



# transformer

## Knowledge Hub

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Responsible Author(s):	Georgia Ayfantopoulou, Maria Konstantinidou
Responsible Co-Author(s):	
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## Abstract

This deliverable includes the presentation of TRANSFORMER Knowledge Hub that serves as a step-by-step advisory hub to build competence to regions and support the ecosystems of actors in evolving a cross-sectoral transition towards climate neutrality, through innovation. It describes the Knowledge Hub prototype that will be tested by the TRANSFORMER TSLs. The Knowledge Hub will be continuously enriched by the end of the project to ensure high levels of sustainability and usability for the TSLs.

## Project Partners

Organisation	Country	Abbreviation
RUHR-UNIVERSITAET BOCHUM	DE	RUB
RUPPRECHT CONSULT-FORSCHUNG & BERATUNG GMBH	DE	RC
BUSINESS METROPOLE RUHR GMBH	DE	BMR
REGIONE EMILIA ROMAGNA	IT	RER
FONDAZIONE ISTITUTO SUI TRASPORTI E LA LOGISTICA	IT	ITL
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## Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>6</b>
<b>1 THE SCOPE AND THE STRUCTURE OF THE KNOWLEDGE HUB .....</b>	<b>7</b>
1.1 HOME PAGE .....	8
1.2 ABOUT .....	10
1.3 DISCOVER THE TRANSITION SUPER-LAB APPROACH .....	12
1.4 HOW TO ACHIEVE A PARADIGM SHIFT?.....	16
1.5 KNOWLEDGE REPOSITORY .....	20
1.6 FREQUENTLY ASKED QUESTIONS.....	25
<b>2 ITERATIONS WITH THE TSLs .....</b>	<b>26</b>
<b>3 LINK WITH THE TRANSITION SUPER-LAB ROADMAP AND TOOLKIT.....</b>	<b>27</b>
<b>4 CONCLUSIONS.....</b>	<b>34</b>

## Table of Figures

Figure 1: Home page of Knowledge Hub.....	9
Figure 2: "About" section in the TRANSFORMER Knowledge Hub.....	12
Figure 3: "Discover the Transition Super-Lab approach" section in TRANSFORMER Knowledge Hub .....	14
Figure 4: "Transition Super Lab" sub section in the Knowledge Hub.....	15
Figure 5: TRANSFORMER Transition Model .....	16
Figure 6: Example of the description of the 1 <sup>st</sup> Phase in the Knowledge Hub.....	17
Figure 7: Example of the description of the step "Examine feasibility of the "pilot use cases" in the 2nd Phase in the Knowledge Hub.....	18
Figure 8: Example of the description of the step "Define "Quick wins" in the 3rd Phase in the Knowledge Hub .....	19
Figure 9: Example of the description of the step "Define emblematic innovative transition projects" in the 4 <sup>th</sup> Phase in the Knowledge Hub .....	20
Figure 10: "Knowledge repository" section in TRANSFORMER Knowledge Hub.....	25
Figure 11: Feedback from TSLs on TRANSFORMER Knowledge Hub during Lower Silesia's consortium meeting .....	26
Figure 12: Link of the Knowledge Hub with the Transition Super-Lab Roadmap and Toolkit .....	28

## Table of Tables

Table 1: Potential user groups, their purpose and usage of the Knowledge Hub .....	10
Table 2: Additional Knowledge item identified during Lower Silesia's consortium meeting .....	27
Table 3: Link of Knowledge Hub, Transition model and activities of transition roadmap .....	29

## List of Acronyms

CCS	Carbon Capture and Storage
CEI	Carbon Emissions Intensity
CI	Composite Indices
CPM	Critical Path Method
DMAIC	Define, Measure, Analyze, Improve, and Control
FAQ	Frequently Asked Question
GHG	Greenhouse gas
KPI	Key Performance Indicator
PESTEL	Political, Economic, Social, Technological, Legal, and Environment
PERT	Program Evaluation and Review Technique
QRAFT	Quantitative Regional Assessment Framework for Transition Super-Labs
RACI	Responsible, Accountable, Consulted, and Informed
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TKI	Thomas-Kilmann Conflict Mode Instrument
TSL	Transition Super-Lab

## Executive Summary

This deliverable (D4.4) is dedicated to the presentation of the Knowledge Hub, serving as a step-by-step advisory hub to build competence to regions and support the ecosystems of actors in evolving a cross-sectoral transition towards climate neutrality, through innovation.

A first set of knowledge items was collected and included in the online prototype. The initial repository consists of methodologies, good practices and solutions from other projects and initiatives (e.g. SPROUT, UNaLab) as well as methodologies developed in the TRANSFORMER project (such as the assessment framework methodologies) and tools (linked to the toolkit of Task 4.2). As the Knowledge Hub will serve as a step-by-step advisory tool supporting regions in evolving their cross-sectoral transition towards climate neutrality, the knowledge items have been aligned with the different steps of the TRANSFORMER transition model and the activities of the first version of the transition roadmap (Task 4.1).

To transfer knowledge on the TSL approach, methodologies/tools, strategies, performing practices and solutions, the Knowledge Hub includes a collection of knowledge items from both external sources (other projects/initiatives/open innovation community) and the involved Super-Labs (validated within the pilot process) that are structured along the phases and steps of the TRANSFORMER transition model to guide users through the Hub. The Knowledge Hub is composed of a portfolio of knowledge items including also tools to support the governance of a Super-Lab and the co-creation processes (linked to toolkit, Task 4.2) and to facilitate the assessment processes enabling the efficient decision-making and scaling-up to concrete transition. Through visualisation techniques and a self-assessment scheme the outputs will be communicated to users in an appealing and understandable way. The Knowledge Hub is accessible at <https://transformerknowledgehub.imet.gr/> and through the TRANSFORMER Hub website.

Chapter 1 provides an overview of the scope and the structure of the Knowledge Hub and a detailed presentation of the content that is included in each section of the online prototype of the Knowledge Hub. Each section is also visually illustrated through relevant screenshots. Chapter 2 offers an insight on the first feedback of the four TRANSFORMER TSLs on the Knowledge Hub and its content during the consortium meeting in Lower Silesia while Chapter 3 connects the knowledge items currently included in the Knowledge Hub with the activities of the transition roadmap developed in Task 4.1 and the toolkit developed in Task 4.2.

# 1 The scope and the structure of the Knowledge Hub

The architecture of the Knowledge Hub was developed based on the TRANSFORMER transition model as being described in D5.1 Framework for Super-Labs Assessment that guides the process of the region's transition towards climate neutrality. The transition model was developed by CERTH as a conceptual framework that defines the overall TSL approach and guiding principles for managing the region's transition towards climate neutrality. The development of the transition model was essential to gain a better understanding of the transition process also providing the basis for the roadmap to elaborate in detail the specific steps and activities to be taken by the TSLs.

As soon as the functionalities of the Knowledge Hub were defined, the first discussions with RUB, RC and TWE about the technical requirements, the needs of its users, and integration in the TRANSFORMER hub were performed in the first 6 months of the project. Based on these discussions, input into the technical specifications of the Transformer Hub was prepared and integrated in D6.3 TRANSFORMER Hub. Further discussions have been held with TWE to agree on the integration level between the Knowledge Hub and the TRANSFORMER Hub, further aligning the compatibility of the two platforms.

The Knowledge Hub is developed as an online platform that provides information about the TSL approach and in parallel guides the regions through four different phases of the TRANSFORMER transition model providing useful material including tools, methodologies and good practices to help them accelerate their transition towards climate neutrality.

The Knowledge Hub is structured as following:

1. Home page
2. About
3. Discover the Transition Super-Lab approach
4. How to achieve a paradigm shift?
5. Knowledge Repository
6. FAQ

“About” section provides users with a general overview of what the TRANSFORMER Knowledge Hub is, who can use it and why to use it. The section “Discover the Transition Super Lab approach” contains all the necessary information for users to familiarise themselves with the concept of transition and the Transition Super-Lab approach including what a TSL is and what it aims to achieve, as well as its main elements. In the section “How to achieve a paradigm shift”, the users have the opportunity to be guided through the different phases and steps of the transition model and learn about what each phase/step entails and why it is important for accelerating the transition process towards climate neutrality. In the section “ Knowledge Repository” the users can find suggested methodologies, tools and good practices that are linked to each step of the transition model and will help them in successfully implementing the specific phase/step. Finally, a section of Frequently Asked Question (FAQ) includes a set of questions that respond to challenges identified by TRANSFORMER TSLs during the first steps of the transition process.

The current deliverable describes the Knowledge Hub prototype that will be tested by the TRANSFORMER TSLs. The Knowledge Hub will be continuously enriched by the end of the project to ensure high levels of sustainability and usability for the TSLs.

The prototype version can be found online at: <https://transformerknowledgehub.imet.gr/>

## 1.1 Home page

The home page of the Knowledge Hub provides a general introduction about the climate challenge, how the TRANSFORMER project takes up this challenge by applying the Transition Super-Lab (TSL) approach and what the contribution of the Knowledge Hub is. Figure 1 illustrates the home page of the Knowledge Hub.

The following text is included in the Home Page:

*“Climate change is the biggest challenge of our times. To reach the ambitious goals set by the Paris Agreement and the European Green Deal, a radical transformation of the EU’s economy is urgent. Civil society and industries in Europe are confronted with the unprecedented challenge to address the ‘great transformation’ to a carbon neutral economy and actively make it happen in an extremely short window of time.*

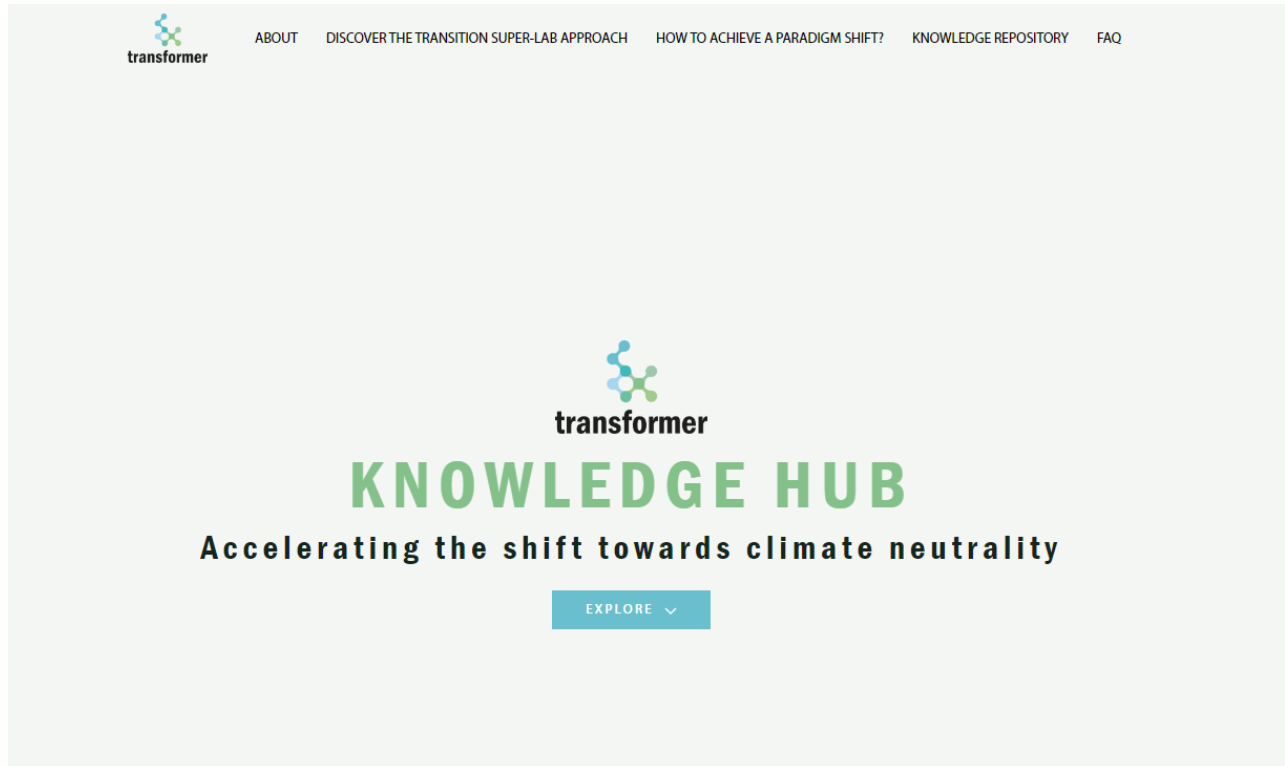
*To reach the goal of net-zero emissions by 2050 requires immediate actions going beyond the level of fostering innovation and digitalisation in societal niches. In fact, it calls for an innovation path which sets out to ‘design’ carbon neutral societal systems and focusing investments in zero-carbon solutions as indicated in the [“Final Report of the High-Level Panel of the European Decarbonisation Pathways Initiative”](#).*

*TRANSFORMER takes up this challenge by applying the Transition Super-Lab (TSL) approach.*

*The TRANSFORMER Knowledge Hub is designed to provide practical guidance at regional level steering the transition towards climate neutrality that regions face. It provides tools, methodologies and good practices developed and/or used during the TRANSFORMER project and where possible and applicable, the Knowledge Hub provides practical examples from TRANSFORMER TSLs.*

*The TRANSFORMER Knowledge Hub provides valuable material that regions can use to achieve a successful transition towards climate neutrality and harness its positive impacts. It represents the results of the TRANSFORMER project, which were co-created by researchers and practitioners in the TRANSFORMER Transition Super-Labs.”*





EXPLORE AND LEARN



Figure 1: Home page of Knowledge Hub

## 1.2 About

### 1.2.1 What is the TRANSFORMER Knowledge Hub?

The TRANSFORMER Knowledge Hub is a step-by-step advisory hub to build capacity for regions and support their ecosystem of actors in evolving a cross-sectoral transition towards climate neutrality through innovation. It operates as a valuable space for sharing and leveraging the collective knowledge and information related to transition towards climate neutrality, contributing to the success of the transition process.

### 1.2.2 Who can use it?

The TRANSFORMER Knowledge Hub can be used by diverse groups of users, each with different needs and interests. Apart from the TRANSFORMER partners in the four TSLs of Emilia-Romagna, Lower Silesia, Ruhr Area, and Western Macedonia, who will be the first users to test and validate the usability of the TRANSFORMER Knowledge Hub, the identified stakeholders involved in these TSL, including marginalised communities, will also benefit from accessing useful knowledge material.

The follower regions across Europe, not only those that were selected and participated in the TRANSFORMER User Forum activities, but also those that are interested in following the TSL approach after the end of the project, will be able to visit the TRANSFORMER Knowledge Hub and find valuable knowledge items. The follower regions include different groups of stakeholders that are further defined as public authorities, enterprises that invest in renewable energy sources, enterprises active in energy storage market, technology providers enabling climate transition, researchers in the field of sustainable development, policy analysts, environmental groups and ecologists.

The following table indicates some potential user groups, their purpose for using the Knowledge Hub and how they could benefit from it.

**Table 1: Potential user groups, their purpose and usage of the Knowledge Hub**

User group	Purpose	Usage
Policy makers and government officials	Policy, regulations, and strategies related to transition towards climate neutrality	Accessing data, case studies, and good practices to make informed decisions
Researchers and Academics	Updates on the latest methodologies, trends, and technologies.	Accessing detailed reports, datasets, and academic papers.
Industry Professionals	Market trends, technologies, and regulatory changes.	Utilizing assessment reports and methodologies, and market analysis.
Investors and Entrepreneurs	Identification of investment opportunities and understanding market dynamics.	Accessing assessment reports and regional information

Environmental and Advocacy Groups	Policies and practices that promote energy transition.	Utilizing data and reports to support advocacy efforts and transition campaigns
Energy Sector Companies	Planning and management of energy services effectively	Accessing regulatory updates, and assessment methodologies
Technology Developers and Innovators	Understanding of the technological landscape and cross-sectoral collaboration opportunities	Accessing assessment reports, cross-sectoral partnership opportunities, and regional innovation challenges
Urban Planners and Architects	Integration of sustainable energy solutions in urban development.	Utilizing guidelines and lessons learnt from case studies
International Organizations and Forums	Coordination and promotion of global transition efforts.	Accessing global data, recommendations and collaborative tools
General Public	Increase of awareness and understanding of energy transition.	Accessing easy-to-understand resources, infographics, and articles

Each user group might interact with the Knowledge Hub differently, seeking information that is most relevant to their needs and roles in the transition process. Therefore, the design and content of the TRANSFORMER Knowledge Hub is versatile and comprehensive enough to address to the diverse needs of these users.

### 1.2.3 Why use it?

Operating as a one-stop-shop for knowledge items related to transition towards climate neutrality, the TRANSFORMER Knowledge Hub is a unified space of centralized information. It collects material from various sources, organising and providing it in a structured way so that users can easily find what they need in one place. This includes good practices, methodologies, tools and FAQs from which all the target groups can benefit:

- **Knowledge Sharing:** The TRANSFORMER Knowledge Hub fosters a culture of knowledge sharing, encouraging members to share their expertise and experiences, which can lead to innovation and improved practices for accelerating the transition towards climate neutrality.
- **Efficient Collaboration:** The TRANSFORMER Knowledge Hub provides tools that facilitate the collaboration between TSLs members as they offer shared spaces to access and contribute to collective knowledge. This can improve communication and productivity.
- **Learning and Training:** The TRANSFORMER Knowledge Hub contributes to continuous learning as target groups can find training materials and tutorials.

- **Problem Solving and Decision-Making:** The TRANSFORMER Knowledge Hub helps in problem solving by offering a repository of good practices, methodologies and tools to common challenges that have been encountered in TRANSFORMER TSLs so far. This can save time and effort when facing similar problems and aid decision-making processes.
- **Stakeholder Engagement:** The TRANSFORMER Knowledge Hub can also serve as a valuable resource for stakeholders, providing them with information and answers to common questions, thereby enhancing their experience.

By regularly updating and refining the content in the TRANSFORMER Knowledge Hub, TSLs communities will be able to adapt and improve their transition processes over time.

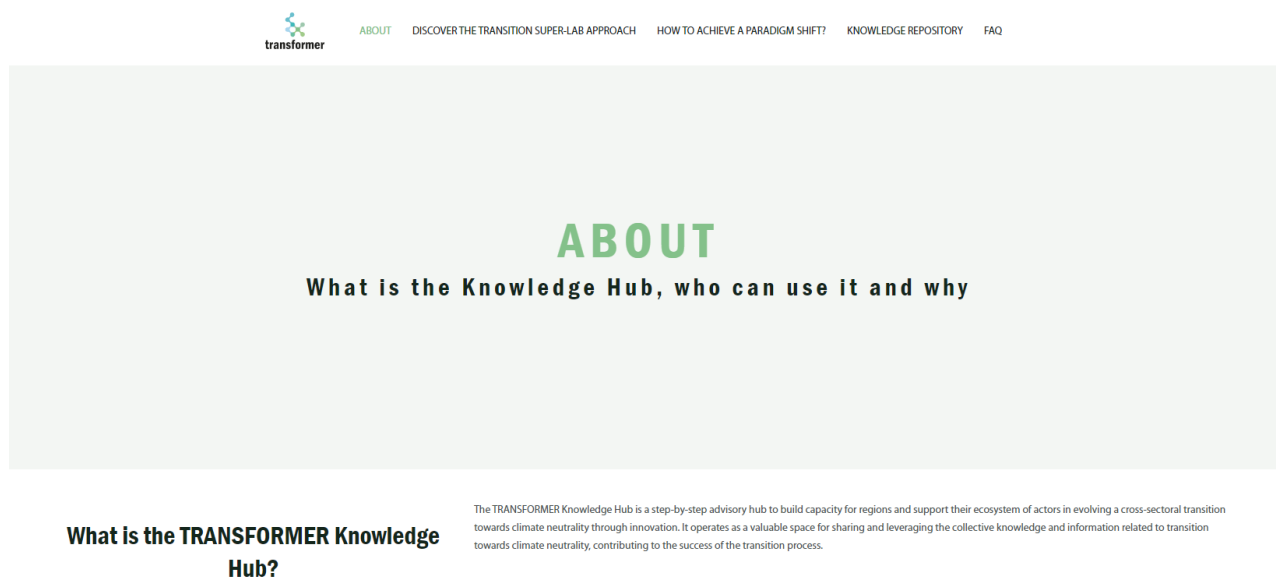


Figure 2: “About” section in the TRANSFORMER Knowledge Hub

## 1.3 Discover the Transition Super-Lab approach

### 1.3.1 What is meant by Transition?

Transition to climate neutrality refers to the procedure of achieving net-zero greenhouse gas emissions to mitigate climate change. The goal is to reduce and ultimately eliminate the emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases from various sources such as energy production, transportation, industry, agriculture, and land use changes into the atmosphere reaching a point where the amount of emissions released is balanced by the amount removed from the atmosphere through a variety of methods, such as reforestation or carbon capture technologies. This entails implementing cleaner and more sustainable technologies and practices, increasing energy efficiency, and shifting away from fossil fuels and toward renewable energy sources.

Key aspects of a transition to climate neutrality include:

- **Carbon Offsetting** by investing in initiatives that remove or reduce an equivalent amount of greenhouse gases from the atmosphere. This can involve reforestation, afforestation, carbon capture and storage (CCS), and energy efficiency programs.
- **Replacement of fossil fuel-based energy by renewable energy** from sources like wind and solar power can significantly contribute to the reduction of emissions from fossil fuel-based energy generation.
- **Improving Energy Efficiency** in buildings, transportation, and industries is critical for reducing the overall energy demand and, consequently emissions.
- **Regulatory and Policy Measures** set by governments, organizations, and international agreements play a crucial role in achieving climate neutrality as they may include emissions reduction targets, carbon pricing mechanisms, and incentives for sustainable practices. Alignment of the policies on different levels of government is also important for achieving sustainability.
- **Technological Innovation** such as carbon capture and storage, electric vehicles, and sustainable agricultural practices, can accelerate the transition to climate neutrality.
- **Behavioral Changes** related to the adoption of a more sustainable lifestyle such as consumption reduction, recycling, and public transportation use contribute to emission reductions.

To tackle climate change, the [Paris Agreement](#) and the [European Green Deal](#) set out very ambitious goals that require an urgent and radical transformation of the EU economy. Reaching the goal of net-zero emissions by 2050 needs immediate action going beyond the level of fostering innovation and digitalisation in societal niches. It calls for an innovation path which sets out to design carbon neutral societal systems and focus investments in zero-carbon solutions.

# DISCOVER THE TRANSITION SUPER-LAB APPROACH

## All about transition

### What is meant by Transition?

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Key aspects of a transition to climate neutrality include:

Figure 3: “Discover the Transition Super-Lab approach” section in TRANSFORMER Knowledge Hub

## 1.3.2 Transition Super-Lab

### 1.3.2.1 What is a Transition Super-Lab and what does it aim to achieve?

A Transition Super-Lab is an ecosystem of actors organized to accelerate the transformation towards climate neutrality through innovation and cross sectoral synergies on a regional scale. It benefits from a collaborative governance, operates in accordance to systemic transformation principles and utilizes transition enabling methods and tools in order to create added value to cross-sectoral initiatives for economic transformation and to provide feasible solutions to complex regional transformation challenges.

The TSL approach adapts and applies enriched **Living Lab methodologies** in order to develop (co-create) together with all transition relevant stakeholders from the quadruple helix and society a vision for regional transformation and a **portfolio of large-scale systemic solutions** for climate neutrality, net-zero emissions and resilient future. The **systemic transformation** within TSLs leverages large and diverse communities to innovate for systemic changes that accelerate transition at scale.

### 1.3.2.2 Elements of a Transition Super-Lab

The **systemic transformation** will be achieved by developing and implementing a portfolio of connected solutions (“e.g., pilot use cases”) which engage **multiple leverage points** at the **intersection of socio-technical regimes** simultaneously in order to achieve a rapid and more efficient transformation. Therefore, the adaptation of Living Lab methodologies to a large scale and with a focus on systemic transformation can be regarded as the core characteristics of a TSL process:

1. Adaptation and application of enriched Living Lab methodologies (co-creation, experimentation and evaluation)
2. Aiming at large-scale systemic solutions for a rapid sustainable transformation
3. Applying a portfolio approach of measures (experiments) and using multiple leverage points for systemic change simultaneously

## Transition Super-Lab

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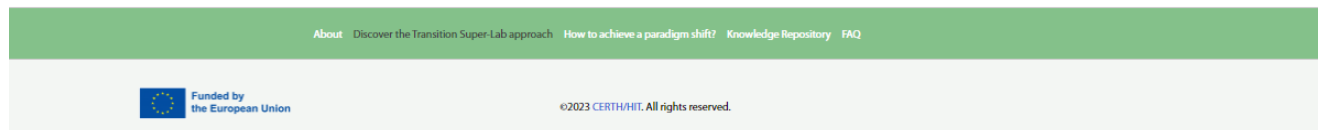
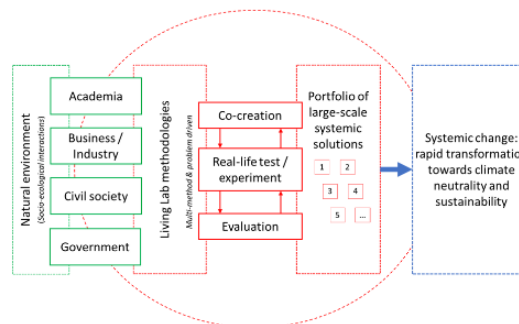


Figure 4: “Transition Super Lab” sub section in the Knowledge Hub

## 1.4 How to achieve a paradigm shift?

A Transition Super-Lab achieves a paradigm shift in the approach a region accomplishes a climate neutral transition by following the 4 steps of the TRANSFORMER Transition Model based on the open innovation process.

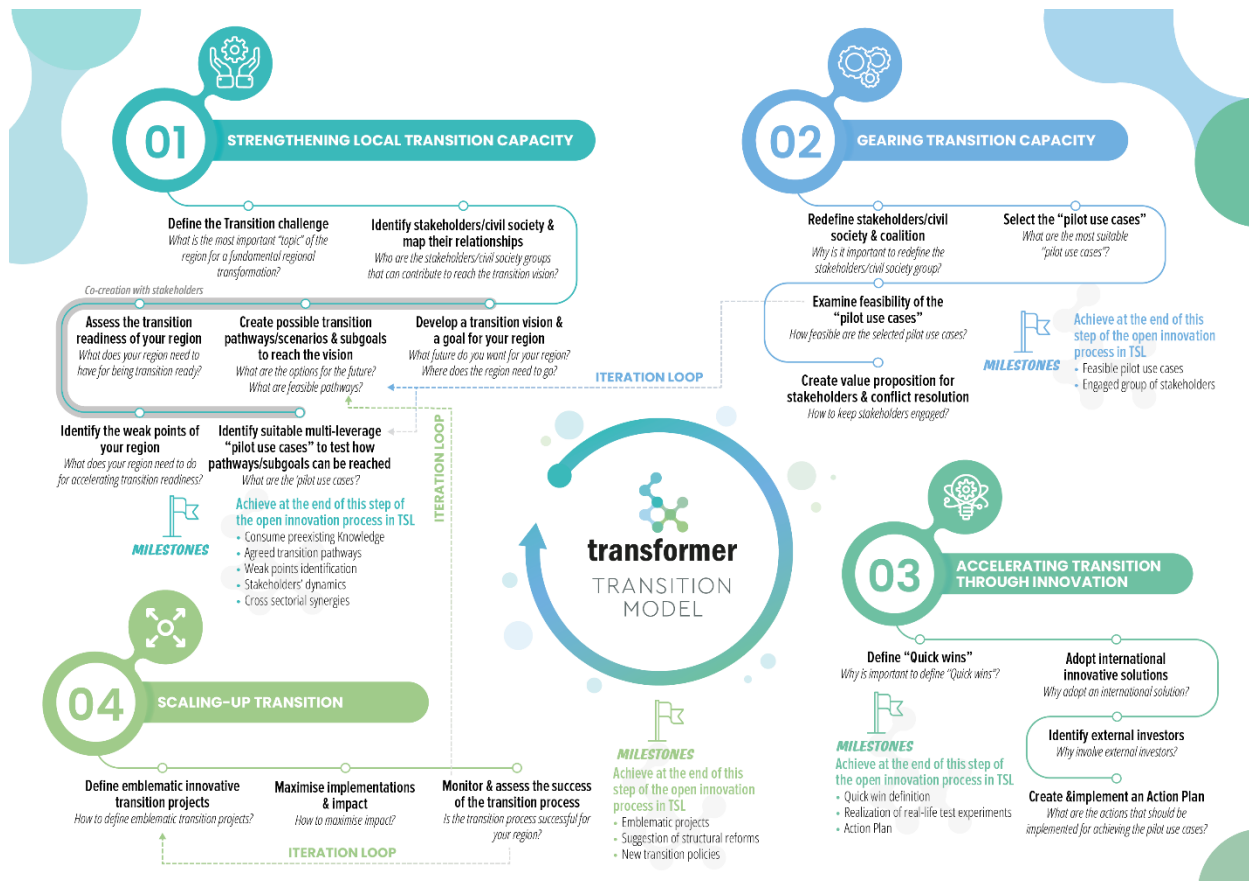


Figure 5: TRANSFORMER Transition Model

In the following subsections, the steps included in each phase are briefly presented. Further descriptions of the steps as they are presented in D5.1 are included in the Knowledge Hub by clicking each phase and step.

### 1.4.1 Strengthening local transition capacity

This first step is a preliminary stage that assists each TSL in creating a fruitful ground for the transition by utilizing the capacities of the local ecosystem as well as common knowledge and understanding of the challenges to be solved. This phase involves a sequence of steps that a region should follow for setting a strong foundation upon which the TSL will be developed ensuring a successful continuation of the transition process towards climate neutrality.



The steps included in this phase are:

- Define the Transition challenge
- Identify stakeholders/civil society and map their relationship
- Develop a transition vision and a goal for your region
- Create possible transition pathways/scenarios and subgoals to reach the vision
- Assess the transition readiness of your region
- Identify the weak points of your region
- Identify suitable multi-leverage “pilot use cases” to test how pathways/subgoals can be reached

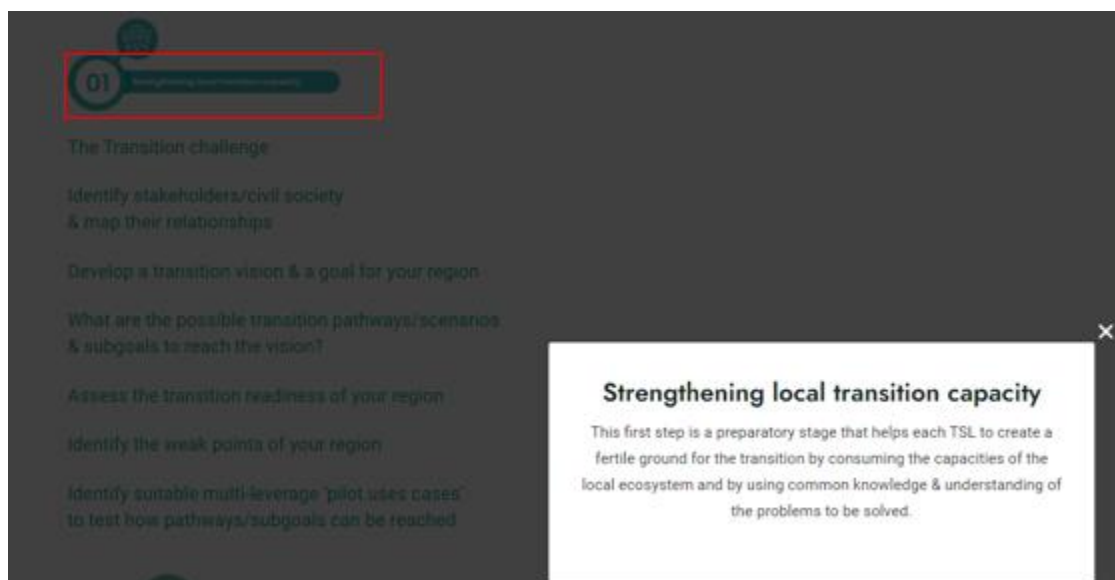


Figure 6: Example of the description of the 1<sup>st</sup> Phase in the Knowledge Hub

### 1.4.2 Gearing transition capacity

In this phase the TSLs continue the coalition building activities trying to increase cross-sectoral ecosystem capacity towards innovative sustainable sectors. The steps that are included are:

- Redefine stakeholders/civil society and coalition
- Select the “pilot use cases”
- Examine feasibility of the “pilot use cases”
- Create value proposition for stakeholders and conflict resolution

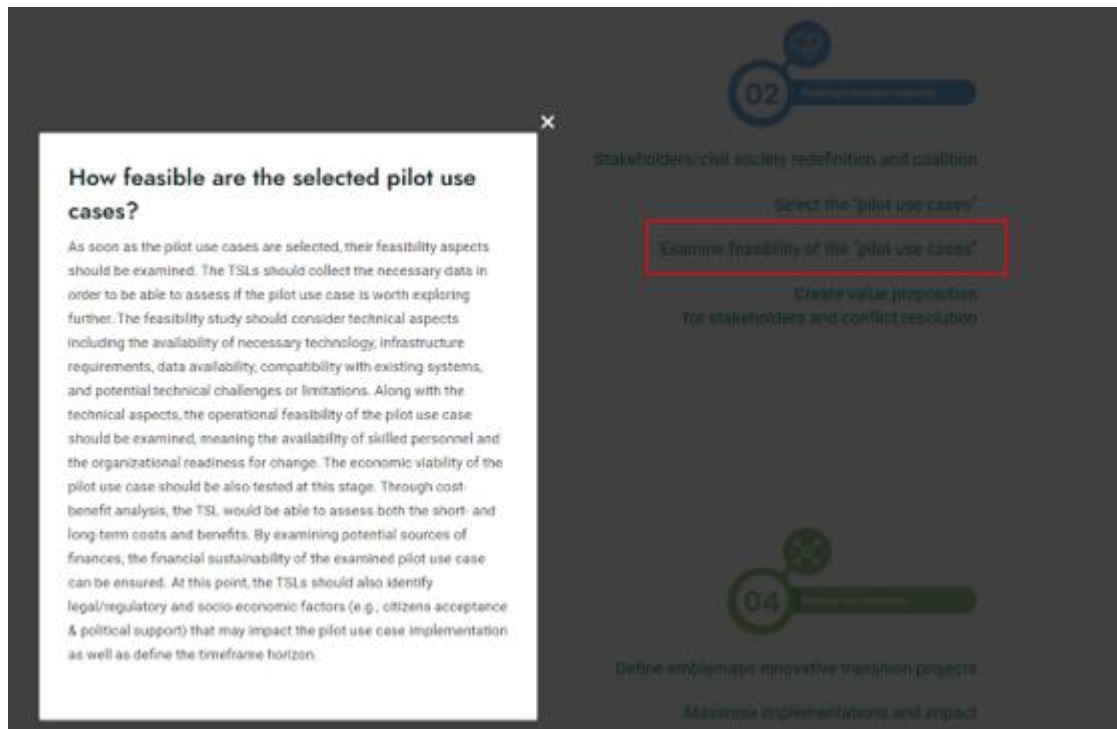


Figure 7: Example of the description of the step “ Examine feasibility of the “pilot use cases” in the 2nd Phase in the Knowledge Hub

### 1.4.3 Accelerating transition through innovation

In this phase TSL stakeholders should collaborate in developing innovative solutions that will alleviate barriers and accelerate transition. This could be achieved through the definition of “Quick wins”, the adoption of international innovative solution and the identification of external investors. The creation and implementation of an action plan is also included in this phase.

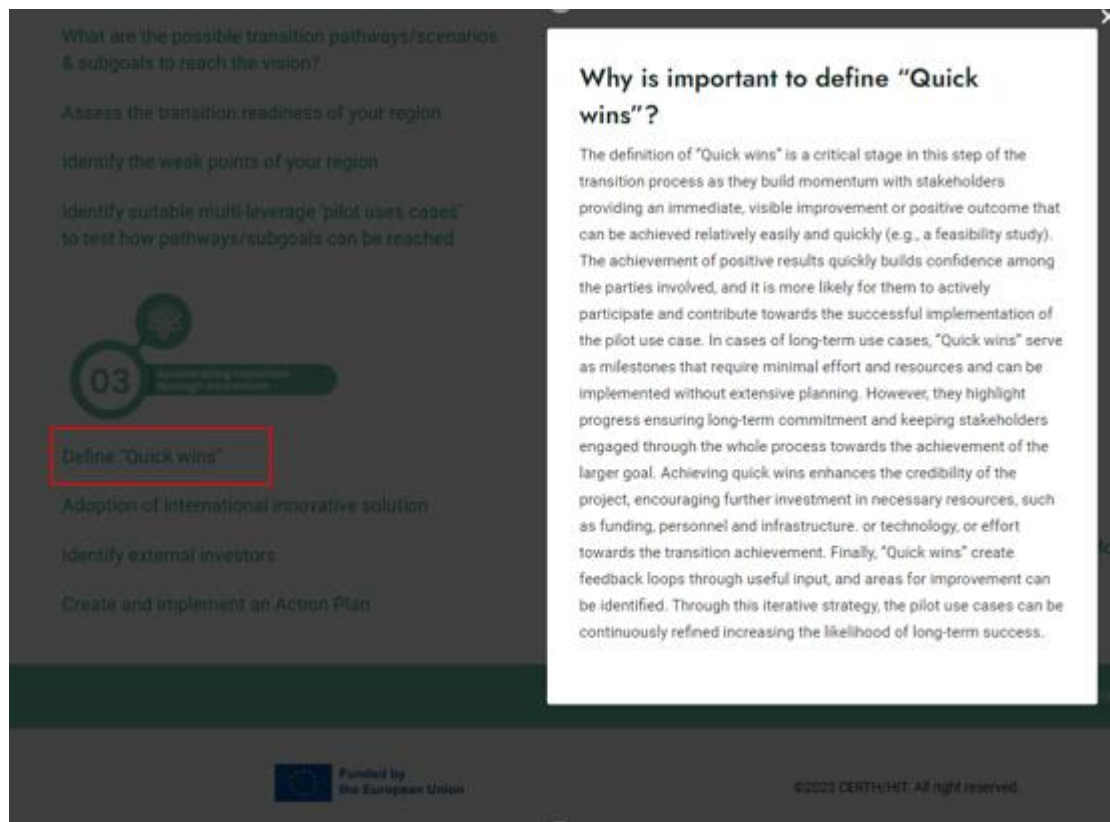


Figure 8: Example of the description of the step " Define "Quick wins" in the 3rd Phase in the Knowledge Hub

#### 1.4.4 Scaling-up transition

For a transition process to be effective and successful, it is important to secure innovative policy response to maximize implementation and impact of the solutions and achieve full adoption by the citizens. The phase includes the following steps:

- Define emblematic innovative transition projects
- Maximise implementations and impact
- Monitor and assess the success of the transition process

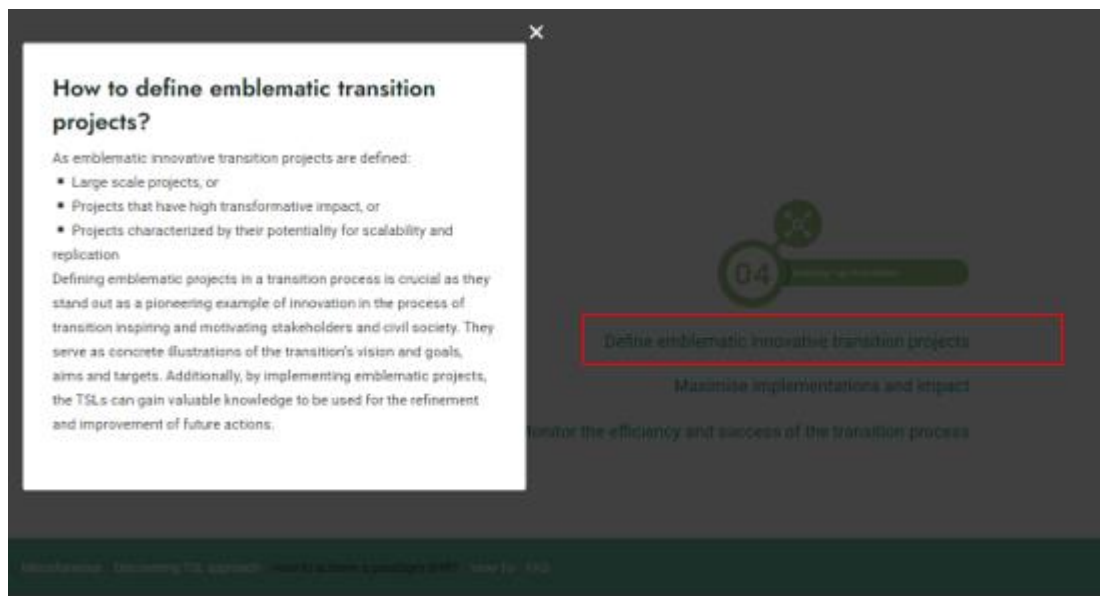


Figure 9: Example of the description of the step “ Define emblematic innovative transition projects” in the 4<sup>th</sup> Phase in the Knowledge Hub

## 1.5 Knowledge Repository

The “ Knowledge Repository” section includes all the tools, methodologies, good practices and other knowledge items related to the development and the implementation of the TSL approach as defined in TRANSFORMER project and described in the previous sections of the Knowledge Hub. Each knowledge item is linked to one or more phases and/or steps that a region should follow to successfully implement the TSL approach and accelerate its transition towards climate neutrality. Thus, users will be able to use a filter function to select the phase and/or step of the transition model they are interested in, and specify whether they are looking for a tool, a methodology or a good practice. Below there are the descriptions of the knowledge items collected so far and included in the Knowledge Hub.

### Phase 1: Strengthening local transition capacity

#### ➤ Define the Transition challenge

- ✓ Quantitative Regional Assessment Framework for Transition Super-Labs (QRAFT)

The TRANSFORMER Knowledge Hub includes the “Quantitative Regional Assessment Framework for Transition Super-Labs (QRAFT)” that was developed within the TRANSFORMER project to provide knowledge to users on how they can measure their regional transition needs (Greenhouse gas (GHG) emissions per capita development and the carbon emissions intensity (CEI) of economic sectors and regional transition potentials from a TSL perspective (by recurring to existing Composite Indices (CI)). By implementing the QRAFT methodology, a region that aims to follow the TSL approach for accelerating its

transition towards climate neutrality, will be able to gain valuable insights for conducting the first steps in the TSL process of identifying the regional challenge and possible topics for transition and developing a vision for transformation.

- ✓ Guidance on how to perform SWOT analyses, 1) Overall SWOT and 2) Topic -based SWOT.

The regional SWOT analyses steps that were followed by TRANSFORMER TSLs, including important aspects such as risks and benefits of different solutions, key transformation challenges, innovative potential, available strategies, potential networks, social implications, and aspects of diversity (including gender), will be described providing guidance to users of the Knowledge Hub to follow a similar approach.

The PESTEL (Political, Environmental, Social, Technological, Economic, and Legal) approach as a framework used to analyse and monitor the macro-environmental factors that may have a profound impact during the region's transition process will be included under this step of the Knowledge Hub. It could be used by the regions as a methodology to identify the factors that can enable or prevent the transition towards climate neutrality.

- ✓ Methodology for assessing the efficiency and success of the Transition Process towards climate neutrality

The methodology for assessing the efficiency and success of the transition process is based on the achievement of specific milestones to be reached at the end of each transition step in a suggested timeline (milestone achievement monitoring).

➤ **Identify stakeholders/civil society and map their relationship**

- ✓ "Models of Governance" canvas developed by ENoLL to evaluate various governance models applicable to TSLs

The "Model of Governance" canvas is a tool under the copyright of ENoLL, adapted for the TRANSFORMER project's needs. The canvas is a tool on a Miro board application that supports the TSL team in defining the operational and strategic levels of a TSL. The elements defined in the canvas are essential for later defining the governance structure of the TSL.

- ✓ Good practices of strategies for stakeholder mapping and engagement

Here the user will be able to find various materials including the influence/interest matrix and documents related to strategies for stakeholder engagement including TRANSFORMER recommendations regarding coalition building and empowering vulnerable and marginalised groups and communities.

➤ **Create possible transition pathways/scenarios & subgoals to reach the vision**

- ✓ SWOT-proxy analysis or similar analyses for purposefulness, feasibility, sustainability and risk aspects.

Guidance on how the methodology of SWOT analysis can be used as a proxy for identifying purposefulness, feasibility, sustainability and risks aspects of a pathway/scenario. This methodology was implemented successfully, through dedicated questions to stakeholders in the TSL of Western Macedonia resulting in SWOT-like schemes that can be used as a valuable input for a TSL as they provide a clear image of enablers and barriers of each pathway/scenario. The suggested methodology contributes to the finalization of the use cases using a bottom-up approach and to the development of high-quality and complete feasibility studies in the next steps.

➤ **Assess the transition readiness of the region.**

- ✓ Transition Readiness Assessment Framework through the Self-assessment Tool

The TSLs will be able to get familiar with the Transition Readiness Assessment Framework that was developed within TRANSFORMER project and use the Self-assessment Tool answering to a set of qualitative questions to calculate their transition readiness level and identify their weak points. The results of the transition readiness assessment will be a critical first step in the development of transition pathways for the region as they will provide valuable insights related to the region's strengths and weaknesses. Based on this first step, the region can identify the most promising pathways/scenarios and focus its efforts and resources on them, thereby increasing the likelihood of impactful outcomes.

**Phase 2: Gearing transition capacity**

➤ **Select the “pilot use cases”**

- ✓ Evidence-based Impact Assessment Methodology

Here the Knowledge Hub users will get familiar with the six-step approach that a TSL should follow to achieve a structured and comprehensive impact assessment of its pilot use cases. This methodology unravels through the following steps: (1) identification of the expected impact categories, (2) KPIs identification, (3) baseline scenario definition, (4) TO-BE scenario definition, (5) analysis for impact determination, and (6) conclusions and overall impact determination.

➤ **Examine the feasibility of pilot use cases**

- ✓ TRANSFORMER Indicators from the Transition Assessment Framework

Table of Indicators that will help TSLs to examine the feasibility of the pilot use cases.

- ✓ Evidence-based Impact Assessment Methodology

See description above.

- ✓ Examples of feasibility study methods

The users are able to go through a feasibility study that was performed by the TSL of Western Macedonia for one of the pilot use cases. Also, the EU Regional Policy Guide to Cost Benefit Analysis of investment projects is provided here, offering guidance for the preparation or evaluation of investment projects through cost-benefit analysis.

- **Create value propositions and conflict resolution mechanisms**
  - ✓ Examples of conflict resolution mechanisms

Users get familiar with conflict resolution models, such as the Thomas-Kilmann Conflict Mode Instrument (TKI) and the Harvard negotiation model. For example, by using the TKI, the TSLs can assess the stakeholders' behavior in conflict situations and get insights through examples about the advantages of each conflict resolution strategy as identified by Thomas-Kilmann (Competing, Avoiding, Accommodating, Collaborating and Compromising) in order to select the appropriate conflict resolution strategy for their case.

### **Phase 3: Accelerating transition through innovation**

- **Define "quick wins"**
  - ✓ Strategies for identifying quick wins

Material about the quick wins approach, impact matrix and processes (such as DMAIC<sup>1</sup> process) that are used for defining the quick wins and helping regions initiate quick wins.

- **Adopt international innovative solutions**
  - ✓ Best practices and innovative ideas that were already implemented, tested and evaluated in other regions and contexts.

Documents of TSLs predecessors' experiences, best practices in different sectors (e.g. mobility) and lessons learnt by TRANSFORMER TSLs.

- **Create and implement an action plan**
  - ✓ Potential funding avenues, mechanisms for assessing financial readiness, and innovative financing options.

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<sup>1</sup> DMAIC stands for Define, Measure, Analyze, Improve, and Control.

Link to the fi-compass platform that is provided by the European Commission in partnership with the European Investment Bank to offer advisory services on financial instruments under EU shared management. fi-compass can support regions by providing practical know-how and learning tools on financial instruments. These include 'how-to' manuals, factsheets and case study publications, as well as face-to-face training seminars, networking events, and video information.

- ✓ Facilitation strategies for fostering collaboration and mechanisms for role clarity

The assignment of roles and duties to stakeholders involved in the development and implementation of a TSL is difficult. When responsibilities are not clearly defined, it is difficult to hold people accountable for their actions. To ensure the seamless and effective execution of the required steps and processes, it is critical to understand who is responsible for what. The Knowledge Hub will provide relevant mechanisms for role clarity such as the RACI<sup>2</sup> Matrix.

- ✓ Methodologies for crafting timelines that consider dependencies, planning phases, and communication strategies.

Document that lists different methodologies for crafting timelines that consider dependencies, planning phases, and communication strategies and how they incorporate these elements. A variety of methodologies such as Gantt Chart, Critical Path Method (CPM), Kanban and Program Evaluation and Review Technique (PERT) are included in the Knowledge Hub among others along with suggested tools to implement these methodologies (e.g. Trello, Asana etc).

#### **Phase 4: Scaling-up transition**

##### **➤ Monitor & assess results and impacts**

- ✓ Monitoring and reporting system to track the progress and outcomes of the transition activities continuously based on the assessment plan

Dedicated log files created within TRANSFORMER project to help TSLs in the monitoring activities of their progress and outcomes during the transition process.

##### **➤ Maximise implementation and impact**

- ✓ Transition Readiness Assessment Framework through the Self-assessment Tool

Although Transition readiness assessment is a useful step for the creation of possible pathways/scenarios in the beginning of the transition process, it is an iterative process allowing for adjustment of the transition pathways and the use cases. This continuous learning during the next phases of the transition process is also crucial for adapting the strategies that were designed to accelerate a successful transition towards

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<sup>2</sup> RACI stands for responsible, accountable, consulted, and informed.



climate neutrality, ensuring that the region remains on course to achieve its desired outcomes and maximize the impact of its transition efforts through the pilot use cases.

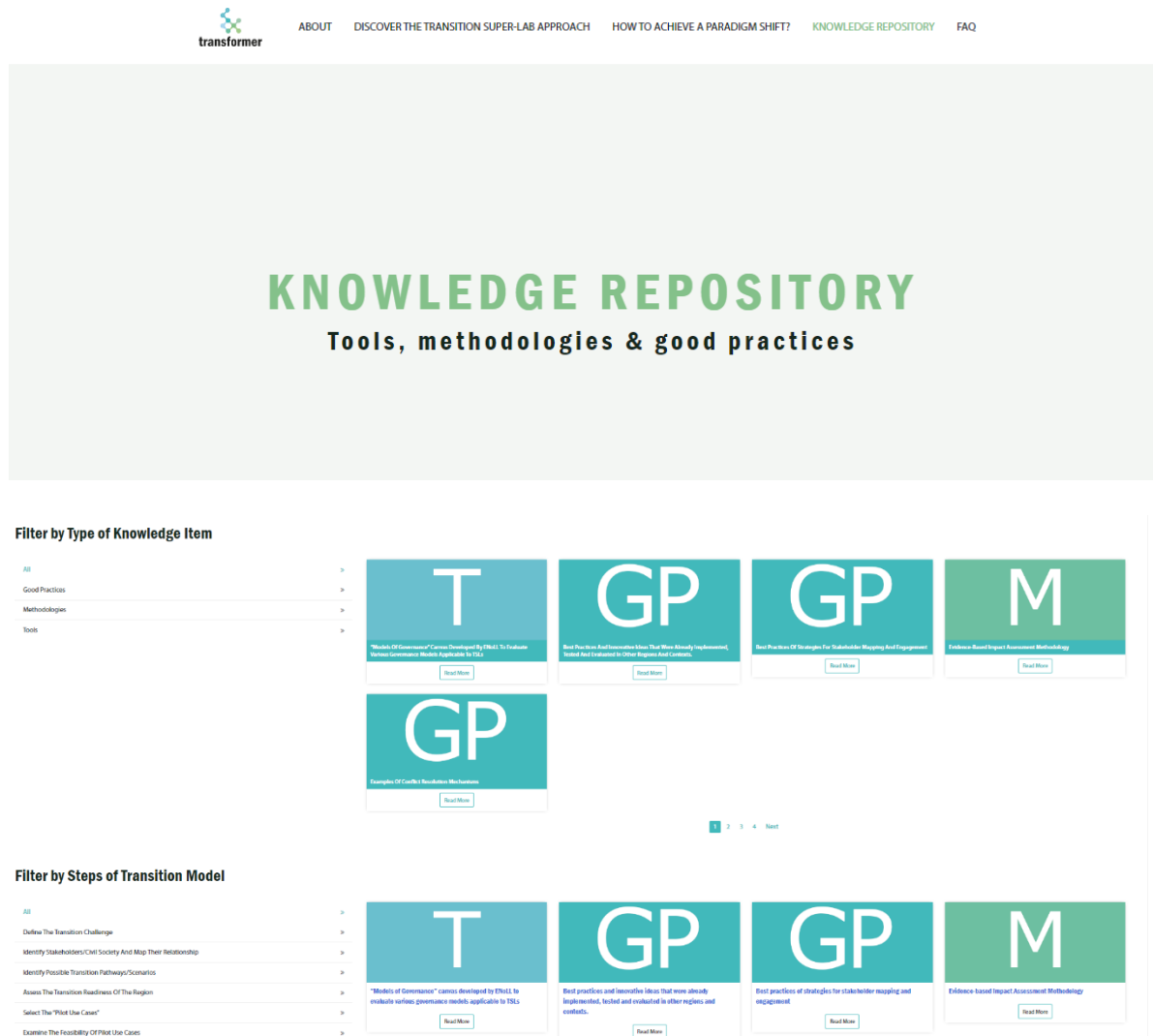


Figure 10: “Knowledge repository” section in TRANSFORMER Knowledge Hub

## 1.6 Frequently Asked Questions

This section will be updated during the testing period of the Knowledge Hub by the TRANSFORMER TSLs, and new questions will be added by the end of the project.

## 2 Iterations with the TSLs

The Knowledge material that is included in the Knowledge Hub for guiding the TSLs through the different phases/steps of the transition model towards the achievement of climate neutrality were presented to TRANSFORMER TSLs during the consortium meeting in Lower Silesia, on 27-28 September 2023. An interactive session was organised in order to collect the TSLs' feedback on the following questions:

- Do you think that there are knowledge items in the Knowledge Hub that won't be useful for the TSLs (related to a specific step of the transition model and the roadmap)?
- If yes, do you have other ideas (alternatives) of what would be useful for this specific step?
- Would you like any specific knowledge (methodology, good practice etc) to be provided by the Knowledge Hub that is not currently foreseen?

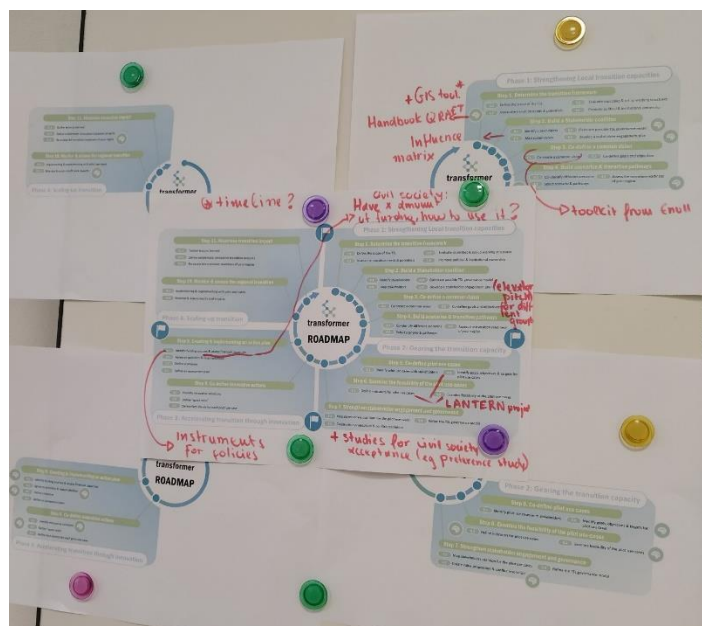


Figure 11: Feedback from TSLs on TRANSFORMER Knowledge Hub during Lower Silesia's consortium meeting

All the Knowledge items that are included in the Knowledge Hub were assessed as useful from the TSLs. Moreover, some additional knowledge items that would be valuable for regions for accelerating their transition towards climate neutrality were suggested by the TSLs during the iteration process. These knowledge items will be added in the Knowledge Hub in the following months.

Table 2: Additional Knowledge item identified during Lower Silesia’s consortium meeting

Related step of the transition model	Knowledge Items to be included in TRANSFORMER Knowledge Hub
<b>Define the Transition challenge</b> (Roadmap: Activity 1.2 Assess the transition needs and potentials)	Handbook of QRAFT
<b>Identify stakeholders/civil society and map their relationship</b> (Roadmap: Activity 2.1 Identify stakeholders)	Interest/influence Matrix
<b>Develop a transition vision and a goal for your region</b> (Roadmap: Activity 3.1 Co-create a common vision)	ENOLL’s Toolkit for co-creation activities
<b>Identify stakeholders/civil society and map their relationship</b> (Roadmap: Activity 2.4 Develop a stakeholder communication and engagement plan)	Elevator pitches for different groups
<b>Create value propositions and conflict resolution mechanisms</b> (Roadmap: Activity 7.2 Create value propositions and conflict resolution mechanisms)	Studies to enhance civil society acceptance (e.g. preference studies examples)
<b>Create and implement and action plan</b> (Roadmap: Activity 9.1 Identify funding sources and assess financial capacities)	Instruments for policies

### 3 Link with the Transition Super-Lab Roadmap and Toolkit

The knowledge items collected so far and included in the TRANSFORMER Knowledge Hub have also been matched with the different activities of the transition roadmap as they have been described in D4.1. The portfolio of the knowledge items included in the Knowledge Hub contains, among others, tools to support the regions in the co-creation activities with the stakeholders (linked to toolkit, Task 4.2) and tools to facilitate the self-assessment processes for increasing their transition readiness through innovation and to maximise and scale-up the transition impact. Through visualisation techniques and a self-assessment

scheme the outputs will be communicated to users in an appealing and understandable way and thus the Knowledge Hub will also serve as a new tool for two-way communication between Super-Lab multi-layered stakeholders, the public and other target groups such as the media, educational institutions etc.

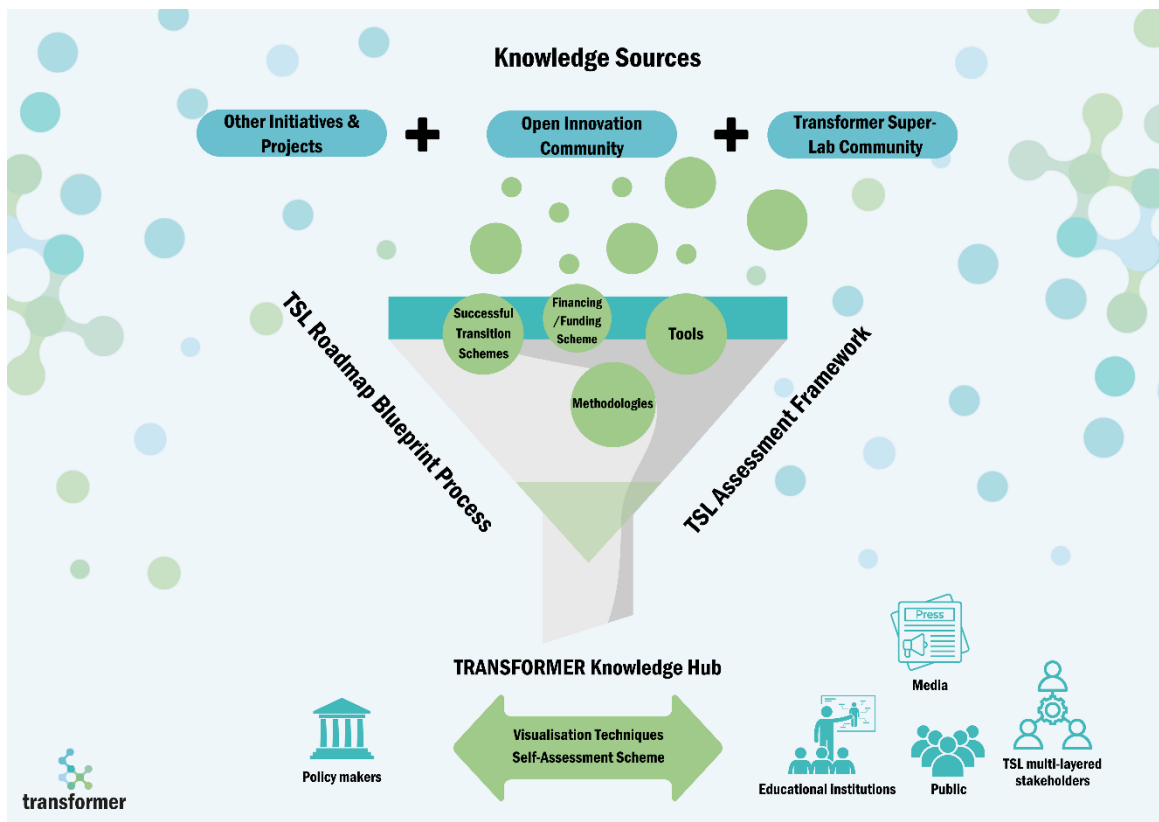


Figure 12: Link of the Knowledge Hub with the Transition Super-Lab Roadmap and Toolkit

The table below shows these interconnections between the variety of the knowledge items collected so far along with the phases and steps of the TRANSFORMER transition model and the roadmap activities and further specifies the type of the knowledge item as tool, methodology or good practice. The tools of the Toolkit as identified in Task 4.2 are also included in the table and matched with the related phases and steps of the transition model (for full details related to the tools of the Toolkit please refer to D4.3). If no knowledge item has been identified so far for a specific step, this is indicated in the relevant column. However, this table will be enriched during the project as new knowledge items will be continuously added in the Knowledge Hub.

Table 3: Link of Knowledge Hub, Transition model and activities of transition roadmap

Phase of TRANSFORMER transition model	Step of TRANSFORMER transition model	Roadmap activity (Task 4.1)	Knowledge item	Type of Knowledge item (tool, methodology, good practice)	Tool from toolkit (Task 4.2)
Phase 1: Strengthening local transition capacity	Define the Transition challenge	<b>Activity 1.1 Define the scope of the Transition Super-Lab</b>	No knowledge item	-	Transitioncamp
		<b>Activity 1.2 Assess the transition needs and potentials</b>	Quantitative Regional Assessment Framework for Transition Super-Labs (QRAFT)	Methodology	-
			Guidance on how to perform SWOT analyses, 1) Overall SWOT and 2) Topic - based SWOT.	Methodology	-
			Methodology for assessing the efficiency and success of the Transition Process towards climate neutrality	Methodology	-

	<b>Identify stakeholders/civil society and map their relationship</b>	<b>Activity 2.1 Identify stakeholders</b>	No knowledge item	-	Transitioncamp, Open Matchmaker
		<b>Activity 2.2 Map stakeholders</b>	No knowledge item	-	Transitioncamp, Open Matchmaker
		<b>Activity 2.3 Elaborate on possible TSL governance model</b>	"Models of Governance" canvas developed by ENOLL to evaluate various governance models applicable to TSLs	Tool	-
		<b>Activity 2.4 Develop a stakeholder communication and engagement plan</b>	Good practices of strategies for stakeholder mapping and engagement	Good practice	-
	<b>Develop a transition vision and a goal for your region</b>	<b>Activity 3.1 Co-create a common vision</b>	No knowledge item	-	Transitioncamp
		<b>Activity 3.2 Co-define main goals and objectives</b>	No knowledge item	-	Transitioncamp

	<b>Identify possible transition pathways/scenarios</b>	<b>Activity 4.1 Co-identify different scenarios</b>	No knowledge item	-	Transitioncamp
		<b>Activity 4.2 Select scenario and pathways</b>	SWOT analysis or similar analyses for purposefulness, feasibility, sustainability and risk aspects.	Tool	Transitioncamp
	<b>Assess the transition readiness of the region.</b>	<b>Activity 4.3 Assess the transition readiness of the region.</b>	Transition Readiness Assessment Framework through the Self-assessment Tool	Tool	-
	<b>Identify suitable multi-leverage ‘pilot uses cases’</b>	<b>Activity 5.1: Identity pilot use-cases with stakeholders</b>	No knowledge item	-	Transitioncamp
<b>Phase 2: Gearing transition capacity</b>	<b>Stakeholders/civil society redefinition and coalition</b>	<b>Activity 7.1 Map stakeholders for each pilot use-cases</b>	No knowledge item	-	Transitioncamp, Open Matchmaker
	<b>Select the “pilot use cases”</b>	<b>Activity 5.2 Identify goals, objectives and targets for pilot use-cases</b>	Evidence-based Impact Assessment Methodology	Methodology	

	Examine the feasibility of pilot use cases	Activity 6.1 Define indicators for each pilot	TRANSFORMER Indicators from the Transition Assessment Framework	Tool	Transitioncamp
			Evidence-based Impact Assessment Methodology	Methodology	
		Activity 6.2 Examine the feasibility of pilot use cases	Examples of feasibility study methods	Good practice	-
	Create value propositions and conflict resolution mechanisms	Activity 7.2 Create value propositions and conflict resolution mechanisms	Examples of conflict resolution mechanisms	Good practice	-
Phase 3: Accelerating transition through innovation	Define "quick wins"	Activity 8.2 Define "quick wins"	Strategies for identifying such wins	Methodology	-
	Adoption of international innovative solutions	Activity 8.1 Identify innovative solutions	Best practices and innovative ideas that were already implemented, tested and evaluated in	Good practice	Open Matchmaker



			other regions and contexts.		
	<b>Create and implement and action plan</b>	<b>Activity 9.1 Identify funding sources and assess financial capacities</b>	Potential funding avenues, mechanisms for assessing financial readiness, and innovative financing options.	Tool	Open Matchmaker
		<b>Activity 9.2 Agree on priorities &amp; responsibilities</b>	Facilitation strategies for fostering collaboration and mechanisms for role clarity	Methodology	Transitioncamp, Open Matchmaker
		<b>Activity 9.3 Define a timeline</b>	Methodologies for crafting timelines that consider dependencies, planning phases, and communication strategies.	Methodology	Transitioncamp
<b>Phase 4: Scaling-up transition</b>	<b>Monitor &amp; assess results and impacts</b>	<b>Activity 10.2 Monitor &amp; assess results and impacts</b>	Monitoring and reporting system to track the progress and outcomes of the transition activities continuously	Tool	Transitioncamp

			based on the assessment plan		
	<b>Maximise implementation and impact</b>	<b>Activity 11.3 Re-Assess the transition readiness of your region</b>	Transition Readiness Assessment Framework through the Self-assessment Tool	Tool	Transitioncamp, Open Matchmaker

## 4 Conclusions

The current document is focused on the first online prototype version of the TRANSFORMER Knowledge Hub. The first set of knowledge items including methodologies, good practices and solutions from other projects and initiatives as well as methodologies developed in TRANSFORMER project (such as the assessment framework methodologies) and tools (linked to the toolkit of Task 4.2) was collected and embedded in the Knowledge Hub. As the Knowledge Hub will serve as a step-by-step advisory tool supporting regions in evolving their cross-sectoral transition towards climate neutrality, the knowledge items have been aligned with the TRANSFORMER transition model developed by CERTH and the specific activities of the first version of the transition roadmap.

The D4.4 outlines the first batch of the methodologies and tools that are essential for regions aiming to accelerate their transition towards climate neutrality. The detailed methodologies and tools presented in the document serve as valuable resources for TRANSFORMER TSLs, various stakeholders, and follower regions, enhancing the transition readiness of regions and facilitating informed decision-making and strategic planning in the pursuit of achieving paradigm shifts towards a sustainable future and climate neutrality.

The current online version of the Knowledge Hub will be tested and validated by the four TRANSFORMER TSLs by the end of the project. The Knowledge Hub is publicly accessible at <https://transformerknowledgehub.imet.gr/> and through a redirection link in the TRANSFORMER Hub website.

As the project continues, the Knowledge Hub will be enriched with more tools, methodologies, good practices and practical examples of the TRANSFORMER TSLs to ensure high levels of sustainability and usability for the TRANSFORMER TSLs and the follower regions. Therefore, the Knowledge Hub will be evolved in a unique collaborative space where the regions can find valuable knowledge on how they can follow the TSL approach to speed up the transition towards climate neutrality.