



Roadmap for Science-policy-practitioner Lab processes

Deliverable D2.1

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TRANSPATH

Transformative pathways for synergising just biodiversity and climate actions



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Summary

The aim of the deliverable D2.1 is to provide a roadmap to support inclusive and deliberative coproduction processes for the codesign of transformative pathways. Deliverable D2.1 emerges from the insights gained within the first phase of the TRANSPATH project and related results. In addition, it provides guidelines on suitable approaches for the co-design of transformative pathways in 'transformative labs' that will be established and developed through WP2. Finally, it provides an outlook for the further use of the results of these transformation labs, especially in respect to the identification of leverage points and scaling of transformative pathways.

List of abbreviations

EE	Eastern European
EU	European Union
FCM	Fuzzy Cognitive Mapping
NGO	Non-governmental Organization
NPLG	National Program for Rural Areas in the Netherlands
SJOS	Safe and Just Operating Spaces
WE	Western European
WP	Work Package
WS	Workshop
ZHPLG	Zuid-Holland Provincial Program for Rural Areas

1 Transformation labs: General approach and its key principles

Transformative change aims at tackling complex sustainability issues, often through a sequence of interrelated decisions and actions aggregately referred to as **transformative pathways**. Within the TRANSPATH project, these are understood as an integrated set of actions and strategies that are designed in a purposeful and reflexive manner to be able to work towards achieving rapid biodiversity net gain and carbon neutrality. Transformative pathways are never uni-scale but need to consider the **complex interactions across scales over space, time, people**. Thus, a part of transformative change is also to include and question the role of the multi-level state in meaningful, lasting change.

To this end, one of the major preconditions of co-designing transformative pathways is around bringing together a wide range of stakeholders from practice, policy, science and beyond, and to engage them in a transdisciplinary research process (see also Box 1). There are multiple approaches that might be used to create deliberative, inclusive, and safe environments for the co-design of transformation pathways (see e.g., McCroy et al., 2020). To this end, in order to form science-policy-practitioner lab processes, we build on an approach referred to as **transformation labs**, that will endeavour to develop and guide social-ecological transformation through engaging an array of stakeholders that hold diverse views and roles but who have similar interests in solving sustainability problems and in pursuing transformative change (Pathways Network, 2018). This setting allows for the co-creation of new ideas, mental models and eventually new practices that might stimulate the uptake of alternative pathways (Pereira et al., 2018). At the same time, transformation labs are suitable spaces for an exploration of the relations between people's motivations and willingness to accept and implement actions and measures that are necessary for pursuing transformative change (Aguiar et al., 2020). In this sense, joint understanding and revision of problems and identification of opportunities and solutions might inform policy processes and help to accelerate the interventions with high transformative potential (Pereira et al., 2021).

The transformation labs in TRANSPATH are envisioned to serve three purposes. First, they aim to co-design **cross-scale transformative pathways**, bridging the national, subregional and regional scales within the EU. Second, the transformation labs aim to **enable mutual learning** among stakeholders across sectors, in order to co-produce transformative knowledge but also to offer added value to the involved stakeholders in the form of cross-sectoral exchange of best practices. Third, the transformation labs aim to **reflect on the learning process** happening within the transdisciplinary research process.

In TRANSPATH, we build on the specific approach to transformation labs as introduced by Pathways Network (2018) that comprise of the sequence of workshops and follow up activities. The interaction among stakeholders will be achieved through following means: interviews, workshops and continuous communication of intermediate outputs and results, such as workshop and interview summaries, policy briefs, reflexive blog posts, to the stakeholders engaged in the transformation labs. In pursuing these interactions and communications, we follow clear ethical principles that allow for the creation of a conducive learning environment. These principles are elaborated in Deliverable 1.2 and briefly summarized in Box 1 below.

On top of these ethical principles, aligned with the work in WP1, we seek for the creation of "safe and just operating spaces" (SJOS) for climate, biodiversity and societies across a range of contexts through reflexive deliberation with stakeholders. In all TRANSPATH work, **safe** refers to maintaining and enhancing the stability of the Earth's life-support processes in Holocene-like conditions, while **just** is understood as striving for an equitable sharing of nature's benefits, risks and associated responsibilities. However, these are highly normative goals and cannot simply be determined by scientists alone; they require reflexive deliberation with diverse stakeholders through collective learning processes. To this end, TRANSPATH

provides guidance through **ecological reflexivity**, where impacts on/of social-ecological systems are recognized, core values (such as justice, nature) and practices related to production and consumption are rethought and consequently transformed in a response to this reflexivity (for more detail see Deliverable 1.2 Transformation Navigation Toolkit).

Box 1: Key ethical principles and best practices of participatory research to be followed in transformation labs (based on Barth et al., 2017; Bentz & O'Brien, 2019; Chambers et al. 2021; Chaves, 2018; 2022; Norström et al. 2020; Moore et al., 2018; Popa et al. 2015; Reed 2008; Wals, 2010; Wilner et al. 2012) (for more details see deliverable 1.2).

- ✓ **Co-production and co-development:** focusing on the co-production of knowledge among transformation lab participants and on the co-development of understandings, options and solutions; embracing mutual learning among the participants.
- ✓ **Deliberation:** careful consideration and discussion as the core principles of the transformation lab interactions.
- ✓ **Sharing:** making room for experiencing positive stories and harnessing passions and emotions.
- ✓ **Constructive dissensus (as opposed to forced consensus):** enabling dialogue that productively harnesses dissonance and disagreement and fosters the ability to change perspectives.
- ✓ **Reflexivity:** foster reflexivity when exploring how problems are defined, by whom, and what plans or actions should follow. Make room for bottom-up, collective, and critical reflection, and enable counter-hegemonic thinking to break away from taken-for-granted and locked-in frames.
- ✓ **Empowerment:** nurturing the empowerment of the transformation lab participants to act on the envisioned and deliberated options and solutions.
- ✓ **Contextuality:** being sensitive to contextual differences and facilitate linking abstract knowledge with concrete cases.
- ✓ **Facilitation:** ensuring a well-performed facilitation of the process.
- ✓ **Flexibility:** the possibility to adjust the transformation labs process based on the interactions with the lab participants, intermediate results and emerging situations.
- ✓ **Impact and innovations:** nurturing the potential of transformative real-world impacts of the research process; encouraging innovations towards a fundamentally different, more safe and just future and alternative pathways of development towards this future.
- ✓ **Networking:** to foster and think in innovative ways about the different connections and opportunities between stakeholders, sectors, regions, countries at a number of scales.
- ✓ **Managing power imbalances and including marginalized voices:** making sure that power imbalances are reflected and incorporated in the design and facilitation of the transformation labs; embracing and emphasizing **equity** while avoiding bias and marginalization of various groups.
- ✓ **Respect:** making sure that stakeholders' time and capacity investments are respected and used effectively; ensuring that the objectives of the transformation lab process are clearly communicated from the start.
- ✓ **Transdisciplinarity:** ensuring that the transformation lab stakeholders are an inherent part of the research process as both its participants and co-designers; making sure to involve the participants from early on in the research process based on a thorough and systematic stakeholder analysis.
- ✓ **Trust:** embracing the importance of building trust between all participants of the transformation lab process.

1.1 Identification of the case studies

For the purpose of co-designing cross-scale transformation pathways, the TRANSPATH project has been designed to focus on **two case studies**, one each in 'eastern' and 'western' Europe. In order to cover the cross-scale nature of TRANSPATH, the transformation lab process focuses on the national-to-subregional level, while the link to the regional EU-wide level is going to be covered in collaboration with other TRANSPATH work packages (WP3, WP4). The focal case study countries in Eastern and Western Europe are the Czech Republic and the Netherlands, respectively. Nesting the national scale within the larger subregional scale of Eastern and Western Europe is going to be reached as detailed in the following sections.

2 Mapping the case study context

2.1 Identification of the core thematic focus

The core thematic focus of both case studies with respect to the co-development of transformative pathways has been defined based on the following criteria:

- Relevance for the project context
- Relevance from the perspective of current research and knowledge gaps
- Relevance from the perspective of current local concerns and issues
- Presumed interest from the side of potential stakeholders
- Connection to ongoing on-the-ground transformative endeavours
- Strong link to biodiversity, climate, human rights, justice and well-being

First, based on these criteria, the general focus of the case studies has been defined as the **land-food-water-energy nexus**, with the assumption that the specific interplays within the nexus will differ in each of the case studies. The land-food-water-energy nexus is directly related to biodiversity and climate issues and is also fundamental to the production-consumption focus of the TRANSPATH project.

Second, another thematic element common for both of the case studies has been defined as engaging with **existing transformative initiatives seeking sustainability transformations**, preferably on the level of networks of stakeholders. The case studies strongly prioritize engagement with key societal change makers and nurturing the ability of these stakeholders to learn from each other's transformative initiatives across sectors within the land-food-water-energy nexus.

Finally, in order to identify **cross-scales leverage points and potential sustainability pathways interconnected at different scales**, it engages with the perspective of **financial, legal, structural and stakeholder interconnections** and potential **leakage risks across different scales within and across** the European case studies.

Eastern European case study

The Eastern European case study focuses on the nexus between food and energy, as this nexus relates to the current energy- and food-security related issues in Eastern Europe and is easy to link to the production-consumption paradigm of TRANSPATH. In addition, the themes of energy, food, water and have a strong land-, biodiversity/nature- and climate-related dimension and are increasingly gaining importance in public debate.

The priority of the Eastern European case study is to work with existing networks and initiatives who are already active in social enterprises and societal change-making, hence can be considered as agents of change who can be considered as transformative or who have transformative potential. We depart from the assumption that these stakeholders are easier to

motivate to take long-term active part in the planned co-production process, seeking pathways to sustainability transformation.

The case Eastern European study strives to emphasise not only the products of the process of co-designing transformation pathways, but also social learning happening within its transformation labs. Additionally, following the above-mentioned principles of transformation labs (Box 1), we will aim at creating such environment, that is stimulating new partnerships across the transformative stakeholders in order to trigger transformative change.

The identified risk for the Eastern European case study is that local stakeholders are frequently disempowered, and their activities are hampered by the economic situation, institutional rigidity and social climate not considering sustainability issues as a priority. Therefore, the stakeholders are often discouraged to participate in any kind of participatory processes. This is something to be sensitive about when designing the case study. A previous experience of the research team from the participatory research and scenario co-development processes in Czechia shows that local stakeholders tend to be strongly motivated by the opportunity to receive useful information beneficial for their professional practice. In addition, stakeholders are motivated by the options for professional networking. These types of motivation will be considered particularly at the stage of workshop planning, as the transdisciplinary nature of the research process requires that stakeholders perceive their participation in the transformation labs as meaningful and beneficial from their personal perspective.

Western European case study

The Western European case study focuses on the nexus between land-food-water-energy in the Netherlands. This focus has been chosen in accordance with the ongoing development of the national program for rural areas (NPLG). The aim of this program is to take a more holistic and integrated approach to dealing with the nexus of land-food-water-energy issues faced in rural areas, tailored to each province. The program foregrounds cooperation in the search for synergies and avoidance of trade-offs across this nexus, also with social and economic capital, making it well suited to the aims of the TRANSPATH project. By taking a more in-depth focus into a particular province, South-Holland, the ongoing development of these plans presents a timely opportunity to follow the learning process, both in terms of observing the activities, discussions and outputs surrounding their development, as well as through deliberate engagement with key stakeholders through the transformation labs.

To develop a more representative insight into the Dutch context, alongside the stakeholders actively involved in the development of these rural area programs, the case study will also engage with pre-existing networks and stakeholders actively involved in changemaking activities particularly relevant to TRANSPATH, across the land-food-water-energy nexus both in urban areas of the province, and nationwide.

Potential risks in the Western European case study include stakeholder fatigue, as contexts such as the Netherlands have been subject to extensive inquiries of a similar nature, which may make it more challenging to attract participants, especially in the long term. This was also part of the motivation to focus on the development of the rural area program, as an ongoing process in which many different stakeholders are already engaged and interested, and will be for the duration of this project. Furthermore, to mitigate this stakeholder fatigue risk, it is also important that the transformation labs and their particular focus be tailored to the needs and interests of the participants as much as possible, by involving them from the onset. For example, this could entail integrating the transformation labs into the events organised by the stakeholders themselves. Another risk is the contention surrounding issues of climate and nature in the Netherlands, as demonstrated through the farmers' protests, for example. Careful sensitivity to this issue will also need to be taken into account when designing the Western European case study.

2.2 Identifying the case study stakeholders

2.2.1 Stakeholder mapping methodological background

In order to identify the most relevant stakeholders within our core thematic focus, it was necessary to undergo a thorough stakeholder analysis. In general, there are three main steps involved in this process (Figure 1): identifying stakeholders, differentiating between and categorizing stakeholders, and investigating relationships among them (Reed et al., 2009).

First, to ensure inclusivity and avoid bias in the research process, all relevant and potential stakeholders as well as stakeholder groups must be **identified**. This can be achieved by various methods, the most common ones being focus groups, expert opinion, semi-structured interviews, and snowball sampling (Reed et al., 2009). However, this top-down approach can often be biased by researchers and tends to sample within bubbles rather than strive for diversity. Dougill et al. (2006) thus propose iterations of scoping interviews, follow-up interviews, and focus groups, to incorporate the bottom-up approach as well, while Chevalier & Buckles (2008) also recommend complementing these identification methods with expert and other stakeholders' opinions to get a comprehensive overview.

It is important to emphasize that the identification of stakeholders should be an iterative process throughout the research project to make sure no crucial stakeholders have been omitted in the analysis as the process evolves (Reed et al., 2009). Besides that, researchers should always consider the possible ways to motivate stakeholders to join the project, e.g., by providing the possibility to network, get new insights and so on, which will increase the probability of participation substantially.

In order to **classify and prioritize** stakeholders, it is useful to sort them into predefined categories and consequently assess their stake in the research. This can be done by many different ways and approaches but in respect to stakeholder participation, their interest and influence as well as the potential impact on and benefit for the respective stakeholder should be considered at this stage (Durham et al., 2014). Before any further analysis, it is necessary to categorize stakeholders according to, for example, the sector they're involved in, their position and role, area of expertise etc. (Durham et al., 2014).

A common top-down approach to classifying and prioritizing stakeholders includes making an *interest-influence matrix*, which how the name suggests categorizes stakeholders according to the level of their interest in and influence over the matter (Durham et al., 2014). In this matrix, stakeholders are sorted out into the four following groups: "key players" (stakeholders with the highest interest and influence), "context setters" (those with high influence but little interest), "subjects" (those with high interest but little influence), and "crowd" (those with little interest and little influence) (Reed et al., 2009). However, it should be noted that this approach can be perceived as too simplistic and can lead to the marginalization of certain groups (Reed et al., 2009). Another way researchers can differentiate among stakeholders is placing them in *rainbow diagram* according to the level of which they can affect or be affected by a certain issue (Chevalier & Buckles, 2008).

In the past few years, there has been an advancement in stakeholder analysis approaches, specifically in terms of assessing stakeholders' influence over and dependence on the subject of research. For example, building on and expanding the interest-influence matrix, Martín-López et al. (2019) developed a "*cross-scale influence-dependence*" framework for ecosystem services research, that determines which stakeholders are dependent on ecosystem services, have an influence on ecosystem services management decision-making, and the formation of social interactions and relationships among stakeholders across diverse spatial scales.

There are also bottom-up methods that allow for stakeholder-led stakeholder categorization, for example, the *card-sorting method*, where stakeholders sort cards (a representation of

themselves) according to their own perspective and therefore, their own categories (Hare & Pahl-Wostl, 2002). Another approach that can be used is called a *Strategic Perspectives Analysis* by Dale & Lane (1994), which identifies similar goals within various groups of stakeholders and classifies them accordingly, based on the views of other stakeholders.

Lastly, if necessary, **relationships between stakeholders** can be assessed by a variety of methods, most commonly by using the stakeholder-linkage matrices, Social Network Analysis or Knowledge Mapping analyses (Reed et al., 2009). The easiest and quickest approach is creating a grid (the *stakeholder-linkage matrix*) with stakeholders listed both in the rows and columns and describing their interrelationships with specific key words (e.g., conflict or cooperation), which, however, may lead to confusion or lack of clarity due to a high number of linkages (Reed et al., 2009). Both the *Social Network Analysis* and *Knowledge Mapping* methods are more complex and time-consuming and should be used if deemed valuable or necessary for the research project.

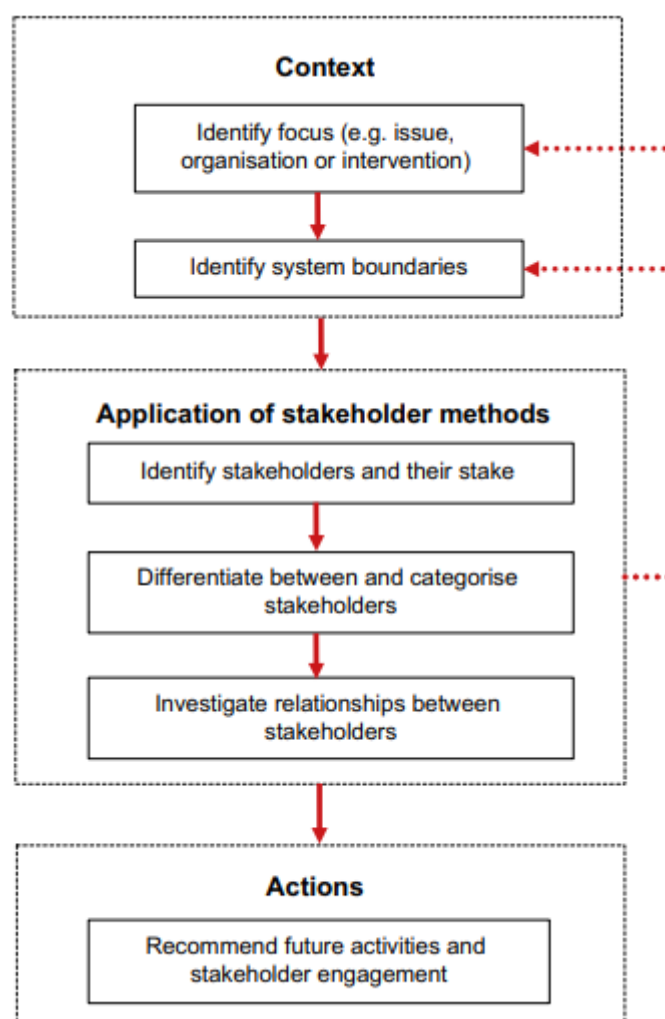


Figure 1: Key methodological steps necessary for stakeholder analysis (Reed et al., 2009)

Box 2: Implementation of the stakeholder mapping approaches in the case studies

As for our approach, firstly, we created a thorough stakeholder database to identify all potentially relevant stakeholders within our predefined energy-land-food nexus while also classifying them according to the location and scale of their activities (local, national or regional level) and the sector or type of organization (public/private/NGOs etc.). This was done through in-depth internet research, institutional know-how and recommendations from other experts in the field. To map out the Czech and Dutch context and their respective transformative baselines, we decided to proceed with scoping interviews.

For the scoping interviews, we agreed on prioritizing social enterprises and networks within our nexus who currently self-identify as being transformative or are aiming to be transformative in the Czech and Dutch society. These predefined criteria have led to a narrow list of potential stakeholders and thus no classifying or prioritizing approach was necessary. During the scoping interviews, a snowball sampling was used, which consequently provided us with expert opinions for other relevant stakeholders within the nexus. This approach allowed us to map the context and identify other relevant stakeholders efficiently, quickly, and yet reliably, while also applying bottom-up methods to avoid researchers' bias. In terms of other upcoming stakeholder interactions, including workshops and follow-up interviews, an interest-influence matrix will be used to assess which stakeholders to prioritize and involve in the project, especially since more stakeholders were identified by snowballing.

Stakeholder mapping results

Stakeholders identified in our database were primarily categorized by the nexus element they were involved in. Stakeholders that are active in the energy nexus included various networks, specifically, associations, alliances, and unions; dominant energy companies; NGOs, initiatives, and think-tanks; and lastly, the public sector, e.g., ministries. As for the land and food nexus, we mainly focused on social enterprises and networks that aim for a transformative change in agricultural practices, land use or the current food system. It is important to note that many enterprises and networks overlap in these two nexus elements and are, therefore, listed in both land and food nexuses. We also listed a few experts who are particularly active in this field and were identified as "change-makers". Stakeholders included in the land and food nexus mostly involve local farms that pursue organic farming or promote community supported agriculture while employing socially excluded people (e.g., people with disabilities), whereas some networks unite these enterprises and often strive for raising awareness in these topics. The complete list of identified stakeholders can be found in the [Annex](#).

Eastern European case study: Czechia

Based on the stakeholder database and mapping approach mentioned above, we identified one social enterprise and six networks which represent transformative stakeholders within the land-food-energy nexus in Czechia to approach them for the scoping interviews. These enterprises/networks were specifically the following:

- *Community Energy Union*: an expert network advocating for community energy in Czechia (energy network)
- *Association of Social Agriculture*: association supporting the development of social agriculture and social farms in Czechia (food/land & social enterprise network)
- *Association of Local Food Initiatives*: association reconnecting local people with local food and developing local food systems; two interviews were conducted within this association (food/land network)
- *"Decent company"* ("Slušná firma"): a community of companies and nonprofits working to change the way we do business – from one-sided profit accumulation and externalization of harm to general utility and responsibility (social enterprise network)^[1]
- *Social enterprise "The Roof"*: social enterprise and social cooperative that employs disadvantaged people (social enterprise)

- *National network of Local Action Groups*: network unifying all LAG in Czechia Republic; runs a Platform for community energy (energy network)

Subsequently, based on website information and expert recommendations, relevant members of these enterprises and networks were identified and contacted with an interview enquiry.

¹¹ [note: the interview was conducted with the founder of the company “*Taste dispensary*” (“*Výdejna chuti*”), which is a member of the social network “*Decent company*” and who talked on behalf of “*Decent company*” as well as “*Taste dispensary*”]

Western European case study: the Netherlands

Out of the range of identified stakeholders in the stakeholder database, the following organisations were selected to invite for scoping interviews in the Dutch case study, as initiatives and networks engaged in transformative activities across the land-food-water-energy nexus in both rural and urban areas of South-Holland:

- *Nature and Environment Federation South-Holland* (Natuur en Milieufederatie Zuid-Holland): organisation giving voice to nature, environment and landscape, develops initiatives with residents, social organisations, companies and governments on circular economy, sustainable port, sustainable agriculture, climate and energy, nature and landscape, mobility, water quality, wildlife management, coastal protection, peatlands
- *We.Land* (Wij.Land): organisation promoting a healthy and resilient peat meadow landscape, bringing nature and agriculture together in sustainable business models
- *Stonebreak Foundation* (Stichting Steenbreek): national knowledge and network organisation offering support in the sustainable greening of the Dutch living environment, with the core themes of biodiversity, climate adaptation, social cohesion, and health
- *Farmers Co-op* (Herenboeren): citizen movement practising a different model of daily food production and consumption, through farms owned as a cooperative of 250 households. Do not use chemical pesticides, and work with a nature-driven, regenerative approach
- *BlueCity*: hub of circular economy in Rotterdam, missing to accelerate transition from linear to circular, or even ‘blue’ economy (taking nature and natural ecosystems as the source of inspiration, learning from nature’s principles) by supporting entrepreneurship
- *Energie Samen Zuid-Holland*: regional umbrella organisation of energy cooperatives in province of Zuid-Holland

2.2.2 Scoping the transformation baseline

Apart from the stakeholder mapping, another critical component related to the design of transformation labs is to explore the transformation baseline through a review of policy and strategy documents and/or through scoping interviews with a relevant stakeholders who already have an existing track record with initiating transformative change and consider themselves as transformative or have the potential for being transformative in the food-energy-land nexus. These relevant stakeholders may include both local people who are affected by policies, as well as policy makers and regulators, as the transformation lab process strives to ideally build a bridge between them.

Ideally, the review of policy and strategy documents should be conducted in a cross-scale perspective, from local to international (e.g. the EU) level, as the influence of the higher-scale policies on the sub-national and local level is key. For instance, one of the current concerns is

that some of the EU-wide policies and strategies may be developed too fast without providing sufficient space for their deliberation at the affected scales, and without paying sufficient attention to how they are received in the implementation environments. Subsequently, this might result to backlash to the policies from these scales and their perception as a “regulation dictate”.

In respect to scoping interviews, to map out the enabling factors and action steps needed for the transformative change, the interview guide (see Table 1) works with specific examples of successful initiatives/organisations/networks involved in transformative change that was achieved by the respondent's organisation. The interview guide focuses on the visions and motivations of the initiatives/organisations/networks. Furthermore, it focuses the specific steps, external conditions (enablers), and other stakeholders involved that led to their achievement, including lessons learned and their future plans. Intentionally, the interview guide was not designed to explicitly ask about the barriers and obstacles that were encountered during the transformative process, as such questions usually provoke a barrier-oriented thinking and narrative. Instead, the stories of success and the overview of enabling conditions will be used as a departure point for the identification of the barriers and disablers in the further stages of the transformation labs. Therefore, the analysis in this stage should be focused on the different levels of specific steps and actions, taken by the selected stakeholders during the process, particularly the operational level (specific actions and measures influencing the functioning of the social-ecological system), institutional level (actions and measures changing the institutional set-up of the social-ecological system), and narrative level (actions and measures related to the framing and discursive level of the social-ecological system). Moreover, enablers and disablers of the transformative change, covering the three above-mentioned levels can be identified. This approach will provide a comprehensive insight into the transformative environment in respective countries.

The scoping interviews should be carried out in person / online according to the preference of the respondent. Where appropriate, the scoping interviews should be recorded under the signature / oral agreement on the informed consent. Upon the consent, the scoping interviews should be transcribed verbatim and subjected to content analysis.

Table 1: Interview guide used for the scoping interviews

THEME	QUESTIONS
About the activities of the respondent's organization / network (broadly)	<ol style="list-style-type: none"> 1. What does your organisation/network do? 2. What is the vision of your organisation/network? <ol style="list-style-type: none"> a. What is the broader need / problem that your organisation / network is aiming at? b. / What are your organisation's/network's goals? 3. What are your key motivations? 4. Are you part of any relevant national / regional network? 5. What do you personally do within your organisation/network?
Achievements	<ol style="list-style-type: none"> 6. What are you proud of/what have you achieved within your organization/network?
Core section	
Proven steps/procedures	<ol style="list-style-type: none"> 7. How did you achieve this particular success? 8. What were the specific steps that helped you achieve success?
External factors (enablers)	<ol style="list-style-type: none"> 9. What were the external conditions that helped you achieve these steps? <ol style="list-style-type: none"> a. Were there any specific policies that you find helpful? Can you name them and explain how? 10. What other external conditions would have helped you [but did not happen]?
Stakeholders	<ol style="list-style-type: none"> 11. Who do you think are the key stakeholders that have helped you achieve this change? <ol style="list-style-type: none"> a. Were there any specific institutions that you find helpful? Can you name them and explain their role? 12. From your today's perspective, are there other stakeholders whose support would have helped you achieve your success? <ol style="list-style-type: none"> a. Would have a state involvement would help you in any way to achieve your success (e.g., ministries, new policy frameworks)?
Future plans	<ol style="list-style-type: none"> 13. What direction of action do you plan to take in the future?/What are your plans for the future?
Implications for the future	<ol style="list-style-type: none"> 14. In light of past experience, what would you do the same in the future? 15. Why? 16. In light of past experience, what would you do differently in the future? 17. Why?
Who else to ask	<ol style="list-style-type: none"> 18. Who else do you think has something to say on this topic?
Conclusion	
What to add	<ol style="list-style-type: none"> 19. Do you feel that something else should have been said but wasn't? 20. Would you like to participate in any further project activities?

Box 3: Illustrative results of the scoping interviews eliciting the transformation baseline in the Czech case study

The key **motivation** and the overarching **aim** of the transformative stakeholders in the Czech context relates to the change of the dominant discourse in relation to particular elements of the land-food-water-energy nexus. Therefore, the stakeholders crave for creating and nurturing the notion of complexity of production-consumption relations by problematizing its global aspects and promoting the importance of localisation as the essential path towards sustainability. As we mapped the transformation baseline especially around networks of organisation, another important motivation of these stakeholders relates to support of network members in pursuing transformative change.

In order to achieve the overarching aim, the stakeholders implement **actions and steps** on operational, institutional and narrative level. At the **operational level**, gradual, *consistent and continuous* work at the intersections of various sectors and themes proved to be a vital step towards delivering transformation change. A critical component of such work lies in *building communities of change* through *networking and experience sharing* (e.g., best practices) across wide range of stakeholders. Also, engaging stakeholders in the transformative processes allows for higher levels of *transparency* in the pursued activities and internal and external *communication*.

The steps and actions related to the **institutional level** included several foci. Firstly, the stakeholders perceive it as essential to *institutionalize* their efforts. In this sense, they understand that their efforts and related actions can achieve transformative change only if they are viewed by the general public as legitimate stakeholders. This is often done through two main and mutually not exclusive steps: intentional formalization of often initially organically developed activities of the network, and by supplementing some of the activities/services that are usually expected to be provided by the state or other formally responsible institutions. Secondly, the stakeholders promote *participation* and *new forms of democratization* and *rethinking hierarchies* as the key principles of transformation towards sustainability. This is closely related to the third course of actions, which is based on bringing together practical and systemic levels through *cross-scale cooperation of stakeholders*. Finally, a key type of identified actions related to *lobbying* for transformational policy elements at various levels of decision-making.

Finally, the **narrative level** of steps and actions are often related to the demonstration of the importance of *narrative shifts* by *personal enthusiasm* and by providing stories of people directly engaged in the nexus. This means, for instance, that being passionate about the transformation change and sharing the stories of diverse people might *inspire* others and consequently cascade to wider society. This is closely related to the importance of *communication* towards the general public and with having a control over the discussions of the topic that the transformation stakeholders are engaged in.

However, the above-mentioned actions and steps would not be possible without **external factors, or enablers**. A critical enabler at the **operational level** relates to the *personal capacities and qualities* of being keen, persistent and fearless in pursuing transformative change. At the same time, an important precondition seems to be time availability and possibility to *work without stress of short-term deadlines*. At the **institutional level**, the *transfer of EU directives, laws and policies* to the Czech context seems to be a key precondition for the transformative change as it creates a vital opportunity window for a shift in the institutional setting. This also relates to the *newly emerging streams of funding* and related subsidies, that might be used only in the case that institutional change provides the necessary conditions. Since the public sector has been continuously weakening in Czechia, an important enabler for some of the stakeholders is having the possibility to *substitute the role of the state* and earn credit for taking over some of the seemingly “out of interest societal

themes”, such as service provision to disadvantaged people. Finally, the essential enablers on the **narrative level** can be seen in *global crises*. For instance, the war in Ukraine and related spike in energy prices opened up discussion and stimulated legislative change towards energy self-sufficiency at communal levels. Another important narrative enabler relates to the increasing number of *people seeking more sustainable and healthy ways of life*, which might be demonstrated by the emerging new peasantry communities in rural, sub-urban and urban areas.

Identified **disablers, or barriers** slowing down transformative change on the **operational level** included *missing transformative on-the-ground stakeholders within the production-consumption chains* (such as the absence of transnational eco-friendly transportation companies). The identified disablers at the **institutional level** included *financial flows* (e.g., the inequal taxation and tax exemptions in Czechia) that are often intertwined with *skewed power relations* between small and large producers, e.g., through the access to subsidies. Particularly in the Czech context, institutional *resortism* (i.e., narrow focus on few responsibilities, usually captured within the silo of a single sector) represents a strong disabler that, in the understanding of the stakeholders, undermines a vast majority of the transformation efforts. This issue partially relates to *the role of municipalities*, that are crucial players of transformation, but are often not recognizing the importance of some of the topics (especially in the land and food sector). Furthermore, municipalities oftentimes reflect an unfulfilled potential in the Czech governance system as they lack willpower and sufficient interest in many of the current issues and prioritize only those that are urgent at the moment. There is also an array of disablers at the **narrative level** that are linked to the *publicly (in)visible themes and their framings*. First, there are *neglected themes* that are picked up only by few stakeholders and are completely missing in the public discourse (e.g., transformation of the food system through employing disadvantaged and disabled people in agriculture). Second, some themes (even extremely important ones, such as resilience of the food system and food crises) are so far “*unattractive*” to the policymakers as they are not perceived as urgent at present. Third, the Czech society is seen as strongly *preferring individual solutions perceived as “non-political”, to collective and political ones*. This phenomenon results from the Czech society being generally strongly apolitical, as historically, the former Czechoslovak Socialistic Republic (CSSR) government viewed the engagement in other than state-controlled politics as negative and many people were prosecuted due to expressing their political views. A similar case of path dependency emerges in the strong contentiousness of the themes of the current dominant patterns of agricultural production, control of land use and land redistribution, due to the history of socialist “collectivisation”, during which land was forcefully taken from private individuals and put under the state control. Consequently, the notions of “*community*” and “*solidarity*” have strong negative connotations because of the obligatory membership in cooperatives during the socialist era.

Finally, the actions and steps are not only underpinned by the enablers and disablers, but also by the other **stakeholders** that are crucial for steering society towards the transformative change. There are multiple sectoral ministries whose support is required. While some of the ministries (e.g., Ministry of Environment), or at least some of their departments (department of ecological agriculture at the Ministry of Agriculture) have more likely positive standpoints towards the transformation, others are not proving that supportive. Rather disabling role are having diverse public authorities, especially in the energy sector. Important role is also played by the formal and informal networks, NGOs and academia.

Box 4: Illustrative results of the scoping process eliciting the transformation baseline in the Dutch case study

The Netherlands has a long history of seeming control over nature, from the reclamation of land from the sea to today's highly intensive agriculture making the Netherlands one of the world's largest food exporters, despite its comparatively small land area. Typically, preference has been held for highly managed and maintained, 'tidy' landscapes, with nature being kept tightly under control. Overall, the Netherlands is performing poorly in terms of nature conservation and restoration, with the loss of biodiversity being considerably greater than the European average (Rli, 2021). However, there are signs of a narrative or even cultural shift occurring in relation to nature, with a rise in activity around making the Netherlands a more 'nature-inclusive' or even 'nature-positive' society, or taking nature as the basis, for example for agriculture and spatial planning. This is also supported from the top-down level, for example from the Dutch government's vision for nature up to 2025, which stated that the vision's most important point was a change in thinking recognising that nature belongs in the centre of society, and not only in protected areas, therefore shifting focus from protecting nature *against* society, to strengthening nature *throughout* society (Rijksoverheid, n.d.).

Statistics collected from the Dutch population in 2021 demonstrate a widespread concern for the climate and biodiversity crises, with three quarters of the population being concerned about the impact of climate change and most being in support of green energy, as well as over 80% thinking it is very likely that plant and animal species will disappear from the Netherlands and the same proportion finding this a troubling notion (CBS, 2021; Rli, 2021). This recognition of the climate and biodiversity crises, however, does not necessarily always translate to support for action, for example due to prominent 'NIMBY' ('not in my backyard') perceptions (CBS, 2021). Conflicts over *who* should bear responsibility for change, especially potent in relation to rural landscapes, have also arisen in the Netherlands, as demonstrated by opposition by farmers against measures to reduce nitrogen emissions. In 2023, it was also found that alongside deteriorating natural capital, the Netherlands is also experiencing 'hairline fractures' in various areas of social capital, including a decline in trust in institutions and the judicial system, and increase in perceived corruption (CBS, 2023).

While there may be widespread concern over the climate and biodiversity crises in the Netherlands, and general support for measures to tackle them, the challenge for the Netherlands to change largely lies in the problem of space scarcity. To improve the state of nature in the Netherlands, while also meeting other goals, from addressing the climate to the housing crises, there is a recognised need to seek clever synergies between these goals and measures, to bring them in cooperation rather than only competition. This is demonstrated by the ongoing development of the NPLG ('Nationaal Programma Landelijk Gebied'), the national program for rural areas in the Netherlands, which is aiming for a more holistic and integrated approach to rural areas in the Netherlands, by finding synergies between goals and measures on nature, climate, and water towards a 'future-proof' development of Dutch rural areas (Rijksoverheid, 2023). The central government is steering the general aims and obligations of this program, as well as financing through a 'transition fund' of 24.3 billion euros. While the central government is setting out the 'what' of the program, the provinces are responsible for determining the 'how', by developing tailored measures to suit the particular soil and water characteristics of their landscapes. A large part of the motivation in this program is achieving obligations as set out in European and international agreements. The NPLG is also being developed with an explicit 'learning' focus, with an approach of learning by doing, experiencing together, evaluating, and doing better.

To narrow the scope of this case study to a more in-depth focus, the province of Zuid-Holland has been selected. Zuid-Holland is the most populous province in the Netherlands and is highly urbanised, containing the metropolitan region of Rotterdam – The Hague, and the university towns of Delft and Leiden. The program states that, while exploiting natural capital

has allowed for technological and economic development of the province, ecological limits are being reached, necessitating a change in the business-as-usual activities in how the land is used. While the Zuid-Holland provincial program for rural areas (ZHPLG) is directed towards 'a new balance' between the ecology and economy in rural areas, it also recognises the importance of taking the interconnections between the rural and urban areas into account for reaching their nature, climate, and water goals (Provincie Zuid-Holland, 2023). The ZHPLG takes the natural landscape as the starting point, striving for a vital, future-proof rural area within the preconditions set by nature, climate, water and soil (Provincie Zuid-Holland, 2023). The program aims to work on both short-term goals as well as working collaboratively with 'area partners' on the long-term sustainability transition (Provincie Zuid-Holland, 2023). The program foregrounds cooperation, stressing that all sectors will need to contribute to the goals, including industry and mobility. It is also emphasised that due to the complexity of the tasks at hand and need to sometimes make difficult choices, the development of the program will need to involve a careful process for building mutual trust, where everyone feels invited to participate, parties take joint responsibility, and space is offered for forming coalitions (Provincie Zuid-Holland, 2023). As with the national program, the Zuid-Holland program's main goal is to achieve the legal objectives as set out in international and European agreements around nature, water and climate (Provincie Zuid-Holland, 2023). In this program, the aforementioned shift from protecting nature against humans towards integrating it throughout society is also reflected, in the ambition to work on agricultural natural values and a basic nature quality for the province, in addition to the protected nature reserves (Provincie Zuid-Holland, 2023). The province states that to achieve this, a systems approach will be essential, in which connections with the urban areas is also taken into account (Provincie Zuid-Holland, 2023). While this program represents a time scale between now and 2035, it also stresses that they are not starting from scratch, and many different stakeholders have been active in ongoing change processes towards a better balance between ecology and economy in the province.

In this vein, the Dutch case study will also identify and engage with these stakeholders working on transformative change in and across both the rural and urban areas of the province.

3 Roadmap to the transformation lab processes

The transformation lab process has been designed to reach the following outcomes, comprising *D2.2 Coproduced systemic models and pathways with sensitivity analysis and database of the co-designed pathway elements for both case studies (Wageningen University)*:

- Fuzzy cognitive maps related to transformative processes in the land-food-water-energy sector in Czechia and the Netherlands,
- Elements of national-level transformation pathways for Czechia and the Netherlands,
- Subregional (Eastern and Western European) perspective on the national-scale transformative pathway elements. This is further elaborated in section 3.3.

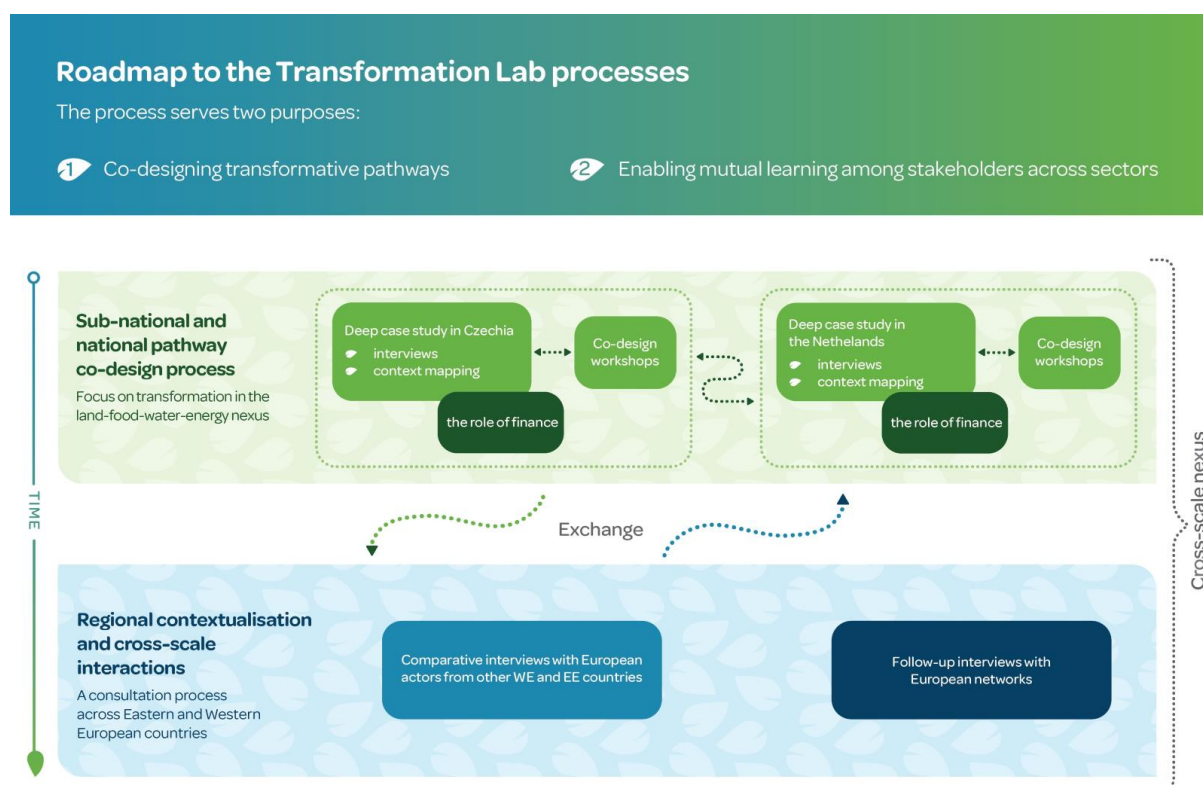


Figure 2: Schematic roadmap of the transformation labs process

3.1 Fuzzy Cognitive Mapping and its application in transformation lab processes and the TRANSPATH project

The outcomes of the mapping of the case study context as introduced in section 2 is centred around actors and their networks, which operate as key agents of transformative change. Subsequently, the scoping interviews develop understanding of the context, prospective actions as well as the barriers and enablers of transformative change. Building on these fundamentals, it is key to further explore what needs to be changed and which of the identified first steps might be carried out collectively by the agents of change to contribute to the transformative pathways. While there is a number of approaches suitable to this end, here we

focus on Fuzzy Cognitive Mapping (FCM) as a particularly useful approach facilitating the exploration of the complexities of potential future transformation pathways.

FCMs yield insights in the current and future dynamics of the entire system of social, environmental, and economic factors. This allows to analyse and understand connections and feedbacks between different sub-systems, and their complex interplay. Importantly, the integrative nature of FCMs allows for including any type of constraint or opportunity across biophysical, social, or political domains. This applies to current system descriptions, future scenarios, and transformative pathways. As with any type of model, performing a sensitivity analysis and model calibration will help understanding the functioning of the system and particularly the resistance to change. In turn, this allows to identify key levers and systemic properties that can catalyse or inhibit change.

With this information, FCMs can systematically operationalise the notion of a ‘safe and just operating space’ (SJOS), the guiding concept introduced in Deliverable 1.2 Transformative Navigation Toolkit, from the perspective of the stakeholders. The concept of a SJOS refers to a space between ‘safe’ Earth system boundaries, beyond which lies the risk of crossing irreversible biophysical tipping points, and a ‘just’ social foundation (Raworth, 2012; Rockström et al., 2023). FCM could be connected with the notion of SJOSs at multiple stages, for example, in terms of providing a starting point to critically explore the extent to which the current system state can be considered ‘safe’ and ‘just’, both locally and in terms of wider impacts on global social and biophysical capitals. The stakeholders could also imagine what a desirable ‘safe and just future’ state of the system at hand could entail, for example through guiding questions on how the local system can thrive both socially and ecologically, while respecting human wellbeing and planetary health at the global level (See D1.1, Figure 6; D1.2, Figure 6). Based on the perceived ‘gap’ between the current system state and desired safe and just future state, backcasting can then be carried out with stakeholders to develop transformative pathways aimed at tipping the system to this desired state.

To this end, in this deliverable we suggest how Fuzzy Cognitive Mapping can be used to:

- Test feasibility of future pathways
- Identify positive social-ecological tipping points and related interventions
- Assess the safe and just operating spaces
- Identify biophysical, social, economic and other constraints, but also systemic properties that resist to or catalyse change

3.1.1 Introduction to Fuzzy Cognitive Mapping

Transformative change and related transformation pathways are tackling complex sustainability issues that are happening within social-ecological systems. In order to fully understand the dynamics of these changes, we need to also understand the dynamics of the system. To this end, **system dynamics** is an umbrella term for all approaches aiming to understand the behaviour of complex systems over time. Generally, approaches deal with internal feedback loops and time delays that affect the behaviour of the entire system. What makes system dynamics different from other approaches studying complex systems is the use of feedback loops. These elements help describing how even seemingly simple systems can display strong nonlinear behaviour. **Fuzzy Cognitive Mapping** can be regarded as a system dynamics method (Edwards et al., 2023).

Fuzzy Cognitive Mapping is a technique that builds quasi-quantitative models from the knowledge of interconnected variables in a system (Jetter and Kok, 2014). FCM is suitable for linking stakeholders’ knowledge and scientific knowledge in modelling a complex social-ecological system and has been praised for the ease and speed of obtaining and combining

different knowledge sources (Kok, 2009; Jetter and Kok, 2014; Voinov et al., 2018). An FCM represents the variables of a system as 'concepts' and assesses the strength between these concepts as causal 'connections' represented by arrows with positive or negative values between -1 and +1. The particular strength of FCM is in the fact that it can be used to analyse the quasi-dynamic behaviour of the system derived by multiplying the FCM's weight matrix by the state vector in an iterative manner. There is a wealth of scientific literature that offers further details on the structure and functioning of FCMs (e.g., Kok, 2009; Papageorgiou and Salmeron, 2012; Jetter and Kok, 2014; Diniz et al., 2015; Gray et al., 2018).

FCMs are useful in modelling complex social-ecological systems as perceived/understood by the stakeholders living and working in the system (Voinov and Gaddis, 2017). The nature of FCM makes it easy for stakeholders to participate in the diagramming of the map or in contributing knowledge for the map building either individually or as a group. FCMs are particularly flexible in allowing the inclusion of both quantifiable and difficult to quantify aspects of a complex system; as well as the different domains of the system (Kafetzis et al., 2010). FCM can be developed through a participatory process as a group modelling exercise (van der Sluis et al. 2019) by eliciting knowledge from stakeholders through interviews (Edwards and Kok, 2021) or through a literature review (Jetter and Kok, 2014; Olazabal et al., 2018). When using a participatory process or stakeholder knowledge, an FCM typically combines individual cognitive maps into a collective mental model of the system, considered as shared knowledge (Olazabal et al., 2018).

3.1.2 General applicability of Fuzzy Cognitive Mapping

FCMs, as co-produced with stakeholders, can and have been used to address broadly three types of questions:

1. Understanding stakeholder perspectives on the current system. Complex systems give rise to multiple interpretations of how the system functions. When engaging with a broad group of stakeholders, diverse system descriptions will exist. These can be uncovered through the development of FCMs. Models can be developed to represent the system perception of each homogenous group of stakeholders. These FCMs can be structurally compared and analysed to enhance understanding of similarities and differences. Individual and group FCMs can be aggregated to a single system description, based on common elements. Ultimately, the aim is at understanding how stakeholders perceive the current situation. FCMs can be analysed to identify most important factors in the system, and potential sensitivities to change, by performing a sensitivity analysis and model calibration.

2. Developing future pathways. Once finalised, FCMs can be used to develop and test the effect of future scenarios on system dynamics. External drivers can be activated, changed, and added. Additionally, new concepts can be added and/or relationships can be changed. This gives insights in how stakeholders perceive the future state of the system and consequences on key aspects of the system. The behaviour of different FCMs can also be analysed and compared. Importantly, FCMs allow for testing the feasibility of pathways within a certain system understanding. The degree to which positive tipping points exist and can be triggered is part of the analysis.

3. Analysing system 'flips' and system transformations. Finalised FCMs can be used to explore possibilities of non-linear changes and system transformations. Most FCMs can be manipulated such that the dynamic output 'flips' and transforms to a different stable state. Often this new stable state represents a different basin of attraction, which can be interpreted as a system transformation. FCMs can be analysed to understand the ease with which the system transforms, and identify leverage points that facilitate change, or obstacles that prevent it. Therefore, FCM can offer a useful tool for exploring potential synergies and positive (desirable) tipping points in social-ecological system dynamics towards an alternative, more

safe and just stable state, as set out in Deliverable D1.1 Conceptual Framework), and D1.2 (Transformation Navigation Toolkit). Note that in Step 2 as described below, we test feasibilities of pathways as constructed by stakeholders, while here we propose a deeper analysis of systemic changes and the SJOS.

Application of Fuzzy Cognitive Mapping in TRANSPATH

In TRANSPATH, we will address all three applications that can be taken as consecutive steps, with a special emphasis on the last application and use FCMs to analyse how current system descriptions can be transformed and what are key aspects in that transformation.

Step 1: develop FCMs describing the current system. In each case study, ideally, a one-day workshop will be organised during which FCMs will be developed, describing the current system. The number of FCMs will depend on the diversity of stakeholder perceptions. The aim is to work towards a single FCM that represents the consensus view of the case-study system. Exact method to co-produce FCMs will depend on willingness of stakeholders to engage in a full day workshop. Various methods exist to co-develop FCMs in shorter workshops or through interviews.

Step 2: analyse FCMs and test future scenarios. FCMs will be analysed to understand their dynamic behaviour and sensitivity to changes of outside drivers and other system manipulations. This will also yield insights related to the most important factors in the system. Simple scenarios will be used to understand system dynamics. As the focus in TRANSPATH is on transformations, this step will not involve development of elaborate scenarios. This step is executed by project experts and will not involve stakeholders.

Step 3: identify leverage points. FCMs will be used to understand what is needed to transform the system to an alternative stable safe and just state, and what are crucial leverage points and transformative actions needed to ‘flip’ the system. The outputs of this analysis can be used as starting point for the second workshop, where more detail can be obtained on key transformative actions. Drawing on D1.1, the FCMs could provide a useful starting point for exploring how multiple interventions could be combined to enable positive social-ecological tipping points to be triggered in the particular systems being addressed in the case studies.

3.2 Design of Transformation Labs

In each case study, the transformation labs will comprise of two key activities in order to co-design regional transformative pathways that are scalable to the EU level: two consecutive participatory workshops, and comparative regional and network interviews. Below, we provide a foreseen timeline (Figure 3) of the transformation labs as envisioned in TRANSPATH project.

Year	2022		2023												2024												2025												2026											
Month of the year	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10		
Task #	Month of the project duration		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
2.2	Science-policy-practitioner Labs: co-creating leverage points for transformative pathways (Lead: WU; Participants: CG, UCL)																																																	
	D2.1: Roadmap for Science-policy-practitioner Lab processes (Report M12 - after Task 2.1)																																																	
	Analyzing scoping interview results																																																	
	Review of workshop approaches																																																	
	Stakeholder analysis and identification																																																	
	Stakeholder invitations to Workshop 1																																																	
	Targeted interviews to compile list of factors for fuzzy cognitive mapping																																																	
	Workshop 1 detailed planning and preparation																																																	
	Workshop 1 (CZ, NL)																																																	
	Workshop 1 data processing and analysis (fuzzy cognitive mapping)																																																	
	Stakeholder invitations to Workshop 2																																																	
	Development of vision and transformative actions																																																	
	Workshop 2 planning and preparation																																																	
	Workshop 2 (CZ, NL)																																																	
	Workshop 2 data processing and analysis (transformative actions)																																																	
	D2.2 preparation																																																	
	D2.2 I: Coproduced systemic models and pathways with sensitivity analysis and database of the co-designed pathway elements for both case studies (M28 - after national workshops are completed; submission ready publication M48)																																																	
	Publication drafting																																																	
	D2.2 II: Publication submission																																																	

Figure 3: A visualised workflow of the transformation lab process (Gantt chart).

- Nov-Mar 2023 Stakeholder analysis + identification
- March 2024 Stakeholder invitations WS1
- Feb-May 2023 Targeted interviews to compile list of factors
- June 2024 Workshop 1
- June-August 2024 [Feeding into Task 2.3: Regional interviews about interconnections across sectors in East Europe]
- August-Nov 2024 [Feeding into Task 2.3: Regional interviews about interconnections across sectors in West Europe]
- Jul-Sep 2023 FCM analysis
- Aug 2024 Stakeholder invitations WS2
- October 2024 Development of vision and transformative actions
- October-Nov 2024 [Feeding into Task 2.3: Interviews across Europe for identifying potential opportunities for cross-leverage]
- November 2024 Workshop 2
- Nov-Feb 2025 Analysis of transformative actions

Transformation Labs Activity 1: Participatory Workshops

Workshop 1 – Current system description – system dynamics models using FCMs

Overall aim: develop FCMs describing the current system. Main steps:

- Agree on list of concepts to be included (plenary)
- Develop FCMs (sub-groups)
- Show and discuss dynamic output (plenary)

Below is an example of how the agenda of an FCM development workshop could look like. A minimum of 6-7 hours is needed to execute all steps. Shorter workshops are possible, also in combination with interviews. In this example, a list of factors to include was prepared before the workshop, based on interviews with key stakeholders. This shortened the time needed for compiling the list from scratch during the workshop.

<u>Time</u>	<u>Activity</u>
09:15-09:30	Registration and coffee
09:30-10:15	Introduction of location, participants, and tool
10:15-10:45	Step 1. Introducing factors, discussion, final list
10:45-11:00	Break
11:00-12:30	Step 2. Construction of FCM graph
12:30-13:30	Lunch
13:30-14:00	Step 3. Enter data in Excel and produce dynamic output (expert)
13:30-14:00	Presentation of related topic
14:00-14:45	Presentation of resulting graphs and dynamics
14:45-15:00	Discussion and next steps
15:00	Closure

Workshop 2 – System transformations – pathways and transformative action using backcasting

The analysis of the FCMs will be used to identify potential transformative actions. These are likely to be rather generic. FCM stable states can be used to formulate a vision of a desirably end state. These two together can be used as starting point for a backcasting workshop, in which will first aim at completing pathways to reach the desirable endpoint, and then to identify and specify transformative actions. Details will depend on information that can be extracted from the FCMs.

Below is an example of how the agenda of a backcasting workshop could look like. A minimum of 6-7 hours is needed to execute all steps. Shorter workshops are possible, also in combination with interviews. In this example, a vision and a starting list of transformative actions were prepared before the workshop, based on interviews with key stakeholders and the FCMs from workshop 1. This shortens the time to build a vision during the workshop.

<u>Time</u>	<u>Activity</u>
09:15-09:30	Registration and coffee
09:30-10:15	Introduction of location, participants, and backcasting method
10:15-10:45	Presentation of FCMs, vision and transformative actions
10:45-11:00	Break
11:00-12:30	Step 1. Backcasting – development of pathways and actions
12:30-13:30	Lunch
13:30-14:30	Step 2. Specifying transformative actions
14:30-14:55	Presentation of actions and discussion
14:55-15:00	Next steps

15:00

Closure

Transformation Labs Activity 2: Comparative Interviews

As a follow-up activity to co-designing the transformative pathways within the Czech and Dutch case study, comparative interviews with transformative stakeholders from other Western and Eastern European countries are going to be conducted to test which of the insights gained in Czechia and the Netherlands are mirrored in the experience of other regional stakeholders. These are also to identify potential cross-links and collaborations, needs and support mechanisms that may help strengthen and cascade existing initiatives.

The comparative interviews will be based on a separate stakeholder analysis of regionally relevant stakeholders from the land-food-water-energy nexus, from across other countries belonging to the Western and Eastern European regions. In addition, snowball sampling will be used to fill in the gaps in the coverage of relevant stakeholders.

The interviews will collect data on the reflection of the transformative elements from the perspective of other countries, and the underlying reasons why they are reflected as equally/less suitable in the respective contexts. They will be initiated with a strong understanding of extant networks and support structures, with the goal of rethinking opportunities to strengthen interlinkages and the idea of 'scaling' out initiatives that are found to be successful and transformational. This will mean that interviews will interrogate the potential role of different support mechanisms, levels of government and state roles, and innovative stakeholder partnership arrangements.

3.3 Longer-term outlook: Identifying promising leverage points and cross-scale pathways

The following stages of WP2 will be designed to identify cross-scale leverage points developed across regional case studies for Europe (D2.3) and finalize a suite of cross-scale transformative pathways summarized in an accompanying report (D2.4) (Figure 4).

Building on our stakeholder identifications and engagements, Task 2.3 will work towards synthesising and assessing leverage points and transformative pathways, for opportunities to expand and cascade 'what works' to sectors in new geographic regions and contexts, as well as to strengthen the initiatives of engaged case studies. To undertake this, identified factors contributing to change-makers' successes will be mapped to establish what contributed meaningfully towards their establishment, maintenance and possible transferral. With these understandings in hand, a range of follow-up focused interviews will be undertaken on the subject of ongoing challenges and needs, translation opportunities beyond finite, local case studies, and ways of improving the longevity of initiatives, across East, West and regional Europe. These interviews promise conceptual and practical advances: conceptually, we will push contemporary understandings of leverage points and feedback mechanisms' roles in "scaling"; while practically offering network connections across these geographies and sectors.

The final stage of WP2 (Task 2.4) will analyse how the national-to-subregional transformative pathways and their promising leverage points can be scaled to the European level. The Task will assess how the identified pathway elements and the leverage points can interfere with the direct and indirect drivers on the Eastern European, Western European and the whole-EU level. In addition, it will analyse how the identified pathway elements and leverage points can be enabled or hampered by various values and norms on the Eastern European, Western European and the whole-EU level, and vice versa, how they can contribute to shifting these norms and values across the different contexts. The data collection in this Task will be based on mixed methods including interviews filling the gaps on the scaling potential of the different identified interventions, and a cross-scale European workshop organized in collaboration with WP4. The workshop with stakeholders will be organised to discuss, compare, and scale the specific findings for both case studies to a European-level set of levers. In a subsequent cross-scale analysis, this Task will assess the scalability of different transformative elements across European geographic and cultural contexts and develop a cross-scale and cross-contextual synthesis of the transformative pathways for biodiversity, climate and a good quality of life.

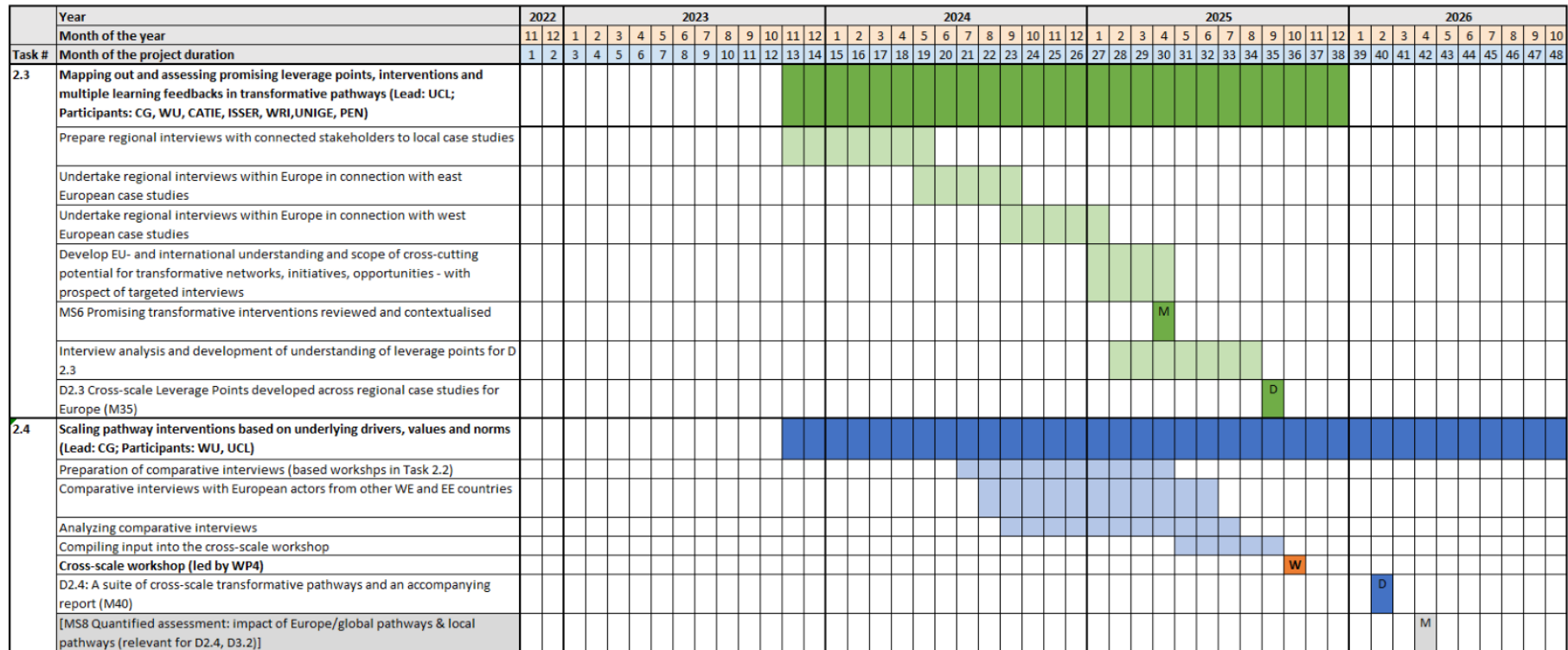


Figure 4: A visualised workflow of the activities (Task 2.3 & 2.4) building on the transformation lab process (Gantt chart).

4 References

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5 Annexes

5.1 Stakeholders for the EE case study

Table 2: Stakeholders in the Czech Republic

NEXUS	Name	Type
ENERGY	Asociace pro rozvoj infrastruktury (Association for Infrastructure Development)	Associations, alliances, unions (networks)
ENERGY	Svaz měst a obcí ČR (Union of Towns and Municipalities of the Czech Republic)	Associations, alliances, unions (networks)
ENERGY	Svaz moderní energetiky (Modern Energy Union)	Associations, alliances, unions (networks)
ENERGY	Asociace pro akumulaci energie (Energy Storage Association)	Associations, alliances, unions (networks)
ENERGY	Asociace komunitní energetiky ČR (Community Energy Association)	Associations, alliances, unions (networks)
ENERGY	Aliance pro energetickou soběstačnost (Alliance for Energy Self-Sufficiency)	Associations, alliances, unions (networks)
ENERGY	Asociace poskytovatelů energetických služeb (The Association of Energy Service Providers)	Associations, alliances, unions (networks)
ENERGY	Asociace výrobců minerální izolace (Association of Mineral Insulation Manufacturers)	Associations, alliances, unions (networks)
ENERGY	BIC Brno - podnikatelské a inovační centrum (BIC Brno - Business and Innovation Centre)	Associations, alliances, unions (networks)
ENERGY	Česká fotovoltaická asociace (Czech Photovoltaic Association)	Associations, alliances, unions (networks)
ENERGY	COGEN Czech (COGEN Czech - Association for combined heat and power production)	Associations, alliances, unions (networks)
ENERGY	Sdružení podnikatelů pro využití energetických zdrojů (Association of Entrepreneurs for the Utilisation of Energy Sources)	Associations, alliances, unions (networks)
ENERGY	Česká technologická platforma Smart Grid (Czech Technology Platform Smart Grid)	Associations, alliances, unions (networks)

ENERGY	Solární asociace (Solar Association)	Associations, alliances, unions (networks)
ENERGY	Univerzitní centrum energeticky efektivních budov ČVUT (The CTU University Center for Energy Efficient Buildings)	Associations, alliances, unions (networks)
ENERGY	Unie zaměstnavatelských svazů ČR (Union of Employers' Associations of the Czech Republic)	Associations, alliances, unions (networks)
ENERGY	REsolar (REsolar - solar panel recycling provider)	Associations, alliances, unions (networks)
ENERGY	Pražské společenství obnovitelné energie (Prague Community of Renewable Energy)	Associations, alliances, unions (networks)
ENERGY	Unie komunitní energetiky (Community Energy Union)	Associations, alliances, unions (networks)
ENERGY	Národní síť místních akčních skupin (National Network of Local Action Groups)	Associations, alliances, unions (networks)
ENERGY	Národní síť zdravých měst (National Network of Healthy Cities)	Associations, alliances, unions (networks)
ENERGY	Asociace developerů (Developers Association)	Associations, alliances, unions (networks) *
ENERGY	E.ON	Companies
ENERGY	ČEZ Group	Companies
ENERGY	Sev.en Energy	Companies
ENERGY	Innogy	Companies
ENERGY	Pražská energetika (PRE Group)	Companies
ENERGY	Sokolovská uhelná (Sokolov Coal)	Companies
ENERGY	Energetický a průmyslový holding (EP Corporate Group)	Companies
ENERGY	OKD (Ostrava-Karviná Mines)	Companies
ENERGY	MND	Companies
ENERGY	Nano Energies/ Nano Green	Companies
ENERGY	AMO (Association for International Affairs)	NGOs, initiatives, think-tanks
ENERGY	Hnutí DUHA (Friends of the Earth Czech Republic)	NGOs, initiatives, think-tanks
ENERGY	Greenpeace Czech Republic	NGOs, initiatives, think-tanks
ENERGY	Centrum pro dopravu a energetiku (Centre for Transport and Energy)	NGOs, initiatives, think-tanks
ENERGY	EkoWATT	NGOs, initiatives, think-tanks

ENERGY	Institut pro demokracii a ekonomickou analýzu (Institute for Democracy and Economic Analysis)	NGOs, initiatives, think-tanks
ENERGY	Platforma pro sociálně-ekologickou transformaci: Re-set (Platform for socio-ecological transformation: Re-set)	NGOs, initiatives, think-tanks
ENERGY	Limity jsme my (We are the limits)	NGOs, initiatives, think-tanks
ENERGY	Fridays for Future Czech Republic	NGOs, initiatives, think-tanks
ENERGY	Platforma pro sociální bydlení (Platform for social housing)	NGOs, initiatives, think-tanks
ENERGY	Eurosolar Czech Republic	NGOs, initiatives, think-tanks
ENERGY	Frank Bold	NGOs, initiatives, think-tanks *
ENERGY	Heinrich-Boll-Stiftung Praha	NGOs, initiatives, think-tanks
ENERGY	Ministerstvo průmyslu a obchodu (Ministry of Industry and Trade)	Public sector
ENERGY	Ministerstvo životního prostředí (Ministry of the Environment)	Public sector
ENERGY	Ministerstvo pro místní rozvoj (Ministry of Regional Development)	Public sector
ENERGY	Progressive cities in terms of their energy strategies (e.g., Prague, Brno, Litoměřice, Kněžice)	Public sector
ENERGY	Cities and municipalities that own their own renewable energy sources and are interested in community energy (see Hnutí DUHA)	Public sector
ENERGY	Jiří Krist	Change-maker *
ENERGY	Michal Svoboda	Change-maker *
LAND	Abri s.r.o.	Social enterprise
LAND-FOOD	Averitas s.r.o.	Social enterprise
LAND-FOOD	Biobýt	Social enterprise
LAND-FOOD	Biostatek Valeč	Social enterprise *
LAND-FOOD	Ekozahrada Raková	Social enterprise
LAND	Farma Krok	Social enterprise
LAND-FOOD	Kokoza	Social enterprise
LAND-FOOD	KomPot	Social enterprise
LAND	Práci lidem	Social enterprise
LAND	Ekovysočina	Social enterprise

LAND	Farma na Kotku	Social enterprise
LAND-FOOD	Sady sv. Prokopa	Social enterprise
LAND-FOOD	Sociální podnik Jasan	Social enterprise
LAND-FOOD- WATER- ENERGY	Sdružení Neratov	Social enterprise
LAND	Mýdlárna Koukol	Social enterprise
LAND-FOOD- WATER- ENERGY	Fér Kaffé Veronica a Moštárna Hostětín	Social enterprise
LAND-FOOD	Envira o.p.s. (Toulcův Dvůr)	Social enterprise
LAND-FOOD	Svobodný statek Na Soutoku	Social enterprise *
LAND-FOOD	Pomoc Týn nad Vltavou - statek Čihovice	Social enterprise
LAND-FOOD	Květná zahrada	Social enterprise
LAND	Pastvina	Social enterprise
LAND	Lavandia	Social enterprise
LAND-FOOD	Apolenka	Social enterprise
LAND-FOOD	Sociální farma Lozice	Social enterprise
LAND-FOOD	Výdejna chutí	Social enterprise
LAND-FOOD	Český svaz sociálního podnikání	Social entrepreneurship/ network/changemaking
LAND	Nadace pro půdu	Network
LAND-FOOD	AMPI - Asociace místních potravinových iniciativ	Network
LAND-FOOD	Slušná firma	Social entrepreneurship/network/ changemaking
LAND	Živá půda	Network
LAND-FOOD	SoFarm	Network
LAND-FOOD	Asociace sociálního zemědělství	Network
LAND-FOOD	Tematická síť pro sociální ekonomiku (TESSEA)	Social entrepreneurship/ changemaking
LAND-FOOD	KPZkoALICE	Network
LAND-FOOD	Druživa (SK)	Social entrepreneurship/ changemaking
LAND-FOOD	Nadace Partnerství	Network *
LAND-FOOD	Markéta Vinkelhoferová	Change-maker in social entrepreneurship
LAND-FOOD	Tomáš Uhnák	Change-maker *
LAND-FOOD	Nada Johanisová	Change-maker in social entrepreneurship
LAND-FOOD	Eva Fraňková	Change-maker *

FOOD	Bezobalu	Social enterprise *
FOOD	Fair&Bio pražirna	Social enterprise
FOOD	Restaurace Střecha	Social enterprise
FOOD	Suširna z pod Radhošťa	Social enterprise

*identified by snowballing

5.2 Stakeholders for the WE case study

Table 3: Stakeholders in the Netherlands

NEXUS	Name	Type
LAND-WATER-FOOD	Samen voor Biodiversiteit (Together for biodiversity - Delta Plan for Biodiversity Restoration)	Associations, alliances, unions (networks)
LAND-WATER-FOOD	Staatsbosbeheer (State Forest Management)	Public sector
LAND-WATER	IVN Natuureducatie (IVN Nature Education)	NGOs, initiatives, think-tanks
LAND-WATER-FOOD-ENERGY	Natuur en Milieufederatie Zuid-Holland (Nature and Environment Federation South-Holland)	NGOs, initiatives, think-tanks
LAND-FOOD	Wij.Land (We.Land)	Social enterprise
LAND	Stichting Steenbreek (Stonebreak Foundation)	Associations, alliances, unions (networks)
LAND	Naturalis	Research institute
LAND	Stichting Zuid-Hollands Landschap (Foundation for the South-Holland landscape)	Associations, alliances, unions (networks)
FOOD	Herenboeren (Farmers Co-op)	Social enterprise
LAND-FOOD-WATER-ENERGY	Jonge Klimaatbeweging (Youth Climate Movement)	Associations, alliances, unions (networks)
FOOD	Lekkernassûh	Social enterprise
ENERGY-WATER-WASTE	BlueCity	Social enterprise
ENERGY	Energie Samen Zuid-Holland (Energy Together South-Holland)	Associations, alliances, unions (networks)
LAND-FOOD-WATER-ENERGY-WASTE	Dutch Research Institute for Transitions (DRIFT)	Research institute
LAND-ENERGY-FOOD-WASTE	MVO Nederland (Corporate Social Responsibility Netherlands)	Associations, alliances, unions (networks)

WATER-LAND	Water board Hollandse Delta	Public sector
LAND	Samenwerkingsverband Nationale Parken (Partnership national parks)	Associations, alliances, unions (networks)
LAND	Het Haagse Groen (The Hague's Green)	Public sector
LAND	LandschappenNL (LandscapesNL)	Associations, alliances, unions (networks)
LAND-WATER	Natuurmonumenten (Nature monuments)	Associations, alliances, unions (networks)
LAND-ENERGY-FOOD	Milieudefensie (Dutch branch of Friends of the Earth international network)	Associations, alliances, unions (networks)
ENERGY	RESCoop	Associations, alliances, unions (networks)
ENERGY-LAND	Duurzaam Den Haag (Sustainable The Hague)	NGO
WATER-ENERGY-LAND	Klimaatverbond Nederland (Dutch Climate Partnership)	Associations, alliances, unions (networks)
LAND-ENERGY-WASTE	Stichting Rotterdams Milieu Centrum (Rotterdam Environment Centre)	NGO
FOOD	Transitie Coalitie Voedsel (Coalition Food Transition)	Associations, alliances, unions (networks)
WASTE	Groene Hart Werkt (Green Heart Works)	Associations, alliances, unions (networks)
LAND	Stichting Duinbehoud (Organisation for Dune Management)	NGO
FOOD-LAND	Rotterdam De Boer Op	Associations, alliances, unions (networks)
LAND-ENERGY	The Green Village - Delft	Living lab
WASTE	Rotterdam Circulair	Public sector
FOOD	Protein Port	Associations, alliances, unions (networks)
ENERGY	Rotterdam Climate Initiative	Group of initiatives
FOOD-LAND	Bewust Den Haag (Conscious The Hague)	Associations, alliances, unions (networks)
LAND-FOOD	Greenport West Holland	Associations, alliances, unions (networks)
LAND-ENERGY	Make Day	Social enterprise
LAND-ENERGY-FOOD	Squarewise	Business
LAND-ENERGY	NL Greenlabel	Associations, alliances, unions (networks)
LAND-FOOD	Boeren Met Biodiversiteit (Farmers with Biodiversity)	Associations, alliances, unions (networks)
LAND-FOOD-WATER-ENERGY	Triodos	Business

LAND-WATER-ENERGY	ASN	Business
LAND-FOOD	Land Van Ons (Our Land)	Associations, alliances, unions (networks)
LAND-WATER	WWF-NL	NGO
LAND-WATER-ENERGY-FOOD	Greenpeace NL	NGO
LAND-ENERGY-FOOD	URGENDA	NGO
ENERGY	Nederlandse Vereniging Duurzame Energie	Associations, alliances, unions (networks)