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Critical and Emerging Issues for Food Security and Nutrition

Synthesis of the Enquiry

A note by the HLPE Secretariat, 8 February 2017

Summary

The Committee on World Food Security (CFS) requested the HLPE to produce a note on Critical and emerging issues for food security and nutrition (FSN).

As for other HLPE studies, a central element of the evidence-based work consisted of documented inputs by the scientific community and a wide range of knowledge networks and knowledge holders, through a public enquiry.

This document synthesizes the results of the enquiry conducted by the HLPE. The documents for the enquiry (notice and questionnaire) are attached to the present note.

Outline

INTRODUCTION

In October 2013, the CFS requested the HLPE to produce a note on critical and/or emerging issues in the area of food security and nutrition (FSN). This first note was released in August 2014.[1]

In October 2015, at its 42nd Plenary Session, the CFS decided that this HLPE note shall be updated at least every four years, depending on funding availability and the HLPE workload, and released in due time to be used as a starting point for the process of elaboration of the following CFS multi-year programme of work (MYPoW). In this context, the CFS Bureau requested the HLPE to produce a second "Note on critical or emerging issues in the area of food security and nutrition" (hereunder referred to as the C&EI note), to be presented during CFS44 Plenary session in October 2017.

The purpose of this exercise is to help CFS stakeholders prioritize future actions and activities on a limited number of critical policy-relevant areas[2] in the overall framework of the Agenda 2030.

This C&EI note is expected to provide an inclusive and evidence-based perspective, built on the knowledge of diverse actors, on critical and emerging issues impacting on FSN, which could be included in the CFS agenda. In order to reach this objective, the HLPE sought evidence-based, rationally identified and documented inputs through two avenues.

First, as was done for the first C&EI note in 2014, the HLPE conducted, between August and December 2016, an enquiry directed to the scientific community as well as to the diversity of knowledge networks and knowledge holders – institutions, organizations, knowledge networks and individuals – and a public electronic consultation opened to a wider range of stakeholders, through the form of a questionnaire (see Annex 1).

Respondents were invited to fill a separate form for each critical and/or emerging issue they identified. The questionnaire aimed to cover the diversity of the issues that can be considered as critical and/or emerging for FSN, and to identify their main characteristics (including whether the issue is an external or internal driver to food systems, considered a challenge or opportunity, the primary dimension of the issue itself, its depth and breadth, geographic scale of the issue itself and the actions needed to address it, impact on the four pillars of food security, impact on most vulnerable peoples, time scale, degree of confidence of the assessment of the issue, and finally linkages to the Sustainable Development Goals).

In addition to this enquiry and public consultation, the HLPE organized or co-organized three conferences to allow a direct interaction between different knowledge holders and political decision-makers and to seek inputs and feedbacks at different stages of the process. The first conference, co-organized with Columbia University, in New York City, United States of America, in May 2016, was an occasion to present the first C&EI note (2014) and the process devised for the second edition. Two other conferences were co-organized – with Hohenheim University in Stuttgart, Germany, in September 2016, and with Agropolis International and the UNESCO Chair on World Food Systems, in Montpellier, France, in December 2016 – during the public consultation. Their outcomes are available online.[3]

This note presents a synthesis of the inputs received, through the enquiry and public consultation, to inform the work of the HLPE Steering Committee towards its final C&EI note. The first section gathers general remarks and statistics. The second proposes an analysis of the issues raised, presented by thematic clusters. The third section considers the relationships

[1] See: http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/Critical_Emerging_Issues/HLPE_Note-to-CFS_Critical-and-Emerging-Issues_6-August-2014.pdf

[2] In the CFS context, a clear distinction needs to be made between: (i) issues of relevance to FSN, which are the object of the present knowledge-based exercise by the HLPE; and (ii) CFS activities, which are not the object of the present exercise as they are discussed and decided upon at the level of the CFS, by its own, distinct processes.

[3] See http://www.fao.org/cfs/cfs-hlpe/critical-and-emerging-issues/en/

between the issues raised in the enquiry and public consultation and the overall framework of the Agenda 2030.

1. STATISTICS AND GENERAL REMARKS

1.1. Statistics

During the enquiry, the HLPE directly solicited 181 knowledge organizations, institutions and knowledge networks worldwide. Thirty-eight of these (K) replied, submitting a total of 104 questionnaires (herewith referred to as “issues”).

The public electronic consultation organized in parallel attracted 37 respondents (P), submitting a total of 56 issues. Finally, the HLPE also received 14 “other” contributions (O) that did not use the questionnaire and were therefore incomplete.

In total, 174 issues were collected from 80 respondents, totalling 915 pages. All regions are represented in the answers. European respondents were particularly involved and raised around one-fifth of the issues. Over 40 percent of the issues were raised by international organizations.

Annex 2 lists the respondents and Annex 3 the issues raised, distinguishing the types of answers presented above: knowledge institutions (K), public enquiry (P) and others (O).

1.2. Main characteristics of the issues

Around 40 percent of the issues were presented as challenges only. Nearly one-fifth of the issues were considered as solely opportunities, mainly linked to actions in research, capacity development, good practice and policies. Around 25 percent were seen as either an opportunity or a challenge, depending on the situation and on how the issue would be addressed. Interestingly, the answers received during this enquiry and public consultation were more solution-oriented than those received during the previous exercise. Even when the issues are presented as challenges only, respondents often suggested possible solutions, either technical or institutional.

Around 40 percent of the issues were presented both as an “internal” and as an “external driver” to food systems, highlighting the tight interlinkages existing between food systems and other “sectors” (systems, drivers or policies) such as health, education, environment, demographic changes, economy and trade.

Respondents were asked to link the nature, and main impact of their issue on FSN, to the three classic dimensions of sustainability (economic, social, environment) and to governance. The vast majority of the issues identified linkages to these four dimensions, in this order: economic, governance, environmental and social. Some respondents also identified “nutrition” as another important dimension. Almost all the issues were also presented as impacting, negatively or not, the four dimensions of FSN (availability, access, utilization and stability).

Around two-thirds of the issues were presented as relevant to food systems as a whole, while only one-fifth were considered as critical for specific components of food systems. This highlights the complex interactions existing between the different components of food systems, and also the need for systemic and holistic approaches, in science and policy, to address the challenges that food systems are facing.

Respondents mainly raised issues considered to affect many people and to have an impact at the global level. Over half of the issues were considered to have a global impact, although respondents had the possibility to select multiple scales, from local to national, regional and global (e.g. just over 10 percent of the issues indicated all four scales of impact).

Respondents paid particular attention in their answers to the specific impacts of the issue on disadvantaged and marginalized groups, including women, children, indigenous peoples and

smallholders. When suggesting solutions, they also often took into consideration the specific roles and needs of those vulnerable groups.

Most of the issues were described as having short- and medium-term impacts followed relatively closely by long-term impacts. However, the respondents privileged in their answer solutions implementable in the short term (followed by medium and then long term), pointing to the cost of inaction and the urgent need for action to address the challenges identified.

For most of the issues, respondents qualified the knowledge base as medium or high. Many contributions provide additional supporting information, often with references to scientific publications. This shows that, in most cases, there is already evidence grounding the identification of the issue and often also of potential solutions. The respondents also pointed out the need for further research when the knowledge base for an issue was considered as low.

2. SYNTHESIS OF THE ISSUES, PRESENTED BY THEMATIC CLUSTERS

In organizing the issues, a structured methodology was followed, whereby each issue was analysed at different levels of granularity, from a more detailed "descriptive" analysis to finally be grouped into a broader thematic cluster, as related to FSN.

For the purpose of clarity, each issue was associated to only one "thematic cluster", although some issues could have been related to different clusters given the interlinkages existing between them.

Six broad thematic clusters, and a set of subthemes suggested in Table 1 below, were used to structure this section.

Table 1. List of issues by thematic cluster

Thematic cluster	Subthemes	Issues
Climate change and natural resource management (32 issues)	Climate change	K1A, K22A, K23A, K27A, K31B, K37B, K37J, P19A, P27A, P34A, O4D
	Energy	K18A
	Land	K37H, P5A, O4E
	Natural resource management (NRM)	K3A, K16A, P10A
	Water	K17B, K28A, K31A, K32A, K37S, P26A, O4B
	Biodiversity and ecosystem services	K10A, K17A, K20A, K26A, K37T, K37U, P28C
Food chains (26 issues)	Food losses and waste (FLW)	K38E, P13A, P14B
	Infrastructure	P14D
	Sustainable agriculture	K1B, K2A, K8D, K26B, K37M, K38F, P32E, O4A, O5C
	Sustainable food value chains	K6A, K36A, P24B
	Animal production	K21A, K37Q, P22A
	Sustainable food systems for FSN	K19B, P24A, P30B,
	Sustainable fisheries and aquaculture	K37E, O3A
	Pollution	P16A, P4A

Nutrition and health (34 issues)	Anti-microbial resistance (AMR)	K8F, K35B, K37I, P14A, P14E
	Food safety	K8A, K36B, K37K, K37O, P14C, P14F, P14I, P28B, P32D
	Malnutrition	K30A, K31C, P1A,P12A, P28A, P32B
	Nutrient-rich foods	K35C
	Nutrition-sensitive agriculture	K9A
	Diets	K38D, K38G
	Food fortification	K9B, P8A, P31A
	Nutrition-sensitive food value chains	K22C, P14G, P18A
	Animal-sourced food (ASF)	K8B, K8E, K29A
	Novel foods	O1A
Governance (32 issues)	FSN policies	K17D, K18D, K22D, K23B, K33A, K36C, K36D, O5B
	Institutions	K16B, K35A, K37D
	Rights	K19A, K24A, P33A
	Trade	K4A, K22H, K25A, K36F, K38C, P2A, P15A
	Power relationships, stakeholders	K22B, K36E, P7A, P20A, P21A, P29A, P37A, O2C, O5A
	Nutrition governance	K13A
	Food sovereignty	P9A
Social issues (28 issues)	Conflict and migrations	K11A, K22E, K37A, K37P
	Gender	K2D, K37C, O5D
	Social protection	K22G, K37F
	Urbanization and rural transformation	K18B, K18C, K22F, K37G, P11A, O2A
	Youth	K16C, K28B, K38H, P21B, P32C
	Smallholders	K2B, K8C, P37B, O2B
	Inequalities	K23C, K38B
	Employment and working conditions	P25A, P35A
	Poverty reduction	K38A
Knowledge and technology (21 issues)	Education	P6A, P17A
	Information	P3A, P23A
	Innovation	K5A, K34A, P32A, O4C
	Technology	K17C, K37L, K37N, K37R, P14H, P29B, P30A
	Metrics	K7A, K14A
	Research	K2C, K12A, K15A, P36A

2.1. Climate change and natural resource management

Respondents underlined that climate change, increased climate variability and extreme weather events impact negatively on food stability (K27A), food production (P19A, K23A,

K37J) and livelihoods of farmers and vulnerable people such as women and youth (K27A), undernourished people (K22A) and indigenous people (P34A). Climate-smart agriculture was mentioned as a way to contribute to sustainable and productive agriculture (O4D) and to improve resilience (K1A).

The management of natural resources is seen as a challenge by many respondents (see for instance K3A, K16A, P10A), as natural resource degradation impacts global food systems. Land (K37H) and grasslands (P5A) degradation, as well as soil health (O4E) and water scarcity, including the depletion of groundwater (K31A) and water withdrawal (K37S), were highlighted.

Management practices and enabling environments for sustainable agriculture are needed (K16A). Many respondents call for improvements in resource-use efficiency, for instance through plant breeding (P10A) or efficient water management, including irrigation (K3A, K17B, K32A, O4B).

Threatened ecosystem services are impacting on ecosystem health and resilience (K37T), limiting the capacity to achieve sustainable agriculture in the long term. Biodiversity can play an important role for nutrition (P28C), healthy diets (K26A) and the production of nutrient-rich crops (K73U). Agrobiodiversity is also considered an important issue by some respondents, who highlighted the need for availability of quality seeds (genetic resources) to peasants and farmers (K20A), including through (threatened) community seed systems (K10A).

2.2. Food chains

Undernourishment, population growth and incomes were identified as challenges to global food security (P24A). To tackle FSN, a food system approach is needed (P30B). Respondents highlighted the key role to be played by food value chains and the food industry (K6A, K36A, P24B) in the needed modernization of food systems (K19B). Food losses and waste (FLW) need to be reduced (K38E) all along the food chain. Post-harvest technologies should be developed and disseminated (P13A, P14B).

A sustainable agriculture (O5C) is the first step towards sustainable food systems. Respondents pointed out the need to promote resilient agricultural practices, in particular in the context of disasters (P32E), to disseminate agroecology (K37M), as well as to facilitate access to inputs (agricultural, information and financial) (O4A) and infrastructure, e.g. for animal food chains (P14D). Sustainable intensification of crop and livestock systems is often seen as a solution towards more sustainable development and improved FSN (K1B, K2A, K26B).

Respondents pointed out a number of issues related to animal production, including animal health and welfare (K37Q, P22A), aquaculture and fish production systems (K37E, O3A, P16A), and novel feed sources for food production on land and sea (K21A).

2.3. Nutrition and health

Respondents highlighted that malnutrition in its different forms (K30A, P28A, K31C) affects the health and development of people, and in particular of vulnerable people including children and breast-feeding women (P32B, P12A). These challenges require a better understanding of dietary patterns (K38D), design of diet-based solutions, and promotion of nutrition-sensitive farming systems (K9A) and nutrition-sensitive food value chains (K22C, P14G, P18A). One of the challenges is to improve the nutritional characteristics/content of food (K35C), for instance through food fortification (P8A, P31A, K9B) or through the development of alternative sources of protein, such as algae (O1A).

Animal-sourced foods (ASF) were identified as an important component of sustainable diets, although their consumption is unequally distributed across countries and social groups (K8B, K8E, K38G). Fish is a major source of key nutrients but fish consumption is not always fully integrated into strategies to combat malnutrition (K29A).

Food safety, both localized and transboundary, was identified as an important aspect of FSN (K36B, K37K, K37O, P32D). Food-borne diseases (P14C, P14F, P14I) are a concern as they have impacts on household health, nutrition, market access and livelihoods (K8A, P28B).

More broadly, health (both animal and human) was raised as an important issue by a number of respondents. Widespread use of antibiotics for livestock favours the emergence of anti-microbial resistance (AMR) that constitutes a major global threat to human health (P14A, P14E, K8F, K35B).

2.4. Social issues

Conflict and migration are seen as a critical challenge to FSN. It is important to know more about the role of agriculture and food security in conflict and emergency situations (K11A), and about the impacts of migration on nutrition (K22E).

Urbanization and rural transformation are considered both a challenge and an opportunity for FSN (K18B, K22F, K37G), particularly in the case of urban agriculture (P11A). Urbanization often comes at the price of changing land use, from fertile lands to urbanized areas for residential/industrial purposes (O2A), and requires its own set of tools for assessing FSN in urban contexts (K18B).

Food insecurity and malnutrition are among the root causes of rural–urban migration: agriculture and rural development can play a key role in harnessing this phenomenon for an improved FSN (K37A). Employment and working conditions in agriculture and rural area can influence the FSN of rural communities (P25A, P35A). Several respondents emphasized the key role that agriculture and rural development should play in providing opportunities and decent jobs for youth in rural areas (K16C, K28B, K38H, P32C, P21B).

Empowering women and closing the gender gap (K2D, K37C, O5D), while providing support to smallholders (K2B, K8C, O2B), are seen as being critical for more sustainable agriculture and food systems and better FSN.

Lastly, social protection programmes (K22G, K37F, K38A) can play a major role to reduce food insecurity, eliminate hunger and combat rural poverty.

2.5. Governance

Respondents highlighted that human rights are the cornerstone on which to build a global governance for better FSN. These include rights to land and water use (K19A) and the right to food (P33A), especially for smallholder food producers and workers. Human rights should be respected by corporations and protected by states (K24A).

Good governance is needed to address power relationships, power concentration, and power imbalances and conflicts of interest between different stakeholders, at different stages of the food systems (P20A, P21A, P29A, P37A, O2C, K36E).

With regard to institutions, respondents pointed out the need for capacity building (K16B, K35A), institutional innovations (K33A) and better enforcement of existing laws and regulations (K37D). Partnerships and participatory approaches in the decision-making process should be promoted, in particular for smallholders and other vulnerable people (P7A, O5A, K8C, K22B).

Respondents also noted the importance of policy coherence across sectors to better address different aspects of FSN by integrating policies related, among others, to environment (K17D), cities (K36C), nutrition and health (K22D), access to markets, in particular for smallholders (K33A), investments (K18D) and food stocks (K36D). Nutrition governance and accountability still require a concerted focus from local to global levels (K13A).

There are diverging views among respondents about the impacts of trade policies on FSN, which are seen as either positive or negative (K22H, K25A, K38C, P2A). Trade policies can penalize poor households (K4A), and have a negative impact on local food systems (P15A).

There is also a need to strengthen efforts to tackle transboundary pests, diseases and food safety risks (K37O).

2.6. Knowledge and technology

Information and education are critical to enable people and policy-makers to make informed choices to improve farming practices and diets (P3A, P17A, P23A, P6A). In a broader context, information needs to be collected to accurately measure food insecurity, globally (K14A) and to assess sustainable food consumption patterns (K7A, K38D). Adequate metrics need to be developed in this context, and at different scales (K7A, K14A).

More investments are needed in research and development, and capacity building, related to FSN, in particular in the developing word (K2C). Further research is needed in order to better understand the impact of sustainable and healthy diets on human health and the environment (K12A), and to develop appropriate technologies, adapted to farmers, in order to increase agricultural productivity and resource efficiency in the context of climate change and global population growth (K15A).

The importance of acknowledging and understanding the role that science and technology play in FSN (K15A) was noted. The role of innovation in agriculture and food systems (P32A, K5A, O4C), including small-scale farmer innovation (K34A, K37R) will be critical to achieve sustainable development and improved FSN. This includes institutional innovation, which in turn is linked to governance (K5A). Information and communications technology (ICT), including big data, for precision agriculture (K37R) and mechanical farm power along the food chain in developing countries (K37N) are examples of "hardware-based" technologies. The need for bio- and nanotechnologies for FSN was supported by some respondents (K17C, K37L, P14H). However, the disruptive impacts of next generation biotechnologies were also highlighted (P29B).

3. LINKAGES TO AGENDA 2030 AND THE SDGS

Most respondents linked the issue presented to one or several Sustainable Development Goals (SDGs), either directly or indirectly, and listed them.

As expected, over 75 percent of the issues were directly linked to **SDG2** *"End hunger, achieve food security and improved nutrition and promote sustainable agriculture*". For around 10 percent of the issues, links with specific targets are identified under SDG2. SDG2 is consistently the most frequently quoted SDG for each of the six clusters related to FSN described in section 2.

Interestingly, all the other SDGs were mentioned, showing not only the interlinkages existing between the SDGs and the need to consider the 2030 Agenda with an integrated perspective, but also that FSN is seen by the respondents as a cross-cutting entry point/condition to the achievement of the whole 2030 Agenda.

After SDG2, and by decreasing order of importance, the following SDGs were mentioned as directly linked to more than 10 percent of the issues:

- **SDG1:** *End poverty in all its forms everywhere*
- **SDG3:** *Ensure healthy lives and promote well-being for all at all ages*
- **SDG15:** *Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*
- **SDG12:** *Ensure sustainable consumption and production patterns*
- **SDG8:** *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*

Logically, the following SDGs were, after SDG2, the most frequently directly linked to the following thematic clusters:

- **SDG15** for “Climate change and natural resource management”
- **SDG12** for “Food chains”
- **SDG3** for “Nutrition and health”

For the last three clusters (“Social issues”, “Governance”, “Knowledge and technology”), the answers are more equally distributed among the 16 other SDGs, giving a slight prominence to SDG1. This could reflect the wide range of issues encompassed in each of those three clusters as well as the general nature of SDG1 which is, as is FSN, a cross-cutting challenge to sustainable development and requires addressing integrated policies impacting diverse sectors.

CONCLUDING REMARKS AND LESSONS LEARNED FOR THE ELABORATION OF THE FINAL NOTE

The answers received are more solution-oriented than for the previous exercise in 2014. Even when the issue is presented as a challenge only, the respondents often suggested possible solutions and ways forwards, either technical or institutional.

The main issues raised during the two conferences co-organized by the HLPE in Stuttgart (September 2016) and Montpellier (December 2016) – see outcomes attached – are also quite consistent with and easy to insert in the overall framework of the results of the public enquiry as defined by the thematic clusters described in section 2, even if they put forward specific points that can enrich this framework. For instance, the participants in Stuttgart recalled the importance of integrating diverse forms of knowledge. When discussing the social dimension of FSN, the participants in Montpellier emphasized the importance of human dignity and, when discussing about governance, they pointed out the need for territorial approaches at different scales. Both conferences underlined the growing competition for resources (land and water) likely to entail conflicts and migrations in the coming decades.

In each thematic cluster, many issues raised by the respondents have already been covered or touched upon in previous HLPE reports or will be in ongoing reports (see Annex 4 for the list of published and ongoing HLPE reports). There are, however, groups of issues that show the need for future HLPE reports.

Climate change has been directly dealt with in report #3, and mentioned from a sectoral perspective in report #10 on agriculture and #11 on forestry. Issues related to land use are covered in report #2 on land tenure, #5 on biofuels, as well as in reports #10 and #11 from a sectoral perspective. Water has been the core topic of report #9. Report #5 introduced some questions related to energy. However, topics related to ***“Biodiversity and genetic resources for food security and nutrition”*** have not been covered.

Sustainable production systems were covered with a specific focus on fisheries in report #7 and on livestock in report #10. Food losses and waste were covered in report #8. The ongoing report #12 on *Nutrition and food systems* will complete these analyses and should cover many issues raised under the cluster “Food chains”.

Most of the issues gathered under the cluster “Nutrition and health” should be covered by report #12. Some of these issues, such as animal-sourced foods, including fish, or antimicrobial resistance, have already been introduced in reports #7 or #10.

Concerning social issues, a specific attention has been paid to vulnerable groups in all the previous HLPE reports, in particular in report #6 on smallholder agriculture. Report #4 covered the issue of social protection from a food security perspective. The HLPE Steering Committee always made sure that gender issues have been correctly mainstreamed in each specific report given the fundamental role of women in agriculture and food systems for FSN. **“*Urbanization***

and rural transformation" and related social issues, including employment and working conditions, seem to call for a specific HLPE report. It could provide further insights on the specific roles of women and youth to progress towards more sustainable food systems for better FSN.

Many issues related to the cluster "Governance" will be analysed in the future report #13 on multistakeholder partnerships. However, for many respondents, further work is needed on the ***"Impacts of trade on FSN"***

Although all the HLPE reports are knowledge- and evidence-based, ***"Knowledge and technology"*** have never been the core focus of any HLPE report. Such a study could provide useful insights: on the role of innovation in agriculture and food systems; on the potential and limits of technologies in the perspective of sustainable development; on the integration of diverse forms of knowledge, including traditional and indigenous knowledge; and on the design of policies and solutions. Capacity-building strategies and facilitated access to technologies and practices adapted to each specific context would also be an important question for such a study.

Among the five main issues identified by the first HLPE C&EI note (2014), three have been already covered by HLPE reports. One issue, ***"Increasing role of financial markets in FSN"*** has not yet been covered but has not been raised again by the respondents during this enquiry and public consultation. ***"Inequalities and FSN"*** that can be linked also to the achievement of SDG1 could be the topic of a report around social issues.

Annex 1: Questionnaire

HLPE Enquiry Critical and Emerging Issues for Food Security and Nutrition – 2016 Questionnaire

About the respondent

Name, Surname and Institution		
Do you answer on behalf of your institution, or as an individual?	On behalf	As individual
Do you agree if this contribution is made available to the public as part of the proceedings?	Yes	No
Country of the responding individual/institution Please mention international or regional, the case being		

1. Overview of the issue

Issue *in 2 lines*			
Description of the issue *in less than 5 lines*			
Is the issue a *challenge* and/or an *opportunity* for FSN? *Please tick the appropriate box*	Challenge	Opportunity	It depends (please specify)
Methodology and approach used to identify the issue and assess its importance for food security and nutrition *In less than 10 lines.* Additional supporting or describing information (literature, reports, expert report, analysis, etc.) can be provided in section 8 below.			

Main response proposed to address the issue	

Main actor(s) concerned or involved in the response proposed	

For the public enquiry fields below are optional

2. Broad typology of the issue

(*)	***External driver***	***Internal to food systems***	***Both***
Is the issue either or both?			Briefly mention how this may be the case

(*)	***Economic (and productive)***	***Social (and cultural)***	***Environmental (resources, etc.)***	***Governance (institutions, rights, etc.)***	***Other (SPECIFY)***
Main nature of the issue					
Nature of the main impact of the issue on FSN					

(*) Please tick the boxes. Additional supporting or describing information can be provided in section 8 below.

In 3 lines maximum, provide, if needed, a short explanation/justification of your answer, or any further observation:

3. Attributes of the Issue

	Classification (**)	
1. Depth: Is it relevant to food and nutrition systems as a whole, or to specific parts of those systems?	Critical point	Systemic issue
2. Breadth: are there many people affected?	Few	Many

3. Scale: local/national/regional/global?	Local	National	Regional	Global
	Indicate here the precise location	*Indicate here the precise country*	*Indicate here the precise region*	

For items 4–11 below, please use the classification [— — , —, 0, +, ++]:

Very negative (— —) / Negative (—) / Low (0) / Positive (+) / Very positive impact (++)

4. Impact on availability			
5. Impact on access			
6. Impact on utilization/nutrition			
7. Impact on stability			
8. Impact on most vulnerable people	Specify as appropriate		
9. Impact on women			
10. Impact on children			
11. Impact on marginalized populations	Specify as appropriate		
12. Cost to address the issue	Low	Middle	High

(**) Please tick the boxes or classify the impacts and provide synthetic data where required. Additional supporting or describing information, data, sources can be provided in section 8 below.

In 3 lines maximum, provide, if needed, a short explanation/justification of your answer, or any further observation:

4. Time scale

Timeframe (*)	***Now/Short term (1–5 years)***	***Medium term (5–10 years)***	***Long term (10–20 years +)***
Moment when the issue will have an impact			
Moment to act to address the issue			

(*) Please tick the boxes. Additional supporting or describing information can be provided in section 8 below.

In 3 lines maximum, provide, if needed, a short explanation/justification of your answer, or any further observation:

5. Degree of confidence

Solidity of currently available knowledge base	Low	Middle	High

In 3 lines maximum, provide, if needed, a short explanation/justification of your answer, or any further observation:

6. Linkages with SDGs (1 to 17)[4]

First indicate the most relevant SDG and, the case being, links existing with other SDGs

7. The case being, linkages with any other issue

8. Additional supporting information

[4] See: http://www.un.org/sustainabledevelopment/sustainable-development-goals/ and : http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Additional information
Evidence
Knowledge gaps
References

Annex 2: List of respondents

Cont	(Public Enquiry) Contributor
P1	Associated Country Women of the World (ACWW)
P2	Brooke
P3	Indiana University
P4	HELVETAS Swiss Intercooperation
P5	University of Bristol
P6	Paul Rigterink
P7	Swiss Farmers' Union (SFU)
P8	University Miguel Hernández
P9	Claudio Schuftan
P10	Federal Research Institute of Animal Health
P11	Mazingira Institute
P12	The Australian National University
P13	The Postharvest Education Foundation
P14	Max Rubner-Institut (MRI), Federal Research Institute of Nutrition and Food, Karlsruhe/Germany
P15	Australian Food Sovereignty Alliance
P16	Skandinavias største uavhengige forskningsorganisasjon (SINTEF)
P17	Nutrition Consultants from FAO
P18	Direzione Generale per l'Igiene e la Sicurezza degli Alimenti e la Nutrizione
P19	Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI)
P20	International Institute for Sustainable Development
P21	Federal Office for Agriculture, Switzerland
P22	Occupy UN For Animals
P23	Ghent University, Belgium
P24	Population Education Resource Centre
P25	University of Bern
P26	Active Remedy Ltd
P27	College of the Atlantic
P28	US Mission to the UN Agencies in Rome
P29	Erosion, Technology and Concentration (ETC) Group
P30	Global Dairy Platform Inc
P31	HarvestPlus
P32	Private Sector Mechanism of the UN Committee on Food Security
P33	Oxfam-Solidarity
P34	Government of Manitoba
P35	International Union of Food (IUF)
P36	Global Pulse Confederation
P37	Welthungerhilfe (WHH) Germany
Cont	**(Knowledge Institution) Contributor**
K1	Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)
K2	International Food Policy Research Institute (IFPRI)
K3	Institut national de la recherche agronomique (INRA – Algeria)

K4	Organisation for Economic Co-operation and Development (OECD)
K5	The Montpellier Malabo Panel (with Ousmane Badiane, IFPRI and Joachim von Braun, Bonn University)
K6	National Agricultural Research Centre
K7	American University of Beirut
K8	International Livestock Research Institute (ILRI)
K9	Swaminathan Foundation
K10	Zimbabwe Smallholder Organic Farmers Forum
K11	Leibniz Institute of Vegetable and Ornamental Crops
K12	United Nations Human Rights Council (UNHRC) SR on Right to Food
K13	Institute of Development Studies, UK
K14	The Pennsylvania State University
K15	Commonwealth Scientific and Industrial Research Organisation (CSIRO) Agriculture and Food
K16	International Fund for Agricultural Development (IFAD)
K17	United Nations Educational, Scientific and Cultural Organization (UNESCO)
K18	Joint Research Centre of the European Commission
K19	German Development Institute
K20	Zukunftsstiftung Landwirtschaft
K21	National Institute of Nutrition and Seafood Research
K22	UN System Standing Committee on Nutrition
K23	The Latin American Center for Rural Development-Rimisp.
K24	University of Oslo
K26	Bioversity International
K27	International Potato Center
K28	Oscar Ortiz (CG)
K29	WorldFish
K30	International Center for Agricultural Research in the Dry Areas (ICARDA)
K31	International Rice Research Institute (IRRI)
K32	International Water Management Institute
K33	World Food Programme
K34	Prolinnova International Support Team
K35	University of Pretoria
K36	Centre de coopération internationale en recherche agronomique pour le développement (CIRAD)
K37	Food and Agriculture Organization of the UN (FAO)
K38	Chinese Academy of Agricultural Sciences (CAAS)
Cont	**(Other) Contributor**
O1	National Algae Association
O2	Post Harvest Research Centre
O3	Fishers Union Organisation
O4	The International Fertilizer Association
O5	Prof. Ali Abdalrahman

Annex 3: List of issues presented

Cont	Issue title
P1A	Iron and vitamin C deficiency in female subsistence farmers
P2A	Community livelihood strategies for FSN undermined by surging unregulated donkey trade
P3A	Food transparency: lack of public information makes intelligent policy decisions impossible
P4A	Long-term effects of agrochemicals on human health and ecosystems
P5A	Pastoral livestock systems, animal welfare and environmental health
P6A	Vocational training material for poor people raising pigs in the lowland tropics
P7A	Farmers' voice and needs towards SDGs and food security
P8A	Lysine genetically enriched sorghum (and corn) grains
P9A	Consistent refusal/neglect of the UN System to adopt the concept of food sovereignty
P10A	Plant breeding for resource efficient feed and food production
P11A	Urban agriculture can improve food and nutrition security for vulnerable groups
P12A	Neglect of children's nutrition and breastfeeding (BF) causing rising food insecurity, malnutrition, ill health
P13A	Integrating PHT for reducing FLW into national extension/advisory services (EAS)
P14A	Minimizing the development and incidence of antibiotic-resistant micro-organisms in food
P14B	Development of technologies to minimize post-harvest losses for improved food security
P14C	Mycotoxin and aflatoxin in the food chain
P14D	Creating infrastructures for trading, slaughtering and chilling of slaughter animals
P14E	Minor amounts of antibiotic residues may induce resistant bacteria
P14F	Plant toxins (e.g. tropane alkaloids) in the food chain
P14G	Improvement of mineral bioavailability from plant-based foods
P14H	Nanotechnology in food and agriculture
P14I	Ciguatoxins (CTX) in the fish chain
P15A	Barriers to regional food planning for resilient diversity
P16A	The impact of plastic litter in the marine environment on marine food resources and species
P17A	People´s capacity to make good use of available resources and the food environment (which is directly influenced by the food system) to improve own diet, food practices and food and nutrition security in the long term
P18A	Win–win strategy (Ministry of Health and Industry) for improving nutritional characteristics of food
P19A	Increased risks to food production and distribution due to extremes of weather and climate variability
P20A	Competition in global seed, fertilizer and chemical sectors
P21A	Increasing concentration in the seeds and pesticides markets
P21B	Youth in agriculture and agrifood systems (agripreneurship)
P22A	Ancient animal processing 1. Asian tortured dog and cat meat 2. European force-fed ducks: foie gras

P23A	Lots of people use ”neglected/underutilized species” (NUS) for food, without anyone knowing their nutritious value
P24A	Undernourishment, population growth and income pose significant challenges to achieving global food security
P24B	Sustainable food industry
P25A	Employment in commercialized agriculture influences food security and nutrition of rural communities
P26A	Safeguarding the global water cycle for food security, nutrition and health
P27A	Impacts from climate change mitigation technologies (negative emissions technologies) and strategies that rely extensively on the land sector, including bioenergy carbon capture and storage
P28A	Food safety and urban food systems
P28B	The double burden of malnutrition and epigenetics
P28C	Biodiversity and nutrition
P29A	The impact of market concentration in the agrifood sector on food security and nutrition
P29B	Wide disruptive impacts of next generation biotechnologies on food security and nutrition
P30A	Acknowledgement and understanding of the role that technology plays in food and nutrition security
P30B	The need for a systems approach to understanding food and nutrition security, societal, economic and environmental sustainability
P31A	Improving the nutrient content of staple crops to reduce micronutrient malnutrition
P32A	Innovation for sustainability and productivity
P32B	Stunting
P32C	Engaging, recruiting and retaining youth in agriculture
P32D	Food safety
P32E	Resilient agricultural practices in the context of disasters
P33A	Right to food under increased risk from violence against and criminalization of small-scale food producers, workers and civil society
P34A	Climate change and the affect on indigenous food security
P35A	How poverty wages and poor working conditions deny plantation workers food security and nutrition
P36A	Pulse research for food security and nutrition
P37A	Consequences of current “mega mergers” as a major threat for world’s food security
P37B	Smallholder farming families and correlation to nutritional and socio-economic indicators/indexes
K1A	Climate-smart agriculture for enhanced resilience against climate change impacts on crop yields, agricultural water productivity and food security
K1B	Sustainable intensification of crop and livestock systems
K2A	Sustainable intensification with a focus on nutrition
K2B	Support small farmers to move up or move out
K2C	Increase food and nutrition security research and policy-making capacities
K2D	Close gender gap for a more inclusive and effective food system

K3A	L'eau, la démographie, les changements climatiques et la dépendance économique : facteurs déterminants de la sécurité alimentaire. La gestion durable des ressources naturelles: carrefour des politiques futures.
K4A	Some current agrofood trade and domestic support policies are working against food security
K5A	The role of innovation (institutional and technological) for achieving FNS in Africa
K6A	Lack of farm-level fruits and vegetable value chain and value addition causing post-harvest losses, price volatility that affects farm profitability, employment, food security and nutrition
K7A	Methods to assess sustainability of food consumption patterns in absence of common metric
K8A	Evidence is emerging on the very high burden of food-borne disease and its major impacts on human health, nutrition, market access,- and livelihoods
K8B	Animal-sourced foods (ASFs) can fall in two "extremes", where there are segments of the population who eat too much, whilst other segments are eating too little
K8C	Supporting small-scale producers' participation in livestock value chains for an inclusive sector
K8D	There is growing concern about the environmental footprint of livestock production
K8E	Availability of animal-sourced foods for the poor
K8F	Increasing use of antimicrobials in agriculture and the impact of this on antimicrobial resistance (AMR)
K9A	Farming system for nutrition
K9B	Genetic gardens of biofortified crops
K10A	The push on monocultures is threatening the existence of community seed systems that contributes to quality nutrition that is based on diversity of plant genetic resources
K11A	Role of agriculture and food security in conflict and emergency situations
K12A	Sustainable and healthy diets: impact on human health and environment
K13A	Nutrition governance and accountability
K14A	The need for tools which accurately measure food insecurity worldwide
K15A	Role of science and technology against the demand curve for future food security
K16A	How to deliver on rising food demand against ongoing degradation of natural resource base
K16B	Significant challenges for delivery on FSN due to governance and capacity constraints
K16C	Transformation of food systems and their scope for creating youth employment in food insecure regions
K17A	Prevent agriculture expansion into sensitive ecosystems so as to reduce global biodiversity loss
K17B	Increase agriculture resource efficiency through improved irrigation and water management
K17C	Use of technology (biotechnology) for food security and nutrition
K17D	Improvement of policies to develop more efficient decisions regarding productivity and environmental stewardship

K18A	Link between the food system and the energy systems across the entire food chain
K18B	Food and nutrition security in the urban context
K18C	Implications of agriculture policies on FNS, rural exodus and out-migration. Issues on farm types and sizes in developing countries with focus on sub-Saharan Africa
K18D	Public policies and investments for food and nutrition security
K19A	Security of water-use rights along with land rights as key to food security
K19B	Modernization of food systems, rural transformation and food security
K20A	Accessibility, agrobiodiversity and quality of seed available to peasants and farmers
K21A	Novel feed sources for a multidisciplinary integrative food production on land and sea ensuring food and nutrition security
K22A	Climate and nutrition security and increased resilience of food systems, mitigating greenhouse gas emissions
K22B	Developing enabling food environments, including PPP's
K22C	Food safety, food processing, food distribution and bioavailability of nutrients: nutrition-sensitive value chains
K22D	Nutrition, food systems and health systems
K22E	Migration and nutrition
K22F	Rural transformation, urbanization and nutrition
K22G	Nutrition, food systems and social protection
K22H	Nutrition and trade and markets approaches
K23A	FSN policies must be linked to climate change mitigation and adaptation strategies
K23B	In rural Latin America, FSN policy is often top-down designed. It frequently ignores access to food and concentrates on food availability
K23C	Spatial inequality in food consumption within developing countries
K24A	Defining corporate respect for human rights in fighting growing obesity and associated NCDs.
K25A	Heavy reliance on rice imports in sub-Saharan Africa
K26A	How can management of food biodiversity (local, global) best contribute to diet quality and sustainability of diets in view of current food system transformations?
K26B	Sustainable intensification is increasingly being seen as a solution to multiple grand challenges
K27A	Food stability is undermined by extreme weather events and other consequences of climate change
K28A	Growing conflicts for water utilization between agriculture for food and alternative uses
K28B	Agriculture not providing opportunities for youth who migrate leaving the farms with limited labour
K29A	Fish are a major source of key nutrients but fish consumption has not been fully integrated into strategies to combat undernutrition, nor are nutritional considerations well integrated into aquaculture and fisheries strategies
K30A	Micronutrient deficiency is widespread in South Asia and sub-Saharan Africa, causing malnutrition in over 2 billion people. It has debilitating health and human development implications

K31A	Rapid depletion of groundwater in parts of India and Bangladesh will constrain future productivity growth
K31B	Rice productivity is highly sensitive to climate change, which explains around 33% of rice yield variation globally
K31C	Non-communicable diseases and malnutrition challenges requires a diet-based solution
K32A	More nutrition-dense diets needed for human well-being appropriate more water, especially under higher variability of rainfall under climate change
K33A	Policy reforms and institutional innovations that catalyse and sustain pro-smallholder systemic change in food systems
K34A	Small-scale farmer innovation
K35A	How to translate international FS policy decisions into transversal national policies and governance in countries
K35B	Biosecurity and antibiotic resistance
K35C	Indigenous resources
K36A	Rôle du secteur agro-alimentaire (SAA) dans la sécurité alimentaire et nutritionnelle (SAN)
K36B	A quelles conditions la sécurisation sanitaire des aliments contribue à l'amélioration de la sécurité alimentaire et nutritionnelle (SAN)?
K36C	Gouvernance de la sécurité alimentaire et nutritionnelle par les régions urbaines
K36D	Quelles politiques pour les stocks de sécurité alimentaires?
K36E	Power (un)balance between different food systems actors and drivers
K36F	What is the cost of dependency in terms of food and nutrition security?
K37A	Migration is part of development and when well managed has positive impacts on food security
K37B	Impacts of climate change on long-term patterns of capture fish production
K37C	Closing the gender gap in agriculture to eradicate hunger and poverty
K37D	Illegal, unregulated and unreported (IUU) fishing
K37E	The rise of aquaculture as the main provider of fish and other aquatic foods
K37F	Social protection systems to reduce food insecurity, eliminate hunger and combat rural poverty
K37G	Urbanization, rural transformation and implications for food security and nutrition
K37H	Combating land degradation through sustainable land management
K37I	Antimicrobial resistance (AMR) is a present threat to local and global public health. Trade will likely be affected
K37J	Increasing climate variability and climate change
K37K	Only safe food can alleviate food insecurity, inadequate attention to domestic food safety is given by most low-income countries
K37L	Use of agricultural biotechnologies for food security and nutrition
K37M	Supporting the dissemination of agroecology to ensure food security and nutrition for all in a sustainable manner
K37N	The persisting lack of farm power and power along the food systems in countries in development and transition hampers improved nutrition and increased food security, and contributes to climate change
K37O	Transboundary animal and plant pests and diseases and food safety incidents
K37P	Role of pastoralism for landscape management and peace keeping

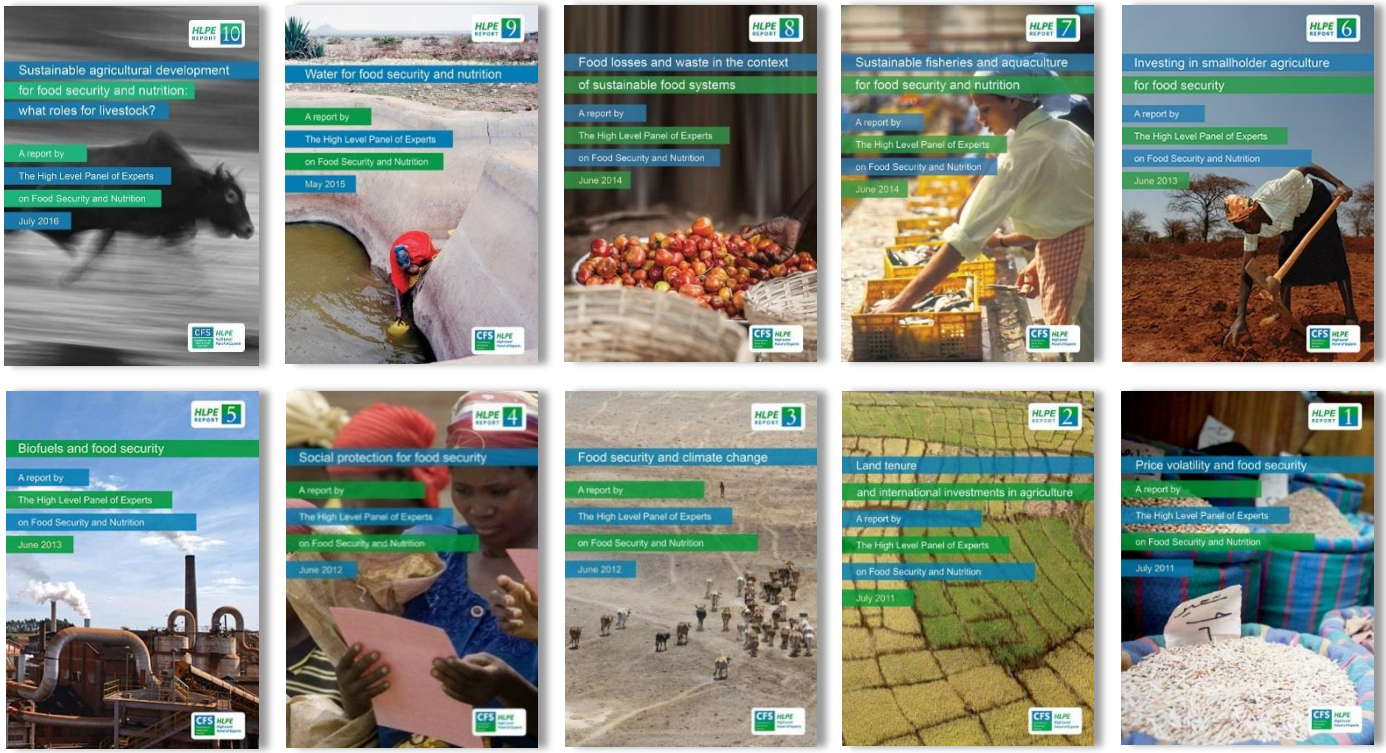
K37Q	Small ruminant (SR) diseases impact negatively on the nutritional status of vulnerable populations.
K37R	Big data and its application in precision agriculture in commercial farms – can smallholder systems also benefit?
K37S	Food security in many regions is undermined by water scarcity. This situation is exacerbated by climate change
K37T	Threatened ecosystem services are impacting on ecosystem health and resilience, limiting options for sustainable agriculture in a world facing a growing population and diminishing natural resource base
K37U	Pollinator declines and pollination management
K38A	Food security and poverty reduction
K38B	Imbalanced development of regional food security and nutrition
K38C	Food price crisis
K38D	Dietary patterns
K38E	Reduce food waste and increase cyclic utilization of food resources
K38F	Quality of food
K38G	Diet change under rapid urbanization and rural transformation
K38 H	Youth's escaping from rural and agricultural sector
O1A	Algae
O2A	Utilization of fertile land for residential and industrialization purpose.
O2B	All pre- and post-harvest problems exist with small farmers who are the major player in the food production.-
O2C	Need to introduce corporate farming
O3A	Challenges facing fish communities in Tanzania
O4A	Access to inputs
O4B	Water management
O4C	Innovation in agriculture
O4D	Climate-smart agriculture
O4E	Soil health
O5A	The role of civil society and the private sector related to agriculture
O5B	Food security policies
O5C	Production systems, green and sustainable
O5D	Rural women

Annex 4: List of published and ongoing HLPE reports (2011–2017)

Since its establishment in 2010, the HLPE has produced ten reports, all followed by debates in CFS and adoption of policy recommendations. It has also produced in 2014 a first note on *Critical and emerging issues for food security and nutrition* to inform the discussion for the CFS multi-year programme of work (MYPOW).

Beyond the second C&EI note, the HLPE is currently working on three reports:

- Sustainable forestry for food security and nutrition (2017);
- Nutrition and food systems (2017);
- Multistakeholder partnerships to finance and improve food security and nutrition in the framework of the 2030 Agenda (2018)



For more information about the HLPE and to download the reports, please visit the HLPE Web site at: www.fao.org/cfs/cfs-hlpe