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Report of the Secretary-General

Summary

The present report highlights the critical role of a sustainable food systems approach in eradicating poverty, hunger and all forms of malnutrition, promoting sustainable production and consumption, meeting the challenges of urbanization, absorbing the youth labour force and reducing the impact of food systems on biodiversity, natural resources and the climate. Promoting the development of food systems that are inclusive, nutrition-driven, sustainable, eco- and climate-friendly and resilient is a challenge that requires action across the 2030 Agenda for Sustainable Development.

In the report, slowing or reversing progress towards the achievement of Sustainable Development Goal 2 and related Goals is highlighted, and a definition of food systems is introduced that goes beyond value chains to the food environments that shape the actions of all actors. A food systems perspective is used to identify key issues in promoting improved nutrition and healthy diets, making food systems more inclusive, improving sustainability by reducing food losses and strengthening climate resilience. The report also includes an update on important partnership initiatives to enable more effective collective action and mobilize the means of implementation to improve food systems.

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I. Introduction

1. In its resolution 73/253 on agriculture development, food security and nutrition, the General Assembly requested the Secretary-General to report to the Assembly at its seventy-fourth session on the implementation of the resolution and called upon the relevant organizations of the United Nations system, within their respective mandates and resources, to ensure that no one was left behind and no country was left behind in the implementation of the resolution.

2. In providing information and annual updates on global efforts to achieve the internationally agreed goals on agriculture development, food security and nutrition in line with the 2030 Agenda for Sustainable Development, the present report includes contributions from the Food and Agriculture Organization of the United Nations (FAO), the World Food Programme (WFP), the International Fund for Agricultural Development (IFAD), the High-Level Panel of Experts of the Committee on World Food Security, the International Atomic Energy Agency, the World Trade Organization, the secretariat of the United Nations Convention to Combat Desertification, the United Nations Children's Fund (UNICEF), the United Nations Human Settlements Programme (UN-Habitat), the Economic and Social Commission for Western Asia, the Standing Committee on Nutrition and the Scaling Up Nutrition movement. The report is also based on input to the high-level political forum on sustainable development and other sources, including the Department of Economic and Social Affairs.

II. Overview

3. The 2030 Agenda for Sustainable Development places the eradication of poverty and hunger among its core priorities and identifies sustainable agriculture and food systems as key drivers of sustainable development. The most recent evidence indicates that, in terms of several indicators, the world is not on track in its efforts to achieve Sustainable Development Goal 2 – zero hunger – and other targets related to agriculture, food security and nutrition. Conflict and protracted crises are key contributors to the loss of momentum, but so too are weak policy responses in the regions where policies for inclusive, transformative change are most needed. Goal 2, with its interlinkages across the 2030 Agenda, calls for integrated, cross-sectoral actions to foster the more dynamic, inclusive and sustainable development of food systems. In particular, it is focused on the critical role that investment, technology and partnerships in, for and with small-scale food producers can play in accelerating the elimination of extreme poverty, hunger and malnutrition and in reducing pressures from food systems on natural resources, including biodiversity, and on the climate.

4. Based on available evidence, the present report includes an examination of progress towards meeting the targets of Sustainable Development Goal 2 and related Goals. Meeting the challenges posed by the holistic vision of Goal 2 is a complex balancing act with several competing objectives: ensuring adequate food supply to feed 10 billion people by 2050;[1] ensuring continued employment for the 28 per cent of the population directly or indirectly employed by the agriculture sector; reducing the 25 per cent of global greenhouse gas emissions stemming from agriculture;[2]

[1] Food and Agriculture Organization of the United Nations (FAO), *The Future of Food and Agriculture: Alternative Pathways to 2050*, 2018.

[2] Intergovernmental Panel on Climate Change, *Global Warming of 1.5° C: Summary for Policymakers*, 2018.

reducing the 70 per cent of global water withdrawals resulting from agriculture;[3] and protecting the land and soil employed in crops and grazing, which account for 37 per cent of the world's land surface.[4]

5. A comprehensive perspective is required to see how the different targets fit together and to identify opportunities for synergies and assess trade-offs among objectives. To provide such a perspective, the report focuses on food systems for a developmental approach to ending poverty and hunger and improving nutrition and food security while promoting sustainable agriculture and the protection of biodiversity. In this context, the term "food systems" is defined in a broad way, linking production, consumption and sustainability, and calling attention to the critical role of food environments in providing information, resources, policies, regulation and incentives that guide decision-making by all food system actors.

III. Progress towards Sustainable Development Goal 2 and related Goals and targets

6. New evidence in 2018 continued to point to a rise in world hunger for the third consecutive year, after decades of steady decline. An estimated 821 million people – approximately one in nine people in the world – were undernourished in 2018, as measured by the prevalence of undernourishment (Sustainable Development Goal indicator 2.1.1).[5] While the prevalence of undernourishment remained nearly unchanged at the global level, it is increasing in almost all regions of Africa, as well as in South America. Africa remains the continent with the highest prevalence of undernourishment, which affects one fifth of its population (more than 256 million people). A second indicator for monitoring Sustainable Development Goal indicator 2.1.2 was introduced in 2019 to estimate the prevalence of moderate or severe food insecurity based on the Food Insecurity Experience Scale. Including all people affected by moderate or severe levels of malnutrition, it is estimated that more than 2 billion people do not have access to safe, nutritious and sufficient food.

7. In 2015, one in seven newborns, or 20.5 million babies in the world, were characterized by low birthweight; this proportion has remained unchanged since 2012.[6] Although stunting has decreased in nearly every region since 2000, one in five children under 5 years of age (149 million) were stunted in 2018. Globally, 49 million, or 7.3 per cent of children under 5 years of age, were affected by acute undernutrition or wasting in 2018, a condition that is generally caused by limited nutrient intake and infection and limits the ability of the body to absorb nutrients from food.

8. While more than 821 million people do not have sufficient food, estimates suggest that one third of the global population will be overweight or obese by 2030. The global prevalence of overweight among children under 5 years of age has shown no improvement since the global nutrition target of "no increase in childhood overweight" was endorsed by the World Health Assembly in 2012. Globally, 5.9 per cent of children under 5 years of age (i.e. 40.1 million) were overweight in 2018, up from 5.5 per cent in 2012. While Asia and Africa had the lowest overweight prevalence (5.2 per cent and 4.9 per cent, respectively) in 2018, as a result of their

[3] World Water Assessment Programme/UN-Water, *The United Nations World Water Development Report 2018: Nature-Based Solutions for Water*, 2018.

[4] See www.fao.org/economic/ess/environment/data/en/.

[5] FAO, International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), World Food Programme (WFP) and World Health Organization (WHO), *The State of Food Security and Nutrition in the World 2019: Safeguarding against Economic Slowdowns and Downturns*, 2019.

[6] Ibid.

large populations they accounted for nearly three quarters of all overweight children under 5 years of age in the world (46.9 per cent in Asia and 23.8 per cent in Africa). Oceania had the highest prevalence of overweight, with almost 1 in 10 children (9.1 per cent) affected.[7]

9. Hunger has increased in many countries where the economy has slowed down or contracted, especially during the period 2011–2017. Out of the 77 countries that experienced a rise in hunger, 65 saw their economies slowing or contracting, and 44 of those 65 countries are middle-income countries, of which 32 are in Africa, 17 in Asia and 11 in Latin America and the Caribbean.

10. Between 1990 and 2015, progress was made in reducing extreme poverty on a global scale, but current evidence indicates that progress has slowed markedly in recent years and that the target of reducing extreme poverty below 3 per cent by 2030 is in doubt.[8] The situation is particularly challenging in sub-Saharan Africa, where the number of extreme poor increased from 278 million in 1990 to 413 million in 2015, and where current trends suggest that poverty will remain above 400 million in 2030.[9] Despite rapid urbanization, extreme poverty remains "disproportionately and overwhelmingly rural",[10] and the inclusive economic transformation of rural areas remains critically important to reducing overall levels of poverty, hunger and malnutrition.[11] Whether as direct producers or labourers in agriculture or closely related activities, the rural poor depend on agricultural activities for their livelihoods and require access to natural resources and biodiversity for their food security and livelihoods. At the same time, shifting diets of consumers are also changing the nature of urban-rural linkages.

11. In developing countries, the predominant share of food consumed by the hungry and poor in both urban and rural areas is produced by small-scale food producers and rural labourers.[12] Strengthening their resilience and adaptive capacity is critical to reversing the trend of rising hunger while reducing the number of people living in extreme poverty. There are some 570 million family farms worldwide, of which 475 million (representing more than 2.5 billion people) are smaller than 2 hectares.[13] As many as 500 million people are engaged in pastoralism, utilizing nearly one quarter of the world's land surface, mostly land that could not otherwise be used productively.[14] There are more than 370 million indigenous people who live in seven regions and 90 countries and endure some of the most extreme conditions on the planet. Their food systems have survived through territorial management techniques that account for ecosystem reserves that produce foods while maintaining biodiversity. Small-scale fisheries, which are present in almost all countries, account for more than half of total production, in terms of both quantity and value, and they employ the majority of people working in the fisheries sector. Women account for

[7] FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2018: Building Climate Resilience and Food Security for Nutrition*, 2018.

[8] World Bank Group, *Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle*, 2018.

[9] Ibid.

[10] Ibid.

[11] IFAD, *Rural Development Report 2016: Fostering Inclusive Rural Transformation*, 2016; and FAO, *The State of Food and Agriculture: Leveraging Food Systems for Inclusive Transformation*, 2017.

[12] IFAD, *Rural Development Report 2016*.

[13] Sarah K. Lowder, Jakob Skoet and Terri Raney, "The number, size, and distribution of farms, smallholder farms, and family farms worldwide", *World Development*, vol. 87, pp. 16–29.

[14] United Nations Environment Programme (UNEP) and International Union for Conservation of Nature and Natural Resources, "Sustainable pastoralism and the post 2015 agenda", 2015.

about 50 per cent of the workforce in small-scale fisheries, in particular in processing and trade.[15]

12. Biodiversity in food and agriculture is indispensable to food security, sustainable development and the provision of many vital ecosystem services. Around 1 million animal and plant species are threatened with extinction, many within decades; this figure is now higher than ever before in human history.[16] Key components of biodiversity in food and agriculture at the genetic, species and ecosystem levels are also in decline.[17] At the end of 2018, 60 per cent of local livestock breeds were at risk of extinction in the 70 countries that had data on risk status, while that status remained unknown for two thirds of local livestock breeds. Of 600 plant species that have been cultivated for food, 9 species accounted for 66 per cent of total crop production, and fewer than 200 had significant production levels globally. Circular economy approaches are one means of addressing food security and malnutrition while also protecting vital ecosystems.

13. Ex situ efforts to conserve plant and animal genetic resources are increasing, but many gaps in coverage remain. At the end of 2018, global holdings of plant genetic material conserved in gene banks in 99 countries and 17 regional and international centres increased by 1.8 per cent compared with the previous year. For animal breeds, the material stored is sufficient to reconstitute less than 1 per cent of existing local breeds in the case of extinction.

14. Fisheries and aquaculture are a vital source of nutritious food and protein. Worldwide, nearly 3.2 billion people receive 20 per cent of their daily animal protein intake from fish, providing about 59.6 million jobs worldwide.[18] However, the share of world marine fish stocks that are still within biologically sustainable levels declined from 90 per cent in 1974 to 66.9 per cent in 2015. If the current trend of unsustainable use of marine resources is not reversed, the ability of oceans and seas to provide food for future generations will be severely compromised. Illegal, unreported and unregulated fishing remains one of the greatest threats to marine ecosystems and endeavours to conserve marine biodiversity, often leading to the collapse of local fisheries, with small-scale fisheries in developing countries proving to be particularly vulnerable. Despite recent growing attention to curbing such fishing, some 30 per cent of countries still report a low to medium level of implementation of the key international instruments aimed at combat illegal, unreported and unregulated fishing.[19]

15. Terrestrial ecosystems make vital contributions to sustainable development. Forests sustain a range of industries, generate jobs and income and serve as a source of food, medicine and fuel for more than 1 billion people. Mountains provide 60 to 80 per cent of the world's fresh water. Soil is the foundation of agricultural development and holds at least a quarter of global biodiversity, but terrestrial ecosystems now face unprecedented and unrelenting pressures. More than one fifth of Earth's total land area is degraded, in large part because of human-induced processes, such as desertification, cropland expansion and urbanization. Between 2000 and 2015, the share of forest area in the world's overall land area decreased

[15] FAO, *The State of World Fisheries and Aquaculture 2016: Contributing to Food Security and Nutrition for All*.

[16] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, *Global Assessment on Biodiversity and Ecosystem Services*, 2019.

[17] FAO, *The State of the World's Biodiversity for Food and Agriculture*, 2019.

[18] FAO, *The State of World Fisheries and Aquaculture 2018: Meeting the Sustainable Development Goals*, 2018.

[19] FAO, "SDG indicator 14.6.1: illegal, unreported unregulated fishing", 2019, available at http://www.fao.org/sustainable-development-goals/indicators/1461/en/.

from 31.1 per cent to 30.7 per cent.[20] Forest loss can result in a loss of livelihoods for rural communities, release carbon dioxide into the atmosphere and cause biodiversity loss and land degradation. Although global forest area is decreasing, the rate of forest loss slowed by approximately 25 per cent between 2010 and 2015 compared with the period 2000–2005.[21]

IV. Thematic discussion: accelerating progress on Sustainable Development Goal 2 and related Goals and targets through a food systems approach

16. Sustainable Development Goal 2 and its related Goals and targets are connected through a complex array of interdependent objectives, requirements and needs that span the entire 2030 Agenda for Sustainable Development. A food systems perspective offers great value by providing a shared framework in which the issues of poverty, hunger and all forms of malnutrition across the rural-urban continuum can be viewed in their relationships to gender inequality, social exclusion and persistent or growing inequalities, while also highlighting the impacts of environmental degradation, climate change and extreme weather events, and crises and conflict. A food systems lens can help to focus attention on the interplay among land, water, energy and food policies and on the possibilities of both synergies and trade-offs among economic, social and environmental objectives. For example, women's access to land and other productive resources is an important part of eradicating poverty and ending hunger and all forms of malnutrition. Many recent reports have highlighted the need for a radical transformation of food systems to promote the kind of structural transformation required to achieve the Sustainable Development Goals.[22]

Definition of food systems

17. Food systems encompass the entire range of public and private actors (farmers, processors, wholesalers, distributors, advertisers, marketers, regulators and retailers) and their interlinked activities in the production, aggregation, processing, distribution, regulation, consumption and disposal of food products that originate from agriculture, forestry or fisheries, as well as the broader economic, social and natural environments in which they are embedded.[23] Those actors play a role in influencing what foods are produced and how they are produced, processed, distributed, marketed and consumed. They work across the supply side of the food system.

18. Every food system also comprises food environments, which are the collective physical, economic, policy, sociocultural and environmental surroundings, opportunities and conditions that influence people's food and beverage choices. Food environments include distance to markets or physical access, the advertising and marketing of foods, the regulation of food marketing, food safety, labelling of ingredients, health claims, food promotion, food prices, food provision in schools and other settings, food availability, and taxation, trade and other policies affecting food

[20] FAO, "SDG indicator 15.1.1: forest area (as a percentage of total land area)", 2019, available at http://www.fao.org/sustainable-development-goals/indicators/1511/en/.

[21] FAO, "SDG indicator 15.2.1: progress towards sustainable forest management", 2019, available at http://www.fao.org/sustainable-development-goals/indicators/1521/en/.

[22] IFAD, *Rural Development Report 2016*; FAO, *The State of Food and Agriculture: Leveraging Food Systems for Inclusive Transformation*; *The Least Developed Countries Report 2015: Transforming Rural Economies* (United Nations publication, Sales No. E.15.II.D.7); and C. Peter Timmer, "Managing structural transformation: a political economy approach", 2014.

[23] FAO, "Sustainable food systems: concept and framework", 2018.

availability, price and quality.[24] Food environments influence supply and demand and have significant implications for societies, economies and the environment.[25]

19. Lastly, consumers are essential elements of all food systems. The values they hold, their incomes, social standing, culture, knowledge and access to information, preferences and religions all make important contributions to the foods they decide to purchase or eat (often called "food demand") and to their enjoyment of the basic right to adequate food. At the core of the Sustainable Development Goals is an obligation and commitment to ensure that every person enjoys food security, is nourished and can thrive.

Opportunities and challenges for promoting the sustainable development of food systems

Making food systems work for nutrition

20. Efficient food systems that reliably deliver safe, nutritious, desirable and affordable food are essential to the battle against hunger, but ensuring access to dietary energy is insufficient as a goal today. Healthy diets are essential to protect people against malnutrition in all its forms, as well as related non-communicable diseases, including diabetes, heart disease, stroke and some forms of cancer.[26] Research indicates that healthy diets are essential for improving nutrition throughout life and for reducing the disease burden. A healthy diet meets the nutritional needs of individuals by providing sufficient, safe and diversified foods to maintain an active life and reduce the risk of disease. Such a diet includes fruits, vegetables, nuts and whole grains and is low in fats (in particular saturated fats), sugars and salt.[27] It ensures that the need for essential nutrients is met, with specific attention to each person's gender, age, physical activity level and physiological state.

21. Food systems worldwide are undergoing rapid transformations, driven by population growth, urbanization, rising incomes, globalization and the increasing integration of value chains, and climate change and the resulting increase in extreme events. Some of those changes have positive benefits, including the year-round availability of foods, access to diverse foods and improved food safety and durability, but the changes in the food system have also been shown to contribute to lower diet quality in many countries. For example, energy-dense, highly processed foods that are often low in micronutrients are readily available, often cheaper and more convenient to consume than more nutrient-rich fresh foods.[28]

22. Ensuring healthy diets will require actions across food systems, including policies to promote the production of nutrient-dense crops; processing methods in which nutrients are retained; policies to ensure that nutritious foods are affordable, accessible and safe; restrictions or bans on harmful ingredients in food production; and data to guide effective policies on making healthy diets available to all. Demand-side interventions empower consumers to make healthy food choices, with the support of national food-based dietary guidelines to give guidance on healthy eating; Governments' use of metrics, such as the minimum dietary diversity score, to monitor diet quality; and the introduction of nutrition in school curricula. Income subsidies

[24] Vivica I. Kraak and others, "An accountability framework to promote healthy food environments", *Public Health Nutrition*, vol. 17, No. 11 (2014), pp. 2467–2483.

[25] High-level Panel of Experts on Food Security and Nutrition, *Sustainable forestry for food security and nutrition*, June 2017.

[26] WHO, *Guideline: Sugars Intake for Adults and Children*, 2015.

[27] WHO, "Healthy diet", fact sheet, 23 October 2018, available at www.who.int/news-room/fact-sheets/detail/healthy-diet.

[28] Carlos Monteiro and others, "Ultra-processed products are becoming dominant in the global food system", *Obesity Reviews*, vol. 14, suppl. 2 (2013), pp. 21–28.

and social protection schemes, including vouchers for fresh food, can help low-income individuals and households to gain access to micronutrient-rich foods. Interventions to improve consumer purchasing behaviour work best when multiple approaches are used in combination.[29]

23. Policy and actions to improve food environments include regulations to improve nutrition labelling on packaged food products to enable more informed consumer choices; rules to discourage the marketing and consumption of energy-dense foods that are high in fat, sugar and/or salt on school premises; and campaigns to promote healthy eating. Encouragement and support for alternative food markets, such as those for organic food, zero-kilometre food and direct sales to urban and peri-urban consumers, reach only a small share of consumers but have done much to raise awareness of where, how and by whom food has been produced and to increase demand for quality food.

24. As food systems have become increasingly globalized and concentrated, transforming them to promote healthy diets will require cross-sectoral and interdisciplinary actions at all levels. Better governance of food systems, facilitated by focused political support, is needed to build a common vision, to support evidence-based policies and to promote effective coordination and collaboration through integrated, multisectoral action. The Codex Alimentarius Commission, in particular its Committee on Nutrition and Foods for Special Dietary Uses, studies specific nutritional problems, drafts general provisions concerning the nutritional aspects of all foods and develops standards for foods for special dietary uses. Codex guidelines on nutrition labelling are periodically updated to provide consumers with a suitable profile of nutrients contained in specific foods.[30]

25. This approach requires understanding and action tailored to local customs, tastes and conditions. Indigenous food systems, for example, demonstrate synergies with the natural environment and biodiversity, are closely adapted to local culture and conditions and feature a high level of diversification and a light carbon footprint. Those systems are being threatened by the destruction of habitats and the displacement of indigenous peoples from their lands, the loss of languages and culture in indigenous communities, the loss of traditional seeds and the rapid shift in food habits among young people.[31]

26. Food systems are also a matter of concern in conflict situations, in which performance can be hampered by limited governance presence, disrupted social and economic services, changes in people's food choices and intra-household food dynamics based on actual availability and accessibility.[32] A comprehensive approach is needed to address malnutrition in those contexts, to prevent the deterioration of nutrition in times of crisis and to sustain nutrition-related gains in the longer term.[33] Joint action by Governments, United Nations agencies, donors and partners from civil society and the private sector is needed to support national efforts to bridge the gaps in the humanitarian-development-peace nexus.

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[29] Global Panel on Agriculture and Food Systems for Nutrition, "Policy actions to support enhanced consumer behaviour for high-quality diets", policy brief No. 8, June 2017.

[30] FAO, "Nutrition and labelling", available at www.fao.org/fao-who-codexalimentarius/thematic-areas/nutrition-labelling/en/.

[31] FAO, *The Future of Food and Agriculture: Trends and Challenges*, 2017.

[32] FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2017: Building Resilience for Peace and Food Security*, 2017.

[33] FAO, *Nutrition, Food Systems and Conflict: Development Initiatives*, forthcoming; and Development Initiatives, *2018 Global Nutrition Report: Shining a Light to Spur Action on Nutrition*, 2018.

Improving the inclusiveness of food systems development

27. The 2030 Agenda for Sustainable Development is people-centred, and the "zero hunger" vision of target 2.3 of the Sustainable Development Goals focuses on the importance of small-scale producers and those employed in agriculture-related pursuits. The world's 475 million small family farms engaged in raising crops and livestock, aquaculture, forest harvesting and pastoralism are responsible for a substantial share of the world's food supply, accounting for up to 80 per cent in sub-Saharan Africa and Asia.[34] Small family farms are also responsible for a large share of the food supply for the 370 million indigenous people in the world.[35] More than three quarters of the economically active extreme poor in rural areas engage in agriculture as a primary activity.

28. Rapid population growth, accelerated urbanization, rising incomes and expanding middle classes have contributed to a broad shift in dietary demand towards highly processed foods and to changes in the structure and management of the agrifood value chains that have emerged following the demise of government-sponsored marketing systems and the liberalization of foreign direct investment in food systems.[36] The increasing concentration of populations in urban and peri-urban centres, which typically consume up to 70 per cent of the food supply even in countries with large rural populations, has served to create large food market "catchment areas" in the surrounding areas to meet exploding urban food demand. This has created opportunities for private investment in a host of services, ranging from inputs to food handling, sorting, processing, distribution, marketing and retailing.

29. Those trends can be witnessed across less developed regions, where rural markets for food have expanded as rural populations grew from 1.6 billion in 1960 to 3.1 billion in 2015.[37] The surge in domestic demand for fresh and processed food can create notable opportunities for family farmers and small-scale food processors through new markets and off-farm income generation based on local employment. However, in the absence of an effective public sector role, the increasing vertical integration of rural supply chains with urban food markets may exclude small producers, who have difficulty meeting stricter standards for accessing urban markets. In addition, rising pressure on natural resources and the impacts of climate change are making food production even less predictable, with small-scale producers in developing countries shouldering most of the burden of risk.[38]

30. The opportunities and constraints associated with inclusive food systems differ across regions and countries. In Africa, where more than 60 per cent of the population is under the age of 25, few employment opportunities are in place to contribute to poverty reduction,[39] and policies relating to food systems need to factor in rural agro-entrepreneurship and employment diversification. In small island developing States, where obesity rates are among the highest in the world, food import substitution strategies need to be focused on strengthening local food value chains

[34] FAO, *The State of Food and Agriculture: Leveraging Food Systems for Inclusive Rural Transformation*.

[35] *State of the World's Indigenous Peoples* (United Nations publication, Sales No. 09.VI.13).

[36] IFAD, *Rural Development Report 2016*; and FAO, *The State of Food and Agriculture: Leveraging Food Systems for Inclusive Rural Transformation*.

[37] *World Urbanization Prospects: 2014 Revision – Highlights* (United Nations publication, Sales No. E.14.XIII.8).

[38] Carmel Williams and Paul Hunt, "Health rights are the bridge between law and health", The Lancet, vol. 393, No. 10183 (4 May 2019), pp. 1782–1784.

[39] International Labour Organization (ILO), "Youth employment in Africa", 2019, available at www.ilo.org/africa/areas-of-work/youth-employment/lang--en/index.htm.

supplied by family farms and small-scale producers so that local fresh food is easier to obtain than cheaper, highly processed food.[40]

31. Poor small-scale producers face structural constraints that limit productivity. Examples include insecure (or unrecognized) rights to natural resources, such as land, water, fisheries and grazing lands; limited access to inputs because of concentration in supplier markets; and a lack of access to scale-neutral labour-easing technologies and other productive assets, such as education, technical assistance, credit, insurance and social protection. A combination of public policies and programmes and coordinated investments, including in infrastructure and extension services, through public-private alliances and measures to promote more effective collective action among the small producers themselves, is needed to make the sustainable development of food systems viable. At the macroeconomic level, policies that help to enable market access and reduce excessive price volatility should also ensure that producers and processors can compete in profitable markets, while safeguarding consumers' access to affordable, healthy food.

32. The United Nations can support countries in their efforts to promote the economic inclusion of small-scale producers and the extreme poor. Policies for inclusion should not be limited to production activities alone, but should improve the competitiveness of those engaged in primary production and increase opportunities to add and realize value in the downstream handling, processing, marketing and retailing of higher-quality, diversified food mixes. Such approaches require multi-stakeholder and cross-sectoral alliances of actors working to increase incomes and resilience among small-scale producers, to create new jobs and incomes around food systems and other services, to improve the availability and accessibility of quality food for the rural poor and to generate additional tax revenue from increasingly formalized value chains.[41] Rural revitalization schemes based on food systems development and upgrading should also address gender inequalities, strengthen sources of social empowerment and sustain ongoing public investment in the economic inclusion of the extreme poor.

Enhancing food system functioning by reducing food loss and waste and ensuring food safety

Food loss and waste

33. Estimates of food loss and waste vary considerably, in part owing to differences in definition, measurement and estimation, but they generally support the conclusion that one third or more of food is lost or wasted during the processes of production, processing, trading and consumption. Those losses can be measured in terms of the loss of available food, lost income to producers, unnecessary impacts on the environment and natural resources, and deterioration of the nutritional quality of food, especially fruits and vegetables.

34. Target 12.3 of the Sustainable Development Goals sets the ambition "by 2030, to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses." To achieve significant reductions in food loss and waste, three types of actions are necessary.

35. First, improved, consistent terminology and more precise measurement of food loss and waste is required to improve existing methods and to identify where and why

[40] FAO, "Global Action Programme on Food Security and Nutrition in Small Island Developing States: supporting the implementation of the Samoa Pathway", 2017.

[41] FAO, *Developing Sustainable Food Value Chains: Guiding Principles*, 2014.

food losses occur.[42] Food loss and waste is associated with an array of factors, including poor agricultural practices and management skills, improper or suboptimal harvesting and sorting techniques, a lack of appropriate storage facilities and transport infrastructure, inefficient and wasteful processing methods, poor coordination in marketing, inappropriate product labelling, and consumer tastes. Moreover, this type of waste occurs along the entire value chain.

36. Second, with improved, cost-effective measurement techniques[43] to identify where and why food losses occur, producers, policymakers and other stakeholders can better evaluate interventions. Food loss and waste tends to be more prevalent towards the production and consumption ends of the spectrum, with production losses being most significant in developing countries and consumption waste being more prevalent in developed countries. It will be important to strengthen urban-rural linkages with a view to reducing food losses and promoting food safety and food labelling, including in rural locations.

37. Third, significant investment will be required to achieve the desired reductions in food loss and waste. Evidence suggests that the causes of pre- and post-harvest losses include pests, disease and lack of rainfall; lack of appropriate harvesting techniques and technologies; and damage during selection due to a lack of worker training and experience. Appropriate interventions could include investments leading to improved agricultural practices, education, better seeds for resilience and improved local transport infrastructure.

Food safety

38. Food-borne illnesses affect an estimated 600 million people and result in 420,000 premature deaths annually.[44] In low- and middle-income countries alone, food safety issues lead to productivity losses of $95 billion a year. Failure to comply with regulatory requirements relating to food safety contributes significantly to food losses. The incineration of aflatoxin-contaminated grain is one notable example that is frequently encountered in developing countries.

39. The United Nations supports actions on multiple fronts to enhance the participation of all countries in the standard-setting work of the Codex Alimentarius Commission and in facilitating the implementation of Codex standards; increasing investment in national food control systems; leveraging private sector investment in building safe food supply chains; strengthening cross-sectoral collaboration and applying the multisectoral “One Health” approach; combating and containing antimicrobial resistance; ensuring adherence to adequate food safety management standards along food chains, including those serving informal markets; and paying particular attention to small-scale family farmers, small and medium-sized enterprises and vulnerable populations.

40. Trade contributes to food availability and diet diversification throughout the world, but it also increases the probability that the food produced in one place will affect the diet and health of people elsewhere. As a result, global food safety and nutrition measures applicable across borders, institutions and disciplines, including the establishment of evidence-based international standards for food safety and nutrition, have become more important than ever before. It is of paramount importance to ensure that globally traded food is safe and compliant with

[42] Luciana Delgado, Monica Schuster and Maximo Torero, “The reality of food losses: a new measurement methodology”, International Food Policy Research Institute discussion paper No. 1686 (2017).

[43] Ibid.

[44] WHO, “Food safety”, fact sheet, 4 June 2019, available at www.who.int/news-room/fact-sheets/detail/food-safety.

internationally agreed food standards established by the Codex Alimentarius Commission. Ensuring food safety will influence the ability of the international community to achieve the goal of zero hunger for a global population that is projected to reach 8.5 billion by 2030.

41. Mycotoxins essentially render food unsafe and unavailable to consumers; such food is therefore lost. To reduce those losses, a number of technical cooperation projects in the African region have equipped some Member States to regularly test for and monitor mycotoxins in foods that would otherwise be discarded, and to create awareness among stakeholders on mitigation, including the proper handling of foods that are prone to contamination by those toxins. Routine testing and monitoring programmes can thus help enhance food safety in the region.

Addressing the impacts of climate change through adaptation and enhanced resilience

42. Agriculture and food systems are particularly vulnerable to the impacts of climate change but are also significant contributors to greenhouse gas emissions and a fundamental part of the solution to tackle the impacts of climate change. Reducing the carbon footprint of agricultural and food systems can help countries deliver on the 2030 Agenda for Sustainable Development as well as the Paris Agreement.

43. Many aspects of the agriculture and food system, from food production, supply and distribution processes to consumer behaviour, can increase the global carbon footprint. The Agriculture, Forestry and Other Land Use sector produces an estimated 21 per cent of total greenhouse gas emissions. Including emissions resulting from energy use in the processing, trade and consumption of food, the total amount of net greenhouse gas emissions from the food and agriculture sector amounts to 26 per cent of total emissions. In line with the commitments made by countries to achieve all of the Sustainable Development Goals, in particular Goal 2.4, agricultural systems will need to undergo a vast transformation and become more resilient and adaptive to climate change, while increasing production and reducing such emissions.

44. Agricultural trade patterns have evolved and are expected to continue to change in the coming years, reflecting the uneven impact of climate change on food systems across the globe. Climate change alters the comparative advantage and competitiveness of agriculture across regions and countries, and international trade could play a particularly important role in adaptation efforts, for example by allowing food to move from surplus to deficit areas to address production shortfalls arising from extreme weather events. In the long term, international trade could contribute to efficiently adjusting agriculture and food systems across countries. Measures to promote adaptation and mitigation in agriculture will be part of broader agricultural and food security policies, subject to the rules and disciplines of the Agreement on Agriculture.

45. The report published by FAO on the state of food and agriculture in 2016[45] focused on the effects of climate change on agriculture and food security. In that report, it was noted that although the impacts of climate change on agricultural yields and livelihoods vary, they might be catastrophic in some areas, especially for the 475 million smallholder farm families in the world. Urgent attention is needed to improve infrastructure, extension services, climate information, market access, credit and social insurance to enable such families to adapt and diversify their livelihoods. To that end, it will be necessary to align and integrate policies on the climate, agriculture, food and nutrition in order to manage trade-offs, and to define ways to measure the

[45] FAO, *The State of Food and Agriculture: Climate Change, Agriculture and Food Security*, 2016.

success of actions. Such efforts should also leverage agriculture and climate financing mechanisms.

46. The AquaCrop software programme is one example of strengthening capacity to assess how changing water availability due to climate change affects agricultural production. AquaCrop is a crop growth model developed by FAO to address food security and assess the effect of the environment and management on crop production. AquaCrop simulates the yield response of herbaceous crops to water and is particularly well suited to conditions in which water is a key limiting factor in crop production. The programme has been used in the Arab region, with promotion by the Economic and Social Commission for Western Asia, to manage scarce water resources.

47. Opportunities to address the impact of climate change through adaptation and shaping agriculture and food systems resilience include the following:

(a) Shifting diets towards sources with lower ecological impact;

(b) Linking the resilience of ecosystems and biodiversity in a manner that integrates urban and rural policy, programmes and investments;

(c) Reducing the amount of food loss and waste, which accounts for 8 per cent of global greenhouse gas emissions. Interventions should target commodities and points in the supply chain that are associated with higher levels of those emissions and at which there is potential for sizeable reductions in losses;[46]

(d) Reducing fossil fuel dependence and embracing renewable energy sources for food production systems;

(e) Diversifying crops and animals, including the diversity of species, habitats and genetics, which can bring significant benefits for improving soil and plant health, conserving biodiversity and reducing exposure to the impacts of climate change, as well as to pests and diseases;

(f) Investing more in innovative technologies and their adoption;

(g) Applying climate-smart agricultural practices that promote productivity, help with adaptation to climate change and increase carbon sequestration.

V. Partnerships to mobilize means of implementation and transform food systems

Data and evidence on progress towards means of implementation targets

48. Although the international community and regional bodies have reiterated their commitment to increasing public investment in agriculture and recognized the role of agriculture in accelerating economic growth, in particular in developing countries, government spending on the agriculture sector, measured in terms of its contribution to the total economy, has been declining. At the global level, government expenditure on the agriculture sector compared with the sector's contribution to gross domestic product (GDP) fell from 0.42 in 2001 to 0.26 in 2017.[47] Since 2001, central Governments have allocated less than 2 per cent of their expenditure to agriculture. By contrast, the sector's contribution to global GDP increased from 4.13 per cent to 6.15 per cent in the same period.

[46] FAO, *The State of Food and Agriculture 2019*, forthcoming.

[47] FAO, "Government expenditure on agriculture", February 2019, available at http://www.fao.org/economic/ess/investment/expenditure/en/.

49. The decline in public investment and its effects on the agriculture sector are further exacerbated by declines in official development assistance (ODA). The 2015 pledge made by donor countries to increase development finance is not meeting expectations. Public aid is stagnating, with ODA totalling $153 billion in 2018 and less of that assistance going to least developed countries, where it would be needed most.[48] Statistics from the Organization for Economic Cooperation and Development show that foreign direct investment in developing countries also dropped by around one third over the 2016–2017 period. Aid to agriculture in developing countries has fallen from nearly 25 per cent of all sector-allocable aid from donors in the mid-1980s to only 5 per cent in 2017, representing a decline of $12.6 billion. By contrast, in 2017 the agriculture sector benefited from the largest absolute increase in aid-for-trade commitments, which rose to $1.7 billion.[49]

50. Development practitioners increasingly recognize that delivering on the Sustainable Development Goals and meeting the expectations of the "billions to trillions" investment agenda requires innovative approaches to mobilize the private sector and other sources of investment. To bridge the financial gap required to achieve the Sustainable Development Goals, development financing institutions and donors have started to use public official development assistance funds to create de-risking instruments and blended finance to leverage private investment. This trend is also visible in the agriculture sector, which is generally considered too risky by private lenders and investors, especially at the primary production level.

51. To incentivize private investment, United Nations agencies are increasingly facilitating public-private dialogue to create an enabling environment with more predictable and investment-friendly policies. Specialized agencies, including FAO in the agriculture sector, are also addressing some of the root causes of the risks typically associated with investment, such as inconsistent and unpredictable agricultural and/or subsector policies and legislative, regulatory and institutional bottlenecks. These initial efforts also include measures to promote inclusive economic growth to ensure that revenues benefit both investors and producers, to reduce risk for investors and to benefit small-scale food producers for pro-poor and inclusive economic growth.

52. In terms of production costs, small-scale food production and family farming can be competitive with large-scale commercial farms. In addition, small-scale food producers and local food systems provide the majority of food consumed by the urban and rural poor. However, they are often disadvantaged by factors unrelated to their size, such as the institutional environment and a lack of capacity and access to the services, technology and innovation needed to enhance productivity and incomes. Public investment can play a critical role in research and development tailored to the needs of small-scale producers and in enabling conditions for investments to be devoted to or provide benefits for small-scale producers and family farmers, including their access to innovation and technology. In many countries, the decline in public investment has mirrored the decline of public sector extension services, with limited to no replacement by other forms of access to such services for small-scale producers.

53. The value of world agricultural trade nearly tripled between 2000 and 2016, reaching a total of $1.4 trillion. Even in real terms (constant 2000 prices), agricultural trade has practically doubled. With the expansion of overall trade, the participation of emerging economies in international agricultural trade has increased in importance. Low- and middle-income countries have expanded their share of transactions in global agricultural markets, reflecting rapid growth in South-South trade. The least

[48] OECD, "Development aid drops in 2018, especially to neediest countries", 10 April 2019.

[49] Organization for Economic Cooperation and Development (OECD), *Global Outlook on Financing for Sustainable Development 2019: Time to Face the Challenge* (Paris, OECD Publishing, 2019).

developed countries, by contrast, have seen a rapid deterioration in their agricultural trade balance; their trade deficit has quintupled, rising from $4.3 billion in 2000 to nearly $23 billion in 2016. While trade volumes have risen, agricultural prices have declined. As measured by the FAO Food Price Index, international benchmark prices declined by 27 per cent from 2009 to 2018. With higher trade volumes and lower prices, price volatility has also fallen, in particular compared with the large price swings observed from 2008 to 2012.[50]

54. High food prices can pose a threat to agricultural markets and to food security, especially among the most vulnerable people, in particular the poor in rural and urban areas. Although a broad general decline in world food prices has been observed in the past decade, one in four countries in Africa and Western Asia and one in five countries in Central and Southern Asia experienced high general food prices in 2016 and 2017. Landlocked developing countries were particularly prone to high general food prices, with about one third of countries affected during the same period.[51]

55. Innovation and new technologies in food systems, agriculture, forestry and fisheries are of growing importance in the pursuit of the Sustainable Development Goals. In the past decade, innovations and technologies have emerged that are changing the way people produce, trade and consume food and other agricultural, forestry and fishery products. Those emerging technologies drive more efficient, productive, transparent and sustainable food systems, demonstrating real promise in addressing many of the obstacles to global food security. They have become an integral part of innovation, often summarized under the heading “Agriculture 4.0”, whereby technologies are used to observe, measure, record, analyse and respond to data gathered in food systems to maximize output, minimize inputs and optimize information flows.

56. Precision agriculture, for example, uses remote sensing technology, satellite information, vast computing power, robots and drones to optimize agricultural output while conserving resources. Technology-supported smart farms produce fruit and vegetables at very high yields irrespective of natural growing conditions in or near cities or in extreme weather conditions. Gene editing refers to a group of technologies that allows genetic material to be added, removed or altered to breed crops with resistance to abiotic (e.g. drought, flood, salt, nutrient deficiencies) and biotic stresses (e.g. pests and diseases), different maturity times and preferential characteristics for harvesting, preserving freshness and reducing losses.

57. Digital technologies enable smarter agricultural value chains by collecting data on the conditions and characteristics of the production, processing, movement and storage of agricultural products; by analysing data for predictive and data-driven decision-making; and by sharing data securely in agricultural value chains. These technologies can bring greater accountability, efficiency, transparency and traceability in agricultural value chains, enhance food safety, facilitate access to trade finance and other types of agricultural financial services, improve market transparency, provide greater legal certainty in land tenure systems and strengthen accountability for compliance with international agreements related to agriculture.

58. However, costly technologies are not accessible for small-scale producers and least developed countries. Measures should be taken to ensure that developing countries and family farms can gain access to the know-how, technology and innovation they need, with pro-poor technology and innovations developed and made available through technology transfer and other means.

[50] FAO, “FAO Food Price Index”, available at http://www.fao.org/worldfoodsituation/foodpricesindex/en/.

[51] Ibid.

59. The United Nations system is partnering with researchers and investors to make new technology available and affordable. The use of digital technologies, for example, is improving access to information, markets and services for farming households. Other innovations include climate technologies in agrifood systems that help countries to reduce their greenhouse gas emissions and adapt to climate change. The challenge going forward is to enlarge the scope of those innovative subnational and national approaches in agriculture to achieve greater impact, in particular for poverty and hunger reduction.

Global partnership initiatives and their complementarities

60. As a follow-up to the Second International Conference on Nutrition, the General Assembly declared the United Nations Decade of Action on Nutrition (2016–2025) in April 2016, providing stakeholders with a unique, time-bound opportunity to strengthen joint efforts and achieve a healthier and more sustainable future. Country commitments, of which several have been submitted, for action on nutrition are key to achieving the objectives of the Decade to leverage government policy development, investments and actions on the ground. The Decade supports country collaboration on nutrition through action networks.

61. The United Nations Network for Scaling Up Nutrition provides a platform to increase United Nations coherence, coordination and convergence on nutrition at country level as a contribution to the Scaling Up Nutrition movement. The Network leverages the collective strengths of United Nations agencies to foster innovations, find efficiencies and enhance complementarity across agencies and with Governments and Scaling Up Nutrition subnetworks. These activities enable the United Nations to work more effectively to deliver nutrition actions at scale and to ensure value for money and enhanced results. In addition, the Network leverages the nutrition resources, skills, expertise and knowledge of its member agencies, programmes and funds to support convergence along the six action areas of the Decade of Action on Nutrition in support of relevant national efforts.

62. The United Nations Decade of Family Farming (2019–2028), proclaimed by the General Assembly in its resolution 72/239 of 20 December 2017, calls for Governments to develop public policies and investments to support family farming from a holistic perspective, to achieve the Sustainable Development Goals and to leave no one behind. The Decade, supported by a secretariat jointly provided by FAO and IFAD, will mobilize actions in support of family farming, simultaneously addressing targets across the Goals and addressing the three dimensions of sustainability. With the participation of all stakeholders concerned, the Decade calls for actors to mobilize around seven pillars, and to enable family farmers as critical agents of change.

63. Comprising more than 150 members, representing Governments, the private sector, international agencies and civil society, the Sustainable Food Systems Programme, launched under the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, provides a platform to create a more sustainable basis for food systems.[52] The programme supports actions towards progress on Sustainable Development Goal 12 as a key integrator for the achievement of the majority of the Goals, including Goal 2. The importance of the programme was recognized in paragraph 26 of the ministerial declaration of the 2018 high-level political forum on sustainable development (E/HLS/2018/1).

64. In 2017, the Committee on World Food Security decided to embark on a multi-stakeholder policy process that will lead to the development of voluntary

[52] See www.oneplanetnetwork.org/sustainable-food-system.

guidelines on food systems and nutrition, to be presented to the Committee for endorsement in October 2020. The voluntary guidelines are expected to reduce policy fragmentation between the food, agriculture and health sectors, while also addressing livelihood and sustainability challenges. The guidelines are also intended to make food systems nutrition-sensitive and to promote secure access to safe, diverse and high-quality diets for everyone. The policy convergence process is supported by the scientific evidence provided by the High-level Panel of Experts on Food Security and Nutrition in its report on nutrition and food systems, which was launched in 2017.[53]

65. Nutrition for Growth is led by a partnership between the Governments of Brazil, Japan and the United Kingdom of Great Britain and Northern Ireland, and championed by philanthropic foundations and civil society organizations. At the original Nutrition for Growth summit, held in London in 2013, numerous stakeholders committed to preventing at least 20 million children from being stunted and to saving at least 1.7 million lives by 2020. Donors made commitments in the order of $4 billion for nutrition-specific projects up to 2020 and $19 billion in complementary nutrition-sensitive projects between 2013 and 2020. The 2020 summit in Japan will represent an opportunity to set the world on a path towards achieving the Sustainable Development Goal target to end malnutrition in all its forms by 2030 and much more.

66. In 2015, the Group of Seven adopted the Broad Food Security and Nutrition Development Approach. On that basis, in 2016 the Group endorsed the Vision for Action on Food Security and Nutrition, in which it outlined collective actions in three priority areas: (a) empowering women; (b) improving nutrition through a people-centred approach that is focused on the diverse food security challenges that people face across the rural-to-urban spectrum; and (c) ensuring sustainability and resilience within agricultural and food systems.

67. In 2016, the Group of 20 endorsed its Action Plan on the 2030 Agenda for Sustainable Development, making a commitment to position sustainable development high on the Group's agenda, to enhance policy coherence on sustainable development and to further align the Group's work with the implementation of the 2030 Agenda. Since 2016, the Group has collectively endorsed multiple initiatives to improve soil productivity through sustainable soil management, to promote the sustainable use of water and natural resources in agriculture and to foster youth empowerment, young agro-entrepreneurship and youth employment.

68. A monitoring framework for addressing food security (with its four components) was developed by the Economic and Social Commission for Western Asia, the Arab Organization for Agricultural Development, the Arab Centre for Studies on Arid Zones and Dry Lands and FAO. The framework considers how action across the 17 Sustainable Development Goals and the related targets affect food security.

69. The International Atomic Energy Agency, through its technical cooperation programme, helps countries to build capacity in using nuclear/isotopic and complementary techniques to understand and tackle key challenges ranging from developing more effective systems of agricultural soil and water management to assessing human nutrition programmes and understanding disease vectors and epidemiology. The technical assistance provided to Member States focuses on addressing development priorities, using a demand-driven approach.

70. Together with other stakeholders, UN-Habitat has published a set of guiding principles for urban-rural linkages and a framework for action to support integrated

[53] See High-level Panel of Experts on Food Security and Nutrition, *Nutrition and Food Systems*, September 2017.

territorial development and implementation to address Sustainable Development Goal 2 and other Goals across the 2030 Agenda for Sustainable Development.[54]

VI. Conclusions and recommendations

71. **The 2030 Agenda for Sustainable Development demands a "future of food" that is inclusive, equitable, nutrition-driven, dynamic, efficient, safe, respectful of planetary boundaries, stable and resilient – in short, a food system that is fully sustainable in all dimensions. To accomplish this objective, it is recommended that Governments and their development partners:**

(a) **Adopt and promote a food systems perspective to identify opportunities, trade-offs, entry points, instruments, mechanisms, risks and mitigation responses for transforming food systems to eradicate poverty and hunger, improve nutrition and food security, promote sustainable agriculture and the sustainable use of natural resources and ecosystems, reduce greenhouse gas emissions and protect and restore biodiversity, while recognizing the differences in opportunities and trade-offs that exist across regions and ensuring that no one is left behind;**

(b) **Support coherent institutional and policy measures aimed at making food systems more nutrition-driven by implementing measures to improve:**

(i) **Food supply through strategies that promote diversity and improve access to nutritious foods, in particular fruits and vegetables;**

(ii) **Food environments to address the physical, economic, policy and sociocultural factors that influence people's food and beverage choices;**

(iii) **Food demand through measures designed to influence consumer behaviour;**

(c) **Strengthen or support the formation of multi-stakeholder alliances to enable inclusive food systems that strengthen the voice and capacity of small producers to engage local, national and, where appropriate, regional and global market partners to reach new markets, improve capabilities and competitiveness, adopt new practices and exploit new technologies to improve small-scale food producers' incomes, productivity, sustainability and resilience;**

(d) **Support the development and implementation of new analytical methods to identify and measure sources of food loss and waste and develop appropriate cost-benefit matrices to estimate costs and impacts, as well as trade-offs, among different policy goals and interventions to reduce food loss and waste and contribute to ending hunger and all forms of malnutrition;**

(e) **Provide smallholder family farmers with secure access to land and other productive resources, as well as to services that increase their resilience;**

(f) **Encourage Member States to account for urban-rural linkages in their respective national and subnational development planning policies and processes to strengthen the economic, social and environmental links between urban, peri-urban and rural areas, including their surrounding territories;**

(g) **Actively participate in and support the multi-stakeholder policy process of the Committee on World Food Security for the development of voluntary guidelines on food systems and nutrition;**

[54] UN-Habitat, *Urban-Rural Linkages: Guiding Principles – Framework for Action to Advance Integrated Territorial Development*, 2019.

(h) **Strengthen agriculture and food systems to improve adaptation and resilience to climate change, including through ecosystem services and biodiversity preservation, and incorporate poverty, hunger, food security and nutrition objectives into national climate adaption and mitigation plans;**

(i) **Increase research and capacity development to address the loss of biodiversity and scale up existing practices with proven positive impact;**

(j) **Leverage global, regional and national partnerships and initiatives to optimize the mobilization and coordination of resources, including human, material and financial resources, focusing on the role of multi-stakeholder and cross-sectoral partnerships to enable collective action and mobilize means of implementation;**

(k) **Identify, experiment with, improve and scale up new approaches to increase public, private and blended investment in agriculture and food systems;**

(l) **Promote/encourage the use and availability of innovations and new technologies in agriculture, food security and nutrition to help support more efficient, productive and sustainable food systems;**

(m) **Lead and encourage broad engagement in the United Nations Decade of Action on Nutrition (2016–2025) and the United Nations Decade of Family Farming (2019–2028), taking inclusive, nutrition-driven and sustainable food systems as an important connecting theme.**