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**Subsidiary Body for Scientific and
Technological Advice**

Subsidiary Body for Implementation

Socioeconomic and food security dimensions of climate change in the agricultural sector

Workshop report by the secretariat*

Summary

The in-session workshop on socioeconomic and food security dimensions of climate change in the agricultural sector was held in conjunction with the UNFCCC Climate Dialogues 2020. Experts from Parties, international organizations, the private sector, research organizations, civil society and constituted bodies under the Convention as well as farmers presented experience and challenges and barriers in relation to achieving a transformation in agriculture that addresses socioeconomic and food security dimensions of climate change, and engaged in in-depth discussion on the potential, co-benefits and synergies with multiple objectives involved in such a transformation. The workshop provided the opportunity to begin discussing options for increasing synergy and collaboration among stakeholders, while highlighting that farmers must be at the centre of all discussions and decision-making on climate change, including socioeconomic and food security dimensions, and agriculture.

* This document was submitted after the due date owing to human resource constraints partly created by the pandemic.

Abbreviations and acronyms

COP	Conference of the Parties
COVID-19	coronavirus disease 2019
GCF	Green Climate Fund
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
KCI	Katowice Committee of Experts on the Impacts of the Implementation of Response Measures
KJWA	Koronivia joint work on agriculture
NGO	non-governmental organization
SB	session of the subsidiary bodies
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SDG	Sustainable Development Goal
SRCCCL	Intergovernmental Panel on Climate Change Special Report on Climate Change and Land
SSP	Shared Socioeconomic Pathway

I. Introduction

A. Mandate

1. The COP requested the SBI and the SBSTA to jointly address issues related to agriculture, including through workshops and expert meetings, working with constituted bodies under the Convention and taking into consideration the vulnerabilities of agriculture to climate change and approaches to addressing food security.¹
2. The SBI and the SBSTA requested the secretariat, subject to the availability of supplementary resources, to organize six workshops to be held in the lead-up to COP 26 (November 2021) under the KJWA,² as outlined in the Koronivia road map.³ They encouraged admitted observers to participate in these workshops.
3. The SBI and the SBSTA requested the secretariat to organize the sixth workshop in conjunction with SB 52 on the subject of socioeconomic and food security dimensions of climate change in the agricultural sector. They also requested the secretariat to prepare a report on the workshop for their consideration at SB 53.⁴ They further requested the secretariat to invite representatives of the constituted bodies to contribute to the work and attend the workshops.⁵
4. The SBI and the SBSTA invited Parties and observers to submit via the submission portal⁶ their views on the subject of the workshop referred to in paragraph 3 above.⁷ They took note of the importance of issues, including but not limited to farmers, gender, youth, local communities and indigenous peoples, and encouraged Parties to take them into consideration when making submissions and during the KJWA workshops.⁸

B. Possible action by the Subsidiary Body for Implementation and the Subsidiary Body for Scientific and Technological Advice

5. The SBI and the SBSTA may wish to consider this report when reviewing the KJWA and preparing a report to COP 26 on the progress and outcomes of the work, including on potential future topics.⁹

II. Proceedings

6. Owing to the circumstances related to COVID-19, the workshop referred to in paragraph 3 above was convened by the secretariat virtually on 1 and 2 December 2020. It was open to all Parties and observers attending the UNFCCC Climate Dialogues 2020.
7. On behalf of the SBI and SBSTA Chairs, the SBI Chair, Marianne Karlsen (Norway), delivered opening remarks and detailed the mandate and objectives of the workshop. She invited Monika Figaj (Poland) and Milagros Sandoval (Peru) to co-facilitate the workshop.
8. The workshop was organized in four sessions:
 - (a) Country presentations;
 - (b) Expert panel discussion;
 - (c) Presentations on work undertaken by constituted bodies and financing entities;

¹ Decision 4/CP.23, para. 1.

² FCCC/SBI/2018/9, para. 39, and FCCC/SBSTA/2018/4, para. 61.

³ FCCC/SBI/2018/9, annex I, and FCCC/SBSTA/2018/4, annex I.

⁴ FCCC/SBI/2018/9, para. 41, and FCCC/SBSTA/2018/4, para. 63.

⁵ FCCC/SBI/2018/9, para. 42, and FCCC/SBSTA/2018/4, para. 64.

⁶ <https://www4.unfccc.int/sites/submissionsstaging/Pages/Home.aspx>.

⁷ FCCC/SBI/2018/9, para. 43, and FCCC/SBSTA/2018/4, para. 65.

⁸ FCCC/SBI/2018/9, para. 40, and FCCC/SBSTA/2018/4, para. 62.

⁹ As mandated in decision 4/CP.23, para. 4.

(d) Plenary discussion.

9. In their feedback on the organization of the workshop, Parties expressed their satisfaction with the fruitful, substantive discussions held, but raised concerns about the following related to the virtual format: connectivity and technology issues, preventing full and inclusive participation; difficulties with time management and scheduling taking into account different time zones, particularly in relation to the workshop running over time; and challenges related to coordinating groups of Parties, all of which may have had a negative impact on delegates' effective participation in the workshop.

10. Further information on the workshop, including the agenda, presentations and links to the recordings, is available on the UNFCCC website.¹⁰

III. Summary of presentations

A. Keynote presentations

11. An expert¹¹ from the Food and Agriculture Organization of the United Nations gave a keynote presentation on a systemic approach to addressing food and nutrition security. Around 750 million people worldwide are exposed to severe levels of food and nutrition insecurity, compounded by the COVID-19 pandemic. Traditionally programmes addressing food security and poverty have focused on interventions at farm level to increase food supply, thus overlooking the significance of post-harvest activities like processing and transport. In an increasingly globalized agrifood system, the challenges in achieving food and nutrition security result from the various interactions across scales and levels and go beyond food value chains.

12. The definition of food security provided by the Committee on World Food Security covers not only accessibility and nutritional and cultural dimensions, but also stability and sustainability for future generations. All stakeholders at all levels must take integrated action to address the complex challenge of achieving food security. Solutions must target the root causes of unsustainable behaviour, prioritize leverage points and address critical constraints. An inclusive approach of assessing the potential impact of decisions and interventions while minimizing trade-offs and increasing synergies is necessary for achieving sustainable development, enabling integrated interventions and better-aligned programmes to be developed through collaboration across disciplines and sectors.

13. An IPCC lead author¹² presented key findings from the chapter on food security of the SRCCCL.¹³ The fact that 821 million people in the world are undernourished while 2 billion adults are overweight or obese shows the inequality resulting from the current food system. In addition, the food system is under pressure from both non-climate stressors and climate change, with rising temperatures, changing precipitation patterns and frequent extreme weather events already affecting food security. However, it is possible to advance adaptation throughout the food system by optimizing and scaling up many existing adaptation practices. The SRCCCL notes that climate-related risks, including the rate of temperature increase, can be positively or negatively influenced by socioeconomic choices; and the level of climate-related risk also depends on the SSP: the risk to food security moves from moderate to high with global warming of between 2.5 and 3.5 °C in SSP1 but between 1.3 and 1.7 °C in SSP3.

14. The expert highlighted agriculture, food production and deforestation as major drivers of climate change, with 25–30 per cent of total global GHG emissions being attributable to

¹⁰ <https://unfccc.int/event/koronivia-workshop-on-socioeconomic-and-food-security-dimensions-of-climate-change-in-the>.

¹¹ Maryam Rezaei.

¹² Prajal Pradhan.

¹³ IPCC. 2019. *IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*. PR Shukla, J Skea, E Calvo Buendia, et al. (eds.). Available at <https://www.ipcc.ch/report/srcccl/>.

the food system. Supply-side practices can be adopted that help to mitigate climate change by reducing emissions from crop and livestock agriculture, absorbing carbon into soils and biomass, and decreasing emission intensity. The widespread adoption of a balanced diet presents opportunities for reducing emissions from food systems and improving health outcomes, while reducing food loss and waste could also help to lower emissions and improve food security. There are cropland and livestock management options that can help to reduce pressure on land and offer mitigation and adaptation synergies and co-benefits for health, livelihoods and biodiversity. However, policies, markets, institutions and governance must be in synergy for such options to be successfully implemented.

15. An expert¹⁴ from the International Panel of Experts on Sustainable Food Systems presented on diversified resilient agricultural systems for climate mitigation and adaptation. He indicated that twentieth-century conventional agriculture, which is based on uniformity and simplicity, prioritizes economies of scale and specialization and uses chemistry to feed and protect plants, is unsustainable. Food systems are currently contributing to not only about one third of total global GHG emissions but also to other negative effects, such as pollution, biodiversity loss, land degradation, malnutrition and inequity; and they are also vulnerable to climate change and need to adapt. However, incremental improvements to the existing agricultural system will not be enough to enable achievement of the Paris Agreement goals or the SDGs; and necessary change is being prevented by several structural lock-ins, including the concentration of power in the agrifood business and the inadequacy of indicators of success in agriculture.

16. The expert emphasized that a paradigm shift towards diversified, resilient and sustainable systems is required. This should involve co-innovation, using a combination of traditional and farmers' knowledge and innovations that are compatible with the 10 elements of agroecology to develop locally adapted sustainable solutions. Agroecology has been shown to enhance farmers' income and also benefit the environment and the climate by boosting biodiversity, restoring degraded land, enhancing soil carbon, increasing tree cover on agricultural land through agroforestry, and improving ecosystem services, such as water and nutrient cycling and pollination. The transformation of the agricultural system is also about changing social relations, empowering farmers, adding value locally and promoting short value chains that link consumers and producers. Indicators of success also need to evolve beyond the traditional yield per ha. To support the transition, it is important to apply true-cost accounting, subsidize sustainable and tax unsustainable practices, promote short value chains linking consumers and producers, and support farmers during the conversion period.

B. Country presentations

17. Representatives of six countries made presentations, in which they responded to the following questions:

(a) What is your country's experience of addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(b) How does your country address co-benefits and synergies with multiple objectives in addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(c) How does your country set goals and measure progress in addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(d) Which challenges has your country faced in addressing socioeconomic and food security dimensions of climate change in the agricultural sector, and how can the KJWA and UNFCCC constituted bodies help to address these challenges?

18. A representative of Brazil presented the country's experience of promoting a sustainable agricultural system that contributes to food security and socioeconomic development. Brazil was a food-importing country in the 1970s and 1980s. Precision farming

¹⁴ Emile Frison.

and science-based technology led to productivity gains and a 50 per cent reduction in the price of food, making food accessible and contributing to food security, sustainable development and farmers' income. While productivity increased by 386 per cent, the agricultural area increased by only 83 per cent, which saved 120 million ha forest. The key to achieving this was Brazil's investment in relevant public policy and science-based technology, promoting sustainable agriculture based on sustainable intensification, technological innovation, adaptation to climate change, and conservation of natural resources. Brazil intends to continue these efforts and use opportunities for cooperation, knowledge exchange and multilateral support as key strategies for achieving sustainable development and food security.

19. Two representatives of the European Union presented on its efforts towards a more environmentally, socially and economically sustainable food system. The COVID-19 pandemic has shown the importance of a robust and resilient food system that provides sustainable livelihoods for primary producers and access to a sufficient supply of affordable food for citizens. This food system, which is under threat from the increasing frequency of drought and floods and new pests, must be made more sustainable and resilient. Efforts towards environmental sustainability include tackling climate change, protecting the environment, preserving biodiversity, and reducing food loss and waste; while fairer income for farmers and fishers, a just transition and new business and job opportunities are important for ensuring economic sustainability. In addition, the European Union is engaged in international cooperation to support food security in developing countries, using approaches that enable stakeholders to participate fully and effectively in all stages of projects, and to recognize the important role, activities and needs of women as producers of food.

20. A representative of India presented on Indian agriculture, which is monsoon dependent. The seasonal variability of the country's rainfall, in terms of both amount and distribution, is closely associated with its socioeconomics, affecting 70 per cent of the population. As land and water availability per capita decline, the pressure on India's natural resources is expected to increase: the country will need to produce more food on essentially the same land area but with less water, nutrients, fuel and labour and in changing climatic conditions. Owing to its diversity, large land mass, limited natural resources, seasonal weather variations, predominantly agricultural economy and increasing population, India is very vulnerable to climate risks. The Government has recognized climate change as a serious obstacle to the country achieving its development goals, and has developed climate action plans and associated indicators, including for food security, nutrition and health. Adaptation is a priority, with 17 key activities for climate change adaptation in agriculture. The main challenges that India intends to address under the KJWA are developing weather forecasting models and water management technologies, enhancing climate modelling capacity, and reaching out to farmers to offer support for implementation.

21. A representative of South Africa explained that the country's agriculture was already constrained prior to the COVID-19 outbreak. This was due to several issues, including drought; lack of inclusivity caused by high barriers to entry; biosecurity issues; rising input costs due to the weakening local currency; and deteriorating market, logistics, processing and research infrastructure. By 2030, changes in temperature are anticipated to have led to reduced crop yields in many areas. Through its climate-smart agriculture strategic framework, South Africa is aiming to achieve a socially inclusive, climate-resilient, sustainable and highly productive agriculture sector and hence national food and nutrition security. It is also aiming to build its capacity for identifying and implementing evidence-based agricultural policy. Key challenges that South Africa intends to address under the KJWA are strengthening research, development and transfer in relation to new technologies; supporting agricultural insurance systems; and developing effective early warning systems and contingency plans. It also considers capacity-building for identifying and exploring technologies for adaptation to be important.

22. A representative of South Sudan presented on the rain-fed agricultural system in the country, where 87 per cent of the population depends on agriculture, livestock and forestry for its livelihood. The country has experienced significant warming of 0.4 °C per decade over the past 30 years and a 10–20 per cent decrease in rainfall since the mid-1970s with increasing variability in the annual amount and timing of the rainfall. South Sudan is implementing a

strategy for building climate resilience and reducing GHG emissions while also increasing food production, rural income, opportunities for public and private investment and access to markets. The goal is to achieve food security by 2030. Lack of technical and financial resources has led to limited capacity to adapt to the adverse impacts of climate change and low-quality climate and agricultural data. At the same time, the country faces other challenges, such as population displacement, lack of participation of youth in agricultural activities and economic decline and inflation. The representative suggested a number of activities that could be promoted under the KJWA, including enhancing climate information, early warning systems and climate risk management tools, including crop and livestock insurance; and facilitating international cooperation and financial investment in climate action that addresses socioeconomic and food security dimensions of climate change.

23. A representative of Switzerland presented an optimization model for the Swiss food system with the goal of minimizing the environmental impacts of the Swiss food supply. The model includes 29 nutrients to cover the nutritional requirements of the population, and takes into account environmental impacts in Switzerland, upstream processes and environmental impacts abroad of feed and food imported into Switzerland but not the environmental impact of food exports, retail, consumption, storage or preparation. According to the model, optimizing the food system would include significantly reducing the total number of animals in the livestock sector, but with increased egg production and a slight intensification of dairy production. The representative highlighted that environmental impacts of the food system can be reduced by over 50 per cent, mainly by reducing feed and food imports; with further reductions achievable by reducing calorie intake and avoiding food waste. Switzerland has not yet decided how this potential will be reflected in its long-term climate strategy for 2050, but identified options for action include increasing policy coherence, strengthening resilience, accelerating change, exploiting new opportunities and investing research and development.

C. Presentations by expert panellists

24. In the panel discussion, experts representing non-State actors responded to the following questions:

(a) What are the key challenges and barriers in relation to achieving a transformation in agriculture that addresses socioeconomic and food security dimensions of climate change in the agricultural sector?

(b) How can the KJWA, UNFCCC constituted bodies and other actors help to address these challenges?

25. A representative of business and industry NGOs emphasized that farmers are facing significant challenges in their efforts to produce food for a growing global population while reducing their impact on the environment and climate. The future for farming lies in an ever-evolving mix of systems that must be tailored to local conditions depending on the needs and preferences of different farmers, while integrating traditional knowledge with scientific practices and taking landscape-level approaches. The key challenge in making progress and delivering positive transformation in agriculture is ensuring that farmers have access to the widest range of tools and technologies possible for addressing climate change while maintaining food security. The representative added that new incentive schemes can support farmers in implementing sustainable practices by rewarding them for their contributions to managing climate change.

26. A representative of environmental NGOs explained that, in the context of climate change, agriculture faces many intersecting socioeconomic challenges that affect some groups more than others. Smallholder farmers and the poor are the most vulnerable as they lack resources to invest in adaptation strategies and cope with climate shocks, loss of income and high food prices. Identifying large-scale industrialized agriculture as a key contributor to climate change and vulnerability, land inequality and food insecurity, the representative suggested that the KJWA should facilitate the shift from industrial agriculture to agroecology through supportive guidelines and policies and adequate financing and investment. Possible measures include shifting subsidies away from synthetic nitrogen fertilizers and factory

farming infrastructure towards scaling up agroecological practices, supporting gender-responsive extension services and training in agroecology, and supporting local and territorial markets. Guidelines developed under the KJWA should also include that countries with high industrial livestock production and/or consumption per capita implement measures to shift towards more sustainable meat systems and find ways to address consumption and promote dietary shifts. In addition, such guidelines must encourage national Governments to promote participatory, inclusive and gender-transformative policymaking processes at the community, local and national level.

27. A representative of farmers and agricultural NGOs explained that agricultural production, rural livelihoods and economic well-being, healthy ecosystems, and food security and nutrition are complexly interrelated, increasingly interdependent and affected by the changing climate. Farmers are essential partners in accomplishing key social and economic outcomes, such as reducing hunger, creating jobs, generating economic growth in rural communities and ensuring the integrity of soil, water, forests and other ecosystem resources. Priority processes and actions towards achieving these goals include developing and enabling diversified and sustainable agricultural production strategies appropriate to different geographies, cultures and a wide variety of farm types and scales; creating private activities and public policies that incentivize markets and food system distribution infrastructure to ensure access to food for low-income households; using evidence-based and people-centred approaches; accelerating system integration of agriculture, food and nutrition research into the SDGs; and transforming, modernizing and diversifying information networks through capacity-building, knowledge exchange and impartial advice, building on farmers' traditional knowledge. Climate change adaptation and financial security for farmers are critical to both allowing farmers to move beyond subsistence livelihoods and achieving food and nutrition security for all.

28. A representative of research and independent NGOs presented socioeconomic barriers and challenges identified in a survey conducted by the Global Alliance for Climate-Smart Agriculture. First, farmers lack information on how climate change will affect their region and production systems. Extension services, advisors and farmers need accurate weather and climate information with monthly and seasonal forecasts. In addition, more specific information on how to implement climate-smart practices needs to reach farmers directly. Second, the global goals for climate-smart agriculture are not being integrated into national policies or local programmes, while national policies are not being implemented at the local level. There is also insufficient focus on addressing issues related to gender, youth, land tenure and small family farms. Third, lack of funding and incentives is the most significant barrier to farmers adopting mitigation and adaptation practices. The representative suggested that, under the KJWA, links between small family farming, ecosystem services, forests and landscapes should be assessed; Parties encouraged to develop climate-smart plans and policies for implementing the agriculture-related mitigation or adaptation goals in their nationally determined contributions; and identified mechanisms strengthened for providing greater support and investment to developing countries for implementing their climate-smart plans and projects in line with their nationally determined contributions.

29. The International Union of Food Agricultural, Hotel, Restaurant, Catering, Tobacco and Allied Workers Associations delivered a statement on behalf of trade union NGOs. Agriculture is the sector with the greatest incidence of child labour: 108 million children worldwide work in agriculture and are thus deprived of formal education and exposed to workplace hazards. Women who are both agricultural workers and primary family caregivers face additional burdens and suffer greater deprivation from environmental degradation and diminishing food security. To address these issues, the International Union advocates a rights-based approach to addressing the socioeconomic and food security dimensions of climate change, whereby the right to food must frame the shift to climate-friendly agricultural practices. Agricultural workers and smallholders must have a voice in shaping change and their representatives must have a prominent role in redesigning the food system. In the view of trade union NGOs, trade in agricultural products currently benefits agribusiness corporations, while the trade rules set by the World Trade Organization impoverish small farmers and undermine the right to food. According to the International Union, agroecology is necessary for reducing emissions and reforming the global food system in order to guarantee the right to food; and transition programmes must include income support,

education and training on sustainable practices within the food industry, and preparation for alternative jobs in environmental restoration and community care.

30. A representative of the women and gender constituency emphasized that consideration of socioeconomic dimensions of climate change in the agriculture sector requires rigorous examination of the role of inequality, especially gender inequality, poverty and other power imbalances. Recognizing and respecting land tenure and governance rights of rural communities, particularly women’s rights to land, must be central to ensuring local livelihoods and food sovereignty. There should be a strong gendered focus on adaptation in the agriculture sector, and general guidelines for action in the agriculture sector should be developed under the KJWA that focus on adaptation and take into account how power imbalances in agriculture constrain the upscaling of sustainable agriculture and agroecology. Small-scale food production is suffering as a result of the expansion of an industrial model supported by perverse incentives, including government support for free trade agreements that trigger significant negative, gendered impacts on both small farmers and forests. The representative further explained that dietary change leading to reduced demand for meat and dairy would benefit the health of the planet, human beings and other animals, and can be brought about by removing all legal, fiscal, economic and other incentives that currently promote unsustainable livestock production.

31. A representative of youth NGOs explained that harmful agricultural practices, industrial monocultures, deforestation and land-use change generate significant levels of GHG emissions. Agriculture – especially smallholder agriculture and food systems – is also severely affected by the impacts of climate change, such as soil erosion, drought, natural disasters, forced migration and economic losses. The representative made three recommendations for addressing several key challenges related to agriculture and climate change. First, the principles of intra- and intergenerational equity, gender equality, participation of vulnerable groups, non-regression and progression should be taken into consideration. Action taken in the agriculture sector should be guided by the rights to a safe climate system, food and a healthy environment. Second, policymakers need to consider issues related to nutrition, capacity development, job creation and youth access to land and finance. They should create opportunities for knowledge-sharing and meaningful and direct participation of youth in policy management. Third, rights-based transformation initiatives that take into account the socioeconomic dimensions of food production should be scaled up. All farmers and rural youth should have the means to undergo a fair agroecological transition based on circular economy principles and short value chains. Furthermore, key stakeholders must be fully included in decision-making and implementation related to changes in agriculture.

D. Presentations on work undertaken by constituted bodies and financing entities

32. Seven experts made presentations on the work of their respective body or organization, guided by the following questions:

(a) What work is your body or organization undertaking to address socioeconomic and food security dimensions of climate change in the agricultural sector?

(b) How does your body or organization address co-benefits and synergies with multiple objectives in addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(c) How does your body or organization set goals and measure progress in addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(d) Which challenges has your body or organization faced in addressing socioeconomic and food security dimensions of climate change in the agricultural sector, and how can the KJWA, UNFCCC constituted bodies and other actors help to address these challenges?

33. A representative of the Adaptation Committee noted that, although its work is not sector specific, some is relevant to agriculture; for example, its work on enhancing the effectiveness of economic diversification, such as by anchoring in scientific information to assess needs and explore options or building on local knowledge and experience. Further work on agriculture and food security is taking place under the Nairobi work programme on impacts, vulnerability and adaptation to climate change in 2021–2022, including a project to fill gaps in knowledge on water resources and agriculture. As part of its work to engage the private sector in adaptation action, the Adaptation Committee fostered the engagement of the agrifood sector in a climate change workshop.¹⁵ The Committee’s work on the links between mitigation and adaptation is also relevant to agriculture as it involves the study of synergies at different levels; as is its work on monitoring and evaluation, including a recently published technical paper on approaches to reviewing overall progress towards achieving the global goal on adaptation.¹⁶

34. A representative of the Adaptation Fund presented its projects relating to agriculture and food security, which account for more than USD 200 million of the Fund’s total portfolio worth USD 750 million. Funding has been provided for agricultural adaptation actions such as implementing climate-resilient technologies and practices; working with drought-tolerant seeds; improving irrigation systems, sustainable land management and ecosystem-based adaptation; accessing finance and markets; and implementing early warning systems. The agricultural projects are often designed to include contributions towards achieving the SDGs and multiple socioeconomic co-benefits, such as food security and improved nutrition, carbon sequestration, gender equality, sustainable growth and youth employment. The representative suggested that the outcomes of the KJWA should support overcoming the challenges in addressing socioeconomic and food security dimensions of climate change in the agriculture sector, such as by drawing attention to the need for increased and more predictable adaptation finance.

35. A Co-Chair of the Facilitative Working Group of the Local Communities and Indigenous Peoples Platform, whose theme for 2020 was food and water, presented indigenous peoples’ holistic perspective on agriculture and food sovereignty. She emphasized the importance of a rights-based approach that builds on existing agreements, such as the 2002 Declaration of Atitlán, the 2007 United Nations Declaration on the Rights of Indigenous Peoples and the recognition of their rights in the Paris Agreement, which set the minimum standards for the survival, dignity and well-being of indigenous peoples. The representative highlighted that indigenous peoples need rights to land, water and resources and to maintain and transmit traditional knowledge and scientific practices. They also need a variety of crops whose traditional integrity has been preserved and are not genetically modified, which they plant according to their traditional knowledge of weather prediction. Without the living vitality of biodiversity and ecosystems, indigenous peoples would be unable to maintain food security: a temperature increase of as little as 2 °C would put them at risk of losing land and cultural and natural heritage and disrupt cultural practices embedded in their livelihoods.

36. A representative of the GCF presented on the development of the GCF sectoral guide, which identifies three investment pathways for the Fund to support transformational change in agriculture. The first pathway promotes resilient agriculture, which is important for the 2.4 billion people on 19 million km² agricultural land in the southern hemisphere threatened by climate hazards. Key activities in this area include improving seeds, crop varieties and breeds; diversifying crops, aquaculture and livestock; and developing sustainable practices and technologies, while synergies with mitigation benefits are also important. The second pathway facilitates climate-informed advisory and risk management services, including in particular climate information and early warning systems; effective delivery mechanisms that facilitate personal relationships and multiway communication at low cost; addressing gaps in extension programmes affecting women, youth, smallholders and vulnerable groups; and financial literacy training and index insurance. The third pathway involves reconfiguring food systems, with key activities including changing how food is stored, transported, sold

¹⁵ See <https://unfccc.int/event/adaptation-committee-fostering-engagement-of-the-agri-food-sector-in-resilience-to-climate-change>.

¹⁶ See Adaptation Committee document AC18/TP/5A, available at <https://unfccc.int/documents/258955>.

and consumed; restructuring supply chains, food retail, marketing and procurement; reducing food loss and waste; encouraging consumers to demand safer, healthier and more environmentally sustainable diets; and building supply chain resilience. These three investment pathways create a matrix of agricultural activities when combined with the four drivers of paradigm shift: transformational planning and programming; catalysing climate innovation; mobilizing finance at scale; and coalitions and knowledge to scale up success.

37. A representative of the Global Environment Facility presented on its various agricultural programmes and projects. The focus of the presentation was on the Global Environment Facility's climate change adaptation portfolio, including under the Least Developed Countries Fund and the Special Climate Change Fund, with nearly USD 2 billion in approved projects and programmes. In relation to adaptation, support is being provided for collecting seasonal climate information; livelihood diversification; support for climate-resilient species; water, energy and soil conserving methods and technologies; empowering women and youth; reducing post-harvest waste; improving rural roads for market access; and mobilizing private sector engagement. Socioeconomic co-benefits of the adaptation activities include higher and more stable incomes; diversified livelihoods generating year-round income; better health and nutrition; and empowerment of women. Key global challenges in relation to adaptation in agriculture include increasing productivity, decreasing food waste and reducing GHG emissions from the food value chain. Other global challenges identified include water management in a changing climate; meeting energy demand across the food life cycle through widespread deployment of renewable energy and by improving energy efficiency across the value chain; implementing technological advances in order to 'climate proof' agricultural production systems; and establishing strong private sector engagement to in developing and disseminating innovative solutions. Over time, the agricultural projects in the Least Developed Countries Fund and the Special Climate Change Fund portfolios are shifting away from an almost exclusive focus on crop production towards addressing food value chains and private sector outlets for sustainably produced commodities.

38. A representative of the KCI explained that the work of the forum on the impact of the implementation of response measures focuses on social and economic impacts. The KCI workplan encompasses economic diversification and transformation; just transition of the workforce and the creation of decent work and quality jobs; assessing and analysing the impacts of the implementation of response measures; and facilitating development of tools and methodologies for assessing the impact of the implementation of response measures. The KCI provides a platform for sharing information, experience, case studies, best practices and views, as well as facilitating assessment and analysis of the impact of the implementation of response measures. At the 3rd meeting of the KCI, experts provided inputs on the impact of implementing response measures related to land use and food production; and promoting climate-smart agriculture, organic farming and modernizing agriculture were considered approaches that would maximize the positive impacts of response measures. The representative emphasized the potential for future interaction between the KCI and the KJWA.

39. The representative of the World Bank addressed the question of how to feed 10 billion people without using more land while also lowering emissions, improving climate resilience and reducing poverty. Actions must be as inclusive and demand-driven as possible to meet farmers' economic and social needs and must be underpinned by an integrated landscape approach. Public support for agriculture is often insufficient, which compounds the unsustainability of food systems and wastes the opportunity to drive trillions in private investment into sustainable practices. Meanwhile, information platforms can support implementation of relevant projects by providing access to high-resolution agrometeorological data. The representative highlighted five priority actions in this context. First, institutional strengthening and active engagement of institutions should be supported in order to catalyse positive transitions to integrated and geospatial approaches. Second, tools that can help to identify context-specific priorities for investment and policy should be scaled up. Third, discussions on current subsidy regimes should be facilitated among countries in order to identify possibilities for redirecting them towards positive climate, food security and livelihood outcomes. Fourth, it must be ensured that farmers understand that climate-smart agriculture is financially beneficial. Finally, fit-for-purpose measurement, reporting and

verification systems that can be used to inform investment in interventions that have positive impacts on food security and livelihoods should be supported and promoted.

IV. Summary of discussions and way forward

A. Summary of discussions

40. The plenary discussions were guided by three questions:

(a) How could the UNFCCC constituted bodies be further involved and synergies be enhanced in addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(b) Which modalities would be useful for implementing activities for addressing socioeconomic and food security dimensions of climate change in the agricultural sector?

(c) How is addressing socioeconomic and food security dimensions of climate change in the agricultural sector linked to other KJWA topics, and how can synergies be achieved?

1. Practices and approaches

41. Addressing the socioeconomic dimension of agriculture and climate change is challenging, and, as highlighted by one workshop participant, must take into account context, such as the impact of climate change and related policies on farmers' income, the effects of investment, overall economic growth and demographic factors. The aim must be to address inequality, economic injustice, the gender gap, the rights of different groups and the generation of income while achieving more sustainable and nutritious diets for all, which is particularly important where a country is dealing with issues of both obesity and hunger. Another participant added that different socioeconomic pathways and scenarios developed by the IPCC predict different impacts on food security.

42. All participants identified food security as a key priority. Combating hunger and poverty as envisioned in the SDGs is threatened by the expected impacts of climate change on yields, losses and damages, and livelihoods. Given the root causes of food insecurity, it is especially important to focus on providing farmers and rural communities with capacity, tools, technologies and knowledge to move beyond subsistence and contribute to the food security of their and other non-farming households. Integrated and diverse approaches are required to achieve multiple SDGs at the same time.

43. Several participants, particularly those representing developing or least developed countries, emphasized that, given the huge challenges posed by climate change for agriculture and food security, adaptation in agriculture is a priority for their countries. Other participants highlighted the need to focus on integrated solutions, for which there is increasing demand. Several participants emphasized developing countries' particular need for international cooperation and support for adaptation in agriculture, especially capacity-building, research, innovation and technology. In addition, measuring and evaluating adaptation is critically important for implementing the Paris Agreement and mobilizing finance.

44. With some studies estimating that food systems are responsible for 25–30 per cent of total global GHG emissions, participants discussed whether it is possible or necessary for the global food system to achieve net zero emissions. A balance between rural productivity and reducing emissions must be established. Several participants emphasized that the Paris Agreement goal of limiting global temperature increase to 1.5 °C above pre-industrial levels is not achievable without changes not only to food systems but also in all non-food sectors. The options for emission reductions in different sectors can be combined in different ways, resulting in different mitigation contributions required from agriculture.

45. Climate change has negative impacts on the entire food supply chain, including in terms of food loss and waste. By reducing food loss and waste, GHG emissions can be reduced and availability of food increased. One participant suggested that discussions under the KJWA could cover how to facilitate the design and implementation of possible solutions

specific to agricultural systems and geographic and climatic conditions. However, it was emphasized that eradicating food loss and waste is an unrealistic goal.

46. Participants identified the main difference between incremental approaches to change and a transformational change in agriculture to be the end goal. To achieve transformational change, incremental steps need to be implemented following overarching principles. For example, integrated approaches to reducing the negative externalities of agriculture can help to enhance sustainability and reduce production costs for farmers.

47. The crucial role of farmers was discussed, as were communication strategies for conveying information on agriculture and climate change to farmers and the general public. One participant highlighted that farmers must be involved in decision-making and understand why change is needed, the relevant technology and what it can deliver, and the importance of sustainability and interlinkages between agriculture and the environment. Another participant emphasized that communication goes both ways: farmers' voices must be heard at the national level, such as when nationally determined contributions are being updated; but, by the same token, any policy reforms must be properly explained to farmers.

48. Participants, particularly those from the least developed countries, emphasized the need to improve climate services, as outlined in the SRCCL, particularly strengthening early warning systems. Accurate information must be provided to vulnerable groups and relevant institutions to enhance their capacity to respond to emergencies associated with climate change. One expert explained that the COVID-19 pandemic and the resulting reduction in flights has led to a lack of data and increased uncertainty, as key information for these systems is collected by aeroplanes. It was also mentioned that some data stations have not been properly maintained during the pandemic.

49. Participants highlighted that research is key to making agriculture more resilient while reducing emissions and increasing productivity. One participant added that there needs to be more agroecological research, as more than 90 per cent of research relates still to the industrial agricultural model. Another expert added that, while research is being implemented quite effectively at the global level, further work is required to translate the findings into frameworks and project design at the national and local level.

50. Many participants emphasized the multiple benefits offered by agroecology. The climate community has a tremendous opportunity to introduce new ideas to the traditionally conservative agriculture sector, with agroecological approaches relying on the very best of modern science. Other participants urged a pragmatic approach in order to enable farmers using diverse practices and production systems to deal with the uncertainties caused by a changing climate, volatile markets, and challenging health and social conditions. The COVID-19 pandemic has shown that all kinds of innovation are needed.

51. Participants held diverging views on whether it would be useful to employ a food systems approach to addressing agriculture and climate change. One noted that an assessment of existing food systems could be very useful for implementing projects but it must recognize the diversity of those food systems. Other participants found the concept difficult to grasp and to apply, especially for developing countries, and indicated that further clarification of the components of food systems and the overall concept would be required. One participant added that it is the processing, transport and consumption of food that account for 30 per cent of emissions assigned to food systems, which must not be erroneously attributed to the agriculture phase of the food system. In any case, discussing food systems is beyond the scope of the KJWA and agriculture.

52. Many participants advocated for the potential of dietary change to reduce emissions and negative externalities, in particular by reducing demand for meat and dairy products. Other participants cautioned that this is not a legitimate concern for the majority of the global population and therefore not an appropriate focus for discussions, especially when there is still much room for improving practices and reducing emissions in agriculture.

53. The role of trade in the context of improving global food security was discussed, and its crucial role in distributing nutrition across the world. However, as trade systems are vulnerable to climate extremes, it was noted that a balanced approach towards trade is required, so that countries are not fully dependent on trade. One participant called upon the

global community to come to an agreement on whether food-insecure countries should continue to import food or build their own capacity to produce food. Another participant called for stopping the use of restrictions on food trade as a means of exerting political pressure on countries.

2. Measurement and data

54. In discussing how to assess the performance of food systems and related indicators, one expert highlighted that governments' priorities and objectives, combined with dialogues and multi-stakeholder participatory approaches, determine the use of indicators. A different indicator can be used for each dimension of performance (e.g. economic and social).

55. Specific examples were discussed in the context of evaluating trade-offs, such as establishing large-scale monocultures, which may increase yield but also reduces biodiversity. Experts identified two complementary ways of identifying criteria for selecting policies to resolve such trade-offs: working on better data at the national level in order to improve understanding of the economic, social and environmental aspects of food systems particular to that country; and involving stakeholders through participatory approaches in order to better understand their needs and perspectives.

3. Support

56. Several participants identified effective implementation, action on the ground, direct support for farmers and the provision of means of implementation as priority needs. The KJWA could contribute to creating conditions that enable the mobilization of resources for implementing action at the national level, build knowledge and capacity, and support the creation of national and international enabling environments and national policies for implementation, taking into account the diversity of agroecosystems. One expert added that innovative investment opportunities must be expanded along agricultural value chains to accelerate public involvement in agriculture and agribusiness.

57. Participants recognized that agriculture and food security account for a significant proportion of the project portfolios of many financing entities, and discussed how coordination could be improved. Representatives of different financing entities highlighted the ongoing efforts under the complementarity and coherence framework. These efforts are useful when helping countries to access climate finance from other funds. The representative of the Adaptation Fund noted the work of the Community of Practice for Direct Access Entities in building capacity for project design and accessing climate finance, which can increase complementarity between funds; for example, the GCF could scale up small-scale projects that have proven to be successful. One participant added that climate finance tracking tools should be developed in order to provide comprehensive data on climate spending.

58. Financing entities were asked whether they prioritize certain projects or regions for funding and how they ensure complementarity of funds when there is a clear division between adaptation and mitigation financing. The representative of the Adaptation Fund explained that it provides up to USD 10 million for adaptation projects in developing countries that have ratified the Kyoto Protocol, alongside some additional grants such as for readiness and learning. The GCF representative explained that shifting to synergetic approaches is difficult given the strict mandate to split funding between mitigation and adaptation equally. There are also clear technical obstacles, such as adaptation project developers lacking the capacity to measure mitigation benefits. The Global Environment Facility representative reported similar difficulties and added that projects are reviewed by a scientific panel in order to check for inconsistencies that may have negative impacts.

59. The GCF representative explained that grant-based projects require relatively high government co-financing, such as in the form of existing government programmes, social support, and training programmes that can be leveraged. It was recognized that the least developed countries in particular are experiencing difficulties in accessing finance, to which the GCF representative responded that further support opportunities are being explored, such as negotiating swapping a country's debt for financing for national climate action.

60. Private sector investment is required to transform the agriculture sector as governments alone cannot achieve this. The private sector can also contribute to projects; for

example, although climate information is a public sector activity, the private sector can help to ensure an ongoing operational maintenance plan for the country, which is also in the interest of the private sector. However, participants discussed whether collaboration with private sector institutions could also be an obstacle, given that these institutions often benefit from perverse incentives that are driving unsustainable agricultural practices.

61. One participant raised the issue of perverse incentives in the livestock sector that promote deforestation, and research that shows countries often spend over 100 times the amount they receive through funding from abroad on forest conservation. An expert added that the global food system is subtracting rather than adding value, which is a major problem that needs to be addressed for a successful transformation in agriculture. Other participants noted the problematic system of agricultural subsidies and the need for policy reform. Multi-stakeholder platforms and processes, whereby representatives of government, the private sector and farmers can come together to identify solutions and the way forward in a country's specific circumstances, are essential.

62. Several participants emphasized the need to mainstream socioeconomic issues in addressing adaptation and mitigation. One expert added that supporting governments in redirecting public support can have positive socioeconomic effects if the aim is to compensate all farmers, including smallholder farmers, for providing ecosystem services. Support is also needed for enhancing climate risk management tools, including livestock and crop insurance.

4. Cooperation and partnerships

63. Many participants called for continued dialogue to facilitate international cooperation on and financial investment in climate action that addresses socioeconomic and food security dimensions of climate change in the agriculture sector. Although needs and views are highly diverse, there are clear convergent goals: the KJWA process should continue to support countries in understanding and implementing solutions for addressing the impacts of climate change in close cooperation with the UNFCCC constituted bodies, financing entities and other organizations. It was suggested that this could be best achieved by creating a permanent body in charge of coordinating agricultural activities and related issues to be discussed under the KJWA. Some participants emphasized that existing solutions are segmented and dispersed, requiring collaboration and coordination to improve awareness of them, potentially by putting messages forward also to some of the bodies. The goal should be to make better use of existing instruments for cooperation and implementation.

B. Way forward

64. Farmers are essential partners in accomplishing key social and economic outcomes, such as reducing hunger, creating jobs, generating economic growth in rural communities and ensuring the integrity of soil, water, forests and other ecosystem resources. The future for farming lies in an ever-evolving mix of systems that must be tailored to local conditions through bottom-up approaches and 'learning by doing', depending on the needs and preferences of different, particularly women, farmers, integrating traditional knowledge with scientific practices and following a landscape approach. This is particularly challenging because of the diversity of agricultural systems demanding attention at the national level and the implementation indicators tailored to regional climatic conditions and socioeconomic circumstances. A deep understanding of each of these diverse systems is required in order to select suitable agricultural solutions and implementation indicators.

65. Creating national and international enabling environments for the transformation to a more inclusive, sustainable and climate-resilient agricultural system and harvesting any mitigation benefits is a key challenge. There is a need to build resilience and internalize the hidden costs of environmental externalities while rewarding farmers for positive environmental services. Lack of sufficient funding and incentives was identified as the most significant barrier to farmers adopting mitigation and adaptation practices. Other frequently identified needs include strengthened technology research, development and transfer,

effective early warning systems, water management technologies, enhanced modelling capacity, and contingency plans and support for agricultural insurance systems.

66. Participants suggested that the KJWA could promote mainstreaming of socioeconomic issues in addressing adaptation and mitigation, including by assessing links between small family farming, ecosystem services, forests and landscapes. To this end, general guidelines for climate action in the agriculture sector could be developed under the KJWA, taking into account power imbalances in agriculture. Participants discussed whether concrete messages to financing entities could contribute to creating conditions that enable the mobilization of resources for implementing action at the national level taking into account the diversity of agroecosystems. Given the magnitude of challenges related to climate change and the importance of food security, participants emphasized the need for further research and knowledge-sharing on climate change impacts and their implications for socioeconomics and food security.
