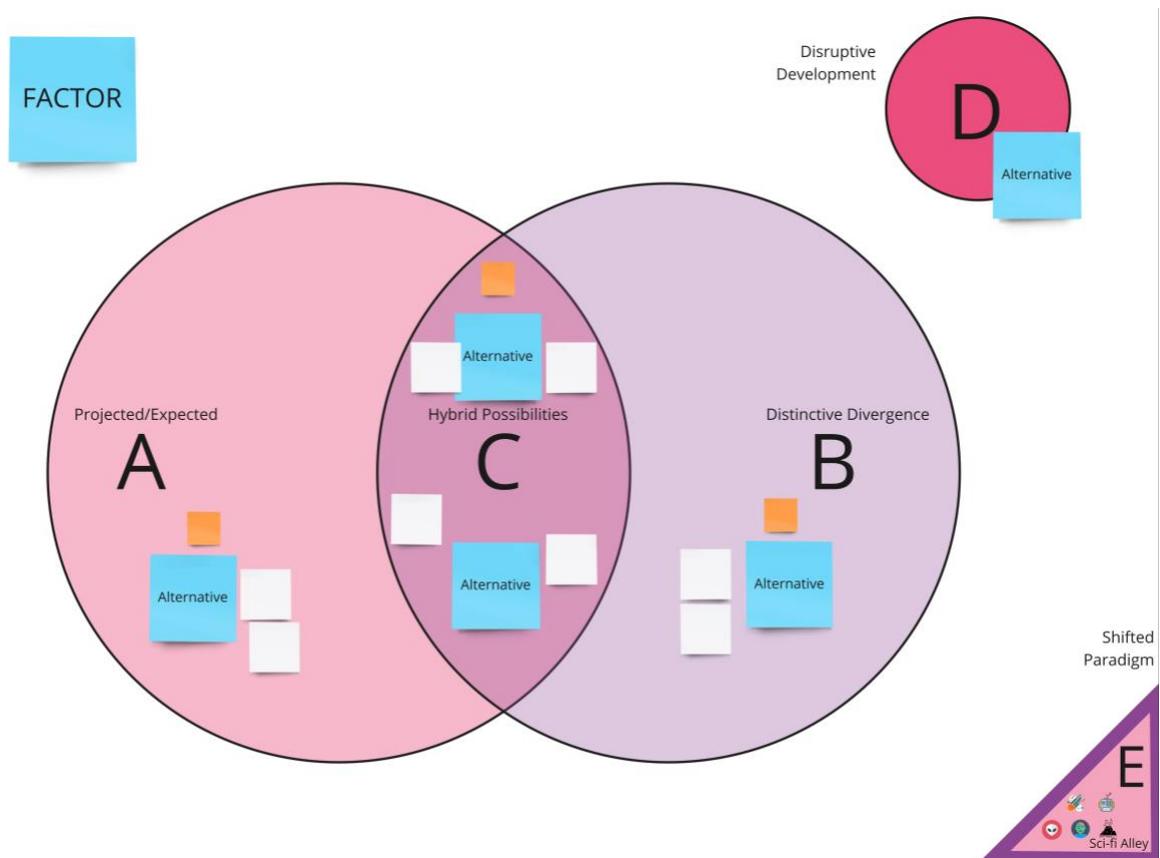
The prompting of the groups could be conducted as follows:

Outline possible alternative developments for the selected factors.

- a) What is the current projected/expected future for this factor?
- b) What is a distinct divergent development possibility?
- c) What are some hybrid possibilities where both elements of A and elements of B are present?
- d) What are possible disruptive developments?
- e) What can we think of that radically shifts our thinking about this factor? What would render the whole question irrelevant?



Figure 6 Template for tetralemma exercise



Tips

- For elaborating the projections, it is important to agree on a time-horizon. For the case of FUTURESILIENCE we will usually adopt a mid-range horizon of 2040 but there may be good reasons for pilots to deviate from this. Some subjects (such as e.g. infrastructure) require very long time-horizons, while others may require rather short ones (e.g. IT development).
- Make sure to give clear names to each projection when closing the discussion.
- If you have the time, it is helpful to briefly sketch the present situation of this influencing factor – this helps the group to clarify their shared understanding of the factor.

Cross-impact analysis

If you have the time in the workshop, we recommend ending with the cross-impact analysis. This is because after taking the problem apart in many small pieces, the cross-impact analysis is the first step where the factors are considered all together, allowing participants to see how things will come together in the end. Otherwise, you can do it in the core team or divide portions of the analysis amongst suitable working groups.

You can use [this google sheet template](#) to carry out the analysis. By downloading it or copying it to your own drive, you will get an editable version for your own project.



To prepare the sheet, fill in the factor names including a short description, starting in column C and Row 5. Then assessments of the impact of one factor on another are given (from 0 no impact to 3 high impact) strictly following the direction of impact indicated in the sheet (from the left towards the top). For example, in the row of factor 1 the impact of factor 1 on factor 2 and each other factor respectively is indicated, not the other way around! On the left, you can accordingly find the sum of active scores. The factors with the highest active sum are the ones driving the system, which will be highlighted automatically. Since they have the most influence on other factors, these types of factors will be good starting points for the scenario cores, as explained in the next step.

Tips

- Depending on the time available and the group size you can organise this in different ways, e.g., through a quick hand raising, electronic voting or dividing groups of factors among working groups for assessment.
- Make sure to strictly work in one direction of impact from the factor in the row to the ones towards the right in the columns!

3.2.5 Step 3 Scenario Building

Scenario core development

The most important step of the scenario building is the outlining of the scenario cores. Scenario cores consist of plausible combinations of the previously elaborated factor projections. They form the backbone of the scenarios. There are different ways to arrive at the scenario cores including by forming a full matrix with all possible combinations and assessing their fit one by one (“consistency analysis”). For the case of FutuResilience however, we suggest using a more intuitive, less formal approach called **“scenario sprint”**. Workshop participants generate consistent combinations of the factor projections by logical and intuitive reasoning, starting with the most active factors (as identified in the cross-impact analysis). Then, projections for each other factor are added on respectively, until a complete set of projections finally results in a one scenario core. This scenario building workshop will be conducted with roughly the same group of participants as the key factor workshop. It can be held online or physically depending on the circumstances of the Lab. The agenda will be developed by the scenario-core team with guidance from the Foresight partner. ~~Table 9 provides a possible outline that will of course have to be adapted depending on the framework conditions.~~ For instance, in case of a physical workshop a lunch-to-lunch setting may be useful. In the case of an online setting the workshop could be split into two sessions on two different days.

As input to the workshop, you need to prepare the factor projections from the first workshop on a virtual whiteboard (e.g. Mural or Miro) starting from the factors that have emerged as the most active ones from the cross-impact analysis as explained above.



Table 6 Example Agenda for Scenario Workshop 2

Phase	Approximate Timing (h)	Components
Day 1 (afternoon)		
Welcome & Introduction	0,5	Getting used to the digital tools (Miro or Mural Board, voting system, chat), explanation of the purpose, methodology and agenda of the workshop
Review of previous steps	0,5	Review of results from the previous workshop
Scenario nuclei (plenary)	0,5	Deciding on combinations for the first three factors
Break	0,5	
Scenario cores (breakout groups world café setting)	2	Walk through the morphologic table and form scenario cores starting from the nuclei, naming the scenario
Day 2 (morning)		
Scenario Refinement (Breakout groups)	1h	Selection of refinement techniques, fleshing out the scenarios
Strategic Conversations (breakout groups)	Xh (can be adapted to any length)	Risks and opportunities for different groups
Closing Plenary	0,75	Feedback, Explanation next steps

Scenario Refinement & Strategic conversation

Scenario refinement is the step where the scenario cores are elaborated into a story that makes them come to life, making them relatable and feasible to work with. This phase helps participants to make sense of the worlds they have created, fill in missing links, and detect as well as amend inconsistencies. Moreover, scenarios should provide images of the future that inspire forward looking conversations, helping people to challenge their mental models and enriching their capacity to imagine change. Therefore, it is important that they are more than mere bundles of factors but rather provide interesting, thought provoking and inspiring glimpses into future worlds.

There are many ways to refine scenarios and you are sure to find your own that best serve your purpose and the needs of your target audiences. You can use the full range of communication formats such as words, images, graphs, movies etc. A lot can be done in post-processing, i.e., with the help of communication professionals. It is important however to generate the initial material together with the participants who have developed the scenario cores. The list below provides a few inspirations to get started.



- **Metaphor/Symbol:** Find a metaphor or symbol for your scenario, something that immediately transmits the spirit of the scenario
- **A day in the life:** Imagine a day in your organisation/company/ research group/ policy unit what would be different from today? Alternatively: A walk through your city/village/neighbourhood ...
- **Headline from the future:** Sketch a news item of the future containing, e.g., 1 graph, 1 headline, 1 tweet, 1 image
- **Artefact from the future:** What is a typical [communication device, artwork, toy, tool, shelter, dish] in each scenario?
- **Persona Method:** Imagine a person from our key stakeholder groups in each of the scenarios (e.g. farmer, refugee, entrepreneur, major, child, elderly person ...). Describe the situation of this person in the scenario. What is their life like, what are their concerns and fears, hopes and dreams?

In strategic conversations we then use the scenarios to enhance our capacity to deal with uncertainty and change, thereby ultimately increasing our resilience. Of course, these discussions also serve to further refine the scenarios. In strategic conversations we think through what the scenarios would imply for certain actors, problems and questions that we are facing today. Also, here there are many ways to make the most of the scenarios for your group and topic, the list below provides a few inspirations.

- What are threats and opportunities? (In general, and for each of our key stakeholder groups)
- Who are the winners and who are the losers in the scenario?
- Signposts: What are indicators that would imply that this scenario is becoming reality? Are there any signs today?
- Backcasting/Roadmapping: How could you/your organisation/your team achieve your goals in this scenario starting from the present?

Tips

- Depending on the group size, a rotating seat setup may give you a great opportunity to cover each scenario with different perspectives.
- For example, you can have one group per scenario to be refined or have each group work on each scenario for a little bit. The resulting group discussions, again, are an important part of the value that you get out of the exercise.

3.2.6 Things to keep in mind

- Scenarios are not predictions; they are tools to sharpen our mental models and inform strategic conversations. Adapt the format of your scenarios to the use you want to make of them, i.e., don't waste time with detailed descriptions if you are not going to use them.
- Experience shows that scenarios will speak mostly to those involved in the process, thus try to engage as many stakeholders as possible and let them speak for "their" scenarios to others.



Questions for Reflection

- How has your understanding of the problem changed through the exchange with various stakeholders and the exercises?
- How did the framing of the problem or situation affect your work with the factors and resulting scenarios?
- What was surprising or new to you?
- What did you learn about the system surrounding the issue? How might these learnings be of use going forward?
- Where will you have to dig deeper, which topics would you like to explore further, both within and outside of FUTURESILIENCE?

3.3 Phase 3 Policy Testing

In phase 1 and 2 FUTURESILIENCE lab communities have jointly characterised their challenges and existing or potential crisis situation and developed possible scenarios of its evolution. This has contributed to strengthen community resilience by building capacity to mobilise collective intelligence and to act upon it together. In this final phase we proceed to use the scenarios in order to test policies to address the problem. Again, the contribution to community resilience is twofold. On the one hand the process generates tested and robust approaches to tackling the crisis, on the other the community develops the capacity to use this process including the scenarios to generate further robust policies in the future.

3.3.1 Timing

The main part of the policy testing process is participatory and takes place at a workshop. The preparation for the workshop is not necessarily work intensive, if participant from the first physical workshop is engaged and eager to participate. If not the main part of the work will be securing stakeholder engagement which can take time. The preparation for the workshop itself should not take more than one or two weeks.



3.3.2 Roles

Suggested distribution of roles is as follows:

Table 7 Roles of the Policy Testing phase

Partner	Role
Local research lead	<ul style="list-style-type: none"> • Prepares the policy cards (see example on the policy card below) • Prepares the New policy cards • Prepares the policy sheet • Prepares the wind-tunnelling matrix, in this way responsibility for the material lies with one party.
Local community partner	<ul style="list-style-type: none"> • Responsible for stakeholder management • Interacts with local research lead in preparing policy input
Foresight Support	<ul style="list-style-type: none"> • Responsible for the foresight process at the workshop

3.3.3 Policy Identification and wind-tunnelling

The knowledge base consists of research and innovation findings, policy recommendations and good practices that could create greater resilience in the European context. A set of relevant policies are extracted from the knowledge base to be tested in different scenarios through a windtunneling exercise. For each scenario an additional set of potential policies are devised and tested alongside those coming from the knowledge base.

Wind-tunnelling is a method used in strategic foresight to test strategic options in corporate strategy setting or policies for government. Wind-tunnelling is a way of testing different policy options in diverse possible futures. Wind-tunnelling helps to identify critical areas where policies may need to be adjusted. The wind-tunnelling exercise provides an overview of the different strategic recommendations across different scenarios. It does not, however, show how risk (quantitatively) is distributed.

3.3.4 Combined policy identification and windtunneling workshop

Preparation before the workshop:

- Pre-read: Send the scenarios before the workshop, so that people can be acquainted with the content of the scenarios, before the workshop.
- Policy cards: From the knowledge base retrieve 20 or more potentially relevant policies that may be relevant for the topic you are covering and devise policy cards to be divided out among the groups. Design the policy cards so that there is room for writing more information on them. Tip: sometimes, policy documents from the Knowledge Base may be too long. We strongly suggest preparing the policy cards in advance, summarising information and actions for building societal resilience



- Policy sheet: If each group gets more than 10 policies, it can help devise a policy sheet with a list of policies for easy overview. Remember to number the policies for easy location.
- New policy cards: Prepare 'New policy' cards that can be used to list new policies. The policy cards should be big enough to write on. These 'new policies' cards will include novel policies design by the group.
- Windtunneling matrix: Print a windtunneling matrix for each table minimum size A4.
- Scenario description: The scenario description is printed out so to be placed at each group table.

Preparation at the workshop:

- Divide the groups in such a way that each group represents one scenario and that this is the scenario they work with during the workshop.
- Place the scenario description that belongs to the group at their group table together with policy cards, new policy cards and policy sheet. The groups do not need to have the same policy cards. It can be beneficial to cover more policies.
- Preferably there is a notetaker in each group, or if allowed the group's work is recorded.

Example slides

Figure 7 Policy Sheet

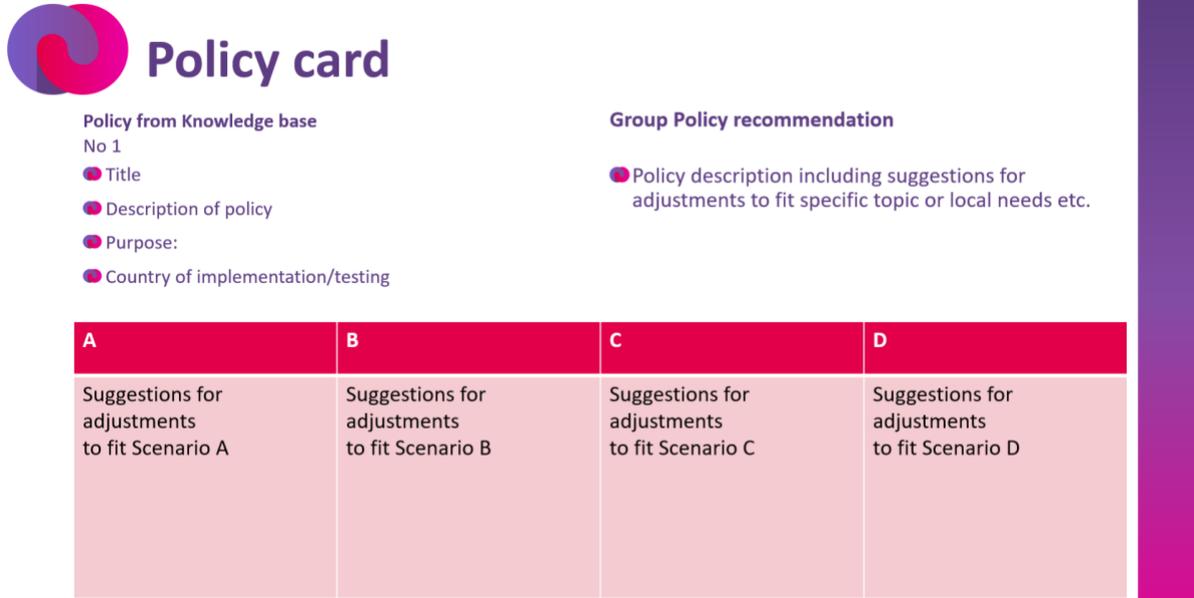


Policy sheet

No	Policy	Policy description
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		



Figure 8 Policy Card



Policy card

Policy from Knowledge base
No 1

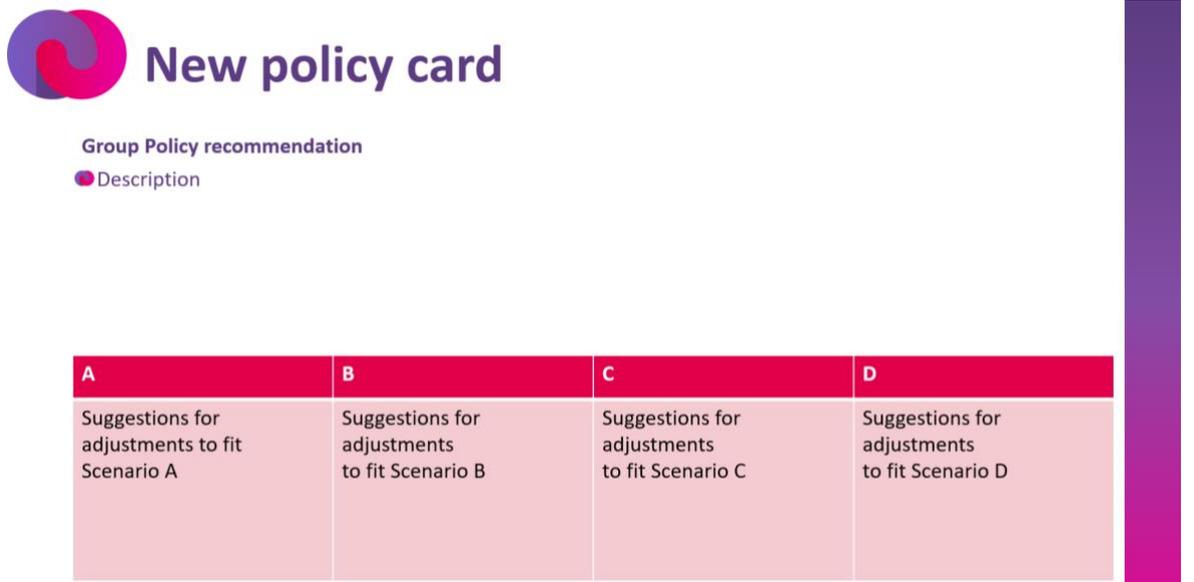
- Title
- Description of policy
- Purpose:
- Country of implementation/testing

Group Policy recommendation

- Policy description including suggestions for adjustments to fit specific topic or local needs etc.

A	B	C	D
Suggestions for adjustments to fit Scenario A	Suggestions for adjustments to fit Scenario B	Suggestions for adjustments to fit Scenario C	Suggestions for adjustments to fit Scenario D

Figure 9 New Policy Card



New policy card

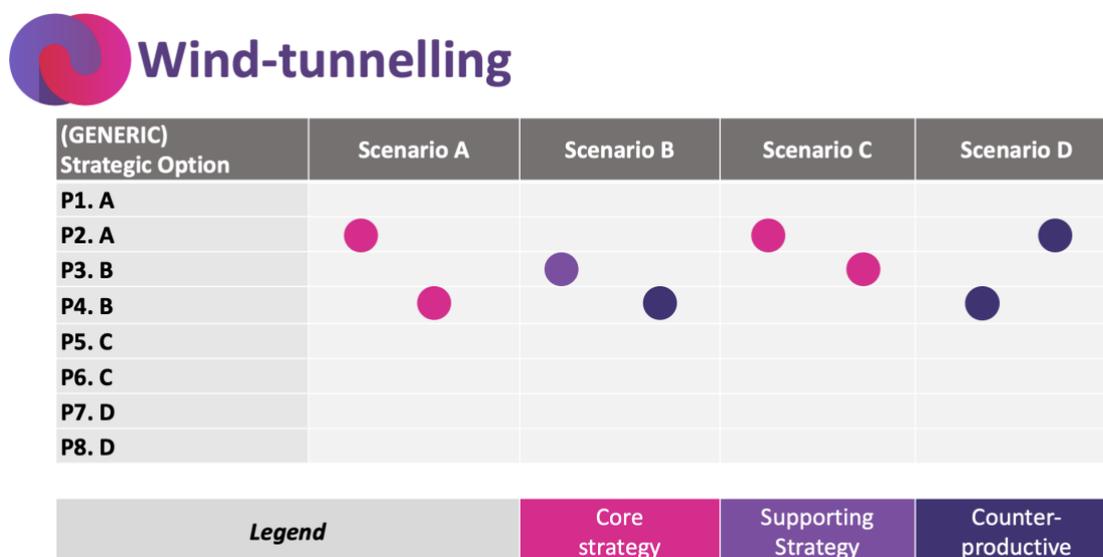
Group Policy recommendation

- Description

A	B	C	D
Suggestions for adjustments to fit Scenario A	Suggestions for adjustments to fit Scenario B	Suggestions for adjustments to fit Scenario C	Suggestions for adjustments to fit Scenario D



Figure 10 Windtunneling matrix



Process at the workshop

- The workshop can be adjusted depending on the number of policies examined and depth of analysis, but a minimum of 5 hours should be expected.
- At the workshop a presenter walks through the scenarios.
- Groups split up according to the number of scenarios (if they are not seated in groups from the beginning).

Table 8 Example Agenda for Policy Testing workshop

Phase	Approximate Timing (h)	Components
Day 1 (afternoon)		
Welcome & Introduction	0,5h	Presentation, purposes, stakeholders, process
Presentation of scenarios	1h	Present the scenarios (tip: too deep and you may lose the crowd!)
Break		
Scenario analysis	0,5h	Analyse threats and weaknesses in your scenarios
Policy identification	1h	Prepare the policy cards and policy sheets
Day 2 (morning)		
Wind-tunnelling	1,5h	Break out in groups
Break		
Plenary	0,5h	Presentation of break-out work
Closing	0,5h	Wrap-up and next steps



Policy identification

- Each group is given time to discuss the threats and weaknesses that appear in their scenario.
- Each group is tasked with identifying policies that may work in each scenario from a set of prechosen policy options (The policy cards). These options are discussed and relevant local considerations etc. are taken into account. Policies that can be adjusted somehow are discussed and suggestions for changes in design etc are written on the policy cards.
- Each group is tasked to identify other policies that are not part of the policy cards on a new set of policy cards.

Figure 11 Threats and weakness identification



Threats and weakness identification

- For your specific scenario...
 - Identify the future **threats** in your scenario (outside-in, future-today)
 - Identify current characteristics as they would appear as **weaknesses** in your scenario (inside-out, today-future)

Figure 12 Policy identification



Policy identification

- For your specific scenario...
 - Look at the policy overview sheet. Find potentially relevant policies, that can reduce the identified weaknesses.
 - Pick the policy card that goes with it.
 - Discuss if the policy described could help reduce the weakness
 - If needed adjust the policy, so that it could work in local context etc. (try to manage to identify two or more policies)
 - Identify 1 – 3 other policies that could potentially be implemented in response to your threats-weakness analysis of your scenario
 - For the purpose of the exercise, it is fine to keep the description of your policy recommendation on a high level.



Windtunneling

- Each group's preferred policies are then tested against the other scenarios to see if the policies if adjusted can be used in those scenarios as well.
- In the break after the policy windtunneling (rotation) exercise the individual windtunneling matrices are consolidated into an already prepared windtunneling matrix in a PowerPoint, which is filled out with the appropriate colours (dots) and policies.
- In the plenum discussion the policies that are considered to be working in more scenarios are identified. The policies that are green across multiple scenarios or blue, using the colour code green, blue and red. Here green refers to policies that work in a particular scenario, blue for a policy that may work if adjusted. In the case that a policy is counterproductive it is labelled red. The policies that are labelled green or blue across all scenarios can be considered to create greater resilience. Note that this is a high-level strategic analysis, a cost benefit analysis would need to be made before executing strategy. Likewise, it makes sense to assess opportunity cost. For more information regarding the windtunneling approach see the process visualisation of the Future Resilience Toolbox.

Figure 13 Windtunneling Rotation



Windtunneling rotation

- Each group pick a presenter.
- The chosen presenter will walk to the other groups and present the potential policy recommendations your group has identified.
- Scenario A Group presenter presents to Scenario B group. Scenario B group presenter presents to Scenario C group etc.
- Each group has (x minutes- TBD) to talk through the initiatives before the presenter move to the next groups.

Task for the presenter

- Present your groups policy recommendations. Answer any clarifying questions.

Task of the group

Consider the other group's initiatives presented by the presenter visiting your group.

- If the initiative would also work in your scenario put a "green" dot in your scenario on the windtunneling matrix, "red" if not. Blue, if it might work with some adjustments.



Figure 14 Plenary Discussion



Windtunneling Plenum discussion

● Finally in plenary, reflect on:

- Does any of the policies prove robust/resilient/successful in all 4 scenarios?
- Did any policy recommendations seem particularly attractive?
- Could you pursue several policy recommendations simultaneously? (value of strategic options)
- Could you use elements from each/some of the policies to develop one overarching policy recommendation?

After the workshop

A short questionnaire that will feed a consortium analysis will be shared with the labs during the policy testing phase. The survey is aimed to collect information about possible potential barriers for policy implementation of the selected policy options tested during the windtunneling exercise. The consortium will make this survey available with enough time to the local stakeholder.

3.3.5 Things to keep in mind

- Try to select the groups composition to get the best dynamic possible.
- Try to have a diverse and balanced group
- It's the facilitator responsibility to make sure everyone is heard.

Questions for Reflection

- Did the policy cards accurately reflect policies that could be employed.
- The process primarily focuses on learning from policy practices, identifying the “what”, what would it take to move forward with the how?
- It can be worthwhile to try to identify low hanging fruits that could fairly easily be accomplished in order to pursue the end goal.
- Could a consortium be created to take next steps to that end?



4 References & Further reading

Stakeholder analysis

Achterkamp, M. C., & Vos, J. F. J. (2007). Critically identifying stakeholders. *Systems Research and Behavioral Science*, 24(1), 3–14. <https://doi.org/10.1002/sres.760>

Clausen, L. P. W., Hansen, O. F. H., Oturai, N. B., Syberg, K., & Hansen, S. F. (2020). Stakeholder analysis with regard to a recent European restriction proposal on microplastics. *PLoS One*, 15(6), e0235062. <https://doi.org/10.1371/journal.pone.0235062>

Goodman, J., Korsunova, A., & Halme, M. (2017). Our Collaborative Future: Activities and Roles of Stakeholders in Sustainability-Oriented Innovation. *Business Strategy and the Environment*, 26(6), 731–753. <https://doi.org/10.1002/bse.1941>

Lyon, C., Cordell, D., Jacobs, B., Martin-Ortega, J., Marshall, R., Camargo-Valero, M. A., & Sherry, E. (2020). Five pillars for stakeholder analyses in sustainability transformations: The global case of phosphorus. *Environmental Science & Policy*, 107, 80–89. <https://doi.org/10.1016/j.envsci.2020.02.019>

Matti, C., Martín Corvillo, J. M., Vivas Lalinde, I., Juan Agulló, B., Stamate, E., Avella, G., & Bauer, A. (2020). Challenge-led system mapping. A knowledge management approach. *Transitions Hub series. EIT Climate-KIC*. Brussels. <https://transitionshub.climate-kic.org/publications/challenge-led-system-mapping-a-knowledge-management-approach/>

Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *The Academy of Management Review*, 22(4), 853. <https://doi.org/10.2307/259247>

Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C. H., & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, 90(5), 1933–1949. <https://doi.org/10.1016/j.jenvman.2009.01.001>

Schmidt, L., Falk, T., Siegmund-Schultze, M., & Spangenberg, J. H. (2020). The Objectives of Stakeholder Involvement in Transdisciplinary Research. A Conceptual Framework for a Reflective and Reflexive Practise. *Ecological Economics*, 176, 106751. <https://doi.org/10.1016/j.ecolecon.2020.106751>



Wildcards

Barber, M. (2006). Wildcards – Signals from a Future Near You. *Journal of Futures Studies*, Vol 11, No 1, p. 75–94. <https://ifsdigital.org/wp-content/uploads/2014/01/111-A05.pdf>

BIPE Conseil (1992). CIFS/Inst. for the Future: Wild Cards: A Multinational Perspective. *Institute for the Future*.

Hiltunen, E. (2006). Was It a Wild Card or Just Our Blindness to Gradual Change? *Journal of Futures Studies*, 11(2). <https://ifsdigital.org/articles-and-essays/2006-2/vol-11-no-2-november/articles/was-it-a-wild-card-or-just-our-blindness-to-gradual-change/>

Steinmüller, K. (2003). The future as Wild Card. A Short Introduction to a New Concept. Z_punkt GmbH, Büro für Zukunftsgestaltung Essen and Berlin, Berlin.

Weak Signals/Biases

Amanatidou, E., Butter, M., Carabias, V., Konnola, T., Leis, M., Saritas, O., Schaper-Rinkel, P., & van Rij, V. (2012). On concepts and methods in horizon scanning: Lessons from initiating policy dialogues on emerging issues. *Science and Public Policy*, 39(2), 208–221. <https://doi.org/10.1093/scipol/scs017>

Day, G. S., & Schoemaker, P. (2004). Peripheral Vision: Sensing and Acting on Weak Signals. *Long Range Planning*, 37(2), 117–121. <https://doi.org/10.1016/j.lrp.2004.01.003>

Ilmola, L., & Kuusi, O. (2006). Filters of weak signals hinder foresight: Monitoring weak signals efficiently in corporate decision-making. *Futures*, 38(8), 908–924. <https://doi.org/10.1016/j.futures.2005.12.019>

Hiltunen, E. (2008). The future sign and its three dimensions. *Futures*, 40(3), 247–260. <https://doi.org/10.1016/j.futures.2007.08.021>

Kahneman, D. (2012). *Thinking, fast and slow*. Penguin psychology. Penguin Books.

Kahneman, D., & Tversky, A. (1996). On the reality of cognitive illusions. *Psychological Review*, 103(3), 582–91; discussion 592–6. <https://doi.org/10.1037/0033-295x.103.3.582>

Policy Horizon Canada Foresight Training Manual Module 3: Scanning <https://horizons.gc.ca/en/our-work/learning-materials/foresight-training-manual-module-3-scanning/> (last retrieved 06.10.2023)

Quoidbach, J., Gilbert, D. T., & Wilson, T. D. (2013). The end of history illusion. *Science* (New York, N.Y.), 339(6115), 96–98. <https://doi.org/10.1126/science.1229294>

Rossel, P. (2012). Early detection, warnings, weak signals and seeds of change: A turbulent domain of futures studies. *Futures*, 44(3), 229–239. <https://doi.org/10.1016/j.futures.2011.10.005>

Schirmeister, E., Göhring, A.-L., & Warnke, P. (2020). Psychological biases and heuristics in the context of foresight and scenario processes. *FUTURES & FORESIGHT SCIENCE*, 2(2), 13. <https://doi.org/10.1002/ffo2.31>



Warnke, P., & Schirmeister, E. (2016). Small seeds for grand challenges—Exploring disregarded seeds of change in a foresight process for RTI policy. *Futures*, 77, 1–10. <https://doi.org/10.1016/j.futures.2015.12.001>

Scenario Method

Disclaimer: Literature on scenario building is vast and approaches vary widely, we thus offer a small selection of overviews and classical scenario literature in this section.

Börjeson, L., Höjer, M., Dreborg, K.-H., Ekvall, T., & Finnveden, G. (2006). Scenario types and techniques: Towards a user's guide. *Futures*, 38(7), 723–739. <https://doi.org/10.1016/j.futures.2005.12.002>

Cairns, G., & Wright, G. (2018). *Scenario Thinking* (2nd ed.). Palgrave Macmillan.

van der Heijden, K. (1997). *Scenarios: The Art of Strategic Conversation*. John Wiley.

Ringland, G. (1998). *Scenario Planning: Managing for the Future*. John Wiley.

Schwartz, P. (1991). *The Art of the Long View: Planning for the Future in an Uncertain World*.

Spaniol, M. J., & Rowland, N. J. (2019). Defining scenario. *Futures & Foresight Science*, 1(1), e3. <https://doi.org/10.1002/ffo2.3>



5 Appendix

5.1 Informed Consent Form

Informed Consent Form for labs activities

You have been invited to participate in a pilot case of the FUTURESILIENCE project. This consent form provides detailed information allowing you to make an informed decision about participation in the pilot activities. Please read it carefully and don't hesitate to get in touch with the contact persons named below should you have any doubts or questions.

- Name of project manager: Dr. Matias Barberis (barberis@efiscentre.eu)
- Name of organisation: European Future Innovation Systems (EFIS) Centre
- Name of project: FUTURESILIENCE – GA. No 101094455.

This Informed Consent Form has two parts:

- Information sheet, including relevant information about the study.
- Certificate of consent, for acceptance of conditions if you choose to participate.

Information Sheet

Introduction

The activities are part of the research project **FUTURESILIENCE**, funded by the European Union's Horizon Europe research and innovation programme and coordinated by EFIS Centre (Brussels). **FUTURESILIENCE** aims to strengthen the ability of communities in Europe to react to future crises by quickly identifying and testing evidence-based solutions. The project has set up ten pilot cases called 'FUTURESILIENCE Labs' where we work with community partners to understand future crises and possible solutions for each specific local situation. The project will ultimately develop guidelines emerging from the pilots and useful for other communities aiming to follow a similar process to create resilience. More Information on the project is available on the website: <https://futuresilience.eu/>

Purpose of activities

You are invited to participate in [**Name_of_Pilot**] FUTURESILIENCE lab. This lab aims to [**insert_objectives**]. More information of this lab is available at [**insert_link**]

The FUTURESILIENCE lab will undertake the following activities [*please select those applying*]

- Kick-off meeting/conference: [**insert description**]
- Community mapping: [**insert description**]
- Foresight workshop I: in this workshop we will develop scenarios that will specify how the challenges of the city/region emerge and evolve in certain periods of time. [**modify description**]
- Foresight workshop II: this activity will be dedicated to jointly discuss whether existing evidence-based solutions across Europe or worldwide could help to deal with the challenges. [**insert description**]
- [**insert other activities and description**]



These activities are led by [*insert name of organisation*] and conducted jointly with [*indicate names of participating partners*]. Contact details are as follows:

- Name and email of pilot leader contact person
- Name and email of pilot leader Foresight
- Name and email of pilot contact person

Duration and extent of involvement

The activities you are invited to join will take place in [*insert_place*] and will last [*insert details of timing*].

We invite you to contribute to the pilot activities by providing insights from your experience as a citizen living in the area or practitioner in one of the areas relevant for the topic. You will be invited to provide your input within discussions with other participants in small groups and plenary in oral and written format (e.g. on sticky notes). [*Expand if known activities*]

It is entirely up to you to decide what and how much you chose to contribute. You do not have to answer any question if you feel the question(s) are too personal or if answering them makes you uncomfortable. Whenever possible, further information about the activities will be shared with participants with enough anticipation and there won't be need for extensive preparation to participate in the activities.

Voluntary Participation

Your participation is entirely voluntary. It is your choice whether to participate or not. You may change your mind later and stop participating even if you have agreed to do so previously. You can withdraw the process by not attending the activities, even though registered, or once activities started you are free to leave the activity at any time. You can also participate in one or some activities and not all of them. The lab activities are considered finished once the [*name of lab*] lab has produced its final report and no later than December 2025.

Although it will be possible to withdraw from participation, given the anonymising process, data and contributions to the project implementation will still be processed, since it will not be possible to identify the data source.

Personal data management

For the sole purpose of managing the workshop invitations and sending out the documentation we will save participants **names and email addresses**. These will be stored on secure folders at [*insert name of pilot leader*] and share only, upon request, by the coordinator (EFIS Centre) or the European Commission. The data will be kept for a period of 5 years after project ends and will be destroyed afterwards, in compliance with General Data Protection Rules (GDPR) and the Grant Agreement signed between the FUTURESILIENCE consortium and the European Union.

During the activities we will capture participants contributions exclusively **in an anonymised format e.g. on post-its, flipcharts and templates without noting down who said what**. These outcomes will be captured through photos or information transcribed, which will be the basis for the activities' documentation. [*please change or adapt if necessary*]

We will apply the "**Chatham House Rule**" meaning that participants are encouraged to freely share insights from the workshop but commit to refrain from direct citations of each other's statements. You can learn more about here: <https://www.chathamhouse.org/about-us/chatham-house-rule>



The requested personal data are suitable, pertinent and strictly necessary for the purpose for which they were collected. You can exercise your right to access, rectify, cancel or oppose the personal data held in our files by contacting EFIS Centre and FUTURESILIENCE project designated Data Protection Officer, Christine Neve, contact at contact@futuresilience.eu. The Data Protection Officer will ensure that personal data collection and processing in the frame of the pilot will be carried out according to EU legislation.

Use and sharing of results

The fully anonymised results will be documented in a **pilot report** that will be shared with and accessible by all participants. This report will be used in two main ways:

1. The [name of pilot leader] will uptake the results to design actions towards addressing the challenge and increase societal resilience.
2. The FUTURESILIENCE project will further use the results for:
 - If during the pilot activities new actions and solutions contributing to build societal resilience is developed or shaped from another evidence-based solution, this will feed the project “Knowledge Base” of solutions, useful for other communities with similar challenges.
 - Develop the [name of pilot] FUTURESILIENCE lab final report, only taking stock of activities results and methodological challenges of implementation. This report will be only accessible by consortium partners.
 - Document findings across all ten pilots in Deliverable 2.5 (“Consolidated report of pilot cases”), including relevant learnings from each pilot final report. This report will be publicly accessible through the project website.
 - In addition, the learnings from the workshop process will be used to improve the methodology that will finally result in the “FUTURESILIENCE Toolbox” (Deliverable 1.3). This report will be publicly accessible through the project website.

Certificate of voluntary consent

I agree to voluntarily enter this study. Hereby, I accept I have had a chance to read this consent form, and it was explained to me in a language which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. I understand that I can withdraw at any time. A copy of this signed Informed Consent Form has been given to me.

Participant Signature*
Name, place and date

Matias Barberis
FUTURESILIENCE Project Management
5th October 2023

*This could be collected through a registration list for the different activities.



This project has received funding from the European Union’s Horizon Europe research and innovation programme under grant agreement No 101094455.

5.2 MIRO design

The FUTURESILIENCE Toolbox supports policy and decision makers to set up a participatory process that underpins future oriented policies for societal resilience. The participatory design is based on what is conceptually defined as anticipatory governance and thus organised as Foresight process, including also other relevant tools for policy development.

On the MIRO board you will first find an overview guiding you through the whole process step by step. Below you will find explanations and supporting templates for each step as well as links to additional sources should you wish to dive deeper. The toolbox also provides links to other tools in support of resilience in specific fields ranging from rural households to health system resilience and disaster resilience.

Figure 15 Cover image toolbox for website

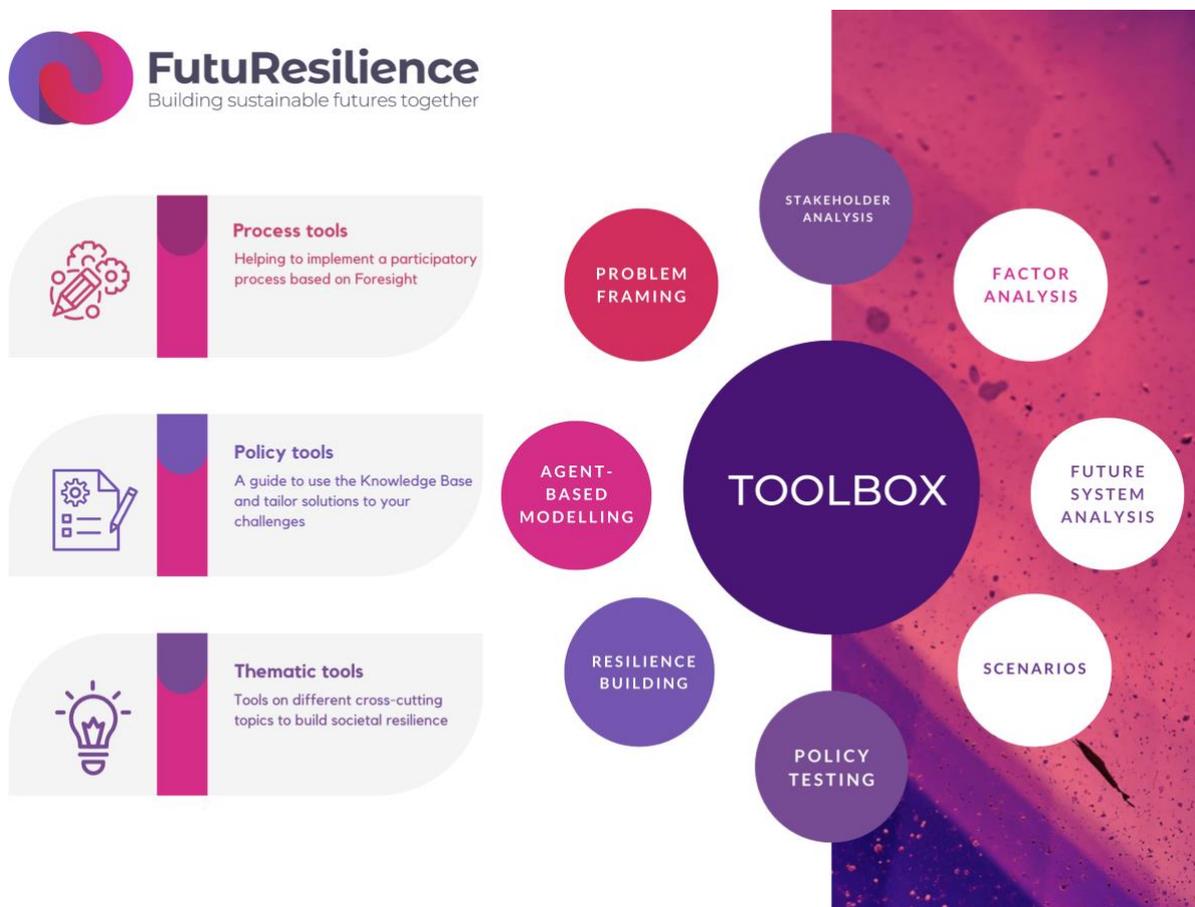


Figure 16 Process Tools – overall process (based on MIRO)

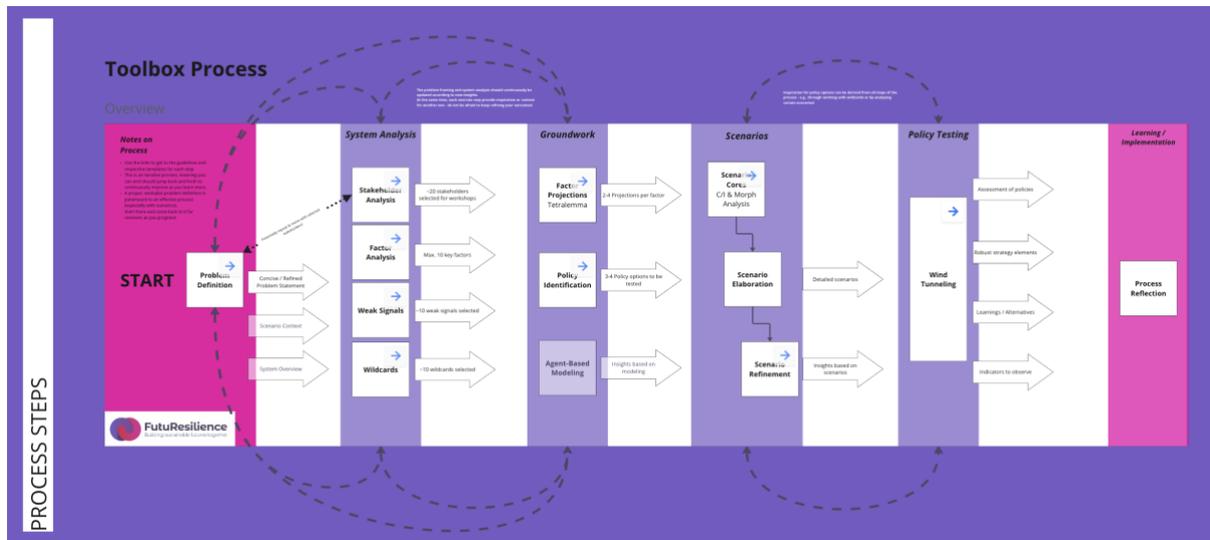


Figure 17 Example of specific tool for the scenario phase (based on MIRO)

Scenario Cores- Cross-Impact Analysis & Morphological Table

Guide

How do Factors interact with each other?
Start with the cross-impact analysis.

- Combining the respective projections of the factors created in the tetralemma exercise, we will be able to construct the backbone of a complete scenario.
- Before doing so, however, it is important to examine the interactions between the factors. This not only helps to get a better general understanding, but also yields crucial information for the next steps.
- To conduct the cross-impact analysis, you take a look at how Factor A influences Factor B - for example, how does a change in temperature affect public parking? While this would probably receive a low rating of 1, other factors such as crop harvests may be impacted much more strongly.
- Keep in mind that the combination is only one way (at least), so verify A influencing B and not the other way around.
- In the end, we can identify factors that have a lot of influence on other factors (highest average on active side), and the factors that are strongly dependent on others (or not influenceable at all - highest average on the passive side).

How to arrive at meaningful scenario cores?
Combine projections in the morphologic table.

- The morphologic table is the crucial next step to arrive at scenario "cores". It is all about combining projections that make sense together (i.e. are reasonably consistent with each other) into a set that sketches the outline of a plausible world.
- Keep in mind: A scenario does not have to be likely or realistic to be useful for your exercise - Plausible means it is logically constructed and you can reasonably argue that it is internally consistent.
- The order of factors will be strongly determining the direction of the resulting scenarios. Therefore, start with the factors that were identified as the most influential (highest active rating) in the CI Analysis!
- Choose a projection for each factor in such a way that in combination they could result in a plausible scenario. Starting from the left, the connecting line you draw will ultimately yield a set of projections that make up your scenario cores.

Tips and Tricks:

- Both the cross-impact analysis and the morphologic table revolve around group discussions to arrive at plausible results - Therefore, it is vital to facilitate formats that allow for a smooth process.
- To make the evaluations of the cross-impact analysis more manageable, you can divide them up into smaller teams of, e.g., two people. Both should rate individually before comparing and discussing results to avoid biases and arrive at a more nuanced rating. The more people or groups working on one rating the more nuanced it can become, yet it also becomes more time-intensive.
- The morphologic table can be approached with a larger group, yet everyone involved should have a shared understanding of the projections.

Templates

1 Cross-Impact Analysis

- To the right, you can find a template for the cross-impact analysis.
- Copy it for your project and fill in the respective factors with descriptions, adding or removing them as needed.
- Work in groups to share the workload and arrive at more reflected results.

2 Morphologic Table

Factor X Projections	Factor 1 Description	Factor 2 Description	Factor 3 Description	Factor 4 Description	Factor 5 Description	Factor XXX (Please Specify Content to date)
Factor Projection 1	One projection from Tetralemma exercise					
Factor Projection 2	A different projection from Tetralemma exercise					
Factor Projection 3	Another projection from Tetralemma exercise					
Factor Projection 4	One more projection from Tetralemma exercise					

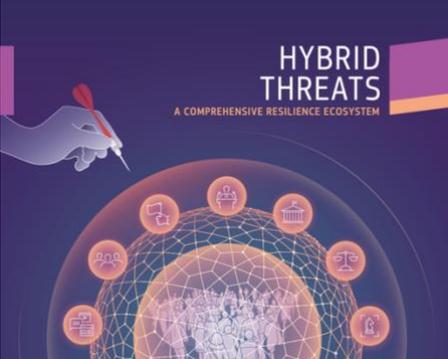
● Scenario 1
 ● Scenario 2
 ● Scenario 3
 ● Scenario 4
 ● Scenario 5

Back to Guidelines:



Thematic tools

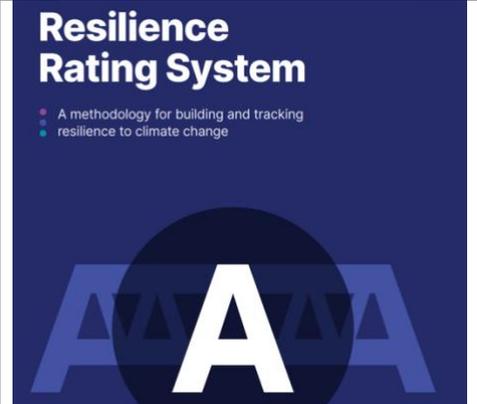
Table 9 Thematic oriented tools to build resilience (examples from mapping policy documents via Overton.io)

Name	Author, Year	Linked topic in KB	Link	Image
Hybrid threads: a comprehensive resilient ecosystem	EC-JRC, 2023	Governance, policy planning	https://publications.jrc.ec.europa.eu/repository/bitstream/JRC129019/JRC129019_01.pdf	
Self-evaluation and holistic assessment of climate resilience of farmers and pastoralists	FAO, 2022	Agriculture, food, climate resilience	http://www.fao.org/3/cb7399en/cb7399en.pdf	

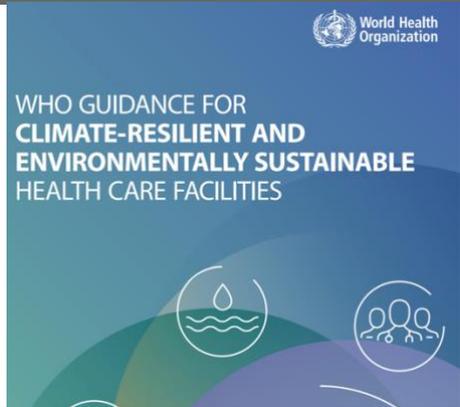


Name	Author, Year	Linked topic in KB	Link	Image
Measuring the climate resilience of health systems	WHO, 2022	Health and well-being	https://apps.who.int/iris/bitstream/10665/354542/1/9789240048102-eng.pdf	
Climate resilience and disaster risk analysis for gender sensitive value chains	FAO, 2022	Agriculture, food, industries, gender	http://www.fao.org/3/cc0051en/cc0051en.pdf	
The resilience design and monitoring tool	IFAD, 2022	Agriculture, climate resilience, housing	https://www.ifad.org/documents/38714170/46740629/htdn-rdmt.pdf/eef9da98-2b1c-af48-62e1-8583b42d04de?t=1668158824285	

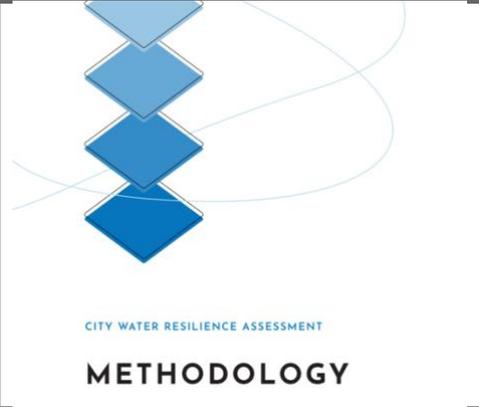


Name	Author, Year	Linked topic in KB	Link	Image
Health systems resilience toolkit	WHO, 2022	Health and well-being	https://apps.who.int/iris/bitstream/10665/354177/1/9789240048751-eng.pdf	
Resilience rating system	World Bank, 2021	Governance, project design	https://openknowledge.worldbank.org/bitstream/10986/35039/6/Resilience-Rating-System-A-Methodology-for-Building-and-Tracking-Resilience-to-Climate-Change-A-Summary.pdf	

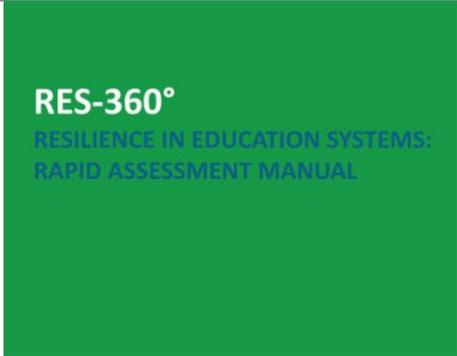
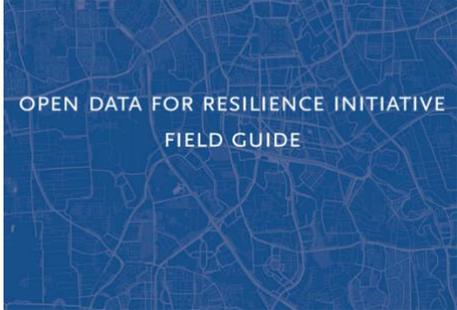


Name	Author, Year	Linked topic in KB	Link	Image
Guidance for climate resilient and environmentally sustainable health care facilities	WHO, 2021	Health and well-being	https://apps.who.int/iris/bitstream/10665/335909/1/9789240012226-eng.pdf	
Toolkit for value chain analysis and market development integrating climate resilience and gender responsiveness	UNDP-FAO, 2020	Value chains, agriculture, industries	http://www.fao.org/3/cb0699en/CB0699EN.pdf	



Name	Author, Year	Linked topic in KB	Link	Image
City water resilience assessment	ARUP et al, 2019	Water, housing, urban development	https://www.arup.com/-/media/arup/files/publications/c/cwra-methodology.pdf	
Disaster displacement: How to reduce risk, address impacts and strengthen resilience	UNDRR, 2019	Disaster, displacement, well-being, governance	http://www.unisdr.org/files/58821wiadisasterdisplacement190511webeng.pdf	

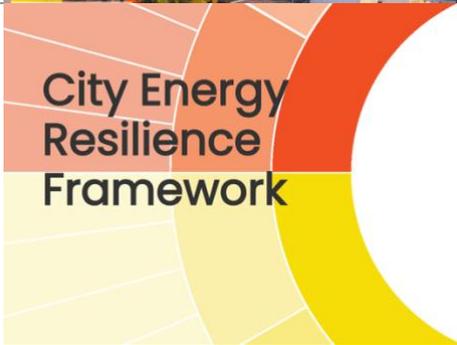


Name	Author, Year	Linked topic in KB	Link	Image
The city resilience index	Rockefeller Foundation	Urban development, governance, measuring resilience	https://www.cityresilienceindex.org/#/	 <p>CITY RESILIENCE INDEX</p>
Resilience in Education Systems: Rapid Assessment Manual	World Bank, 2013	Education, training	https://openknowledge.worldbank.org/bitstream/10986/17467/1/776850/WPORES030Box0342041B00PUBLICO.pdf	 <p>RES-360° RESILIENCE IN EDUCATION SYSTEMS: RAPID ASSESSMENT MANUAL</p>
Open Data for Resilience Initiative: Field Guide	GFDRR, 2014	Open data, governance	https://www.gfdr.org/en/publication/open-data-resilience-initiative-field-guide#:~:text=In%20response%2C%20the%20World%20Bank,disaster%20and%20climate%20change%20information.	 <p>OPEN DATA FOR RESILIENCE INITIATIVE FIELD GUIDE</p>



Name	Author, Year	Linked topic in KB	Link	Image
Financial system resilience index	NEF, 2015	Finance, economy, governance	https://neweconomics.org/uploads/files/70470851bfaddff2a2_xem6ix4gg.pdf	 <p>Financial System Resilience Index Building a strong financial system</p>
Think Hazard	World Bank, 2007	Hazard mapping, urban development	https://thinkhazard.org/en/	 <p>ThinkHazard! Identify natural hazards in your project area and understand how to reduce their impact</p>
City Resilience Dynamics tool	SMR Project, H2020	Urban governance, planning,	https://crd.smr-project.eu/	 <p>SMART MATURE RESILIENCE</p>



Name	Author, Year	Linked topic in KB	Link	Image
Resilience Recovery Toolkit	Resilient Cities Network	Urban Development, governance	https://resilientcitiesnetwork.org/resilient-recovery-toolkit/	
City Energy Resilience Framework	Resilient Cities Network	Urban development, energy	https://resilientcitiesnetwork.org/city-energy-resilience-framework/	
Quick Risk Estimation Tool	UNDRR, 2021	Urban development, disasters	https://www.unisdr.org/campaign/resilientcities/toolkit/article/quick-risk-estimation-qre.html	



Name	Author, Year	Linked topic in KB	Link	Image
Disaster Resilience Scorecard for Cities	UNDRR, 2017	Disasters, urban development, governance	https://mcr2030.undrr.org/disaster-resilience-scorecard-cities	





This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101094455.