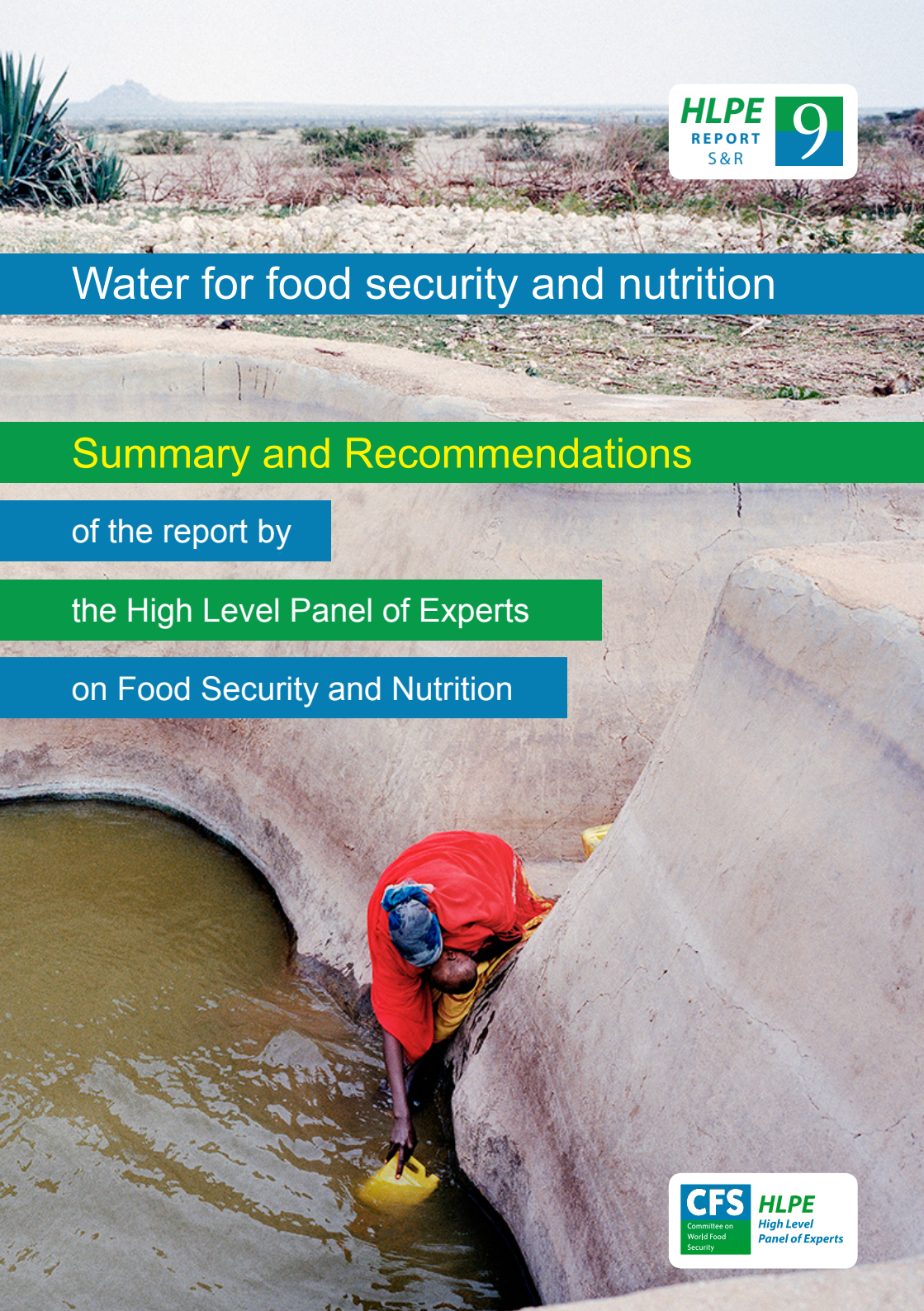


HLPE REPORT 9 S&R

Water for food security and nutrition

Summary and Recommendations

of the report by

the High Level Panel of Experts

on Food Security and Nutrition

CFS Committee on World Food Security

HLPE High Level Panel of Experts

Summary

Water is key to food security and nutrition. However there are many challenges for water, food security and nutrition, now and in the future, in the wider context of the nexus between water, land, soils, energy and food, given the objectives of inclusive growth and sustainable development.

In this context, in October 2013, the Committee on World Food Security (CFS) requested the High Level Panel of Experts on Food Security and Nutrition (HLPE) to prepare a report on Water and Food Security, to feed into CFS's 42nd Plenary session in 2015.

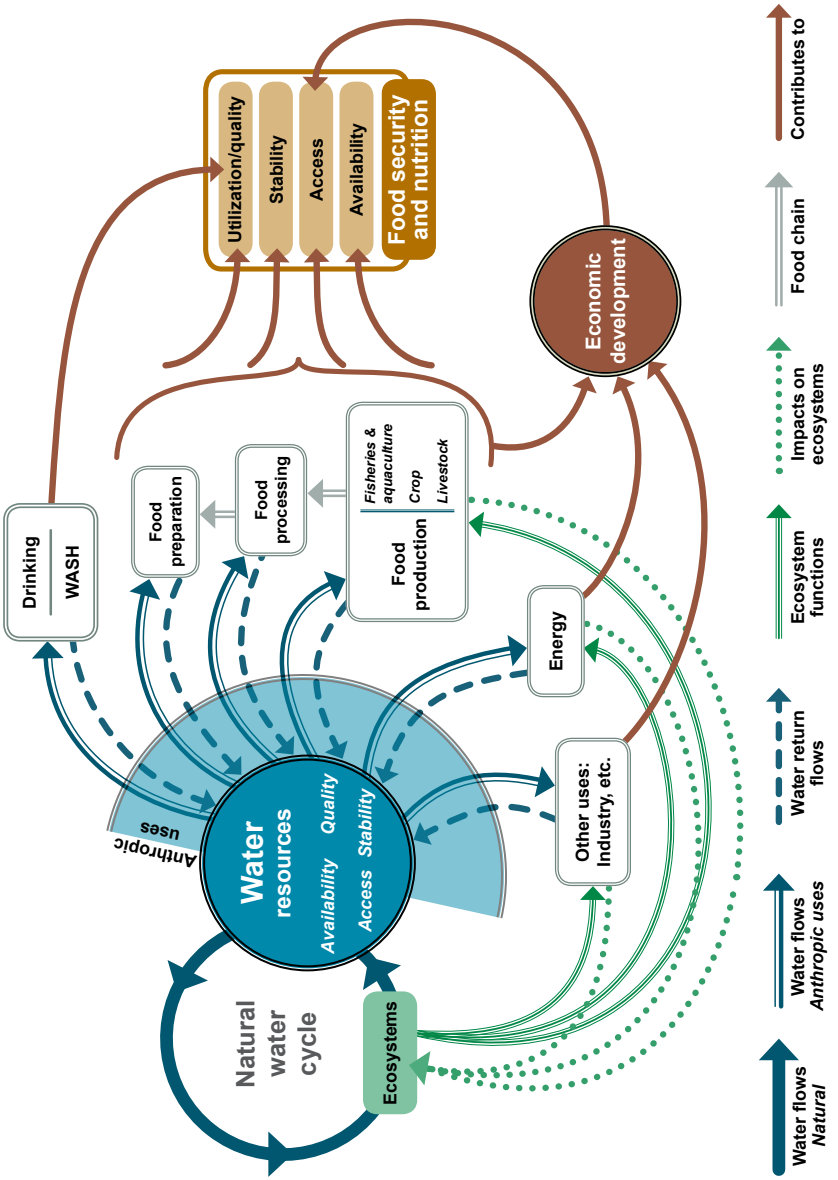
The report explores the relations between water and food security and nutrition, from household level to global level. It investigates these multiple linkages, in a context of competing demands, rising scarcities, and climate change. It explores ways for improved water management in agriculture and food systems, as well as ways for improved governance of water, for better food security and nutrition for all, now and in the future. The report is deliberately oriented towards action. It provides examples and options to be implemented by the many stakeholders and sectors involved, given regional and local specificities.

What follows is a summary of the main observations and findings of the report.

WATER IS CENTRAL TO FOOD SECURITY AND NUTRITION (FSN)

1. Water is life. Water is essential to food security and nutrition. It is the lifeblood of ecosystems, including forests, lakes and wetlands, on which depend the food security and nutrition of present and future generations. Water of appropriate quality and quantity is essential for drinking and sanitation, for food production (fisheries, crops and livestock), food processing, transformation and preparation. Water is also important for the energy, industry and other economic sectors. Water streams and bodies are often key ways for transport (including inputs, food and feed). All in all, water supports economic growth, and income generation, and thus economic access to food (Figure 1).

Figure 1 The multiple linkages between water and food security and nutrition



2. Safe drinking water and sanitation are fundamental to the nutrition, health and dignity of all. Lack of access to safe drinking water, sanitation facilities and hygiene practices undermines the nutritional status of people through water-borne diseases and chronic intestinal infections. Despite significant advances in access to drinking water and sanitation, in 2012, according to WHO and UNICEF, globally 4 percent of the urban population and 18 percent of the rural population (but 47 percent of the rural population in Sub Saharan Africa) still lacked access to an improved drinking water source[1] and 25 percent of the population lacked access to improved or shared sanitation.[2]

3. According to FAO, in 2009, 311 million hectares were equipped with irrigation, 84 percent of those actually being irrigated, corresponding to 16 percent of all cultivated land and contributing to 44 percent of total crop production. Reliable irrigation is also essential to increasing and stabilizing incomes and provides livelihood resilience for a vast number of smallholder farmers. Irrigated agriculture is by far the largest water user globally, totalling 252 billion cubic meters of surface and groundwater withdrawals[3] in 2013†, equivalent to 6.5 percent of the global renewable freshwater resources flows, and 70 percent of anthropic withdrawals globally, with significant differences between countries: 90 percent in low income countries, 43 percent in high income countries.

Water availability and stability for FSN

4. Availability of water is very different across geographical regions, both in terms of rainwater, and of surface and ground water. Therefore, water availability needs to be considered at regional, national and local levels.

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1 Sources protected from outside contamination, particularly faecal matter, by construction or through active intervention.

2 Facilities ensuring hygienic separation of human excreta from human contact.

3 A withdrawal of water (or "water use") does not necessarily translate in net water consumption, which is the portion of water withdrawn that is not returned to the original water source after being withdrawn (11 percent of the withdrawals by the energy sector are consumed, and 50% of the withdrawals for irrigated agriculture are consumed, i.e. evaporated into the atmosphere or transpired through plant leaves). Water withdrawn and returned to the original source is often accompanied by an alteration of its quality.

† World Development Indicators (World Bank database) estimates for 2013 as per available figures.

5. Ground water is a particularly stable source of water. 40 percent of irrigation uses groundwater sources. It offers considerable opportunities especially for regions that have no other sources. However it is also a major challenge for the future as much groundwater is not renewable, and slowly replenishing reservoirs can get quickly depleted. Some "fossil" ground water reservoirs are replenished only on a geological timescale, thousands or even millions of years.
6. Ecosystems and landscapes sustain water resources. Forests play a major role in the watercycle, ensuring quantity, quality and stability of water for human use.
7. Climate change adds significant uncertainty to the availability of water in many regions. It affects precipitation, runoff, hydrological flows, water quality, water temperature and groundwater recharge. It will impact both rainfed systems, through precipitation patterns, and irrigated systems, through availability of water at basin level. Climate change will modify crop and livestock water requirements, and impact water flows and water temperatures in water bodies which will impact fisheries. Droughts may intensify in some seasons and areas, due to reduced precipitation and/or increased evapotranspiration. Climate change will also significantly impact sea level, with impacts on freshwater resources in coastal areas.

Competing uses of water

8. In most parts of the world water resources are under increasing stress. Population growth, rising incomes, changing lifestyles and diets, and growing demands for different uses of water, are all increasing pressure on limited freshwater resources. Total water withdrawals for agriculture, energy, industry, and municipalities accounted in 2013† for globally 9 percent of internal renewable resources, a number ranging from 2.2 percent for Latin America and Caribbean, to 122 percent in the Middle East and North Africa.
9. Water and energy are closely linked: water use for energy generation represented 15 percent of world water withdrawals in 2010, and can compete with food production. At the same time energy is essential in making water available for irrigation, food processing and preparation and for water and wastewater treatment.

† World Development Indicators (World Bank database) estimates for 2013 as per available figures.

10. According to OECD's business as usual scenario global water demand is projected to increase by some 55 percent by 2050, with over 40 percent of the global population living in river basins experiencing severe water stress (where water withdrawals exceed 40 percent of recharge), especially in North and Southern Africa, and South and Central Asia. Manufacturing (+400 percent), thermal electricity (+140 percent) and domestic use (+130 percent) are responsible for the projected demand growth until 2050, with little scope to increase irrigation water use.

Water scarcity and access to water

11. Water scarcity is generally defined[4] by the difference between water availability - the level of renewable water resources (rain water, surface and ground water) available within a certain area - and a certain demand for water, including basic needs. There are however as many perspectives to "water scarcity" as there are perspectives to water availability and to water demand. Water scarcity can also be encountered in water rich regions, if there is an excess of water demand, with often increasing and badly managed competition for water use between sectors (agriculture, energy, industry, tourism, and household use).

12. Access to, and use of, water for FSN is informed by social, political and economic power relations within countries, in water basins, and at the local level, as much as by infrastructure and rainfall. Securing access to water can be particularly challenging for small holders, vulnerable and marginalized populations and women.

13. Access to water, or the lack of it, is of particular importance for women as cultural norms in much of the developing world dictate that women and girls are responsible for water collection, and they may spend several hours per day collecting water, with impacts on their health and nutritional status as well as on time

4 Some authors have come to define "water scarcity" by pre-determined thresholds, such as 1 700 m^3 and 1 000 m^3 of available water per person per annum, which were determined to cover all uses including agriculture (irrigation) and other economic sectors. Other authors have defined "economic water scarcity" to define situations where water is physically available in the environment to, in theory, meet the demand, but not provided where it is needed and at the quality needed, due to economic factors, such as a lack of infrastructure, storage, distribution systems, etc. One could define "social water scarcity" for situations where part of the population does not have access to water in sufficient quantity and quality, for drinking and sanitation, as well as to sustain their livelihoods.

available for other activities, child-care, productive and educational activities. Moreover, women are often excluded from decision-making processes regarding water management or access to water technologies, and are often discriminated against by formal water allocation systems.

Water quality

14. The many potential uses of water, from drinking and sanitation, to growing food, energy, mining, manufacturing, etc. typically require different quantities and qualities of water, and therefore often specific treatment, which can be done at the source, or closer to the user, or even by the end-user itself (household or industry). Also, irrigation water quality needs vary by crop. This leads to trade-offs for the provision of water services, between their specialization versus a "multiple use approach" to serve different purposes or uses.

15. Poor water quality affects human health and ecosystems' functioning. High water quality standards are needed for drinking water and important for other WASH components, and are important for food processing and preparation. Drinking water quality has improved in many developed countries over the last several decades and is supported by regulations and monitoring. In most parts of the global South, water quality and associated food safety risks still have adverse impacts on both human and ecosystem health.

16. Environmental impacts of uses and return flows vary between uses, as well as depollution needs, and all require specific attention. Pollution renders water unfit for use and undermines ecosystems' health in many areas. Unsustainable water use and management reduce the ecosystems' functions of land, fisheries, forests and water bodies, including their ability to provide food and nutrition.

17. Waste water is also a resource, and water-scarce countries often resort to wastewater reuse, which also provides for closing the nutrient cycle but poses risks to human health if not regulated effectively. Waste water, currently undervalued and underused, can be a resource for the future, with adequate safeguards. Desalination of sea water is a potential source of freshwater in coastal areas, particularly for drinking.

MANAGING WATER SCARCITIES IN AGRICULTURE AND FOOD SYSTEMS

18. Improving water management in agriculture and food systems aims at improving the productivity of agriculture and food systems for FSN (availability, access, stability, nutrition), given water constraints. This can be achieved by improving water efficiency at all levels (how water is used, from ecosystems to plants) and by improving the agricultural water productivity (the ratio of output to the water input), in rainfed and irrigated systems.

19. Improving water management for FSN mobilises actions ranging from appropriate planning and optimization of resources, inputs and means of production, in both rainfed and irrigated systems, as well as along food chains, to sustainable management of ecosystems and landscapes which enhance, regulate and stabilize water provision. Water management will be key to the adaptation to climate change of agricultural systems both rainfed and irrigated.

20. For future food security, land and water management needs to preserve ecosystem functions and ensure the future of the resource. Sustainable management of ecosystems, and an ecosystem's approach to water management from local to continental levels is key to ensuring quantity and quality of water for food security and nutrition in the future.

Management for improved water and agriculture productivity in both rainfed and irrigated systems

21. Broader agro-ecosystem approaches consider rainfed and irrigated agriculture as part of a whole, with upstream-downstream interactions, aiming to optimize water allocation and ensuring attention to ecosystem's health.

22. Globally, rainfed agriculture is the primary source of food production. In many regions, there is still an important yield gap, and potential to improve yields and water productivities without irrigation. Rainwater harvesting, as well as supplemental irrigation, can also substantially improve rainfed agriculture. Livestock water productivity can be improved, inter alia, through better management of grasslands and rangelands and through livestock systems resilient to water stresses. In pastoral systems, drinking water constraints

for livestock often limit the use of pastures and rangelands, and making water available could increase the sustainable use of available biomass.

23. A range of means such as plant and livestock breeding, agro-ecology and conservation agriculture can also improve water productivity in both rainfed and irrigated systems. Better integration of plant and livestock production can improve nutrient management and water use efficiency. The water productivity of aquaculture, including in integrated systems, is high compared to other sources of protein and nutrients, which gives it an important role for FSN.

24. High variability of expected income, linked to dependence on variable rainfalls often constrain investment in rainfed agriculture, thus limiting potential improvements. Risk management strategies and tools can thus facilitate investments and productivity enhancements.

25. Groundwater is increasingly being used for irrigation and being overexploited in many regions In other areas it is still underutilized and can be further exploited for food production. A constraint to the sustainable use of ground water is the difficulty to monitor individual withdrawals and the impact on the resource.

Optimise uses and re-uses for FSN at all levels

26. In the irrigation sector, there are margins of improvement and revitalization of existing systems to improve productivity and sustainability. It requires appropriate maintenance, which necessitates institutions, technical competencies, and sustainable financing. In addition, cropping systems, patterns and practices can be adapted to reduce the need for irrigation water. Finally, there is scope for new systems and practices in some areas.

27. Currently, 1.5 million hectares of irrigated land are lost annually because of salinization due to bad irrigation practises. Globally 34 million hectares are now impacted by salinity representing 11 percent of the total irrigation equipped area. Addressing secondary salinization and drainage issues is essential to keep the potential and valorize the investment of irrigation-equipped land.

28. Appropriate water pricing can be a tool to improve cost recovery in irrigation schemes. In addition, water and energy pricing can be used

to increase efficiency. High levels of energy subsidies can also result in the overuse of water.

29. In some areas, more water can be made available through the development of new infrastructure. Marginal quality water including brackish, sewage and drainage water can also be used, although environmental, health and cost concerns must be managed.

30. In food processing, water management issues mainly regard the quality of the water needed, and the impact of activities on water quality through discharged water.

Trade can compensate water scarcities for FSN

31. The importation of food is a coping mechanism used by water scarce countries. Approximately 14% of world cereals are traded internationally, with a greater share of net imports by countries facing physical or economic water scarcity. Water scarce countries are thus particularly dependent on international trade and particularly affected by food price volatility as well as by export restrictions in times of crisis.

32. Trade has a key role to play for FSN, to cope with water scarcity and also to maximize FSN outcomes of water abundance. The food and nutrition security of water scarce countries depends on a reliable international trade. Measures to improve the reliability of international trade, such as the creation of AMIS can thus be also seen as measures to cope with water scarcity. Water used for agriculture in water rich countries contributes to ensure global availability of food.

Data and monitoring

33. Effective water management is grounded on appropriate tools to monitor and assess climate risks (floods and droughts), and can mobilize landscape approaches, such as land restoration, forest and watershed management, appropriate use of floodplains, as well as infrastructure for water storage.

34. Improvement in water management relies on appropriate data and tools, such as metrics of water use, water efficiency and water productivity. To improve water management, each stakeholder needs different tools, which to be mobilized will require appropriate data.

In many countries, there is still a lack of basic data, particularly in relation to groundwater and water quality. There is also value to collect more data on informal uses as well as more gender disaggregated data. Another challenge is the rapidly changing situation of the resources, both in quality and quantity, as well as of the uses, and the need for up-to-date data systems at the appropriate level/scale.

35. Different water accounting schemes have been proposed (e.g. life cycle analysis, water footprinting etc.), with the aim to help orient production choices for producers to optimize water use, and to help raise awareness of consumers and contribute to orient their choices. It is however important to use such tools with caution as they often cannot capture all context specificities, particularity local scarcities and impacts on ecosystems.

CHALLENGES OF WATER GOVERNANCE FOR FOOD SECURITY AND NUTRITION

36. Water governance[5] has to deal with competing policies, interests and actors coming from numerous sectors, with different degrees of political or economic power. Access to water, control over water resources or water pollution can cause disputes and conflicts at various levels. Increasing scarcities and growing and competing demands on water by a multiplicity of users and sectors make water governance for food security and nutrition particularly challenging, from local to broader levels.

37. Water governance covers both water resources and water services. Depending on the situations, the governance of these two issues have been either linked or separated. The modernization of water provision, when it happened, often led to differentiated governance schemes for water services. Governance issues are different for resources and for services. For resources, the dominant challenges are competition between uses and users of different economic and political power, the rules of this competition and how FSN is taken into account, as well as the links with land. For services, the

5 In this report, the following definition of water governance is used: "Water governance is the set of political, social, economic and administrative systems, rules and processes (i) which determine the way decisions regarding the management and use of water resources, and the delivery of water services, are taken and implemented by the various actors; and (ii) through which decision-makers are held accountable".

dominant challenge is the regulation, control and monitoring of the service provider, public or private, including how physical and economic access to water for different users, especially marginalized populations, is enabled, conditioned and performed.

The challenge of integration and priorization

38. Numerous policies have an impact on water resources: environment, energy, trade, food and agriculture, including fisheries and forests, industry, etc. Policy coordination is managed differently according to countries' institutional settings. At national level, when it exists, the coordination is assumed either by a lead ministry, or an interministerial coordination mechanism, or a dedicated body. In some cases, this leads to an integrated water policy.

39. In many cases national water policies do not prioritise water for food security. While some do outline the order of priorities for water allocation with a focus on FSN, fully implementing it remains a challenge, not least due to the lack of integration in decision-making, with decisions on irrigation, industrial or power generation development being taken in different departments with little consideration for the cumulative impacts on water. Some countries however have put in place improved intersectoral decision making, a critical process in ensuring sufficient water for FSN.

40. Sustainable management of water resources for FSN often depends on the protection and conservation of specific ecosystems, particularly wetlands and forests, which themselves also contribute to the FSN of local populations. Similarly, quality water streams and bodies are important for inland fisheries and aquaculture. The ecosystem approach as defined by the Convention of Biological Diversity provides a good model. It requires specific integrated governance mechanisms.

41. The concept of Integrated water resources management (IWRM), following the Dublin principles (1992), was invented to bring together social, environmental and economic objectives, in a cross-sectoral approach of water management, combining users, planners, scientists and policy-makers. It has been widely used and promoted,[6]

6 IWRM has been defined, in 2000, by the Global Water Partnership as "a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems".

but also the object of numerous criticisms. Whilst the critics of IRWM recognize its value as a comprehensive framework, they argue that it is too abstract when addressing implementation challenges. This makes it less operational and practical especially in developing countries' contexts. Critics also point to IWRM's difficulty to recognize conflicts and to enable proper prioritisation of issues, especially those most important for people locally, including water for FSN.

Actors

42. Many different actors, public and private, operate in water use and management. There is often confusion, and a need for clear rules and common understanding, on their roles and functions, the way they interrelate, their different responsibilities and how they can be made accountable. In many cases, inclusiveness of governance schemes, accountability and control mechanisms do not function in such a way that the efficiency and fairness of the system can be fully guaranteed.

43. Corporate actors such as from energy and industrial sectors, cities, food transformation and beverage industry, or large-scale agriculture/plantations, have an increasing influence in water governance and management. First, some of them, like the big providers of services for large irrigation schemes or for drinking water, act as water managers. Second, large enterprises enter in competition for the allocation of the resource with agriculture and small users. Third, in some cases, the scale of the intervention or investment, or the economic and political influence, is such that the resource itself is controlled.

44. While there is also clearly a role for the private sector in the provision of water, in many countries there is insufficient regulatory oversight. Experiences with privatization of water services have not always been poor-friendly, affecting the ability of poor households to access sufficient water of an appropriate quality for food preparation, health and hygiene requirements.

45. In many countries, water users associations can play an important role in the management of water resources and water services, especially at local and community level, including in irrigation

schemes. There is however often a divide between different categories of users, having different objectives: farmers, fisherfolks, urban users, environmentalists and recreational users, etc. Governance has to provide for mechanisms to arbitrate between diverging interests and to solve conflicts in a fair way.

Institutions

46. Institutions dealing with water resources are extremely diverse, depending on countries and situations. They can be formal or informal/customary, part of the local, sub-national or national administration, they can be specific water institutions, eventually linked to a water body (or not), they can be linked to an investment, they can be public or private, they can associate to various degrees the different users in the management of the resource.

47. Decentralized governance allows to take better into account the need of users and the state of the resource, and to better responsibilize users especially with secure rights and when they are associated to the resource management decisions. Decentralized governance often involves strengthening local organizations and/or the setting up of specific institutions, such as water user associations, or river basin organisations. However even at such levels, principles of good governance need to be put in place to ensure equitable access, and not exclude less powerful actors, including informal water users.

Mechanisms to manage competing demands

48. Many mechanisms and tools can be used to manage water scarcities and competing demands, such as: mechanisms to set maximum withdrawals; allocation tools, including access rights; permits and tradable permits; licensing systems; pricing schemes; other tools to protect the resource and its quality, such as to regulate water abstraction and discharge, protected areas, catchment protection, water quality and resource protection regulations. The choice of the tools and the way they are implemented can have diverse effects on FSN through the impacts on water available for agricultural uses, and on access to water for poor, vulnerable and marginalized populations. In particular, the impacts of tools on FSN and on populations depend on the social and legal systems in which they are

implemented (formal and informal). Badly adapted tools can disrupt existing community-based systems. Market based tools often tend to give priority to the sectors which offer the highest economic value for water use, at the expense of food security.

49. Governance of water resources, especially in water scarcity contexts, goes with the establishment of an allocation scheme, including allocation tools and rules. In the context of FSN, the challenge is to ensure that allocation systems give adequate priority to water for food production as well as for the basic needs of poor and marginalized populations.

50. Allocation mechanisms, ideally, operate at a pertinent hydrological level where the resource is contained and shared. This can be particularly challenging because the institutional arrangements are not often aligned on hydrological bodies. A water resource can spread on different administrative entities including on different countries. Also, institutional arrangements do not always take into account interconnections between various water resources, such as between surface and ground water.

51. Allocation of, and access to water are determined not only by formal institutions (supported by laws) but also by informal arrangements such as customary law. In a context of increasing formalization of access rights, the rights of poor and marginalized women and men, often of a customary nature, are often overlooked and threatened, with impacts on FSN.

Land and water linkages

52. When land and water governance are not adequately linked, changes in land ownership and tenure at one location can have impacts on water access rights elsewhere, with impacts on agriculture and FSN. Conversely, loss of access to water can impede the proper use of land. In particular, large land acquisitions can lead to the re-allocation of water locally or downstream and can negatively affect the FSN of communities, local or remote.

53. The Voluntary Guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security (VGGT), and the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty

Eradication (VGSSF) have not paid much attention to the topic of water resources, despite it having important linkages with land issues, and it being a determinant of fisheries resources.

Investments

54. Investments in various economic activities, and in particular in energy, industry and large scale plantations, by corporate actors, often have an important impact on water. Mobilizing the investment potential of businesses can benefit FSN by providing development opportunities. They can also, when directed to water supply and water services, increase the provision of water. However, in both cases they can often bear a very important negative impact on local population, especially on the most vulnerable, marginalized, indigenous peoples and women. There is a need to ex-ante assess impacts on the FSN of all, including vulnerable populations, and to create mediation and dispute settlement mechanisms in case of negative impacts. Tools recently developed such as the CFS principles for responsible investments in agriculture and food systems can serve as a guide to maximize FSN outcomes of investments in the water sector and of investments in activities having an impact on water.

International agreements and initiatives

55. The 263 transboundary lakes and river basins account for an estimated 60 percent of freshwater flows. In addition approximately 300 groundwater aquifers are transboundary. Close to 700 bilateral, regional or multilateral water agreements in more than 110 basins cover different types of activities and objectives, from regulation and development of water resources to the setting of management frameworks.

56. The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses is the only treaty governing shared freshwater resources that is of universal applicability. It introduced the principles of equitable and reasonable utilization and participation, in the use, development and protection of the international resource, the obligation not to cause significant harm to other states, principles of prior notification of planned measures, and provisions concerning management and settlement of disputes.

57. At the global level, several international initiatives have emerged, particularly in the aftermath of the Dublin conference in 1992. The Global Water Partnership aims at promoting integrated water resource management, and providing advice, helping with R&D and training. The World Water Council – a multistakeholder association, best known for its flagship conference, the World Water Forum, aims to promote awareness, build political commitment and trigger action on water issues. In addition, UN-Water has been created to strengthen coordination and coherence amongst the UN agencies, programmes and funds that have a significant role in tackling global water concerns.

The rights to safe drinking water and sanitation, and the right to food

58. The human rights to safe and clean drinking water and sanitation were recognized in 2010 by the United Nations General Assembly. They entitle everyone, without discrimination, to access to sufficient, safe, acceptable, physically accessible and affordable drinking water and to physical and affordable access to sanitation for personal and domestic use. They were incorporated in several constitutions and national legal orders.

59. The right to adequate food has been recognized in the International Covenant on Economic, Social and Cultural Rights (ICESCR), a multilateral treaty adopted by the United Nations General Assembly in 1966. The 2004 Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security (VGRtF) contain dispositions about access to and sustainable use of water.[7]

60. The human rights to safe drinking water and sanitation and the human right to food have close ties because safe drinking water and sanitation are crucial for health and good nutrition, and because access to water is indispensable for food producers, and the right to food of producers. There are ongoing reflexions, warranting further

7 The VGRtF underline that the realization of the right to food necessitate State action to "improve access to, and promote sustainable use of, water resources and their allocation among users giving due regard to efficiency and the satisfaction of basic human needs in an equitable manner and that balances the requirement of preserving or restoring the functioning of ecosystems with domestic, industrial and agricultural needs, including safeguarding drinking-water quality".

exploration and research, on the consequences of these two rights for water governance, and how they can promote a human rights based approach to water governance for FSN. These reflexions also lead to considerations about the extra-territorial obligations of States to regulate the activities of third parties under their jurisdiction to ensure that they do not violate the human rights of people living in other countries.

Recommendations

The concept of "water for FSN" designates water's direct and indirect contributions to food security and nutrition in its four dimensions. It covers safe drinking water and sanitation, water used to produce, transform, and prepare food, as well as the contribution of water uses in all sectors to livelihoods and income and as such to food accessibility. It covers also the objective of sustainable management and conservation of water resources and of the ecosystems that sustain them, and that are necessary to ensure FSN for present and future generations.

1 ENSURE SUSTAINABLE MANAGEMENT AND CONSERVATION OF ECOSYSTEMS FOR THE CONTINUED AVAILABILITY, QUALITY AND STABILITY OF WATER FOR FSN

States should

a) Ensure continued availability, quality and stability of water for FSN through the conservation and sustainable management of landscapes and ecosystems, across biomes, including by using the ecosystem approach of the Convention on Biological Diversity.

b) Ensure that the quality of water resources is preserved, especially for the provision of drinking water, for food processing, for sanitation, as well as for irrigation water. This should be done through the introduction of regulatory systems as well as targeted incentives and disincentives, such as the polluter-pays principle and other measures commensurate with harm done. All actors should be held accountable for the impact of their activities on water quality.

States and other relevant stakeholders should

c) Promote participatory mechanisms for sustainable management of ecosystems and landscapes that are key to ensure the availability, quality and stability of water for FSN. These include collective and coordinated action within and across watersheds and ecosystems, innovative capacity building and frameworks for accountability of governance and management, including of decentralized governance and local adaptive management.

d) Consider co-management of water resources whereby the design, implementation and monitoring of management measures are shared or developed with a range of different stakeholders closer to the resource such as local governments, basin organizational structures, associations of food producers and of other users.

2 ENSURE AN INTEGRATED APPROACH TO WATER AND FSN RELATED POLICIES

States should

a) Develop, through inclusive participation of all stakeholders, a national integrated water resource management strategy, and make sure that it incorporates FSN concerns related to water availability, quality and access to water for food production, food processing, drinking and sanitation. The strategy must be comprehensive across sectors. Such a strategy needs to ensure equitable access for all to safe drinking water and sanitation. It should also take into account the specific FSN needs and uses of water by urban and rural populations, and the contribution of food producers (subsistence, smallholders and large scale) and processors (small and large scale) to FSN.

b) Integrate water into comprehensive national FSN strategies, review national policies related to trade, rural development, and industrialization to ensure that they promote water for FSN and eliminate practices that disadvantage the vulnerable and marginalized.

c) Ensure coordinated policy development and implementation of water and FSN strategies across sectors and hold all sectors accountable for their impact on water for FSN.

d) Undertake evidence-based assessments of actual and future water demand in all sectors and plan investments, policies and allocation for the pro-active management of long-term water resources and uses accordingly, prioritizing water for FSN amongst uses.

e) Include sex-disaggregated indicators for water availability, access, quality and stability of supply of water for FSN in national food security information systems. This shall contribute to the implementation of the sustainable development goals, according to national priorities.

States and Civil Society Organizations and other relevant stakeholders should

a) Strengthen the capacity of households and local organizations to adopt water-saving practices and technologies for innovative water storage and distribution, efficiency in multiple water uses and disposal of wastewater that is appropriate for the environmental, social and cultural contexts.

3 PRIORITISE THE MOST VULNERABLE AND MARGINALISED, INCLUDING MAINSTREAMING GENDER AND ADDRESSING THE SPECIFIC NEEDS OF WOMEN

States and, where relevant, other stakeholders should

a) Ensure that policy and legislation give women and men equal access to water. Particular attention should be given to indigenous peoples, smallholders and marginalized communities.

b) Avoid negative effects on the FSN of the urban and rural poor and marginalized in any reform in water management.

c) Take proactive measures to ensure that women and men food producers are accorded equitable access to land, inputs, markets, finance, training, technologies, services, including climate information, that will allow them to use water effectively to meet their FSN requirements.

d) Design and implement appropriate infrastructure and technologies to improve water availability and access at household level that deliberately address the drudgery and burden of water collection and disposal and related health risks, and directly improve conditions for clean drinking water, hygiene and food safety to reduce the incidence of food-borne diseases.

e) Address the specific needs of women and girls in relation to water for FSN through their empowerment as well as through targeted interventions. These should take into account women's productive and reproductive roles.

f) Strengthen rural women's participation and representation at all levels of water governance (water users associations, ministries and other

national institutions, regional platforms, etc.) to ensure that their perspectives and productive roles in all key sectors are taken into account in policy-making and reform processes.

Private, public, and public-private initiatives should

g) Ensure that no action related to water have negative impacts on the availability and access to water for FSN of vulnerable and marginalized peoples.

4 IMPROVE WATER MANAGEMENT IN AGRICULTURE AND ADAPT AGRICULTURAL SYSTEMS TO IMPROVE THEIR OVERALL WATER EFFICIENCY AND WATER PRODUCTIVITY, AND THEIR RESILIENCE TO WATER STRESSES

States and, where relevant, other stakeholders should

a) Develop and implement adaptive water and agricultural strategies and action plans based on a comprehensive approach to long-term availability and variability of all water sources (rain-water, surface water and ground water), considering also the impacts of climate change and the capacity of agro-ecological systems to retain moisture.

b) Reduce water scarcity risks through water management options such as water harvesting and supplementary irrigation, water storage infrastructure, including improving soil moisture retention capacity.

c) Design and implement agricultural practices (agronomic practices, agro-ecological innovations, seeds, livestock breeds, diversification) and landscape management which increase resilience of agricultural systems to water stress.

d) Make rain-fed agriculture systems a more reliable option for farmers and pastoralists, by reducing risk, and adapting formal and informal enabling mechanisms (e.g. credit, community solidarity) to enhance rain-fed systems' resilience to water stress.

e) Invest in an enabling environment, mobilizing the full set of tools (from meteorological predictions and credit provision, to social protection) in order to devise a risk management strategy that reduces water-related risks on agricultural production, communities and households.

f) Make rain-fed agriculture systems a more reliable option for farmers and pastoralists, by reducing risk, and adapting formal and informal enabling mechanisms (e.g. credit, community solidarity) to support rain-fed systems vulnerable to water stress.

g) Take into account the long-term availability of water in planning and investing in irrigation, to maximise long-term FSN objectives.

h) Investments in, and management of, irrigation systems should aim for water efficiency at catchment level and minimise adverse effects on land and water quality (e.g. salinisation and contamination of water tables), and on downstream water quantity (e.g. for the FSN of fishing and pastoralist communities).

i) Ensure, through appropriate governance mechanisms, sustainable management of groundwater taking into account renewal rates and future needs, and considering, when necessary, fixing maximum withdrawals levels and setting up systems to monitor and control individual water withdrawals.

5 IMPROVE THE CONTRIBUTION OF TRADE TO "WATER FOR FSN"

States should, when negotiating and implementing trade rules and agreements

a) Take action to restore confidence in a rules-based, transparent and accountable multilateral trading system, taking into account the concerns and vulnerabilities of water-scarce countries that rely on international markets to meet their FSN needs through food imports.

b) Protect the interests of low-income, water stressed, net food-importing countries by strengthening trade rules on food exports, including rules that limit the use of export constraints.

States should

c) Strengthen the capacity of AMIS (Agricultural Market Information System) to provide transparency about prices, production, stocks and trade in staple foods. This includes encouraging States to join AMIS and to ensure that all AMIS members provide up-to-date and comprehensive data.

d) Consider measures to ensure that commercial actors respect their contractual obligations to deliver food imports. For example, encourage contracted parties to use third party commercial conciliation for contract enforcement.

e) Incorporate trade and investment policies into their comprehensive national FSN plans, taking account of water-related risks and vulnerabilities for FSN, in particular at times of crisis. Policy instruments might include food reserves, risk insurance, social protection, and investment in the development of agri-food industries.

6 DEVISE AND SHARE ENHANCED KNOWLEDGE, TECHNOLOGIES AND MANAGEMENT TOOLS RELATED TO WATER FOR FSN

States, research actors, and, where relevant, other stakeholders should

a) Support the definition of global, national and local strategic research agendas through inclusive participatory processes by relevant actors including local communities and researchers engaged in water for FSN. They should also ensure that all research on water and FSN is gender-sensitive.

b) Enable methodological and institutional innovations for the participatory co-construction, co-validation and dissemination of knowledge appropriate for risk prone, diverse and complex environments, such as arid and semi-arid regions, wetlands, deltas, and mountains.

c) Increase investments in research and innovation for water and FSN, with due attention to neglected areas. Research is needed in the following key areas:

- Impacts of climate change on run off, aquifer recharge, water quality and plant water use, and means to address them.
- Incentive instruments and pricing structures for energy and water to reduce water waste or over-utilisation.
- Monitoring and evaluation of the water-related impacts, at different geo-spatial and temporal scales, of large-scale land acquisitions and foreign direct investments impacting water availability, access, quality and stability of supply, as well as on policies, interventions and institutional innovation to regulate their negative effects on FSN.

d) Build the necessary capacities, professional re-training, and organizational change to develop systems approaches within the research and local communities, for the production of knowledge on water for FSN, including capacity building on community-established research protocols.

e) Intensify national and international efforts to collect sex-disaggregated data on water for FSN to monitor progress and improve gender-sensitive policies and practices.

f) Improve the local level relevance of climate models particularly for countries that are vulnerable to climate change impacts; and develop climate-resilience tools for decision making that combine information from improved localized climate and hydrological modelling.

g) Establish and manage open data systems to provide evidence for decision making and monitoring.

h) Facilitate knowledge exchange on best practices for the management and governance of water systems for FSN.

International research organisations (such as the CGIAR) should

i) Take a lead role in research and development initiatives that seek to investigate the global issues related to water for FSN.

7 FOSTER AN INCLUSIVE AND EFFECTIVE GOVERNANCE OF WATER FOR FSN

States should

a) Establish effective governance mechanisms to strengthen policy coherence across sectors to ensure comprehensive water and FSN strategies.

b) Coordinate agriculture, land and water governance processes to ensure the full and effective participation and promote the interests of marginalized and poor disadvantaged users of common lands and pastures, water, and fisheries, particularly indigenous peoples and those whose rights are enshrined in customary arrangements.

c) Ensure the full and effective participation of all actors, including the vulnerable and marginalized, with special attention to gender inclusive processes, in the development of policies and practices for the conservation and sustainable use of water for FSN.

d) In the context of increasing uncertainty and rapid change, ensure the participation of all actors, including the vulnerable and marginalized, in the local adaptive management of landscapes and diverse ecosystems that sustain water for FSN.

e) Ensure that all investments respect the Rights to safe drinking water and sanitation and the Right to adequate food, and are guided by the Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security (VGRtF), by the Voluntary Guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security (VGGT), and by the CFS principles for responsible investments in agriculture and food systems, in particular in relation to large-scale land acquisitions.

f) Ensure that all parties to contracts involving large-scale investments in land (with its associated water) are held accountable for the impacts on the sustainable use of natural resources and the consequences on the livelihood and FSN of the affected communities.

g) Protect the access, use and tenure rights of the vulnerable and marginalized to land, fisheries and water in particular, especially in the face of large-scale infrastructure development.

States, Intergovernmental Organizations, as well as Civil Society Organizations and other relevant stakeholders should

h) Support communities to take ownership of water planning and management at relevant levels.

i) Comply with principles of good governance such as Free Prior and Informed Consent (FPIC) and build capacities about them.

States should

j) Recognize community-based actors and empower them with regard to water conservation and sustainable use of water for FSN in order to have a greater impact on outcomes.

k) Use the VGGT in the context of water for FSN, recognizing the particular relevance of article 8.3 on collective rights and common resources, and Section 9 on Indigenous Peoples, to develop, implement and assess policies and programmes, particularly those that affect access to water for FSN.

The CFS and relevant international water platforms should

l) Jointly organize a special meeting inviting all food security, nutrition and water-related actors to discuss how to coordinate policies and programmes toward progress in the FSN outcomes of their activities.

8 PROMOTE A RIGHTS-BASED APPROACH TO GOVERNANCE OF WATER FOR FSN

States must

a) Comply with their obligations under international human rights treaties and similar agreements, including but not limited to the International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social and Cultural Rights.

States should

b) Ensure the full and meaningful implementation of the existing Rights to safe drinking water and sanitation.

c) Ensure the full and meaningful realization of the Right to adequate food, and the full and meaningful implementation of the VGRtF, fully taking into account the contribution of water to FSN.

d) Ensure the full and meaningful implementation of the VGGT in such a way that it takes into account the inextricable relationship between land (fisheries and forests) and water, and the associated tenure rights.

e) Fully take into account, in the governance of water, the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (VGSSF) and the importance of quality water streams and bodies for inland fisheries and aquaculture.

f) Assess the direct and indirect effects, of the development and implementation of water and/or land related policies, interventions and investments, on the realization of Rights to safe drinking water and sanitation, and of the Right to adequate food.

g) Implement the UN Declaration on the Rights of Indigenous Peoples, particularly in the context of laws and policies that affect water for FSN.

The CFS should

h) Provide guidance on how to ensure access to water for FSN when implementing the VGGT and the VGRtF, based on experiences of members and participants of the CFS, as well as on technical work by FAO.

The United Nations Human Rights Council and its Special Procedures (especially the Special Rapporteurs on the Human Rights to Safe Drinking Water and Sanitation, the Right to Food, the Right to Health, the Rights of Indigenous Peoples and the Independent Expert on Human Rights and the Environment) should

i) Address in their work means to strengthen the realization of the Rights to drinking water and sanitation and to explore the implications of the linkages between water and FSN on the realization of human rights.

j) Provide guidance on the relevance and possible use of the Maastricht Principles on Extraterritorial Obligations of States in the Area of Economic, Social and Cultural Rights, as related to water for FSN.

The CFS and the HLPE

The Committee on World Food Security (CFS) is the foremost inclusive and evidence-based international and intergovernmental platform for food security and nutrition, where policies can be designed, interventions can be coordinated, options can be shared and decisions at different levels can be prepared.

In addition to member countries, the CFS includes a wider range of organizations and stakeholders working on food security and nutrition. It gathers the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the World Food Programme (WFP), the UN System High Level Task Force on Global Food Security, and other UN bodies. It also includes civil society and non-governmental organizations, particularly organizations representing smallholder family farmers, fisherfolk, herders, landless, urban poor, agricultural and food workers, women, youth, consumers and indigenous people. It finally includes private sector stakeholders, financial institutions, filantropic organizations, and research and development actors.

The High Level Panel of Experts for Food Security and Nutrition (HLPE) was created in October 2009 as an essential element of the reform of CFS, as its science-policy interface (Box 1). HLPE reports include analysis and recommendations and serve as a comprehensive, multi-faceted and shared evidence-based starting point for policy debates at CFS.

The HLPE receives from CFS its working mandate. This ensures the legitimacy and relevance of the studies undertaken, and their insertion in a concrete political agenda at international level.

The HLPE produces scientific, policy oriented reports. The report elaboration process is crafted to guarantee the scientific inclusiveness and the independence of the HLPE.

Box 1 Key functions of the HLPE, as stated in the CFS reform document (2009)

As directed by the CFS Plenary and Bureau, the HLPE will:

1. Assess and analyze the current state of food security and nutrition and its underlying causes.
2. Provide scientific and knowledge-based analysis and advice on specific policy-relevant issues, utilizing existing high quality research, data and technical studies.
3. Identify emerging issues, and help members prioritize future actions and attentions on key focal areas.

The HLPE aims to help CFS to better understand the diversity of issues and rationales when dealing with food and nutrition insecurity. It thrives to clarify contradictory information and knowledge, elicit the backgrounds and rationales of controversies, and identify emerging issues.

The HLPE is not mandated to conduct new research. The HLPE draws its studies based on existing research and knowledge already conducted by various expertise-providing institutions (universities, research institutes, international organizations etc), and adding value by global, multi-sectoral and multidisciplinary analysis. To do so, the HLPE institutes a scientific dialogue, building upon the diversity of disciplines, backgrounds, knowledge systems, the diversity of its Steering Committee and Project Teams, and organizing open e-consultations.

HLPE studies combine scientific knowledge with experiences from the ground, in a same rigorous process. The HLPE translates the richness and variety of forms of expert knowledge from many actors (knowledge of local implementation, knowledge based on global research and knowledge of "best practice") that draw on both local and global sources, into policy-related forms of knowledge.

To ensure the scientific legitimacy and credibility of the process, as well as its transparency and openness to all forms of knowledge, the HLPE operates with very specific rules, agreed by the CFS.

The HLPE has a two-tier structure:

- A Steering Committee composed of 15 internationally recognized experts in a variety of food security and nutrition related fields, appointed by the Bureau of CFS. HLPE Steering Committee members participate in their individual capacities, and not as representatives of their respective governments, institutions or organizations.
- Project Teams acting on a project specific basis, selected and managed by the Steering Committee to analyse/report on specific issues.

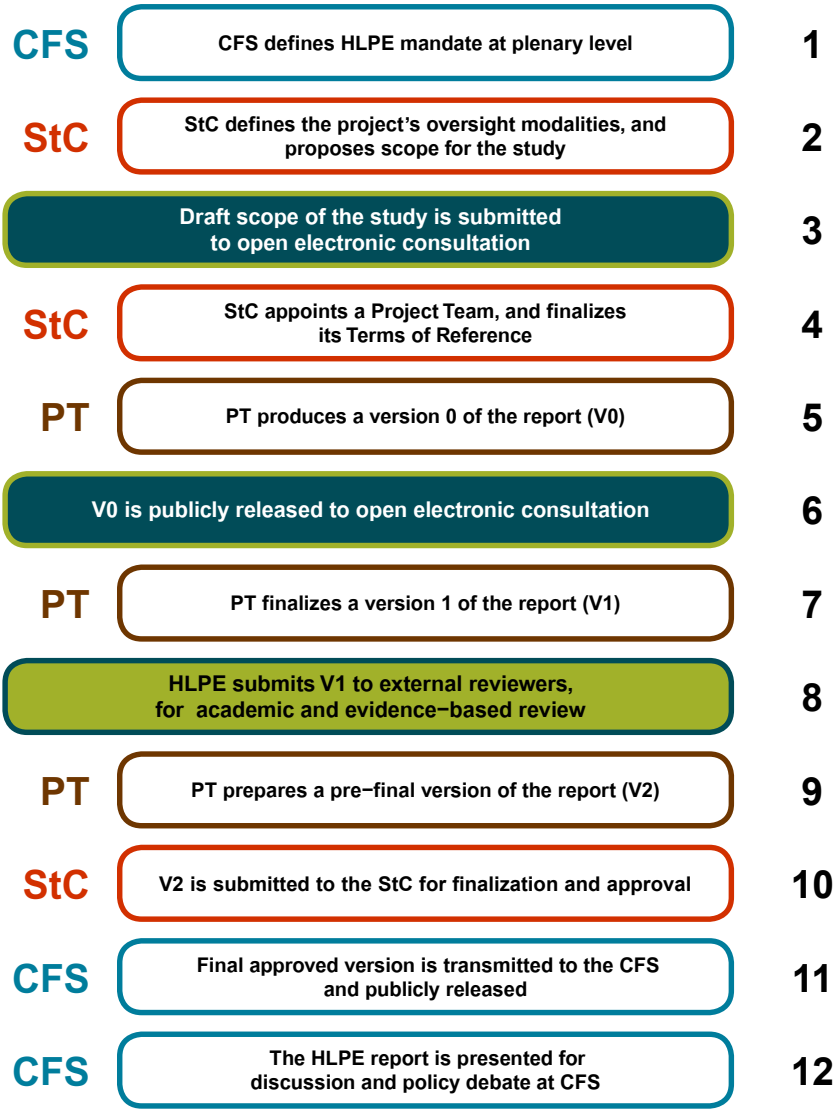
The project cycle to elaborate the reports includes clearly defined stages (Figure 2), starting from the political question and request formulated by the CFS. This mobilizes topic bound and time bound Project Teams working under the Steering Committee's scientific and methodological guidance and oversight. It includes also open consultations and an external scientific peer-review on a pre-final draft. The report is finalized and approved by the Steering Committee during a face-to-face meeting.

The HLPE runs two open consultations per report: first, on the scope of the study; second, on a V0 "work-in-progress" draft. This opens the process towards to all experts interested as well as to all concerned stakeholders, which are also knowledge-holders. Consultations enable the HLPE to better understand the issues and concerns, and to enrich the knowledge base, including social knowledge, thriving for the integration of diverse scientific perspectives and points of view.

The final approved report is transmitted to the CFS, published and translated in the 5 other official languages of the UN (Arabic, Chinese, French, Russian and Spanish), and serves to inform discussions and debates in CFS.

All information regarding the HLPE, its process and all former reports are available at the HLPE Website: www.fao.org/cfs/cfs-hlpe.

Figure 2 HLPE project cycle



CFS	Committee on World Food Security
HLPE	High Level Panel of Experts on Food Security and Nutrition
StC	HLPE Steering Committee
PT	HLPE Project Team

HLPE Steering Committee members (April 2015)

Per Pinstrup-Andersen (Chair)
Maryam Rahmanian (Vice-Chair)
Amadou Allahoury
Marion Guillou
Sheryl Hendriks
Joanna Hewitt
Masa Iwanaga
Carol Kalafatic
Bernardo Kliksberg
Renato Maluf
Sophia Murphy
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Claudia Ringler
Barbara Schreiner
Shiney Varghese

Coordinator of the HLPE

Vincent Gitz

Referencing the report

HLPE, 2015. Water for food security and nutrition. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome 2015.

HLPE Reports series

#1 Price volatility and food security (2011)
#2 Land tenure and international investments in agriculture (2011)
#3 Food security and climate change (2012)
#4 Social protection for food security (2012)
#5 Biofuels and food security (2013)
#6 Investing in smallholder agriculture for food security (2013)
#7 Sustainable fisheries and aquaculture for food security and nutrition (2014)
#8 Food losses and waste in the context of sustainable food systems (2014)
#9 Water for food security and nutrition (2015)

www.fao.org/cfs/cfs-hlpe

Water is life: it is integral to human food security and nutrition, and it is the lifeblood of ecosystems upon which all humans depend. Safe drinking water and sanitation are fundamental to the nutrition, health and dignity of all. Securing access to water can be particularly challenging for vulnerable populations and women. Water of sufficient quantity and quality is essential for agricultural production and for the preparation and processing of food. Irrigated agriculture accounts for 70 percent of all surface and ground water withdrawals globally.

The HLPE report explores the relations between water and food security and nutrition, from household levels to global levels. It investigates these multiple linkages, in a context of competing demands, rising scarcities, and climate change. It proposes ways for improved water management in agriculture and food systems, as well as ways for improved governance of water, for better food security and nutrition for all, now and in the future. The report is deliberately oriented towards action. It provides examples and options to be implemented by the many stakeholders and sectors involved, given regional and local specificities.

This document contains the Summary and Recommendations of the HLPE report.

CFS Committee on World Food Security
HLPE High Level Panel of Experts

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