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Federal Department of Foreign Affairs FDFA
**Swiss Agency for Development and Cooperation SDC**
Global Cooperation Domain
Global Programme Food Security

# Towards Sustainable Food Systems[1]

Supporting transformation through
applying ***agro-ecological principles*** and contributing to ***improved nutrition***

An amendment to the
Global Programme Food Security's Strategy 2017 - 2020

## Food, Health and Planet

Today's global food system is unsustainable, exclusive and fails to enable healthy food choices for a large part of the global population, despite considerable progress in the fight against hunger in the last two decades. Food accounts for roughly one third of total net anthropogenic emissions of greenhouse gases[2]. Land use change and pollution associated with agriculture and forestry are considered one of the key drivers of global biodiversity loss[3], depletion of freshwater resources and the deterioration of aquatic and terrestrial ecosystems through nitrogen and phosphorus run-off[4]. And, although global food production of calories has kept pace with population growth, more than 820 million people have insufficient food and many more consume low-quality diets that cause micronutrient deficiencies and contribute to a substantial rise in the incidence of diet-related obesity and non-communicable diseases. Globally, 2 billion adults are overweight or obese as are 40 million children under the age of 5[5]. Growing scientific evidence calls for an urgent and profound transformation of the global food system[6] in order to address the multiple burden on environmental and human health. Business as usual pathways and upscaling of current practices will not only exacerbate the current devastating environmental impacts, but could ultimately threaten food security in an unprecedented way at a global scale.

Mounting scientific evidence further suggests profound and complex interactions between diets, human health and environmental sustainability. Food production cannot be separated from consumption which in turn cannot be separated from environmental consequences and human health. It is not a surprise that science considers food as the single strongest lever to optimize human health and environmental sustainability on earth[7].

Fortunately, at this point in time, redirecting food systems onto a sustainable path is still possible. Recent studies describe food systems capable of delivering nutritious food for a global population of up to 10 billion people with significantly reduced environmental impact[8]. Transforming food systems, however, will require a substantial dietary shift, sustainable food production practices and a significant reduction of waste and loss, to be achieved with technological and organizational innovation, strategic use of economic incentives, new forms of governance and changes in values and in individual and collective behavior. Ultimately, transformation of the global food system must lead, through sustainable production and consumption (SDG12), to ending hunger and malnutrition (SDG 2) while at the same time addressing water scarcities (SDG 6), reducing climate impacts (SDG 13) and protecting life and biodiversity in water and on land (SDG 14 and 15). With agriculture being the world's biggest employer, transforming food systems must also significantly contribute to eradicating poverty (SDG 1). Productivity increases alone will make it impossible to meet the associated targets. Failure to include and address environmental and social impacts of food production will ultimately result in negative feedbacks on food systems that will render the achievement of SDGs 1 and 2 itself impossible.

**The pathway towards sustainable food systems**

The urgent need for a profound transformation of food systems is increasingly recognized. The path to achieve sustainability, however, is highly controversial. A significant number of frameworks, concepts and approaches (i.e. *climate smart agriculture*, *climate resilient agriculture*, *sustainable intensification, integrated pest management, etc.)* exist and have been promoted as pathways to food systems' sustainability. While most of these concepts have proven their potential to reduce the ecological footprint of agriculture, most of them are limited to agricultural production with a focus on resource efficiency. Facing the global challenges highlighted above, resource efficiency[9] will undoubtedly be an essential part of the transformation. Yet ecological science insists that resource efficiency alone will in no way meet the minimal requirements to achieve sustainability of food systems[10]. As an integral part of a circular economy that addresses the economic, social and environmental aspects, sustainable food systems are comprehensive and include how food is produced, processed, transported and sold[11], what food and how food is consumed, and what is lost and wasted.

The Global Programme Food Security (GPFS) of SDC recognizes the multidimensional, intertwined and complex interactions between food, human and planetary health. It advocates for a comprehensive understanding and approach to contribute to the transformation of food systems in view of the Agenda 2030 and to achieve food security in its four dimensions of availability, access, utilization and stability, and nutrition. It acknowledges that resource efficiency is undoubtedly essential but not sufficient, and considers agroecology as the most comprehensive approach to guide and support the transformation towards sustainable food systems.

**Combining agroecology and improved nutrition: a comprehensive pathway towards sustainable food systems**

**Agroecology**, at its most basic, is the application of ecological principles in agriculture[12]. It is a complex and dynamic concept as both fields, agriculture and ecology are highly dynamic. The approach has gained considerable attention in scientific, agriculture and political discourse in recent years. Agroecology embraces a science, a set of practices and a social movement and has evolved over recent decades to expand in scope from a focus on fields and farms to encompass agriculture and food systems. There is no single, consensual definition of agroecology shared by all the actors involved, nor agreement on all the aspects embedded in this concept. This makes it challenging to pin down exactly what agroecology is, but provides flexibility to adapt agroecological approaches to local contexts. The FAO acknowledges the wide spectrum of different understandings of the term agroecology and has compiled a framework of "the 10 Elements of Agroecology"[13] to guide the transition to sustainable food systems.

More recently, the *High Level Panel of Experts* HLPE of the *Committee on World Food Security*[14] published a comparable framework that identifies a comprehensive set of 13 agroecological principles organized in three categories (annex 1)[15]:

- *Improve resource efficiency:* recycling (local renewable resources, as close as possible cycles of nutrients and biomass), input reduction.
- *Strengthen resilience:* soil health (particularly by managing organic matter and soil biological activity), animal health, biodiversity, synergy (positive interaction and complementarity among elements of ecosystems), and economic diversification.
- *Secure social equity / responsibility:* co-creation of knowledge (local and scientific innovation), social values and diets (food systems based on culture, social and gender equity that

provide healthy and diversified diets), fairness, connectivity (proximity and confidence between producers and consumers, re-embedment of food systems into local economies), land and natural resource governance, participation.

The HLPE further defines to five levels of change, from incremental to transformation, starting with increased resource efficiency at level 1 to strive for a global food system based on participation, localness, fairness and justice (annex 2).

Although nutritional aspects are inherently embedded in agroecological principles, they often remain hidden and implicit. **Nutrition** is a key determinant of health and a crucial dimension of sustainable food systems, and therefore requires explicit attention. Nutrition is multidimensional and its improvement requires a multi-sectorial approach, covering aspects of health, water and sanitation, education, agriculture and many more. Malnutrition has many forms, such as undernutrition, micronutrient deficiencies or overweight and obesity. As of today, food-based approaches to malnutrition are[16]:

- Make safe and nutritious food available, affordable, accessible, and acceptable through targeted nutrition-sensitive interventions along value chains.
- Enhance the consumption of safe and nutritious food through education, marketing and promotion.
- Improve agricultural and food policies, targeting simultaneously the availability, accessibility, affordability, acceptability and utilization of safe and nutritious food for consumers.
- Give due consideration to equity, gender and women empowerment in any nutrition-sensitive approach.

A food based approach to malnutrition puts the consumption of safe and nutritious food in the centre and facilitates healthy and diverse diets for all on a regular basis and throughout their entire lifetime. Using a food based approach requires looking at food value chains, food consumption habits, gender, food and agricultural policies. The *Voluntary Guidelines on Food Systems and Nutrition* of the Committee on World Food Security are expected to be published by October 2020[17].

**The role of agroecology and improved nutrition in GPFS' new strategic framework 2021 - 2024**

The mission of GPFS is to "contribute to a world free of hunger and malnutrition in which smallholder rural and peri-urban farmers, women, men and young people equally, produce healthy and nutritious food accessible to all while improving their income and safeguarding the environment"[18]. In line with the Agenda 2030, the GPFS strives to contribute to sustainable food systems[1] as the ultimate objective. Agroecology and its 13 principles, and due to its importance for human and planetary health, nutrition, shall guide GPFS policies, programmes and projects for their contribution to the transformation towards sustainable food systems. In a pragmatic yet ambitious manner, the GPFS will strengthen its investments towards this objective, while explicitly using agroecology and improved nutrition as key reference points in the new GPFS' strategic framework 2021 – 2024. The commitment implies an increased advocacy in these fields in current and future programmes and projects, both at bilateral and multilateral level. Finally, it lays the ground for strengthened and new alliances with a number of Swiss and international stakeholders working towards sustainable food systems transformation.

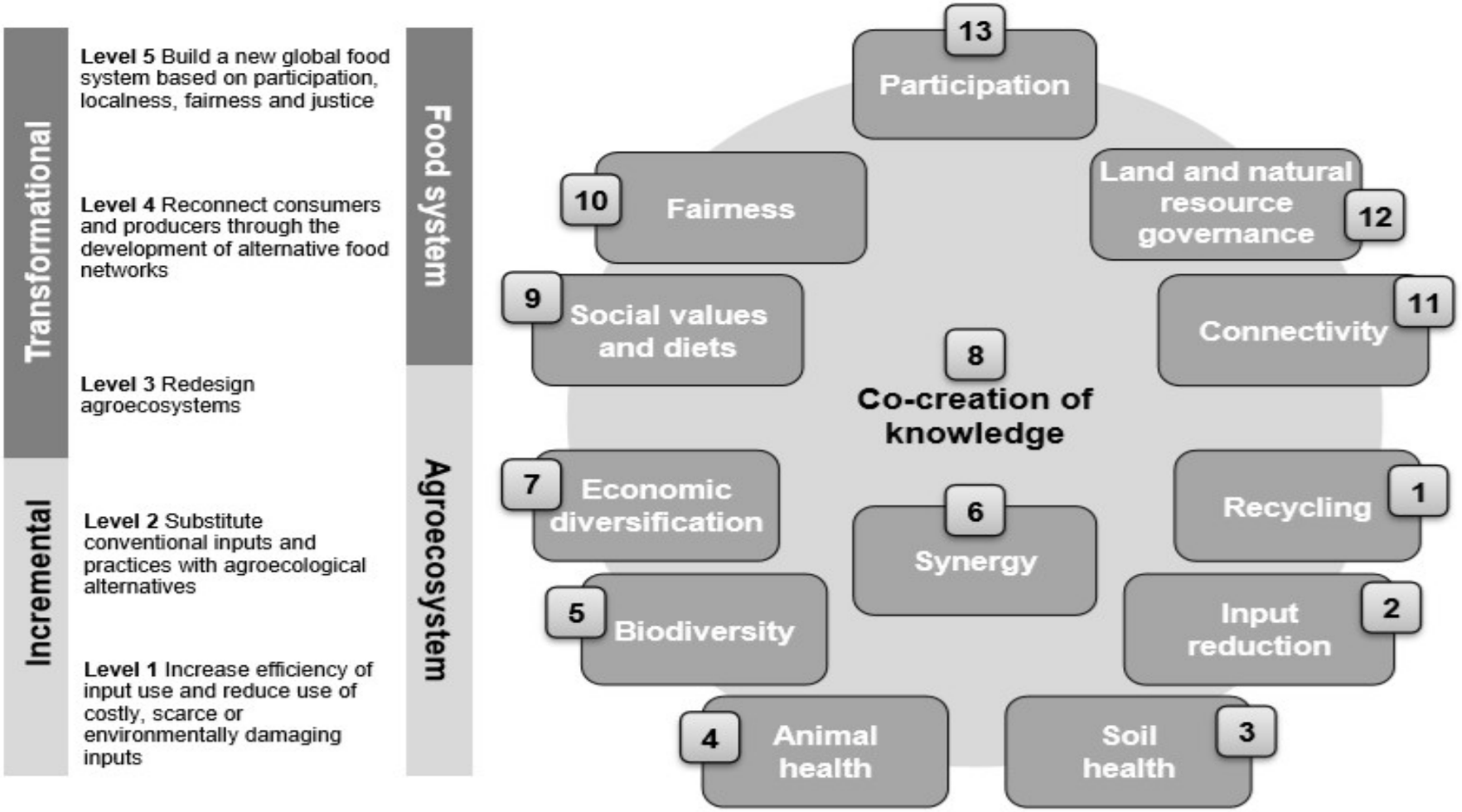
GPFS, January 2020

## Annex 1: 13 agroecological principles (HLPE of the Committee on World Food Security)

| Principle | FAO's ten elements | Scale application* |
|---|---|---|
| ***Improve resource efficiency*** | | |
| **1. Recycling.** Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass. | Recycling | FI, FA |
| **2. Input reduction.** Reduce or eliminate dependency on purchased inputs and increase self-sufficiency | Efficiency | FA, FO |
| ***Strengthen resilience*** | | |
| **3. Soil health.** Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity. | | FI |
| **4. Animal health.** Ensure animal health and welfare. | | FI, FA |
| **5. Biodiversity.** Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales. | Part of diversity | FI, FA |
| **6. Synergy.** Enhance positive ecological interaction, synergy, integration and complementarity among the elements of agroecosystems (animals, crops, trees, soil and water). | Synergy | FI, FA |
| **7. Economic diversification.** Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers. | Part of diversity | FA, FO |
| ***Secure social equity/responsibility*** | | |
| **8.Co-creation of knowledge.** Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange. | Co-creation and sharing of knowledge | FA, FO |
| **9. Social values and diets.** Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets. | Parts of human and social values and culture and food traditions | FA, FO |
| **10. Fairness.** Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights. | | FA, FO |
| **11. Connectivity.** Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies. | Circular and solidarity economy | FA |
| **12. Land and natural resource governance.** Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources. | Responsible governance | FA, FO |
| **13. Participation.** Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems. | | FO |

*Scale application: FI = field; FA = farm, agroecosystem; FO = food system
*Source:* derived from from Nicholls *et al.*, 2016; CIDSE, 2018; FAO, 2018c.

**Annex 2: HLPE's five levels of transition towards sustainable food systems and related to 13 agroecological principles.**



[1] FAO, 2018. Sustainable Food Systems Concept and Framework: Food systems (FS) encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded. The food system is composed of sub-systems (e.g. farming system, waste management system, input supply system, etc.) and interacts with other key systems (e.g. energy system, trade system, health system, etc.). Therefore, a structural change in the food system might originate from a change in another system; for example, a policy promoting more biofuel in the energy system will have a significant impact on the food system. "*A sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised. This means that: – It is profitable throughout (economic sustainability); – It has broad-based benefits for society (social sustainability); and – It has a positive or neutral impact on the natural environment (environmental sustainability). A sustainable food system lies at the heart of the United Nations' Sustainable Development Goals (SDGs).*"
Adopted in 2015, the SDGs call for major transformations in agriculture and food systems in order to end hunger, achieve food security and improve nutrition by 2030. To realize the SDGs, the global food system needs to be reshaped to be more productive, more inclusive of poor and marginalized populations, environmentally sustainable and resilient, and able to deliver healthy and nutritious diets to all. These are complex and systemic challenges that require the combination of interconnected actions at the local, national, regional and global levels."

[2] IPCC, 2019: Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. In press.
A.3 Agriculture, Forestry and Other Land Use (AFOLU) activities accounted for around 13% of CO2, 44% of methane (CH4), and 81% of nitrous oxide (N2O) emissions from human activities globally during 2007–2016, representing 23% (12.0 ± 2.9 GtCO2eq yr–1) of total net anthropogenic emissions of GHGs (medium confidence).21 The natural response of land to human-induced environmental change caused a net sink of around 11.2 GtCO2 yr–1 during 2007–2016 (equivalent to 29% of total CO2 emissions) (medium confidence); the persistence of the sink is uncertain due to climate change (high confidence). If emissions associated with pre- and post-production activities in the global food system are included, the emissions are estimated to be 21–37% of total net anthropogenic GHG emissions (medium confidence).

[3] IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages

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[6] Endnote 2,3,4; et al.

[7] Willet W. et al., 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. Lancet. 2019 Jan. pii: S0140-6736(18)31788-4. doi: 10.1016/S0140-6736(18)31788-4.

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Searchinger, Timothy, et al. Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050. World Resources Report. World Resources Institute, 2019.

[9] More concretely: produce more crops with less land, labor, water, fertilizer, pesticides, etc.

[10] Rockström, J., et al., 2009. Planetary boundaries: exploring the safe operating space for humanity. Ecology and society, 14 (2), 32. ; Steffen, W., et al., 2015. Planetary boundaries: Guiding human development on a changing planet. Science, 347 (6223), 1259855. And others.

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[12] Sinclair, F., Wezel, A., Mbow, C., Chomba, S., Robiglio, V., and Harrison, R. 2019. "The Contribution of Agroecological Approaches to Realizing Climate-Resilient Agriculture." Rotterdam and Washington, DC. Available online at www.gca.org.

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