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Exploring Transition Pathways to Support Food System Transitions

Are you facilitating activities that support the transition towards socially inclusive, healthy and environmentally sustainable food systems and feel lost to how your activity fits within these transition goals? This guide helps practitioners to develop actionable steps to reach a joint future vision.

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About

The method to explore Transition Pathways presented in this Practical Guide is one of the outcomes of the Knowledge Base programme 'Food Security and Valuing Water' (Transition pathways: project number KB-35-006-001).

The first version of the method was based on earlier work on transition analysis and attempts at stimulating transitions in a variety of projects and programmes over the past decade. This initial version of the method was subsequently applied in a number of concrete projects in various LMICs in Africa and South-East Asia within the KB programme in the period 2019-2022. None of these projects used all seven steps of the method due to practical and budgetary limitations and a focus related to the specific objectives of each project. Across all projects, however, we were able to assess the performance of each step. These experiences were used to develop this Practical Guide. Here, we illustrate the various steps of the method with examples from the different projects in which a specific step was actually performed.

This is an interactive guide

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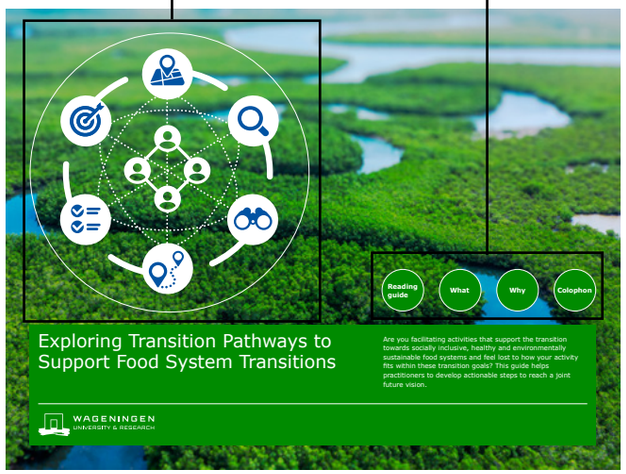

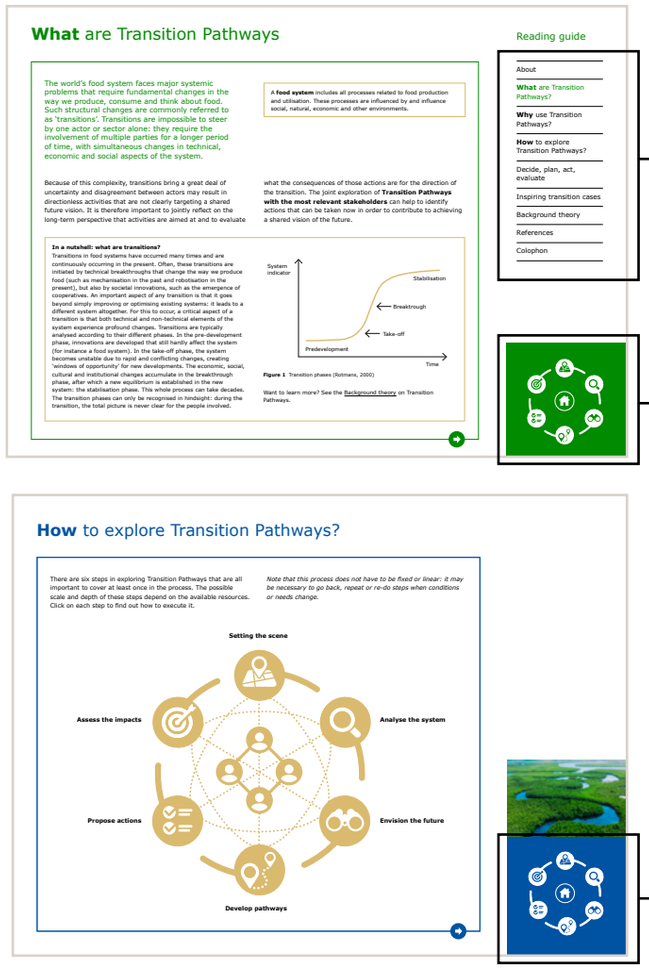

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What are Transition Pathways

The world's food system faces major systemic problems that require fundamental changes in the way we produce, consume and think about food. Such structural changes are commonly referred to as 'transitions'. Transitions are impossible to steer by one actor or sector alone: they require the involvement of multiple parties for a longer period of time, with simultaneous changes in technical, economic and social aspects of the system.

A **food system** includes all processes related to food production and utilisation. These processes are influenced by and influence social, natural, economic and other environments.

Because of this complexity, transitions bring a great deal of uncertainty and disagreement between actors may result in directionless activities that are not clearly targeting a shared future vision. It is therefore important to jointly reflect on the long-term perspective that activities are aimed at and to evaluate what the consequences of those actions are for the direction of the transition. The joint exploration of **Transition Pathways with the most relevant stakeholders** can help to identify actions that can be taken now in order to contribute to achieving a shared vision of the future.

In a nutshell: what are transitions?

Transitions in food systems have occurred many times and are continuously occurring in the present. Often, these transitions are initiated by technical breakthroughs that change the way we produce food (such as mechanisation in the past and robotisation in the present), but also by societal innovations, such as the emergence of cooperatives. An important aspect of any transition is that it goes beyond simply improving or optimising existing systems: it leads to a different system altogether. For this to occur, a critical aspect of a transition is that both technical and non-technical elements of the system experience profound changes. Transitions are typically analysed according to their different phases. In the pre-development phase, innovations are developed that still hardly affect the system (for instance a food system). In the take-off phase, the system becomes unstable due to rapid and conflicting changes, creating 'windows of opportunity' for new developments. The economic, social, cultural and institutional changes accumulate in the breakthrough phase, after which a new equilibrium is established in the new system: the stabilisation phase. This whole process can take decades. The transition phases can only be recognised in hindsight: during the transition, the total picture is never clear for the people involved.

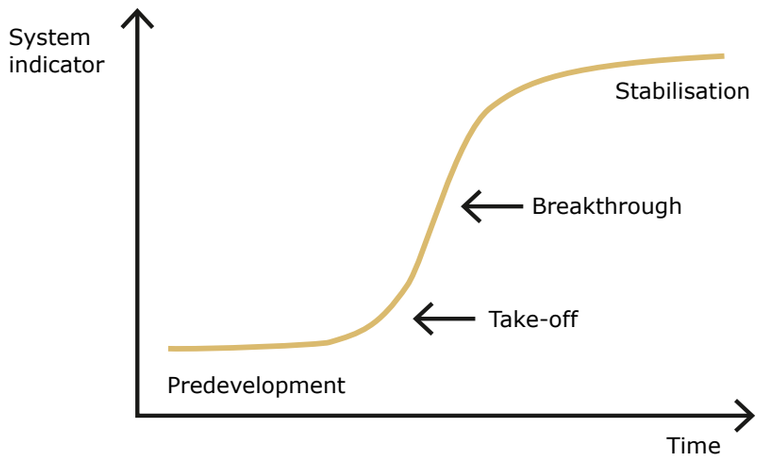

Figure 1 Transition phases (Rotmans, 2000)

Want to learn more? See the Background theory on Transition Pathways.

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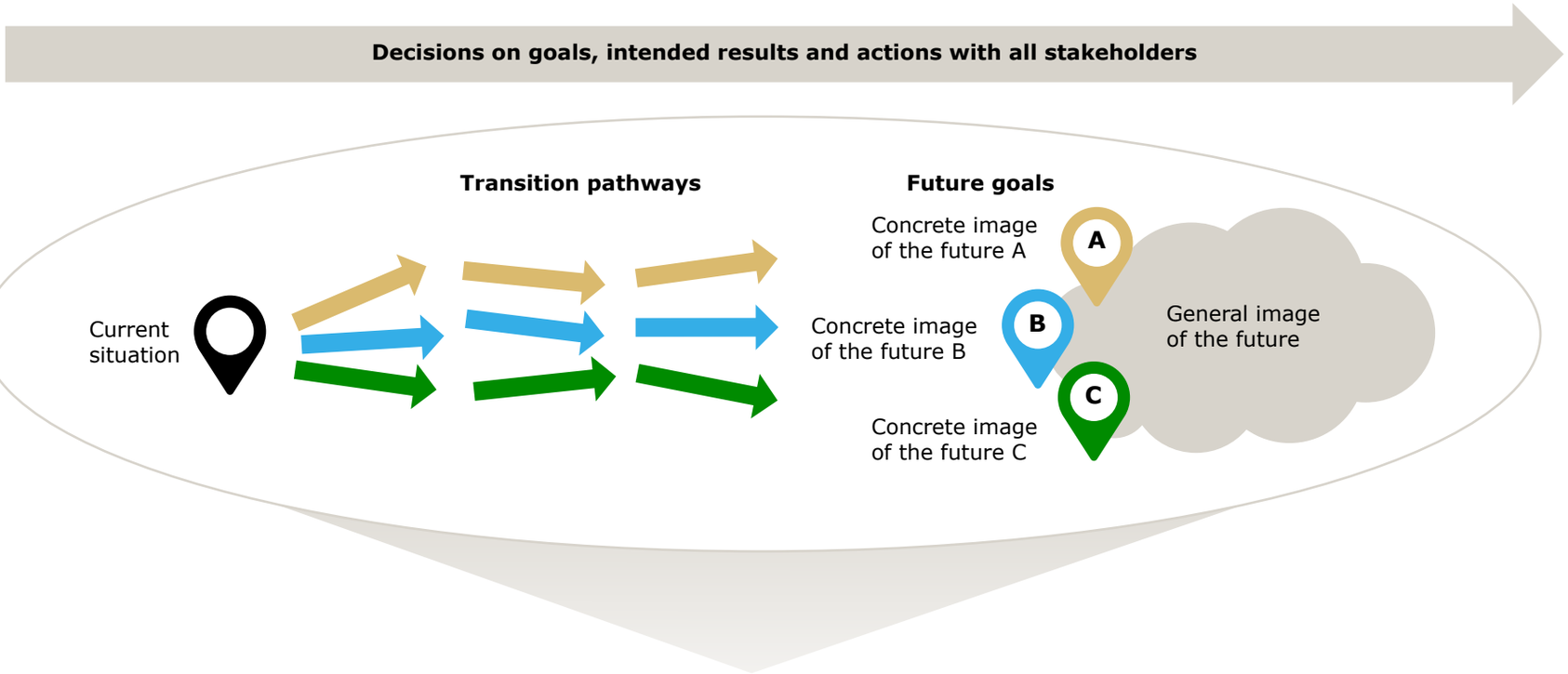
What are Transition Pathways

Transition Pathways are written narratives that tell the story of how a future food system may evolve out of a previous system. Transition Pathways make alternative futures imaginable and actionable. The term is always used in the plural: it is not meant as a blueprint, as the future may develop in various ways. However, stakeholders can use a certain pathway as a starting point for action after exploring one or multiple pathways that lead to the same imagined future. These pathways are therefore always developed with a diverse group of stakeholders who share an interest in the transition, either as active participants or as participants that are potentially impacted by the actions taken.

Want to get an idea of the process of creating Transition Pathways? See the case of Overijssel/Accra.

Aspects of Transition Pathways
SCOPE: what aspects do we focus on?
SCALE: what is the scale?
ARENA: who should be involved?
TIME: what is the timeline?
JUSTICE: who or what is potentially disadvantaged?
ROLE: what is everyone's (and your own) role in the transition?
LEARNING PROCESSES: how do we adapt during the process?

Want to learn more? See Background theory on Transition Pathways.



Awareness of the full scope of developments
Insight into possible transition paths
Ground for choices

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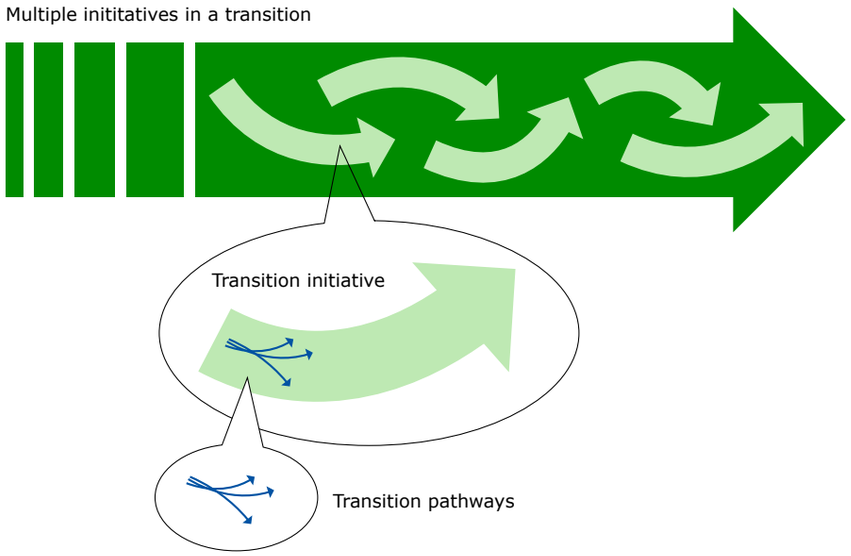
Why use Transition Pathways?

A Transition Pathway identifies the potential steps to arrive at a shared future vision, and thereby makes that vision more plausible and actionable. This inspires other actors to act in the now to reach that future vision, and not just take an adaptational approach with short-term vision. The exploration of multiple Transition Pathways can be helpful to find and facilitate well-considered actions that may motivate to take the first steps towards a renewed system.

Transition Pathways are an ideal tool to use in initiatives in which stakeholders are looking for a solution to a major structural food system issue that requires a transition. This change cannot be materialised through simple and linear (adaptive) solutions, but requires complex, multi-level transitions that include changes in technical, social, cultural and institutional aspects.



Situations in which Transition Pathways are useful

- You are part of a group that works to redesign delta areas. Climate change and urban development cause pressure on delta areas. You and your team want to build sustainable pathways to make necessary adjustments in agricultural production. See case Bangladesh.
- You want to support the protein transition in Europe by stimulating legume production. There are many factors that have an influence on this process. You want to provide transition pathways for key stakeholders so that they can act on the different implications of each pathway. See case LegValue.
- You are part of a project group that supports a governmental project focusing on agricultural development: strengthening sustainable and inclusive growth economic growth through the agricultural labour force. There is a willingness to invest in agricultural technical and vocational education and training, but informed choices need to be made on where to invest in towards the future. See case Myanmar.
- You want to explore policy options for the realisation of urban agriculture and local food production. Residents and policy actors are on the same page about the desirability of urban agriculture and local food production, but there are different views within the community about how to achieve those goals. See case Oosterwold.

For more inspiring transition cases, see Case study analysis Transition Pathways 2020.

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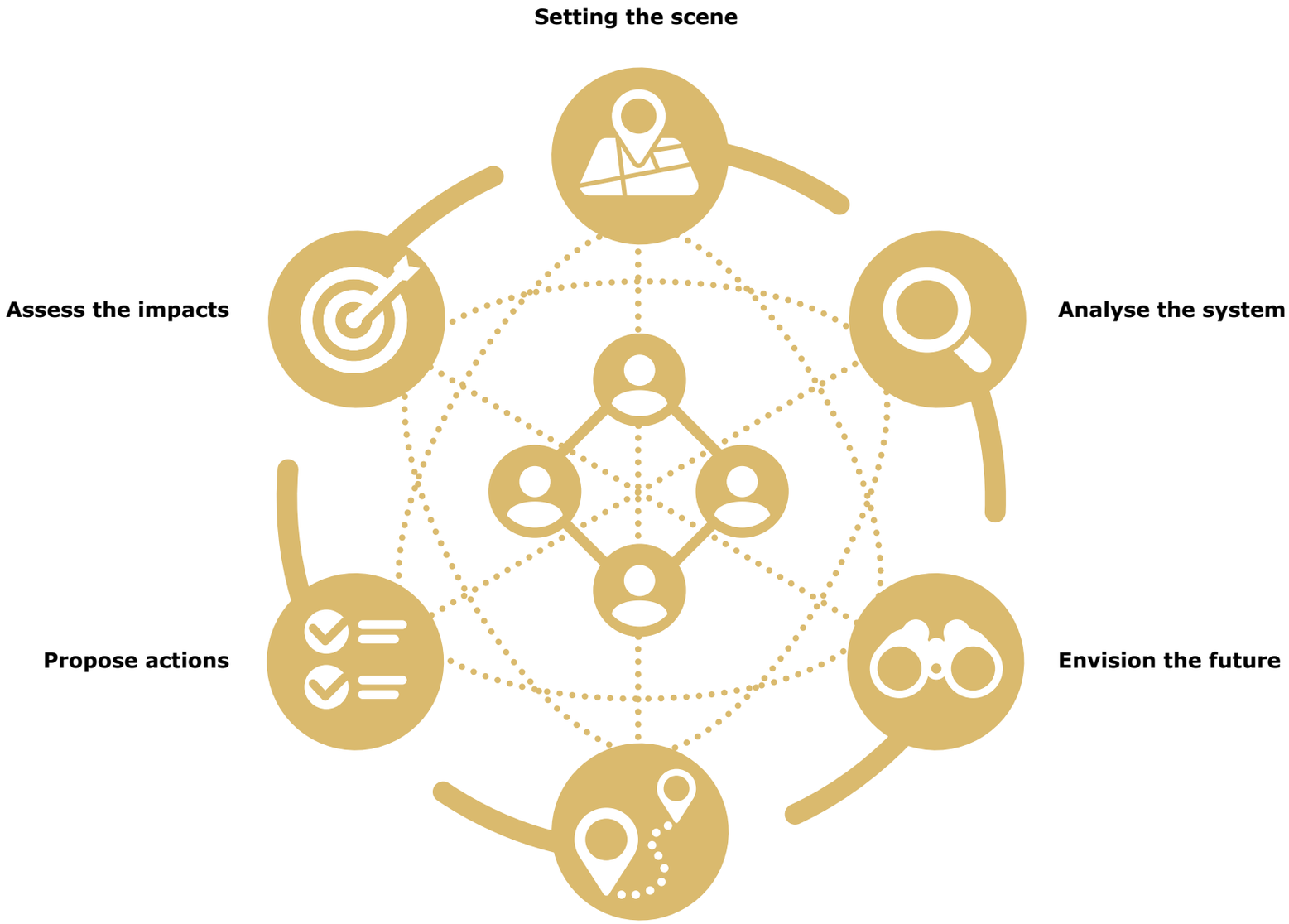
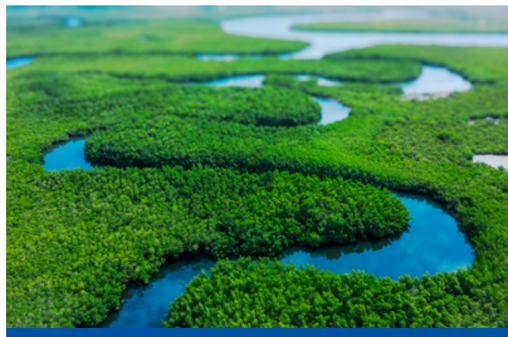
How to explore Transition Pathways?

There are six steps in exploring Transition Pathways that are all important to cover at least once in the process. The possible scale and depth of these steps depend on the available resources. Click on each step to find out how to execute it.

Note that this process does not have to be fixed or linear: it may be necessary to go back, repeat or re-do steps when conditions or needs change.





Setting the scene

Setting the scene consists of making sure that everything is in place to start the process of creating Transition Pathways. First, you need to consider the urgency and importance of the exercise before you start. Is the general idea behind the exercise clear to all? Does everyone agree that this process is useful? Does everyone agree on the goal of the process?

If everyone is aligned on the goal and use of Transition Pathways, it is important to have at least a rough idea of the scope. Are we targeting the food system in a specific city or in a whole country? What is our sphere of influence in the activities we can undertake? It is important to do this before you start, because it may mean that other stakeholders must participate in the process. If for any reason they cannot be part of the process, it should be clear to everyone what limitations this brings.

Finally, the group of stakeholders should discuss the approach to make clear to everyone what each step entails. This can be done using this Practical Guide.

Implementation

Setting the scene is all about preparation. Before getting started with content, you first focus on the process of your project. Make sure you have thought about stakeholder involvement, added value, informal decision making and clarity about the development of transition pathways.

Case example - Ethiopia

In a Transition Pathway process that took place in Ethiopia, evaluation sessions that were held with key stakeholders after each multi-stakeholder workshop, provided new insights into the types and diversity of stakeholders that should participate in the next stages of the dialogue and the design of transition pathways.

In the first workshop the majority of stakeholders were directly related to the project we were working with. A number of participants were from partner organisations, knowledge institutes and industry level partners.

For the second workshop more representatives of the public sector were invited, more representatives of Ethiopian knowledge institutes, development partners, representatives of dairy cooperatives and dairy farmer organisations and delegates from the Ethiopian Food System Roadmap working team.

Some of the thematic areas that had come up in designing the Transition Pathways required specific subject matter expertise to be added through additional stakeholders. This example provides insights into the importance of continuously and periodically (re)-assessing if you have the right people on board.

Checklist

- ☐ Is there sufficient urgency to develop the Transition Pathways?
- ☐ Will the stakeholders that should be part of the process be part of the process?
  - ☐ If not, are the risks of excluding these stakeholders clear?
- ☐ Is it clear what added value the Transition Pathways can provide?
- ☐ Is it clear how to develop Transition Pathways?

If these conditions are in place, you are ready for the next step.

Setting the scene

Getting the right people on board

To ensure that the Transition Pathways do not stay on the shelf but are actually acted upon, it is important to have all relevant stakeholders represented in the process. In many project this happens ad hoc, which can lead to an unbalanced influence on the project. Therefore, it is important to systematically identify which actors have a stake in the transition path for which the transition path is being developed. This involves looking at the roles that actors play. Who are the (potential) financiers, clients, implementers, coalition partners, etc.? See Tools for Transitions for help with stakeholder analysis. If it is unfeasible to involve certain groups or actors due to budgetary, time or other constraints, try to explore other ways in which you can engage with these actors, for example by linking up to already existing platforms, communities of practice and initiatives.

And how do power and political dynamics play a role? This can be analysed using the power scan. But it is also important to look at who will benefit from the envisaged transition and who will potentially suffer from it, and to ensure that the latter group is also able to participate. See Just Transitions.

Apart from analysing the stakeholders from the perspective of the desired transition, it is important to look at your own role as a facilitator of this process. How do you relate to the other stakeholders, the societal or cultural context or the process itself? How could other stakeholders see you? Take into account that these steps can be applied to any transition initiative, but that specific cultural and societal contexts differ hugely. This requires adapting the implementation of the steps to the context.

Analyse the system

Once you are ready to get started, it is important to analyse the current food system to identify what future paths and explorations are necessary. You can conduct this advance analysis yourself or with a smaller group before you bring together a wider stakeholder group. This analysis serves as the basis for further discussions on the desired future.

This analysis should focus on four topics:

1 Assess the functioning of the food system
2 Identify the network of actors that play a role in that system
3 Identify the policies of governments and strategies of actors
4 Identify important developments outside the sphere of influence (e.g. population growth)

This analysis can for example be done using the food system framework. For each component in the framework, the question can be asked whether it is relevant to include for your own case. See Tools for transition.

Case example - Overijssel

The Dutch province of Overijssel wished to gain insight for themselves and their stakeholders into potential transition paths towards a sustainable food system in 2050. To understand the context from the current situation, the WUR researchers involved used stakeholder interviews and IPCC (Intergovernmental Panel on Climate Change) scenarios to describe the potential impact on the province. Those scenarios provided insight into the future developments:

- Population decline over the long term in the province
- Increased concentration of population in the cities
- High economic growth
- High productivity in agriculture
- High environmental pressure due to food consumption, high meat consumption in particular

These characteristics provided the starting points for further development of potential Transition Pathways.

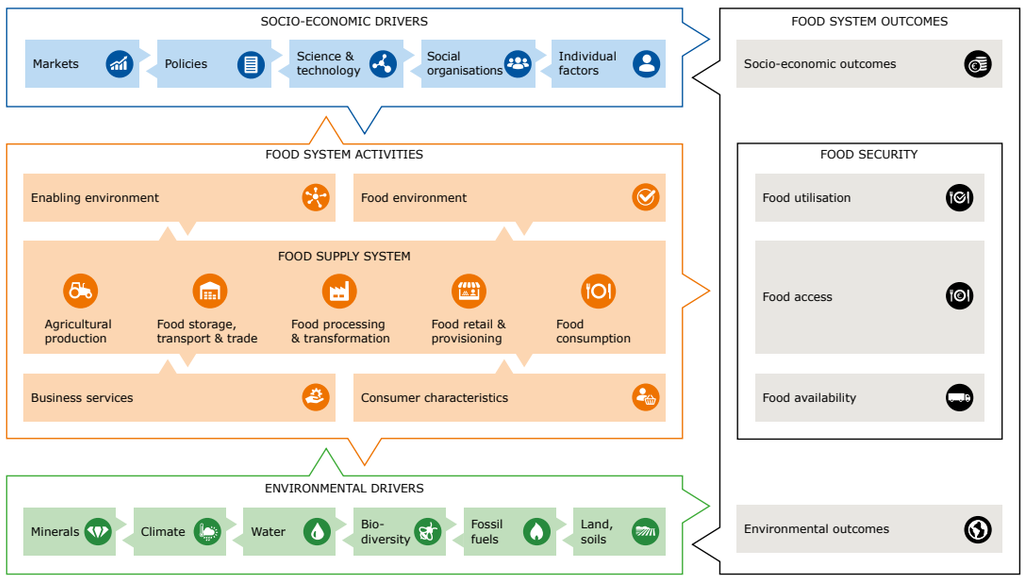
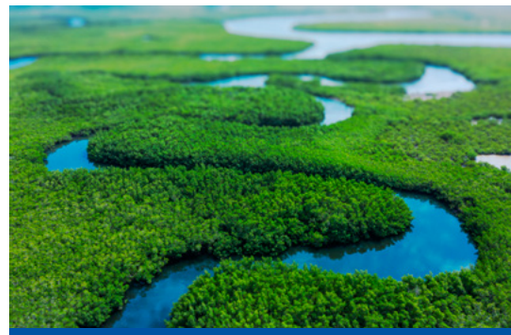


Figure 2 Food system approach, Van Berkum et al. (2018).



Analyse the system

Implementation

After preparations in the first step, learning the system is about getting to know the current system. Here you start by determining the scope of the system you are studying. Then, you can focus on the content of the system, including power dynamics, influential policies and relevant future developments. This serves as input for starting up the process with a wider stakeholder group.

Another useful tool in this step is the DESTEP method: an analysis of the Demographic, Economic, Socio-cultural, Technological, Ecological and Political factors. This method is an extension of the PEST analysis (Political, Economic, Socio-cultural and Technological). Originally used in business practice, the DESTEP method is now also academically applied to analyse external macro-factors to take into account for strategic planning. The method gives insight into the external environment and the relevant trends that need to be taken into account.

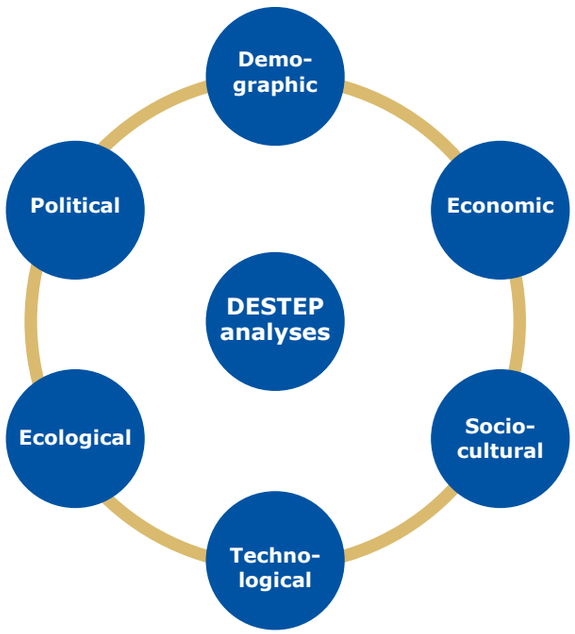
Checklist

- ☐ Is it clear which aspects of the system you will include and exclude? Is it clear which aspects of the system are problematic?
- ☐ Is it clear how power dynamics play a role?
- ☐ Is it clear which policies have an influence?
- ☐ Are the future developments outside of the sphere of influence clear?

If these conditions are in place, you are ready for the next step.

NOTE

This step can be done by external researchers, but is also very feasible in interaction with stakeholders. This has the benefit that local knowledge can be included. Jointly analysing the system can also lay bare the assumptions and ways of thinking of the stakeholders involved.



Envision the future

The current system is analysed and you have a good indication of the scale and scope of your transition initiative. Now, it is time to bring together the stakeholders you identified and discuss the envisioned future: what are our goals and what are the goals already set by society at large? Can we agree on those goals?

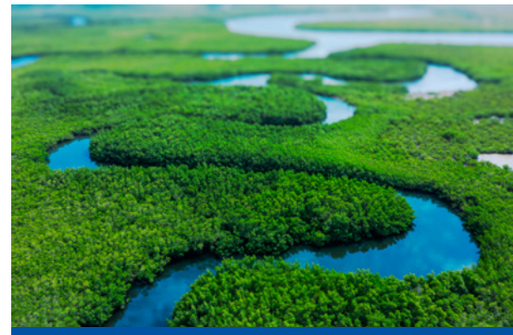
Two tips that can help in this step:

1 Ideally, the future goals are **concrete** enough for them to lead to actions for different stakeholders. In some cases, it can be enough to refer to the goal in general terms (lower taxes, affordable healthy food). In others, general goals will need to be specified in order to be actionable. For example, instead of 'we aim for sustainable agriculture', articulate what that would look like in practice: e.g., specify the maximum amount of emissions, reduction of land pressure or raw materials to be used. The more concrete and ambitious the goal, the more stimulating the pathway development. These are also known as 'Man on the Moon' goals.

Case example

In a project on improving the food system in Accra, Ghana, a vision of the future was chosen in which all project participants could agree. This vision was formulated in general terms and did not include concretisation in terms of, for example, percentage of malnutrition or nutritional value. During the development of the Transtion Pathways, it turned out that there were different ideas about how to achieve the goals. Some looked for necessary changes in guided a culture change around cooking and eating, while others expected a lot from greening the city with urban agriculture and school gardens. In this project, it was then decided to work with one vision of the future and several transition paths.

2 **Visualise** the desired future and establish a time frame. Visualisation is very helpful to make goals concrete. Do not start to discuss numbers for desired emission of a farm, but describe what an emission-free farm would look like. Different stakeholders may envision different things, but it is important to get this out in the open to be able to make it as concrete as possible.



Envision the future

Implementation

Taking with you the lessons learnt in setting the scene and learning the system, envisioning the future is ultimately a creative process that requires dialogue rather than discussion. Check the quality of the future vision in terms of clarity, concreteness, consensus among stakeholders and fair representation of marginalised groups. If during this step you find that there are conflicting views in the group on what they envision the future to look like, ensure that there is an open space where these conflicting views can be discussed openly and concerns are taken seriously. Make sure to thoroughly check and reflect during this step, before moving on to the next step where the future vision needs to be solid and clear.

Checklist

☐ Is there a clear vision of the future?
☐ Are the future goals concrete?
☐ Do stakeholders agree on the relevance of the future goals?

If these conditions are in place, you are ready for the next step.

NOTE

It may be necessary to go back to analysing the system if you find that there is a knowledge gap during this step.

Develop the Transition Pathways

You have now identified the main aspects of the current system and set goals for the desired future. Initially, this future will seem out of reach, because it is likely to be very different from the current situation.

The Transition Pathways break down this giant leap into a series of realistic consecutive steps or 'events'. This is done in two parts for each formulated future goal:

1 Distinguish events

In this first step, the most important question is: what must happen for the desired future to be realised? This can be a brain-storming exercise: everything that is relevant can and must be put on the table, even if there is no influence on the events. For instance, if the desired future includes lower meat consumption, then the events and activities can vary from government measures, new insights, changes in eating habits, emerging health risks, price developments, etc. To identify events, it is practical to distinguish general developments, structural elements of the system and actions of actors. The MLP model can serve as a framework to do so.

This can be done for each desired future goal. But it is also a moment to decide that it is necessary to distinguish different pathways to one desired future. For the example, if the future goal is 'lower meat consumption', there can be a government induced pathway (e.g. the introduction of strict rules), a technologically induced one (the development of meat substitutes) and a citizen-induced one (the rise of a new fashion in eating culture), but there can also be a pathway based on the combination of these or multiple pathways based on different combinations in between. There are many ways to arrive at the desired future, and that is precisely why it is so important to develop pathways interactively with multiple stakeholders: the developed pathways need to be based on different perspectives.

Case example

In Accra, three Transition Pathways were identified according to the common vision on healthier diets in the urban environment. For each pathway, action perspectives or events were identified. The action perspectives were then placed on a timeline, see Figure 3, which reflects the timeline of events for the pathway 'Changing the food value chain'. From the set of action perspectives, eight key actions or events were selected by the stakeholders, which are placed below the arrow in Figure 3, the key action perspectives. An urgent event such as awareness-raising education, creating capital for food supply improvements and sharing transportation costs in urban food supply were placed in the near future. The connection between education and business as well as education centres for consumers needs to be established midway. Towards 2050, replication of cold rooms, cost-effective transportation and events to make consumers self-conscious about healthy diets should be in place.

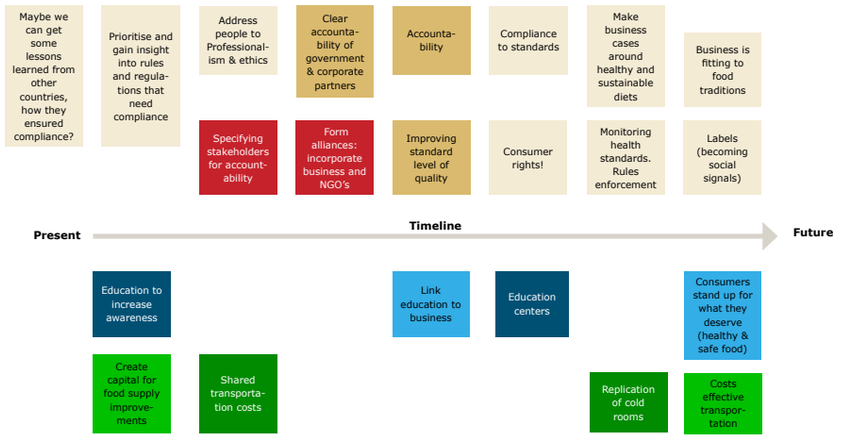


Figure 3 Accra, Ghana. Events on timeline for the Transition Pathway 'Changing the food value chain'

Develop the Transition Pathways

2 Place the events on a timeline

Next, these events are put in a logical order, indicating what has to happen first and how one event leads to another. This series of events is called the *Transition Pathway.* Look carefully at the events that depend on each other. This can be done in various ways. You can start in the future and describe transitions from then to now, or vice versa from the current system and describe to adapt from there. Choose a way of working that suits the practice of the stakeholders involved.

There are always various possibilities to order the event, leading to different Transition Pathways. The challenge is not to find the 'most likely' one (which participants might disagree on) but to develop a 'plausible' one, i.e. one on which all participants agree that this is a good possibility that this might happen. In a later step, these events and their order will be used to identify possible actions for the people involved.

Checklist

☐ Have all the necessary events been taken into account?
☐ Are the events placed on a timeline?

If these conditions are in place, you are ready for the next step.

Implementation

Developing Transition Pathways is about connecting the current system to the future vision. How did we get from the current system to the future goal? After breaking this road down into a pathway of smaller, actionable steps, check both the comprehensiveness and timing of events.

Propose actions

Once the Transition Pathways have been developed, it is time to translate the narratives into concrete actions. These are actions that the participating stakeholders have *influence* on. For example, if one of the events necessary for a desired future is new legislation, the stakeholders involved may not have the power to make the legislation but do have the means to advocate or undertake other actions to influence legislators that may subsequently lead to new legislation. The action thus is to influence legislators.

The outcomes and impacts must fit into the transition path, but one must also consider parts of the transition path which fall outside the scope of the project. Now, every project manager learns that there is a difference between the circle of involvement and the circle of influence, but when deploying transition paths, this is where substantial questions can arise about the meaning of the project. That is why the development of transition paths is so important to apply at the start of a project or during a mid-term review. A classic approach to formulating these actions is to distinguish inputs, outputs, outcomes and impacts. A Theory of Change approach could be taken here. See figure 4.

Case example

In Accra, the development of the Transition Pathways was part of the collaboration with the Netherlands Food Partnership (NFP), which established the Collective Impact Coalition on Ghanaian Urban Food Environments (GUFE). This coalition aims to achieve healthy and sustainable diets in urban environments in Ghana. The coalition consisted of four action groups focusing on components of the urban food environment: 1) Urban Consumer; 2) Trading and Purchasing Environment; 3) Healthy Food Availability; and Enabling Environment. Each action group formulated actions and, with a Theory of Change (ToC) approach, the outcomes, outputs and activities (actions) that would lead to the desired impact. Figure 4 presents the ToC graph of action group 2 on Trading and Purchasing Environment. Based on the problems identified, actions were formulated which all related to market upgrading to improve food safety and decrease environmental pollution. The actions also contribute to the Transition Pathway 'Change the food value chain'. See previous step.

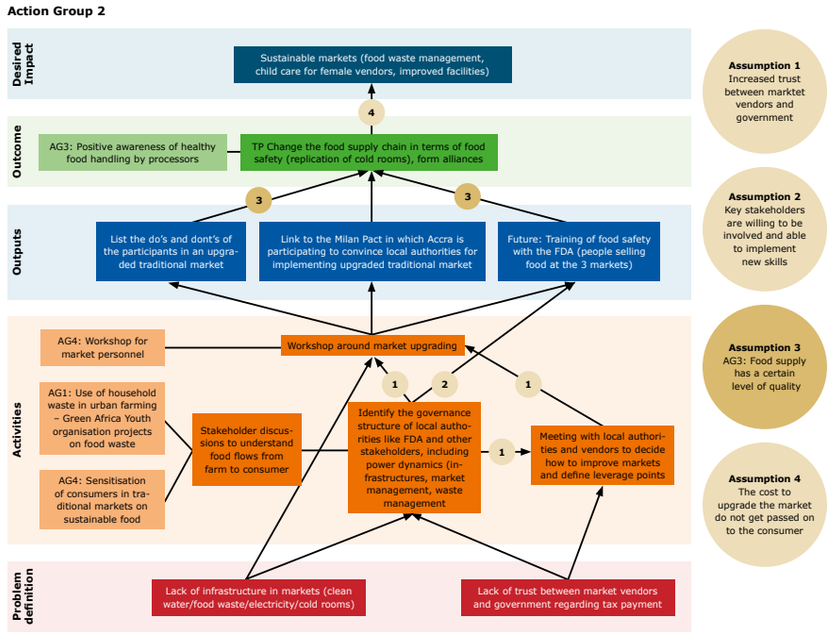


Figure 4 Theory of Change for Action Group 2 of the GUFE coalition focusing on Trading and Purchasing Environment

Propose actions

Implementation

This step is all about translating events and developments into actions for stakeholders. Ask the question: who should do what (and when) in order to reach the desired goal? In the end, check if all stakeholders are informed about all relevant actions.
Once you have identified the actions, go through them to check if they are SMART: Specific, Measurable, Achievable, Relevant and Time-bound. This increases the chances that the actions will actually be taken and that they will lead to the desired result.

Checklist

- ☐ Have all participants identified a set of actions that they can take?
- ☐ Are the proposed actions SMART?
- ☐ Is it clear how the actions link together and how they link to potential other initiatives?

If these conditions are in place, you are ready for the next step.

Note

It is important in this step to focus on the linkages between actions (how can actions reinforce each other), and the linkages between the actions and already existing structures that should be taken into account. Are there any existing policy developments, Communities of Practice, initiatives and activities that the proposed actions can tie into?

Assess the impacts

After the Transition Pathways have been developed and concrete actions have been formulated, you may be inclined to get to work and realise the actions. But there is still one more important step to take before you can do so. An impact assessment can lead to the redefinition of the way the project will be continued. After the impact assessment, the conclusion could be that other stakeholders should be involved, that the analysis of the current system should be deepened, that the desired futures should be adjusted or that the pathways should be described differently.

The impact assessment will need to address multiple aspects (normative, social, economic, environmental, among others, see table). For each of these you should assess whether they are addressed appropriately in your future vision and transition pathway. There are several ways to go about this, such as calculations or qualitative methods (also see Tools for Transitions). Think of specific indicators that relate to the impacts, and determine what the formulated actions would mean for the indicators. The result may be that you need to go back to a previous step to modify certain things.

Implementation

This step is all about reflecting together on the proposed actions and the Transition Pathway as a whole. If time and budget allows, the expected impacts can be calculated or analysed by external researchers. This may lead to different choices. If not, it can also be sufficient to go through potential areas of impact and reflect collectively on how the actions would work out. Here, it is important to go through several different domains of impact and consider the impacts on (marginalised) groups that have not had a voice in the process.

Case example – Overijssel

In Overijssel, each Transition Pathway was assessed on the expected impact they were likely to have on the province. Based on these impacts, the stakeholders involved chose to change or sharpen certain actions. For example, by fulfilling the demand for dairy consumption for the province only, it was calculated that greenhouse gas emissions would reduce considerably and the environmental pressure on nature would be reduced too. However, the economic consequence of this would be that thousands of agricultural jobs would disappear in the province, and much of the grassland would need to be used differently.

Checklist

- ☐ Have you considered the potential impact of the actions on marginalised groups or stakeholders not present during the process?
- ☐ Have you considered whether the actions are fair and just?
- ☐ Are potential negative impacts of the actions clear and accepted by the stakeholders?

If these conditions are in place, you are ready for the next step.

Type of impact	Including	Example of impacts
Normative impact	Equity, Equality	Ignoring the needs of certain groups
Social impact	Well-being, liveability of cities and villages, social relationships	Social unrest because the transition has winners and losers
Economic impact	National income, income distribution, exacerbating poverty	Drop in income of certain groups
Physical impacts	Health, living environment	Life expectancy in different areas
Environmental impact	Climate, biodiversity, resources, circularity	Decrease in the use of certain resources

Decide, plan, act and evaluate

The Transition Pathways are ready, the actions are defined and the impacts are known and acceptable to all stakeholders involved. This means you are ready for the most important part: it is time to act. However, this does not mean that you cannot and should not revisit the steps in this guide.

Transitions are dynamic, and so are transition projects. After some time, different needs or challenges may arise. Going back through the steps in this guide can help you to make informed decisions in response to these changing circumstances.

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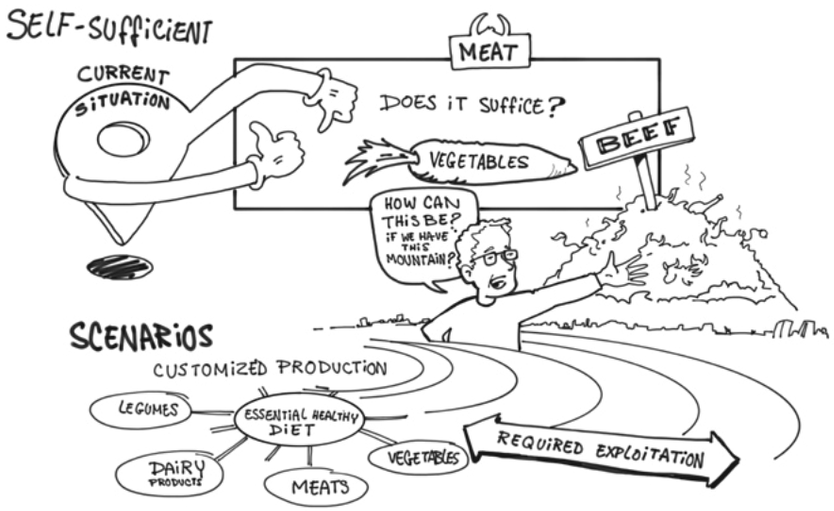


Name: Transition Pathways towards a sustainable food system in 2050

Scope: Regional

Timeline: 2020-2030

Objectives: the transition to a sustainable agri-food sector in the province

Stakeholders: different actors in the food chain, ranging from producers, processors, caterers, retailers, consumers and local government. The composition of the stakeholder group was evaluated at the end of each step and changed when relevant knowledge was missing.

Description: In the vision of the future, 'Beken kleur 2030' ('Take a stand 2030'), the Province of Overijssel highlighted the importance and the challenges of a sustainable food system for 2030. The impact of climate change also requires action to continue safe and sustainable provision of food, and to ensure that the city remains a good place to live. During conversations with stakeholders, it became clear that it is difficult to persuade the people of Overijssel to adopt a healthy diet in the current era of unhealthy food. The stakeholders wanted both to promote a healthier lifestyle, and to decrease the environmental pressure of the current diet within and beyond the borders of the Province of Overijssel. Additionally, employment effects of changes in the sector were also of interest. The group of stakeholders and researchers evaluated and discussed future projections of changes in the agri- and food sector and the idea of self-sufficiency for the agri & food sector in Overijssel. Stakeholders expected that citizens will become more aware of the nutritional value and the environmental footprint of their diets, which means that they will know more about what they eat, how much they eat, where the food comes from, and the impact it has on the environment and the landscape. Interviews, expert sessions and visual support were used during the process.

Further reading

Creating a sustainable food system together

2 Accra, Ghana

Name: Healthy and Sustainable diets for all, Accra, 2050

Scope: City

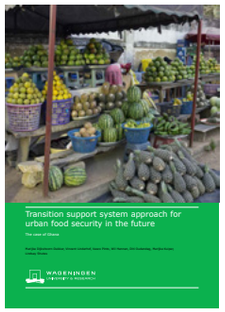
Timeline: 2020-2050

Objectives: Pathways to achieve healthy diets for all in 2050

Stakeholders: Researchers, private sectors, education, journalists

Description: As part of the Ghanaian Urban Food Environment Project, the Netherlands Food Partnership (NFP) and Wageningen University & Research (WUR) have decided to combine each other's activities and apply the Transition Pathway method. Two online workshops were conducted with stakeholders. First, the stakeholders discussed the visioning of what the food environment in Accra should look like in 2050 when there are healthy diets for all. Then, stakeholders discussed the transition pathways how to achieve or contribute to achieve the future vision. In practice, three groups of stakeholder were formed with diverse backgrounds for discussing the visioning and the transition pathways. For the visioning, there was a plenary session after the group sessions to converge to one common vision. For the transition pathways, the group sessions worked on the transition pathways description separately. With one common vision, these pathways diverged, because they differ in emphasis on change in the food system, and how this change has to be achieved.

Further reading



Transition support system approach for urban food security in the future

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3 Ethiopia

Name: Building Rural Income through Inclusive Dairy Growth in Ethiopia (BRIDGE)

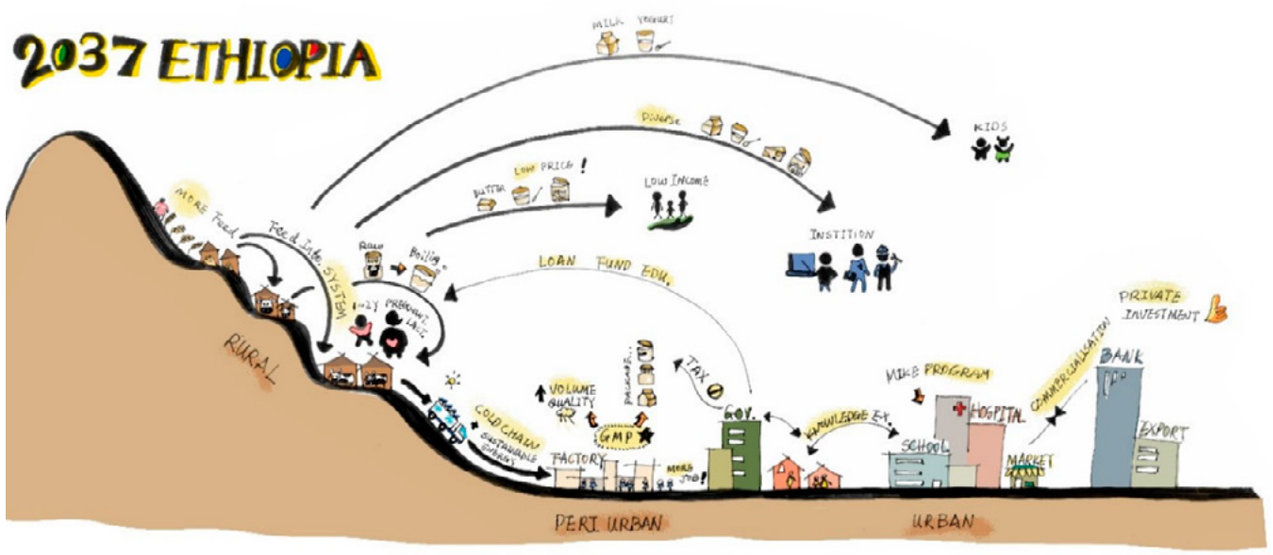
Scope: National including a differentiation between urban and rural areas

Timeline: 2022 - 2037

Objectives: Design future visions and transition pathways to strengthen the contribution of the Ethiopian dairy sector to healthy and nutritious diets for all

Stakeholders: Diverse stakeholders in the Ethiopian dairy sector and the food system including producers, producers' organisations, dairy cooperatives, dairy processors, knowledge institutes, development partners, implementing organisations and public authorities.

Description: A variety of stakeholders with the Ethiopian dairy sector took part in two workshops where they reflected on possible transition pathways with the aim of strengthening the contribution of the Ethiopian dairy sector to the consumption of healthy dairy products. The workshops focused on using transition pathway methodologies, in order to reflect about the potential contribution of Ethiopia's dairy sector towards healthy and nutritious diets. The reflection started by considering which population groups were most vulnerable for deficiencies in animal source foods in their diets and continued to reflect on how to address the underlying causes and challenges in order to improve the intake of dairy products by these specific population groups. The design of the transition pathways and the priorities for action were supported and facilitated through two workshops and multi-stakeholder dialogues. The dialogues started by focusing on desired future food system outcomes and specifically identified 'vulnerable' population groups that would benefit from an additional intake of dairy products in their diets. Four future visions were generated in a first workshop. Taking these future visions as a point of reference, transition pathways were designed by backtracking from the future vision back to the current situation, taking into consideration what type of actions were required for stakeholders, institutions and innovations to transition the system towards the aspired future state.



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4 Europe

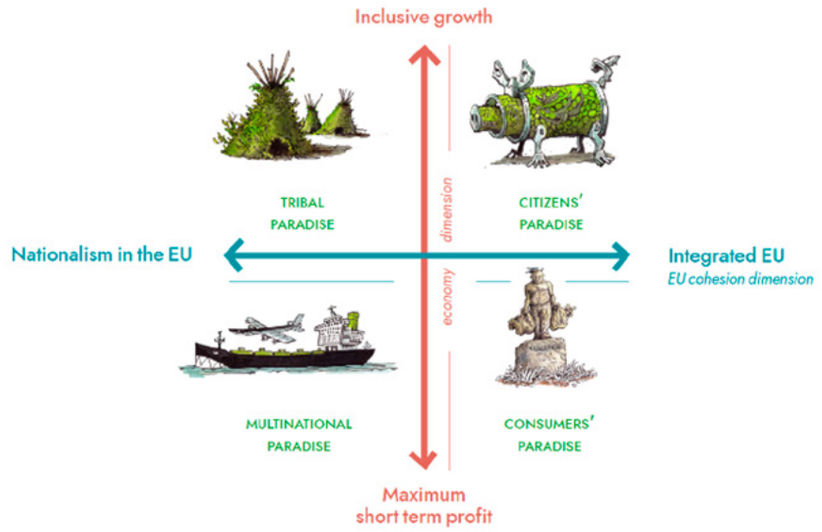
Name: LegValue: Transition pathways for European legume-based value chains

Scope: Regional (Europe)

Timeline: 2020 - 2040

Objectives: Self-sufficient European legume-based value chains

Stakeholders: public authorities, value chain partners, farmers



Description: The starting point of LegValue and this study is that the EU wishes to become more self-sufficient in plant-based protein production. The protein transition has an environmental aspect (fewer inputs and imports of nitrogen), but protein self-sufficiency is also of strategic importance in light of global affairs. Of course, there is not one way for European agriculture to materialise into a system with more legumes in the crop rotation. There are many variables that influence the process and the end result. During our exploration, we found two key driving forces: an economic dimension ranging from inclusive growth (with a strong focus on sustainability) to maximum short-term profit (with no focus on sustainability); and an EU cohesion dimension ranging from nationalism (with a focus on local economy and trade barriers) to an integrated EU (with a focus on liberalism, global economy and free trade).

In a two-by-two grid, these dimensions result in our four future scenarios:

- Tribal paradise (Nationalism in the EU x Inclusive growth)
- Citizen's Paradise (Inclusive growth x Integrated EU)
- Consumer's Paradise (Integrated EU x Maximum short-term profit)
- Multinational Paradise (Maximum short-term profit x Nationalism in the EU)

The scenarios were elaborated using four building blocks (technology, policy, markets, value chain), after which transition pathways were formulated from the current agricultural system in the EU towards the four future scenarios. The four pathways give insight into how current decisions can influence the future of legume value chains in Europe based on macro developments. The transition pathways inform thinking and strategic planning of technology providers, agronomists, processors, policymakers, NGOs and other stakeholders about the future of legume value chains in Europe. Stakeholders can identify and act on the different implications of each pathway: what do these developments mean for me/my business/my organisation in terms of tools to use and timing of those tools? Hopefully, this will help the EU to successfully become more autonomous in its legume production.

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Transition pathways for European legume-based value chains

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5 Bangladesh Deltas

Name: Deltas Under Pressure

Scope: National (Bangladesh)

Timeline: 2022 – 2100

Objectives: address food system supply and demand challenges

Stakeholders: government of Bangladesh, government of the Netherlands, NGOs, farmers

Description: In Bangladesh the transition towards climate resilience is very important. The transition of food system is related to it, and does not only imply adjustment of farmers, but also requires new solutions how to link farmers and goals at national level. The recently approved Bangladesh Delta Plan 2100 provides direction to new programmes and plans. The WUR team subdivided the work on the case study Bangladesh into four themes: i) Water and salinity. The objective is to understand how the salinity changes over time by considering flooding, drought, sediment accretion, and subsidence and how this interacts with water availability and water management. It will allow a better understanding of the effects of the changes in the water system on food production. A mechanistic, deterministic model will be developed based on existing models to capture these water and food production interactions. ii) Livestock. The objective is to understand the possibilities to improve the national diet with more proteins by increasing livestock (cattle, sheep and poultry) production towards climate-resilient adaptation and sustainable animal production in the delta. iii) Mangrove and shrimp. The objective is to determine the most socio-economically beneficial practices of the shrimp/mangrove system for farmers' livelihoods. iv) Human behaviour. The objective is to analyse 'human behaviour' to aid the understanding of different strategies used by farmers and provide insight into how the foreseen transitions can be aligned with farmer behaviour.

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Deltas under Pressure, guidelines to facilitate transition pathways

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Name: Strengthening Myanmar's agricultural technical and vocational education and training system

Scope: National (Myanmar)

Timeline: 2020-2030

Objectives: A government project aimed at supporting agricultural development through increased alignment of agricultural technical and vocational education and training.

Stakeholders: Diversity of stakeholders representing public sector (Ministry of Agriculture, Ministry of Education, Ministry of Planning); ATVET institute, private sector, industry level players (such as cooperatives), development partners, NGOs and practitioners.

Description: The Myanmar Government requested development partners to support them to develop potential scenarios, and pathways to development of the agricultural sector through agricultural technical and vocational education and training (ATVET). A Wite Paper was written on request of the Ministry of Agriculture Livestock and Irrigation MOALI and the State Agricultural Institute (SAI) Division, which presents an overview of how Myanmar's ATVET system can support the transformation of the agricultural sector by generating large numbers of highly skilled and knowledgeable male and female agri-professionals to drive the development and functioning of a resilient, prosperous, inclusive, economically strong and ecologically sound rural economy. As part of the process, an initial scoping exercise was carried out to review the current and future scope of the ATVET system as conducted at pre-university level by the State Agricultural Institutes (SAI). Additionally, attention was paid to the necessary bridging of the gap between SAI education and training and higher education at Yezin Agricultural University (YAU).

A wide variety of sources of information were taken into consideration for this White Paper. The process included individual interviews with key stakeholders throughout the entire agricultural sector. In addition, the process contemplated focus group discussions, and interactive multi-stakeholder workshops at different levels and scales, geared at integrating viewpoints and historical perspectives from a wide diversity of stakeholders. Lastly, the assessment also consulted and reviewed key policy documents and strategies. The ideas and considerations presented were the result of a common effort by the staff of the Department of Agriculture, SAI, MOALI and a diversity of stakeholders from Myanmar's agricultural sector (farmers' organisations, agri-food companies, input providers, etc). They provided a series of suggestions that could be used to inform decision-making and to identify which policies to prioritise. This was carried out in order to create a robust, resilient and reliable system for ATVET, to ensure that Myanmar can develop the qualified midlevel skilled labour force that will further strengthen and dynamise sustainable and inclusive economic growth. The white paper contemplates four key areas of attention i) Governance structure of ATVET, ii) Funding and resource mobilisation, iii) ATVET Quality assurance and iv) Labour market oriented qualifications and curricula. In addition, the white paper delves into priorities for action for each of these four areas.

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Strengthening Myanmar's agricultural technical and vocational education and training system

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7 Oosterwold, the Netherlands

Name: Towards Urban Agriculture in 2030

Scope: Local (Oosterwold)

Timeline: 2020-2030

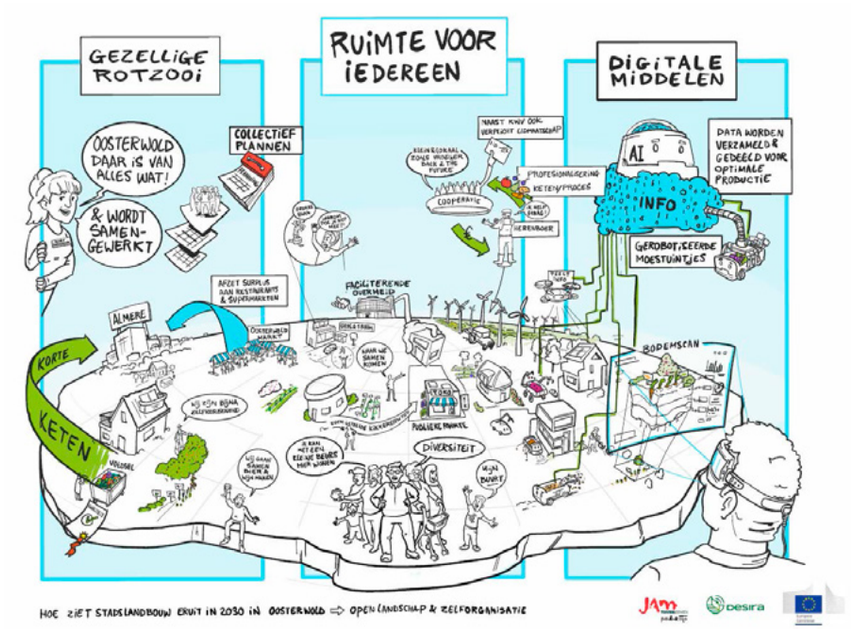
Objectives: Explore the future of urban agricultural and local food production in Oosterwold, the Netherlands

Stakeholders: Residents, local policy makers, governance actors

Description: Oosterwold is a new peri-urban area within the municipalities of Almere and Zeewolde in the Netherlands, creating a hybrid landscape where urban and rural characteristics are integrated. Local food production is a central part of Oosterwold, with the aim to produce 10% of Almere's food basket in Oosterwold, with 51% of the area dedicated to agriculture. While the planning process of Oosterwold dates back the the early 2000s, the first residents settled in 2016 and in 2021, the area counts around 2,000 residents. Local food production and self-organisation are the main features of the area that are radically different from traditional spatial planning. The municipalities of Almere and Zeewolde are planning the second phase of the project. What should that look like and what lessons from Oosterwold phase 1 should be taken on board? Together with residents, local policy makers and governance actors, scenario and transition pathway workshops were organised to explore the future of urban agriculture and local food production on Oosterwold. The workshop resulted in two scenarios: Room for Everyone and Manhattan with Rules. The scenarios were based on two axes:

1 Self-organisation vs Strict regulation by authorities
2 Open landscape vs Closed (urbanised) landscape

Using these scenarios, participants then formulated transition pathways with a corresponding action agenda to achieve preferred future developments. Parts of this action agenda could be implemented by participants themselves, while the remaining actions were translated into four practical policy options for the municipality of Almere. These recommendations were largely adopted in a recommended approach for the development and rules of play of subarea 2 in Oosterwold, as commissioned by the municipality of Almere.



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Towards urban agriculture in 2030: Transition pathways for Oosterwold

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Background theory on Transition Pathways

What are transitions?

Agro-food systems have been and are subject to continuous change. Transitions in agriculture and food production have occurred in the past for many times, often initiated by technological breakthroughs (such as chemical N-fixation (Haber-Bosch); mechanisation made possible by abundant and cheap fossil fuels; classical breeding; genetic modification), but also by societal innovations, such as the emergence of cooperatives. This is a critical aspect of any transition: they not only imply technological changes but also various non-technical aspects of a system.

A transition goes beyond improving and optimising existing systems. This distinction is relevant in view of the challenges that emerge when targeting sustainable development. It implies that change cannot be confined to either technical innovations, or changing a single rule or procedure. A transition of the food system entails changes and innovations in which technical as well as non-technical elements of the system change, including the production and consumption side of food, their intermediates, as well as the governance aspects of this system. A transition can be defined as: an aligned change of technical, economic, social, and cultural regimes.

A transition process is non-linear, evolves with and without interventions, involves trial and error in terms of intervention management, and involves many actors. Controlling the process of transition as a whole is impossible, even if someone would want to (Grin et al., 2010). However, there may be various forms of transition management on components, by (consortia of) governments, companies or civil society organisations. Transition management will usually relate to the way actors interact with each other, coordination of sub-processes, joint fact finding, incentives, and empowerment.

Transition Pathways

'Transition Pathway' is a general term to characterise the dynamic of transitions processes. The term can be used retrospectively, to describe past transitions, as well as prospectively, to assess possible future transitions. In the literature, a set of different Transition Pathways are distinguished depending upon differences in the niche-regime-landscape dynamic from historical transitions (Geels and Schot 2007). We use the term in the prospective sense, to explore how potential future transitions might develop.

When exploring Transition Pathways, the following aspects are important to consider:
Scope. It is important to get an idea in advance of the scope of the system for which one is developing the pathway. In principle, all developments of the world can be included as variables in the Transition Pathway. However, this becomes unworkable. Therefore, it is important to properly determine in advance what one does and does not want to include in the pathway. A schematic overview of the food system can be helpful here.

Scale. Similar to the scope, the envisioned scale of change could ideally be on a global level. Depending on the type of initiative, however, this is usually unworkable. It should therefore be clear which scale of change is realistic for your initiative. This can be national or regional, but also local. The proposed actions represent this scale, although the Transition Pathway itself can also include events outside of it.

Arena. Because Transition Pathways aim to raise awareness, create insight and develop a ground for choices about future possibilities, it is important to involve all actors who have to act upon the project outcomes and for whom this awareness is important as a background to their daily actions. The level of involvement can be adapted according to the needs and resources available and the role of each stakeholder group. The ladder of stakeholder participation can be a helpful tool in deciding who to involve in what way (Figure 5).

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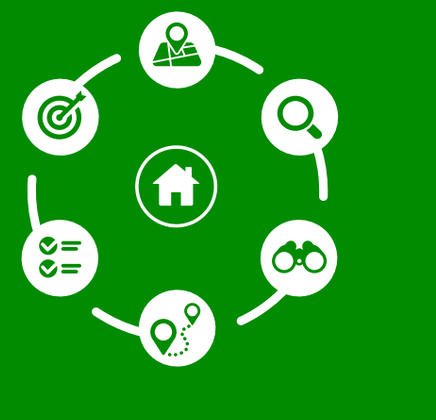

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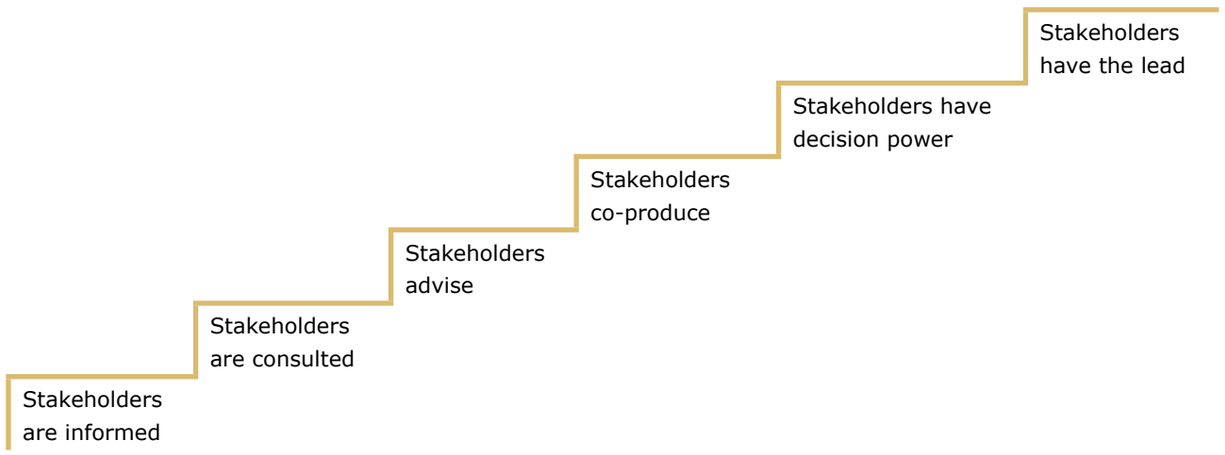

Figure 5 Ladder of stakeholder participation (Bosselaar et al., 2019, based on Arnstein, 1969)

Timeline. Transitions can take decades. This means that the Transition Pathways should also cover decades. It is good to make a distinction between the various steps in which the pathway takes place. For example, a pathway of thirty years can be divided into short term (first few years), medium term (about ten years), and long term (thirty years). The advantage of subdividing the pathway in terms is that one is better able to imagine a concrete picture of how the pathway can actually proceed, resulting in a higher probability of a concrete and actionable outcome.

Justice. In transitions, it is not only important that problems are solved technically, but also that this does not create new but unintended distributions of harms and benefits, for example by creating new unwanted dependencies or increasing inequality between population groups. Transitions should therefore be just transitions (Dijkshoorn-Dekker et al., 2022). This means that transition pathways can address different aspects of justice. For example, procedural justice is important for the process of transition. Distributive justice may be at issue for the determination of futures. Another form of justice that actually forms the rationale for an entire transition is so-called intergenerational justice: the concern for a liveable earth for our grandchildren. Figure 6 provides a picture of these and other forms of justice in transitions.

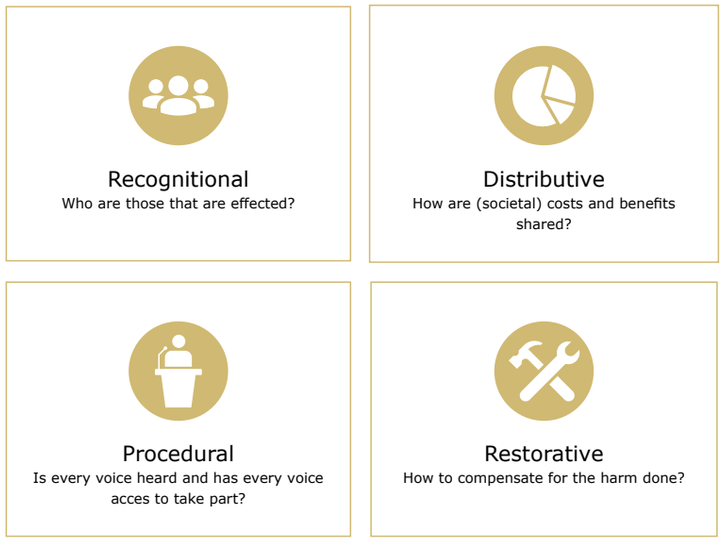

Figure 6 Aspects of justice in transitions

Role. Any group of people working on one part of a transition and choosing to draw up transition paths as part of it must also think about its own role in the transition. Ideally, several positions are possible for this purpose. A first choice is whether one takes a role as an independent advisor standing between the parties, or

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whether one sides with a particular disadvantaged group (small-scale farmers). A second choice is whether to use standard sources from science or governments for information, or to rely primarily on information from all those involved in the group. This yields four possible approaches (Figure 6). These influence the character of the visions of the future that one will draw up.

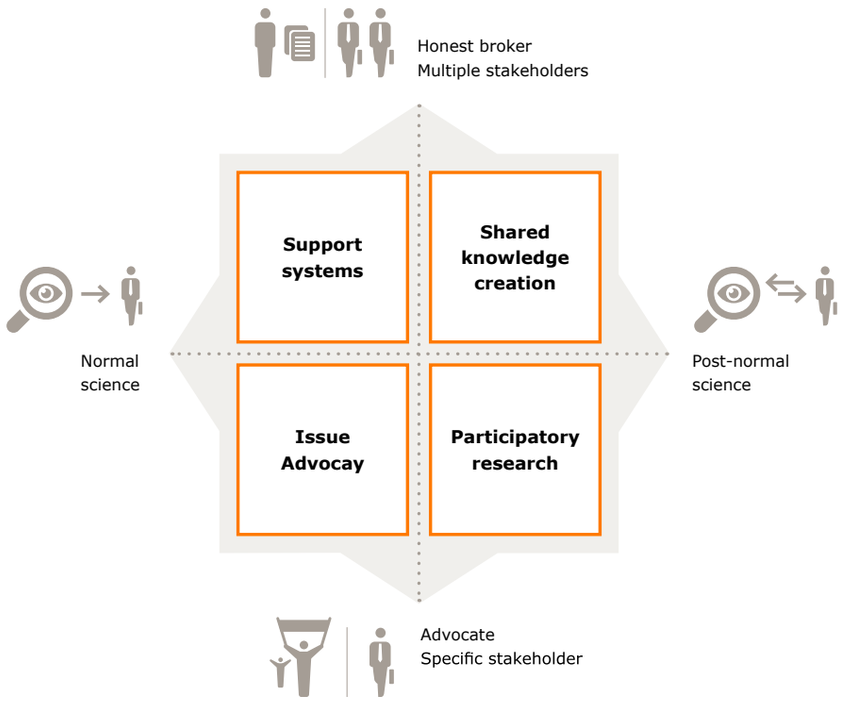

Figure 7 Four roles in transitions

Learning processes. Transition Pathways contribute to the awareness of those who make choices in transition initiatives. Awareness is created especially if the transition paths are drawn up with representatives of those involved as much as possible. The emergence of awareness can be strengthened if the drawing up of transition paths is part of a consciously designed learning process around a transition project. This also ensures that people who are not part of the transition initiatives can learn from the created knowledge. It is important to carefully think through how knowledge can be disseminated and to whom. Part of the process

is to create commitment of the participants to act subsequently, or anchoring transition initiatives to existing structures (e.g. policy developments or action agendas).

The Multi-Level Perspective model

The MLP model distinguishes three layers: landscape, regimes, and niches. The landscape layer is about general developments, the regime layer stands for the cultural, social, economic and technological system, and the niche layer stands for concrete innovative activities (cultural, social, economic and/or technological) aimed at adapting existing systems. The description of the transition pathway may then include:

- Which general developments are at issue in the period in question. You can use scenarios from organisations such as the IPCC, IPBES, OECD, WEF, etc.
- Which system changes are necessary for the realisation of the vision of the future. Try to indicate what the leverage point is that can lead to systemic change.
- Which activities can or will bring them about. This layer in particular forms the starting point for the recommendations for action. At this stage, it is not only about one's own activities, but also about the activities of other actors.

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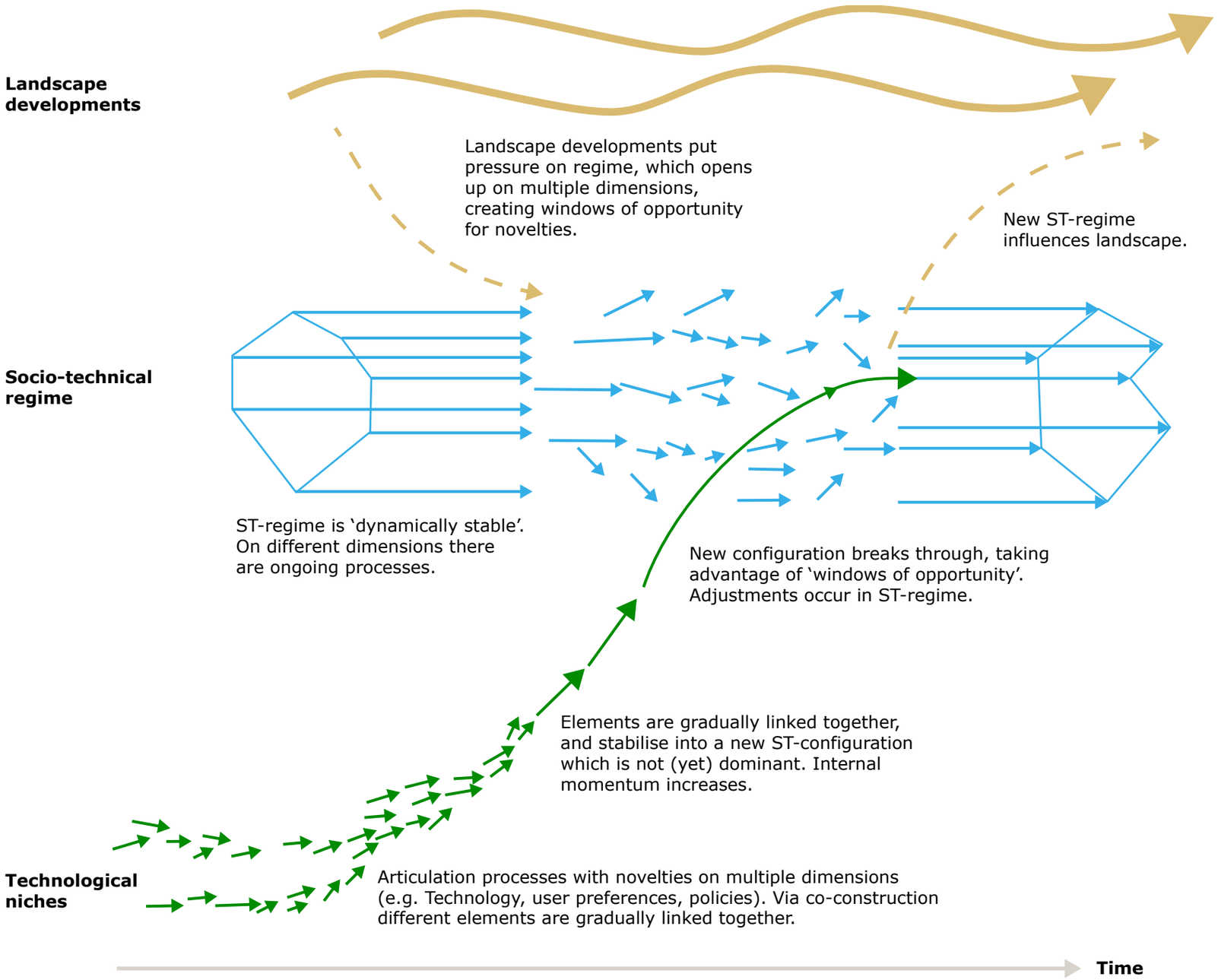

Figure 8 The Multi-Level Perspective on transitions (Geels, 2005)

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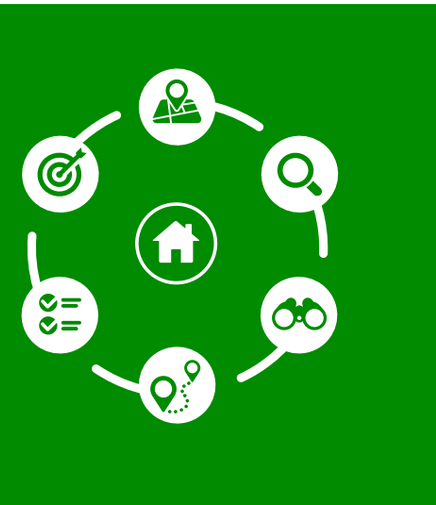

Background theory on Transition Pathways

Other approaches

It is often asked what the differences are between the exploration of Transition Pathways and other methods, such as Theories of Change or Scenario Studies. The methods overlap in part, yet differ in emphasis. The context, however, is different: The exploration of Transition Pathways is specifically developed for use in the context of major sustainability transitions of (food) systems. A Theory of Change is a description of how a project or initiative can contribute to a long-term desired goal. It is a broadly used term to describe the process by which movements or organisations conceive how they will achieve the change they pursue.

A Theory of Change is aimed at the bridge between project actions and the desired goals. It gives an answer to questions like: What conditions are needed to achieve the desired goals? How are they interrelated and how can they lead to the impacts? What assumptions lie behind them? Theories of Changes are developed by formulating long-term goals and looking back at necessary conditions. A Theory of Change is not limited to the intervention, but has a broader view on the surrounding context and assumptions. This overlaps strongly with the process of identifying and narrating Transition Pathways. In practice, however, Theories of Change are often used to justify actions rather than as a broad search for conditions and substantive relationships that lead to intended purposes, especially when they are expressed in 'Logframe terms', with indicators for output, outcome and impact.[1] In this respect, Transition Pathways can be seen as Theories of Change as they were originally intended. Both show what and how conditions can lead to desired goals.

In short, a scenario is a description of what could possibly happen. This definition is similar to that of Theories of Change, but in practice they are often more focused on major developments in the environment that can be assumed as preconditions.

Exploration of the future	Focus (in terms of the Multilevel Perspective)
Theories of Change	Impact of niche actions
Transition Pathways	Transition of regimes
Scenarios	Transformations of the landscape and general development

1 A Logframe is a management instrument that presents planned results in a matrix, with indicators on input, output, outcome and impact.

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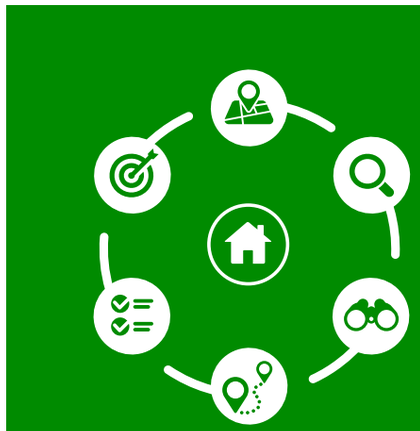

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Illustrations

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