



General Assembly

Distr.: Limited
16 November 2021

Original: English

Seventy-sixth session
Second Committee
Agenda item 20
Sustainable development

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Agricultural technology for sustainable development

The General Assembly,

Recalling its resolution [74/215](#) of 19 December 2019,

Reaffirming its resolution [70/1](#) of 25 September 2015, entitled “Transforming our world: the 2030 Agenda for Sustainable Development”, in which it adopted a comprehensive, far-reaching and people-centred set of universal and transformative Sustainable Development Goals and targets, its commitment to working tirelessly for the full implementation of the Agenda by 2030, its recognition that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development, its commitment to achieving sustainable development in its three dimensions – economic, social and environmental – in a balanced and integrated manner, and to building upon the achievements of the Millennium Development Goals and seeking to address their unfinished business,

Reaffirming also its resolution [69/313](#) of 27 July 2015 on the Addis Ababa Action Agenda of the Third International Conference on Financing for Development, which is an integral part of the 2030 Agenda for Sustainable Development, supports and complements it, helps to contextualize its means of implementation targets with concrete policies and actions, and reaffirms the strong political commitment to address the challenge of financing and creating an enabling environment at all levels for sustainable development in the spirit of global partnership and solidarity,

Recalling the Zero Hunger Challenge initiative launched by the Secretary-General at the United Nations Conference on Sustainable Development as a vision



for a future free from hunger, the Rome Declaration on Nutrition, adopted at the Second International Conference on Nutrition,¹ the United Nations Decade of Action on Nutrition (2016–2025)² and the United Nations Decade on Ecosystem Restoration (2021–2030),³ and looking forward to the upcoming Nutrition for Growth Summit, to be held in Tokyo in 2021,

Recalling also the adoption of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns by the United Nations Conference on Sustainable Development in 2012,⁴

Reaffirming the Paris Agreement⁵ and its early entry into force, encouraging all its parties to fully implement the Agreement, and parties to the United Nations Framework Convention on Climate Change⁶ that have not yet done so to deposit their instruments of ratification, acceptance, approval or accession, where appropriate, as soon as possible,

Recalling the Sendai Declaration and the Sendai Framework for Disaster Risk Reduction 2015–2030, adopted at the Third United Nations World Conference on Disaster Risk Reduction,⁷

Recalling also the Buenos Aires outcome document of the second High-level United Nations Conference on South-South Cooperation, held in Buenos Aires in March 2019,⁸

Looking forward to the Fifth United Nations Conference on the Least Developed Countries, recalling the Istanbul Declaration and Programme of Action for the Least Developed Countries for the Decade 2011–2020,⁹ recalling also relevant strategies and programmes of action, including the SIDS Accelerated Modalities of Action (SAMOA) Pathway,¹⁰ and the Vienna Declaration and Vienna Programme of Action for Landlocked Developing Countries for the Decade 2014–2024,¹¹ reaffirming the importance of supporting Agenda 2063 of the African Union and the programme of the New Partnership for Africa's Development,¹² recognizing the major challenge to the achievement of durable peace and sustainable development in countries in conflict and post-conflict situations, and noting the twenty-sixth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Glasgow, United Kingdom of Great Britain and Northern Ireland, from 31 October to 13 November 2021,

Recalling the United Nations strategic plan for forests 2017–2030,¹³ and acknowledging that forests and trees outside forests provide essential ecosystem services, such as timber, food, fuel, fodder, non-wood products and shelter, as well as soil and water conservation and clean air, and that forests and trees outside forests contribute substantially to climate change mitigation and adaptation and to the conservation of biodiversity, prevent land degradation and desertification and reduce

¹ World Health Organization, document EB 136/8, annex I.

² See resolution [70/259](#).

³ See resolution [73/284](#).

⁴ [A/CONF.216/5](#), annex.

⁵ Adopted under the UNFCCC in [FCCC/CP/2015/10/Add.1](#), decision 1/CP.21.

⁶ United Nations, *Treaty Series*, vol. 1771, No. 30822.

⁷ Resolution [69/283](#), annexes I and II.

⁸ Resolution [73/291](#), annex.

⁹ *Report of the Fourth United Nations Conference on the Least Developed Countries, Istanbul, Turkey, 9–13 May 2011* ([A/CONF.219/7](#)), chaps. I and II.

¹⁰ Resolution [69/15](#), annex.

¹¹ Resolution [69/137](#), annexes I and II.

¹² [A/57/304](#), annex.

¹³ See resolution [71/285](#).

the risk of floods, landslides and avalanches, droughts, dust and sand storms and other disasters,

Recalling also the United Nations Decade of Family Farming (2019–2028)¹⁴ and noting that sustainable agricultural technology, digitalization as well as technological, social, economic and institutional innovations build on the knowledge and capacities and respond to the needs and realities of smallholders and family farmers, in particular women and youth in rural areas, and in that regard highlighting the importance of innovation-driven development and support to entrepreneurship and innovation, and welcoming new sustainable agricultural technologies that can contribute to their transition from subsistence farming to innovative, commercial production, helping them to increase their own food security and nutrition, generate marketable surpluses and add value to their production,

Noting with great concern the severe negative impact on human health, safety and well-being caused by the coronavirus disease (COVID-19) pandemic, as well as the severe disruption to societies and economies and the devastating impact on lives and livelihoods, and that the poorest and most vulnerable are the hardest hit by the pandemic, reaffirming the ambition to get back on track to achieve the Sustainable Development Goals by designing and implementing sustainable and inclusive recovery strategies to accelerate progress towards the full implementation of the 2030 Agenda for Sustainable Development and to help to reduce the risk of and build resilience to future shocks, crises and pandemics, including by strengthening health systems and achieving universal health coverage, and recognizing that equitable and timely access for all to safe, quality, effective and affordable COVID-19 vaccines, therapeutics and diagnostics are an essential part of a global response based on unity, solidarity, renewed multilateral cooperation and the principle of leaving no one behind,

Recognizing that agricultural technology has a beneficial impact on and an important role in the successful implementation of the goals and targets of the 2030 Agenda, and in that regard taking note with appreciation of the report of the Secretary-General on progress towards the Sustainable Development Goals¹⁵ and the *Global Sustainable Development Report*, and the Secretary-General's strategy on new technologies,

Expressing concern about the high level of global hunger, which affected between 720 million and 811 million people in 2020,

Taking note with appreciation of the United Nations Food Systems Summit, convened by the Secretary-General on 23 and 24 September 2021, as well as its Pre-Summit, held in Rome from 26 to 28 July 2021, noting the Chair's Summary and Statement of Action on the Summit, issued by the Secretary-General, and recognizing that agricultural technologies have improved the productivity of agriculture and enhanced the sustainability and resilience of food production systems at the local level,

Noting the findings contained in the report of Working Group I of the Intergovernmental Panel on Climate Change entitled *Climate Change 2021: The Physical Science Basis*,

Taking note of the report of the Secretary-General entitled "Road map for digital cooperation", presented on 11 June 2020,¹⁶

¹⁴ See resolution [72/239](#).

¹⁵ [E/2021/58](#).

¹⁶ [A/74/821](#).

Taking note with appreciation of the activities of the Technology Bank for the Least Developed Countries since its operationalization, and encouraging continued support to the Bank,

Seriously concerned about the findings of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, and stressing the urgent need to step up efforts to prevent the loss of biological diversity and the degradation of land and soil,

Recognizing that the COVID-19 pandemic and mitigation measures taken in response have exposed both strengths and vulnerabilities in agriculture and food systems, the latter of which have caused disruptions to both livelihoods and food supply chains, increased food prices and constrained access to food, and that sustainable agricultural technologies, alongside other forms of innovation, can contribute to resilient, equitable, sustainable agriculture and food systems, which promote healthy diets and improved nutrition,

Recognizing also that the agriculture sector is inextricably linked with the entire food system and that agricultural technologies and digitalization can add value throughout the food system by improving the sustainability of storage, transport, trade, processing, transformation, retail, waste reduction and recycling, as well as interactions among these processes,

Stressing the crucial role of women in the agricultural sector and their contribution to enhancing agricultural and rural development, improving food security and nutrition and eradicating rural poverty, and underlining the fact that meaningful progress in agricultural and agricultural technology development necessitates, inter alia, closing the gender gap, introducing appropriate gender-responsive interventions at all stages in agricultural innovation processes, including at the policy level, and ensuring that women have equal access to agricultural technologies, related services and inputs and all necessary productive resources, including tenure rights and access to land, fisheries and forests, as well as to affordable education and training, social services, social protection, health care, health services and financial services, and access to and participation in local, regional and international markets,

Recognizing that young people play a significant role in supporting sustainable economic growth and that agricultural technology, innovation and digitalization have an essential role to play in facilitating access to agricultural skills for young women and men, improving the livelihoods of youth, creating quality and decent jobs and contributing to the prohibition and elimination of the worst forms of child labour, strengthening progress towards achieving the realization of the Sustainable Development Goals,

Recognizing also the rapid evolution in science and technological innovation and digitalization, and that the development and open access to mega data and information will bring about profound changes in agricultural research, agricultural extension and rural development,

Recognizing further that a systems approach to agricultural innovation is essential to ensure that innovations, including technologies, are aligned towards common objectives, promote collaboration, address problems relevant to farmers and offer incentives to, and the means to accelerate adoption by, smallholder farmers, and that it is essential to enable interactions and knowledge flows among the different stakeholders in the agricultural innovation system, including farmers' organizations, research institutions, extension services, governments, international organizations, the private sector and civil society,

Acknowledging the role and work of civil society, the private sector and academia in furthering progress in developing countries and promoting sustainable agriculture and management practices, the use of agricultural technology, digitalization and the training of smallholder farmers, in particular rural women, and that multi-stakeholder partnerships can contribute to the financing of food security and nutrition as well as sustainable development by mobilizing additional resources through advocacy and innovative funding mechanisms and facilitating the coordinated and targeted use of existing resources, aligning them more effectively with global and national public priorities,

Stressing the need to design sustainable food systems that conserve the natural resource base and enhance the provision of ecosystem services, while increasing productivity, and that respond to the challenges posed by, inter alia, climate change, the depletion and scarcity of natural resources, urbanization and globalization, and recognizing that agricultural technology and digitalization can contribute to food security and nutrition and help to build resilience,

Emphasizing that participatory research, in conjunction with effective, pluralistic and demand-driven extension and rural advisory services, is critical in order to ensure that agricultural technologies respond to the demands and needs of all farmers, including family farmers and smallholder producers,

Recognizing the need to further enhance the linkages and synergies between agricultural technology and innovative sustainable agricultural practices, including agroecological principles, resource use efficiency, circular economy, recycling, optimizing external inputs, integration, crop rotation and diversification, no-tillage, soil health monitoring, agroforestry and regenerative agricultural practices, and by effectively combining appropriate technologies, including biotechnologies, with traditional and indigenous knowledge, in order to design sustainable farming systems that strengthen the interactions between plants, animals, humans and the environment for food security and nutrition, enhance productivity, improve nutrition, conserve the natural resource base and attain more sustainable and innovative food systems,

Stressing the need to support and strengthen information systems and statistical systems for better disaggregated data collection and processing, which will be key in monitoring progress in the adoption of sustainable agricultural technologies and their impact on improving food security, nutrition and sustainable agriculture,

1. *Takes note* of the report of the Secretary-General;¹⁷
2. *Urges* Member States, relevant United Nations organizations and other stakeholders to strengthen efforts to improve the development of sustainable agricultural technologies and their transfer and dissemination under mutually agreed terms to developing countries, especially the least developed countries, in particular at the bilateral and regional levels, and encourages international, regional and national efforts to strengthen capacity and foster the utilization of local know-how in developing countries, especially that of smallholder and family farmers, in particular rural women and youth, in order to enhance the productivity and nutritional quality of food crops and animal products, promote sustainable practices in pre-harvest and post-harvest agricultural activities and enhance food security and nutrition-related programmes and policies that take into consideration the specific needs of women, young children and youth, with particular attention to securing the prohibition and elimination of the worst forms of child labour, strengthening progress towards achieving the Sustainable Development Goals;

¹⁷ [A/76/227](#).

3. *Recognizes* the important role of family farming and smallholder farming in contributing to the achievement of food security and improved nutrition and the role that family farms play in contributing to global food security, poverty eradication and sustainability, as well as job creation, and in ending chronic child malnutrition, and that agricultural technologies should be adapted to the needs of small- and medium-scale family farmers and combined with credit access for sustainable production and significant investment in rural infrastructure as well as the training and education of those who would most benefit from them;

4. *Calls upon* Member States and relevant United Nations organizations and other stakeholders to mainstream gender perspectives into agricultural policies and projects and to focus on closing the gender gap by, inter alia, encouraging gender-balanced investments and innovation in small-scale agricultural production and distribution, and a gender-responsive value chain supported by integrated and multisectoral policies, in order to improve women's productive capacity and incomes, strengthen their resilience and achieve equitable access to all forms of financing, markets and networks, labour-saving technologies and agricultural technology information and know-how, equipment, decision-making forums and associated agricultural resources to ensure that agriculture, food security and nutrition-related programmes and policies take into consideration the specific needs of women and the barriers that women face in accessing agricultural inputs and resources;

5. *Encourages* Governments to develop and implement youth-focused agricultural development projects and programmes, including through training, education, financial inclusion services, including microcredit services, and capacity-building, including with regard to innovation, in association with the private sector, in order to stimulate the interest and the involvement of youth in agriculture, especially in agroenvironmental sustainability through access to microcredit and capacity-strengthening, to develop agricultural technological innovation through private partnerships;

6. *Remains concerned* that agricultural innovations and technologies often bypass ageing farmers, and in particular ageing women farmers, as many do not possess the financial resources or the skills to adopt new practices, and in this regard stresses the need to strengthen the capacity of ageing farmers through continued access to financial and infrastructure services and training for improved farming techniques and technologies;

7. *Acknowledges* the importance of adopting innovative and sustainable food systems by harnessing science, technology and innovation, including co-innovation, promoting participatory research, demand-driven extension and rural advisory services and increased, responsible and inclusive public and private investment, building human capacity, encouraging entrepreneurship, creating an enabling economic and institutional environment and strengthening knowledge flows, in particular between scientists and farmers, taking into account local and traditional knowledge systems, in combination with new sources of knowledge;

8. *Invites* the United Nations system and all relevant stakeholders to consider ways to make available, on mutually agreed terms, data and information relating to agriculture and food systems, including meteorology, big data, the Internet of things, satellite imagery, early warning systems and other data-based technologies, that could help to build the resilience of family farmers and smallholder producers, optimize yields and support rural livelihoods;

9. *Recognizes* that weather forecasting and climate services and products allow farmers to better plan agricultural activities, optimize production, manage climate-related risks and integrate climate change adaptation into their decisions, and therefore encourages governments and meteorological agencies to improve the

collection, dissemination and analysis of agrometeorological and agroclimatological data and information;

10. *Acknowledges* that technological innovations can be supported by financial innovations and financial support, such as de-risking strategies and blended finance options, and that blended finance mechanisms are new institutional models that link public and private financing and patient capital with equity investments and promote schemes that more effectively distribute investments to small-scale enterprises and producers;

11. *Underlines* the importance of supporting and advancing research in improving and diversifying crop varieties and seed systems, as well as supporting the establishment of sustainable agricultural systems, sustainable management practices and the use of new and existing technologies, such as conservation agriculture, integrated soil fertility management, integrated farming systems, animal disease prevention and control and integrated pest management, precision agriculture, irrigation, livestock husbandry and biotechnologies, in order to make agriculture more sustainable and productive and, in particular, to make crops and farm animals more resistant to diseases, including drug-resistant infections, considering international standards in this regard, pests and environmental stresses, including the impacts of climate change, drought and extreme rainfall events, in accordance with national regulations and relevant international agreements;

12. *Stresses* the urgent need to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, and urges Member States to continue to engage in adaptation planning processes and the implementation of mitigation actions;

13. *Recognizes* that recovery efforts from the COVID-19 pandemic present an opportunity to promote sustainability and increase resilience of agriculture and food systems to the impact of the pandemic and future crises, including through the use of technology and innovation in all its forms, including digital services that can increase access to financial services for small-scale producers and family farmers, including in rural areas, to address mobility restrictions and bank closures, agricultural extension services, weather and climate services, and online platforms that can enable producers to sell directly to consumers, leading to increased profits, improved supply chain efficiency, reduced wastage and better financial inclusion, leveraging artificial intelligence in supporting sustainable agriculture, which can help to improve the overall harvest quality and accuracy, and calls upon all relevant stakeholders to continue to develop policies, investments and partnerships that help to realize the potential of technologies to transform agriculture and food systems, while tackling the persistent digital divides, including the gender digital divide, in order to build back better and achieve the Sustainable Development Goals;

14. *Also recognizes* that sustainable agricultural mechanization can have potential drawbacks but could also help address shortages of labour, ease drudgery, increase incomes, enhance productivity and the timeliness of agricultural activities, promote efficient resource use, enable better market access and attract new investment and talent into agriculture, thereby creating better prospects for sustainable growth and support measures to mitigate climate and weather-related hazards, and acknowledges that mechanization and digitalization can also create new and higher-paying jobs in agricultural value chains, making it more attractive for youth to stay in rural areas;

15. *Stresses* the need to significantly reduce pre-harvest, post-harvest and other food losses and waste throughout the food supply chain through, inter alia, improved production planning, the promotion of resource-efficient production and processing practices, improved preservation and packing technologies, improved

transportation and logistics management and enhanced household and business awareness of food losses and waste prevention, to help all actors in the value chain to enjoy greater benefits and to contribute to environmental protection;

16. *Recognizes* that energy-efficient food systems represent a key component in transitioning to sustainable food and agriculture;

17. *Also recognizes* that strengthening urban-rural linkages can improve both rural and urban food security and nutrition, and in this regard highlights the need for integrated urban and territorial agriculture land planning, improved rural-urban transportation links, food packaging technology and cold chain development to reduce food loss, and for effective trade links across the urban-rural continuum, which will contribute to ensuring that small-scale farmers and fishers are linked to local, subnational, national, regional and global value chains and markets;

18. *Further recognizes* that urban farming and agriculture can improve the food security and nutrition of, and foster income opportunities for, urban dwellers, and in this regard highlights the need to further develop agricultural technology in support of sustainable urbanization, including sustainable intensification through indoor and vertical farming, the use of automation to overcome intensive labour challenges, the innovative use of urban spaces for agriculture and the promotion of urban farming, in order to reduce hunger and malnutrition and to promote sustainable urban development;

19. *Underlines* the importance of the sustainable use and management of water resources to increase and contribute to agricultural productivity, calls upon stakeholders to promote integrated water resources management in agriculture and adapt agricultural systems to improve their overall water efficiency and water productivity, and their resilience to water stresses, inter alia, by developing and implementing adaptive water and agricultural strategies and action plans based on a comprehensive approach to the long-term availability and variability of all water sources, reducing water scarcity risks through integrated water resources management options, designing and implementing agricultural and landscape management practices that increase the resilience of agricultural systems to water stress and reduce pollution, making rain-fed agriculture systems a more reliable option, investing in an enabling environment and mobilizing the full set of tools available to them, and calls for further efforts to develop and strengthen irrigation facilities and water-saving technology, which can also enhance resilience to the current and projected adverse impacts of climate change;

20. *Encourages* Member States, civil society and public and private institutions to develop partnerships to support financial and market services, including training, capacity-building, infrastructure and extension and rural advisory services, and calls for further efforts by all stakeholders to include smallholder farmers, in particular rural women and youth, in planning and in taking decisions about making appropriate sustainable agricultural technologies and practices accessible and affordable to them, and strengthen the links between community-based initiatives and financial institutions, including through the promotion of financing tools that foster agricultural sustainability;

21. *Recognizes* the important role of information and communications technology, as well as digitalization and e-agriculture, in achieving the Sustainable Development Goals, which constitute tools for improving agricultural productivity, practices and smallholder livelihoods, strengthening agricultural markets and institutions, improving agricultural extension and rural advisory services, empowering farmer communities, keeping farmers and rural entrepreneurs informed about agricultural innovations, weather conditions, input availability, financial services and market prices and connecting them with buyers, and stresses the need to

ensure the access of women and youth to information and communications technology, digitalization and e-agriculture, especially in rural areas;

22. *Calls upon* Member States to include sustainable agricultural development as an integral part of their national policies and strategies, notes the positive impact that North-South, South-South and triangular cooperation can have in this regard, and urges the relevant bodies of the United Nations system to include elements of agricultural technology, research and development in efforts to realize the 2030 Agenda for Sustainable Development,¹⁸ with a focus on the research and development of technology that is affordable, durable and sustainable and that can be easily used by and disseminated to smallholder farmers, in particular rural women and ageing farmers;

23. *Requests* relevant United Nations organizations, including the Food and Agriculture Organization of the United Nations, the International Fund for Agricultural Development and the United Nations Conference on Trade and Development, to promote, support and facilitate the exchange of experience among Member States through, inter alia, recommendations and other public goods related to ways to promote sustainable agriculture and increase the adaptive capacity of agriculture and the use of a broad range of agricultural technologies that support more sustainable food systems, build long-term fertility, healthy and resilient agroecosystems and secure livelihoods and have a positive impact on the entire value chain, including technology for post-harvest crop storage, processing, handling and transportation, including in pressing environmental circumstances;

24. *Underlines* the instrumental role of agricultural technology, agricultural research and innovation and technology transfer on mutually agreed terms and the sharing of knowledge and practices in furthering sustainable development and in achieving the Sustainable Development Goals, calls, therefore, upon Member States, and encourages relevant international bodies, to support sustainable agricultural research and development, emphasizes that research outputs should be appropriate to the needs of and accessible to end users, including governments, water managers, large-scale private sector enterprises and smallholder farmers, and in this regard calls for continued support to the international agricultural research system, including the research centres of CGIAR and other relevant international organizations and initiatives;

25. *Stresses* the importance of indicators that can be used to formulate targeted policies towards the adoption of agricultural technology and to measure their impact on the Sustainable Development Goals, and in this regard encourages Member States, in cooperation with all relevant stakeholders, to continue to contribute to the ongoing work of the Statistical Commission on the global indicator framework;

26. *Requests* the Secretary-General to submit to the General Assembly at its seventy-eighth session, within existing resources, an action-oriented report that examines the current technological trends and key advances in agricultural technologies, provides illustrative examples of the transformative use of technologies at scale and includes recommendations that assist Member States in accelerating their efforts to implement the relevant goals and targets of the 2030 Agenda, and decides to include in the provisional agenda of its seventy-eighth session the item entitled “Sustainable development”.

¹⁸ Resolution 70/1.