

Exploring Transition Pathways

towards sustainable
food systems



WAGENINGEN
UNIVERSITY & RESEARCH

About

To achieve sustainable agriculture and food systems poses an enormous challenge. This will require new agricultural production processes while various stakeholders in agro-food production and consumption chains will have to change their behaviour and practices. Such an encompassing change process we call a transition. The required path of development by which a sustainable future will develop out of the present system is called a *Transition Pathway*.

A transition is so complex and encompassing that it cannot be planned and realised from a central point. It will have to result from a broad variety of initiatives, each of which addresses only parts of the agro-food system. The risk is, however, that the changes that result from all these partial initiatives are poorly tuned to one another and cannot be connected to change the system as a whole in a more sustainable direction. To address

that problem, the Transition Pathways approach seeks to coordinate the activities of various stakeholders for sustainable development. Funders of developmental programmes and strategic actors oriented towards change, like policy bodies and NGOs may consider this approach to strengthen the long-term coherence of their efforts. This brochure gives a first introduction to the approach.

This is an interactive guide

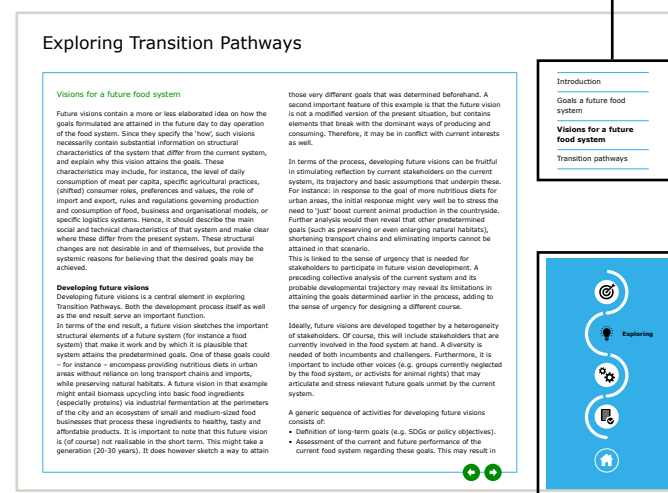
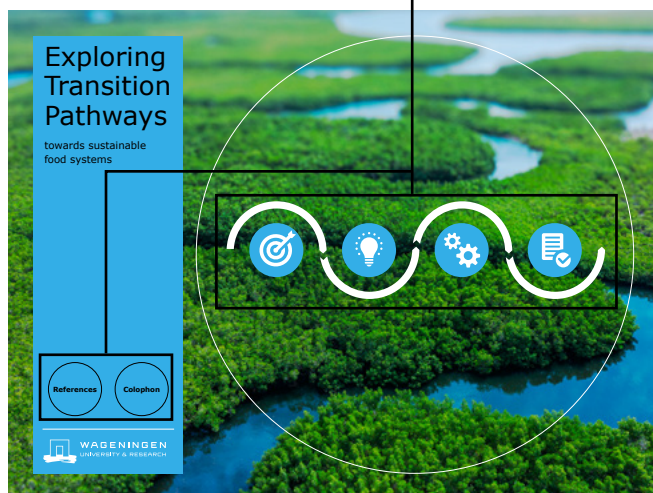
Navigation

Via the Home page of this interactive PDF, you can navigate to the various chapters.

You may navigate to the paragraph of your choosing using the menus in the bar.

You may navigate directly to a particular chapter from any page using the buttons.

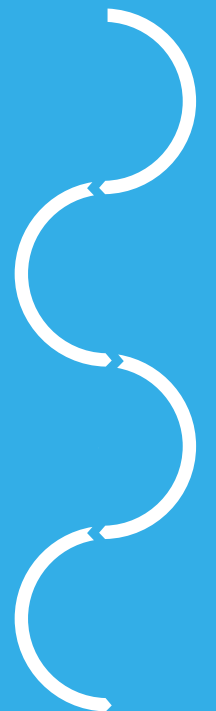
The Home button at the bottom will take you back to the home screen.



About

References

Colophon



Food systems challenges and transitions

Food systems worldwide are under pressure of several crises at the same time, which will force them to radically transition to new forms. This will happen anyway, but not necessarily in the most sustainable way. This e-brochure suggests a way to guide the governance of transitions, based on a longer-term perspective. Funders, governments, and programme managers may use these insights to structure their efforts and direct resources.

The challenge

Current configurations of food systems in many regions of the world are inadequate to solve complex questions regarding the UN Sustainable Development Goals (SDGs) on Zero Hunger, Responsible Production and Consumption, and Climate Action. Moreover, food systems must respond to growing (urban) populations and changing societal demands. Low and middle-income countries in the Global South (primarily south-east Asia and sub-Saharan Africa) are facing rapidly changing and sometimes unpredictable effects (FAO et al., 2021a, FAO et al., 2021b). Considering the broad-ranging effects of migration and climate change that prompt a reconsideration of agro-ecological concepts of production at national or regional levels, the growing shortage of fresh water, and (particularly in Africa) a fast-growing (urban) population, new arrangements for the supply of fresh and diversified food in cities are required.

These challenges call for drastic and system-wide transformations from the current food systems into more sustainable forms that are able to address these complexities.

In this brochure we outline a practice-oriented framework for exploring transition pathways together with stakeholders, to guide these transformations in a more sustainable direction. The framework brings together different concepts and tools relevant to transition pathways. Existing concepts were enriched by the addition of new elements or linkages amongst approaches. We put special emphasis on stakeholders as actors in the transitions, with a focus on their behavioural change process(es) and

incentives as well as personal and environmental motivation, and drivers and barriers for change.

The challenge of transitions towards sustainable food systems

Attaining multiple Sustainable Development Goals (SDGs) in food systems at the same time is virtually impossible to do with incremental improvements of parts or subsystems alone, because of lock-ins and unwanted side effects. In most cases a transition is needed. Such transitions in food systems towards sustainability entail structural reconfigurations of current food systems, for which neither technological innovation, nor policy changes are sufficient by themselves. They typically entail developments that stretch over the timespan of a generation (20-30 years) or more, and affect not only technologies used, but also the governing norms and institutions, as well as social and cultural practices. Such transitions cannot be planned in advance, and executed accordingly, for the obvious fact that the future bears a lot of uncertainties including unpredictable behaviour of actors/stakeholders. Yet, this does not mean that long-term policies and strategies are useless. A number of scientific fields have developed approaches to facilitate, guide or steer transition processes in a desired direction. Much of this body of knowledge is developed outside the area of food and agriculture, most prominently energy and mobility. However, several (participatory) traditions and approaches exist that are aimed at structural changes in food systems worldwide.

The challenge

Food systems:
what they are, how
they are conceived

Transitions:
what they are, how
they are conceived

Desirable and just
transitions



Food systems challenges and transitions

Food systems: what they are, how they are conceived

Food systems entail 'the processes associated with food production and food utilisation: growing, harvesting, packing, processing, transporting, marketing, consuming and disposing [or processing] of food remains (...). All these activities require inputs and result in products and/or services, income and access to food, as well as environmental impacts. A food system operates in and is influenced by social, political, cultural, technological, economic and natural environments.' (Van Berkum et al., 2018)

The Food System Framework (FSF; Figure 1) of Van Berkum and colleagues views the functioning of a system as an interplay of interacting subsystems, in which feedback plays a key role, rather than as a simple chain of cause-effect relationships. The FSF enables the observer to understand which different domains (biophysical, social, economic, natural) are included, and what drivers may enable or constrain a proposed system change.

Furthermore, the FSF provides a good tool to facilitate the dialogue among researchers and stakeholders about the character of a system (change).

The FSF looks at the interrelations between the food system and its socio-economic and biophysical environment. The FSF distinguishes four sets of concepts:

- Food system activities. These consist of five components: the food supply system (the value chain), the enabling environment, business services, the food environment and consumer characteristics.
- Socio-economic drivers (distinguishing markets, policy, science & technology, social organisation, individual factors)
- Environmental drivers (distinguishing soil, fossil fuels, minerals, biodiversity, water)
- Food system outcomes (distinguishing food security – combination of food utilisation, food access and food availability – socio-economic outcomes & environmental outcomes).

The FSF is a good way to characterise current food systems in relation to all their constituent activities, drivers and outcomes, and is especially useful in dialogues between different stakeholders. For instance, to develop a shared understanding of the root causes of current unsustainable processes with a collective system analysis. Yet, the FSF is not very suitable to envision alternative, transformed food systems with different outcomes, nor is it especially suited to understand or envision processes of change. In this sense FSF is a more static framework to increase our collective understanding and see how various aspects are interrelated. Transition thinking, by contrast,

Food systems framework

Van Berkum et al. 2018, Wageningen University & Research

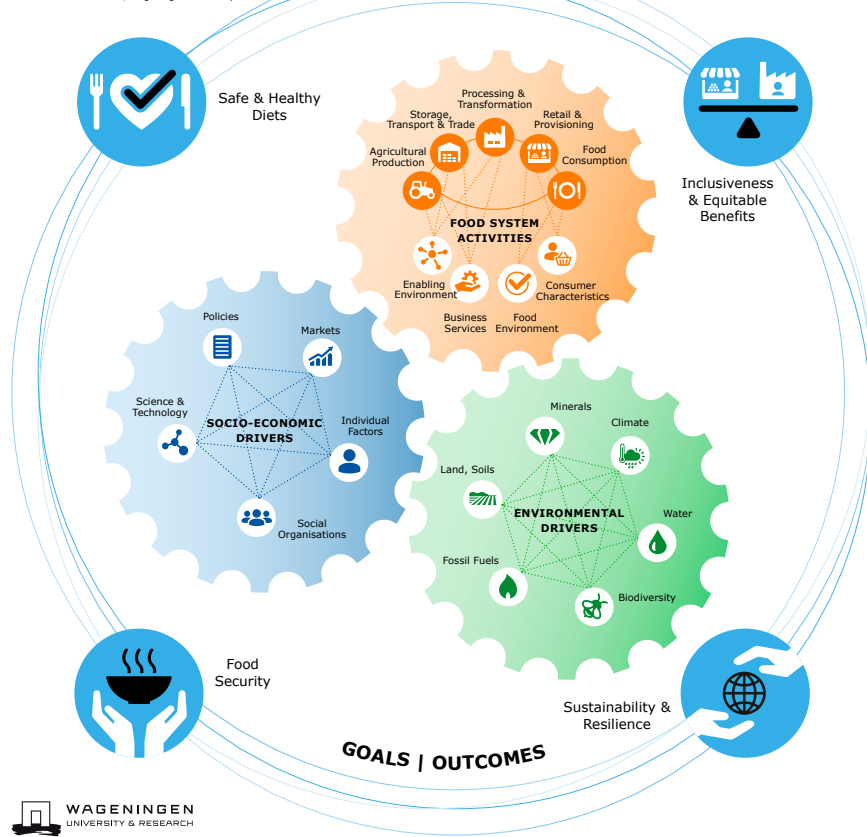


Figure 1 A way of mapping the relationships of the food system to its drivers

The challenge

Food systems:
what they are, how
they are conceived

Transitions:
what they are, how
they are conceived

Desirable and just
transitions



Food systems challenges and transitions

stresses the dynamics of transformation, but has no special instruments to understand the (food) systems themselves. Therefore, transition thinking and FSF can best be applied together to benefit from their mutual strengths.

Transitions: what they are, how they are conceived

Transitions (or transition processes) denote the process of a structural rearrangement of a (food) system. This process may take a generation to complete. Transitions will happen anyway, but neither the process itself nor the end result may be sustainable. The idea of transition pathways laid out in this brochure is to guide/facilitate transitions in a direction that is seen as more sustainable and just along the road and ideally lead to a sustainable end. A transition pathway thus provides a way to guide or modulate a transition process.

Agro-food systems have been and are subject to continuous change. Much of this change is of an incremental nature and focuses on the production side, more specifically on the technological means by which crops and food are produced.

By taking a systems perspective, however, more encompassing and more radical forms of change come into view which affect not only the production side but also the consumption side, as well as their intermediaries (such as processors, retailers and logistics), and governance arrangements. E.g., people's diets could change by eating less beef which could drastically reduce the ecological footprint of our diet. Such more radical changes are called transitions and they are usually related to addressing root causes of experienced or anticipated challenges. Also, they may involve addressing the way power and politics play out in food systems in relation to how they may constrain or accelerate transitions to sustainability.

Transitions in agriculture and food production have occurred in the past for many times, often initiated by technological



breakthroughs (chemical nitrogen-fixation (Haber-Bosch); mechanisation made possible by abundant and cheap fossil fuels; classical breeding; biotechnologies), which, however, co-evolved with and were accompanied by a whole range of other changes of social, cultural and institutional nature.

This is a critical aspect of a transition: they not only imply technology changes but also various non-technical aspects of a system. Thus, for instance, if a coal-fired power plant is replaced by a gas-fired power plant, this would not be called a transition. However, if this power plant is replaced by large-scale introduction of PV panels on people's homes, this would be called a transition because consumers also become producers of energy (also addressed as 'prosumers'). So in a transition non-technical elements of the system also change.

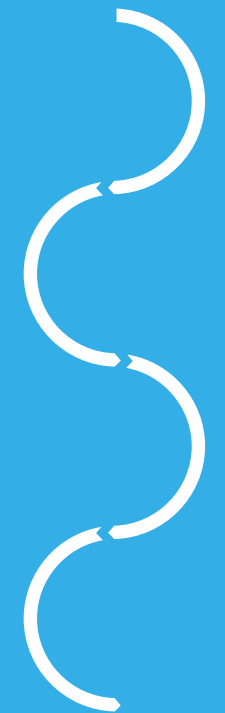
A transition process is non-linear, evolves with and without interventions, involves trial and error in terms of intervention management, and involves many parties (actors). Controlling the process of transition as a whole is impossible, even if someone would want to (cf. Grin, 2010). However, there may be various

The challenge

Food systems:
what they are, how
they are conceived

Transitions:
**what they are, how
they are conceived**

Desirable and just
transitions



Food systems challenges and transitions

forms of transition management on parts of the system, 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, empowerment, etc.

In a transition, several phases can be analytically distinguished (Figure 2): a *pre-development phase* in which a variety of innovations are being developed that hardly affect the system, a *take-off phase* in which the system becomes unstable due to rapid and conflicting changes, creating 'windows of opportunity' for new developments to link up to the system, an *acceleration phase* or *breakthrough phase* in which physical, economic, socio-cultural and institutional changes accumulate, and a *stabilisation phase* in which the renewed system comes to a new dynamic equilibrium. This pattern is still rather generic. Depending on external conditions several types of transition can be distinguished (Geels and Schot, 2007). In hindsight, the character, direction and stages can be recognised, but for those who are actively involved in a transition, the total picture is never clear. Actors have no more than their own perception at that moment. However, this is an analytical perspective. In reality, multiple transitions evolve interactively, making it difficult to consider a particular transition in isolation from another.

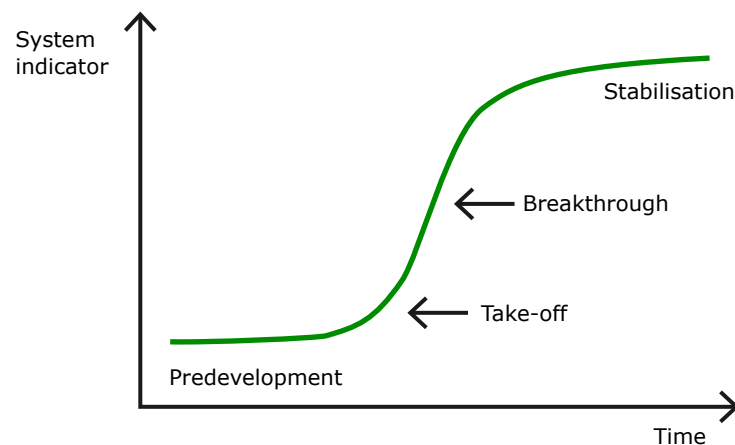


Figure 2 Phases in a transition (adapted from Rotmans et al., 2000)

The distinction between transition and system optimisation is relevant in view of the challenges that emerge when targeting sustainable development. When confronted with the sustainability challenges in agro-food systems, most stakeholders would acknowledge that we need innovations to address these but by this they typically mean new technologies. It is increasingly recognised, however, that technical change only will not be sufficient. 'Transitions' of agro-food systems are needed, i.e. changes and innovations in which technical as well as non-technical elements of the system change, including the production and consumption side of food, intermediary parties in the chain, as well as the governance aspects of this system. This implies not only the building-up of new structures, but also the destabilisation and breakdown of old ones to create space for the new (the so called x-curve; Loorbach et al., 2017)

Desirable and just transitions

As said above, transitions will happen anyhow. If left as unguided processes, their developmental path as well as their outcomes may turn out less desirable for various stakeholders than they could have been. This pertains to the desirability of the end result ('desirable outcome') as well as the fairness of the way the burdens that accompany it are distributed in the process ('just transition'). These are two types of normative arguments to invest in transition processes that are more deliberately guided or facilitated. In this brochure we focus on the first (desirability), but stress the fact that transition pathways may subsequently enable dialogues on the equity and fairness of the transition foreseen.

The challenge

Food systems:
what they are, how
they are conceived

Transitions:
what they are, how
they are conceived

**Desirable and just
transitions**



Exploring Transition Pathways

Introduction

The general idea behind exploring Transition Pathways is that a desired but radically changed food system in the long term can be made to be seen as attainable by current stakeholders, in order to take the first steps. Exploring Transition Pathways is done in three basic steps that are ideally performed in a deliberative and interactive process:

- a description of the current system with current trends
- future visions (multiple) and
- a transition pathway tailored towards one or more of these.

The first step is essentially a system and actor analysis that identifies and explains its current structure and performance, and its likely future performance in a business-as-usual scenario. This analysis will at least entail a causal analysis of the causes of the current performance against current and future criteria. An actor analysis will reveal the problem perception of relevant stakeholders, and thus identify the sense of urgency. Future



visions describe a food system that attains a wider range of sustainability goals than the present system, because it is structurally (and therefore radically) different. A transition pathway shows how such a future vision can be attained over time by identifying intermediate steps that are feasible given the step or situation before it. The normative debate on desirability can be held by assessing the future visions, transition pathways can be employed to assess the fairness of the process leading to this vision and the steps needed to realise it. This is of course to be done in interaction with a wide range of current and future stakeholders. Academic partners can play a facilitating role, yet an institutional (for instance governmental) commitment to such a process and its outcomes is a prerequisite for motivation and follow-up.

Goals for a future food system

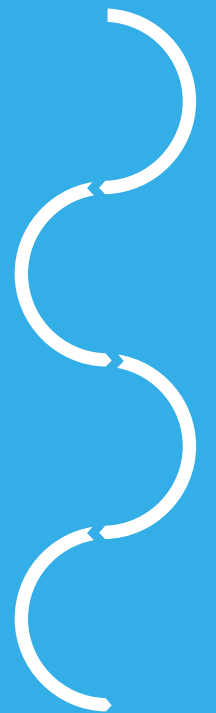
An important starting point is defining the multiplicity of goals that have to be achieved in a future food system that are currently not served. For instance: a 'sustainable food system', elaborated into separate goals such as 'sufficient food', 'access to food', 'no GHG-emissions', 'regenerative', 'enhancing biodiversity' etc. The UN SDGs could be a starting point. Next step is to define the system that is at stake (e.g. a national agro-food system or a more specific, more local system) and then assess which of the SDGs are relevant to that system. Such goals might be supplemented with more specific (quantitative) requirements (e.g. the required level of nutrient value or energy per day per head, or the degree to which biodiversity is enhanced). It is assumed here that these goals differ in important respects from the actual performance of the current food system. Goals do not yet specify the means nor the structural ways these goals are attained. Thus, goals are not a future vision in themselves. Their formulation precedes any future vision. Goals are formulated in a participatory fashion and supported with formalised or scientific knowledge about the food system at stake and non-formalised knowledge from within that same system.

Introduction

Goals a future food system

Visions for a future food system

Transition pathways



Exploring Transition Pathways

Visions for a future food system

Future visions contain a more or less elaborated idea on how the goals formulated are attained in the future day to day operation of the food system. Since they specify the 'how', such visions necessarily contain substantial information on structural characteristics of the system that *differ* from the current system, and explain why this vision attains the goals. These characteristics may include, for instance, the level of daily consumption of meat per capita, specific agricultural practices, (shifted) consumer roles, preferences and values, the role of import and export, rules and regulations governing production and consumption of food, business and organisational models, or specific logistics systems. Hence, it should describe the main social and technical characteristics of that system and make clear where these differ from the present system. These structural changes are not desirable in and of themselves, but provide the systemic reasons for believing that the desired goals may be achieved.

Developing future visions

Developing future visions is a central element in exploring Transition Pathways. Both the development process itself as well as the end result serve an important function.

In terms of the end result, a future vision sketches the important structural elements of a future system (for instance a food system) that make it work and by which it is plausible that system attains the predetermined goals. One of these goals could – for instance – encompass providing nutritious diets in urban areas without reliance on long transport chains and imports, while preserving natural habitats. A future vision in that example might entail biomass upcycling into basic food ingredients (especially proteins) via industrial fermentation at the perimeters of the city and an ecosystem of small and medium-sized food businesses that process these ingredients to healthy, tasty and affordable products. It is important to note that this future vision is (of course) not realisable in the short term. This might take a generation (20-30 years). It does however sketch a way to attain

those very different goals that was determined beforehand. A second important feature of this example is that the future vision is not a modified version of the present situation, but contains elements that break with the dominant ways of producing and consuming. Therefore, it may be in conflict with current interests as well.

In terms of the process, developing future visions can be fruitful in stimulating reflection by current stakeholders on the current system, its trajectory and basic assumptions that underpin these. For instance: in response to the goal of more nutritious diets for urban areas, the initial response might very well be to stress the need to 'just' boost current animal production in the countryside. Further analysis would then reveal that other predetermined goals (such as preserving or even enlarging natural habitats), shortening transport chains and eliminating imports cannot be attained in that scenario.

This is linked to the sense of urgency that is needed for stakeholders to participate in future vision development. A preceding collective analysis of the current system and its probable developmental trajectory may reveal its limitations in attaining the goals determined earlier in the process, adding to the sense of urgency for designing a different course.

Ideally, future visions are developed together by a heterogeneity of stakeholders. Of course, this will include stakeholders that are currently involved in the food system at hand. A diversity is needed of both incumbents and challengers. Furthermore, it is important to include other voices (e.g. groups currently neglected by the food system, or activists for animal rights) that may articulate and stress relevant future goals unmet by the current system.

A generic sequence of activities for developing future visions consists of:

- Definition of long-term goals (e.g. SDGs or policy objectives).
- Assessment of the current and future performance of the current food system regarding these goals. This may result in

Introduction

Goals a future food system

Visions for a future food system

Transition pathways



Exploring Transition Pathways

the identification of the urgency to strive for a structurally different future system.

- Definition of the main future functions of a desired food system. These (societal) functions might very well comprise of more than 'just' food production or food provisioning, and include the provision of quality labour opportunities, upcycling of waste, or energy production, preservation of the environment, to name a few.
- Identification of central structural elements of a future food system that might be able to fulfil these functions and achieve the predetermined goals.
- Assembly of these elements in a coherent and attractive story (or visual) that conveys the vision to a broader audience.
- Evaluation.

An important issue throughout these steps is the demarcation of the boundaries of the food system at hand, and the system to be designed. If they are chosen too small, the exercise risks becoming futile, while if they are chosen too broad, this will render the process and the outcome too complex. A concrete subsystem of the food system (e.g. dairy consumption, or protein production) may serve as a good starting point. System boundaries may be deliberately widened during the process to include other parts of the food system, in order to solve issues that cannot be solved within the limited system itself. For instance, adding parts of the energy system to the food system may open up a range of possibilities to increase the overall climate robustness of an agricultural or livestock production system by dual use of biomass, or controlled fermentation of manure.



Introduction

Goals a future food system

Visions for a future food system

Transition pathways



Exploring Transition Pathways

Transition pathways

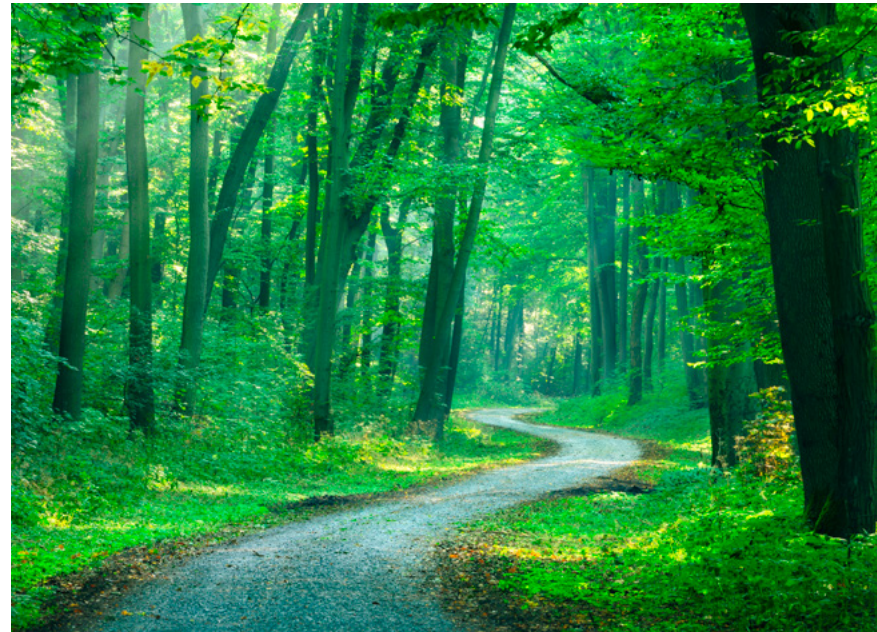
Once one or more future visions have been developed that are seen as needed or desirable, chances are that they seem too far-fetched to be achieved. In fact, the purpose of future visions is to show how structural rearrangements of the system are needed to attain a wider range of predetermined goals than would be the case if the current system was developed further incrementally. Almost by definition, structural rearrangements of an existing system will seem difficult to achieve. Consequently: future visions may very well be quickly abandoned after conception as 'pies in the sky'.

To be able to act upon them, a second process is subsequently needed: the development of a transition pathway. A transition pathway is a possible road that leads towards achieving a specific future vision. They are defined in terms of multiple steps over time that make it plausible that this vision can be reasonably attained, even if it radically diverges from the current situation. The steps in these pathways should show social (institutional, cultural) as well as technical changes, as transitions are inherently socio-technical in character. Each individual step should be 'plausible' in itself, i.e. a small enough change with respect to the previous step to be seen as feasible or realistic to achieve. The actual number of steps in a pathway needed derives from this criterion. To be clear: a transition pathway in itself is certainly not a future vision.

In essence, one transition pathway is enough, as their primary function is to take the first step towards something seemingly unachievable. From there on, the actual pathway will likely change multiple times under the influence of outside events and learning.

Developing transition pathways

Ideally, transition pathways are developed 'back from the future'. This requires a form of backcasting (in contrast to forecasting) in which one starts with the main structural features to be



established in the future system. Each of these will require a sequence of preceding steps to be realised, from technological innovation, to new regulations or the establishment of new cultural norms. This is also an interactive and iterative process, with trial and error. The end result should be a reasonable number of intermediate steps that plausibly build upon each other. Other approaches may lead to the same result, yet the backcasting approach has the benefit of its focus on the desired future structural features, which is difficult if one reasons from the current system into the future. Of course, this more traditional approach has the benefit of being much more concrete, tangible and rooted in what is known. But this is also a drawback when seeking to achieve a system change because one of the main challenges then becomes to deal with what is unknown. The development of a future vision and exploring the pathway that can lead to such a vision is an attempt to 'make the unknown tangible'. An overview of tools and methods can be found in De Koning et al., 2021 and Dijkshoorn-Dekker et al., 2021.

Introduction

Goals a future food system

Visions for a future food system

Transition pathways



Practice

Transition pathways as described above have been explored in two cases in countries of the Global South, to wit Ghana and Ethiopia. In both cases existing development programmes on parts of the food system served as testing ground. Although limited in their duration and intensity, these cases already show the potential as well as some limitations of the approach.

Healthy & sustainable Accra 2050

Accra is the capital of Ghana in West Africa. The food environment in Accra is changing, affecting consumer behaviour and their diets as well. Steady economic growth and political stability are among the socio-economic drivers influencing these changes. Ghana is experiencing a drop in undernutrition rates coupled with an increase in over-nutrition, with obesity rates increasing across rural and urban population. The Collective Impact Coalition on Ghanaian Urban Food Environments (GUFCE) – a governance network of private and public stakeholders from Ghana and the Netherlands – wants to achieve healthy and sustainable diets in urban environments in Ghana, such as in Accra.

In this case a future vision for healthier diets within the urban food environment of Accra was developed in a series of three (on line) workshops, after an initial system analysis consisting of a literature review and interviews with stakeholders. Based on the future vision several transition pathways were defined. Extensive reporting is done in Linderhof et al. (in prep), including the preceding system analysis.

In an interactive visioning session, ideas on what the food environment in Accra should look like in 2050, when there are healthy diets for all, were collected. They were converged in a common future vision, as visualised in Figure 3.



Figure 3 Visual representation of the future vision Healthy & Sustainable Accra 2050 (Linderhof et al., in prep)

In summary, the vision centres around sustainability as an integral part of the local food culture. People are exposed to healthy diets from a young age – fresh fruits and vegetables are part of school diets and children are educated on sustainability. People are proud of their food culture. Ghanaian cuisine is known worldwide and Ghanaian chefs are famous. Both the government as well as the urban environment support this culture.

In a next session, a transition pathway was developed consisting of three different, but complementary components that could contribute to this common vision:

Healthy & sustainable Accra 2050

Healthy and nutritious diets in Ethiopia through dairy

Reflection on the cases



Practice

- 1 Maintaining or promoting the Accra food culture, the cultural way
- 2 Changing the food supply chain, the economic way
- 3 Greening the city, the environmental way.

For each component actions were formulated to realise them, and these actions were ordered on a time line from short-term to longer-term actions. See for instance Figure 4 on the second strategy (*Change the food supply chain*).

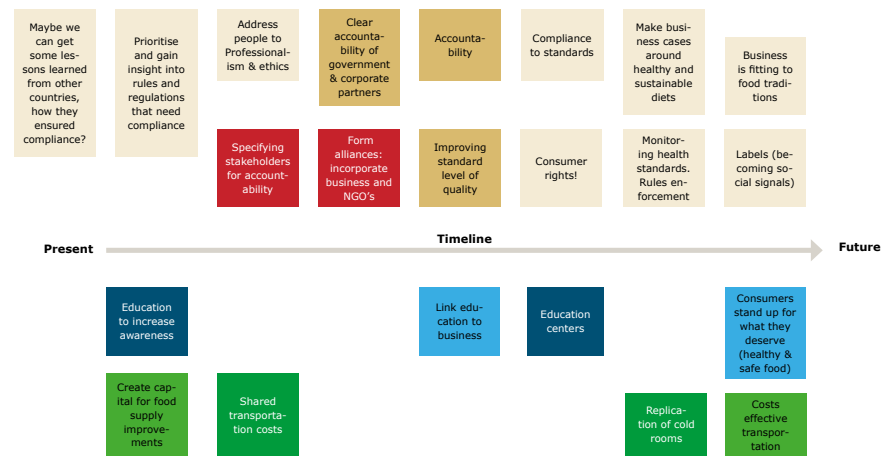


Figure 4 One of the transition pathways (*Change the food supply chain*) created towards the future vision for Accra. As can be seen, actions are organised along a timeline from short term to long term (Linderhof et al., in prep)

Finally, the three components of the future vision were connected to the already established action plans from the *Collective Impact Coalition* for GUFÉ, in the form of a so-called theory of change for each of four action plans that were defined earlier.

The process as a whole clearly showed how a collective future vision stimulates the identification of important structural components of the future food system, in this case the culture, the food chain and the urban environment and how they should be different from the present. Moreover, the diversity of the components illustrates how transitions affect the social, cultural

and technical sphere at the same time. By making a timeline, changes that seem to be more far-fetched or unattainable at present (like labels becoming social signals) become feasible by the addition of intermediate steps in the short and medium term (such as creating awareness, and accountability schemes). Finally, the case shows the importance of anchoring the vision and pathway created into existing structures (in this case the action plans of the coalition) in order to increase the chance that the proposed actions are indeed taken and embedded in a programme with a longer life time.

The case also shows how goals, future visions and transition pathways may be conflated by participants to a certain extent. Here, the future vision consisted of a set of desirable long-term goals, but a limited specification on the structural elements (physical, technical, social and cultural) that had to be in place to attain those goals. This was remedied to a certain extent, however, in the three components that were subsequently identified. The timelines created for these components could be seen as transition pathways.

Furthermore, by focusing on healthy diets in urban environments from the start, other goals (for instance the environmental sustainability of the food system, or the structure and sustainability of agricultural production by farmers) did not get much attention, despite the the future vision depending on it. This points to a more general issue in our transition pathway approach: finding the right balance between system boundaries that enable enough focus in the process, and the inclusion of enough system elements of the food system at large in order to create visions and pathways that are encompassing enough to really make a difference.

Healthy & sustainable Accra 2050

Healthy and nutritious diets in Ethiopia through dairy

Reflection on the cases



Practice

Healthy and nutritious diets in Ethiopia through dairy

Ethiopia has witnessed significant economic growth and increases in agricultural productivity over the last twenty years. At a federal level it has formalised and mainstreamed an integrated nutrition agenda geared towards systemic improvements in the consumption of nutritious and healthy diets for all its population. Despite these successes, evidence indicates that one of the key barriers towards improving dietary quality and nutrition in Ethiopia is the unaffordability (and related unavailability) of nutrient-dense foods (Baye et al., 2019). Ethiopia's cereal-dominated, production-focused agricultural policies have considerably increased production and productivity and have contributed to improving the dietary conditions in terms of energy needs and caloric intake. Yet, these improvements have not been sufficiently able to address the entire spectrum of dietary needs. Proteins, fat and key micronutrients (for instance sourced from animal sourced foods), as well as fresh fruits and vegetables are frequently lacking in Ethiopian diets. Dairy products are increasingly considered as a potential contributor to healthy and nutritious diets, local economic development and income generation in Ethiopia. But how to realise this potential in a sustainable way?



To answer that question, elements of the Transition Pathways approach were applied in two separate workshops with stakeholders and researchers that participated in a running multi-year programme directed at the development of the dairy sector in Ethiopia, called BRIDGE (Building Rural Income through Inclusive Dairy Growth in Ethiopia). The BRIDGE project aims to contribute to sector transformation, while improving the livelihoods of 90,000+ dairy farmers.

The first step was a system analysis consisting of a literature review and interviews with members of the BRIDGE team. Extensive reporting is done in Snel et al. (in prep).

In a first workshop with participants from government and the dairy sector future visions were developed on the role of dairy in providing for healthy diets in Ethiopia. This was deliberately done by starting from different consumer groups in Ethiopia in order to shift the dialogue from a production perspective towards an orientation on healthy and sustainable diets. In a second workshop a larger group with a broader professional orientation devised strategies (transition pathways) to strengthen and attain these future visions.

The future visions from the first workshop were as follows:

- 1 Pasteurised milk for low-income consumers in urban areas – dispensed through ATM-like machines
- 2 Raw locally boiled and powered milk for pregnant and lactating women and young children in rural areas – consumer cooperatives and community dairy farm
- 3 Pasteurised packaged milk for urban children – distributed through local shops and markets
- 4 Processed dairy (pasteurised milk, yogurt, cheese) for institutional markets – school, hospitals, industries, higher learning organisation, catering public institutions).

A visual artist summarised the future visions (2037; Figure 6), and contrasted them with the current situation (2022; Figure 5) in the visuals on the next page.

Healthy & sustainable
Accra 2050

Healthy and nutritious diets in Ethiopia through dairy

Reflection on the cases



Practice

Healthy & sustainable
Accra 2050

Healthy and nutritious diets in Ethiopia through dairy

Reflection on the
cases

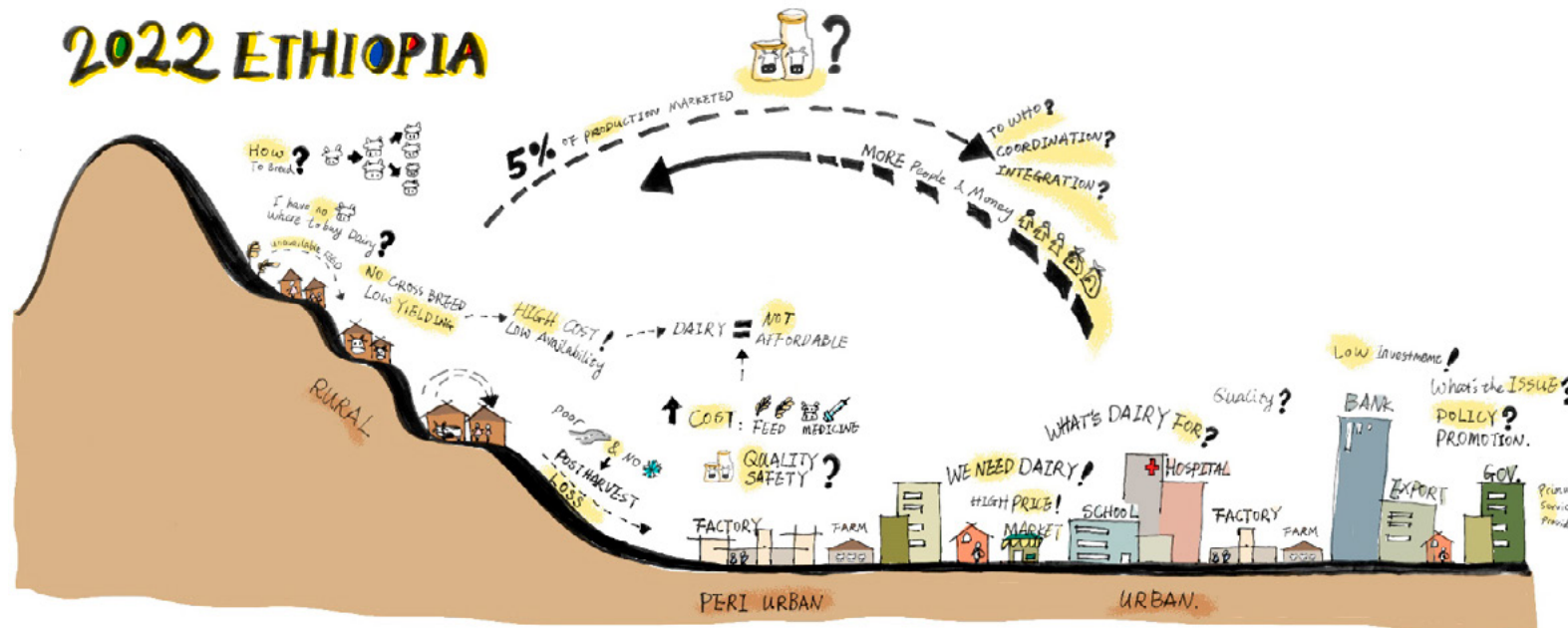


Figure 5 Visual representation of the current dairy food system in Ethiopia (2022)

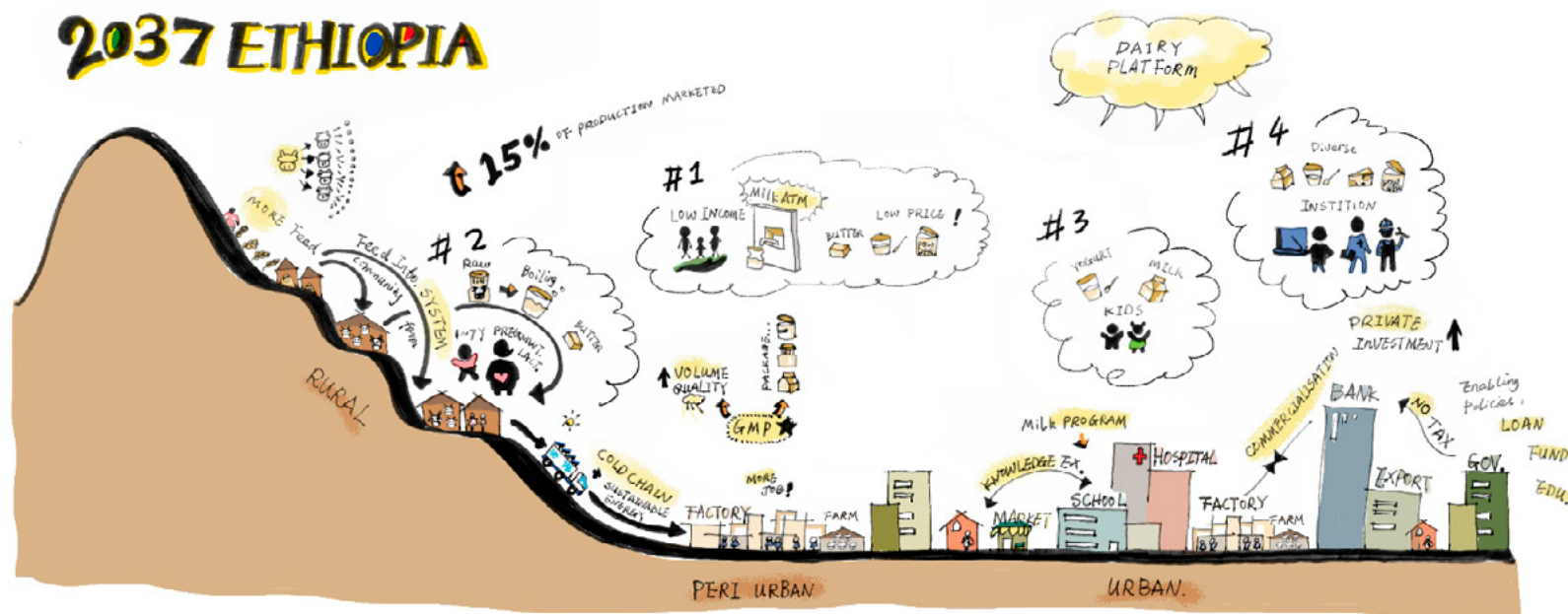


Figure 6 Visual representation of the desired future dairy food system in Ethiopia (2037)



Practice

In the second workshop three of the four visions were elaborated into strategies to attain them, with an associated timeline. First, key structural elements that needed to be changed in the future vision were identified (based in this case on a different Food System Framework of (Fanzo et al., 2021), and the required changes to get there were put on a timeline, thinking from the future to the present (backcasting). One of these timelines is depicted in Figure 7 as an example.

In this case the process of visioning was tightly bound from the outset to the dairy sector and specific consumer groups as the central elements. This was due to the partnership with an existing project with a focus on dairy. Yet, by specifying the more general goal of healthy and nutritious food for specific consumer groups in Ethiopia, the discourse shifted from productivity enhancements towards visions that were tailored to one of these groups, in a combination of social, institutional and technical

changes. This shift was uncomfortable at first for those rooted in the dairy sector, yet turned out to be an eye-opener in the end.

The future visions themselves might not seem too groundbreaking. Nevertheless, in terms of organisation they might entail more transformation than meets the eye, given the Ethiopian context and institutional history. Given the developmental phase of Ethiopia, moving away from a production-oriented focus can be viewed as rather groundbreaking. Furthermore, as was the case in Ghana as well, the visions were primarily addressing one main goal (healthy and nutritious diets), leaving aside a lot of other relevant goals for sustainable food systems. Both issues are due to the quite narrow system boundaries, a limited set of stakeholders involved in the workshops, and the limited time available to explore visions and pathways. The transition pathways approach thus needs time and resources.

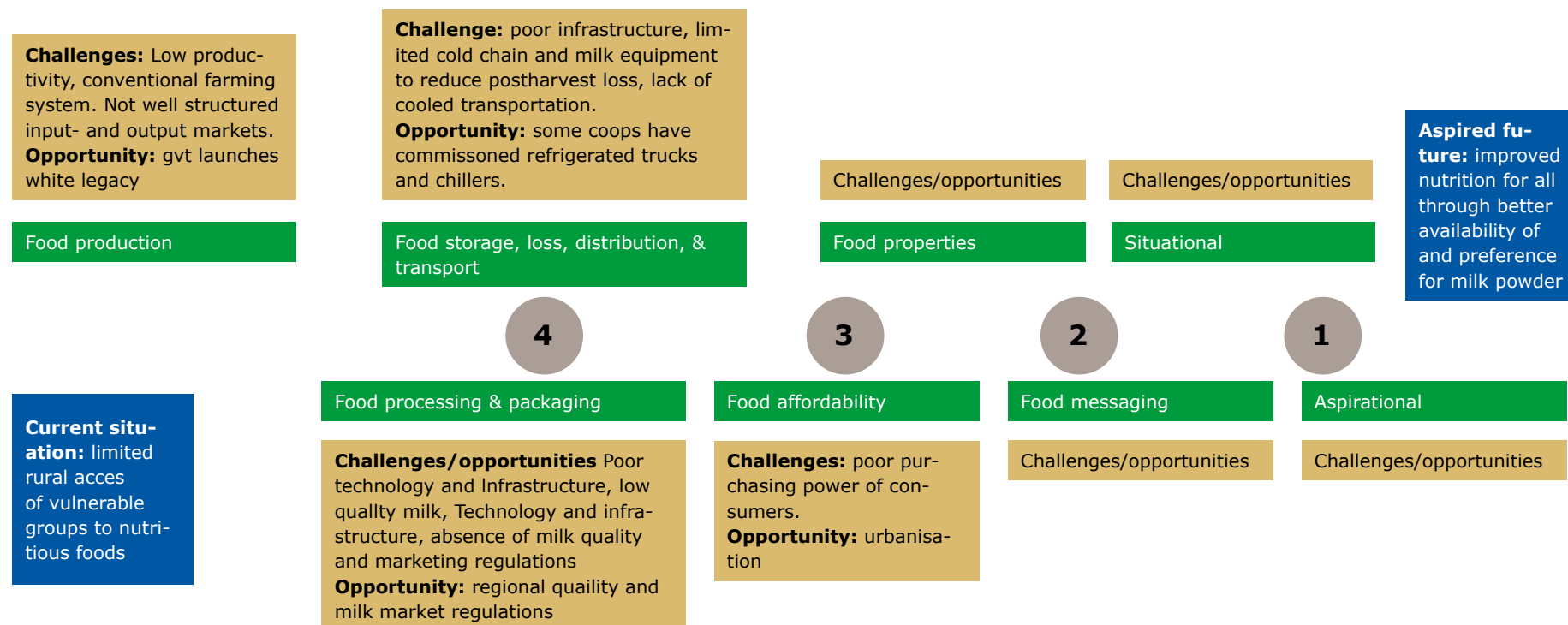


Figure 7 One of the timelines created for the transition of the dairy sector in Ethiopia

Healthy & sustainable
Accra 2050

Healthy and nutritious diets in Ethiopia through dairy

Reflection on the cases



Practice

Reflection on the cases

It is relatively easy to identify and agree upon the range of long-term goals that have to be achieved (for instance the UN SDGs). However, taking the next step by formulating future visions that include key structural features by which these goals may be achieved is much more difficult in a heterogeneous group of stakeholders. This requires a broader view on agri-food systems and general systems thinking that is not a daily routine for most.

This is especially the case if the range and diversity of goals is extended, and the system boundaries are enlarged. In that case, the number of relevant disciplines and the amount of background knowledge required increase exponentially. This cannot be simply remedied by adding more stakeholders and experts, since this requires them to develop a mutual language and a shared knowledge base first. Since food systems are intertwined with so many aspects of life, society and earth, transition approaches in food systems are almost by definition forced to limit their scope. This might be partly bypassed by using more generic and thorough scenario studies on future food systems from global leading institutes as a starting framework.

In the context of low- and middle-income (LMIC) countries, food provision and affordability have been more central issues compared to industrialised countries. Thus, the tendency will be to focus in future visions on increased production volumes and lowering costs, in a sense replicating the developmental path of agriculture in developed countries after WWII. Western counterparts may be wary about this, because of our experience with the side effects of these developments. These different historical experiences may very well affect the sense of urgency that needs to be present. The exercise of formulating future visions and transition pathways is only meaningful if there is a shared need for transformative change. As long as food provision and affordability are key issues, other relevant issues may easily fall out of sight in the process.

Anchoring transition pathways and corresponding action perspectives to existing structures such as policy developments or action agendas can increase the impact of these pathways, while also creating commitment from participants. In the Accra case, for example, this was attempted by connecting the transition pathways to the existing action groups through a Theory of Change. This approach helped in recognising synergies in existing actions and better coordination of these actions. However, the timeframes of existing structures often differ from the timeframe of transition pathways, making it difficult to monitor and keep a steady course towards realisation of a desired future vision. It is therefore important to connect transition pathways to long-term programmes or developments to reach maximum impact and keep the desired goal in sight.

Exploring transition pathways is ideally done in a series of consecutive (live) workshops, to allow for a more elaborate learning process of the participants, and a process of growing ownership of the visions and transition pathways. In hindsight, the time made available by the participating programmes in these cases was too limited to achieve this. For this to happen, the approach needs a more structured place over the course of a broader programme. Formal embedding in the formal terms of assignment is therefore advised.

Healthy & sustainable
Accra 2050

Healthy and nutritious
diets in Ethiopia
through dairy

Reflection on the cases

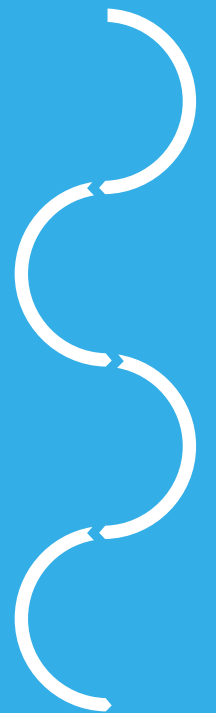


Concluding remarks

Developing transition pathways is – in principle – a suitable way to explore routes towards more sustainable food systems by involving a range of actual and potential stakeholders. The main benefits lie in the collective visioning of alternative futures for a certain food system, and in enabling the development of an action perspective to attain these visions, even if they seem unrealistic in the present.

Initial experience in practice in two countries in the Global South suggests that the approach requires considerably more time and a wider range of stakeholders if wider system boundaries are chosen or a broader set of future goals is to be achieved. In any case, participants need enough time to develop a shared system perspective beyond their own expertise or field of practice.

Therefore, it is important to include the transition pathways approach in multiyear programmes on a regular basis, enabling several iterations of the approach.



References

Baye, K., Hirvonen, K., Dereje, M. and Remans, R. 2019. Energy and nutrient production in Ethiopia, 2011-2015: Implications to supporting healthy diets and food systems. *Plos One*, 14, e0213182.

Van Berkum, S., Dengerink, J. and Ruben, R. 2018. The food systems approach: sustainable solutions for a sufficient supply of healthy food. Wageningen: Wageningen Economic Research.

Dijkshoorn-Dekker, M., Termeer, E., De Haas, W., Bulten, E., Bos, B., Elzen, B., Snel, H., Linderhof, V., Broeze, J., Van Eldik, Z., Vernooij, V. and Obeng, E. 2021. Exploring Pathways to Support Food System Transitions. Wageningen: Wageningen Economic Research.

Fanzo, J., Haddad, L., Schneider, K.R., Béné, C., Covic, N.M., Guarin, A., Herforth, A.W., Herrero, M., Sumaila, U.R., Aburto, N.J., Amuyunzu-Nyamongo, M., Barquera, S., Battersby, J., Beal, T., Bizzotto Molina, P., Brusset, E., Cafiero, C., Campeau, C., Caron, P., Cattaneo, A., Conforti, P., Davis, C., Declerck, F.a.J., Elouafi, I., Fabi, C., Gephart, J.A., Golden, C.D., Hendriks, S.L., Huang, J., Laar, A., Lal, R., Lidder, P., Loken, B., Marshall, Q., Masuda, Y.J., McLaren, R., Neufeld, L.M., Nordhagen, S., Remans, R., Resnick, D., Silverberg, M., Torero Cullen, M., Tubiello, F.N., Vivero-Pol, J.-L., Wei, S. and Rosero Moncayo, J. 2021. Viewpoint: Rigorous monitoring is necessary to guide food system transformation in the countdown to the 2030 global goals. *Food Policy*, 104, 102163.

Fao, Union, E. and Cirad 2021a. Catalysing the sustainable and inclusive transformation of food systems. Rome: FAO.

Fao, Union, E. and Cirad 2021b. Food Systems Assessment – Working towards the SDGs. Rome, Italy; Brussels, Belgium; Montpellier, France;: FAO; CIRAD; European Union;.

Geels, F.W. and Schot, J.W. 2007. Typology of sociotechnical transition pathways. *Research Policy*, 36, 399-417.

Grin, J. 2010. Understanding transitions from a governance perspective. *In: Grin, J., Rotmans, J. and Schot, J.W. (eds.) Transitions to sustainable development. New directions in the study of long term transformative change.* New York: Routledge.

De Koning, S., De Haas, W., De Roo, N., Kraan, M. and Dijkshoorn-Dekker, M. 2021. Tools for Transitions; An inventory of approaches, methods and tools for stakeholder engagement in developing transition pathways to sustainable food systems. Wageningen: Wageningen Marine Research.

Linderhof, V., Obeng, E., Bulten, E., Van Eldik, Z., Dijkshoorn-Dekker, M., De Haas, W. and Hu, X. in prep. Transition Pathways development for healthier diets in urban food environments of Accra, Ghana. Wageningen: Wageningen Economic Research.

Loorbach, D., Frantzeskaki, N. and Avelino, F. 2017. Sustainability Transitions Research: Transforming Science and Practice for Societal Change. *Annual Review of Environment and Resources*, 42, 599-626.

Rotmans, J., Kemp, R., Van Asselt, M., Geels, F., Verbong, G. and Molendijk, K. 2000. Transities en Transitie management. De casus van een emissiearme energievoorziening' (Transitions and Transition Management. The case of a low emission energy provision). Final report of a study 'Transitions and Transition management' as input for the fourth National Environmental Policy Plan. Maastricht: ICIS & Merit.

Snel, H., Bos, A.P., Broeze, J. and Vernooij, D.M. in prep. Contributing towards healthy and nutritious diets in Ethiopia. Development pathways for Ethiopia's dairy sector. Wageningen: WCDI.

About

References

Colophon



Colofon

Authors

Bram Bos⁴, Boelie Elzen³, Ellen Bulten³, Vera Vernooij⁶, Marijke Dijkshoorn-Dekker¹, Emma Termeer¹, Wim de Haas², Herman Snel⁵, Vincent Linderhof¹, Zoë van Eldik², Jan Broeze⁶ and Elisabeth Obeng¹

¹Wageningen Economic Research

²Wageningen Environmental Research

³Wageningen Plant Research

⁴Wageningen Livestock Research

⁵Wageningen Centre for Development Innovation

⁶Wageningen Food and Biobased Research

<https://edepot.wur.nl/583324>

Photography

Jan van der Lee (p13), Shutterstock (p.1, 5, 7, 9, 10)

Design

Wageningen University & Research, Communication Services

This guide is based on research funded by the Dutch Ministry of Agriculture, Nature and Food Quality within the context of the Knowledge Base programme 'Food Security and Valuing Water' (Transition pathways: project number KB-35-006-001).

Wageningen University & Research accepts no liability for any damage resulting from the use of the results of this study or the application of the advice contained in it.

About

References

Colophon

