Foresight4Food
International Collaborative Initiative

UNITED NATIONS FOOD SYSTEMS COORDINATION HUB

Using Foresight for Food Systems Transformation

A guide for policy makers, practitioners and researchers

Version 1.0 - July 2025

Contents

Foreword

- **Welcome to the first edition of 'Using Foresight for Food Systems Transformation',** a guide for policy makers, practitioners and researchers, produced through a collaboration between Foresight4Food and the United Nations Food Systems Coordination Hub. We are pleased to offer a practical resource to support national convenors and the broader ecosystem of stakeholders working to advance country-driven food systems solutions through applied foresight approaches and tools.
- **The 2021 UN Food Systems Summit represents a milestone for food systems transformation**. Countries have been engaged in a collective effort to drive food systems transformation- fostering resilience, sustainability, and equity. It was agreed that such a stocktake exercise should take place every two years. The UN Food Systems Summit Stocktake in Ethiopia in July 2025 (UNFSS+4) marks the second time that countries convene to keep food systems transformation high on the global agenda, this need has never been greater.
- **This publication is designed for policymakers, decision makers, practitioners and researchers driving national food systems policies**. It provides a practical introduction to key foresight concepts, tools, and methodologies, offering a one-stop resource to integrate future-oriented thinking into decision-making.
- **Transforming food systems is one of six key areas where decisive action can accelerate progress toward achieving the UN Sustainable Development Goals (SDGs)**- currently significantly off-track, just five years ahead of the 2030 deadline. While this guidance focuses on food systems, its insights are valuable for anyone seeking to improve present-day decision-making with a long-term perspective.
- **With clear language and an engaging design, this guidance democratizes access to foresight knowledge**, empowering countries to prepare for interconnected crises, navigate complexity, and embrace uncertainty with confidence.

Ensuring that today's actions do not compromise the well-being of future generations must remain a high priority for global decision-makers. We invite all those committed to a better future to use this guidance as a tool for action- because the future starts with the decisions we make today.

Acknowledgements

- This guide has been produced collaboratively between Foresight4Food and the UN Food Systems Coordination Hub.
- The ideas and guidance in this document have been heavily shaped through practical experience working with many different stakeholders across numerous countries. This input from local and national stakeholders into different foresight processes, along with the insights and lessons that emerged, is acknowledged and highly appreciated.
- The guide draws heavily on materials that have been developed by the Foresight4Food Initiative in collaboration with members of its global network.
- The guide was written by Jim Woodhill, Bram Peters, Just Dengerink and Nicole De Paula. Advice on the contents, structure editing were provided by Rathana Peou Norbert Munns and Ludovica Nesbitt.
- Design and layout of the document is by 219 Graphics.
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I. Introduction

I Introduction

How food systems evolve over the coming decades will profoundly shape our future wellbeing. The way food is produced, processed, consumed, and disposed is central to a sustainable future, and to tackling the polycrisis of climate change, inequality, poor human health, biodiversity loss and conflict.

Transforming food systems to deliver on human health, social equity and a resilient environment requires futures thinking. Together, citizens need to imagine how different food systems would unlock collective benefits. To promote action before future crises strike, the consequences of not making a change need to be clear for society, political leaders and business.

Participatory and evidence-based foresight processes can support food systems transformation at local, national, regional, and global scales. Foresight and scenario analysis can be a powerful approach for bringing stakeholders together, opening up dialogue about changes that are needed, and finding practical pathways forward. In an increasingly turbulent world, creating food systems that are resilient to shocks and pressures will be more important than ever. Foresight contributes to anticipating these shocks, and the risks they pose for food security and people's livelihoods. More importantly, foresight can help governments, businesses, farmers, and consumers prepare for the future by being more adaptable and resilient.

This guide has been produced by the UN Food Systems Coordination Hub in partnership with Foresight4Food to encourage and support the use of foresight in food systems transformation. Fostering the fundamental changes needed in food systems is no easy task. It requires an understanding across society about why change is needed. Agreement and commitment to transform are needed from diverse actors in the food system. Difficult trade-offs must be managed, incentives need to be rebalanced, innovative business models created, and new alliances formed to drive positive change. Foresight is a way of helping food system actors see that change is possible and how doing things differently could be in their own future interests, and in the collective interests of their community, country or sector.

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Box 1:
The UN Food Systems Coordination Hub

The UN Food Systems Coordination Hub - hereinafter "the Hub" - is a space to offer options on how better to coordinate food systems solutions at the national level. From a triple crisis, including food, energy, and finance gaps, the Hub has a chance to make this historical moment an opportunity to reimagine our future where food systems are nutritious, accessible, affordable, and respectful of planetary boundaries. As a follow-up to the 2021 UN Food Systems Summit, the Hub is focused on systemic, country-driven, customized support in translating food system transformation commitments into practical actions that will accelerate multiple solutions related to sustainable development.

[1] In this guide we use the term food systems, but we could equally well use agrifood systems. By food systems we are referring to all activities related to producing distributing and consuming food, including fisheries, and all forms of agricultural enterprise including non-food crops which still impact on the overall food system.

Business-as-usual is no longer an option. The status quo continues to reinforce inequalities, accelerate environmental degradation, and falls short of delivering healthy, sustainable diets for all. A truly effective food systems transformation must signal a break from conventional approaches and embrace integrated, forward-looking solutions that leave no one behind and contribute to the achievement of the Sustainable Development Goals (SDGs), particularly those related to climate action, biodiversity, and sustainable resource management.

Now is the time to act strategically. This means keeping the promise of SDGs alive not only for the wealthiest 1% but for all. Transforming our food systems is our best bet to overcome the triple global challenge of malnutrition, rising social inequalities, and environmental change. Aggravated by the COVID-19 pandemic, new conflicts, climate impacts, collapsing multilateralism, and declining resources for international development, the risks of large-scale humanitarian crises are escalating. The complexity and urgency of these challenges requires coordinated global responses, new forms of collective intelligence and compelling narratives for change to ensure a future-proof food system that leaves no one behind.

Box 2:
The Foresight4Food Initiative

02

Foresight4Food is an international initiative and global network that supports the use of foresight for food system transformation. It assists organisations and practitioners access foresight and scenario expertise, syntheses foresight work in the agri-food sector, undertakes methodology development, and provides an online food systems foresight resource portal.

The work of Foresight4Food has been enabled by the Foresight for Food Systems Transformation (FoSTr) Programme. FoSTr provides a country support facility for food systems foresight and scenario analysis. The country-led and multi-actor foresight process aims to assist national food systems transformation. The Programme was implemented in four focus countries, Bangladesh, Jordan, Kenya and Uganda, and was supported by the Kingdom of the Netherlands through IFAD.

Times of crisis can open space for renewal, innovation, and transformation. The mounting challenges facing food systems, and the unwinding of development cooperation can feel overwhelming. However, at the same time, there are numerous inspiring leaders, changemakers and organizations working towards a better future for our food systems. Foresight processes can help to link these efforts and engage a new generation of thinkers and leaders in shifting mindsets, creating new business models and reshaping food systems in ways we have hardly begun to imagine.

1.1 The purpose of this guide and who should use it

This guide has been written to provide practical advice on how foresight can be used to strengthen food system transformation at national and local levels. It explains the basic concepts of foresight and scenario analysis and offers a guiding framework with a set of practical tools. It also provides links to an expansive set of resources, methods and tools.

Food systems transformation requires effective processes of stakeholder engagement. From local to global scale, there is a need for collective problem analysis, trust building, innovation and learning, collaborative research, clear communication, and conflict management. The best science and analysis we can muster must be integrated with effective approaches to stakeholder engagement and dialogue. Without effective processes that can integrate what scientists, differing interest groups, businesses and policy makers have to offer, there is little chance of bringing about the transformation that is so urgently needed. The foresight approach presented in this guide is intended to inspire, encourage and support the setting up and facilitation of stakeholder engagement processes that help to accelerate food systems transformation.

The guide has been written for anyone interested in using foresight to support food system transformation at local and national levels. However, a particular target group for the guide are National Food System Convenors, who have a unique responsibility for supporting the formulation and implementation of National Food System Transformation Pathways. The guide will be a useful resource for professional facilitators who have been called on to support national or local stakeholder processes, and for researchers who undertaking collaborative research activities to support transformation efforts.

02

Box 2:
Why food systems must change: the facts of matter

***Food and water are our most basic needs**. And yet, one in nine (or 821 million people) go to bed hungry every night (FAO, 2018). This unacceptable truth happens while 931 million tons of food, 17% of total food available to consumers in 2019, go to waste (UNEP, 2021). And that is not all. Food loss and waste account for up to 10% of greenhouse gas emissions, exacerbating the planetary emergency crisis linked to climate change, pollution, and biodiversity loss (UNEP, 2021). **Food is vital for our well-being**. It is a fundamental condition for a thriving life with air, water, and decent shelter. And yet, in the context of a triple planetary crisis, we are off track. Our food systems are carbon-intensive, lack diversity, and remain profoundly inequitable.*

***Since the shattering COVID-19 crisis, crises have multiplied and not coincidently**. Because of the COVID-19 pandemic, the prevalence of undernourishment increased by 1.5 percentage points in 2020 – reaching a level of around 9.9% after remaining almost unchanged for five years (FAO et. al., 2021). Conflicts also intensify pressures on global food systems and expose pre-existing gaps in agrifood systems research (FAO, 2016). An examination of 54 conflict-affected countries revealed that its combined population (268 million people) makes up 99% of the global population who are currently at IPC+3 (crisis stage) on the Acute Food Insecurity Scale (Cohen and Messer, 2023). Additionally, while deaths occurring from direct violence is often emphasized as the mainstay for high mortality rates, deaths caused by famine and food insecurity in conflict-zones dramatically exceed those caused by direct violence.*

***Fragile contexts are central to the current global hunger and food security crisis**: 1.9 billion people living in fragile contexts account for 24% of the world's population but 73%of the world's extremely poor, and two-thirds of these people are facing hunger today (OECD, 2022). The State of Food Security and Nutrition in the World Report (SOFI) reveals that the number of individuals unable to afford a healthy diet continues to climb. Over 3.1 billion people worldwide – or 42% – could not afford a healthy diet in 2021, reflecting an increase of 134 million people compared to 2019, before the pandemic (FAO et. al., 2023).*

***The hidden social, economic, and environmental costs linked to current food systems reach a staggering USD 12 trillion**, undermining decades of collective developmental achievements (FAO, 2023). According to the 2023 SOFI report, global hunger rates remained relatively stable from 2021 to 2022 but persistently surpassed pre-COVID-19 levels (FAO et. al., 2023). In 2022, around 9.2 percent of the world's population, or an estimated 691 to 783 million individuals, faced hunger, marking a rise of 122 million people from 2019, prior to the pandemic (FAO, 2023).*

***The developmental, economic, social, and health impacts of the global malnutrition burden persist for individuals and countries.** In 2022, 2.5 billion adults were overweight, including 890 million who were living with obesity, while 390 million were underweight (WHO, 2025). Although food systems account for a significant proportion of global employment, agricultural households constitute up to two-thirds of people living in extreme poverty worldwide (World Bank, 2018).*

1.2 The challenge of transforming food systems

If transforming food systems was easy, it would have already been done. Over recent decades, the challenges facing food systems have become ever more apparent to political leaders, culminating in the 2021 UN Food Systems Summit. However, change is proving difficult. Historically, incentive structures driving food systems have predominantly focused on maximizing the production of cheap calories. This has driven large scale monocultures, the marketing of cheap highly processed foods, and a focus on staple crops at the expense of fruits and vegetables. Urbanization and changing labor patterns have also driven demand for fast and convenient food.

Current patterns of food consumption and production have externalized considerations of human health, the environment, and the livelihoods of family farmers. These hidden costs of the food system are now estimated to be as high as the total global GDP of the agrifood sector. The political importance of populations having secure access to cheap food has prompted most governments to provide support and subsidies to the agriculture sector.

Business-as-usual is no longer an option. The status quo continues to reinforce inequalities, accelerate environmental degradation, and fall short of delivering healthy, sustainable diets for all. A truly effective food systems transformation must break from conventional approaches and embrace integrated, forward-looking solutions that leave no one behind and contribute to the achievement of the Sustainable Development Goals, particularly those related to climate action, biodiversity, and sustainable resource management.

Transforming food systems requires reshaping economic incentives and mindsets. This requires confronting vested political and economic interests in how the current system functions. Transformation is only possible if there is a critical mass of support across all actors in the food system that translates into a political will for change. Different actor groups need to see how their interests could be met in a transformed system and how short-term tradeoffs might be managed so they are not disadvantaged. For collective long-term wellbeing, existing power and market relations must inevitably be disrupted, and doing so requires establishing new alliances.

Foresight processes can help launch difficult discussions about change and help actors see how alternative ways of organizing food systems could be in their interest. By creating safe spaces for dialogue around trade-offs, synergies, and the scale of emerging opportunities, foresight enables stakeholders to identify low-regret options—those that are robust across multiple futures and align with long-term sustainability, equity, and resilience goals.

Foresight Case Study

Strategic foresight at the UN FAO

How can large-scale institutions, operating with a global mandate, incorporate foresight?

Within the United Nations Food and Agricultural Organisation (FAO), ongoing work on 'Overarching Strategic Foresight' provides structured, multidisciplinary, and objective analyses of the long-term future of food and agricultural systems to inform global, regional, and national policy and strategic planning. This has led to key publications such as 'The future of food and agriculture – drivers and triggers for transformation'. By utilizing scenario analysis and quantitative modelling, the team examines key trends, drivers, and systemic challenges—including development patterns, power asymmetries, and barriers to sustainability—to generate alternative future scenarios and strategic options for transforming agrifood systems toward social, economic, and environmental sustainability. Foresight exercises, such as the Corporate Strategic Foresight Exercise (CSFE) and Regional Foresight Exercises (RFEs), directly support FAO's Strategic Framework and programming documents, offering actionable insights for achieving Agenda 2030 and beyond. This work is deeply integrated into corporate planning, enhances foresight capacity across FAO and the UN system, and serves as a conceptual platform for anticipating and navigating uncertainty, fostering resilience, and driving transformative change in global food and agriculture.

1.3 What is a food system?

Understanding 'food systems' is the start for foresight and scenario analysis. Food systems encompass all the activities and processes necessary for food to be produced and end up on people's plates. For society to thrive, food systems need to deliver on three key **outcomes**:

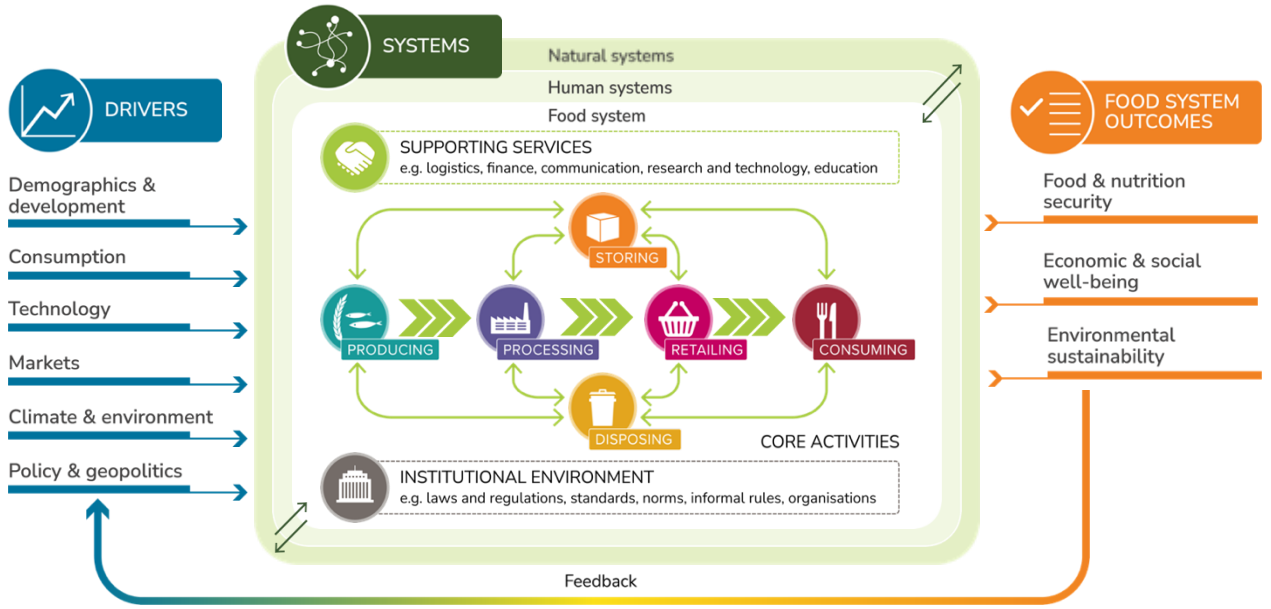
01 Food and nutrition security

02 Economic and social well-being

03 Environmental sustainability

Food systems involve an interconnected set of value chains, from production to consumption. These value chains involve many different food system **activities** carried out by various food system **actors** – consumers, farmers, traders, processers, retailers, and so on. For these activities to be carried out a set of **supporting services** are needed such as transport, financing, research, and input supply. The way the entire system functions and how actors behave is shaped by the **institutional environment** of formal and informal norms and rules, mindsets, and power relations. How food systems evolve over time is influenced by a set of **drivers** and **feedback loops**, both internal and external to the system. These drivers are also embedded in and coupled with wider social and environmental systems. To capture the dynamics of food systems, Foresight4Food uses the model shown in Figure 1.

Figure 1. The Foresight4Food food systems model



1.4

The United Nations Food Systems Summit

The 2021 United Nations Food Systems Summit (UNFSS) brought global attention to the challenges facing food systems. It highlighted that achieving the Sustainable Development Goals depends on being able to transform food systems. The UNFSS process involved food systems dialogues across many countries and led to the development of National Food Systems Pathways and action plans.

Led by the UN Secretary-General, the Summit brought together 163 Member States. During the Summit, 77 Heads of State and Government made statements about the importance of food systems in advancing the 2030 Agenda nationally and globally. Across Member States, 148 convenors were appointed to lead national dialogues, and 127 National Pathways for food systems transformation were submitted.

In July 2023, the first UN Food Systems Summit Stocktaking Moment (UNFSS+2) was convened in Rome, Italy, building upon the momentum of the 2021 Food Systems Summit. With over 3300 people representing a broad stakeholder base from 182 countries, UNFSS+2 aimed to review progress on commitments, identify bottlenecks, and advocate for advancing sustainable food systems transformation as a critical SDG accelerator. At UNFSS+2's conclusion, the UN Secretary-General launched a Call to Action that emphasized the importance of embedding food systems strategies in national policies, establishing inclusive governance frameworks, investing in research and innovation, promoting business engagement, ensuring all stakeholders' participation, and securing long-term finance for transformation.

The second UN Food Systems Summit Stocktaking Moment (UNFSS+4) will take place in Addis Ababa from 27 - 29 July 2025 and will be convened by Ethiopia and Italy. The UNFSS+4 is a critical milestone for reflecting on progress in food systems transformation at the national and global levels, exploring accountability and gaps, and unlocking investment opportunities for scaling impactful solutions for transformative action, including through investment in research, data, innovation, and technology capacities.

1.5 Foresight in practice

From local to global levels there many emerging examples of how foresight is supporting food systems transformation. There is no standard or perfect way of undertaking a foresight exercise. Instead, a diverse range approaches and tools need to be tailored to the specific needs of a particular context and particular group of stakeholders. There is a growing number of foresight studies and processes that clearly illustrate the power for foresight to support food systems transformation. Many examples are shown in this report. Some are more quantitative, and expert driven, while others are highly participatory being generated through lots of stakeholder dialogue. Foresight work has informed global debates, guided local projects, supported national policy development, and guided the strategies and investments of business.

At the global level, foresight studies are helping to frame the international debate on food systems, highlighting futures risks and opportunities for change. A series of key reports on strategic foresight by FAO have drawn together much data and analysis illustrating key trends. The latest report, on *The future of food and agriculture, drivers and triggers for transformation*, provides a comprehensive long-range perspective on the issues facing food systems and the implications for policy makers. An earlier study by the World Economic Forum, *Shaping the future of global food systems: a scenario analysis*, helped to open the debate in the agrifood sector about the negative consequences of business-as-usual approach. The CGIAR Foresight Initiative is contributing to a better understanding of regional and global megatrends.

Local, national and regional foresight exercises are helping to drive collective action and reform policies. There is a long way to go before foresight exercises become regular practice in transforming food systems. However, pioneering initiatives are showing the way. Early work done by the CGIAR research programme on Climate Change, Agriculture and Food Security (CCAFS) demonstrated the value of foresight for creating climate resilience. In the Pacific, an extensive foresight process has been used to help re-imagine how island states can sustainably prosper from their ocean fish resources. Foresight4Food has supported in-depth food systems foresight process in four focus countries – Bangladesh, Jordan, Kenya and Uganda. The West and Central African Council for Agricultural Research and Development (CORAF) identified foresight analysis as a pillar of its CORAF's Strategic Plan used foresight to co-design a plan for coordinating preparedness and response to pest and disease outbreaks with a climate change lens. The Forum for Agricultural Research in Africa (FARA) has established an Africa Foresight Academy and national support hubs.

Foresight Case Study

Foresight Decision-support for Food Systems Transformation: the FoSTr programme

Foresight supporting national food systems pathways: how can it be done?

The Foresight for Food Systems Transformation (FoSTr) programme, jointly implemented by the University of Oxford's Environmental Change Institute and Wageningen University & Research, is a three-year initiative (2022–2025) designed to support national food systems transformation in Bangladesh, Jordan, Kenya, and Uganda.

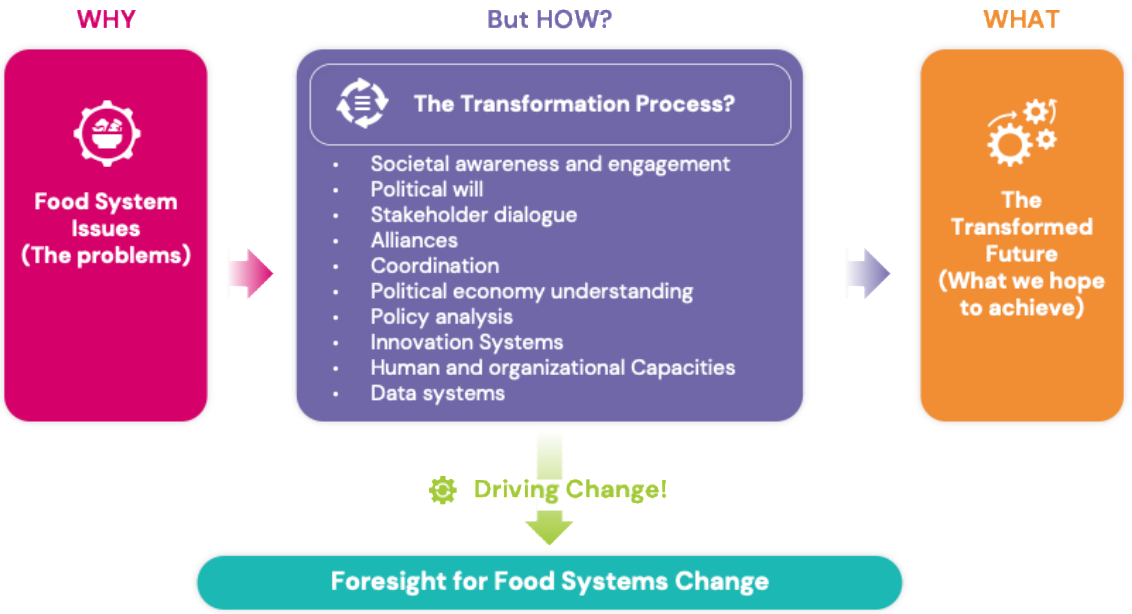
Funded by the Netherlands through IFAD, FoSTr facilitates participatory, country-led foresight and scenario analysis processes, engaging a broad range of stakeholders—including governments, research institutions, and community organizations—to co-create sustainable, healthy, equitable, and resilient food systems. The programme provides knowledge and facilitation support for organizing multi-stakeholder workshops, conducting food systems analyses, and building local capacity for foresight, while also fostering global knowledge-sharing through the Foresight4Food global network.

By generating participatory and evidence-supported scenarios and policy recommendations, FoSTr aims to empower leaders and decision-makers to anticipate future challenges, inform national agendas, and drive transformative change in food systems, with a strong emphasis on local ownership and multi-stakeholder engagement.

1.6 Facing the challenge of transformation

Transforming food systems requires deep thinking about how change happens. For people to engage in collaborative and cooperative processes of change they need to understand **why** change is needed, **what** to do, and **how** to do it. As illustrated in Figure 2, there is a lot of discussion about the problems facing food system, the why, as well as clear ambitions for what an improved food system could be like, the what. However, there is often for too little discussion about the how, in other words, the processes of transformation that will bring change. The how requires difficult discussions about changing economic incentives, politics, power relations, and who does or does not benefit from change.

Figure 2: Transforming food systems requires a focus on WHY, WHAT AND HOW



Food systems are complex and adaptive. Change cannot be 'engineered' in a top-down or in linear ways. Instead, systemic approaches to change are needed that recognise complexity and uncertainty. Systemic change involves shifting underlying incentives structures and signals that shape how individuals and organisation behave. This requires varying degrees of collective consensus on taking new directions and some sense of a collective vision for the future. Processes of systemic change can be strengthened by:

- Creating a shared understanding of the whole system
- Taking a long-term outlook and imagining alternative futures
- Integrating creative approaches to change that engage people emotionally with good science and a strong evidence base
- Establishing effective processes of stakeholder engagement and learning across government, business, civil society and research

II.

The role of foresight in transforming food systems

II The role of foresight in transforming food systems

Foresight can be a powerful way of engaging food system stakeholders to generate the understanding and commitment needed for change. Foresight helps to make the consequences of current trends in the food system explicit. For example, the future impacts of climate change, shifting dietary patterns, or changes in food trade, on the nutrition and food security of a country. This enables stakeholders to understand why making change is a necessary and sensible investment.

Foresight helps to prepare for uncertainty. It can help guide the development of food systems in ways that are more resilient to future shocks and pressures. In an increasingly turbulent world, it is important to think ahead and explore what factors could lead to different futures for the food system and the risks and opportunities these different futures may present.

Foresight processes help society to agree on what is wanted from food systems of the future. By exploring how food systems may change in the future and understanding the implications of these changes stakeholders can gain a deeper understanding of what they want from the food system. Such analysis also helps to understand the trade-offs and synergies for different food system outcomes.

2.1 What is foresight and scenario analysis?

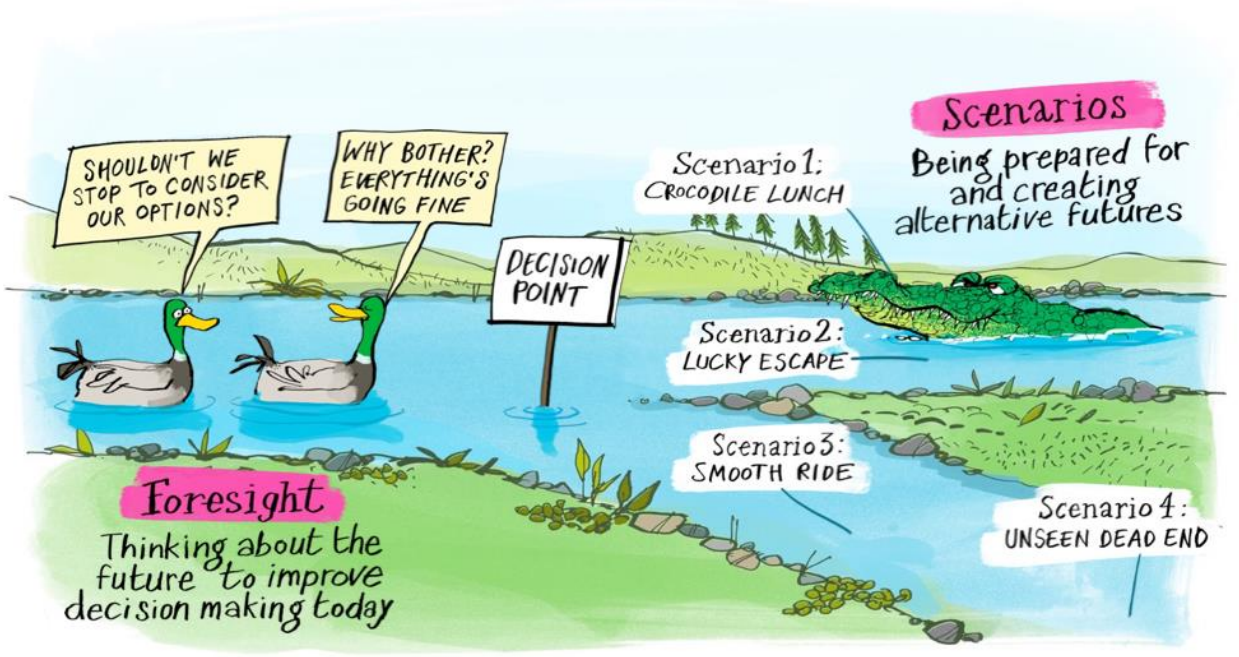
Quite simply, foresight is thinking about the future to improve today´s decision making. It supports taking a long-term and systems perspective to examine factors that may shape the future. This includes assessing current and emerging trends and exploring areas of uncertainty.

Foresight does not try to predict or project the future. Rather, it engages stakeholders in exploring what might lead to different futures and the consequences of these futures. This helps businesses, governments and citizens better prepare for future risks and opportunities, and bring clarity towards the future that individuals, differing interest groups or societies aspire towards.

Central to most foresight approaches is the development of future scenarios. As it is not possible to predict the future, scenarios are a way of exploring potential futures depending on the influence of various drivers and uncertainties. Uncertainties are factors which are difficult to predict but have the potential to significantly impact the future. Changing diets, the severity of climate-induced natural disasters, geopolitics, or the impacts of artificial intelligence, are examples of uncertainties that will have a significant impact on the future of food systems.

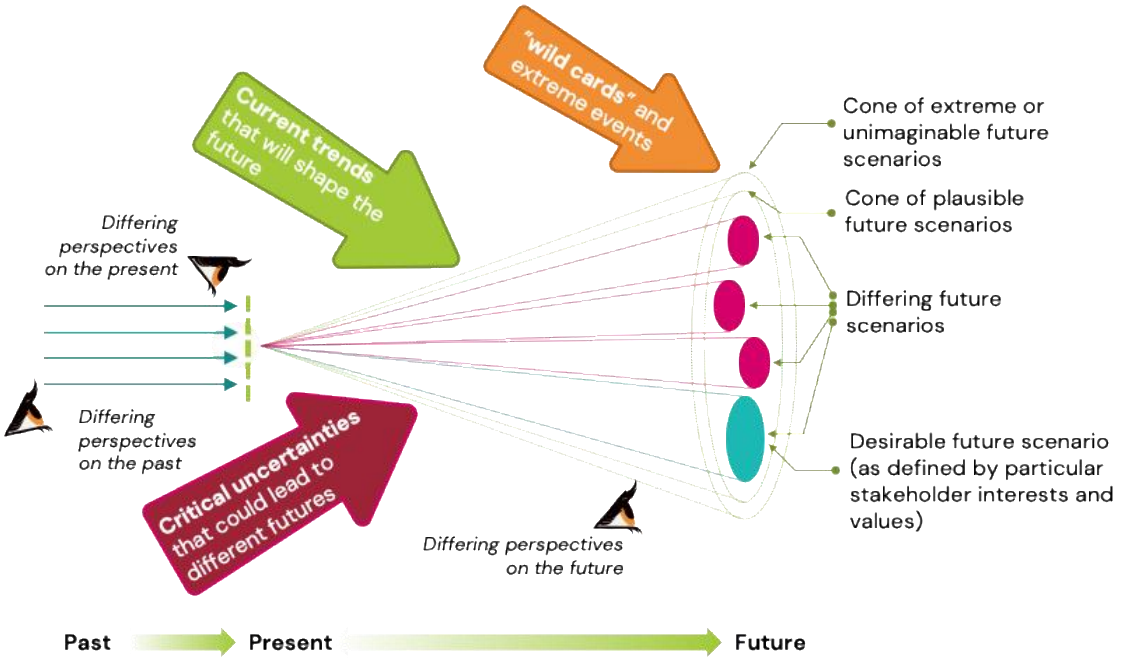
Foresight and scenario analysis help to see and better understand future risks and opportunities. As illustrated in Figure 3, foresight is thinking about the future to improve decision making today, while scenarios involve being prepared for and creating alternative futures. A key idea about foresight and scenario thinking is that it opens up more paths into the future. If we keep going on the same path without thinking about the future, we may well be missing critical opportunities and decision points.

Figure 3: Pictorial illustration of the essence of foresight and scenario analysis



The futures cone is a common way of illustrating the essence of scenario thinking. Figure 4 shows that as we move further into the future the cone of different possible futures gets wider and wider. These different futures are shaped by current trends critical uncertainties and extreme events. Not all possible futures can be imagined – things can happen that it is just impossible to conceive off. However, by thinking as widely as possible a diversity of different plausible scenarios can be imagined. These are scenarios that to the best of our understanding we think could potentially occur. For different stakeholders, different scenarios may be more or less desirable. It is important to recognize that foresight and scenario analysis are about bringing together different perspectives. The more diverse the perspectives around which scenarios are built, the more plausible and useful they are likely to be. It is also important to recognize that different stakeholder groups may have very different perspectives on today's issues and on the past.

Figure 4: The futures cone



Foresight Case Study

Applying foresight to food systems programming at sub-national level

Foresight might seem like a global or academic activity – but it can be a very practical process for supporting local action!

Foresight can support action at different levels, including to enhance the future-readiness of food systems programming within countries. Foresight4Food supported the inception phase of the World Food Programme-led 'Unlocking the Economic Potential Of Lake Turkana' programme in Kenya. This programme intends to lay the groundwork for transforming the region's fisheries sector into a driver of food security, sustainable livelihoods, and resilience for local communities. Supported by a 10 million Euro contribution from the Netherlands and additional funding from Germany, the programme was co-created with local governments and communities in Turkana and Marsabit counties to address challenges such as climate shocks, resource conflicts, and high post-harvest losses.

Using the Foresight4Food framework, local stakeholders were engaged to develop the detailed programme design and enhance local ownership. The inception process involved multiple local workshops and site visits, a series of research studies and two theory of change workshops. Using value chain analysis, trend analysis, scenarios, causal loop diagramming, a Systemic Theory of Change was developed for guiding the programme's implementation.

Box 4:
Ten questions that foresight helps to ask

04

01 What are the main drivers likely to shape the future of food systems?

02 What uncertainties, shocks or surprises could lead to food systems being very different in the future?

03 What are the likely future consequences of food systems continuing along a path of 'business as usual'?

04 What alternative scenarios for the future of food systems can be imagined?

05 What different future food system scenarios would be desirable or undesirable for who and why?

06 As a country what future for our food systems should we be working towards?

07 What drivers, forces and interests of different stakeholder groups are taking us towards or away from a more desirable future food system?

08 What leverage points or triggers for change could move food systems towards a more desirable future?

09 What alliances, partnerships and relationships are needed to bring desired change in food systems?

10 How can foresight become a constant process of assessing emerging drivers, changes and uncertainties to enable better learning, adaptation and resilience?

2.2 How foresight can support national food system transformation

The foresight process described in this guide can support national food systems transformation in multiple ways. Firstly, collating and organising data on food systems will facilitate decision-making by government, business, consumers and producers. Secondly, scenarios developed during a foresight exercise can illustrate the long-term economic, social, environmental and political consequences inaction, or of following alternative pathways for transformation. This can emphasize the need for food systems transformation more tangible for stakeholders and help to create urgency and encourage political will. Thirdly, foresight can enable governments and other actors in the food system to better prepare for future risks and opportunities, enabling a resilient food system. Finally, the foresight process engages all stakeholders in using scenarios to visualize the most desirable future and what strategies and actions would be needed to move towards that direction

Box 5:
Ways that foresight can support national food systems transformation

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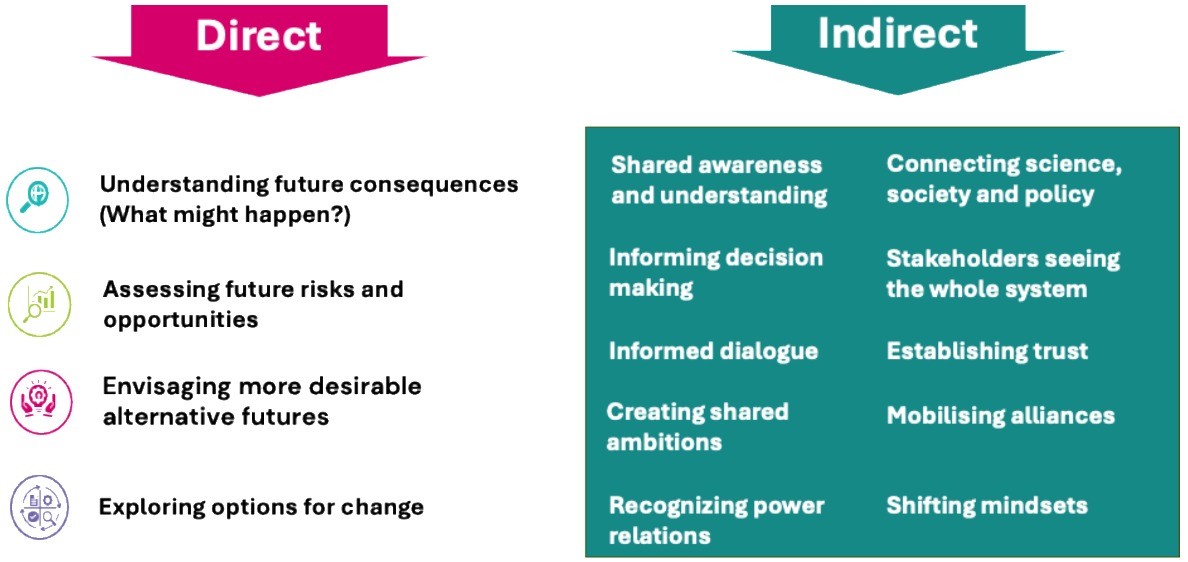
- Engaging all stakeholders in **understanding why change is needed.**
- Making explicit the **drivers** that are likely to shape how food systems evolve
- Identifying **future risks** to food security and good nutrition
- Exploring **opportunities for change** from new markets, innovative technologies, disruptive business models and shifting attitudes
- Bringing different sectors, interests and disciplines together to take a **systems view**
- Creating the processes and insight needed for **anticipatory and adaptive policy development**
- Helping to develop the **political will and societal understanding** needed for change.

Foresight can be used at different scales, across different sectors and for dealing with specific issues. Foresight and scenario analysis can be particularly valuable to help guide food systems transformation at the national scale. It can help to set overall national direction and guide policy innovation. However, to achieve food national goals much of the implementation must happen at local levels and within specific value chains. Foresight will be valuable in these contexts and can help to create coalitions and action. Foresight can also be applied to specific issues, such climate resilience, food loss and waste or improving diets.

There are many indirect benefits of a participatory and evidence-based foresight process that help to create an enabling environment for change. Foresight brings different actors together from across the food system, helping create shared awareness and understanding, stimulating dialogue, building trust, shifting mindsets and mobilising alliances. Although these are intangible aspects of making change possible, they create the foundations for collaborative action (see Figure 5).

Figure 5: The direct and indirect role of foresight in supporting food systems transformation



Foresight can assist organisations and businesses play their part in food systems transformation. Different organisations and businesses can undertake their own foresight processes to help them prepare more effectively for the future. These may be done in alignment with multi-stakeholder processes at national or local levels or within value chains. Individual stakeholder or business groups can also engage in developing and contributing their perspectives and concerns to the wider foresight process.

06

Box 6:
Example of a food systems vision from ASEAN

Participants and stakeholders from the Association of Southeast Asian Nations (ASEAN) have developed the vision of 'a resilient, biodiverse, and pollution-free agrifood system that provides healthy and nutritious food for all by 2050 in ASEAN'. This represent the end-goal as to why ASEAN need to transform the agriculture sector into low emissions. The pathways to achieving this vision have also been identified, but it is notable that ASEAN defines transformative action and enabling conditions to involve all stakeholders and forming alliances with global actors in order to achieve this vision.

ASEAN understands that reducing greenhouse gas emissions in agriculture involves evaluating agricultural production, value chains, and consumption patterns. There is also a recognition that climate-smart agriculture (CSA) is an integrated approach that tackles the interconnected challenges of food security and climate change by aiming to boost productivity, enhance resilience, and cut emissions simultaneously. Practices like low-emissions livestock management, alternate wetting and drying of rice paddies, reduced tillage, crop rotation, and organic farming can all reduce emissions.

Source: GIZ and ASEAN to scale up climate actions for resilient and low-emission landscapes in Asia and the Pacific

Foresight should be an ongoing process. Engagement with foresight and scenario exercises are often inconsistent. This approach misses the point of foresight. The purpose of foresight is to acknowledge and prepare for an uncertain and unpredictable future. Ideally foresight will be an ongoing process that helps decision makers be adaptive and responsive to changing dynamics. For example, if a country has done a foresight exercise, stakeholders and policy makers should review this on an annual basis constantly looking into the future to spot new trends and uncertainties.

2.3 Assessing drivers of change

A powerful part of the foresight process is identifying all the possible drivers which may shape the future of a food system. Figure 6 outlines six different types of drivers to consider when doing a horizon scan, and Figure 7 illustrates areas to look at to ensure a comprehensive assessment.

Most foresight and scenario approaches involve identifying critical uncertainties. These are existing or potential drivers of change which could have a significant impact but remain highly uncertain. Examples impacting food systems include future dietary changes, the degree to which food systems become climate resilient, regional and global trade dynamics, or the effects of novel ways of food production.

Figure 6: Different types of drivers to consider when doing foresight

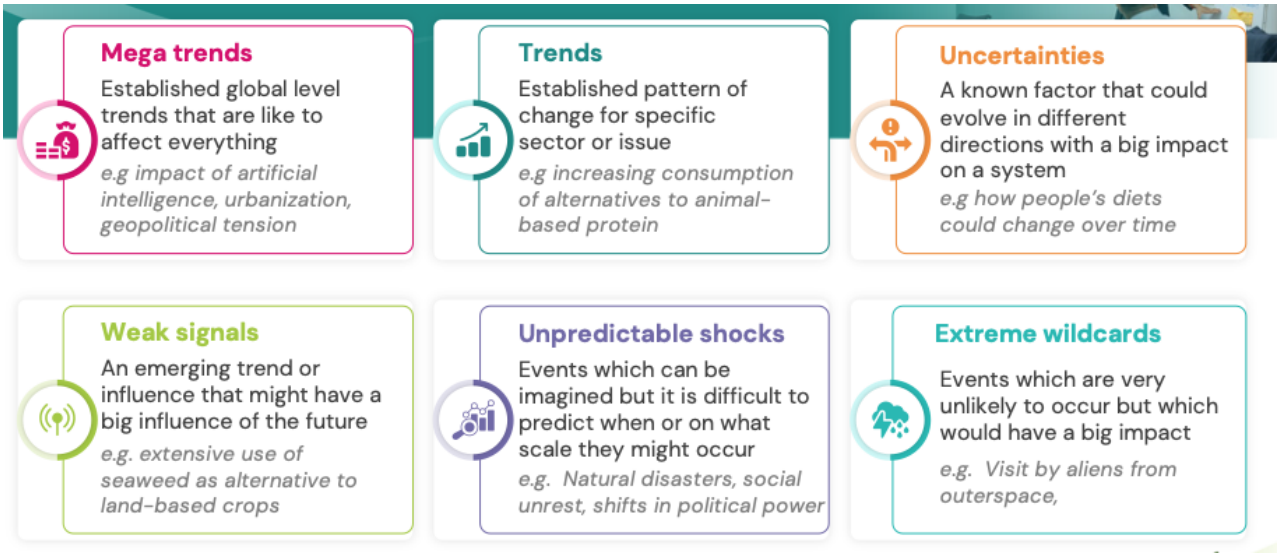
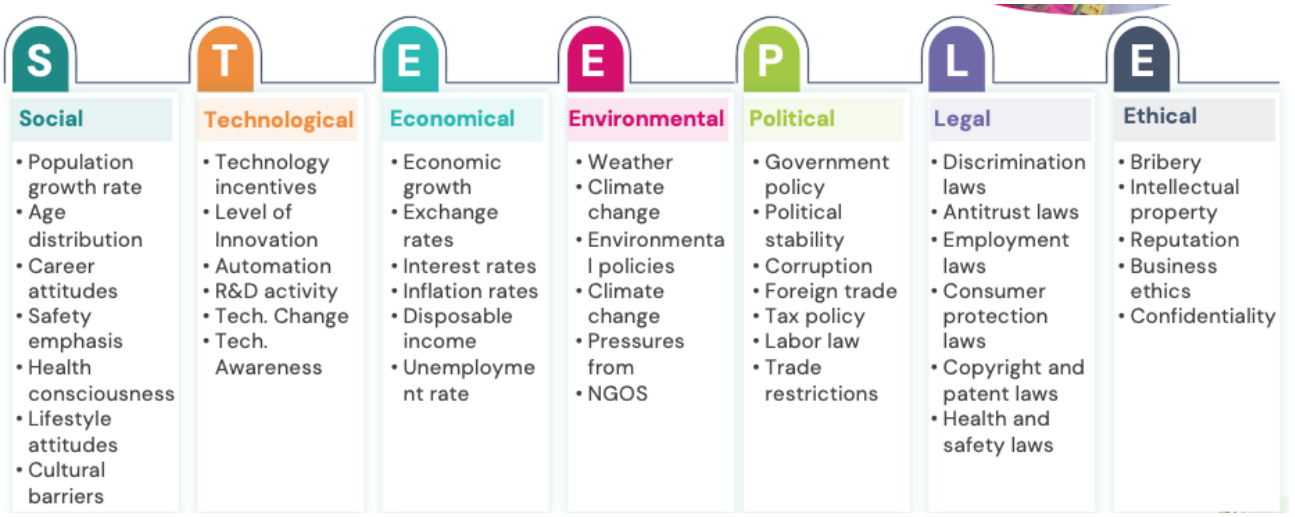


Figure 7: The STEEPLE approach to exploring different drivers of change



2.4 Exploring alternative scenarios

Scenarios help stakeholders imagine how food systems might look in the future. By examining the drivers of change that impact food systems and exploring critical uncertainties, stakeholders can construct alternative futures scenarios. What would a country's food system look like if everyone followed a healthy or unhealthy diet? How might low or high levels of resilience to climate change impact the food systems? Or what would the food system look like under different regimes of trade (more local or global)? Scenario planning helps stakeholders to envisage a range of different food system scenarios, all of which could be plausible – they might happen.

Scenarios enable stakeholders to understand the consequences and risks of how food systems may evolve. Once developed, a set of food systems scenarios enables stakeholders to explore the likely consequences and risks of possible scenarios for different stakeholder groups, and for society overall. For example, what are the potential consequences for public health if most people consumed a highly processed, high fat, high salt or high sugar diet? Different scenarios may have different consequences for different stakeholders. An unhealthy diet could reflect positively on the profits of private-sector companies such as those producing snack foods or medicines for diabetes but bad for government finances and individuals' health costs. Scenarios also help to provide a deeper understanding of trade-offs and synergies when exploring how to bring about food systems transformation.

2.5 Exploring alternative scenarios

The foresight and scenario process helps stakeholders envisage what they consider to be desirable future scenarios, collectively or for individual actors. This helps to develop a long-term vision and set shared goals for food system transformation.

Scenario thinking unpacks stakeholder views and assumptions about desirable futures. By examining possible futures, stakeholders can be more explicit about why they view a particular scenario as most desirable. This can create a deeper understanding of the interests of different stakeholders, making it easier to develop shared goals.

Scenario planning helps to make constraining and enabling factors more visible and explicit. It is easy to develop a utopian vision of the future, but not so easy to achieve it. Linking foresight and scenario planning with developing future visions and strategies brings a more rigorous analysis of the barriers and enablers of change, helping to make visions more realistic.

07

Box 7:
Exploring different scenarios about how the future assists decision makers in four ways:

01 *Being better prepared for a range of different situations that may have to be faced in the future.*

02 *Helping to create the understanding, vision and ambitions needed to steer towards more desirable futures and away from less desirable ones.*

03 *Providing a basis for assessing a range of different options and pathways for realising policy objectives.*

04 *Stress testing how effective different policy, strategy, and investment options might be in different scenarios*

Foresight Case Study

The Future of Youth in African Food Systems

Youth are central to foresight, as they will live in the future. How can we involve them in foresight for food systems?

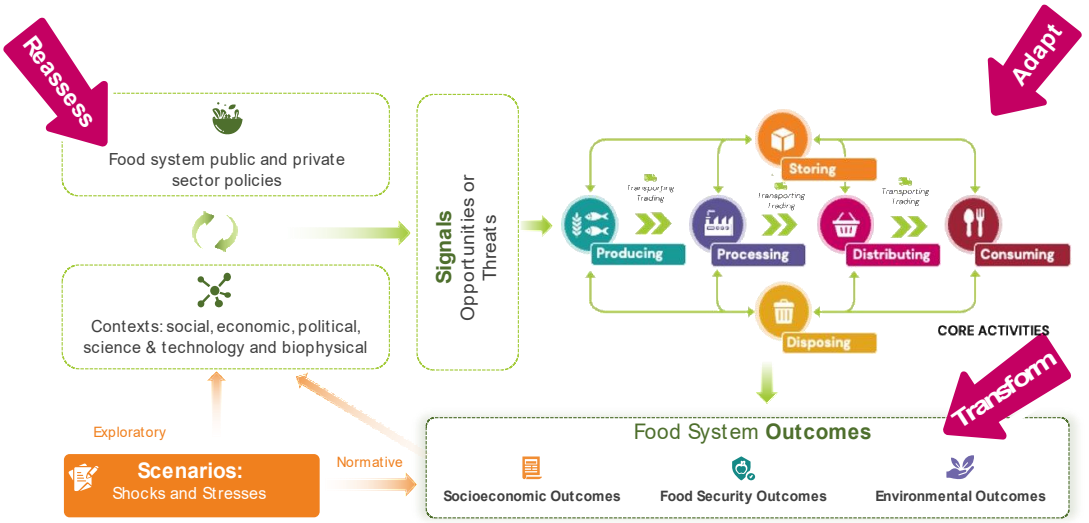
Mastercard Foundation, Forum for Agricultural Research in Africa (FARA), AGRA and Foresight4Food collaborated to conduct a comprehensive foresight analysis focused on the future of youth employment in Africa's agri-food sector. This involved a series of participatory workshops and capacity-building sessions in Mombasa and Naivasha in 2023, which engaged dozens of young leaders and sector experts from across the continent. These activities aimed to identify opportunities and risks for dignified youth employment, develop youth-driven scenarios for the future, and equip participants with foresight and systems thinking skills to drive transformative change in agri-food systems. The project produced key resources, including scenario analyses, policy recommendations, and a competency framework, all designed to inform policy, guide investment, and support youth-centred strategies for sustainable and equitable food systems transformation in Africa. Key recommendations emerging from this trajectory were brought to the Africa Food Systems Forum 2023, where African youth advocated for enhanced opportunities for youth employment and economic participation in the Africa's agri-food system.

2.6 Working with levers of systems change

Levers of systems change are the strategic entry points through which deeper, lasting change can be catalysed. These levers include policy and regulatory reform to align incentives with sustainability and health goals; shifts in financial flows to de-risk and scale investment in climate-resilient and equitable food systems; innovation and technology development that is accessible and appropriate for diverse contexts; changes in consumer behaviour driven by education, pricing, and labelling; and inclusive governance mechanisms that amplify the voices of marginalized groups, including smallholder farmers, women, and Indigenous communities. Acting on these levers in an integrated and coordinated manner can help disrupt entrenched power dynamics, rebalance incentives, and accelerate progress toward food systems that are equitable, resilient, and regenerative.

A transformed food system means it will be delivering more desirable outcomes in terms of food security and health, the economy and the environment. To transform the outcomes of the food system means that the behaviours of actors in the system must change, Figure 8. For that, incentives must also change, with actors getting new signals about opportunities or threats that will motivate them to do things differently. In turn, the incentives and signals are influenced by the policies and strategies of government and of private sector actors. These need to be reassessed and reformed to drive change.

Figure 8: Transforming the outcomes of food systems requires adapting actors behaviors, through the signals they receive, and reassessing policies

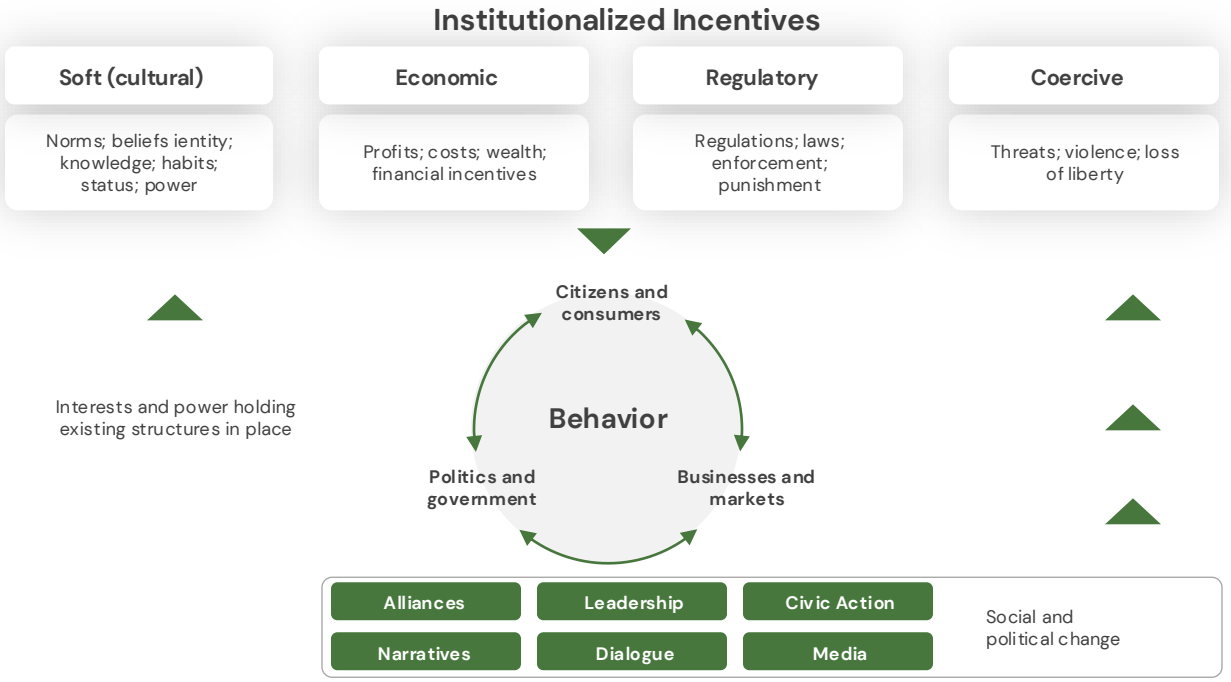


Source: See Ingram and Thornton (2022)

Understanding the incentives (and disincentives) influencing how consumers, producers, businesses and government behave is key to transforming food systems.

The way individual humans, organisations and businesses behave is due to a very complex set of interacting incentives, see Figure 9. These incentives can be soft, cultural, economic, regulatory or coercive. For example, what a child eats will be influenced by social and family norms, the cost of food, regulations such as for food safety or additives, and possibly parental threats around eating or not eating certain foods. Incentives often become institutionalised and are hard to change. For example, cultural food preferences, or government policies and subsidies that benefit a particular sector. Existing power structures often try to hold these existing incentives in places as they maintain the status quo. Social and political change is generally needed shift incentive structures and may involve creating new alliances, mobilising civic action, bringing different groups into dialogue and shifting narratives about the food system.

Figure 9: Different types of incentives influencing behaviour



Exploiting synergies for transformation while managing and overcoming trade-offs is key to leveraging change. The foresight process can help to develop a much deeper understanding of where synergies and trade-offs lie. Bringing change will not always be a win-win for all stakeholders. Thus, to leverage change when a particular group of stakeholders do not see the change as being in their interests requires careful analysis. Sometimes a stakeholder group may just not have thought about how a different situation could be in their interest. Other times, in may be necessary to find ways of offering different incentives, compensation or transition pathways. For the wider public good there will also be times where government needs to make policies and decisions for the collective benefit of all.

Transforming food systems requires tackling the deeper enablers and barriers to systems change. Often this will require changing mindsets, mental models and paradigms, as well as influencing power dynamics and shifting relations and connections between different food system actors. The conditions for systems change framework is a useful model for engaging food system stakeholders in exploring how to bring about transformation, see Figure 10.

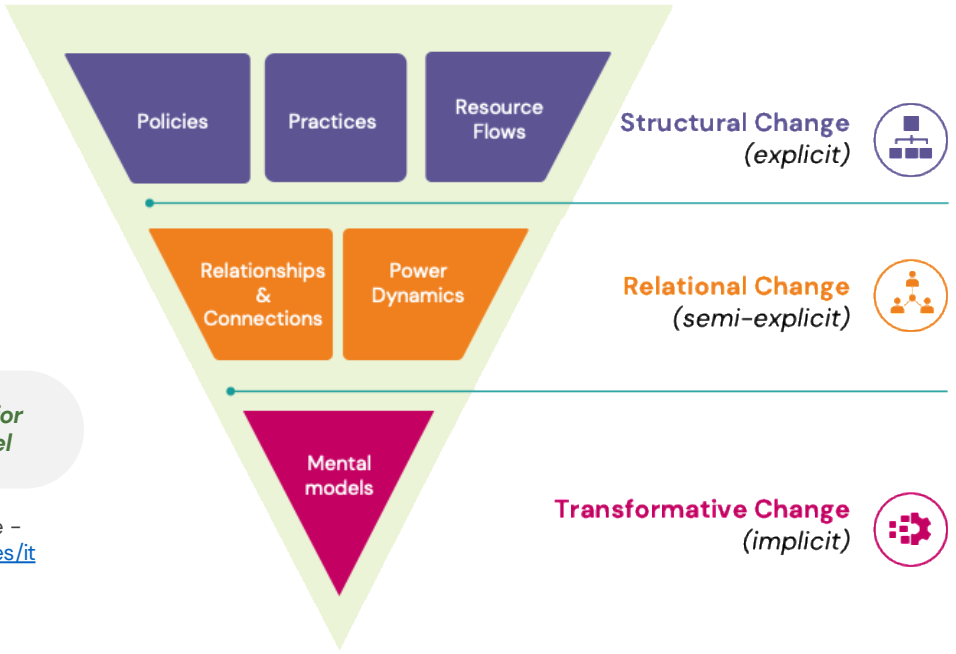


Figure 10: Conditions for systems change model

Source: Water of Systems Change - https://www.hbs.edu/faculty/Pages/item.aspx?num=60908

Foresight Case Study

Participatory foresight in practice: learning from the Pacific Region

Putting foresight into practice in key decision-making spaces, in an inclusive way – how can this be done?

Transforming food systems outcomes in the Pacific region means looking at health, environment, fishing and global trade, much more than just agriculture. The Pacific Community (SPC) has been strengthening food systems across the Pacific region, by integrating foresight approaches with strategic planning, scientific expertise, and inclusive stakeholder engagement. SPC has developed and deployed the *Pacific Pathfinder Toolkit*, co-designed with member countries to facilitate futures thinking, horizon scanning, scenario building, and strategy testing. Through flagship programs and regional collaborations, SPC holistically addresses interconnected issues such as nutrition, climate resilience, sustainable production, and equitable food access, connecting across disciplines of agriculture, fisheries, health, and environmental science. At the same time, a strong reference is made to traditional knowledge and indigenous coastal food practices. This foresight-driven approach ensures that food systems strategies are robust, contextually relevant, and aligned with both national priorities and the region's long-term vision for resilient, healthy, and prosperous Pacific communities.

III.

Guidelines for setting up a foresight process

III Guidelines for setting up a foresight process

This section looks at the practicalities of designing and implementing a foresight process. It draws on a framework developed by Foresight4Food. A foresight process can range from a short single session in a meeting or a workshop through to very in-depth process run over many months and involving a wide range of different stakeholders and technical experts. Foresight processes can be done largely by technical experts and researchers or be highly participatory involving many different stakeholders from across the food system.

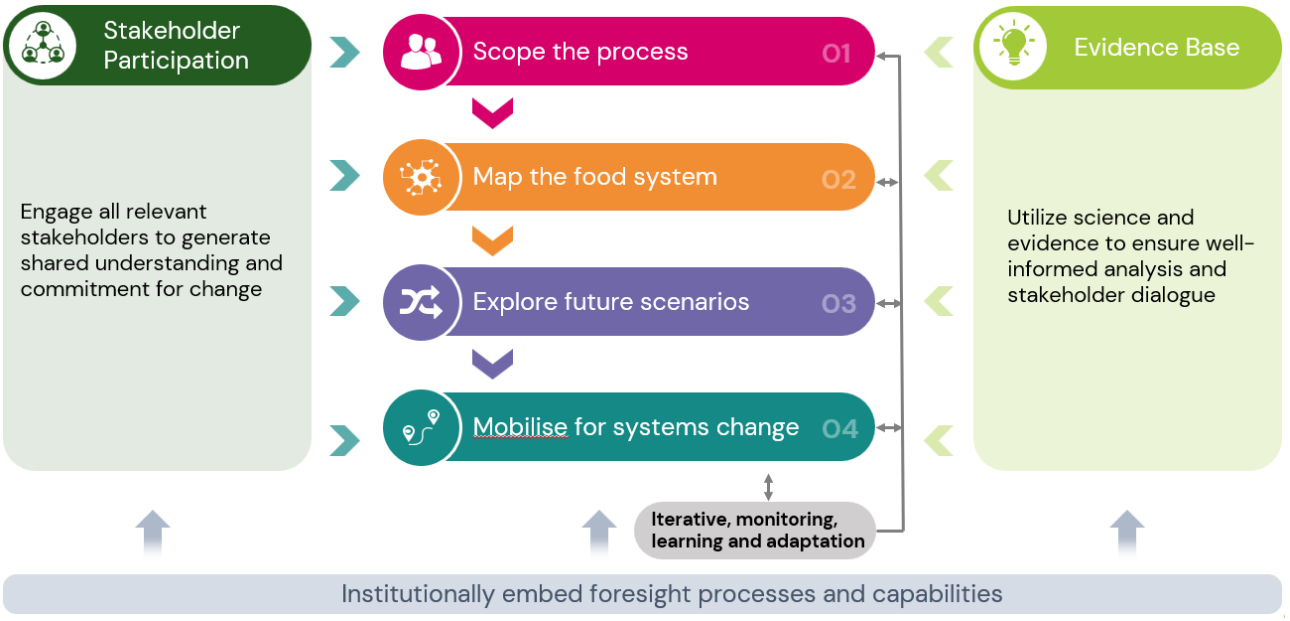
3.1 The Foresight4Food foresight framework for food systems change

To use foresight for food systems transformation, the Foresight4Food Initiative has developed a guiding framework. Illustrated in Figure 11, the framework has four main phases to guide users through setting up a foresight exercise, mapping the food system that is their focus, exploring factors that will shape the future of the food system, and understanding the types of interventions that could leverage positive change. For each phase, there is a series of guiding tasks and a set of participatory and analytical tools.

The framework emphasizes integrating the use of evidence with participatory processes of stakeholder engagement. A core assumption of the Foresight4Food framework is the value of stakeholder dialogue that engages all actors in the food system including government, business, civil society, researchers, consumers, producers, and marginalized groups. For this engagement and dialogue to be effective and lead to positive change, it needs to be well informed by good data and the latest science. Information should be presented in visual ways that can be easily understood by all stakeholders. Computer modelling can also be used to help better understand the longer-term implications of business as usual and alternative pathways of food systems change.

The foresight framework links scenario methods with system mapping and systemic theory of change to provide a holistic approach to food systems transformation. Futures thinking and scenario analysis are very valuable, but on its own is not enough to understand the whole system and drive change. For this reason, the framework has a detailed phase on understanding and mapping the food system, and a phase on mobilizing for systems change. This last phase of the process looks at how to bring about change in complex and adaptive (food) systems. This includes understanding power dynamics, mindsets and incentives structures that shape how actors in the food system behave. This requires a good understanding of the political economy of food systems and how power relations can enable or constrain opportunities for change.

Figure 11: The Foresight4Food Framework of foresight for food systems change



3.2 Key tasks in a foresight process

Figure 12 lists the key tasks to be considered in each phase of the foresight process. However, remember that foresight will mostly be an iterative rather than a linear process. Therefore, you will likely need to go back and forth between phases and tasks. It also needs to be tailored to the specific context, the needs of stakeholders and available capabilities and resources.

Figure 12 : The key tasks of a foresight process

Scope the process 01

1. **Understand the reasons** and ambitions for undertaking a foresight process.
2. **Identify key stakeholders** and explore their concerns, interests, ambitions and influence.
3. **Establish mechanisms to guide** the foresight process and to keep stakeholders engaged and informed.
4. **Clarify the purpose, focus and key questions and** of the foresight process.
5. **Outline an overall foresight process,** including monitoring, and identify the necessary financial, knowledge and human resources.

Map the food system

1. Clarify the **boundaries** of the food system(s) being mapped.
2. Engage stakeholders in **understanding the food system** in terms outcomes, activities, drivers and relationships.
3. Collect, synthesize, and graphically illustrate **key information** about the current status and future trends of the food system.
4. Assess the political economy, and power relations of the food system to **understand enabling and constraining factors** for change.
5. Clarify **key relationships**, dynamics, trade-offs and synergies in the food system which need to be understood, and identify additional information needed to support the foresight process.

Explore future scenarios 03

1. **Decide on the best scenario/ futures approach** to use given the context and foresight purpose and clarify focusing questions.
2. **Identify the key drivers** and associated key trends and critical uncertainties likely to shape the future of the food system.
3. **Develop** a number (often 4) of **plausible future scenarios** using key trends and critical uncertainties.
4. **Create story lines** for each scenario, including using **back casting** to illustrate how the scenario could emerge.
5. **Assess the implications** of the scenarios for the interests of different stakeholders and for society overall.

Mobilize for systems change 04

1. **Generate shared visions** and **desired outcomes** for the future of the food system based on the scenarios.
2. **Explore options and conditions for systems change** considering institutional structures, technologies, relationships and power, and mental models (mindsets and values).
3. **Articulate pathways of change**, including, direction, principles, policies interventions, and stakeholder roles, responsibilities and actions.
4. **Build partnerships and alliances** to gain societal support, establish political will, shift power structures, and take action.
5. **Establish processes** necessary for innovation, research and learning, effective governance, collective action and adaptive management.

3.3 Methods and tools

Each phase of the foresight process is using different tools, Figure 13. The scoping phase uses mainly project management tools. The mapping the food system phase is relying on systems analysis, the exploring future scenarios phase is using a range of futures and scenario analysis tools, and the mobilizing for systems change phase is making use of systems change tools.

Figure 13: Tools used in the Foresight4Food Framework

Foresight Case Study

Foresight, climate change and food systems: CCAFS

What powerful, rich examples are there that generated valuable lessons on the interface of climate, food and foresight?

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has played a pivotal role in enhancing the use of foresight for transformation by integrating foresight analysis and priority setting as core components of its research and policy engagement strategies. Through initiatives such as the CCAFS Scenarios Project, CCAFS has enabled policymakers and stakeholders to anticipate and prepare for climate-related uncertainties by developing and applying participatory scenario-building processes that inform national policy development across multiple regions, such as South East Asia. This approach has fostered more inclusive and pluralistic planning processes, allowing for the consideration of diverse future challenges, risks, and opportunities in climate adaptation and sustainability transformations. By embedding foresight into its research flagships and capacity-building activities, CCAFS has strengthened institutional capacities, guided strategic investments, and ensured that interventions are robust and future-proofed, ultimately supporting the transformation toward climate-resilient food systems.

3.4 How does a foresight process look like in practice?

You can design a foresight process in many ways. How long it takes and how much detail it covers will depend on your purpose and needs. A comprehensive foresight process might take up to a year with a range of different workshops and meetings, supported by research, data gathering and technical analysis, Figure 14. Alternatively, you could run a quick scenario planning exercise for 1-2 hours as part of a workshop or meeting.

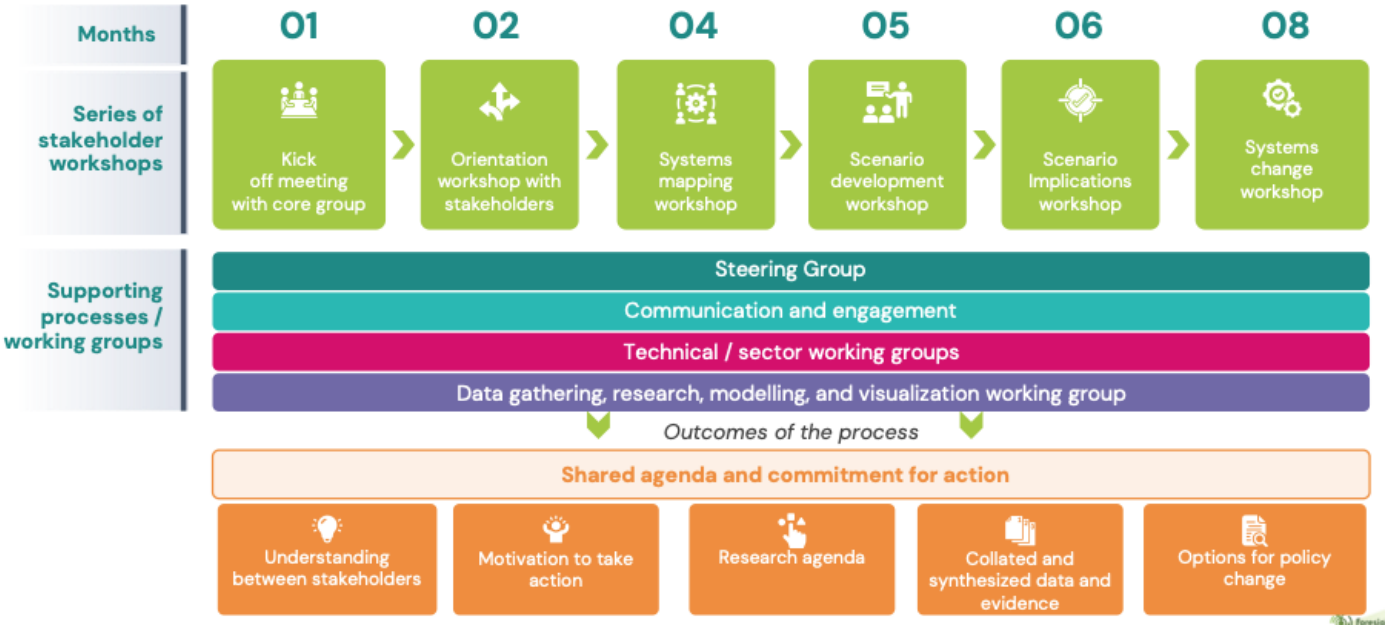
To run a comprehensive participatory foresight process will require 3-5 days of workshop time. This would include working through each of the core tools in each phase of the foresight framework. There are 16 different core tools, and each one takes about two hours in a workshop setting. In most situations it probably makes sense to have a series of workshops of one or two days spread out over time. If needed, you could also work through the whole process in a single multi-day workshop.

It is important to recognise that the participatory workshop activities are only part of the process. Alongside these, there are many other supporting activities that all need to come together to create an effective foresight process.

These include:

- Setting up and running a steering group
- Engaging bilaterally with key leaders and stakeholder representatives to gain their support
- Conducting research and data gathering potentially supported by a technical working group
- Having a communications plan and profiling the foresight process and its outcomes with stakeholders not directly engaged
- Connecting with key policy makers and political leaders

Figure 14: Illustrative time line and activities of foresight process



3.5 Organisational and logistical arrangements

An effective foresight process requires good organisation. There needs to be effective leadership, quality facilitation, adequate resources and good planning, Figure 15. Good communication between all those involved in the process is also vital.

A lot of thinking goes into designing and executing a good participatory workshop. It is very helpful to have the support of people who have expertise and experience in how to use different participatory foresight tools, how long they take, and the materials and resources needed. The detail of planning is also important. For example, having name tags that can be easily read, making sure necessary sound or video equipment is available and functioning, or ensuring that good notes are taken and there is a good report from the workshop, as well as a clear follow up list of actions.

Skilled facilitation is key to running a process that is engaging, builds trust, tackles difficult issues and deepens understanding. Too often what are called 'participatory' workshops are in fact an endless set of presentations. It is vital to have confident facilitators who have experience in both participatory methods and foresight processes.

The legitimacy of a foresight process will hinge on who is seen to be the leading and guiding the exercise. To gain support for a foresight exercise it will often be important to have respected leaders involved in or championing the effort. However, if one particular stakeholder group is seen to be in control or dominating, this may undermine legitimacy and discourage other stakeholder groups for fully engaging. In setting up a foresight process consider if some form of multi-stakeholder steering group might be needed, or if the process can be guided by a group that is as being 'honest brokers'.

Figure 15: Organisational and logistical considerations

01 Who will guide and lead the foresight process?

02 Do you have the support from champions across different stakeholder groups?

03 What sort of steering or advisory group might need to be set up?

04 Do you have skilled facilitators to help with stakeholder workshops?

05 Do you have the necessary financial and human resources?

06 Do you have technical and scientific support to ensure reliable information?

Foresight Case Study

Enhancing foresight facilitation capacities

What is needed to build capacities that will enable the insights from foresight to be applied?

A huge gap exists between the idea of foresight, and the much-needed capacities needed facilitate participatory multi-stakeholder foresight processes that build shared understanding and future-oriented thinking. Building capacity is crucial to support dynamic and complex food systems transformation processes. Examples of such capacity building initiatives include:

- Foresight4Food's collaboration with ICIMOD in Nepal involved a one-week training to partners, equipping them with practical tools for scenario analysis, systems mapping, and stakeholder engagement. Participants from government agencies, NGOs, academia, and development organizations across the Hindu Kush Himalaya (HKH) region were introduced to Foresight4Food's framework for food systems change.
- The Leaders Capacity Development Workshop in Naivasha, Kenya, supported by MasterCard and FARA, brought together over fifty young leaders from across Africa and beyond to develop facilitation skills for foresight, using participatory methods and real-world case studies—such as the Kenyan horticulture sector—to analyse future scenarios and co-create visions for sustainable food systems. These efforts also cultivate networks of facilitators who can drive inclusive dialogue, integrate diverse perspectives, and translate scenario insights into actionable policy recommendations, ensuring that transformation processes are both locally relevant and resilient.
- The UN Global Pulse Initiative seeks to accelerate evidence and experimentation-based learning. Through experiments across the United Nations ecosystem, UNGP collected key insights, tools and resources that stakeholders might find useful for their own foresight journeys.

IV.

Institutionalising foresight

IV Institutionalising foresight

Central to having a successful, iterative process of using futures thinking is a conscious approach to institutional embedding. Foresight can risk becoming a one-off exercise, a piecemeal operation, or simply an activity conducted by external experts or consultants. Similarly, foresight is often conducted at the beginning of a policy or strategy process (such as the agenda setting or policy formulation stage). This hampers the potential of foresight in later stages involving learning, anticipatory governance or evaluation of policy. Overall, lack of embedding of foresight may lead to ineffective foresight efforts and thereby loss of investment. At the same time, this also negatively influences the development of foresight practice into a full-fledged policy support mechanism (De Vito and Taffoni, 2023).

Many organisations, companies and governments are putting in place mechanisms for ensuring foresight capabilities and processes are embedded. Governments like the government of Singapore, United Kingdom and Finland, as well as the European Union have put in place special advisory bodies and mechanisms to conduct ongoing foresight initiatives such as trends analysis, horizon scanning and scenario development. Key institutes such as the Organisation for Economic Co-operation and Development (OECD) and the World Economic Forum (WEF) have invested heavily in foresight capabilities and approaches to support their network members.

There are a number of ways to ensure foresight is embedded institutionally:

01 Establish dedicated foresight structures and units

Create institutional structures such as strategic foresight units or teams within government agencies, equipped with clear mandates, resources, and authority to advise on long-term strategic decisions and integrate foresight into policy cycles. These units should be supported by legal or regulatory frameworks to ensure their continuity and impact. For example, the Singapore Government's Centre for Strategic Futures is meant as an 'agile public service' to support Singapore to manage complex and fast-changing environments.

02 Integrate foresight into policy and decision-making processes

Putting in place internal procedures and policies that require foresight principles and approaches to be integrated systematically into existing policy-making processes, structures, and timetables, rather than relying solely on external consultants or ad hoc exercises. Ensure foresight outputs are directly linked to policy actions, closing the gap between analysis and implementation (for more information, see OECD Observatory for Public Sector Innovation).

03 Nurturing a foresight culture

Adopt systemic approaches that stimulate a futures-oriented culture through high-level sponsorship, clear mandates, institutional arrangements, and integration with policy arenas. Professionalize foresight practice by supporting specialized agencies and career development for foresight practitioners. For example, Sitra, in Finland is set up as an innovation fund, supported by the Finnish parliament, to anticipate the future, innovate, and renew Finland's society. The mandate goes beyond supporting government decision-making, rather engaging with wider society as a 'builder of preconditions for reforms'.

04 Ensuring capacity-sustaining internal processes and cross-departmental exchange

Invest in training of staff at all levels on foresight, futures literacy and foresight tools, and support the use of this knowledge in daily practice. Here, it is important to link across departments and organisational levels to exchange ideas, encourage critical thinking and encourage ongoing learning.

05 Leverage digital tools and knowledge platforms

The growing availability of a diversity of off-line, online and digital tools is making foresight techniques much more accessible. Now, many foresight analyses can be conducted through platforms and research libraries. Increasing opportunities now being unlocked through Artificial Intelligence offer the opportunity to conduct trend analyses and horizon scans at lower thresholds.

06 Encourage networks and communities of practice

Finally, learning across countries, sectors and parts of society is key to support engagement with complex change processes. Here, it is highly valuable to participate in national and international foresight networks (e.g., the OECD Government Foresight Community; African Foresight Academy, Foresight4Food network) to: share methodologies, experiences, and innovations; to strengthen collective foresight capacity; and to connect across disciplines and contexts.

V.

Using participatory methods and tools to engage stakeholders

V Using participatory methods and tools to engage stakeholders

Participatory methods and tools enable stakeholders to engage in constructive, creative, and structured dialogue about how to transform food systems. Used in the right way and by combining different tools into a flow of analysis these tools help to build shared understanding of the food systems, identify options and directions for change, and create collective commitments for action.

Below is a sample of some of the core tools used in the foresight process are illustrated for inspiration. A more comprehensive list of tools and explanations of how to use them can be found in the Foresight4Food Foresight For Food Systems Change Process Guide & Toolkit. There are also many other toolkits about methods and tools for foresight and systems change which are listed in the resources section of this guide.

These tools are mainly designed for workshop settings with a diverse group of stakeholders. However, they can equally well be used as analytical tools for any research process that is supporting food systems transformation efforts.

The effectiveness of these tools in a multi-stakeholder workshop setting will always depend on quality facilitation and good workshop design. It is important that participants are given enough time to work properly through the tool, instructions need to be clear, and small group sessions need to be well guided to ensure everyone is able to contribute equally. For most of these tools it is best if they are done in a small group setting of about seven people.

5.1 Rich pictures

For systems thinking, rich pictures are a classic but powerful tool, see Figure 16. Done in small groups of about 5-10 people, participants quickly develop a drawing of the system they are studying. As they say, a picture tells a thousand words, and this process enables a shared understanding of the whole system, and differing perspectives to be rapidly developed. Rich pictures are also fun, and a group of people trying to illustrate their ideas and thoughts using pictures often brings a lot of laughter into the room. Done well, they break tension and foster a safe space for a holistic discussion as participants build on each other's idea to illustrate the whole system.

Figure 16: example of a rich picture

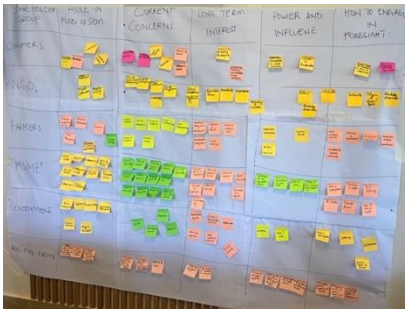
Figure 17: Workshop participants developing a rich picture

5.2 Stakeholder mapping

Understanding who the stakeholder are in a food system is a foundation for any change process. Mapping out stakeholders can be done before or after a rich picture exercise and it will often be an iterative process of expanding the understanding of the different players in the system. The stakeholder mapping should not only list stakeholder but also explore their role in the food system, current concerns, longer-term interests, power and influence, and they might be engaged in the foresight process, see Figure 18. This is essential to make sure that the foresight process relates to the interests of key players in the food system, and that less-powerful players are also included in the process, heard, and participate in decision making.

Figure 18: A stakeholder analysis matrix

Stakeholder Group	Role in food system	Current concerns	Longer term interests	Power and influence	How to engage in foresight



5.3 Data gallery walk

Systems and foresight analysis needs to be based on good data and information. Putting data 'on the table' helps stakeholders to check and challenge the assumptions they or others might be making. As part of the foresight process, the concept of a 'data walk' was developed. This involves placing on walls lots of different graphs, charts, tables, and infographics showing information and trends illustrating different dimensions of a food system. For example, charts showing urbanisation changing food consumption patterns, level of food insecurity, changes in health status, water in agriculture or the impacts of climate change on yields. Data walks are great for getting participants to examine their own beliefs and assumptions in relation to available data, as well as to gain a birds' eye perspective on how trends are influencing food systems and driving towards desirable or undesirable outcomes. Figure 18 illustrates some of the data that could be collected in relation to the food systems model, while figure 19 shows a data walk in progress.

Figure 19: Illustration of data and indicators that can be collected about a food system

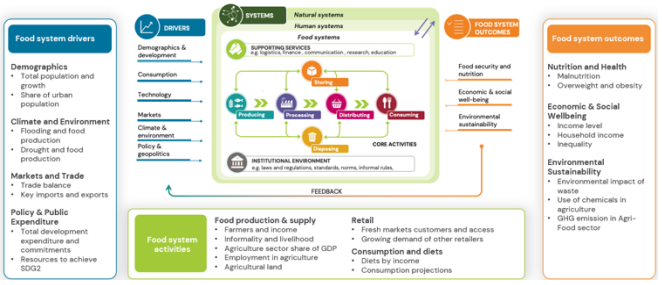
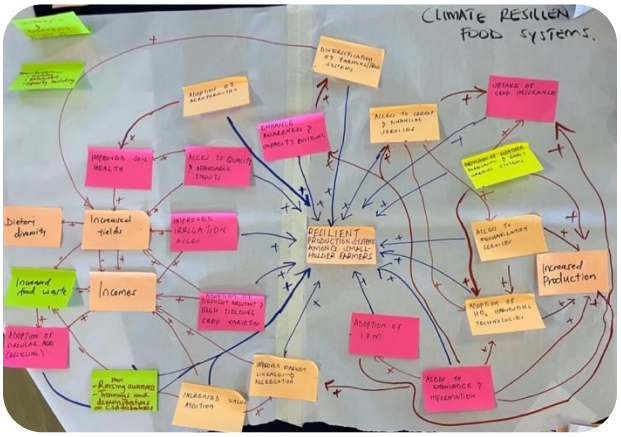


Figure 20: Workshop participants doing a data walk

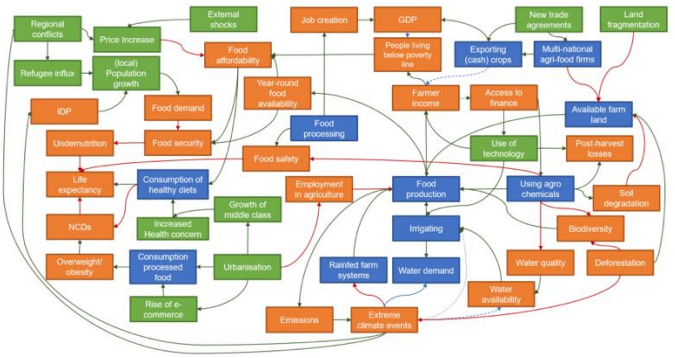
5.4 Causal loop diagramming

Causal loop diagrams (CLDs) are a very powerful tool for looking deeper into how a food system, or part of a food systems is functioning, Figures 21-22. The CLD process identifies how many different factors influence each other and the relations between them. Drawing these causal links allows for a better understanding of the feedback loops, lock-ins, trade-offs, synergies and leverage points in the food system. CLDs can be used both in the systems mapping phase of the foresight process as well as for identifying leverage points for systems change. CLDs can also be turned into quantitative models enabling more rigorous analysis.

- *Figure 21: Example 1 of a CLD*



- *Figure 22: Example 2 of a CLD*



5.5 Drivers of change matrix

Identifying drivers and categorising these into key trends and critical uncertainties is a vital part of the foresight process. Thinking deeply about critical uncertainties – things that could shape the future of a food system in very different ways – is often a very insightful process for stakeholders. For this tool stakeholders first brainstorm as many different ideas about any factor that may influence the future of the food system. They can then be clustered into common groups. Then, each category of drivers is placed on the driver matrix (Figure 23 and 24) according to its level of impact on the system and its level of uncertainty. The brainstorming is often done in pairs or small groups, while the clustering and placing on the matrix can be done in plenary with lots of interaction about where on the matrix a driver should be placed.

Figure 23: Trend and uncertainty matrix

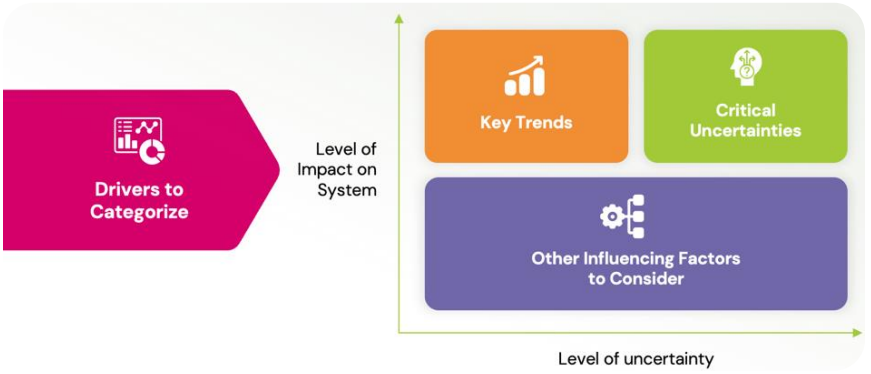
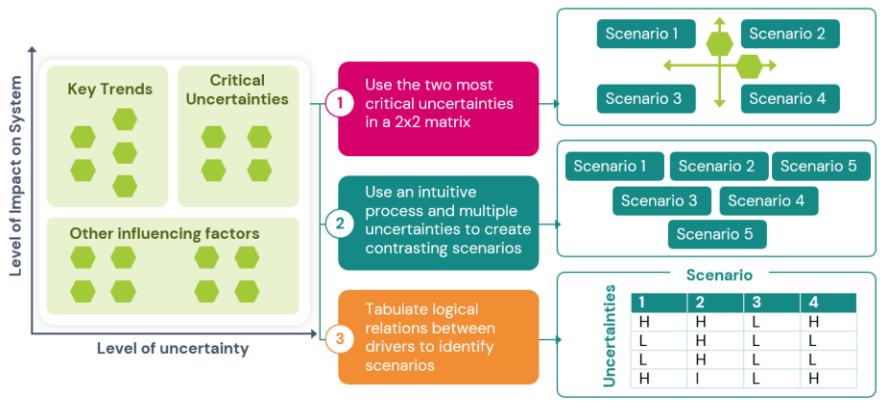


Figure 24: Drivers matric developed in stakeholder workshop

5.6 Constructing scenarios

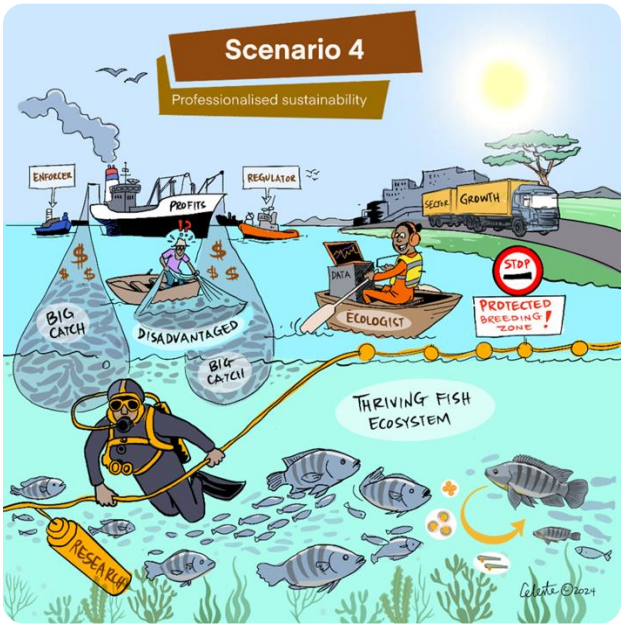
There are many ways and methods for constructing scenarios. Figure 25 illustrates three different ways of deciding which critical uncertainties are used to create the different scenarios. The 2x2 matrix with just two critical uncertainties is the easiest, but this may oversimplify how multiple different uncertainties are shaping the future. Once several critical uncertainties have been selected a basic narrative for each different scenario is created. This is a story line about what the future will be line at some point in the future (scenarios generally have a longer-term outlook but can also be developed for the short-term). At this stage it is helpful to give the scenario a title that captures the essence of the narrative. A full description of the future situation is then developed, often with explicit stories of what this future will be like for different actors. To build the storyline of how this future scenario evolved, backcasting can be used to identify key events and decisions that could have led to such a scenario. A future-oriented rich picture can help stakeholders to visualise this future situation. To help communicate the scenarios it is common to engage artists to create an illustration of each scenario. An important part of the scenario process is to explore the implications of different scenarios for different actors in the system. This helps to understand which scenarios may or may not be in different actors' interests and what this means for how different stakeholders may be supporting or blocking change.

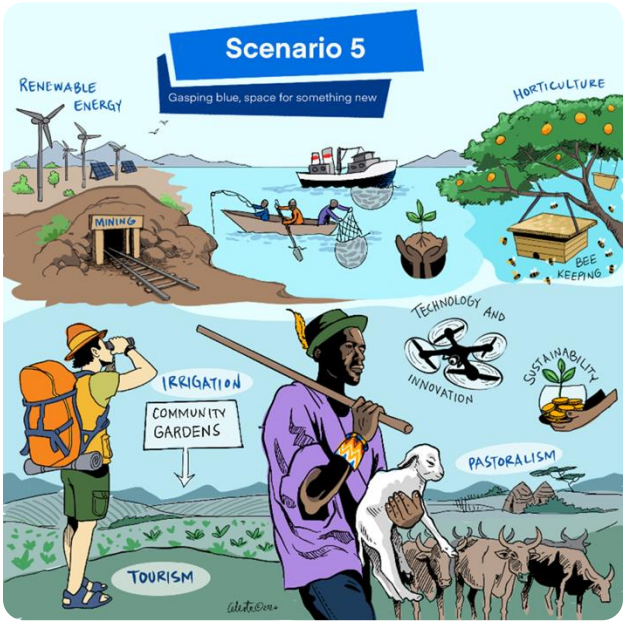
Figure 25: Illustration of different ways of developing scenarios



Not seeing the turkana scenarios here

Figure 26: Examples of scenarios for fisheries sector of Lake Turkana in Kenya, drawn by artist based on stakeholder illustrations and discussions (see case study)

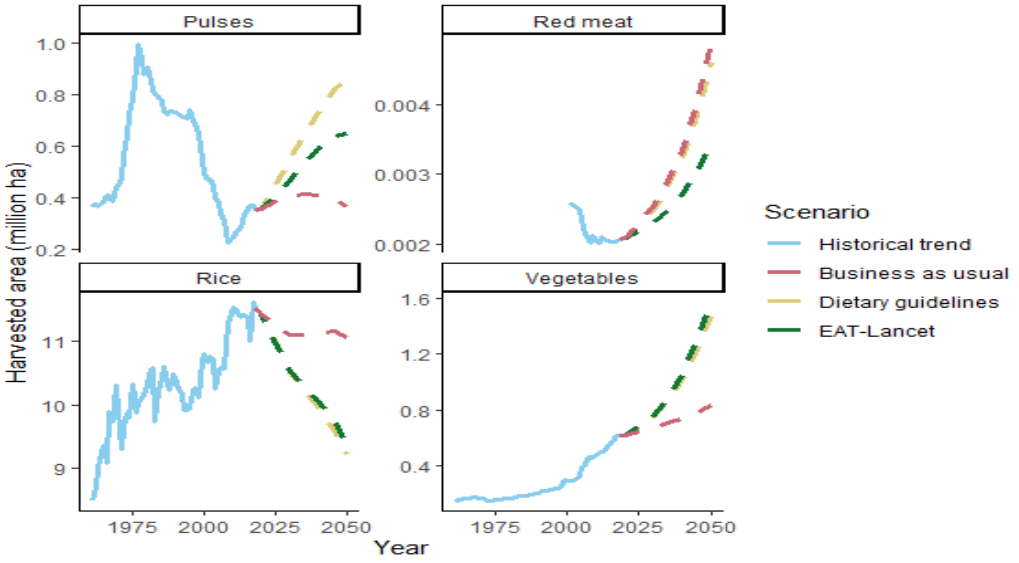




5.7 Simulation modelling

Simulation modelling is a great tool to simulate the implications of different scenarios, Figure 27. Using advanced general equilibrium models can help to show the implications of different scenarios for important outcomes of the food system. While one scenario might have great economic benefits, other scenarios might be better for consumer health or the environment. Such quantitative articulation of scenarios can also be helpful in gaining support from those who may be more sceptical of qualitative foresight processes.

Figure 27: Use of quantitative scenarios to model implications of different diets and consumption of different food types.



Foresight Case Study

Using simulation modelling for food systems transformation

Using simulation modelling for food systems transformation

Food systems are complex, with many scales and elements interacting dynamically. To intervene in foods systems, it is not easy to experiment and know what interventions work. Models provide a means of trying to organize what is known about food systems. Mathematic models convert these concepts into virtual food systems, making it possible to run simulations before intervening in real ones (Peters and Thilmany, 2022). Many different food systems models exist, each using diverse variables, assumptions and calculations. Often these models are used for a variety of purposes, such as policy evaluation, economic projections or monitoring agricultural flows. Initiatives that actively use simulation models play a pivotal role in supporting food systems transformation by providing robust, data-driven insights and scenario analyses that inform policy and decision-making.

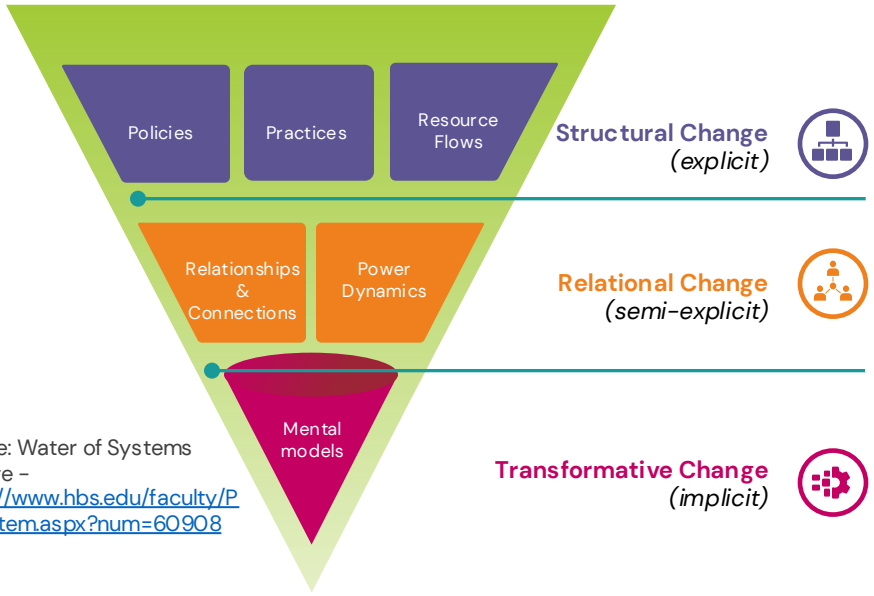
Key initiatives include:

- The CGIAR Foresight Initiative leverages advanced analytics and stakeholder engagement to explore alternative transformation pathways, helping countries and regions identify strategies for more productive, sustainable, and inclusive food, land, and water systems in the face of climate and socio-economic challenges.
- FABLE, through its global consortium, uses tools (such as FABLE Calculator) and approaches (FABLE Scenathon) to enable countries to develop tailored, quantitative pathways for food and land-use systems that align with both national priorities and global sustainability goals, fostering cross-country learning and innovation in addressing nutrition, biodiversity, and climate mitigation.
- The Agricultural Model Intercomparison and Improvement Project (AgMIP) is a network of experts developing methods and using different models for improving predictions on the future performance of agricultural and food systems.
- The Deep Decarbonisation Pathways Initiative emphasizes the integration of digitalization and standardized emissions data across supply chains, enabling transparent measurement, collaboration, and the design of effective decarbonization strategies essential for rapid and deep transformation of food systems.

5.8 Conditions for systems change

In the phase of mobilizing systems change, stakeholders use the scenarios created in the previous phase to envision the most desired future of the food system. Stakeholders explore the changes that are needed to achieve this desired future. One tool that is very helpful to explore different levels of systems change, is the conditions for systems change model (Kramer et al. 2018). This model shows how comprehensive systems change requires change at three levels: structural change (policies, practices & resource flows), relational change (relationships, connections and power dynamics) and transformative change (shifting mental models). An effective change agenda requires action on each of these levels of change. Figure 28 illustrates how the systems change model is used with causal loop diagrams to identify leverage points for change.

Figure 28: Using the systems change model with causal loop mapping to identify leverage points for systemic change

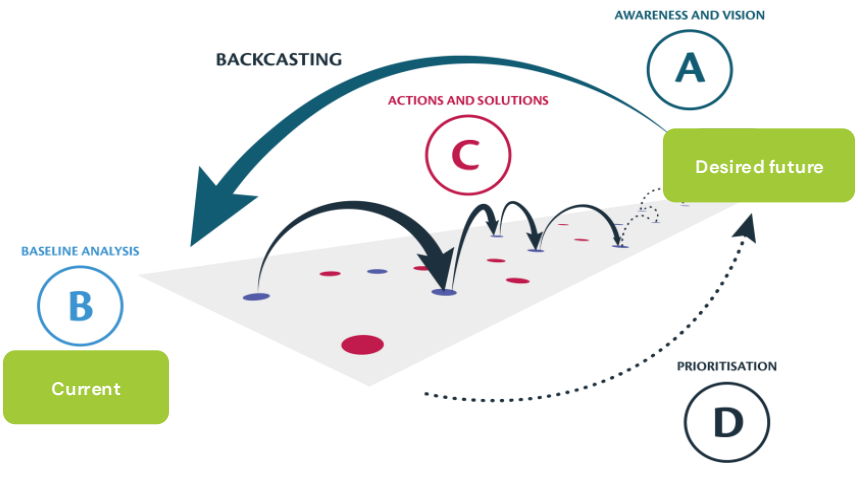


Source: Water of Systems Change - https://www.hbs.edu/faculty/Pages/item.aspx?num=60908

5.9 Strategy backcasting

Another key tool in the mobilizing for systems change phase is the strategic backcasting tool, Figure 30. This tool takes the desired future as a starting point and requires stakeholders to think back from this desired future to the present, listing the different actions that need to be taken to arrive at the desired food system. This creates a stepwise action agenda for systems change.

Figure 30: Backcasting tool.



VI.

Getting going with a foresight process

VI Getting going with a foresight process

We hope that this guide has given you inspiration for how foresight could contribute to your work in bringing about food systems transformation. If you think a foresight might be useful in your context, we encourage you to give it a go. Experience with participatory foresight has shown that it is a very powerful process for bringing stakeholders onboard, generating shared understanding and finding opportunities for join action.

There is no one right way to do foresight, so you can create a process that is tailored to your specific needs and context. As illustrated in the list of resources, there are many different very helpful guides that will assist you to understanding foresight and scenario analysis and provide practical information on how different methods and tools can be used.

To get going with a foresight process:

- Explore the idea with colleagues or partners you think may be interested.
- Create a small working or advisory group with different stakeholders to kick off the process.
- Find champions in senior leadership positions who will support the effort.
- Do a little bit of awareness raising and training with key stakeholders so they understand what it is all about.
- Clarify the purpose of the foresight process – so you and other know why it is being done and what it will produce.
- Design your process to fit with your purpose, time frame, available resources, and available foresight and facilitation expertise.
- Launch into holding foresight workshops – they don't need to be perfect – if stakeholder have the opportunity to engage with each other and share their views they will find it valuable.
- Keep everyone in the loop with good communication.
- Find ways of using the foresight process to act and have some early wins.
- Be realistic – we can't change food systems overnight – but the more we open up dialogue between different stakeholders about how the future could be, the greater the chance of making transformative change possible.

If you would like further advice on kicking off a foresight process do get in contact with Foresight4Food or the UN Food Systems Coordination Hub.

VII.

Resources and References

7.1 Foresight Guides

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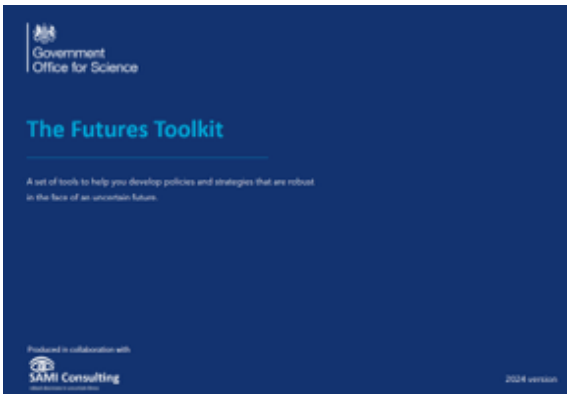
OECD (2025). *Strategic Foresight Toolkit for Resilient Public Policy: A Comprehensive Foresight Methodology to Support Sustainable and Future-Ready Public Policy*. OECD Publishing. Paris.

UN Futures Lab (2023). *UN Strategic Foresight Guide*.



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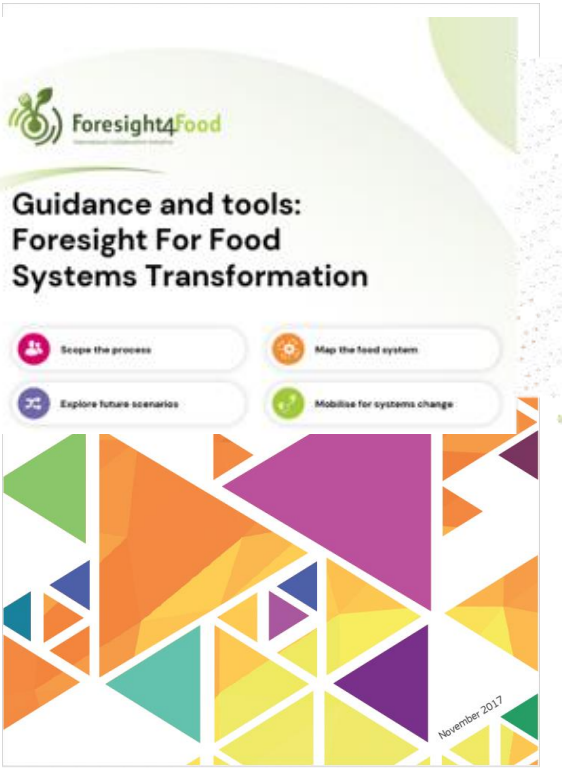

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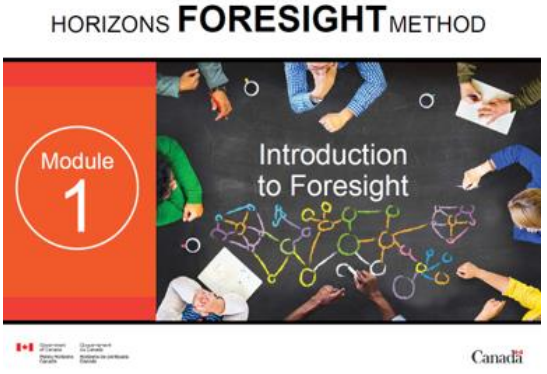
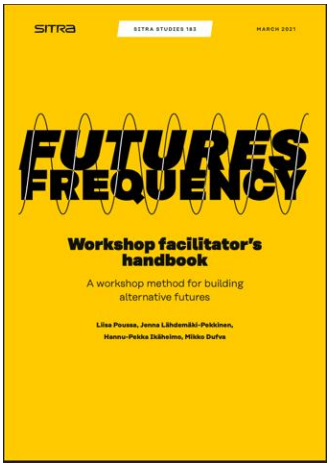


P. Glenday, K. Ramakrishnan, California 100, and School of International Futures (2023). Beyond Strategic Planning: A Foresight Toolkit for Decision Makers. University of California.



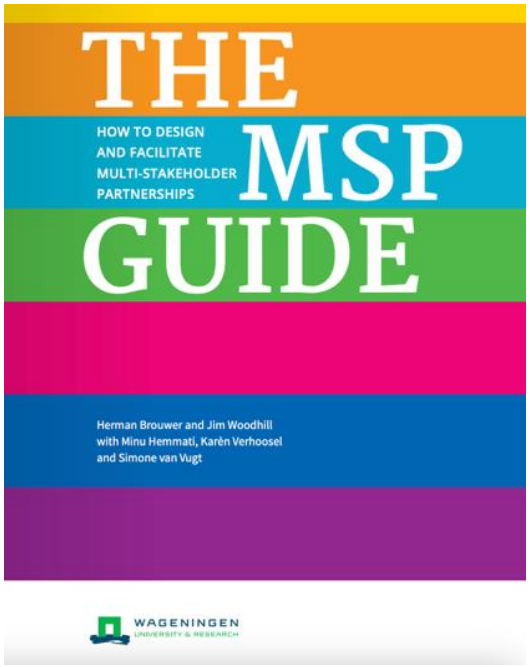
Poussa, L. & J. Lähdemäki-Pekkinen, H. Ikäheimo, M. Dufva (2021). Futures Frequency
https://www.sitra.fi/wp/wp-content/uploads/2021/03/futuresfrequencyengv2.pdf

The UN Global Pulse website contains a wealth of tools that can be downloaded.

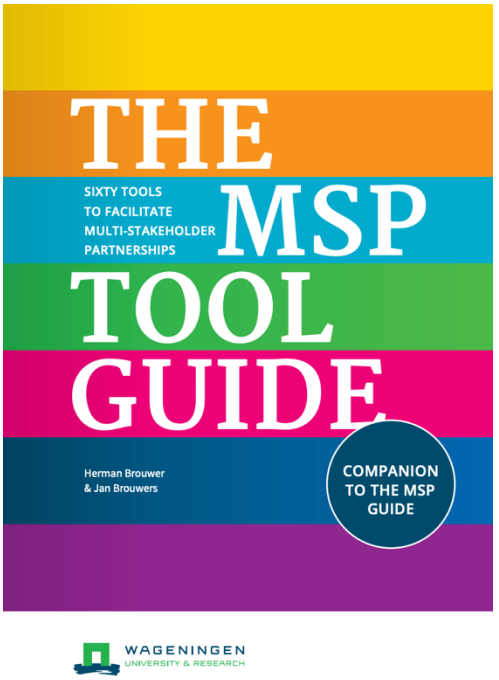
https://foresight.unglobalpulse.net/how-tools/

Chesterman S, Neely CN (2021). Foresight for Future Planning Training Series: Information Pack. Wageningen, the Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

7.2 Facilitation Guides



Brouwer, H. & J. Woodhill, with H. Hemmati, K. Verhoosel, S. van Vugt (2016) *The MSP Guide, How to design and facilitate multi-stakeholder partnerships*. Wageningen: Wageningen University and Research, WCDI, and Rugby, UK: Practical Action Publishing



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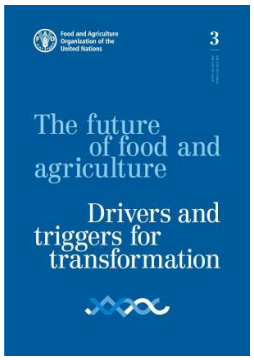
7.3 Case studies and examples



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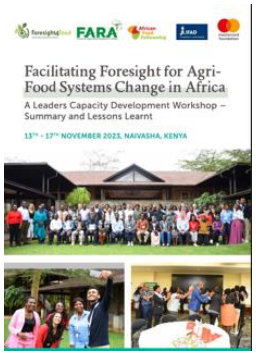
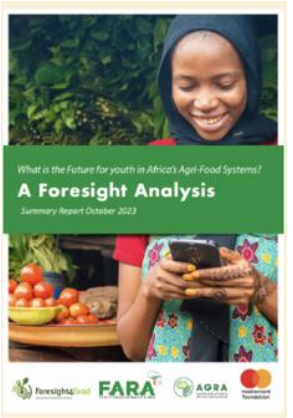


Woodhill, J. & K. Muthui (2024). Facilitating foresight for food systems change in Africa: Summary and lessons learnt. Systemic Link Consulting, Foresight4Food, FARA, AFF, the Mastercard Foundation. Oxford.

See the video

Foresight4Food – Foresight for food systems transformation (FoSTr) programme



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See the video

Woodhill, J. & S. Bakker (2025). Unlocking the economic potential of Lake Turkana Using Foresight for Participatory Programme Design. Foresight4Food with WFP and UNESCO

See the video

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