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CATALYSING THE SUSTAINABLE AND INCLUSIVE TRANSFORMATION OF FOOD SYSTEMS

Conceptual framework and method for national and territorial assessments

Concepts and method

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Published by
the Food and Agriculture Organization of the United Nations
the European Union
and
the French Agricultural Research Centre for International Development
Rome, Brussels, and Montpellier, France, 2022

Required citation:
David-Benz, H., Sirdey, N., Deshons, A., Orbell C. and Herlant, P. 2022. *Conceptual framework and method for national and territorial assessments– Catalysing the sustainable and inclusive transformation of food systems*. Rome, FAO, Brussels, European Union and Montpellier, France, CIRAD. https://doi.org/10.4060/cb8603en

ISBN 978-92-5-136885-5 [FAO]
ISBN 978-2-87614-780-5 [CIRAD]

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Abbreviations and acronyms

CIRAD	French Agricultural Research Centre for International Development (acronym derived from French name)
FAO	Food and Agriculture Organization of the United Nations
FEWS NET	Famine Early Warning Systems Network
INTPA	Directorate-General for International Partnerships
LIC	low-income countries
LMIC	lower-middle-income countries
NGO	non-governmental organization
SDGs	Sustainable Development Goals
UMIC	upper-middle-income countries
VA	value added

Acknowledgements

This methodological framework and tool kit are the outcomes of a collaborative effort between the European Commission's Directorate-General for International Partnerships (INTPA, formerly DEVCO), the Food and Agriculture Organization of the United Nations (FAO), and the French Agricultural Research Centre for International Development (CIRAD). This work benefited from INTPA funds through FAO's Agrintel facility.

This collaboration, set up in 2018, first led to the Food Systems at Risk report (Dury *et al.,* 2019) published in 2019 by INTPA, FAO and CIRAD, and continued with the initiative *Catalysing the Sustainable and Inclusive Transformation of Food Systems*, of which this guide is a part.

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Other team members contributed to the analysis of the different dimensions (socioeconomic, territorial, environmental, food security and nutrition): Yannick Biard, Patrice Dumas, Pierre Girard, Eric Scopel, Xavier Augusseau, Jeremy Bourgoin (CIRAD) and Eric Verger (French National Research Institute for Sustainable Development).

The team would like to extend its gratitude to Philippe Thomas, Pierpaolo Piras, Nicoletta Avella (INTPA) and to James Tefft (FAO) for the fruitful exchanges throughout the creation of this methodological guide, as well as Paul Nagle and Brett Shapiro for their editorial work.

Layout and editing: Chiara Virdis, Polly Butowsky, Paul Nagle and Andrew Morris.

CATALYSING THE SUSTAINABLE AND INCLUSIVE TRANSFORMATION OF FOOD SYSTEMS

Foreword

The fundamental role of food systems in achieving the Sustainable Development Goals is now widely recognized. These systems not only cover food and nutritional needs, but also impact employment and wealth creation, the sustainability of ecosystems and climate change, and territorial development. However, our food systems are under pressure: along with rapid population growth and diets that are changing as a result of urbanization and the expansion of the middle classes, natural resources are deteriorating and climate shocks are proliferating, while financialization accentuates market instability, among other pressing issues. The report *Food Systems at Risk*, written jointly by the European Union, FAO and CIRAD, and shared in April 2019 at the high-level event “Global Network against Food Crises” further highlighted this accumulation of risks facing food systems. The report also emphasized the heightened exposure of low-income countries, particularly in Africa, increasing their vulnerability to shocks, as shown by the resurgence of food insecurity in recent years. While some of these risks are of a global nature, their repercussions on food systems (as well as the levers designed to steer them towards a more sustainable trajectory) are specific to countries and territories.

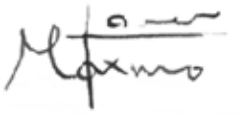
Our three institutions have therefore decided to deepen their collaboration towards the sustainable and equitable transformation of food systems. The approach is fully aligned with the societal and economic transformations envisioned under the Green Deal and actions envisaged under the "Farm to Fork" strategy.

But how can we work towards transforming food systems if they are not first understood on the most appropriate scales and if we don't involve all the relevant actors? Adopting an analytical and methodological framework is a first critical step in this process. To this end, the team has worked together to create this unprecedented manual, with a view to supporting public decision-makers and stakeholders as they jointly conceive and construct a vision for their food systems. Such a shared vision is essential as it encourages debate and reflection, while helping pinpoint both the challenges to and appropriate strategies for sustainable transformation.

This manual provides a methodological framework and a set of tools for carrying out an initial assessment of food systems at national and sub-national levels. The assessment starts by considering four key dimensions of sustainable and inclusive food systems: food security, nutrition and health; territorial balance and equity between actors; inclusive economic growth in jobs and livelihoods; and the calibrated use of natural resources to preserve the environment. The proposed methodology also aims to foster open dialogue between different sectors and stakeholders, in order to determine relevant entry points for transformative actions, support the development of favourable policies, and identify investments with high transformative potential.

Since late 2020, this manual has been used to conduct assessments in more than fifty partner countries. In many cases, this work has contributed to National Dialogues, in preparation for the UN Food Systems Summit in

2021. May this initiative foster further collaboration between policymakers, food system actors and research and development institutions, and support decision-making and efforts towards creating sustainable food systems!



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Introduction

Food systems are linked to all Sustainable Development Goals (SDGs), providing an important entry point for addressing issues of sustainability, resilience and inclusiveness. The challenge for food systems is not only to provide sufficient, healthy and balanced food to the population and have a direct impact on food and nutrition security, but also to contribute to create sustainable employment and livelihoods and to preserve the planet's biodiversity and natural resources.

Food systems involve relationships between a wide range of institutions, various levels of government, and public, private and civil society actors from numerous sectors (e.g. agriculture, trade, industry, health, environment). In every country, region, district, city, town or village, food system actors face specific local challenges. Finding pragmatic solutions to specific problems in food systems at these different levels not only requires a good understanding of the links between system components, but also governance structures capable of addressing trade-offs between the sustainability dimensions.

Despite their multiple contributions to societal, environmental and socioeconomic goals, there is widespread recognition that food systems are currently not sustainable and face increasing risks. These risks and challenges are particularly acute in low-income and lower-middle-income countries (LIC, LMIC) (Dury *et al.,* 2019).

First, food insecurity and the triple burden of malnutrition[1] exist simultaneously in a number of countries. Since 2015, after decades of declining, food insecurity has been rising again. In 2019, 690 million people were suffering from hunger, according to the SOFI 2020 report (FAO *et al.,* 2020). In addition to persistent undernutrition, populations are increasingly suffering from micronutrient deficiencies, obesity and food-related chronic diseases, the various forms of malnutrition affecting one in three people (HLPE, 2017; Willett *et al.,* 2019).

Second, the productivity-oriented agro-industrial model has succeeded in producing cheap food (mostly in terms of calories, fat and proteins), but at a high environmental cost: accelerated depletion of natural resources, damaged ecosystems and threatened biodiversity in many parts of the world. The agrifood sector is a major producer of greenhouse gas emissions. The dependence of this production model on natural resources (e.g. land, water, minerals, and biodiversity) also challenges its long-term viability (UNEP, 2016).

Third, demographic and socioeconomic trends are creating new challenges to food systems. Rapid population growth accelerates the demand for food in both urban and rural areas in low-income and lower-middle-income countries. In addition, rapid urbanization, with the lifestyles and evolving food consumption patterns that it entails, is exerting a large influence on the food system, with urban areas representing 70 percent of global food demand (FAO, 2017). Poverty and inequalities of various kinds including inequalities in access to productive resources are still prevalent in many countries. The capacity to meet their human development goals (with respect to poverty reduction, education and health) depends largely on livelihood and income opportunities, many of which are generated by the food system in production, industry and service sectors. Food systems are crucial in contributing to inclusive economic development, and creating (and preserving) jobs, especially for the most vulnerable population groups (the poorest, young people and women) dependent on informal food-sector jobs and businesses. These jobs are particularly important in African and Asian countries, where the share of the population under 25 is very high.

[1] Triple burden malnutrition covers undernutrition (underweight, stunting and wasting), overweight and obesity, and micronutrient deficiencies.

Food systems are also vulnerable to diverse shocks – agroclimatic, zoonotic and socioeconomic. The COVID-19 crisis has highlighted the importance of food systems that are resilient to the various disruptions that affect food security and socioeconomic well-being. It also confirms the increasing importance and engagement of local actors and governments in finding solutions that are adequately tailored to local contexts.

In order to better understand how food systems work, adopting a comprehensive analytical framework that considers human and environmental interactions as well as particular local conditions (as advocated in socio-ecological systems) is increasingly acknowledged as a way of dealing with these key challenges.

This methodological framework presents a multidimensional view centred on four core food system goals:

1 **Food security, nutrition and health:** to provide sufficient, healthy and balanced food, in order to meet the needs and preferences of all people in a stable manner and to contribute to their health.

2 **Socio-economy:** to provide decent livelihoods and employment for all actors in the food system, including smallholders, women and youth, and contribute to inclusive economic growth through the food sector (from production to distribution) and an improved food trade balance.

3 **Territorial balance:** to contribute to an equitable distribution of power and resources among food system actors and to a balanced territorial development, in order to promote stability and equity

4 **Environment:** to manage, preserve/regenerate ecosystems, biodiversity and natural resources and limit the impact of food systems activities on climate change.

In section one of this report we present an analytical framework for viewing food systems, their multidimensional nature, their core functions and actors, the environment of actors and key drivers.

In section two, we describe a method for conducting a rapid food system analysis in low-income and lower-middle-income countries. The methodology provides a holistic analysis of food system performance and its main drivers, including past trends and future projections for food system sustainability. The section also examines the spatial distribution of the main drivers and impacts of the food system as well as their trends across the country.

Initially tested and consolidated by carrying out food system diagnostics in eight countries (Bhutan, Burkina Faso, Colombia, Dominican Republic, Madagascar, Malawi, Nepal and Senegal), the method was then refined in terms of the analytical and stakeholder consultation process to be followed in a further fifty countries.

In order to integrate the short- and long-term contributions of food systems to the different SDGs, collaboration between the main political, economic and social actors and researchers is needed to assess current food systems jointly and subsequently work on identifying relevant levers and future actions. The methodological framework seeks to contribute to two objectives: (1) to build a shared vision of the current features and challenges of food systems at a national scale and within subnational territories; and (2) to inform and support the decision-making process with a view to implementing the changes needed to improve the sustainability of food systems in the short and long term.

Section 1
Analytical framework: literature review, definitions and food system components

1 Context

The concept of the food system emerged in the 1990s, initiating scientific discussions and analyses that have flourished over the last two decades. Louis Malassis defines food systems as "the way in which people organize themselves in space and time to obtain and consume their food" (Malassis, 1994). Over time, definitions and interpretations of food systems have evolved, largely spurred on by the industrialization and globalization of the food sector (Dury *et al.,* 2019). Recently, many authors have chosen to study food systems through a systemic lens (Prosperi *et al.,* 2016; Béné *et al.,* 2019a,b; Dury *et al.,* 2019; Melesse *et al.,* 2019).

The systemic approach to food systems is acknowledged by the authors as a way to:

- Renew food security analyses in the context of global changes.
- Embrace the multi-dimensionality of food systems: these systems not only provide food but also help fulfil many of the other interlinked Sustainable Development Goals (Dury *et al.,* 2019).
- Embrace all the supply chains that make up food systems, the actors involved and the activities they undertake, as well as the different functions they perform to ensure the flow of food to consumers.
- Consider both the global and direct environments within which food systems' actors operate, and which shape their activities and the resulting outcomes.
- Analyse the complex relationships among the diverse components of food systems, their effects on food security and social, environmental and economic sustainability (Eakin *et al.,* 2017; Tendall *et al.,* 2015); systems thinking is also used to highlight the interactions and interdependencies within and between different scales, from the household to the global scale (Dury *et al.,* 2019; FAO, 2018a; HLPE, 2017; UNEP, 2016).
- Broaden policymakers' and stakeholders' sectoral viewpoints of the full scope of food systems.
- Identify trade-offs between conflicting outcomes and activities, as well as opportunities to create synergies and good strategies.

2 Literature review

The existing literature on food systems underlines their complexity. It underscores the need for systemic thinking as the most appropriate approach to tackle their nuances and interconnectedness (FAO, 2018a; Foran *et al.,* 2014; HLPE, 2017; van Berkum, Dengerink and Ruben, 2018; UNEP, 2016; Vaarst *et al.,* 2017; Ingram, 2011).

In the literature, there are two types of methodological approaches for assessing food systems:

- **Action-oriented methodologies.** Action-oriented methodologies aim to build pathways towards more efficient and sustainable food systems with the involvement and input of food system stakeholders. Participatory

approaches alone cover a broad spectrum of methods, often at city or city–region scale. They include: (i) stakeholder involvement in gathering information and validating the results at the end of the assessment (Let's Food, 2019; Prosperi *et al.,* 2016); (ii) stakeholder involvement in identifying priority issues at the local level (Ingram, 2011; Food Systems Dialogues, 2019); and (iii) sustained participatory processes that enable stakeholders to assess the strategic options available in terms of the future of food systems and to identify transformative interventions (FAO, Resource centre on Urban Agriculture and Food Security, and Wilfried Laurier University, 2018).

- **Evidence-based assessments based on quantitative metrics.** These methods assess the performance of food systems exogenously, through quantitative statistics at a national scale. However, within this type of assessment there are variations in the way systemic dimensions are considered. The approaches used include: (i) proposals with sets of relevant indicators to guide the assessment but not considering how indicators might interact (Zurek *et al.,* 2017; Melesse *et al.,* 2019; World Bank, FAO and Resource centre on Urban Agriculture and Food Security, 2017; Tefft *et al.,* 2017; Allen *et al.*, 2019; IFPRI, 2015; FAO, 2018b; Gaitán-Cremaschi *et al.,* 2018); (ii) quantitative assessment metrics allowing cross-country comparisons of food systems (Institute of Medicine and National Research Council, 2015; Béné *et al.,* 2019a,b; Chaudhary, Gustafson, and Mathys, 2018; IFPRI, 2015; Gustafson *et al.,* 2016); and (iii) proposals seeking to model interactions between food system components (Zurek *et al.,* 2018). While the two first types of methods have been applied in several case studies, to date no application of the third type – based on modelling – has been published.

Lessons from existing literature and the limits identified provide a basis for building a methodology that allows for a rapid assessment of food systems.

- **Systemic approach.** There is consensus on the need for systemic or holistic approaches, although such proposals are largely conceptual and the nature and intensity of the relationships among the food system components are not developed. Very few publications distinguish between outcomes and impacts, whether by type of actor or activities. In particular, quantitative approaches often consist of a list of indicators, or aggregate indicators, and generally neglect the systemic dimension of the analysis.

- **Generic vs specific.** Most of the approaches proposed in the literature are not context-specific (level of income, agroclimatic context, etc.). They are replicable at a given scale (either national or city–region) and in different contexts, allowing for comparisons. However, they are limited to that scale and are consequently not generic. In addition, national-scale and quantitative methods involve the risk of ignoring countries with missing data, which are arguably those where the issues are most critical. In methods that focus on a subnational scale, the data collection process does not distinguish between rural or urban areas or different types of territories.

- **Dynamics.** Most conceptual frameworks emphasize the dynamic nature of their approach and acknowledge that a change in one system component will eventually ripple through the system and trigger a series of changes, including feedback loops. Conceptual frameworks that have been developed around resilience/vulnerability concepts are particularly focused on dynamic processes across food system components. However, no operational examples or case studies have been identified.

- **Territorial perspective.** The territorial aspect is considered in most action-oriented methodologies that rely on participatory approaches. However, they focus on the city–region level. There is no evidence of their application at other types of areas. National-level quantitative assessments do not account for the spatial heterogeneity of food system performance, and local agro-socio-ecological contexts are rarely recognized.

- **Policy dialogue.** Many approaches acknowledge the need to provide food system assessments that feed the policy dialogue. However, suggestions for actively involving stakeholders in the process are uneven and unclear, and methodological approaches are quite heterogeneous. Moreover, these methods are mostly silent on how to translate insights into actionable interventions, as well as on how to involve stakeholders in long-term policy design processes.

This methodology proposes a systemic orientation that is sufficiently generic to be applied to a wide range of countries. It will include: a mix of quantitative analysis, to provide tangible and comparable elements, and qualitative analysis to involve stakeholders and to accommodate environments where data or documentation is poor; a dynamic perspective, considering the performance of past food systems and forecast trends for some key drivers/impacts; a territorial perspective and recognition of local context; and a decision-maker's perspective to inform policy dialogue.

3 Definition of food systems

In the literature the "food system" concept is defined in different ways: most definitions mention how a food system is shaped by the environment in which it is embedded and how it produces various outcomes. However, some of the definitions do not clearly distinguish between the core of the system (actors and functions along food supply chains), the drivers that influence them, and the resulting outcomes. Generally speaking, no distinction is made between the drivers (that shape how the system functions), characterizing trends and the "direct" environment within which actors evolve. In addition, interactions between food system components, and the feedback loops between outcomes and drivers, are generally neglected. Although almost every definition refers to food and nutrition security and socioeconomic and environmental outcomes, the impact of food systems on territorial development and the balance among actors is usually not taken into consideration. Beyond the standard production–processing–distribution–consumption functions, some definitions include the farm-supply industry, transport and/or food disposal. When food disposal is included, the waste generated by each segment of the food supply chain is often not considered. Finally, interrelationships among food system actors and those in non-food or non-agricultural operations are rarely mentioned.

Based on this review of definitions, we propose the following holistic or systemic definition of food systems, emphasizing the following points:

- The broad range of drivers that influence food systems, including external food system drivers and drivers generated internally by the food system actors themselves while, for example, interacting with their direct environments.

- A broad range of outcomes (beyond the "standard" goal of food and nutrition security), including economic, socio-cultural, biophysical and environmental dimensions, but also

outcomes related to governance, equity and territorially balanced development and inclusiveness.

- A clear distinction between the core or nucleus of food systems (i.e. the actors and their activities), the drivers influencing them, and the resulting outcomes and impacts.
- Waste generation and management at all stages of the food system as one of the key functions in the core system.
- Inclusion of the non-food agriculture sector and its diverse contributions to food systems (e.g. energy, transport, education, health).
- Interactions among different parts of the food system (interdependencies, trade-offs, synergies) as well as feedback loops.

Building on these specific points, food systems can be defined as in the following box (definitions of related food system concepts are listed in the table in Appendix 1).

Food systems: concise definition

Food systems encompass the range of actors and their activities involved in food supply chain functions, including their direct environment and the drivers that influence them, as well as their long-term impacts on the main sustainability dimensions, which in turn affect the other elements via feedback loops.

Food systems: full definition

Food systems encompass the entire range of actors and activities involved in the production, aggregation, transport, processing, distribution and consumption of food products that originate from agriculture, forestry or fisheries, including the inputs used and the management of wastes generated by each of these activities. The core actors and activities in food systems are interconnected with non-food agriculture production systems.

Food system actors and activities are influenced by interlinked social, political, cultural, technological, economic and environmental drivers as well as the direct environment[2] in which they evolve. They generate outcomes and have long-term impacts which are all interconnected. Impacts and drivers are linked through feedback loops and synergies. The whole system involves a variety of private, public and civil society actors, requiring governance at several levels.

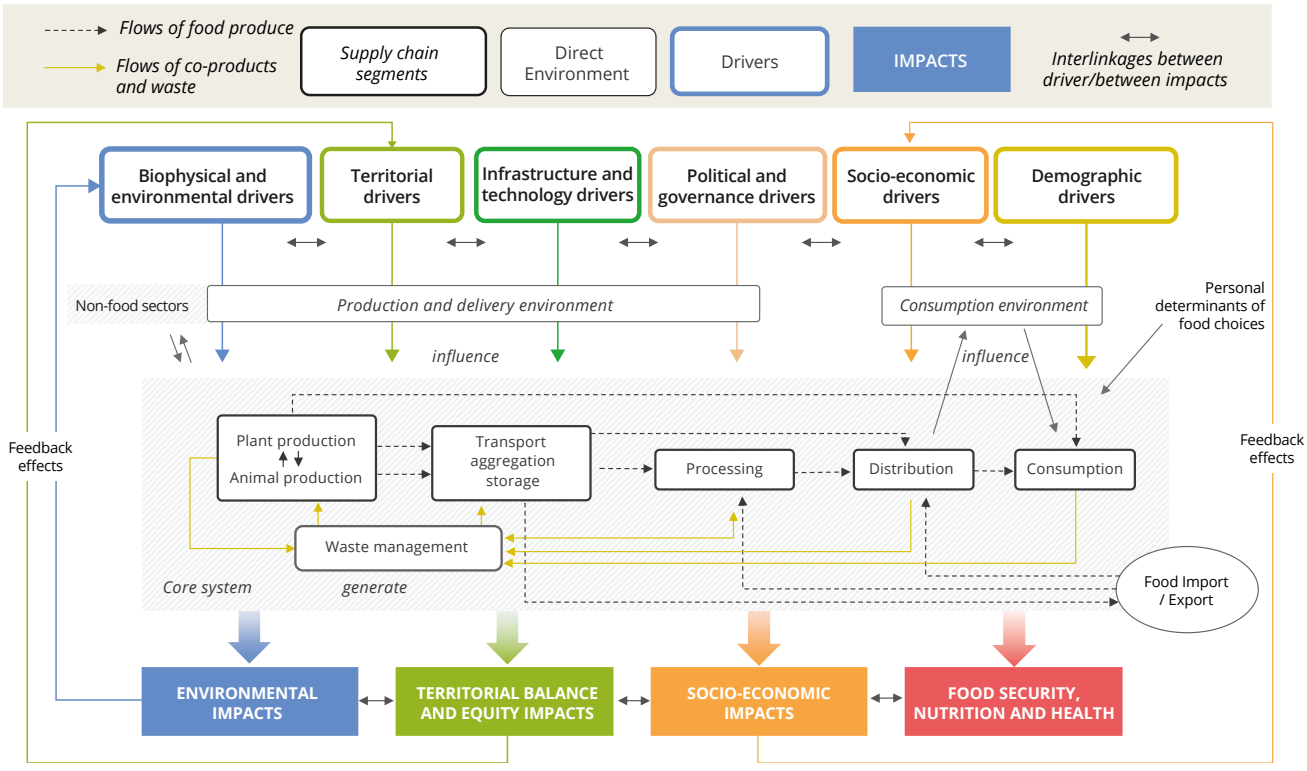
[2] The direct environment of production and distribution actors refers to financial and technical services that have an influence on their activities. The direct environment of consumers includes: availability of food in quantity and in diversity; physical accessibility/proximity; prices; promotion/advertising/information; labelling; product safety and quality.

4 Food system conceptual framework

The conceptual framework articulates five components comprising food systems: (i) food supply chain actors and activities; (ii) drivers; (iii) direct environments – food production and delivery; (iv) consumption environments; and (v) impacts (see Figure 1).

Food systems are not static. The entire system is dynamic, affected by diverse trends and shocks influencing external and internal factors. Some of the outcomes, specifically those related to environmental, social-economic, equity and territorial balance, act on drivers through feedback loops.

Figure 1. Food system conceptual framework



Source: **Authors' own elaboration**.

Food supply chain actors and activities: the core system

The core system or nucleus of the system includes the entire range of actors and their interlinked activities along food supply chains. Production, storage, transformation, processing, distribution, consumption and waste management are all core system activities that are distributed among different types of actors. Consumption includes buying, preparing, preserving and eating, with food habits determining overall demand in terms of quantity, quality and diversity. The core system is characterized by flows of money, information, food and food waste/co-products. In addition, we consider imports and exports as the flows into and out of the system, while import/export actors interact directly with the other actors and activities in the core system. Moreover,

agricultural non-food and non-agricultural sectors (such as tourism and mines) while interacting with the core system and thus impacting jobs, income levels and wealth, may also exert competition as regards land or water. On the other hand, non-food agricultural activities may also synergize and strengthen food production by improving efficiency in the use of sparse resources.

Drivers

Drivers are the "endogenous or exogenous processes that deliberately or unintentionally affect or influence a food system over a long enough period so that their impacts result in altering durably the activities, and subsequently the outcomes, of that system" (Béné *et al.,* 2019b). Six types of drivers are considered in this framework: biophysical and environmental drivers; demographic drivers; socioeconomic drivers; political drivers; territorial drivers (stability, balance); and infrastructure and technological drivers. In the notion of drivers, we also include internal innovations and dynamics driven by the actors of food systems, whether public or private.

The entire range of actors and activities in food systems are shaped by drivers. Drivers modify activities in the short and long terms, which subsequently influence system outcomes and impacts.

Food production, transformation and distribution environment

With drivers, the 'direct' environment in which actors operate influences the way that food systems function as well as the production practices applied by different actors and their relative performance.

Actors operate according to their distinct immediate ('direct') production environments (for example the environment faced by aggregators, processors, retailers etc.). These direct environments incorporate local knowledge and financial, technical and other services, as well as the institutions (e.g. producer organizations, industry groups, markets) and what may be referred to as the "rules of the game" that define the structure of the core system. This environment determines actors' activities and practices, affects their performance and influences how core system functions (from production to logistics, processing and marketing) are effectively carried out. The concept of the direct environment of production and intermediate segments refers to factors that directly affect the opportunities available to actors (credit, inputs, equipment). It is distinct from the relatively distant, global and indirect drivers and indirect drivers (such as policies, infrastructure or trade agreements).

Direct consumption environment [3]

Personal determinants (preferences, purchasing power, family composition, values and lifestyles, etc.) as well as characteristics of the direct environment in which consumers evolve have an influence on what they decide to purchase, prepare and consume. The personal determinants of consumer behaviour include preferences, values and skills, time and lifestyle, purchasing power, household size and age of household members.

[3] We chose not to use the concept of "food environment" used in the literature on food systems (HLPE, 2017; Béné *et al.,* 2019b). This is for two reasons: (i) the concept of "consumption environment" makes it possible to draw a direct parallel with the production and delivery environment while emphasizing the consumer as actor; and (ii) the widening definition of food environment, which covers according to HLPE (2017) the "physical, economic, political and socio-cultural context in which consumers engage with the food system to make their decisions about acquiring, preparing and consuming food", including the "personal determinants of consumer food choices (e.g. income, education, values, skills etc.)" and hence requires a large number of drivers to be operational.

The consumption environment represents the interface between food distribution actors and activities and consumers. Key elements are the availability of food in terms of proximity/physical accessibility of sales points (which may include both the physical spaces where food is obtained and the infrastructures that allow consumers to access these spaces); diversity; affordability; promotion/advertising/information; labelling; and product safety and quality. This environment derives from activities in the production and midstream segments, as well as political and infrastructure drivers. Because they partly determine what food consumers can access at a given time, at what price and with what degree of convenience, consumption environments both constrain and drive food choices.

Impacts

Finally, food system actors and activities generate short- and long-term impacts in four dimensions: food security, nutrition and health; socioeconomics; territorial balance and equity; and environment. As mentioned in the Introduction, these dimensions are broken down into four core goals to meet the sustainability goals of food systems:

1 **Food security, nutrition and health**: provide sufficient, healthy and balanced food, in order to meet the needs and preferences of all people in a stable manner and to contribute to their health.

2 **Socioeconomics:** provide decent livelihoods and employment for all actors in the food system, including smallholders, women and youth, and contribute to inclusive economic growth through the food sector (from production to distribution) and an improved food trade balance.

3 **Territorial balance:** contribute to an equitable distribution of power and resources among food system actors and to a balanced territorial development, in order to promote stability and equity.

4 **Environment:** manage, preserve/regenerate ecosystems, biodiversity and natural resources, and limit their effects on climate change.

These four food system sustainability goals are interlinked from both a short- and a long-term perspective. For instance, socioeconomic and environmental outcomes influence the capacity of food systems to achieve food security, nutrition and health. In many respects, current impacts are determinants for building sustainable food systems in the future.

Section 2
Food system assessment methodology

1 Context

1.1 Users

Food system assessment, as proposed in this methodological framework, is oriented to donors, policymakers and local authorities, as well as key private, public and civil society food system actors. The methodology aims to involve a wide range of actors in the co-creation of the food system assessment. Stakeholders will participate and contribute as resource persons through interviews and in workshops to share their views about food systems. The assessment process and results will provide a better understanding of current and future food system challenges and systemic intervention areas to improve their sustainability. The assessments will be implemented by external experts (either national or international) who will be responsible for setting up, adapting and facilitating the assessment process in the country concerned.

1.2 Objectives and levels of the analysis

The overall objective is to help guide and improve interventions to promote more sustainable food systems.

The specific objectives include:

- Raising awareness among public sector actors (at multiple levels), food system actors (private sector and civil society) and financial partners on the food system transformation approach.

- Providing an initial broad understanding of the state of national and subnational food systems (with respect to the four core sustainable food system goals), highlighting current performances, trends, challenges and opportunities while considering the spatial and territorial heterogeneity of food systems.

- Facilitating dialogue among food system actors, policymakers and local authorities to co-construct a shared, multidimensional and dynamic vision of food systems and to discuss future actions to achieve sustainable food system goals.

The present method was developed with the idea of building pathways towards more sustainable food systems, based on a shared assessment and multi-actor dialogues. A national-level assessment is the first step in the assessment process. This national scale will include, among other considerations, infrastructure, policies, choices made about budgets and trade, social and demographic environments, and system components that shape how national-scale food systems actually work. This first-level analysis will make it possible for stakeholders to reach an agreement on the importance and nuances of the core sustainable food system goals at the national level, while identifying some of the specific issues and combinations of challenges characterizing food systems at subnational scale. The territorial approach used in this methodology will help in orienting future actions so they can respond to local challenges by building up local resources and opportunities and supporting local actors. These subnational entities (territories) then constitute the appropriate spatial units to use when deciding on strategies to transform the food system towards greater sustainability. This approach will also allow us to identify where interventions are more likely to lead to concrete impacts and improve the sustainability of the food system.

1.3 Expected results

The results expected from implementing the methodology are to:

- Provide an overview of the food system performance with respect to the four sustainable food system goals as well as the most pressing challenges, through a comprehensive understanding of the systemic and dynamic multidimensionality of food system impacts, their main drivers and past and future trends, as well as their connections to the main actors of the food system.

- Identify and characterize territorial food systems in terms of their actors and activities and their combinations of challenges with respect to meeting sustainable food system goals.

- Identify, through a collective process involving a broad range of stakeholders and on the basis of a systemic representation, all bottlenecks and levers, and so contribute to transformative pathways for more sustainable food systems.

- Present the results in synthetic analytical notes as a *food system profile* (see Box 1); a *food system profile* prototype and a report outline are provided in the toolbox: [E WRI_Template_Food System profile.docx] and [E WRI_Template_Country report.docx].

Box 1. Outlines of *food system profile* (proposed)

The *food system profile* will present the essential findings of the assessments and key messages for decision-makers.

- **What are the key sustainability questions in the country? How well does the food system perform with respect to the four sustainable food system goals?** Key figures, trends, the most critical challenges to reaching sustainable food system goals, hard-hitting messages.

- **How are food systems structured across the country?**
  - Key figures and trends in food consumption, production and trade patterns across the country
  - Key actors in the food system and their relative importance.

- **What are the drivers that generate the major risks and opportunities in achieving the sustainable food system goals?** Key demographic trends; policies, socioeconomic drivers; infrastructure and technologies; trends in natural resources and climate characteristics; current programmes and strategies contributing to sustainable food system goals; food system governance and general governance at national and territorial scales.

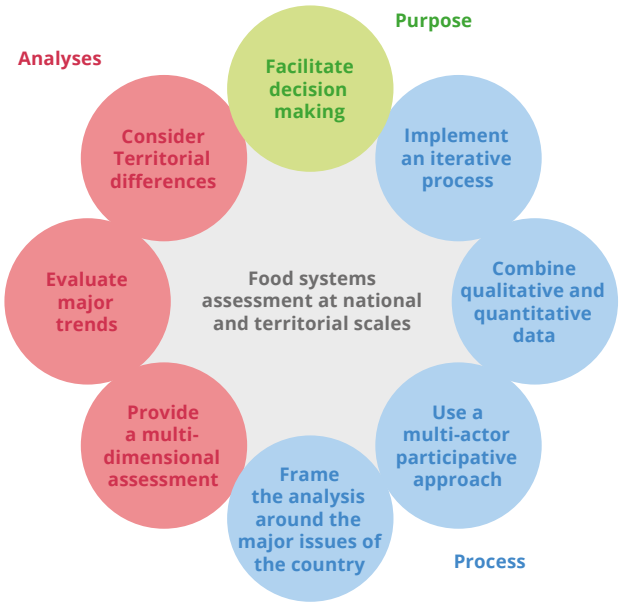
- **How are food system performance and related risks distributed across the country?** A map of the country divided into homogenous subnational food systems and the main features of each, in the form of a systemic narrative.

- **What fields of interest and levers foster the reaching of fundamental goals on national or subnational scales?**

2 Principles and general organization of the diagnosis

2.1 Guiding principles of the assessment at national and subnational levels

Figure 2. Process and analysis hypotheses



Source: **Authors' own elaboration**.

Providing a multidimensional overview of food system challenges

The assessment will cover the four dimensions of food systems (food security, nutrition and health; socioeconomics; territorial balance and equity; and environment) and will provide a multidimensional overview of the contribution of food systems to Sustainable Development Goals.

Based on an initial workshop, the four major sustainable food system goals will be identified in a participatory manner and will guide the rest of the assessment. They will take into account the characteristics of the target population (e.g. women, youth, the poor) or the subnational areas most at risk. The main actors and activities of the existing food systems will be characterized and their contribution to meeting the principal challenges of the food system will be clarified. The various types of drivers that shape food systems will also be considered.

The assessment will identify the multiple contri-, butions of food systems to achieving the SDGs.

Framing the assessment around key issues

The assessment requires finding a constant balance between dealing with the complexity of the food system and preserving the relevance of the systemic approach. Therefore, we consider it important to frame the assessment at the onset by jointly specifying and qualifying the key sustainability questions in the four dimensions. This will facilitate stakeholder involvement in the assessment process while ensuring that the assessment yields operational results and helps identify novel pathways likely to make the food system more sustainable.

The assessment is linked to the main national and subnational issues.

Considering territorial heterogeneity

The assessment highlights the territorial heterogeneity of key actors, activities, drivers and impacts across the country. For example, it will report on the spatial distribution of the main food production areas and consumption centres across the country, while identifying areas of food surplus and deficits. It will describe the dynamic linkages with other key economic sectors for each area. The approach will capitalize on all available sources of spatial information to identify and construct a systemic narrative on food systems, defined at territorial scale. These areas are face particular combinations of challenges and opportunities to reach their food system sustainability goals.

The assessment will identify the subnational specificities of food systems

Assessing key trends
Combinations of trends at global and national scales can have a multiplier effect, drastically increase the systemic risks and threaten national food systems' capacities to meet their sustainability goals. The assessment will consider past trends and relevant forecasts concerning food system drivers and performance (e.g. demography, food security, employment, impact on farming-dependent livelihoods). If relevant, some indicators that provide information on food system exposure to risks and resilience factors will also be considered, including resilience to pandemics, dependence on input and food imports, dependence on export revenues, cereal reserves, tariffs, diversity of production, diversity of supply chain structure and organization, and marketing. Internal trends, such as major technical or institutional innovations addressing food system challenges, will also be identified.

The assessment will emphasize current and future challenges in terms of food system sustainability.

Combining quantitative and qualitative data
The method will be adapted according to the availability (or absence) of data and its quality, while making the underlying assumptions, limitations and validity of the proposed indicators explicit. A combination of qualitative data (based on key informant interviews and secondary qualitative data) and quantitative data will be used.

The method will help to build a consistent narrative based on quantitative and qualitative data.

Using a participatory approach
The methodology will rely on participatory approaches. Food system actors will be involved in order to contribute to the food system assessment and enrich the analysis of secondary data. Indeed, multi-actor consultation and dialogue are valuable throughout the process, from identifying priority key sustainability questions to designing actions. In particular, the stakeholders will contribute to three steps of the process: (i) initial framing of the main issues; (ii) documenting food system characteristics, performance, risks and opportunities through individual interviews; and (iii) participating in a final workshop aimed at achieving a shared understanding of the state of the food systems, key challenges and potential challenges.

Food system stakeholders will be involved throughout the process.

Implementing iterative processes
The assessment will be an iterative process. In particular, the interviews will provide relevant elements to improve the interpretation of the quantitative evidence gathered in the initial steps. It will also be necessary to go back and forth when assessing territorial heterogeneity of food systems. A spatialization proposal consisting of broad areas with corresponding narratives about food system dynamics and how food systems are evolving in each zone will be prepared on the basis of existing maps and literature, then adjusted according to the interviews and the synthesis workshop

The process provides for regular work groups to build consensus about observed complexity and to arrive at workable simplifications.

Facilitating action-oriented decision-making
The assessment will mainly provide information addressed to policymakers, but which should also be readable by people and stakeholders with other backgrounds and interest. The assessment aims to foster a common vision of the food systems' main challenges at a national

scale, considering spatial differences across the country. The process will also initiate discussions around levers that could have a positive impact on food systems and their outcomes. It will also pave the way for in-depth food system assessments at territorial scales to support the dentification of concrete transformative interventions tackling specific territorial challenges.

The assessment process and output will be oriented toward decision-makers.

Based on a *multidimensional* and *dynamic* overview of food systems and a *spatial distribution* of actors, activities, drivers and impacts across the country, the assessment will improve the understanding of *current and future* challenges faced by food systems at national and territorial scales, which threaten their sustainability and resilience. The food system assessment will facilitate the *engagement of actors in transformative interventions* towards more sustainable food systems.

2.2 Human resources and assessment process organization

The methodology presented in detail in the following pages that follow will allow us to make a relatively quick assessment. It will require three to four experts (ideally both national and international experts), for a period of about 35 working days each. An additional expert in participatory approaches can be added to the team to facilitate multi-actor dialogues and the quality of the exchanges. An approximate division of working time by experts and by the stages and tasks is provided. This same methodology and the tools proposed may however be used for a more in-depth assessment if resources (time and budget) allow.

Collectively the team of experts should also be able to muster the necessary expertise as regards quantitative analysis based on international and national databases, territorial approaches, sensitivity to systemic approaches and expertise in policy dialogue. Beyond proven cross-cutting skills (i.e. a sound ability to synthesize and analyse quantitative and qualitative data, excellent writing skills, good knowledge of national and international institutions working in the field of agricultural and food systems, in-depth knowledge of the country's major food system challenges, proven ability to conduct studies in multidisciplinary teams, and essential relational skills) the three experts should be able to contribute with specific expertise on:

- socioeconomic issues in the agriculture and food sector and food security (micro);
- agricultural and food issues connected to natural resources and environmental issues; and
- policy issues, value chains and governance.

There are similar terms of reference for each of the consultants. All experts are expected to be involved in all steps. For all tasks, they must work together as a team and collectively divide the activities among them, according to their fields of expertise.

The experts will receive methodological guidance including training and support from external experts as well as the present methodological guide and tool kit.

2.3 A methodology in six steps

The methodology is structured according to five main steps preceded by a preparatory task (step 0). Table 1 presents the types of tasks that are required for each of the five main steps while Table 2 summarizes the objectives and methods used in each step. These are then further detailed in the following sections.

Table 1. Types of tasks in the steps of the assessment

Types of tasks	**Step A** Framing the issues	**Step B** Document	**Step C** Conduct qualitative analysis and mapping	**Step D** Sharing, discussion and agreement	**Step E** Synthesize
INDicators		B_IND			
DOCuments	A_DOC	B_DOC			
TRENDs		B_TREND			
STATistics Food consumption/ production/balance		B_STAT			
TYPes of food system actors			C_TYP		
INTerviews			C_INT		
ZONing			C_ZON		
DIAlogue	A_DIA			D_DIA	
WRIte					E_WRI

Source: **Authors' own elaboration**.

Table 2. Timeline of the assessment: steps and tasks

	Step A Framing the issue	**Step B** Document
Task A_DOC	**Target the issues to be addressed during the assessment by identifying the main issues in the four dimensions to achieve the food system sustainability objectives** [A DOC_Instructions Documents to gather.docx] [A DOC_ Tool_Literature summary grid.xlsx]	• **Gather and analyse available data (quantitative, qualitative, trends and thematic maps to document the key questions and issues that were selected at the end of step A to guide the analysis** • **Support or refute the assumptions made**
Task A_DIA	**Sensitize stakeholders to the food system approach and involve them in the assessment process** [A DIA_C INT_D DIA Instructions Choosing participants.docx] [A DIA Tool List of participants xlsx] [A DIA Instructions Launch workshop.docx] [A DIA Tool Agenda Launch workshop.xlsx] [A DIA Tool Post-it entry xlsx]	
Task B_STAT		**Provide essential information on the national status and trends in the availability and use of major food and non-food agricultural products** **Priority tools** [B_STAT_Example ProdImportExport_ Burkina Faso.xlsx] [B_STAT Example Food Balance Burkina Faso.xlsx] **Secondary tool** [B STAT Instructions Selection of strategic products.docx]
Task B_IND, B_DOC and B_TREND		• **Gather data on the sustainability of the national food system in the four dimensions by focusing on the major impacts (positive and negative) retained in step A for the analysis** • **In connection with the issues selected, collect essential data on the drivers that shape food systems** • **Identify the most critical challenges (in the present or in the decades to come) constituted by these drivers and impacts of the food system** [B IND TREND DOC Instructions Characterize impacts and drivers.docx] **B_IND** — **Analysis of indicators** **Priority tool:** [B IND Data Calculated international indicators.xlsx] **Secondary tools:** [B IND DOC TREND Sources Indicators.xlsx] [B IND Sources Description of Indicators.docx] [B IND DOC TREND Sources Database availability per country.xlsx] [B IND DOC TREND Sources Description of websites.docx] **B_DOC** — **Document the drivers and impacts** [B IND DOC TREND Sources Qualitative analysis.docx] **B_TREND** — **Analysis of trends. Priority tool** [B TREND Data Example Long series.xlsx]

	Step C Conduct qualitative assessment and mapping	**Step D** Share, discuss and agree
	• **Characterize and map the main types of actors and activities of each segment of the food system (and the main actors external to the food system that influence its functioning)** • **Explore the diversity of existing situations in terms of combinations of challenges, opportunities, and dynamics of food systems across the country** • **Enrich secondary data (quantitative, qualitative and existing maps) with qualitative and systemic assessments, by interviewing actors in the food system and experts in various fields**	• **Synthesis workshop to present and discuss the results of the assessment** • **Facilitate dialogue between food system stakeholders, political decision-making and (local) authorities, to co-construct a multidimensional and dynamic vision of food systems and to identify critical points and leverage points for future interventions**
Task C_TYP	**Provide an overview of the main types of food system actors in each segment (from production to consumption) as well as other non-food or non-agricultural actors and activities that have a major influence on food systems** [C TYP Instructions Typology of actors.docx] [C TYP Example Typology of actors to adapt.xlsx]	
Task C_ZON	• **Carry out a preliminary zoning of territorial food systems to propose a relevant scale of analysis and intervention and to identify a set of challenges to be taken into account** • **Document the profiles of these territorial food systems by building a narrative on each zone in future interventions** [C ZON Instructions Zoning.docx] [C ZON Instructions Use of Lizmap.pptx] [B DOC C ZON Sources Websites maps.docx]	[A DIA C INT D DIA Instructions Choosing participant.docx] [D DIA Instructions Synthesis workshop.docx]
Task C_INT	• **Enrich the response of the issues selected with expert assessments and by exploring the cause-and-effect relationships between the different components of food systems** • **Explore the diversity of situations across the country: understand how the issues identified in the territories are developed and build systemic narratives for each zone** **Priority tools** [A DIA C INT D DIA Instructions Choosing participants.docx] [C INT Instructions Interviews.docx] **Secondary tools** [C Example Interactions.xlsx] [C INT Tool Interview entry.xlsx]	**Step E** Synthesize **Provide a holistic, systemic and spatially differentiated summary of the analysis** [E WRI Template Food System profile.docx] [E WRI Template Country report.docx]

Source: **Authors' own elaboration**.

3 Implementing the assessment

3.1 Step 0. Preparing the assessment

Before starting the assessment, several preparatory tasks need to be carried out:

- Select the experts involved.
- Meet the main ministries involved with the agrifood sector in order to ensure their commitment to the assessment and clarify their expectations as around the process that will be followed. These first meetings (whether bilateral or multilateral) will also be an opportunity to clarify the vision of the authorities on the major challenges relating to food systems and current policies.
- Identify the relevant governance arrangements with which the assessment team could then liaise and synergize (interministerial coordination, multi-actor platforms, ongoing political dialogue, and so on).
- Establish the country team that will support the experts during the diagnostic process. The country team will include the initiators of the process (e.g.: the donor) and the respective focal points of the ministries concerned.
- Become familiar with the methodology.
- Plan the main steps.

The initiator of the study will have a major role to play in the entire analysis and dialogue process by identifying and recruiting experts, establishing the institutional contacts, inviting participants to workshops, identifying key informants to be called upon in step C, and disseminating and promoting the results.

Tools
[0_Tool_Distribution of roles]: Summary of the roles of each of the parties involved in the study.
[0 _Tool_Planning&Products]: Planning to be adapted for each study, summary of the tasks to be completed, the provisional and final deliverables, and the recommended deadlines for each step.

3.2 Step A. Framing the issues

Purposes
- Target the main issues and identify key sustainability questions in each of the four dimensions (food security, nutrition, health; socioeconomics; territorial balance and equity; environment) to achieve the food system sustainability goals that will be addressed in the course of the assessment.
- To make stakeholders aware of the food system approach and involve them in the assessment process.

Rationale
Food systems are extremely complex, and grasping the full extent of this complexity is clearly beyond the scope of the proposed approach. The assessment will thus focus on selected key sustainability questions and issues affecting the short- and long-term sustainability of food systems in the country.

Task A_Doc: Preparatory framework

Method
Initial bibliographic framework
As a preparatory step, and to facilitate the experts in the initial phases of their work (for example, to prepare the launch workshop – see below), an *initial bibliographic framework* is developed. This is a preliminary synthesis of reference policy documents, government strategies and relevant analytical pieces, as well as a review of the main indicators. These documents are summarized to support the formulation of a first set of observations about the main impacts of the food system

in the four dimensions, as well as some of the main causes leading to these impacts.

A collective working session of the country team (involving the initiators of the study and the focal points of government institutions) will then lead to a first outline of the main challenges of the food system by distinguishing the major impacts and causes (at this stage including views which may eventually prove controversial).

Tools
For the initial bibliographic framework and a review of the main indicators, see the Tools for the tasks B_STAT, B_IND, B_DOC, etc. below.

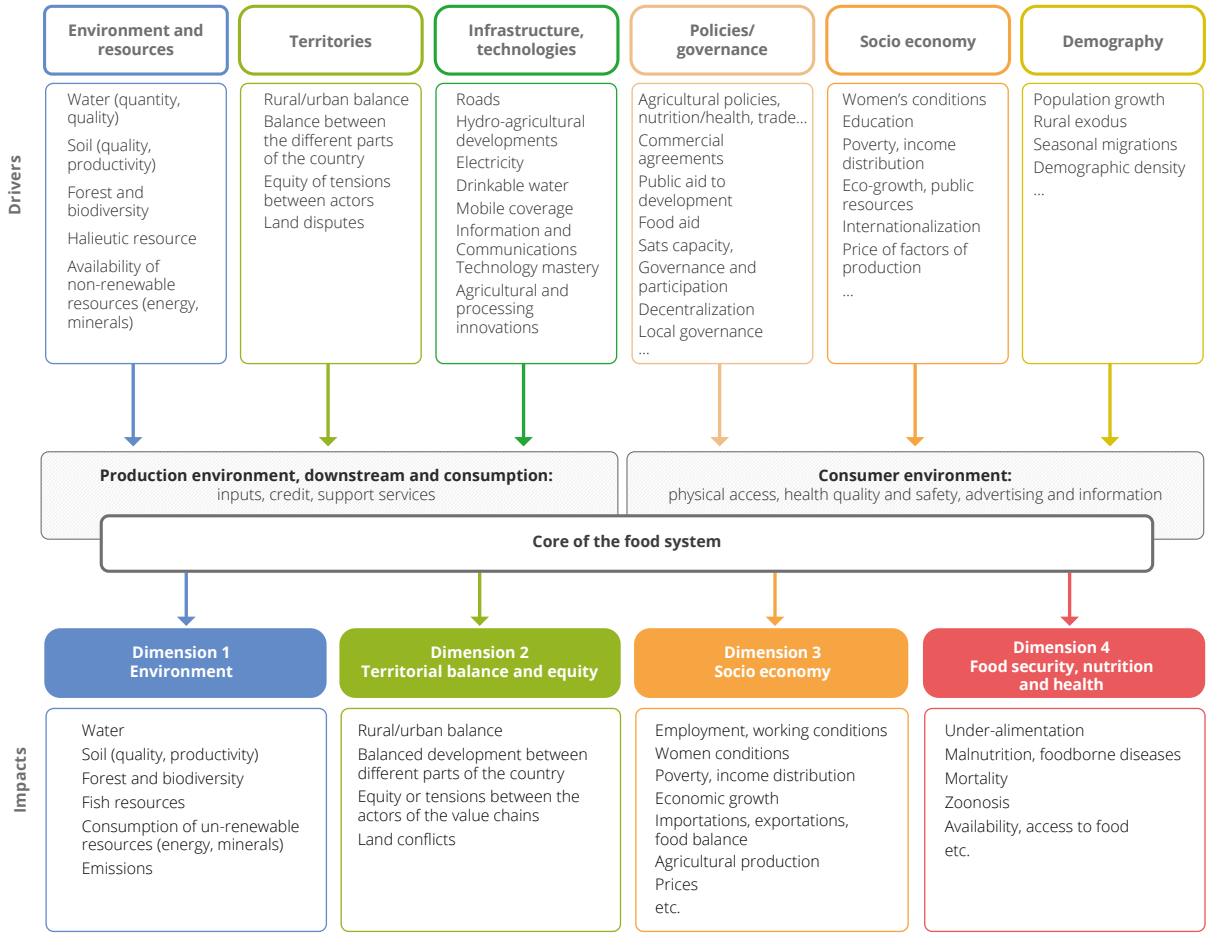
[A DOC_Instructions_Documents to gather.docx]: Suggested documents to search and read to prepare the launch workshop.

[A DOC_ Tool_Literature summary grid.xlsx]: A tool to support the structuring of the information extracted from the literature review and that then will be useful for characterizing the major impacts and causes.

Task A_DIA: Launch workshop

Method
A one-day workshop will be held with 24–40 participants selected from key food system

Figure 3. Drivers and impacts - dimensions and subdimensions



Source: Authors' own elaboration.

stakeholders and institutions related to food systems (if the workshop is held using remote means, it is preferable to split it into two half-days).

This initial multi-stakeholder dialogue will help define the key sustainability questions as perceived collectively at the start of the assessment. The workshop will include the initiators of the study, representatives of food system actors, government representatives, non-governmental organizations (NGOs) as well as national and international civil society organizations involved in agricultural and food issues, and possibly some experts on these topics. This workshop will include plenary sessions and working groups.

Very soon after the workshop the country team will meet for a *post-workshop review*. This aims to:

i summarize the main results in terms of impacts and causes (in table form);

ii develop first drafts of systemic representations (diagrams) in each of the four dimensions, representing causal chains and interactions among drivers, activities and impacts; and

iii collectively agree on a first set of key sustainability questions and hypotheses framing the assessment in each of the four dimensions. *Note*: these hypotheses should seek to trigger in-depth reflection on any observed lack of sustainability of the food system in each of the four dimensions, for instance by linking several critical problems. While this task is about seeking to explain why certain phenomena and dynamics can be observed, care must be taken to avoid formulating these problems as the non-application of a policy or a "good" practice from which solutions would automatically arise (cf. Box 2).

This first analytical product will help define the in-depth work to be carried out in the next step, while focusing the analysis on a few major aspects.

Results

The main result expected from this workshop is a collaboratively produced draft shortlist of the major impacts of food systems at the national level. A second result is a draft identification of major causes with their respective impact pathways linking those causes to major impacts. These impacts relate to the results of food systems in the four sustainability dimensions (as represented at the bottom of the conceptual framework). The causes are either drivers of the food system (at the top of the conceptual framework), elements from the direct environment of the food system actors, or result from specific activities or practices undertaken by the food system actors at its core; see Figure 3.

Tools

Priority tools

[A DIA_C INT_D DIA_Instructions_Choosing participants.docx]: Instructions to establish relevant and balanced lists of participants for the workshops (launch and synthesis) as well as the people who will be interviewed.

[A DIA_Tool_List of participants.xlsx]: Tool to be completed to establish balanced and representative guest lists (by dimension, area, segment of the food system).

[A DIA_Instructions_Launch workshop.docx]: Guidelines for organizing and conducting the launch workshop (goals, organization, exercises).

[A_DIA_Tool_Agenda Launch workshop.xlsx]: Proposed agenda for the launch workshop for face-to-face and virtual workshop.

Secondary tool

[A DIA_Tool_Post-it entry.xlsx]: Tool to help synthesize information, to be completed with the content of the post-its obtained during the launch workshop.

Box 2. Summary of the results of the launch workshop, draft systemic and framing diagram – the case of Senegal

Raw summary of the major impacts identified during the launch workshop

Example

Major impacts identified	Types of Impacts	Comments
Soil destructuring	Decreased soil fertility, degradation	Agricultural practices destroy the land (use of mineral fertilizers instead of organic) – land becomes unproductive. Ex. South of Senegal. In the 1980s, the land was fertile, but there was soil degradation – increased deforestation (forest – agricultural land). This only worsens the loss of soil fertility.
Decreased fertility of agricultural land		Without considering the agrarian system as a whole, e.g. groundnut region. Trees are cut to grow groundnuts because they need a great deal of sun. No organic matter input. Cut trees are also used as livestock feed, especially during times of drought.

Raw summary of the major drivers identified during the launch workshop

Example

Main causes	Types of causes	Comments	Types of causes
Poor choices when promoting production systems	Production system	Promotion of a groundnut monoculture – clearcutting – soil degradation because of bare soils. No integrated system, separation between livestock, tree and animal agriculture less integrated in the cultivation areas.	Soil degradation
Poor farming practices	Agricultural practices	No organic inputs by producers because of quantity and quality are limited.	Soil degradation

Provisional conceptual diagram to highlight the impacts and their various causes

Drivers

- Political drivers and governance
- Poor choices when promoting production systems
- Public policies subside conventional agriculture more than agroecology
- Lack of synergy in the development and implementation of agricultural policies
- Lack of concerted management plan for our forests
- Deficiency in the implementation of environmental and social management plans/lack of "environment" components in certain public policies (e.g. north rice)
- Environment is decentralized jurisdiction, but lack of involvement by local elected officials, and lack of skills/training on food systems at the level of local authorities.

Rise in sea level

Increased frequency of droughts

Climate change

Population growth: need of farmland

Poverty of family farms

Poorly performing hydro-agricultural facilities

Lack of access to processing equipment

Difficulty of access to organic inputs

Activities, practices of sector actors

Herbalists
Firewood
Animal feed
Overfishing/Bad fishing practices (explosion)

Pastoral activity

Little input of organic matter

Diversity of activities

Market gardening overconsumes water (Niayes)

Mines

Lack of drainage system (River Valley)

Rice growing (North), market gardening (Niayes)

Fish companies (discards at sea)

Impacts

Deforestation and loss of biodiversity (cultivated, non-timber forest products, medicinal, fishery)

Decreased soil fertility

Drop in water resources

Water pollution

Soil salinity

Formulation and selection of sustainability questions to guide the analysis. Identification of possible analyses to test these hypotheses

Hypotheses formulated from the launch workshop

Deforestation and loss of biodiversity (cultivated, non-timber forest products, medicinal products, fisheries) are already significant and could disrupt the functions and endanger the balance of ecosystems.

The loss of soil fertility (linked to deforestation, the lack of organic inputs and a lack of environmental vision of policies and methods of governance) is becoming a major concern for producers and threatens future agricultural production.

Salinization, due to climate factors and exacerbated by anthropogenic factors, leads to a loss of available land in certain areas.

The future sustainability of the food system depends on good water governance and adequate infrastructure to counter inequity of access and guarantee the preservation of long-term resource quality and quantity.

The promotion of agroecology is underway (by civil society) and deserves scaling up.

Provisional hypotheses selected according to (i) national priorities and (ii) the most significant challenges to guaranteeing the future sustainability of the food system (expert opinion)

The loss of soil fertility (linked to deforestation, the lack of organic inputs and a lack of environmental vision of policies and methods of governance) is becoming a major concern for producers and threatens future agricultural production.

The future sustainability of the food system depends on good water governance and adequate infrastructure to counter inequity of access and guarantee the preservation of long-term resource quality and quantity.

The promotion of agroecology is underway (by civil society) and deserves scaling up to help meet previous challenges.

Possible analyses to demonstrate/refute these hypotheses (examples)

- Characteristics of the types of soil degradation.
- What are the most affected areas: map of their distribution?
- Identification of the major causes of this degradation (according to zone) and the impact agriculture has on this degradation.
- What is the relationship between soil quality and level of yield/agricultural production?
- What is the state of water resources?
- What role does agriculture play in water consumption in Senegal?
- Which areas are most affected?
- What are the limits of current water governance?
- What uses are in competition?
- What role does agriculture and/or the food system play in water pollution?
- Which areas are turning towards agroecology? Who supports agroecology?
- What portion of the national budget is dedicated to agroecology compared to support for chemical inputs/pesticides?

Source: **Authors' own elaboration**.

3.3 Step B. Documenting and analysing available data

Purposes
The objectives of step B are to:

- gather and analyse available data (quantitative, qualitative, trends and thematic maps) to document the key sustainability questions formulated at the conclusion of step A to guide the analysis;
- support or refute the hypotheses made.

It will be important not only to evaluate existing data about the main impacts of the food system in the four dimensions, but even more so to seek to document the causes that underlie these impacts. The structure of national food production and consumption, as well as trade in food products, will also be analysed.

Rationale
Gathering bibliographic material without having clearly identified key sustainability questions in step A might lead to a waste of time and focus while generating irrelevant analysis. The analysis of existing data should therefore be guided by those sustainability questions. It should make it possible to confirm or refute the hypotheses and possibly identify other critical or particularly positive impacts or drivers that would have been omitted during the workshop and preparatory meetings and that are essential to understanding the observed phenomena or dynamics. At this stage, the national scale will be favoured; it is an imperfect scale to capture the diversity of food systems and their context, but it remains essential as the main level of policy and budget decisions. It will be completed by a spatialized analysis, which will make it possible to start capturing the heterogeneity at subnational levels of the main impacts and drivers. This analysis will then serve as a basis for an initial territorialization of the food system in step C.

Task B_STAT: Basic statistics on production and trade, and food balance

Purposes
To understand the availability of and trends in the use of major food products (as well as major non-food agricultural products nationally). The aim of this task is to provide a comprehensive view of the relative share of food products in the agricultural sector, the share of local supply in food availability, and the balance between national and global markets, as well as historical trends.

Method
This task consists of analysing basic agricultural and food statistics on the main crops, animal, fish products and non-food products (production, exports, imports) at the national level, and the food balance situation of the main categories of food products based on FAOSTAT data (or national data).

Long-term trends should be given priority (since the early 1970s or 1980s) to clearly identify long-term dynamics and possible breakthroughs in trends. Volume data can be considered (especially for products with very unstable prices), but it is preferable to use value data to compare the relative importance of various products:

- Crop production development (by major product categories; with details of the most strategic products, if necessary).
- Import and export development (by major product categories; with details of the most strategic products, if necessary). Box 3 presents examples of figures on trade trends for the case of Burkina Faso.
- Food balance sheets (for the most strategic products, by product groups and for all products combined). They can be extracted from FAOSTAT https://www.fao.org/statistics/faostat

and expressed as calories, protein or fat. The range of food products to be explored is left to the discretion of the experts, but some suggestions are provided ([B STAT_Instructions_Selection of strategic products.docx]). FAOSTAT does not provide direct data for the total food balance by country, but this can be calculated. Box 4 illustrates some calculations for Burkina Faso. Please note that these reports indicate food availability at the national scale, not consumption. These averages do not reflect disparities that may exist according to geographic area and social class. In addition, the availability of certain products (such as dairy, horticultural or non-timber forest products) tends to be underestimated. Statistics on animal products should include both the livestock trade and the meat trade and be analysed with vigilance. For example, data available at FAOSTAT on trade in dairy products are misleading because they do not consider milk powder mixed with vegetable fats, although this is very widespread – in West Africa for example.

Results

- Commented graphics to answer the following questions:
  - What are the most produced food and non-food products? What is exported and imported (and how much)? To what extent does the country depend on imports to meet its needs?
  - What is the long-term development of the production and trade (imports, exports) of various agricultural products?
  - How are diets structured (by product groups, calories/protein/fat)? Which are the most consumed food products? What is the total food assessment and what are the major categories of food products?
- A short section presenting dynamics of non-food agricultural products (and value chains): main products, share of land used, value of production and exports. To what extent do these products and related activities influence or weigh on the food system (competition, synergy)?

These results will also feed into the main issues identified.

Tools

Priority tool

[B STAT_Example_ProdImportExport_Burkina Faso .xlsx]: Example of an analysis of basic data and graphs on production and trade taken from FAOSTAT.

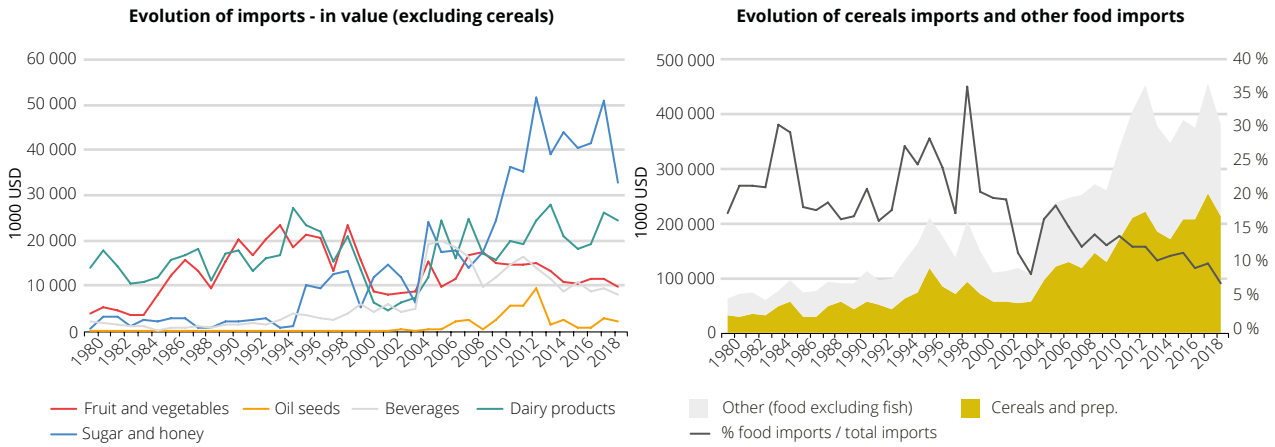
[B STAT_Example_food balances_Burkina Faso.xlsx]: Methodology for extracting data from FAOSTAT and carrying out food assessment calculations based on the example of Burkina Faso.

Secondary tool

[B STAT_Instructions_Selection of strategic products.docx]: Criteria for choosing the main strategic products in the event of further analysis.

Box 3. Dynamic analyses of agricultural and trade statistics – the case of Burkina Faso

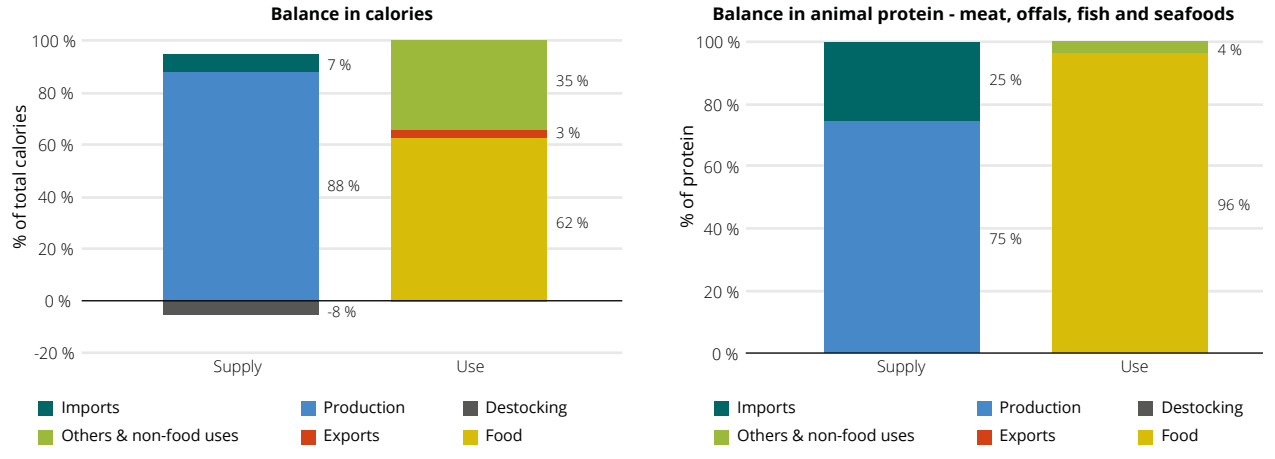
The graphs show the growth in food imports in Burkina Faso. These imports are dominated by cereals, which alone represent almost 50 percent and have been relatively stable since the 1980s. However, in absolute terms, imports of cereals but also sugar, and to a lesser extent dairy products and beverages, has increased sharply.



Source: **Authors' own elaboration based on FAOSTAT, 2021 data**.

Box 4. Food balance – the case of Burkina Faso

Food calorie balance can be calculated using FAOSTAT data. This helps identify dependence on imports as well as the various uses of dietary calories. This type of food balance should also be calculated for the main food categories, namely, cereals, animal products and vegetables.
See more examples in [B STAT_Example_Food balance_Burkina Faso.xlsx]



Source: **Authors' own elaboration based on FAOSTAT, 2021 data**.

Tasks B_IND, B_DOC and B_TREND: Document each issue selected by exploring quantitative data, trends and qualitative information on impacts and drivers of the food system

Purposes

- To gather data on the sustainability of the national food system in the four dimensions by focusing on the major impacts (positive and negative) selected for analysis.
- With respect to key sustainability questions, to collect essential data on the drivers shaping food systems.
- To identify the most critical challenges (current and in future decades) posed by these drivers and their impacts.

The B_IND, B_DOC and B_TREND tasks will be carried out simultaneously in order to collect the data necessary to respond to the sustainability questions selected. These data must be analysed and discussed from a dynamic perspective. What do these numbers and trends tell us about current and future food system sustainability (if the trends continue in a "business as usual" scenario)? This analysis should highlight not only the interactions among the four main sustainability dimensions but also the potential feedback loops between impacts and drivers (e.g. the low incomes of small producers limit their ability to access a diversified diet, which worsens their nutritional situation; lower crop productivity linked to soil degradation leads to an increase in agricultural land, to the detriment of the forest, accentuating erosion phenomena). This then leads to a better understanding of the fundamental drivers and trends determining food system functioning and performance as well as to a better capacity to anticipate how the current performance of food systems is reinforcing or mitigating observed trends and food system dynamics. A thorough understanding of the causes behind key sustainability questions will later help in identifying appropriate levers.

It is often the case that observed food impacts can be attributed to more factors than merely the food system. For example, soil pollution can result from the misuse of agricultural inputs and also from mining activities, while territorial differences in household incomes may reflect not only levels of agricultural productivity but also incomes generated by non-agricultural activities.

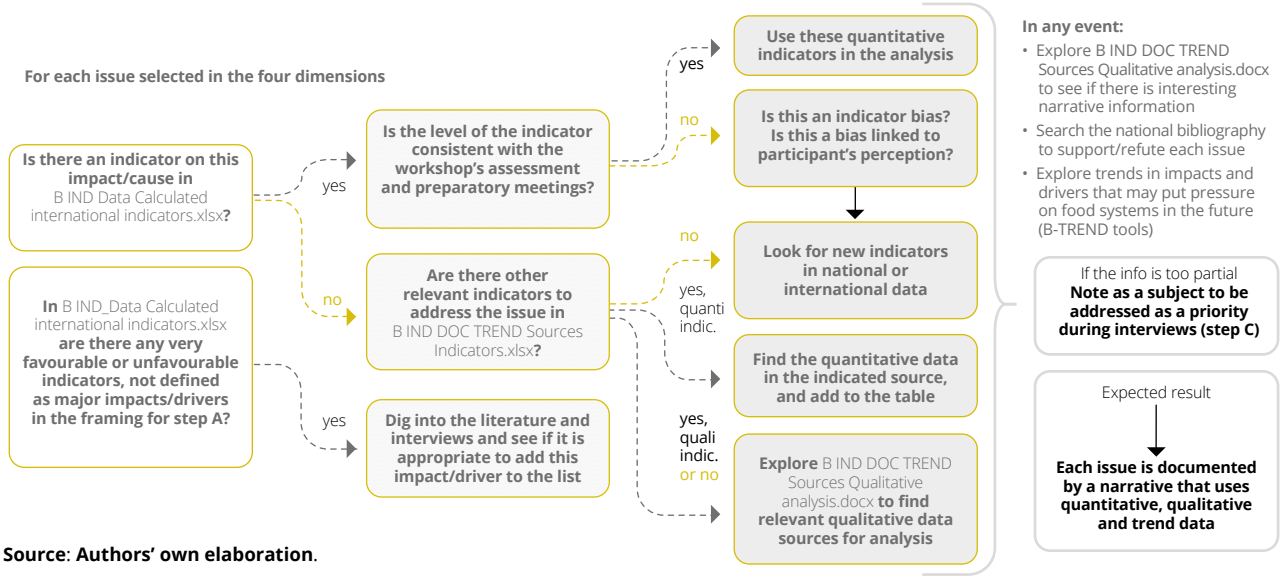
Therefore, other sectors or factors leading to major sustainability impacts must be included in the analysis to understand the relative contribution of food systems (whether marginal or significant) to different observed impacts. Hence the assessment should consider such characteristic trends and dynamics to be able to clearly discern the contribution of the food system to observed impacts.

Method

For each sustainability question selected, it will be necessary to provide data and narratives to confirm or refute the hypotheses formulated. The themes to be explored are classified into subdimensions and categories of each of the four sustainability dimensions and for each of the six types of drivers. They can be documented or assessed using quantitative indicators, proxy indicators and/or qualitative information collected from a literature review (both international and national).

The proposed approach is summarized in Figure 4 and includes going back and forth between the quantitative and qualitative data used to document each issue selected.

Figure 4. Step B analysis process



Source: **Authors' own elaboration**.

Results

The expected result is a consistent and systemic narrative for each of the key sustainability questions. These narratives will link observations and "evidence" of different types. They will include:

- key figures and observations as regard the spatialization of the observed phenomena;
- descriptions of mechanisms at work (causal links between drivers, system activities, impacts) and the interrelationships between various components of the food system; and
- insights about past and (anticipated) future trends.

During stage C, the interviews will supplement understanding of these mechanisms and specify any territorial particularities. These results will be presented, discussed and enhanced during the stage D workshop.

Tools

[B IND_DOC_TREND_Instructions_Characterize impacts and drivers.docx]: This document explains how to document the major impacts and drivers of the food system (process summarized in Figure 5).

Task B_IND: Use quantitative indicators to support or refute the hypotheses selected for analysis

Method

For each of the selected sustainability question and hypotheses formulated at the end of step A, this involves comparing with existing quantitative indicators: are available indicators (in comparison with other countries or in relation to known thresholds) consistent with workshop participants' assessments and hypotheses?

Several sources can be used:

- Seventy-nine international quantitative indicators, covering the four impact dimensions and the different types of drivers, have been gathered and collected for all countries in document [B IND_Data_ Calculated international indicators.xlsx]. As absolute values and percentages are often meaningless (especially for non-specialists in the dimensions concerned), we suggest supplementing these values with a score of 1 to 5 corresponding to the countries' ranking in the distribution of values by quintile, either by income level group (LIC/LMIC, UMIC, etc.), or for all countries, or by comparing them with countries in the same geographical area (5 being the most favourable quintile and 1 the least favourable) - see Box 5. These scores enable a first, rapid identification of the drivers and impacts that call the sustainability of food systems into question.

- A longer list of more than 99 quantitative indicators covering the various dimensions is provided [B IND_DOC_TREND_Sources_ Indicators.xlsx]. This list is based on a review of the literature on food systems assessments: a compilation of all the indicators listed in the main recent publications on food systems assessments with an indicator approach was made.[4] The choice of these indicators is based not only on their potential to reveal key drivers and impacts in the different dimensions, but also on their availability in international databases. If the indicator is not readily available, a second option to describe the subject in question is suggested. Absolute values or percentages will be selected as appropriate using the most recent data.

4 Notably: Allen *et al.,* 2019; Béné *et al.,* 2019a, 2019b; Chaudhary *et al.,* 2018; FAO, Resource centre on Urban Agriculture and Food Security and Wilfried Laurier University, 2018; Melesse *et al.,* 2019; UNEP, 2015; Zurek *et al.,* 2017 (See full references at the end of this report).

- These international indicators should be supplemented or replaced if they appear to be incorrect,) by standard national statistics or surveys. National data will, in particular, make it possible to provide a disaggregated view by administrative unit or by category of actor.

- When quantitative indicators are missing or incomplete, they must be supplemented by qualitative information. A complement of 41 qualitative indicators (or questions) is proposed in the list of indicators.

This list of indicators by dimension/ subdimension/category is indicative. If a selected issue cannot be covered by the set of indicators proposed, other quantitative indicators must be used. For example, coastal countries can add a quantitative indicator on fish stocks in national maritime areas.

Results
The results can be presented in tables, graphs and, possibly, via spider web charts (see Box 6).

Tools

Priority tool
[B IND_Data_Calculated international indicators.xlsx]: Files containing the 79 indicators calculated by country, as well as the quintiles by group of countries (LIC/LMIC, UMIC, etc.), for the world and by geographic area.

Secondary tools
[B IND_DOC_TREND_Sources_Indicators.xlsx]: Table of international indicators by dimension, sub-dimension and category. Essential information is provided for each indicator in this aggregate table.[5]

[B IND_Sources_Description of indicators.docx]: Individual indicator sheets provide details for each indicator and can be viewed as needed.[6]

[B IND_DOC_TREND_Sources_Database availability per country.xlsx]: List of major relevant international databases or websites and coverage by country.

[B IND_DOC_TREND_Sources_Description of websites.docx]: Main international websites or databases to refer to, as well as a brief description of the data available and the organization.

[5] The dimension, subdimension and category of the indicator
- Is the indicator used for A DIA, B IND, B TREND or B DOC tasks?
- Is the indicator considered "primary" or "secondary"? The primary indicators are those that need to be systematically explored, either quantitatively (if data is available) or qualitatively. Secondary indicators should be documented if the dimension given is particularly critical to achieving the objectives of the sustainable food system in the context of the evaluation.
- Does it concern effects, impacts and/or drivers?
- The relevance scale of the indicators (some will also be used for territorial analysis in step C)
- Data sources
- The suggested group of countries to use for cross-country comparisons and scoring (e.g. LIC/LMIC or world).

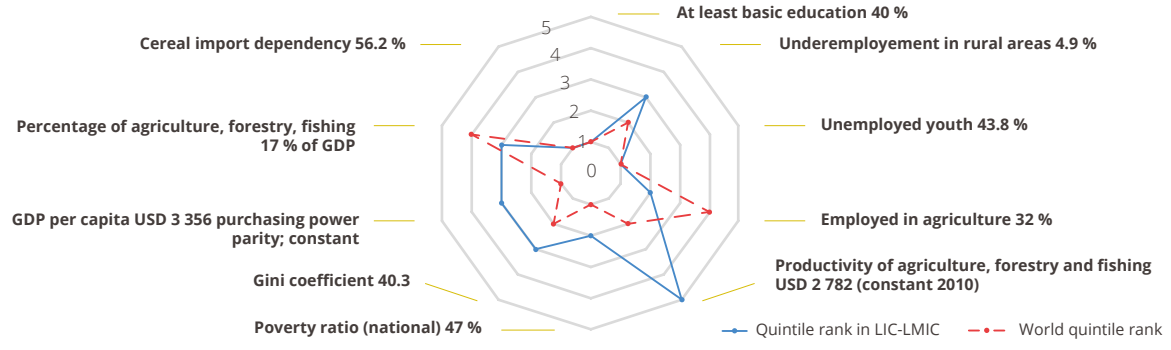
[6] Definition, logic, range of value, unit, limits, comparisons/rating indications, alternative indicator if not available, primary data sources and references for more information

Box 5. Table presenting a selection of indicators and the country's rank in LIC/LMIC or global quintiles - the case of Senegal

Dimension	Sub-dimension	Category	Indicator	Value	Unit	Year	Rank/ LIC/ LMIC	Rank/ world	Driver and/ or impact
Biophysics and environment	Resource consumption	Water	Agricultural water use	92	% of total water use	2002	1	1	Impact
	Biodiversity	Natural areas	Evolution of forest area	-3.2	Points of percentage	2000–2015	2	1	Impact
Territorial balance and equity	Territorial balance	Well-being	Rural/urban gap in stunting prevalence	10	Points of percentage	2017	3	2	Impact
	Political stability/ conflicts	Security	Political stability and absence of violence	-0.09	Index -2.5 +2.5	2018	4	3	Driver
Infrastructure & technologies	Infrastructure	Electricity	Access to electricity	62	% of population	2017	3	1	Driver
Policies and governance	Policy & regulations	Sales policy	Taxes on agricultural products	13.9	Weighted average duty (%)	2018	3	3	Driver
	Production	Public budget	Public expenditure in agriculture	1.00	% of GDP	2017	3	3	Driver
Socioeconomy	Education	Level of education	At least basic education	40	%	2015	1	1	Driver
	Income & equity	Poverty	Poverty rate (national)	47	%	2011	2	1	Driver and impact
	Macro-economics	Wealth & growth	Percentage of GDP by agriculture, forestry, fishing	17	% of GDP	2018	3	4	Driver and impact
	Commerce	Import–Export	Dependence on cereal imports	56.2	%	2011–2013	1	1	Driver and impact
Demography	Population	Growth	Population growth	2.8	Annual %	2018	1	1	Driver
Consumption environment	Accessibility	Price of foodstuffs	Food Consumption Price Index	119.9	2010=100	2000–2019	5	5	Driver and impact
Food security, nutrition & health	Nutrition	Malnutrition	Prevalence of obesity in the adult population	7.4	%	2016	3	4	Impact
				Most critical position					Best position

Source: **Authors' own elaboration based on FAOSTAT, 2021 data**; with further data from: **ASTI** (Agricultural Science and Technology Initiative), 2021, Datasets on agricultural research expenditures and human resource capacity, https://www.asti.cgiar.org/data-graphics; **ILO** (international Labour Organization), 2021, ILOSTAT, https://www.ilo.org/shinyapps/bulkexplorer24; **Global Nutrition Report**, 2021, Country Nutrition Profiles, https://globalnutritionreport.org/resources/nutritionprofiles/africa/#profile; **UN** (United Nations), 2021, UNSTAT, SDG Global Database, UN, https://unstats.un.org/sdgs/unsdg; **WHO** (World Health Organization), 2021, Global Health Observatory data repository, https://apps.who.int/gho/data/node. home; **World Bank**, 2021, Indicators, https://databank.worldbank.org/home.aspx. (Web pages consulted, 19 August 2021).

Box 6. Socioeconomic indicators represented as a radar chart – example of Senegal



Source: **Authors' own elaboration based on FAOSTAT, 2021 data**.

B_DOC Enhance academic literature, expert reports, public policy documents and government strategy documents

Method
A wide range of documentation will be collected to cover the key sustainability questions identified in the four dimensions:

- national policy and strategy documents on agriculture, fisheries, rural development, food security, nutrition and health, food safety, natural resources, climate change mitigation and climate adaptation, risk prevention and resilience, employment, and so on;
- academic literature and expert reports;
- national reports of national surveys or censuses;
- analyses published by professional organizations and civil society actors as well as multilateral organizations (for example, "country profiles" published on many subjects), research institutes and think tanks; and
- thematic maps, which will provide a first overview of the spatial distribution of activities, drivers and major impacts.

An analysis of the bibliography should make it possible to clarify the impact pathways and the processes underlying food system sustainability in the four dimensions, in order to document each of the questions selected. It will complement the analysis that was carried out previously on the quantitative database (or replace it when data is missing). The political and governance dimensions will mainly be explored through this literature review (because quantitative indicators on policies are rare).

Many countries do not have a specific food system strategy, priority or agenda. But most have programmes related to climate/natural resources, nutrition and health, jobs and livelihoods, business development, agricultural trade, and so on. It will be necessary to understand how these sectoral agendas and current governance methods interact (working towards or against) with those food issues selected for analysis and how they could contribute to food system sustainability.

During this task, experts will also collect thematic maps related to the four sustainability dimensions (used in step C).

Results
This task is cross-cutting to the entire assessment and will be used to construct systemic narratives for each question selected.

Tools
[B IND_DOC_TREND_Sources_Qualitative analysis.docx]: Guidance for qualitative analysis and a list of websites and documentary sources pertaining to the dimensions of food system impacts and drivers. Key questions are suggested for each dimension.

[B DOC_C ZON_Sources_Websites maps. docx]: Map sources accessible online.

Task B_TREND: Analyse the trends of the main drivers and impacts

Method
Based on time series and, possibly, projections (when available and reliable),

trends in indicators relating to key drivers and impacts and their implications for food system sustainability will be discussed. The length of the historical series will depend on the indicators and the decision will be left up to the experts. However, it is recommended that the time period consider dates from at least 2000 and preferably from the 1980s.

Trends should be analysed from a systemic perspective and consider interactions among different components. To do this, figures combining drivers and impacts could be developed (for instance, portion of the urban population and prevalence of obesity; gross domestic product (GDP) per capita and prevalence of undernourishment; demographic growth, agricultural areas and forest areas). In addition to the static image of the B_IND step, trend analysis will help identify issues that may worsen or become critical in the future.

For impacts, the trends in the four dimensions of food system sustainability should be considered as follows:

- trends related to food security, nutrition and health – for example, the prevalence of undernourishment, overweight, stunting;
- trends related to socioeconomics – for example, employment in agriculture (total, women), the percentage of the population below the poverty line;
- trends linked to rural/urban territorial balance or inequalities – for example, rural/urban gap in the prevalence of stunting and per capita income; and
- trends related to the state of the environment – for example, changes in land use, greenhouse gas emissions resulting from agriculture, water use for agriculture.

For drivers, it is necessary to consider the main factors exerting (or that may exert in the future) pressure on the food system: demographic and socioeconomic trends related to territorial balance, the environment and policies; changes in consumption, production dynamics, marketing and consumption environments.

Projection data on food system indicators are relatively scarce and those that do exist are uncertain and are based on various assumptions. However, a few projections of often major drivers provide information on the potential outcomes of the food system in a "business as usual" scenario. It is worth considering:

- demographic drivers (e.g. population growth, urbanization) and associated consumption; and
- environmental drivers (e.g. precipitation, temperature, hazards).

Results
The main results of this task will be presented in the form of graphs, accompanied by a narrative on the impact or causes that could worsen the situation (see Box 7).

Tools
[B TREND_Data_Example_Long series EN.xlsx]: World data table with a selection of long time series and examples of combined figures.

Box 7. Population growth and changes in food security indicators – example from Senegal

The prevalence of obesity has increased as the urban population has grown. The rates of undernourishment and obesity converged to reach similar rates in 2016–2018. If these trends continue, obesity will soon affect a larger portion of the Senegalese population than undernourishment.

Source: **Authors' own elaboration based on FAOSTAT, 2021 data**.

3.4 Step C. Consult experts and spatialize

Purposes

- To characterize and map the main types of actors and activities of each segment of the food system (and the main actors external to the food system that influence its function).
- To explore the diversity of existing situations in terms of combinations of food system challenges, opportunities and dynamics across the country.
- To supplement secondary data (quantitative, qualitative and existing maps) with qualitative and systemic assessments by interviewing food system actors and experts in various fields.

Step C encompasses three iterative tasks: Tasks C_TYP, C_ZON and C_INT.

Task C_TYP: Who are the main actors and what are the main food system activities at the national and subnational levels?

Purpose

The purpose of this task is to provide an overview of the main types of food system actors in each segment from production to consumption, as well as other non-food or non-agricultural actors and activities that have a major influence on the food system.

Method

This C_TYP task consist in describing the main types of actors involved in food systems. It is mainly based on consultants' knowledge and supplemented by a generic typology provided (to be adapted for each country, see [C TYP_Example_ Typology of actors to adapt.xlsx]) by the iterature review of existing typologies at national or local level. Interviews with experts (Task C_INT) may be completed, especially for the mid-stream segments (collection, transport, processing and packaging) for which often very little information is available (partly due to the fact that many food system actors in these segments are informal).

The key types of actors to consider in this task are:

- The main actors in the food system at various segments of the food supply chains – production, collection and transport, processing and packaging, distribution of food products, consumption and waste and co-product management.

- The main actors and activities in the non-food agricultural sector (e.g. cotton, rubber) *provided they interact with food systems*, particularly in terms of land use, access to inputs, labour or inter-professional organizations.

- The main non-agricultural activities (e.g. tourism or mining) that have a *significant influence on the food system* should also be mentioned. These localized, non-agricultural activities interact with food systems (e.g. by increasing food or labour demand).

For the last two points, it will be necessary not only to describe these activities, but also to explain the connection they have with the food system, in particular with regard to the sustainability questions selected for analysis.

Four types of criterion, mainly qualitative, are used to describe the actors and activities of food systems: structural characteristics; main activities; techniques and practices; relations with other actors (market relations and organization).

Main production is often insufficient to describe agricultural holdings because they are diversified. In contrast, actors in mid-stream segments frequently specialize in a single product or set of products of similar category; these actors can therefore be identified by the commodities produced.

The choice of products and value chains on which emphasis will be placed must be made according to their contribution to the major impacts and the sustainability questions.

Activities related to waste management will also be described here by drawing on interviews with key informants and a review of the literature (see [B IND_DOC_TREND_ Sources_Qualitative analysis.docx]).

Regarding the consumption segment, one can consider certain structural characteristics of consumers (such as urban lifestyle, purchasing power), consumption practices (such as specific cultural habits), dietary diversity and the importance of self-sufficiency.

Results
The result will be a concise narrative together with a table or a figure containing the following information:

- the "name" of the type of the actor (the name must be concise and simple);

- the main characteristics according to various criteria (other criteria can be used if they are more relevant); and

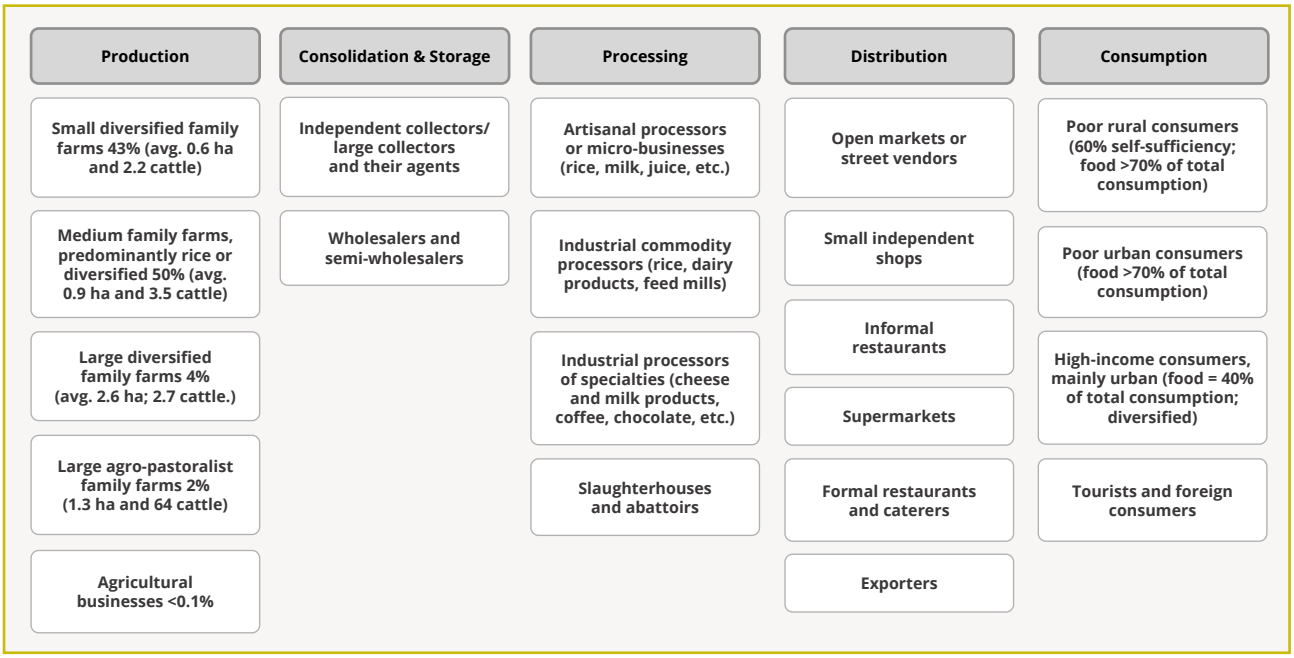
- whether or not the type is specific to a particular area.

A maximum of five “types” per segment is recommended. The various types can also be represented in a synthetic way (see Box 8).

Tools
[C INT_Tool_Interview entry.xlsx]: Instructions to characterize actors of the food system.

[C TYP_Example_Typology of actors to adapt.xlsx].

Box 8. Actor typology in Madagascar's food system



Source: **Authors' own elaboration**.

Task C_ZON: Spatialization and characterization of food system zones

Purposes

- To carry out a preliminary zoning of food systems to propose a relevant scale of analysis and intervention, and to identify a set of challenges for consideration in future interventions (these are territories where food system actors are confronted with similar combinations of challenges and causes, and where the system dynamics are relatively homogeneous).

- To document the profiles of these territorial food systems by constructing a narrative for each zone.

Rationale

Although an analysis of the main food systems challenges at the national level is crucial, there is a risk that it will conceal the great diversity of situations that coexist within the country. Subnational territories are the product of various trajectories, and their respective food systems face different realities and combinations of challenges. Each territorial food system will also involve various types of actors who deploy their activities and develop different internal innovations and dynamics.

A better understanding of the territorial characteristics, constraints and dynamics will allow us to characterize major challenges posed to the food system in each territory while identifying relevant levers. It will also make it possible to engage actors in a transformation of food systems based on a territorial approach.

Method

This will be an iterative process. The tasks of steps B, C and D should identify and characterize territorial food systems progressively. In step B, a series of thematic maps and flow maps must be assembled (see A DOC_Instructions_Documents to gather.docx). These will be transferred to an online tool, enabling them to be manipulated more easily and to allow for remote work. The zoning and characterization of territorial food systems

carried out during step C will be refined in step D during the sharing of results and discussions.

The first phase consists of carrying out a preliminary zoning, based on actors and activity systems as well as product flows (which make it possible to identify areas with a surplus/deficit trend). Using one or more existing maps of activity systems or livelihoods (e.g. those produced by FEWS NET), the experts will propose a first zoning. In this zoning, it will also be necessary to consider cultural food consumption habits, types of actors in mid-stream segments (in particular, processing), non-food actors and major areas of influence (attractive cities, borders), thereby going beyond purely agricultural zoning.

The experts will gradually adjust this preliminary zoning by superimposing:

- thematic maps covering the main issues identified (for instance, food insecurity, land use, risks linked to climate change, etc.); and
- a corpus of maps resulting from individual interviews may also be used; if no recent or good-quality map is available to deal with a major issue selected, a mapping based on the opinion of actors can be carried out during the interviews (see C_INT).

By examining the spatial distribution of the different components of the food system, the consultants will be able to adjust the preliminary zoning based on the distribution of actors and activities.

This zoning will be carried out using a dedicated digital tool (Lizmap, the use of which is detailed in [C ZON_Instructions_Use of Lizmap.pptx]). Experts' work can be discussed and clarified by a working group consisting of six to eight resource persons, who together have a good knowledge of each region of the country and each segment of the value chains. If it is not possible to organize this specific working group, the zoning could be submitted to some of the people interviewed who have a global vision of the diversity of situations across the country.

Once the zoning is stabilized, the profiles of each territorial food system will need to be written. Consultants will draw on interviews (see Task C_INT) as well as quantitative and qualitative subnational data. The process is similar to that used in step B nationally. The spatial differentiation of quantitative indicators, their evolution over time and also narratives (especially concerning cause-and-effect relationships) can be used to provide an overview (key facts and figures) of each territorial food system.[7] This will provide a preliminary presentation of how the identified food systems operate in each territory and their performance (in relation to the sustainability questions selected for analysis), and how they are shaped by the drivers and/or actors and activities of the food system.

The delimitation and description of territorial food systems will be presented, refined and confirmed during the synthesis workshop (step D).

Results
Preliminary maps of territorial food systems in the country as well as a provisional narrative to describe each of the predefined areas (see Box 9).

Tools
[C ZON_Instructions_Zoning.docx]: This document describes the methodology for territorial food system zoning.

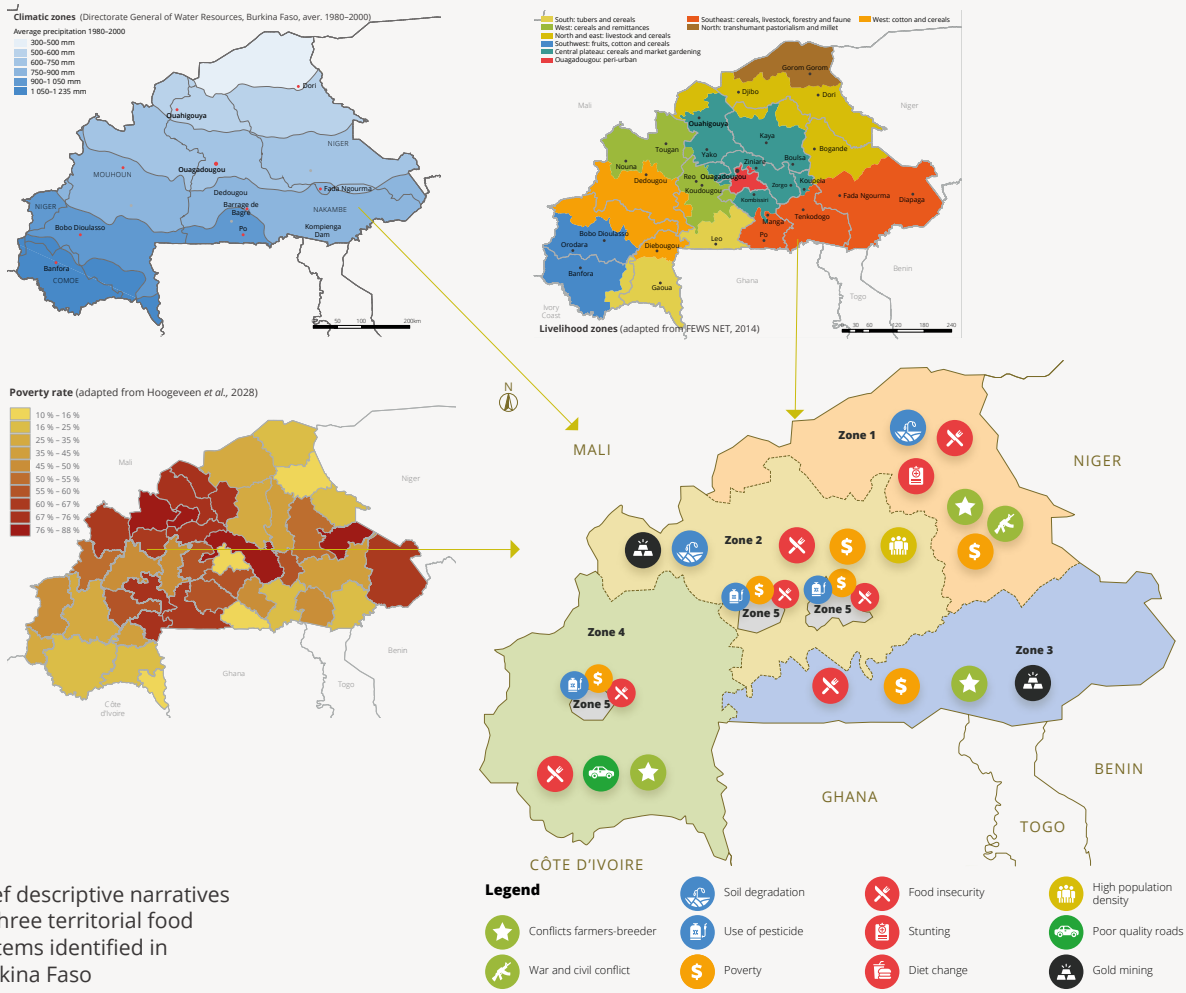
[C ZON_Instructions_Use of Lizmap.pptx]: This document describes the steps to achieve zoning using the Lizmap online app.

[B DOC_C ZON_Sources_Websites maps.docx]: Map sources accessible online.

[7] The scale will depend on the granularity of the data available to describe/approximate the food system dimensions. Not all data will be provided on the same scale. For example, while food security and education indicators are often based on administrative entities (regions/departments), environmental results or trends are often available at the level of (large) agroecological zones.

Box 9. Example of territorial food system zoning in Burkina Faso

Some examples of maps that have helped develop the zoning of territorial food systems in Burkina Faso



Brief descriptive narratives of three territorial food systems identified in Burkina Faso

Zone 1

In a context of conflicts and emigration, the main challenges are the degradation of soils which threatens food insecurity and the livelihoods of these pastoral populations. This area has a severe cereal deficit and is affected by high rates of poverty preventing people from meeting their nutritional needs. The area experiences recurrent food crises and is affected by extremely high rates of stunting among children (40 percent).

Zone 2

Despite the central role of agricultural and, in particular, market gardening, this area remains in deficit and populations are affected by recurrent food insecurity due to poverty, climate contingencies, and growing demographic pressure. The high population density, exacerbated by the arrival of Sahelian refugees, contributes to the degradation and pressure on land resources. Gold mining development is polluting water, increasing land pressure and threatening family farming.

Zone 3

This attractive area, where cereal and tuber production coexist with livestock farming, gold mining activities and national parks, is marked by intense land-use conflicts. Globally in a surplus with regard to cereals, especially rice, it under exploits the production potential offered by the partial control of water, especially in Bagré, and remains marked by rural poverty and food vulnerability.

Source: **Authors' own elaboration**. Maps conform to United Nations. 2020. Map no. 4170, Rev. 19 [www.nationsonline.org/oneworld/map/burkina-faso-political-map.htm]

Task C_INT: Examine the impact paths and territorial food systems in more depth

This task will be achieved through a series of individual interviews with key informants.

Purposes
The interviews will aim to supplement the responses to the key sustainability questions with expert contributions and explore cause-and-effect relationships among the various components of the food systems. They will also make it possible to explore the diversity of situations across the country: to understand dynamics related to food system activities and actors while elaborating a systemic narrative for each zone. This task is strongly linked to the C_ZON task and the tasks are mostly iterative.

Method
The experts should select key informants able to describe the cause-and-effect relationships associated with each major impact identified during step A (at the national level and/or in a specific territory). It would be preferable if most of the informants had attended the launch workshop, however, other informants may be consulted if they are able to help supplement the analysis (especially categories of people under-represented in the launch workshop). All people interviewed must have a knowledge of all regions of the country.

A maximum of twenty interviews will be conducted by the team of experts divided up according to their respective fields of expertise. For each interview, a limited number of major impacts or key questions will be selected, depending on the interlocutor's areas of expertise. Priority will be given to areas that are less well documented elsewhere (literature review and quantitative data).

Order of interviews
It will be important to start with people who have a broad view of food system challenges and how the system works. We should remember that overall consistency and the limits of the initial zoning in territorial food systems could be discussed with these interlocutors if a specific working group has not been organized. After approximately five interviews, the experts should take stock with each other to make a provisional summary and reorient the priority themes to be addressed, if necessary. People with more specific or technical skills and knowledge about certain key issues will be interviewed as a second step to complete the provisional summary.

Preparatory task
During the launch workshop, participants will have identified the main causes of the major impacts (positive or negative) generated by the food system. Based on this "raw" material and the review of literature and existing data, the experts will have prepared a first draft of the impact pathway table (see [C INT_Instructions_Interviews.docx]). This table will be completed from the interview data (see Box 10).

The consultants will print out the preliminary territorial food systems zoning carried out during the C_ZON task. If some interviews are carried out before the C_ZON task, the consultants will bring a map of livelihood or agroecological zones to serve as supporting material.

Note that for each major impact related to the key sustainability questions selected for analysis, three situations are possible: (i) a recent map of the impact exists; (ii) an old or incomplete map exists; or (iii) no map exists. In the first case, this map will be integrated into the zoning process (Task C_ZON) and the interview will focus on describing the relationships between the impact and its various causes, explaining any differences among the zones. In the second and third cases, the

interview will also aim to adjust (case ii) or carry out (case iii) an impact mapping with the interviewee before describing the diversity of causes and processes.

Interview process
Introduce the discussion and present the specific objectives of the interview, which are:

- To detail the main impacts that fall within the area of competence of the interviewee and discuss the processes linking them to food system actors and activities and/or food system drivers; and to discuss the spatial distribution of these impacts and their major drivers in connection with the issues selected.
- Present the causes identified during steps A and B for each impact and discuss the impact processes and pathways as well as the relative importance of each cause (based on the table prepared).
- Examine the spatial diversity of causes and processes in more depth across the national territory. Consultants should base themselves on the preliminary zoning of territorial food systems and the impact map under consideration. These discussion materials will be used so that the interviewee can construct a narrative of the causes at the origin of this impact.
- Optional: in cases (ii) and (iii), adjust or support the preparation of 'actor-generated' representations and maps reflecting the spatial distribution of key drivers (including activities) and food system impacts.
- Request additional documents or sources of information on impacts or drivers that are not sufficiently covered by the preliminary literature review. Contacts can also be requested if there is a lack of resource persons to cover some of the issues.

Results
The previously prepared table is supplemented by a qualitative assessment of the interviewees. All qualitative information that illustrates impact pathways and an overall analysis of short- and long-term food system sustainability is summarized and will supplement the systemic narrative of each sustainability question at the national level. The spatial diversity information collected will also serve as a basis to supplement the profiles of each territorial food system (C_ZON task).

When necessary, spatial distribution maps of some impacts will be produced (these can be added to the online application used during the C_ZON task). If relevant, zoning adjustments could be proposed by the key informant to provide a better account of the spatial distribution of the impact under consideration.

Tools
Priority tools
[A DIA_C INT_D DIA_Instructions_Choosing participants.docx]: Categories of informants to interview and selection criteria.

[C INT_Instructions_Interviews.docx]: Guidelines for conducting the interview.

Secondary tools
[C INT_Tool_Interview entry.xlsx]: Matrix for entering qualitative data from interviews.

[C Example_Interactions.xlsx]: Helps identify interactions among food system components. Matrices of possible interactions between drivers and activities; among drivers; between activities and impacts; matrix of possible feedback loops from impacts to drivers.

Box 10. Example of an impact pathway table in Burkina Faso

				Nature of the cause (actors/activities or drivers)								
Name of inter-viewee	**Dimension**	**Effects/impacts**	**Causes**	**Core of food system**	**Drivers** (external or internal, operable or non-operable)						**Mechanisms and detailed comments** (narrative)	**Intensity of the cause**
				Actors and their activities	Environment. and biophysical	Policies	territorial and governance	Infrastr.uctures and technologies	Socioeconomy	Demography		
XXX	Environment	Environmental pollution (air and water)	Discharge of wastewater from agrifood processing units	x	x						Absence of water treatment system	Rather low
		Land degradation	Extensive agriculture, overgrazing, pruning	x							Lack of means to practice intensive agriculture	Rather high
XXX	Territorial balance and equity	Existence of livestock and poultry marketing channels	Existence of passable roads	Chicken collectors							Level of access determines marketing opportunities for livestock breeders and farmers	
		Competition of non-agricultural activities with pastoral and agricultural activities	Non-compliance with land regulations				X				In new projects, pastures are considered vacant land and therefore usable without compensation	
XXX	Food security, nutrition and health	Food deficit	Post-harvest losses: harvest, transport and storage	x							Harvesting, transport and storage/conservation processes cause enormous production losses	Rather high
XXX		Low dietary diversity	Lack of knowledge about good dietary practices	x							Products may be available but expensive in comparison to household means, or not widely available in landlocked areas	
			High price of nutrient-dense food								Priority is given to commodities when the prices of micronutrient-dense products are high	

Source: **Authors' own elaboration**.

3.5 Step D. Share, discuss and reach a common understanding of spatially differentiated food systems

Purposes

- To achieve a broad and shared understanding of the main current and future challenges to achieving the sustainable food system goals at national and subnational levels.
- To facilitate dialogue among food system stakeholders, political decision-makers and (local) authorities, to co-construct a multi-dimensional and dynamic vision of food systems and to identify critical points and leverage points for future interventions.

Method
This task will consist of a one-day synthesis workshop (face-to-face) or two half-days (when remote). The workshop will bring together around 40 people who participated in the launch workshop or who were interviewed, and may include newly identified food system resource persons and stakeholders. It will be structured by alternating plenary sessions with working group sessions.

Plenary sessions

- Based on the results obtained in steps A to C, experts will present the main provisional conclusions at national level. For each key sustainability question, experts will present the most compelling quantitative and qualitative results. The information will be drawn from the first workshop, the analysis of quantitative indicators, qualitative information and the contributions of the resource persons interviewed. These results must be shared in a systemic and dynamic way, by presenting the causal relationships among the components of the food system (drivers/activities/impacts).

- Based on step C (C_TYP, C_ZON and C_INT tasks), the consultants will present a proposal to break down the country into a set of territorial food systems. While describing each zone, consultants should focus on characteristic systemic features of the food systems to allow participants to grasp the multidimensionality of the system, understand interactions among components (in particular, the distinct impact pathways linking the challenges to causes and interactions between food system impacts) and to highlight the potential of the food system to contribute to a wide range of SDGs.

Working group sessions
To be discussed:

- The key messages of the assessment in order to achieve a common understanding of the current and future challenges relating to food systems.

- The adequacy and key characteristics of proposed territorial food system.

- Potential entry points and levers for sustainable and inclusive transformation of territorial food systems. A proposal with potential entry points and levers should be prepared before the workshop to facilitate discussion within the working groups. These leverage points are themes likely to have positive cascading effects in several dimensions, and therefore those for which it would seem appropriate to act to improve food system sustainability (see Box 10). Leverage points will first be identified for each territory. On this basis, a series of priority leverage points to be activated at the national level will be selected and discussed. Priority can be established according to the urgency of the challenge to be raised and/or the leverage point training capacity (its virtuous effect on various dimensions) and/or its capacity to transform food systems structurally and improve their sustainability.

Territorial food systems that pose particular challenges (for example, in terms of equity or security) could become national priorities.

Results
From this synthesis workshop, the expected results are:

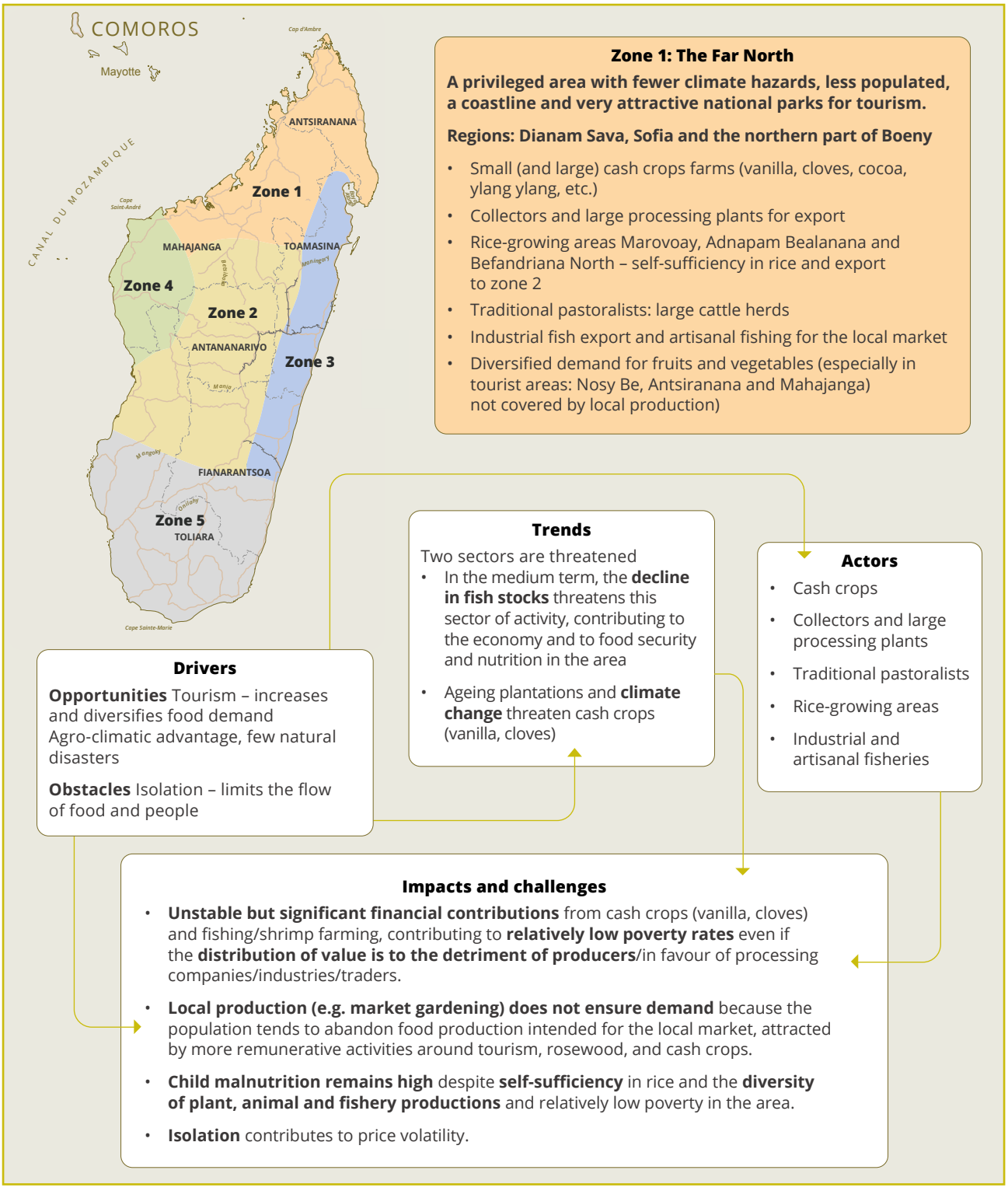
- A shared understanding of the assessment of the food system at the national level and the main challenges.
- A zoning proposal mapping out distinct territorial food systems
- A consistent narrative for each of the zones ("territorial food system profiles") of the main actors and activities, the main current and future challenges and their causes (related to food system operation or the drivers affecting the food system), for example, see Box 11. The profiles of territorial food systems must be described in a systemic and dynamic way based on the food system drivers and impacts in the various dimensions and the interrelationships among food system components (drawing inspiration from the conceptual diagram, Figure 1), as well as impact pathways that link the main impacts to their causes (see Boxes 12 and 13).
- The main levers that can be activated to improve food system sustainability at subnational and national levels as well as their conditions for success and obstacles to their establishment.

Tools

[A DIA_C INT_D DIA_Instructions_Choosing participants.docx]: Instructions for choosing the people to include in the workshops.

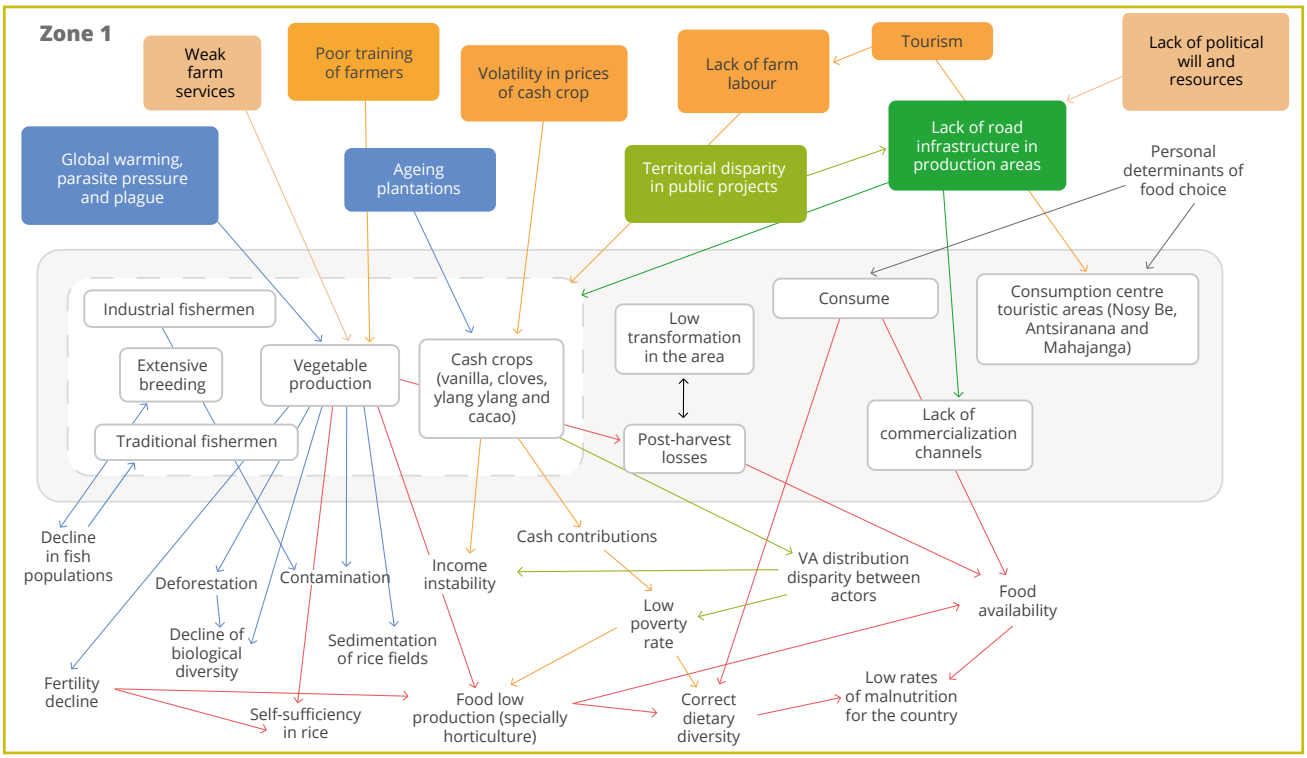
[D DIA_Instructions_Synthesis workshop.docx]: Instructions for organizing and conducting the workshop.

Box 11. Example of slides presenting a territorial food system – synthesis workshop in Madagascar



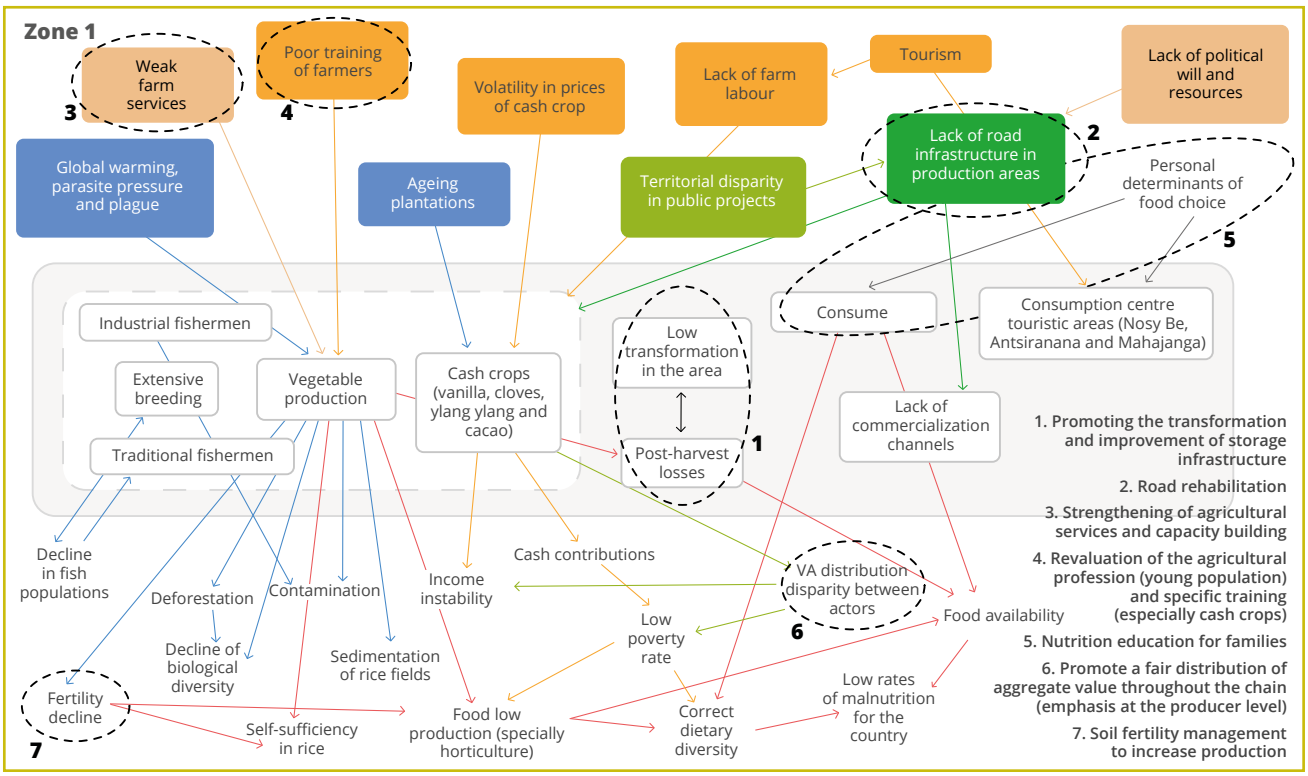
Source: **Authors' own elaboration**. Maps conform to United Nations. 2020. Map no. 4360, Rev. 1. [https://www.nationsonline.org/oneworld/map/madagascar_map.htm]

Box 12. Systemic diagram of a territorial food system – example of Madagascar, northern zone



Source: **Authors' own elaboration**.

Box 13. Systemic diagram of a territorial food system – example of Madagascar, northern zone (according to the working group on territorial levers)



Source: **Authors' own elaboration**.

3.6 Step E. Summarize the food system analysis at the national and subnational level

Purposes
To provide a multidimensional, systemic and spatially differentiated summary of the assessment of food system sustainability.

Method
This task will consist of combining the information collected during all the workshops and interviews, as well as from the data and literature review, and formulating the results.

Results
The final products will combine the most relevant results obtained from the previous tasks:

- summary
- PowerPoint presentation (prepared for the synthesis workshop and improved, if necessary, after discussion)
- capitalization report (working document)

These documents will include the following information:

- Summary note and PowerPoint presentation: (1) key messages about the observed key sustainability questions and dynamics, including the main challenges that food systems are currently facing (or will be facing in the near future) and levers proposed to sustainably transform food systems; (2) production, consumption and trade figures and trends; (3) food system performance in all four dimensions and main impact pathways among drivers, activities and impacts; (4) main types of food system actors; (5) zoning and characterization of each territorial food system, resulting in levers for territorial action; and (6) summary of leverage points and areas of intervention to improve food system sustainability.
- Capitalization report: this is a working document and is not intended for distribution. This will make it possible to keep in mind the different stages of the analysis, from the bibliographic review to the interviews, for the needs of partner institutions of the study and in anticipation of any subsequent, more in-depth study.

Tools
[E WRI_Template_ Food system profile.docx]: Example of the brief from Burkina Faso.

[E WRI_Template_Country report.docx]: Working document plan.

CONCLUSION

Food systems are critically linked to the attainment of nearly all SDGs. The imperative – and the challenge – for food systems is not only to ensure food and nutrition security, but also to contribute more broadly to establishing a habitable planet and sustainable livelihoods for all. To meet this challenge in the long term, food system inclusiveness, resilience, sustainability and collective governance structures are essential.

Assessing food system performance at national and subnational levels, as well as the risks and challenges faced, is crucial in order to fully understand and maximize their contribution to the SDGs. For such an assessment, political, economic and social actors, including the research community, must collaborate to co-assess current food systems, identify available alternatives to transform them, understand the weight of inevitable trade-offs, and guide food systems towards a sustainable pathway.

The goal of the assessment methodology proposed here is to help develop a preliminary systemic, broad and multisectoral understanding of national and subnational food systems, to identify current and future challenges to their sustainability, and to begin determining priorities for action and investment to transform the system.

Compared to existing methodological frameworks, the added value of this methodology is twofold. First, it allows for the revisiting of known data and provides a comprehensive narrative on system challenges and opportunities for transformation using quantitative elements and qualitative analysis based on a participatory assessment process. Second, subnational food systems will be identified and characterized by the challenges faced by territorial actors as well as opportunities for a sustainable and inclusive transformation of these systems. By highlighting challenges and opportunities at the territorial level, the methodology seeks to guide discussions on priorities and the sequence of interventions and programmes to improve food system sustainability.

The proposed methodology will enable food system actors to acquire a common understanding of the challenges, risks and opportunities on consistent scales. However, it will not go so far as to formulate strategies or action plans. Before that step, agreement will have to be reached on common goals and desirable futures that will then enable territorial food system actors to improve their resilience and sustainability. An in-depth participatory assessment of territorial food systems will be essential to select the interventions and investments that are capable of putting the system on a sustainable trajectory and thus achieve development goals. This will require more in-depth analysis and collective reflection, involving territorial food system actors, to arrive at a considered vision of the future food system and to propose avenues for carrying out the necessary changes to transform it.

This national and subnational assessment methodology is the first step towards adopting transformational trajectories that will maximize the potential of food systems to achieve many of the SDGs.

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Appendices

Appendix 1. Concepts and definitions

Concept	Definition
Actors and activities	The notion of actors and activities encompasses the whole range of actors and their related activities in the food supply chain (production, collection, processing, packaging, transport, distribution, waste and co-product management, consumption, preparation, and destruction of food products) that are of agricultural, forestry or fishing origin. This component is also called the "heart of the system" or the "core of the system."
Challenges	Challenges are obstacles that must be overcome to achieve the goals of a sustainable food system. They can correspond to outcomes, impacts or drivers of the food system that affect their sustainability. Challenges can refer either to already critical situations, especially when linked to negative feedback loops between effects and drivers, or to trends (or combinations of trends) that pose risks for food system sustainability and their future ability to meet their fundamental goals.
Components	Five components make up the food systems: (i) the drivers; (ii) the production and delivery environment; (iii) the consumption environment; (iv) the actors and activities of the food supply chain; and (v) the effects and impacts.
Consumer behaviour	Consumer behaviour "reflects the choices made by consumers, at household or individual levels, on what food to acquire, store, prepare and eat, and on the allocation of food within the household (including gender repartition, feeding of children)" (HLPE, 2017). Consumer behaviour is influenced by personal preferences and the food environment.
Consumer environment	Beyond considering endogenous vs exogenous and intentional vs unintentional drivers, we also examine the direct (versus indirect/global) factors that influence the actors of the food system. The consumption environment is considered to be the environment closest to consumers. The key elements are availability and nearby physical access, diversity, accessibility, promotion, advertising, information, labelling, and product safety and quality. This environment stems from the activities of the production and mid-range segments, as well as political and infrastructure drivers.
Core of the system	See actors and activities.
Dimension/subdimension/category	The term dimension is used to characterize different types of drivers, effects and impacts. Nine dimensions are used: environmental; socioeconomic; territorial balance; demographic; policy development; infrastructure and technology; production and delivery; consumption; and food security, nutrition and health. Each dimension is divided into several subdimensions, which in turn are divided into several categories, within which one or more indicators can be found.
Drivers	In the literature, the notion of "driver" has various meanings. While some authors consider drivers only as external factors, others extend the definition to internal driving forces. The conceptual framework considers both external (e.g. climate change) and internal (e.g. agricultural subsidies) factors. In addition, the distinction (made by Béné *et al.,* 2019b) between the intentional or unintentional dimension of the dynamics of food system activities is crucial in helping policymakers make transformative policy decisions. Internal drivers include the internal dynamics of actors and the innovations they undertake. The following definition is used here: drivers are "endogenous or exogenous processes which, deliberately or not, affect or influence a food system over a period long enough for their impacts to lead to a lasting alteration of activities, and subsequently to the effects of this system" (Béné *et al.*, 2019b). Here we categorize the drivers into six dimensions: biophysical and environmental; demographic; territorial balance; infrastructure and technology; socioeconomic; and policy making.

Effects and impacts	Effects and impacts refer to two distinct levels in the trajectory of the impact. Based on the *Glossary of Key Terms in Evaluation and Results-Based Management* (OECD, 2010), and by adapting the definitions to food system analysis, effects are defined as short- and medium-term effects that result from the food system; impacts refer to all of the long-term primary and secondary effects produced by the food system. Effects and impacts may or may not be intended, positive or negative. As the distinction between effects and impacts is often delicate, in this methodology we mainly use the term impacts to refer to the different effects generated by food systems (although short-term impacts are also included).
Feedback loop	Feedback loops are circular effects between the impacts generated by the food system and the drivers that influence it. This is particularly the case in environmental, socioeconomic and territorial balance dimensions, which both influence and are affected by food systems.
Food security	"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access, utilization and stability" as defined by the Committee on World Food Security in 2017 (http://www.fao.org/cfs/OnlineGSF/en/).
Food system approach	The food system approach involves moving away from traditional approaches, which have tended to be either sectoral with a narrowly defined focus or scope, or which use systemic thinking, but are limited to specific segments of the food supply chain (e.g. a production system). It addresses these limitations by taking a holistic and global view of the wide range of actors in the food system and the governance mechanisms that shape their activities. This approach emphasizes "the full range of interactions, feedback and trade-offs rather than on characteristics of separate pieces of the system" (Béné *et al.,* 2019c).
Food system limitations	The limitations of the food system outline a geographical area in which the actors and activities and the combination of goals and challenges/opportunities are homogeneous/consistent.
Food system performance	Food system performance refers to the effects and impacts of the food system in terms of progress towards the core goals of a sustainable food system.
Food system stakeholders	Food system stakeholders are direct system actors (producers, fishers, collectors, traders, processors, distributors and consumers), leaders of professional organizations, NGOs and other civil society organizations, local authorities, policymakers, international and regional organizations and donors related to food systems.
Fundamental goals of a sustainable food system	Food systems are expected to contribute to fundamental objectives in four dimensions: (i) food security, nutrition and health; (ii) socioeconomics; (iii) territorial balance and equity; and (iv) environment.
Issues	The four fundamental objectives can be broken down into specific issues, depending on the country and territory, to improve the sustainability of the system. These issues are what we are trying to achieve, in terms of impact, through the transformation of food systems (with, where applicable, the challenges to be met to achieve this).
Levers	"Levers" are themes or fields of action that can have positive cascading effects on several dimensions of the sustainable food systems, on which it therefore seems appropriate to act to improve the sustainability of the food system. The levers can intervene on the different types of drivers, the direct environments of production, downstream actors and consumers in which the actors are engaged. The levers can involve actors from the core of the food system but also public or private actors from related sectors that could create conditions favourable to the sustainability and resilience of food systems
Non-food agricultural sector (or products)	The non-food agricultural sector includes actors and activities involved in production, co-products/waste management, processing and the trade of products derived from agriculture, forestry or fishing, but which are not used to feed people. This sector includes animal feed, exported spices or drinks with high added value (e.g. coffee, vanilla), fibres (e.g. cotton), materials used to produce energy (soy-based biofuel) and wood.
Non-food sectors or systems	Non-food sectors are those sectors interconnected with agriculture and food activities such as energy, health, labour, tourism and/or trade (FAO, 2018a).

Personal determinants of food choices	Personal determinants include preferences, values and skills, time and lifestyle, purchasing power, household size and age.
Production and delivery environment	Beyond the endogenous vs exogenous and intentional vs unintentional drivers, we also consider the direct/immediate (vs indirect and global) factors that influence the actors of the food system. The production and delivery environment refers to the immediate or direct financial and technical services that influence actors and activities from food production to distribution.
Segments (supply chain segments)	A segment includes actors who perform the same range of functions in the supply chain. We distinguish between the production segment, the consumption segment and, depending on the case, several midstream segments: collection and transport; processing and packaging; storage and distribution. Waste and co-product management is also considered a specific segment.
Subnational scale	The subnational scale is a lower scale of analysis than the national scale. Depending on the granularity of the data available, the level of detail of the analysis will vary.
Sustainable food system	A sustainable food system is a system that achieves the four fundamental goals in four main dimensions (nutrition and health; socioeconomic well-being; environmental quality and territorial balance; equity) in such a way that the economic, social and environmental bases necessary for achieving these fundamental goals in the future will not be compromised.
Territorial food system	A territorial food system is a specific (subnational) food system characterized by a specific set of actors and activities and a relatively homogeneous combination of goals and challenges.
Trends	Trends are the dominant directions of the drivers or impacts that affect food systems in the long term. They are the result of a series of historical data and forecasts. The easiest to predict and the least uncertain are environmental, demographic and socioeconomic trends (Dury *et al.,* 2019).
Type of actor	Within a specific segment, a type of actor refers to a subcategory of actors who operate in a relatively similar manner and context in terms of various possible criteria such as capital endowment, technology, access to services and markets or organization.

Appendix 2. Description of available tools

Step	Name of tool	Content	Primary	Secondary
Step 0	0_Tool_Distribution of roles.xlsx	Summary of the roles of each of the parties involved in the assessment. To be adapted in each country	1	
	0 _Tool_Planning&Products.xlsx	Planning of steps and tasks as well as the tools available and the expected intermediate and final deliverables	1	
Step A	A DOC_Instructions_ Documents to gather.docx	Suggested documents to search and read to prepare the launch workshop	1	
	A DOC_ Tool_Literature summary grid.xlsx	Tool to be completed with information extracted from the literature review which will be useful for characterizing the major impacts and causes		1
	A DIA_C INT_D DIA_Instructions_ Choosing participants.docx	Instructions to establish relevant and balanced lists of participants for the workshops (launch and summary) as well as the people who will be interviewed	1	
	A DIA_Tool_List of participants. xlsx	Tool to be completed to establish balanced and representative guest lists (by dimension, zone, segment of the food system)	1	
	A DIA_Instructions_Launch workshop.docx	Guidelines for organizing and conducting the launch workshop (objectives, organization, exercises)	1	
	A DIA_Tool_Agenda Launch workshop.xlsx	Proposed agenda for the launch workshop for face-to-face and virtual workshop	1	
	A DIA_Tool_Post-it entry.xlsx	Tool to help summarize information and to be completed with the content of the post-its obtained during the launch workshop		1
Step B	B STAT_Example_ ProdImportExport_ Burkina Faso.xlsx	Example of an analysis of basic data and graphs on production and trade taken from FAOSTAT	1	
	B STAT_Example_food balances_Burkina Faso.xlsx	Methodology for extracting data from FAOSTAT and carrying out food assessment calculations based on the example of Burkina Faso	1	
	B STAT_Instructions_Selection of strategic products.docx	Criteria for choosing the main strategic products in the event of further analysis		1
	B IND_DOC_TREND_ Instructions_Characterize impacts and drivers.docx	This document describes the proposed analysis approach and explains how to document the major impacts and drivers of the food system	1	
	B IND_Data_Calculated international indicators.xlsx	Files containing the 49 indicators calculated by country, as well as the quintiles by group of countries (LIC/LMIC, UMIC, etc.), for the world and by geographic zone	1	
	B IND_DOC_TREND_ Sources_Indicators.xlsx	Table of international indicators, by dimension, subdimension and category. Essential information is provided for each indicator in this aggregate table.		1
	B IND_Sources_Description of indicators.docx	Individual indicator sheets provide details for each indicator and can be viewed as needed		1

Step B	B IND_DOC_TREND_Sources_ Database availability per country.xlsx	List of major relevant international databases or websites and coverage by country		1
	B IND_DOC_TREND_Sources_ Description of websites.docx	Main international websites or databases to refer to, with a brief description of the data available and the organization		1
	B IND_DOC_TREND_Sources_ Qualitative analysis.docx	Guidance for qualitative analysis and a list of websites and documentary sources pertaining to the dimensions of food system impacts and drivers. Key questions are suggested for each dimension	1	
	B DOC_C ZON_Sources_ Websites maps.docx	Map sources accessible online	1	
	B TREND_Data_Example_ Long series.xlsx	World data table with a selection of long time series	1	
Step C	C TYP_Instructions_Typology of actors.docx	Instructions to characterize actors of the food system	1	
	C TYP_Example_Typology of actors to adapt.xlsx	Proposal for a document to identify types of actors in the food system		1
	C ZON_Instructions_Zoning.docx	This document describes the methodology for territorial food system zoning	1	
	B DOC_C ZON_Sources_ Websites maps.docx	Map sources accessible online	1	
	C ZON_Instructions_Use of Lizmap.pptx	This document describes the steps to achieve zoning using the Lizmap online app	1	
	C INT_Instructions_ Interviews.docx	Guidelines for conducting the interview	1	
	C INT_Tool_Interview entry.xlsx	Matrix for entering qualitative data from interviews		1
	C Example_Interactions.xlsx	Helps identify interactions among food system components. Matrices of possible interactions among drivers and activities; among drivers; among activities and impacts; matrix of possible feedback loops from impacts to drivers		1
Step D	D DIA_Instructions_Synthesis workshop.docx	Instructions for organizing and conducting the workshop	1	
Step E	E WRI_Example_Food system profile.docx	Example of the food system brief to be completed	1	
	E WRI_Template_Country report.docx	Working document plan to be completed	1	

ISBN 978-92-5-136885-5

CB8603EN/1/09.22