The Food Systems Decision-Support Tool

Application in the case of Ethiopia

Helena Posthumus and Bart de Steenhuijsen-Piters

KIT Royal Tropical Institute

Just Dengerink and Sietze Vellema

Wageningen University & Research

The Food Systems Decision-Support Tool

Application in the case of Ethiopia

Deliverable for the Cluster Food Security of the Ministry of Foreign Affairs, as part of the Support Facility Food & Nutrition Security (OF-VZH)

Wageningen University & Research
KIT Royal Tropical Institute
November 2018

WAGENINGEN
UNIVERSITY & RESEARCH

KIT
Royal Tropical Institute

Contents

Introduction

This document describes the application of the Food Systems Decision-Support Tool, as developed by Wageningen UR and KIT Royal Tropical Institute, at the request of the Cluster Food Security of the Ministry of Foreign Affairs and the Ministry of Agriculture, Nature and Food Quality. This document describes how the tool could be applied to support the Dutch Embassy in Ethiopia.

The Food Systems Decision-Support Tool consists of seven steps:
1. Defining the policy objectives of the Embassy applying the FS tool
2. Mapping the food system relevant to these policy objectives
3. Identifying the causal processes underlying the food system
4. Determining archetypes in system behaviour of the food system
5. Identifying actionable leverage points within the food system
6. Defining relevant actors and their influence and interest to address leverage points
7. Based on leverage points, RNE objectives and relevant actors, develop RNE FNS strategy.
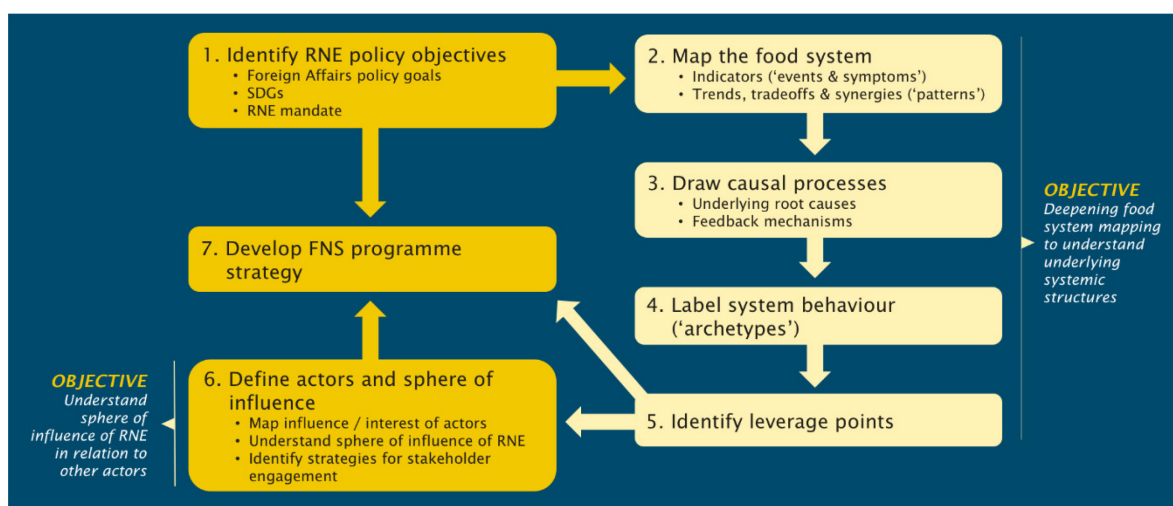
Figure 1   *Food Systems Decision Support Tool*

The application of these steps is based on an extensive literature study of the food system in Ethiopia and complemented by the results of a workshop in which Ethiopia and food systems experts were invited to apply step 3 to 7 of the tool for the case of Ethiopia (see list below).

Table 1   *Overview of experts attending FS tool workshop*

Name	Organisation	Expertise
Herman Brouwer	WCDI	FNS, Embassy Policy
Simone van Vugt	WCDI	FNS, Ethiopia, Embassy Policy
Ferko Bodnar	IOB	FNS, Food Systems, Embassy Policy
Gerard Roemers	Metabolic Consulting	Food systems, Systems Thinking
Arine Valstar	KIT Royal Tropical Institute	FNS, Nutrition, Health
Willem Heemskerk	KIT Royal Tropical Institute	FNS, Systems Thinking, Ethiopia
Mona Dhamankar	KIT Royal Tropical Institute	FNS, Nutrition, Gender

On the following pages, we will describe the application of the Food Systems Decision-Support Tool in the case of Ethiopia for each of the seven steps outlined above.

Step 1: Identify RNE policy objectives

The first step of the Food System Decision-Support (FSDS) Tool aims to define the existing policy objectives and mandate of the Embassy. These objectives help to delineate the part of the food system the FSDS tool will focus on.

Table 2   *Overview of different methodological packages to carry out step 1 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Review of MoFA policy framework and MASP	Review of MoFA policy framework, MASP, government policies of host country	Review of policy goals and mandates of key partners
Who	Embassy staff	Embassy staff	Embassy staff, consultants

As shown in the table above, the application of the step 1 of the FSDS tool can be carried out with different methodological packages, at different levels of intensity: light, advanced and comprehensive. For the purpose of this application of the tool, we use the 'light' package. This package consists of a review of the MoFA policy framework for the RNE in Ethiopia.

The most recent policy framework of the Dutch Ministry of Foreign Affairs on food and nutrition security is laid down in the policy document 'Investing in global prospects' of the current Minister Sigrid Kaag of Foreign Trade and Development Cooperation (MoFA, 2018). In this document, it is made clear that the focus of the food security policy of MoFA will be on creating employment in the agricultural sector through investments in labour-intensive sectors and by sharing Dutch agricultural knowledge and capacity abroad.

Special attention will be paid to improving land rights, climate-smart agriculture and reducing malnutrition. Integrated programmes will be set up to tackle food security, employment, water and climate challenges in small urban growth centres. Water management and improving access to quality drinking water and sanitation are positioned as a high priority, because of its close connection to food security and security.

Based on the new policy direction of the Ministry of Foreign Affairs, a new Multi-Annual Strategic Plan (MASP) is currently drafted for the Dutch Embassy in Ethiopia. As this document is not yet made publicly available, we rely on the content of the previous MASP's (2012-2015, 2014-2017) for the policy direction of the Dutch Embassy in Ethiopia. In both these MASP's, the following three objectives play a central role:

1. *Reduce household vulnerability, improve resilience to shocks and promote community-based nutrition in food insecure areas of rural Ethiopia*. Activities around this objective have focused on supporting the governments Productive Safety Net Program (PSNP), providing food and monetary assistance, and supporting community-based nutrition projects in selected districts to increase crop diversity among vulnerable households.

2. *Increase agricultural productivity and market access in surplus producing areas with increased participation of women and youth*. To achieve this objective, the Embassy has been supporting the multi-donor Agricultural Growth Program (AGP) with the aim of improving the capacity of service providers and farmers' organizations to scale up best practices in production and processing, with special attention to women and youth. This growth strategy is supported with capacity building programs such as CASCAPE, the Small Scale Irrigation Project and the Agricultural Transformation Agency (ATA).

3. *Increase the competitiveness and business climate for a number of agribusiness subsectors.* The Embassy supports sector programs in four agricultural subsectors: horticulture, dairy, seeds and sesame. In these sectors a value chain approach is applied with attention for productivity and quality improvement, creating more added value and export growth. In addition, the capacity of the agribusiness services sector is strengthened through specific public private partnerships, such as the Agri-business Support Facility.

Step 2: Map the food system

The second step of the Food System Decision-Support (FSDS) Tool aims to map the different elements of the food system. In this mapping, special attention is paid to trends and events in the food system, the interdependencies between different elements of the food systems and possible trade-offs and synergies between these elements.

Table 3   *Overview of different methodological packages to carry out step 2 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Document review (use of secondary data sources)	Document review (use of secondary data sources) and expert knowledge	Scoping studies, value chain analysis, analysis of ecosystem services, in-depth empirical research
Who	Embassy staff, consultants	Consultants, experts	Consultants, experts, researchers

As shown in the table above, the application of the step 1 of the FSDS tool can be carried out with different methodological packages, at different levels of intensity: light, advanced and comprehensive. For the purpose of this tool description, we use the 'light' package. This package consists of a document review of the Ethiopian food system, using secondary data sources.
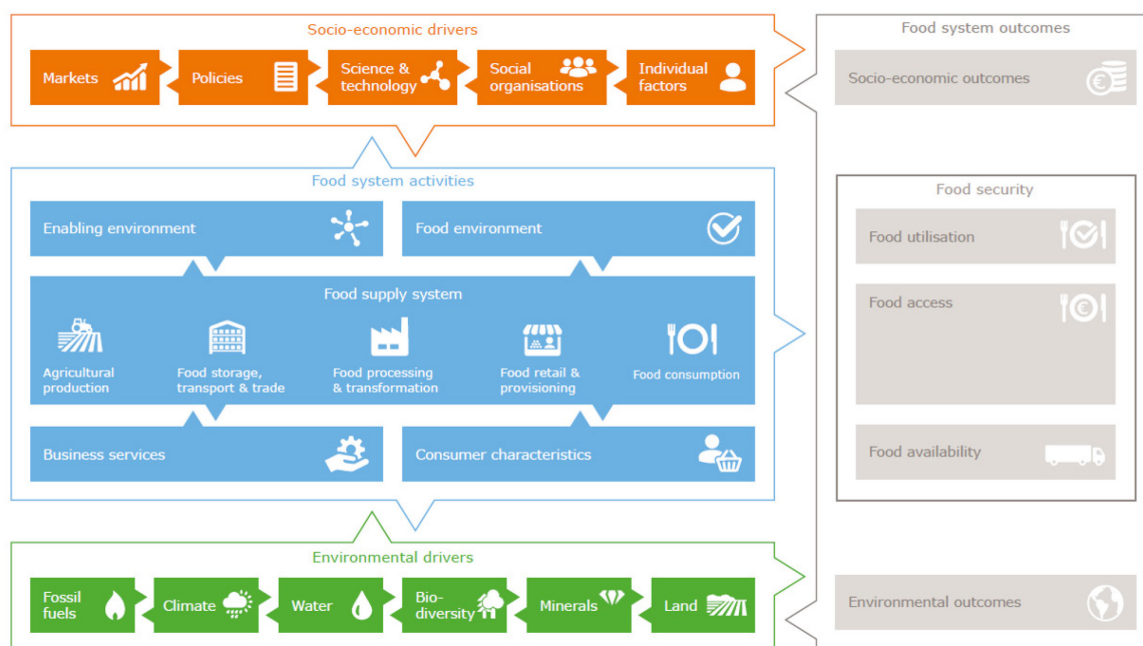
Figure 2   *Mapping the food system (Van Berkum et al, 2018)*

For mapping the food system, the FSDS tool relies on the framework developed by van Berkum et al. (2018) in their report 'The food systems approach: sustainable solutions for a sufficient supply of healthy food', describing a way to map the relationships of the food systems to its drivers and outcomes. This section will describe the core elements of this food systems map for Ethiopia:

1. *The food systems outcomes.* Food systems have food security outcomes (use of, access to and availability of food), environmental outcomes and socio-economic outcomes.

2. *The food systems activities.* These are the activities in the value chain, the enabling environment, the food environment, the business services and consumer characteristics.
3. *The socio-economic drivers:* These are the markets, policies, organizations, individual factors and scientific developments that drive the food systems activities.
4. *The environmental drivers:* These are the minerals, fossil fuels, water-, land-, soil- and biodiversity resources and climatic conditions that drive the food systems activities.

Food system outcomes

The current food system in Ethiopia contributes to various food security outcomes. While Ethiopia has witnessed a decrease stunting from 58% in 2000 to 38% in 2016, levels of wasting or acute malnutrition are around 10% and have remained largely unchanged over the past decade(Central Statistical Agency, Ethiopia [CSA], & ICF, 2016). On the other side of the spectrum, the number of adults with diabetes in Ethiopia is expected to double between 2011 and 2030 (GLOPAN, 2016). The Ethiopian food system also produces socio-economic outcomes. With agriculture being a major contributor to Ethiopian economic growth, the GDP increased with 10% between 2007 and 2017. Finally, the food system in Ethiopia produced environmental impacts, with agricultural expansion leading to reductions in biodiversity and conversion of natural forests, high levels of soil erosion in the highlands and increasing pressures on water availability in commercial agricultural areas.

Food system activities

Each of these outcomes are the result of activities in the food system, with at its core all the value chain activities from consumption to production. Average food consumption increased from 293 kilograms in 2000 to 361 kilograms in 2011, while expenditures on food grew with 19% over the same period (Worku Hassan et al., 2017). To meet increasing demand, total agricultural area increased with 40% between 2004 and 2016. As the number of farmers increased faster than the total agricultural areas, the average crop area declined from 1.0 ha in 2004 to 0.85 ha in 2015. Diet composition changed, with the dominance of starchy staples being challenged by an increasing share of high-value products, such as animal-source foods and fruits and vegetables. Moreover, consumption of processed foods and out-of-home foods increased over the past decade.

Environmental drivers

The food systems activities in Ethiopia are driven in part by environmental drivers, such as water, energy, biodiversity, land, soils and climate. Trends in these environmental drivers have had serious impact on the food system activities. Rainfall data show overall declines in rainfall between March and September from 1980 to present (WFP, 2018). The 2002/03 drought led to a 4 percent decline in GDP and a 12 percent reduction in agricultural output. Major floods, which occured in which occurred in 1994, 1995, 1999, 2005, also caused serious damage to land and agriculture (FDRE, 2015). Soil erosion rates are 2-4 times higher in Ethiopia than in other countries in the region, such as Kenya, Uganda and Tanzania. The estimated monetary cost of land degradation is approximately 3 percent of Ethiopia's agricultural GDP per year. Over 90 percent of Ethiopians depend on biomass for household energy, driving drives forest degradation. Ethiopia's biodiversity and ecosystem services are also under pressure. Among the direct causes are conversion of nature areas into agricultural land or settlements, overgrazing, climate change and water pollution.

Socio-economic drivers

Aside from environmental drivers, many socio-economic drivers also influence the food system activities, such as markets, policies, organizations, technology, demography and other factors. Market prices for food products fluctuate considerably in Ethiopia (Soethoudt et al., 2013). Since the 2008 world food crisis, Ethiopia's grain prices have become more volatile. Unsteady food prices can hamper consumers' ability to buy enough food and can also change the composition of the food basket (Bouis et al., 2011). Meanwhile, the population of Ethiopia is rapidly growing. Since 2000, a population equivalent to that of Canada has been added to the country.

In several key government strategies, the Ethiopian government has expressed a commitment to transform food systems to combat malnutrition. The National Nutrition Program (2016) addresses undernutrition, micronutrient deficiencies, and the emerging diet-related NCDs, with healthier diets at

centre stage. The promotion of healthier food choices has been integrated into several past and ongoing large projects in Ethiopia (MoH et al., 2016).

These policies are supported by a growing research community around food systems in Ethiopia, with the CGIAR 'Food Systems for Healthier Diets in Ethiopia' programme as one of the key drivers. There are several active Ethiopian multi-stakeholder platforms around health and nutrition CASCAPE platform (coordinated by WUR), the ReSAKSS-East and Central Africa platform (facilitated by ILRI and IFPRI), and the ATONU-FANRPAN network.

Trade-offs & synergies in the Ethiopian food system.
Existing food systems studies on the Ethiopian context have a strong focus on describing the food system, while indicating the most important trends in different parts of the food system. Less attention is paid to the dynamics between different elements of the food system. While some attention is paid to trade-offs and synergies between parts of the system, as will be described below, feedback mechanisms, catalytic effects and key leverage points receive little attention.

Trade-offs
Food system studies on the Ethiopian context point to a range of trade-offs in Ethiopia's food system:
- There is a trade-off between improving diets and the need to take care of the environment. Diets of high quality from a nutritional perspective may have more adverse impacts on the environment. For example, the growing livestock sector in Ethiopia allows for higher diet diversity, and contributes to several positive environmental effects, such as improved soil fertility, if zero-grazing practices are applied. Transitioning Ethiopian livestock toward higher productivity and market integration while avoiding the negative environmental trade-offs of livestock intensification is a key challenge.
- A similar trade-off is seen in Ethiopia's vegetable and fruit sector. Intensification of vegetable and fruit production is usually accompanied by increased use of pesticides. Recent studies show that herbicide use in Ethiopia has more than quadrupled in the last decade (Tamru et al, 2018). Herbicides are now used on more than a quarter of the cereal area. Mekonen et al.(2015) reported DDT residues in complementary foods and considerable risk for infants consuming maize-based complementary foods in southern Ethiopia. Sheahan et al. (2017) showed that the increasing pesticide use in Africa has started to affect human health (Ethiopia is part of the cross-country study).
- Another trade-off is between improving dietary diversity on the one hand, without increasing the risks of higher calorie consumption. It is expected that in Ethiopia, there will be further increasing consumption of high-value products, such as meat, dairy products, and fruits and vegetables. While this will be good for nutritional outcomes, a concern is the issue of the double-burden of nutrition – while food security will likely become less of an issue, at least at the national level, avoiding the obesity and overweight trends that have been noted in other transforming countries will likely become an important new challenge in the decades ahead (Gebru et al.2018).

Synergies
Other studies point to possible synergies in the Ethiopian food system:
- There is a potential synergy between more diverse diets and more resilient ecosystems (IFPRI, 2018). When food markets strengthen, benefiting diet diversity, production systems can tend to focus locally on specialization, potentially resulting in lower ecosystem diversity and reduced resilience at the farm and/or landscape scale. Across a gradient of agricultural intensification, Baudron et al. (2017) identify synergies between dietary diversity and diversity of ecosystem functions and services. While Ethiopia's agriculture intensifies, it will be important to carefully manage the country's rich ecosystem and agricultural diversity to ensure sustainable, long-term benefits of the food system.
- Studies indicate a potential synergy between increasing diet diversity and investing in high-value sectors of the economy. To organize the local infrastructure to supply more diverse diets, more attention will need to be paid to their production with increased availability of seeds, agro-chemicals, extension advice and cold storages. Increasing the supply of animal-source foods will require increased livestock-related investments. These include broader adoption of improved animal husbandry and feeding practices, increased production of genetically superior breeds of livestock, the provision and use of appropriate veterinary health practices, and the facilitation of an enabling environment that will allow for efficient livestock markets.

Step 3: Draw causal processes

The third step of the Food System Decision-Support (FSDS) Tool aims to identify the causal processes between the different elements of the food system around each of the Embassy's policy goals. In this mapping, it becomes clear for each policy objective.

Table 4   *Overview of different methodological packages to carry out step 3 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Manually drawing of causal diagrams of the food system	Causal loop diagrams incl. feedback mechanisms (expert workshop)	Computer-based Bayesian modelling: agent-based modelling, fuzzy cognitive mapping etc.
Who	Consultants, key informants	Consultants, experts, key informants	Consultants, researchers

As shown in the table above, the application of the step 3 of the FSDS tool can be carried out with different methodological packages. For the purpose of this application of the tool, we use the 'light' package. This package consists of manually drawing of causal diagrams of the relevant parts of the food system, carried out by consultants with the assistance of key informants. This exercise was done within the FS tool workshop, for each of the three policy objectives as formulated in the most recently available MASP for Ethiopia. For the purpose of showing the application of the FS tool, we show the outcome of this step for one of the three policy goals: the goal of supporting vulnerable households in food-insecure areas.

Erratic rainfall, land degradation and population growth all contribute to a declining food production in food-insecure areas. As production decreases, household income decreases as well while vulnerable households also need to purchase more food to meet their nutrient requirements. Volatile food prices, low household capital and seasonal food shortages result in seasonal vulnerability of households. Seasonal food aid tries to address this by providing access to food to the most vulnerable households. As such, there is a short-term balancing feedback mechanisms between nutrient shortage at household level and food aid. In order to sustain or increase local food production, investments need to be made in sustainable agriculture, both at household level and at landscape level. Investments in improved seeds (e.g. drought-tolerant crops), water conservation, fertilizers and irrigation can all contribute to more resilient and sustainable food production in marginal agro-ecological areas. However, food aid may have a negative effect on investments in agriculture; at household level because households become dependent on food aid, and at regional level because public expenditures are invested in food aid rather than an enabling environment for sustainable agriculture (e.g. investments in advisory services or landscape restoration). In long-term there is thus a negative reinforcing feedback mechanism between food aid and food production.

Figure 3   *Causal diagram for MASP objective on vulnerable households in food-insecure areas*
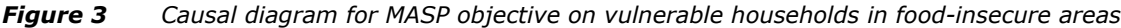
Step 4: Label system behaviour

The fourth step of the Food System Decision-Support (FSDS) Tool aims to determine the archetypes in system behaviour of the food system. For this exercise, the FSDS tool relies on a set of eight commonly found archetypes in systems thinking, summarized in the information sheet 'Archetypes in food systems' found as an Annex to this tool description.

Table 5   *Overview of different methodological packages to carry out step 4 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Identify archetypes in food system based on causal diagrams and desk study	Describe the dynamics of archetypes in the context of the policy goals (expert workshop)	System dynamics modelling
Who	Consultants	Consultants, key informants, experts	Consultants, researchers

As shown in the table above, the application of the step 4 of the FSDS tool can be carried out with different methodological packages, at different levels of intensity: light, advanced and comprehensive. For the purpose of this application of the tool, we use the 'light' package. This package consists of a desk study, resulting in identifying archetypes in the food system based on the causal diagrams produced in step 3.

These archetypes are described in more detail below for the policy goal of supporting vulnerable households in food-insecure areas, and displayed visually in figure 4.

'Tragedy of the commons': population growth results in increasing land pressure for individual benefit (food production), resulting in depletion of soil resources (land degradation) affecting the communities, households and future generations. If households have less capital, assets, and limited FNS (affecting health and thus labour input), they are restrained in their ability to invest in sustainable agricultural practices. Further, the population growth results in a growing demand for food, increasing pressure on the available land resources. These causal processes at household and landscape level are reinforcing, resulting in an increasing pressure that exceeds the carrying capacity of the agro-ecosystem, and thus a decline of natural resources through land degradation.

'Limits to success': the limited carrying capacity of the agro-ecological environment constrains agricultural productivity. Combination of soil regeneration, tailored diversified cropping systems and regreening may result in improvements in micro-climate. But the area will always be dependent on surplus-producing areas for FNS.

'Shifting the burden': structural food aid reliefs immediate problem of food insecurity in short term, but can make vulnerable households reliant on this support in long term ('addiction'). Investments in agriculture decrease due to food aid dependency as well as high food expenditures (by households as well as public sector) to address food insecurity.
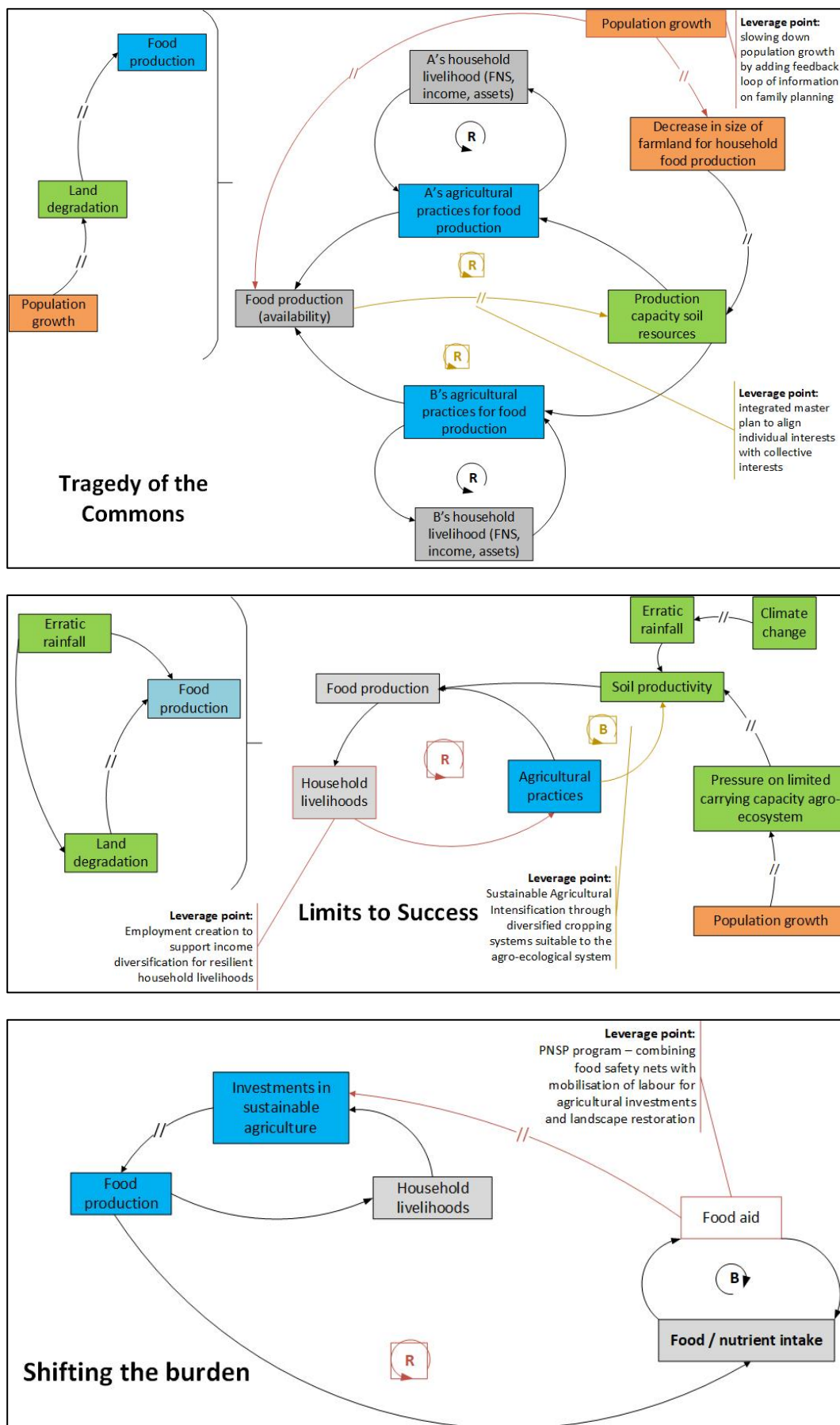
Figure 4 *Archetypes and leverage points around vulnerable households in food-insecure areas*

Step 5: Identify leverage points

The fifth step of the Food System Decision-Support (FSDS) Tool aims to identify the leverage points in each of the archetypes that was identified in step 4. These leverage points are places in the feedback mechanism where minimal effort can result in maximum impact.

Table 6　　*Overview of different methodological packages to carry out step 5 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Identify leverage points based on causal diagrams, archetypes and desk study	Identify leverage points based on causal diagrams, archetypes and expert knowledge of key informants (expert workshop)	Identify leverage points based on expert knowledge and empirical data
Who	Consultants	Consultants, key informants, experts	Consultants, researchers

As shown in the table above, the application of the step 5 of the FSDS tool can be carried out with different methodological packages, at different levels of intensity: light, advanced and comprehensive. For the purpose of this application of the tool, we use the 'advanced' package. This package consists of identifying leverage points based on causal diagrams, archetypes and expert knowledge of key informants in an expert workshop. This method was used in the FS tool workshop described earlier. This section describes the outcomes of this workshop for one policy goal: supporting vulnerable households in food-insecure areas. The leverage points are also indicated in figure 4 on the previous page.

Tragedy of the commons:
- Integrated masterplan on use of natural resources agreed upon with stakeholders, to align individual interests and activities with collective interests. This may include regulatory measures to protect the common good against individual behaviour.
- Integrate information flows on family planning to balance or slow down the population growth.

Limits to success:
- Diversified cropping system (Sustainable Agricultural Intensification) suitable to agro-ecological environment to make optimal use of production capacity of the agro-ecosystem (i.e. optimisation of agricultural production within the limits of the system).
- Employment creation to support income diversification (off-farm income opportunities) for more resilient household livelihoods within food-insecure areas.

Shifting the burden:
- PSNP program: combining food safety nets with mobilizing labour for agricultural investments, infrastructural development and landscape restoration to reverse the causal relation between food aid and agricultural investments.

Step 6: Define actors and sphere of influence

The sixth step of the Food System Decision-Support (FSDS) Tool aims to map the actors that have influence on or interest in achieving the policy goals of the Embassy. Also, it pays attention to the span of control the Embassy has over these other actors and the extent to which the Embassy can influence these actors to help achieve their policy goals.

Table 7   *Overview of different methodological packages to carry out step 6 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Participatory mapping of influence-interest matrix	Participatory mapping of influence-interest matrix and force field analysis (expert workshop)	Stakeholder analysis (incl. social network analysis)
Who	Embassy staff, key informants, stakeholders	Embassy staff, key informants, stakeholders, consultants	Consultants, researchers, embassy staff

As shown in the table above, the application of the step 6 of the FSDS tool can be carried out with different methodological packages, at different levels of intensity: light, advanced and comprehensive. For the purpose of this application of the tool, we use the 'light' package. This method was used in the FS tool workshop described earlier. This section describes the outcomes of this workshop for one policy goal: supporting vulnerable households in food-insecure areas. Figure 5 below gives a visual representation of the outcomes of this exercise.

For employment creation, the private sector (in particular SMEs and agribusinesses) would need to be mobilized to create employment within (or close to) the food-insecure areas. Cottage industries could be supported to grow and expand in order to create local employment. In addition, TVET would need to be supported and mobilized to strengthen the skills of the rural population. The RNE could team up with other donors, such as the USAID, to develop programs for small-scale private sector development and employment creation.

To integrate land restoration in the PSNP, the RNE could lobby with the PSNP and IUCN to collaborate and join forces, but it is not expected that the RNE can alter the PSNP activities. It might be able to engage other actors, such as Kadaster International, to support land governance bottlenecks, but this should be done in consultation with PSNP and possibly IUCN.
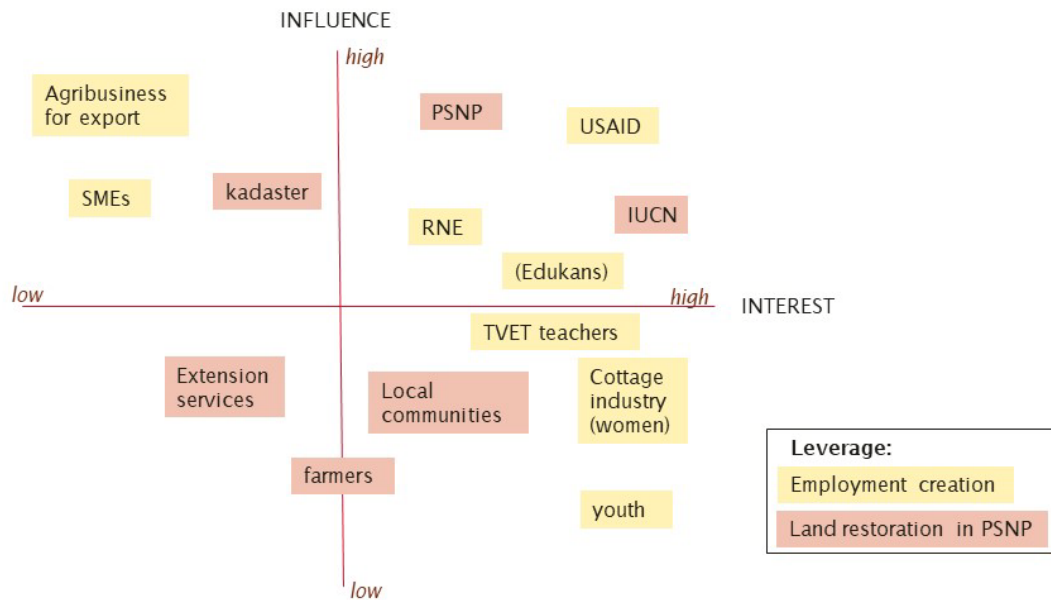
Figure 5   *Influence-interest matrix of actors for vulnerable households in food-insecure areas*

Step 7: Develop FNS programme strategy

The second step of the Food System Decision-Support (FSDS) Tool aims to shape the FNS program strategy of an Embassy, based on a careful assessment of the most attainable leverage points (step 5), the influence of the actors which the Embassy can influence (step 6) and what is feasible within the policy objectives and mandate of the Embassy, and desirable given the policy objectives of the host country or key partners (step 1). In this mapping, special attention is paid to the type of policy measures the relevant Embassy has in its toolbox. Also, the relative costs of different policy options needs to be compared.

Table 8   *Overview of different methodological packages to carry out step 7 of the FSDS tool*

Method	Light	Advanced	Comprehensive
What	Determine interventions and FNS programming	Determine interventions for FNS programming and planning	Detailed planning of FNS programming for short-, medium- and long-term, with planning and budget
Who	Embassy staff, stakeholders	Embassy staff, stakeholders, consultants	Embassy staff, stakeholders, consultants

As shown in the table above, the application of the step 7 of the FSDS tool can be carried out with different methodological packages, at different levels of intensity: light, advanced and comprehensive. For the purpose of this application of the tool, we use the 'light' package. This method was used in the FS tool workshop described earlier. This section describes the outcomes of this workshop for one policy goal: supporting vulnerable households in food-insecure areas. Policy recommendations were given around three themes: the Productivity Safety Net Programme, landscape restoration and permanent employment creation to promote income diversification.

Productive Safety Net Programme
First, it was suggested to further expand the Dutch support for the PSNP, steering it towards more systemic activities, which increase household purchasing power and food production capacity.
- Food assistance to vulnerable households for FNS security for short-term relief
- Food for work program to increase household purchasing power for medium-term relief
- Invest in strengthening the capacity of the food production system for long-term relief

Landscape Restoration
- Second, matching the leverage points identified and the stakeholder analysis suggested investing in strategic partnerships to tackle environmental feedback mechanisms at landscape level. Short-term: expand and strengthen partnerships with PSNP and IUCN to pursue common interests
- Medium-term: territorial governance; creation of landscape masterplan with (local) stakeholders
- Medium-term: focus food for work also on landscape restoration (regreening, soil & water conservation works)

Permanent employment creation to promote income diversification
Finally, matching the embassy's policy goal and mandate with the outcomes of the stakeholder analysis, suggested the Embassy could use its donor network to invest in youth employment.
- Short-term: partnerships with donors (e.g. USAID) and regional state for local private sector development and employment creation
-
- Short-term: capacity building of youth through TVET
- Long term: work with private sector, states, local authorities to create enabling conditions to attract investors and enterprises for development of local industry

The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 5,000 employees and 10,000 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.