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KORONIVIA JOINT WORK ON AGRICULTURE: Analysis of submissions on topics 2(b) and 2(c)

Submissions under UNFCCC decision 4/CP.23
provided by Parties and observers as at 20 June 2019



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Authors

Maria Vincenza Chiriaco, Lucia Perugini, Matteo Bellotta (Euro-Mediterranean Center on Climate Change)
Martial Bernoux and Liva Kaugure (Food and Agriculture Organization of the United Nations)

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ABBREVIATIONS AND ACRONYMS

ABDN	University of Aberdeen
AC	Adaptation Committee
AFOLU	Agriculture, Forestry and Other Land Use
AGN	African Group of Negotiators
AU-DCA	Aarhus University, Danish Centre for Food and Agriculture
BV-FIBL	Biovision - Forschungsinstitut für biologischen Landbau
CAAS	Chinese Academy of Agricultural Sciences
CAN	Climate Action Network International
CARE	CARE International
CaSA Network	Soil Carbon Network for Sustainable Agriculture
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CBs	Constituted Bodies
CCAC	Climate and Clean Air Coalition
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CEA	French Alternative Energies and Atomic Energy Commission
CEIGRAM	Centro de Estudios e Investigación para la Gestión de Riesgos Agrarios y Mediambientales
CGE	Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention
CGIAR	Consultative Group of International Agriculture Research
CGIAR-CIAT-WB	CGIAR System Organization on behalf of CGIAR System Organization, International Center for Tropical Agriculture (CIAT), and the World Bank
CIAT	International Center for Tropical Agriculture
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CIRCASA	Coordination of International Research Cooperation on soil Carbon Sequestration in Agriculture
CMCC	Euro-Mediterranean Center on Climate Change
CNA	Brazilian Confederation of Agriculture and Livestock
CNRS	Centre national de la recherche scientifique
COMESA	Common Market for Eastern and Southern Africa
COP 23	23rd Conference of the Parties
COP 24	24th Conference of the Parties
COP	Conference of the Parties

CSA	Climate-Smart Agriculture
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSU	Colorado State University
CTCN	Climate Technology Center & Network
DORAS Center	Development Oriented Research on Agrarian Systems Center
EAC	East African Community
EDF	Environmental Defense Fund
EU	European Union
FACCE-JPI	European Commission's Joint Programming Initiative on Agriculture, Food Security and Climate
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization of the United Nations
FWG	Facilitative Working Group
FWG-LCIPP	Facilitative Working Group for LCIPP
G77	Group of 77
GASL	Global Agenda for Sustainable Livestock
GCF	Green Climate Fund
GEF	Global Environment Facility
Gender CC	Gender CC-Women for Climate Justice
GHG	Greenhouse gas emissions
GIZ	Gesellschaft fuer Internationale Zusammenarbeit
GRA	Global Research Alliance on Agricultural Greenhouse Gases
GSP	Global Soil Partnership
ICARDA	International Center for Agriculture Research in the Dry Areas
ICRAF	World Agroforestry
IFA	International Fertilizer Industry Association
IFAD	International Fund for Agricultural Development
IGO	Intergovernmental Organization
IIASA	International Institute for Applied Systems Analysis
IITA	International Institute of Tropical Agriculture
INIA	Instituto Nacional de Investigación y Tecnología y Alimentaria
INRA	Institut national de la recherche agronomique
IPCC	Intergovernmental Panel on Climate Change
IRD	Institut de recherche pour le développement
ISRIC	International Soil Reference and Information Centre
ITPS	Intergovernmental Technical Panel on Soils
KCI	Katowice Committee of Experts on Impacts of the Implementation of response measures
KJWA	Koronivia Joint Work on Agriculture
LDCs	Least Developed Countries
LEAP	Livestock Environmental Assessment and Performance Partnership
LEG	Least Developed Countries Expert Group
LULUCF	Land Use, Land Use Change and Forestry

M&E	Monitoring and Evaluation
MRV	Measuring, Reporting and Verification
MSU	Lomonosov Moscow State University
NACSAA	North America Climate Smart Agriculture Alliance Business for Social Responsibility
NAE	Non-Admitted Entity
NAMAs	Nationally Appropriate Mitigation Actions
NAP	National Adaptation Plan
NAPA	National Adaptation Programs of Action
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organization
NWF	National Wildlife Federation
NZAGRC	New Zealand Agricultural Greenhouse Gas Research Centre
PCCB	Paris Committee on Capacity Building
SB 49	49th session of the Subsidiary Bodies
SB 50	50th session of the Subsidiary Bodies
SBI	Subsidiary Body for Implementation
SBs	Subsidiary Bodies
SBSTA 57	57th session of the Subsidiary Body for Scientific and Technological Advice
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCF	Standing Committee on Finance
SDGs	Sustainable Development Goals
SOC	Soil organic carbon
SOM	Soil organic matter
SPI	Science–Policy Interface (SPI)
TEC	Technology Executive Committee
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank
WBCSD	World Business Council for Sustainable Development
WFO	World Farmers’ Organisation
WFP	World Food Programme
WIM Excom	Executive Committee of the Warsaw International Mechanism
WMO	World Meteorological Organization
WRI	World Resources Institute
YOUNGO	Youth Non-Governmental Organizations

INTRODUCTION

The agriculture sector is pivotal in a changing planet with emerging challenges triggered by climate change, an increasing global population and resulting changes in food consumption patterns. At the same time, actions to make agriculture sustainable are among the most effective measures to help countries increase resilience and adapt to climate change impacts, as well as mitigate greenhouse gas (GHG) emissions.

At the 23rd Conference of the Parties (COP 23) to the United Nations Framework Convention on Climate Change (UNFCCC) in November 2017 countries recognized the fundamental importance of agriculture in responding to climate change through a landmark decision (4/CP.23): the Koronivia Joint Work on Agriculture (KJWA) (UNFCCC, 2018a).

The agenda item on issues related to agriculture under the Subsidiary Body for Scientific and Technological Advice (SBSTA) was first formalized in 2011 (decision 2/CP.17), followed by five in-session workshops on the status of scientific knowledge concerning agriculture and climate change. Rich exchanges among countries paved the way towards the KJWA, which calls for collaboration between SBSTA and the Subsidiary Body for Implementation (SBI) on specific elements, including through workshops and expert meetings, thus widening the scope of the conversation from a scientific and technical focus to implementation.

The KJWA is a three-year joint work programme between the Subsidiary Bodies (SBs) that aims at advancing the exchange among Parties on issues related to agriculture under its multifaceted aspects, starting the exchange from, but not limited to, an initial list of topics:

- ▶ Modalities for implementation of the outcomes of the five in-session workshops on issues

related to agriculture and other future topics that may arise from this work;

- ▶ Methods and approaches for assessing adaptation, adaptation co-benefits and resilience;
- ▶ Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management;
- ▶ Improved nutrient use and manure management towards sustainable and resilient agricultural systems;
- ▶ Improved livestock management systems; and
- ▶ Socioeconomic and food security dimensions of climate change in the agricultural sector.

As mandated by the KJWA decision, the work to be carried out in close collaboration with the Constituted Bodies (CBs) should take into consideration the vulnerabilities of agriculture to climate change and approaches to address food security. Parties are also encouraged to take into consideration farmers, gender, youth, local communities and indigenous peoples in the KJWA given the importance of agriculture for these group categories (UNFCCC, 2018b).

The operating entities of the Financial Mechanism of the Convention (the Global Environment Facility [GEF] and the Green Climate Fund [GCF]), the Adaptation Fund, the Least Developed Countries Fund and the Special Climate Change Fund are also invited to contribute to the KJWA workshops (UNFCCC, 2018c). This request for collaboration provides an opportunity for interlinkages and harmonized action under the different bodies, and recognizes that, in order to achieve greater results, it is necessary to combine scientific and technical negotiations with exchanges on how to facilitate and finance implementation.

In total, there are nine bodies under the Convention itself, five under the Kyoto Protocol, and three under the Paris Agreement, in addition to the SBSTA and SBI, and the COP/CMP/CMA.¹

¹ CMP = Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol.
CMA = Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement

These cover different areas of work relevant to the agriculture sectors (see **Figure 1** below), which include:

- ▶ Capacity building (e.g. Paris Committee on Capacity Building, Climate Technology Center & Network, Technology Executive Committee);
- ▶ Financing coordination and mobilization (e.g. Standing Committee on Finance);
- ▶ Promotion of enhanced action on adaptation (Adaptation Committee);
- ▶ Sharing of relevant information, knowledge, experience and good practices (e.g. Climate Technology Center & Network, Technology Executive Committee, Adaptation Committee, Paris Committee on Capacity Building); and

- ▶ Technology support and transfer to developing countries (e.g. Climate Technology Center & Network, Technology Executive Committee, Adaptation Committee).

In 2018, at the COP 24 in Katowice, Parties established two additional constituted bodies:

- ▶ Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (decision 2/CP.24), aimed at operationalizing the Local Communities and Indigenous Peoples Platform and facilitating the implementation functions related to knowledge, capacity for engagement, and climate change policies and actions;

FIGURE 1.

OVERVIEW OF CONSTITUTED BODIES AND FINANCIAL MECHANISM

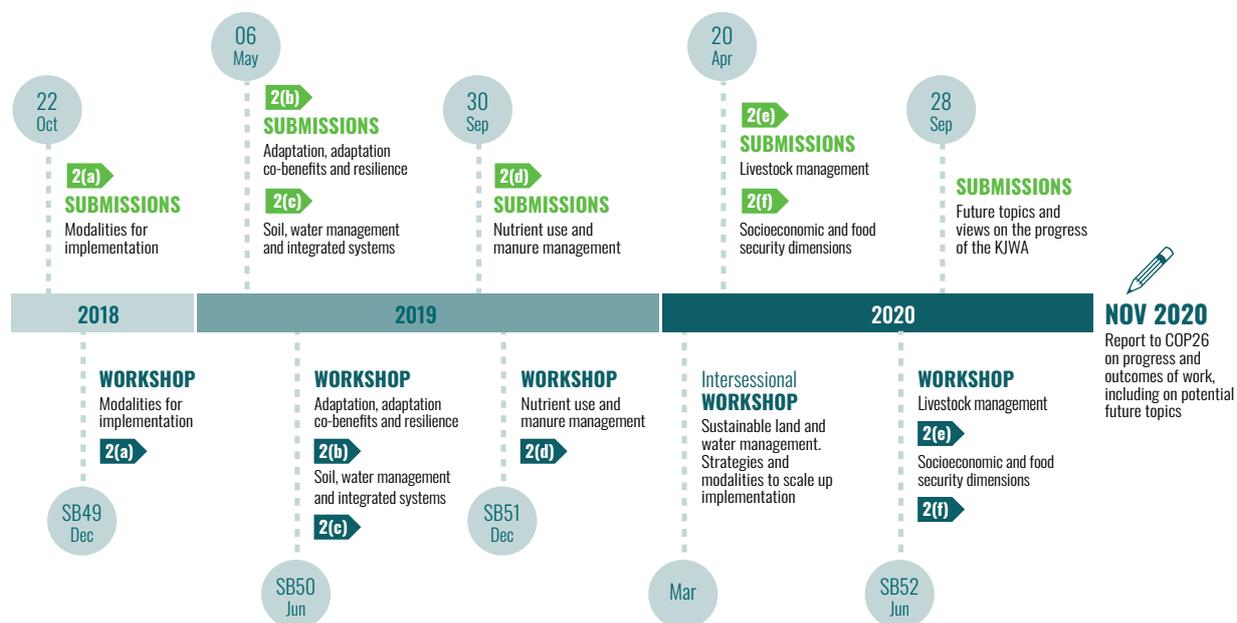


OPERATING ENTITIES / FUNDS
Provide funding and decide on priorities and eligibility criteria

CONSTITUTED BODIES
Provide advice, technical input and expertise

FIGURE 2.

ROAD MAP OF THE KORONIVIA JOINT WORK ON AGRICULTURE



- Katowice Committee of Experts on the Impacts of the Implementation of Response Measures aimed at supporting the work programme of the forum on the impact of the implementation of response measures (see decision 7/CMA.1, annex, paragraph 4 for more detail on its terms of reference).

The two bodies may be relevant to the KJWA, especially the FWG, given the important link between the rights of indigenous peoples and the knowledge and agriculture sectors. The active participation of the bodies in the workshops could be beneficial to the process, although few experiences can be reported, the exchange of views in the KJWA can be of stimulus for future action in the agricultural sector under the bodies.

During the first KJWA workshop held at the 49th session of the Subsidiary Bodies (SB 49), in Katowice, Poland, December 2018, representatives of the CBs made an overview of possible interactions with the KJWA that were summarized in the report of the workshop from the UNFCCC secretariat (UNFCCC, 2019a).

The exchanges on the KJWA topics above are undertaken through a series of workshops, submissions and reports, following a well-defined road map (UNFCCC, 2018b). Furthermore, at the 50th session of the Subsidiary Bodies (SB 50) following the proposal of the Government of New Zealand, SBI

and SBSTA requested the secretariat to organize an additional intersessional workshop that should take into account the following elements:

- Sustainable land and water management, including integrated watershed management strategies, to ensure food security; and
- Strategies and modalities to scale up implementation of best practices, innovations and technologies that increase resilience and sustainable production in agricultural systems according to national circumstances (UNFCCC, 2019b).

The timeline of the KJWA road map and the additional workshop are reported in the **Figure 2** above.

The workshops are organized by the secretariat of the UNFCCC and foresee the participation of Parties, admitted observers and representatives of the CBs and funds like GEF, GCF, the Adaptation Fund, the Least Developed Countries Fund and the Special Climate Change Fund. The secretariat is also required to provide a report following each workshop for Parties' consideration.

Between each session, Parties and observers are invited to provide their views on the forthcoming workshop items through submissions, possibly

including aspects related to farmers, gender, youth, local communities and indigenous peoples.

At the end of the three-year period of the KJWA process by November 2020, SBs should report to the Conference of the Parties (COP) on the progress achieved and possible outcomes of the discussion on the issues listed above. However, many Parties have already declared in their submissions that the three-year period currently foreseen may not signify the end date of the KJWA and that the SBs may define further work after 2020, pending a further COP decision. Furthermore, most Parties see the KJWA as an opportunity to increase exchange and collaboration among countries to promote the development and transfer of knowledge, best practices and technologies. Many Parties envision that discussions under the KJWA could lead to concrete recommendations to the CBs, provide instruments and tools to address the major challenges related to climate change, agriculture and food security that could be embedded in their national planning efforts (FAO, 2018).

The SB 50 (17–27 June 2019, Bonn, Germany) hosted the second and the third in-session workshops. The workshops addressed two topics:

- ▶ Methods and approaches for assessing adaptation, adaptation co-benefits and resilience (Topic 2(b) of the decision 4/CP23); and
- ▶ Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management (Topic 2(c) of the decision 4/CP23).

The workshops included the participation of the CBs under the Convention presenting their past and planned activities on agriculture in general and specifically on the workshop topics. In addition, the SBs also invited the operating entities of the Financial Mechanism of the Convention (GCF and GEF), the Adaptation Fund, the Least Developed Countries Fund, and the Special Climate Change Fund, to participate and contribute to the workshops. Two reports were prepared by the secretariat after the workshops (UNFCCC, 2019c and UNFCCC, 2019d).

In preparation of the two workshops under the KJWA, Parties and observers were required to express their views on the above mentioned topics by 6 May 2019.

Recognizing that decision 4/CP.23 does not mandate the UNFCCC secretariat to produce a synthesis of submissions made, a number of Parties attending the informal Koronivia Dialogue, hosted by the Food and Agriculture Organization of the United Nations (FAO) and supported by the World Bank (WB) in March 2018, suggested that FAO might provide a factual summary of submissions made. FAO has been duly undertaking this exercise and has provided the analysis of two past rounds of submissions by Parties and observers in preparation of the 48th and 49th sessions of the Subsidiary Bodies namely:

- ▶ Koronivia Joint Work on Agriculture: Analysis of Submissions (FAO, 2018a); and
- ▶ Koronivia Joint Work on Agriculture: Analysis of Submissions on topic 2(a) – Modalities for implementation of the outcomes of the five in-session workshops (FAO, 2019).

FAO, with a support of the German Federal Ministry for Food and Agriculture and in collaboration with the Euro-Mediterranean Center on Climate Change (CMCC Foundation), will continue to provide analysis of the upcoming submissions addressing various topics under the KJWA.

Objective

This analysis aims to summarize the views submitted on KJWA topics 2(b) and 2(c) that were discussed during the SB 50 in June 2019, namely:

- ▶ Topic 2(b) – Methods and approaches for assessing adaptation, adaptation co-benefits and resilience; and
- ▶ Topic 2(c) – Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management.

The analysis intends to make the wide range of views submitted more easily accessible to those interested, including to Parties and observers to the UNFCCC, but also experts working on climate change more generally, as well as interested members of the public.

Methodology

The analysis takes into consideration 17 submissions on topics 2(b) and 2(c) by Parties or groups of Parties and 23 by observer organizations or groups of observers, published in the UNFCCC Submission Portal (UNFCCC, 2019e). Each submission was studied in full text to ensure a comprehensive assessment of the views provided by Parties and observers.

Original text was extracted into a database that permits cross-referencing on different aspects of individual submissions. The database includes categories for KJWA topics 2(b) and 2(c), including the general view on the two topics expressed by Parties and observers, the priorities and needs for consideration during the workshops, the desired participation and expected outputs, among others. The final analysis of submissions was developed following a stepwise approach:

- ▶ **STEP A:** A first draft with a partial and preliminary analysis including an in-depth overview reflecting only nine Party submissions and three observer submissions limited to United Nations (UN) and Intergovernmental organizations (IGOs), available in the UNFCCC Submission Portal by 29 May 2019. The cut-off date was chosen to permit the preparation of a first draft in time for consideration at SB 50 (17–27 June 2019).
- ▶ **STEP B:** A complete analysis reflecting all the submissions from all Parties and observers that were submitted after the cut-off date defined for step A, including all the submissions from Non-Governmental organizations (NGOs) and Non-Admitted Entities (NAEs), taking into consideration comments and observations received on the first draft version (STEP A). The draft of the complete analysis was circulated with Parties and UNFCCC for comments and feedback. The comments were addressed in the final version.

■ BOX 1. KEY TERMS

Agriculture or the agricultural sectors, when used by FAO, comprises the sub-sectors of crops, livestock, fisheries and aquaculture and forestry. The terms agriculture or the agricultural sector in the UNFCCC domain are defined in accordance with Intergovernmental Panel on Climate Change (IPCC) terminology and cover emissions from enteric fermentation, manure management, rice cultivation, prescribed burning of savannas and grassland, and from soils (i.e. agricultural emissions). Emissions and removals from grassland and cropland are covered under LULUCF (Land Use, Land Use Change and Forestry). In the IPCC 2006, the two sectors (i.e. agriculture and LULUCF) are treated together in the AFOLU (Agriculture, Forestry and Land Use) sector.

Adaptation, according to the IPCC (2019), is defined in human systems, as the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities; and, in natural systems, as the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

Adaptation assessment in the IPCC (2019) glossary of terms is defined as the practice of identifying options to adapt to climate change and evaluating them in terms of criteria such as availability, benefits, costs, effectiveness, efficiency, and feasibility.

Adaptation co-benefits is not defined under the KJWA. When it is used by FAO, it is referred to the environmental, social and economic co-benefits of adaptation in the agriculture sectors generated through a complex web of context-specific synergies and trade-offs.

Resilience is the capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation (IPCC, 2019).

Food security, although having a central role in the KJWA, is not defined in the decision. When used by FAO, the term draws on the World Food Summit definition (1996): “Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” From this definition, four main dimensions of food security are identified: food availability, food access, utilization and stability.

In this analysis, the terms above are reported from the submissions without specifically referring to any specific meaning, thus not prejudging the interpretation applied by different Parties.

PARTY AND GROUP SUBMISSIONS²

- 1 African Group of Negotiators (AGN)**
- 2 Argentina**
- 3 Bangladesh
- 4 Brazil
- 5 European Union (EU)
- 6 G77 & China**
- 7 Indonesia**
- 8 Japan
- 9 Kenya
- 10 Least Developed Countries (LDC) group**
- 11 New Zealand
- 12 Norway**
- 13 the Philippines**
- 14 the United States of America
- 15 Switzerland
- 16 Uruguay**
- 17 Viet Nam

OBSERVER SUBMISSIONS

United Nations System

- 1 Food and Agriculture Organization of the United Nations (FAO)
- 2 International Fund for Agricultural Development (IFAD)**
- 3 World Food Programme (WFP)

Admitted intergovernmental organizations

- 4 CGIAR System Organization on behalf of CGIAR System Organization, International Centre for Tropical Agriculture and the World Bank (mentioned in the text hereafter as CGIAR-CIAT-WB)
- 5 East African Community (EAC)**

Non-governmental organizations³

- 6 Biovision and BV-FIBL (BV-FIBL)
- 7 CARE International (CARE), Common Market for Eastern and Southern Africa (COMESA) and Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) (CARE and others)
- 8 Climate Action Network International (CAN)
- 9 CropLife International (CropLife)
- 10 Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ)
- 11 Environmental Defense Fund (EDF)
- 12 Gender CC-Women for Climate Justice (Gender CC)
- 13 International Fertilizer Industry Association (IFA)
- 14 National Wildlife Federation (NWF) on behalf of Conservation International (CI) and Land Use & Climate Knowledge Initiative (LUCKI) (NWF and others)
- 15 The North America Climate Smart Agriculture Alliance, Business for Social Responsibility (NACSAA)
- 16 Virginia Polytechnic Institute and State University (Virginia Tech)

² Bold text indicates these submissions were included in the analysis in Step B.

³ All submissions from NGOs and NAEs were included in the analysis in Step B.

- 17 World Business Council for Sustainable Development (WBCSD)
- 18 World Farmers Organisation (WFO)
- 19 World Resources Institute (WRI)
- 20 Youth Non-Governmental Organizations (YOUNGO)

Non-admitted entities

- 21 Four per 1000 Initiative, the Intergovernmental Technical Panel on Soils (ITPS) and the Global Soil Partnership (GSP), the secretariat and the Science-Policy Interface (SPI) of the United Nations Convention to Combat Desertification (UNCCD), Drynet, World Agroforestry (ICRAF) and CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) East Africa (4 per 1000 and others)
- 22 University of Aberdeen (ABDN), Aarhus University, Danish Centre for Food and Agriculture (AU-DCA), Chinese Academy of Agricultural Sciences (CAAS), Soil Carbon Network for Sustainable Agriculture (CaSA Network), Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), CCAFS, French Alternative Energies and Atomic Energy Commission (CEA), Centro de Estudios e Investigación para la Gestión de Riesgos Agrarios y Mediambientales (CEIGRAM), International Center for Tropical Agriculture (CIAT), Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), Centre national de la recherche scientifique (CNRS), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Colorado State University (CSU), Development Oriented Research on Agrarian Systems Center (DORAS Center), European Commission's Joint Programming Initiative on Agriculture, Food Security and Climate (FACCE-JPI), Global Research Alliance on Agricultural Greenhouse Gases (GRA), International Center for Agriculture Research in the Dry Areas (ICARDA), International Institute for Applied Systems Analysis (IIASA), Instituto Nacional de Investigación y Tecnología y Alimentaria (INIA), Institut national de la recherche agronomique (INRA), Institut de recherche pour le développement (IRD), International Institute of Tropical Agriculture (IITA), International Soil Reference and Information Centre (ISRIC), Lomonosov Moscow State University (MSU), New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC), UNCCD (Sec. & SPI) and University of Antananarivo (ABDN and others)
- 23 Brazilian Confederation of Agriculture and Livestock (CNA)

FIGURE 3.

BREAKDOWN OF SUBMISSIONS

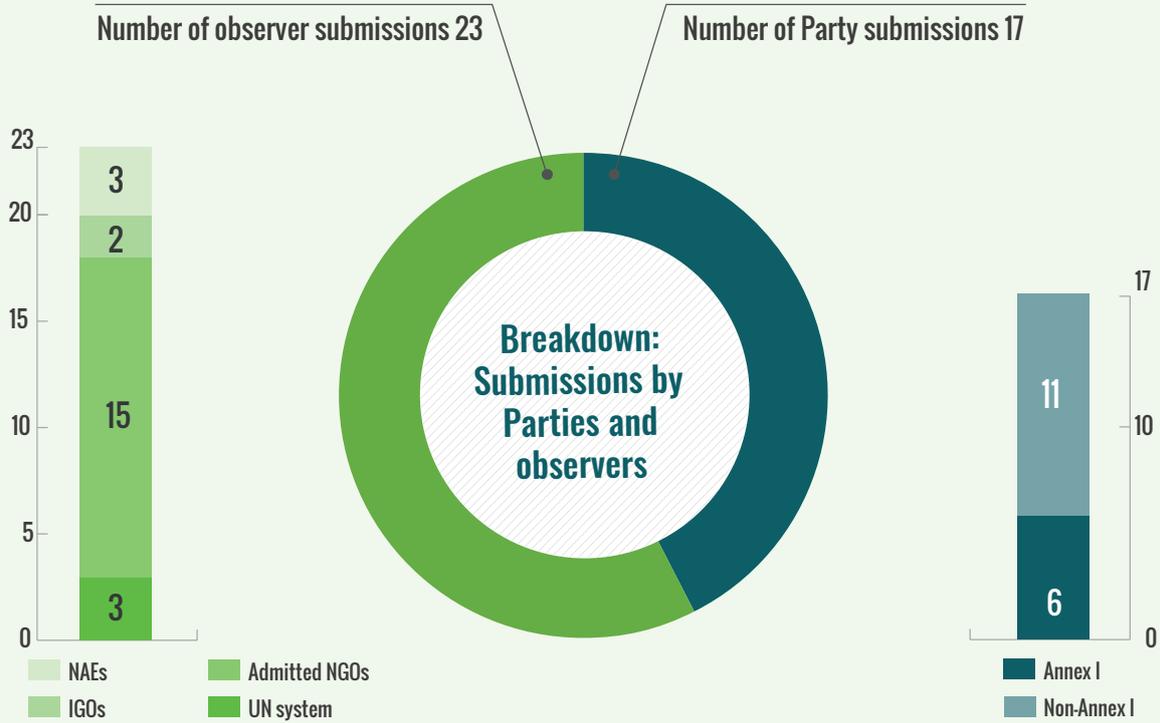
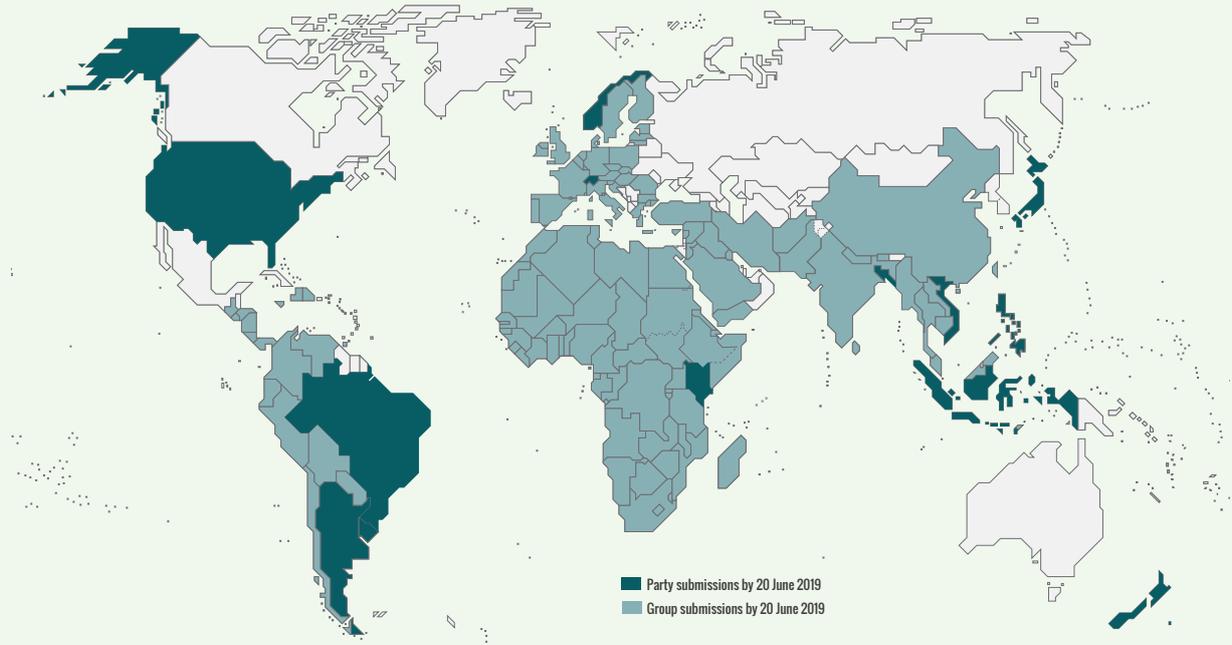


FIGURE 4.

PARTY AND GROUP SUBMISSIONS



Adapted from United Nations World map, February 2019

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OVERVIEW OF THE SUBMISSIONS BY PARTIES

Topics 2(b) and 2(c) cover a wide range of elements in different fields related to climate change and agriculture.

Topic 2(b) focuses on the highly complex challenge of the assessment methodologies and approaches for adaptation, including co-benefits and resilience, while topic 2(c) relates to the important role of soil systems under grassland, cropland as well as integrated systems, in particular regarding their carbon content, health and fertility, also including water management.

In providing their views, Party submissions have treated the specific topics with different levels of detail and varying length. In some cases Parties are focussing on specific aspects, while others provide their view in general terms without going into details. More specifically, most of the Party submissions (AGN, Argentina, Brazil, EU, G77 & China, Indonesia, Japan, Kenya, LDC, New

Zealand, Norway, the Philippines, Uruguay and the United States of America) express their views on both topics 2(b) and 2(c), while one submission (Bangladesh) recalls all the six elements listed in paragraph two of the KJWA decision. Two submissions (Switzerland and Viet Nam) focus exclusively on topic 2(c). Two submissions (Japan and the United States of America) in particular mention also the previous workshop on topic 2(a) emphasizing the usefulness of the secretariat's report (UNFCCC, 2019c).

Despite the wide variety of structure and content of the submissions, many of them show some similarities in highlighting certain components or recommendations. A common element highlighted in many Party submissions (AGN, Argentina, Brazil, EU, G77 & China, Kenya, New Zealand, Norway, the Philippines, Uruguay the United States of America and Viet Nam) is the challenge posed by climate change to food security in their countries, and the need to increase the resilience of the agriculture systems to climate change. In this regard, five submissions

(Brazil, Kenya, LDC, Uruguay and Viet Nam) mention national programmes and initiatives undertaken in their countries. Two submissions (LDC and New Zealand) recall also the imperative message delivered by the 2018 IPCC special report, highlighting the need to put in place ambitious actions by all countries and across all sectors to limit global warming to no more than 1.5°C above pre-industrial levels (IPCC, 2018). In this sense

the KJWA is seen as an important opportunity (Argentina, EU, G77 & China, Japan, New Zealand, Norway, Uruguay, the United States of America and Viet Nam) to share policies, best practices and lessons learned that can help countries and agricultural stakeholders in addressing climate change towards more efficient, productive, and resilient agricultural systems and food security.

The same submissions, in particular, expect more coordinated work under the KJWA in the field of climate change mitigation and adaptation in agriculture and food systems, through better understanding of the current actions undertaken by the CB and identifying synergies, trade-offs and possible gaps. Concrete results and progress on the ground are expected from the KJWA, including:

- ▶ Encouraging cooperation between Parties and ensuring the involvement of farmers, gender, youth, local communities and indigenous peoples in the KJWA process to support the implementation of climate and agriculture-related measures on the ground, considering also the landscape dimension of agriculture in relation to climate change, and identifying different farming systems and climatic conditions;
- ▶ Increasing the scientific and technological knowledge on sustainable and resilient agriculture and food systems, and identifying tools to facilitate their application;
- ▶ Facilitating the implementation of the Nationally Determined Contributions (NDCs) and other relevant national strategies and plans, with the aim to foster future work on agriculture and climate change in the UNFCCC context, ensuring consistency between UNFCCC, United Nations Convention to Combat Desertification

(UNCCD) and United Nation Convention on Biological Diversity, as well as in relation to the Sustainable Development Goals (SDGs) and the goals of the Paris Agreement; and

- ▶ Improving the reporting and accounting of emissions and removals from agriculture and of the impacts of policies and measures while avoiding duplication of efforts and double counting.

1.1 Views on topic 2(b): Methods and approaches for assessing adaptation, adaptation co-benefits and resilience

Fifteen Party submissions out of 17 (AGN, Argentina, Bangladesh, Brazil, EU, G77 & China, Indonesia, Japan, Kenya, LDC, New Zealand, Norway, the Philippines, Uruguay and the United States of America) express their views specifically on topic 2(b). These submissions highlight the importance of enhancing adaptation, adaptation co-benefits and resilience of agricultural systems in facing climate change and ensuring food security. In particular,

these submissions report examples of best practices, technologies and know-how, research experiences and results, education and risk management programmes, developed at national level, that can help farmers to increase adaptation, adaptation co-benefits and resilience in different agricultural systems, considering the local characteristics and conditions.

Some submissions (Brazil, EU and Uruguay), in particular, refer to sets of indicators developed at the country level useful in tracking and monitoring adaptation, adaptation co-benefits and resilience.

Some submissions (AGN, Bangladesh, Brazil, EU, G77 & China, Indonesia, Kenya, LDCs, New

Zealand and Uruguay) deepen the discussion on the needs, priorities and state of implementation of the existing methods and approaches to assess adaptation, adaptation co-benefits and resilience of agricultural systems. In particular, they refer to the complexity of tracking adaptation and mitigation progress, due to lack of:

- ▶ Methodologies for monitoring and evaluating the adequacy and the effectiveness of adaptation efforts in a way that is systematic, rigorous and transparent;
- ▶ Specific, accurate, qualitative and quantitative data for the agricultural sector at local level to properly quantify the mitigation efforts reached, considering the complexity of different agricultural production systems; and
- ▶ Enabling political environment: in many countries there is a lack of specific laws and policies enhancing the assessment of the adaptive capacity, as well as of the financial costs needed for adaptation.

Some of these submissions (Bangladesh, Brazil, EU, G77 & China, Kenya, LDC, New Zealand and Uruguay) mention also the usefulness of a stocktaking of existing methods and approaches, mostly resulting from project-based activities, including an evaluation of their efficacy in tracking progress at different scales and of the gaps, challenges, opportunities and options associated with those methodologies.

The need to develop a common approach is also highlighted, emphasising differentiated smart and user-friendly indicators and metrics that can be used by many actors and at different scales considering local characteristics and conditions. In addition, with different nuances, the importance of exploring the availability of specific data and tools and of improving existing data and tools (as for example, Tier 1 under the IPCC in measuring mitigation results) to increase the reliability of measurement of adaptation and mitigation, are also mentioned.

According to two submissions (Norway and Uruguay), indicators to monitor progress in adaptation, adaptation co-benefits and resilience should take into account the achievements of specific targets in the following four categories: natural resources and ecosystems; production

and productivity, considering also the potential trade-off between the yields per hectare and the land area needed; food security and nutrition; and institutional and support services. Two Parties (the Philippines and Uruguay) highlight that climate risk forecast and management should be an integral part of monitoring adaptation and resilience in agriculture. Therefore, the adaptation indicators should take into account the Sendai Framework for Disaster Risk Reduction (UN, 2015) and its priorities for action.

Another aspect, included in 12 submissions (AGN, Argentina, Bangladesh, Brazil, EU, G77 & China, Kenya, New Zealand, Norway, LDC, the Philippines and Uruguay) is the importance of facilitating knowledge sharing, capacity building, including at the institutional level, as well as exchange of experience and know-how.

A participative approach for assessing the effectiveness of national adaptation work is mentioned by one submission (New Zealand), with the involvement of local government, indigenous populations, the private sector and the community that should have concrete role in taking informed decisions and choices.

Financial and technical support are also highlighted as essential to develop and apply appropriate methods and approaches to assess effectiveness of progress and to effectively support farmers. Eight submissions (Argentina, EU, G77 & China, Kenya, LDC, New Zealand, Norway and Uruguay) highlight the importance of tracking progress in adaptation, adaptation co-benefits and resilience in agricultural systems, while considering effective implementation of the NDCs and National Adaptation Plans (NAPs).

1.2 Views on topic 2(c): Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management

All Party submissions express their views on topic 2(c), with two submissions (Switzerland and Viet Nam) focussing exclusively on this topic.

Recurring considerations in all these submissions are on the key role played by soil carbon, soil health and fertility, and appropriate water management in responding to the current and future food demand, preserving the productivity of cropland and grassland ecosystems and their environmental functions, including biodiversity, and enhancing the resilience to climate change.

In this regard, almost all the submissions (Brazil, EU, Indonesia, Japan, Kenya, LDC, New Zealand, Norway, Switzerland, Uruguay, the United States of America and Viet Nam) report examples of best practices, technologies and know-how, research experiences and results, programmes, initiatives, policy instruments and tools developed and undertaken at country level with the aim to help farmers to apply sustainable soil management practices. The common goals include increasing carbon sequestration and soil organic matter, reducing soil erosion, increasing water infiltration and storage, enhancing nutrient cycling, reducing GHG emissions, improving wildlife and pollinator habitat, while maintaining or even increasing yields and incomes, and strengthening livelihoods and social resilience.

Several submissions give priority to implementing actions aimed at conserving

the existing carbon in soils (Brazil, EU and Switzerland). It is also emphasized that soils have to be managed for multiple purposes and co-benefits (Brazil, New Zealand and Viet Nam), which is worthwhile action even in cases where there is doubt that substantive increase of sequestration rates is possible (Switzerland). Specific sustainable agricultural management practices identified by most Parties' submissions (Brazil, EU, Indonesia, Japan, Kenya, New Zealand, Switzerland, Uruguay, the United States of America and Viet Nam) include the following:

- ▶ Enhancement of agroecology, agroforestry (i.e. the integrated management of woody elements in agricultural landscapes as croplands or grasslands) and integrated crop-livestock-forestry systems. These approaches can provide important benefits for the environment, protection of soil, water, coasts, floodplains and biodiversity, economic diversification, increasing employment rates and higher yields, taking into account the land equivalent ratio;
- ▶ Sustainable intensification of agricultural systems and adequate land use planning in rural settings;
- ▶ Cover cropping, crop rotations and diversification – mixed/inter/cover cropping, and integrated systems that can help to reduce the use of chemicals;
- ▶ Organic farming, including the use of organic manure to reduce chemical inputs and protect biodiversity, soil health and vitality;
- ▶ Efficient use of fertilizers and use of manure, biofertilizers, rhizobacteria, microorganisms and leguminous species promoting biological nitrogen fixation as well as the use of innovative technologies for precision fertilization;
- ▶ Innovations in organic waste treatments, especially in the case of rice straw processing, and development of aquaponics models;
- ▶ Use of biochar as a soil amendment to increase soil organic carbon (SOC) with potential benefits for soil fertility;
- ▶ Rehabilitation and rewetting of organic soils, in combination with cropping of water-tolerant plants, and recovery of degraded lands; and
- ▶ Reduced tillage or no-till, strip-tillage or mulch sowing that limit soil disturbances

while increasing soil carbon and soil vitality and fertility.

In regard to the last point, two submissions (New Zealand and Switzerland) propose to investigate the potential for mitigation of alternative methods consisting in deep ploughing or full inversion tillage of mineral soils.

One submission (Kenya), suggests that by applying proposed sustainable management practices as a package of measures, there is a potential to boost a wider impact instead of single measures.

Many Parties or groups of Parties (EU, Kenya, New Zealand, Switzerland, Uruguay and the United States of America) highlight their involvement in several international initiatives that aim to enhance sustainability in agriculture and food systems, including through addressing climate change. These initiatives include the Global Soil Partnership, the Global Alliance for Climate-Smart Agriculture, the Livestock Environmental Assessment and Performance Partnership (LEAP) of the Global Agenda for Sustainable Livestock (GASL), and the Global Research Alliance on Agricultural Greenhouse Gases (GRA).

Many Party submissions (AGN, Argentina, Bangladesh, Brazil, EU, G77 & China, Kenya, LDC, New Zealand, the Philippines and Viet Nam) deepen the discussion on the needs and priorities they see as paramount to improve soil carbon, soil health and fertility and water management in cropland, grassland and integrated systems both at the local and the global scale. In particular, they refer to the following:

- ▶ The need for updated data, information, characterisation and mapping of soils at national level according to the different climatic conditions, agricultural practices (including fertilizer use, irrigation, etc.), crops and cropping patterns;
- ▶ The need to identify the appropriate methods, with standardized approaches that can be differentiated to local conditions, to assess soil health, soil fertility, and to measure SOC stock and changes due to land management in the short and long term, considering different national circumstances;
- ▶ The need for assistance in profiling, defining and evaluating integrated systems and the need to develop guidelines on the sustainable management of integrated systems taking into account the synergies between adaptation and resilience, as well as measures to balance social, economic and ecologic trade-offs;
- ▶ The usefulness of a stocktake of existing approaches and measures for improved soil and water management;
- ▶ The importance of developing institutional capacities in order to promote sustainable land and soil management practices and organic agriculture as a way to increase SOC and soil health that are of fundamental importance to advance food security and climate change adaptation and mitigation simultaneously;
- ▶ The need to understand the most effective land management strategies to be applied at local level, in order to avoid and reduce adverse land use changes on carbon rich soils (such as drainage of wetlands, deforestation, grassland conversion);
- ▶ The importance of facilitating international cooperation and financial support for sustainable soil and water management in agriculture, enhancing the livelihoods of smallholder farmers. This should include investment in innovative technologies while capitalizing on the traditional knowledge;
- ▶ The international cooperation and financial support aimed at improved soil carbon, soil health and soil fertility should be linked with the support to implement NDCs and NAPs and in synergy with the SDGs (including the SDG 15.3 on Land Degradation Neutrality), UNCCD, 4 per 1000 Initiative, and Global Soil Partnership and other initiatives at national and subnational level;
- ▶ The importance of facilitating collaboration, capacity building and exchanges of knowledge and best practices at international, regional, national and local levels, though, for example, the establishment of fora, platforms and dissemination of publications; and
- ▶ The need to enhance research filling the vast knowledge gaps, e.g. on the characteristics of soils in various regions, the factors influencing soil fertility functions and their capacity to store carbon under different climate and environment conditions.

Three Party submissions (EU, Kenya and Uruguay) also highlight the importance to undertake cost-benefit analysis with the aim of assessing the economic profitability of the sustainable management of land, also considering the transaction costs for farmers to shift to more integrated farming systems.

1.3 Views on the workshops on topics 2(b) and 2(c)

Eleven out of 17 Party submissions (AGN, Argentina, EU, Indonesia, Japan, LDC, New Zealand, Norway, Switzerland, Uruguay and the United States of America) make specific reference to the in-session workshops at SB 50, introducing possible inputs, main themes for consideration, the expected participation and the desired outcomes. Eight submissions (AGN, Argentina, EU, Indonesia, Japan, Norway, Uruguay and the United States of America) express their views on the workshops related to both topics 2(b) and 2(c), while one submission (Switzerland) refers to the workshop dedicated to topic 2(c).

In seven submissions (Argentina, EU, Indonesia, LDC, New Zealand, Uruguay and the United States of America) the in-session workshops on topic 2(b) and 2(c) are seen as an opportunity to:

- ▶ Advance the discussions on technical issues related to agriculture drawing on the expertise of the Parties, observers, and farmers, as well as of the CBs under the Convention, implementing bodies, agencies and organisations (inside and outside UNFCCC); and
- ▶ Share best practices and lessons learned to increase knowledge and assist countries and other stakeholders to face climate change through policies that foster more efficient, productive, and resilient agricultural practices.

Recognizing the vast number of topics to be discussed during the in-session workshops, one submission (Japan) welcomes the proposal of New

Zealand at SB 49 for an intersessional workshops on livestock management.

Many Party submissions (AGN, Argentina, EU, Indonesia, LDC, Norway and Uruguay) suggest possible elements and inputs for discussion in the workshop on topic (2b). This includes identification and mapping of viable options and solutions for assessing adaptation, adaptation co-benefits and resilience to be used by governmental and/or non-governmental actors at national, regional or international levels, while facilitating knowledge exchange of good examples and providing technical support and capacity building.

Possible elements and inputs to be considered and discussed in the workshop on topic 2(c) are mentioned by five Party submissions (AGN, Argentina, EU, LDC and Norway). This includes identification of knowledge gaps of existing sustainable practices, technologies and research results applied in different regions around the world. The knowledge sharing of experiences, methods, tools and models to map, assess and report changes in SOC at various scales are proposed as inputs for discussion at the workshop on topic 2(c), as well as examples and practical experience of policy incentives and local knowledge to promote soil health, soil carbon sequestration, and degraded soil restoration.

Furthermore, some submissions (AGN, EU, LDC and Uruguay) propose the exploration and development of ways to facilitate knowledge sharing (platforms, networks, etc.) and ways to promote technical and financial cooperation, coordination and synergies at national, regional and local level, and other institutions, bodies, and agencies (such as UNCCD, FAO, etc.). Six out of 17 Party submissions (EU, Indonesia, Japan, New Zealand, Norway and the United States of America) provide their views on the possible organization of the workshops on topics 2(b) and 2(c) in terms of general structure and expected participation.

One submission (the United States of America) mentions considering the allocation of one day for each in-session workshop topic and two submissions (EU and the United States of America) underline the importance of allocating enough time after presentations to exchange views and for questions and answers.

Four Parties (EU, Japan, New Zealand and Norway) expect participation in the workshop

from diverse actors, with robust presentations given by:

- ▶ Experts from CBs and the operating entities of the Financial Mechanism of the Convention, as well as funds under UNFCCC, that can provide an overview of all the work already convened within and outside UNFCCC in order to identify gaps and avoid overlap;
- ▶ Experts from research or international organizations and initiatives within and outside UNFCCC (*inter alia*, FAO, World Meteorological Organization [WMO], IPCC, WB, EU Development Policy, GASL, IFAD, High Level Panel of experts on Food Security, CGIAR/CCAFA, Climate and Clean Air Coalition [CCAC], GRA, Coordination of International Research Cooperation on soil Carbon Sequestration in Agriculture [CIRCASA], the 4 per 1000 initiative) that can share their research and implementation experiences related to the two KJWA topics;
- ▶ The UNFCCC secretariat, which could outline the adaptation landscape under UNFCCC, to explain where adaptation is taken into account, including in the light of the Katowice rulebook; and
- ▶ Representatives from Parties, observers and other stakeholders, including farmers, who can share important perspectives and play a key role in implementing actions on the ground.

Regarding the last point, one submission (EU) highlights the usefulness of allocating more time to international initiatives and research organizations emphasizing links with the Global Climate Action Agenda and pre-2020 work instead of Parties presentations.

Five Party submissions expect that the two workshops will lead to a fruitful debate informing the participants on how agriculture is addressed in the relevant elements of the Katowice Rulebook (EU), and build national capacities to facilitate the implementation of the NDCs, NAPs and other national and regional plans and programs (AGN, EU, LDC, Norway and Uruguay). As foreseen by the KJWA road map, each workshop will be followed by a report prepared by the UNFCCC secretariat that should be considered by Parties in the following SB session. In this regard, four Party submissions

(AGN, EU, Norway and Uruguay) recognize that it is not possible to find common measures or indicators to assess adaptation at global level but preparing flexible methodological frameworks could be a good solution to help Parties in identifying and developing nationally determined and appropriate sets of relevant qualitative and quantitative indicators and methods for monitoring and evaluating (M&E) adaptation. For this reason one Party (EU) proposes that the workshop report, in the form of a technical guidance document, should include some common approaches considering the existing frameworks to monitor and evaluate adaptation actions for agriculture.

Regarding topic 2(c), Parties expect as outcome of the workshop a report providing a list of possible options of practices and technologies already applied around the world, with an assessment of their benefits, barriers and challenges.

OVERVIEW OF THE SUBMISSIONS BY OBSERVERS

UN System and intergovernmental organizations

This part of the analysis summarizes the views expressed in three observer submissions representing the UN system (FAO, IFAD and WFP) and two IGOs (CGIAR–CIAT–WB, EAC) on topics 2(b) and 2(c). In providing their views, the five observers or groups of observers prepared their submissions with different levels of detail and varying length, focussing on specific aspects. More precisely, two submissions (one UN system: FAO; one IGO: EAC) express their view on both topics 2(b) and 2(c), while two (two UN system: IFAD and WFP) focus exclusively on topic 2(b), and one group submission (one IGO: CGIAR–CIAT–WB) – on topic 2(c). Main initiatives and programmes highlighted in their submissions are reported for reference in the Annex.

These observers or groups of observers recall in their submissions the risks and vulnerabilities that the agricultural sectors and food security are

experiencing in a changing climate. Moreover, they underline the need to support countries, both in applying approaches and methods for the assessment of adaptation, adaptation co-benefits and resilience, and in undertaking climate actions for sustainable soil and water management, as well as for the other thematic areas of the KJWA.

In this regard, three observer submissions (one UN system: FAO; two IGOs: CGIAR–CIAT–WB and EAC) see the KJWA as an opportunity to provide countries with the necessary technical support to assess adaptation, achieve soil health targets, and enhance their efforts for climate change adaptation and mitigation. These targets should be strongly integrated into the national plans and programmes, such as the NDCs under the Paris Agreement. These submissions highlight the willingness to provide support to countries in the agricultural sector and to work in partnership with other actors in the climate and development fields to advance implementation of the KJWA. They also highlight readiness to support implementation

of the NAPs, as agreed upon under the Cancun Adaptation Framework, the NDCs, the Enhanced Transparency Framework under the Paris Agreement, and achieve the SDGs as part of the 2030 Agenda.

Another observer (one UN system: IFAD) remarks the importance of promoting strong partnerships with other actors working on climate and agriculture, based on comparative advantages and shared goals for tackling a global challenge like climate change.

Non-governmental organizations and non-admitted entities

This part of the analysis summarizes the views on topics 2(b) and 2(c) expressed by observer organizations in 18 submissions including 15 NGOs (CAN, CARE and others, NWF and others, CropLife, EDF, BV-FIBL, Gender CC, GIZ, IFA, NACSAA, Virginia Tech, WBCSD, WFO, WRI, YOUNGO) and three NAEs (ABDN and others, CNA, 4 per 1000 and others). In general, the submissions provided by the observers or groups of observers representing the NGOs and NAEs have a diverse level of detail and varying length, focussing differently on specific aspects. More precisely, 12 submissions (11 NGOs: BV-FIBL, CAN, CARE, CropLife, EDF, Gender CC, NACSAA, NWF and others, Virginia Tech, WFO, YOUNGO; one NAE: CNA) express their view on both topics 2(b) and 2(c), while one submission (one NGO: WRI) focuses exclusively on topic 2(b) and five (three NGOs: GIZ, IFA, WBCSD; two NAEs: ABDN and others, 4 per 1000 and others) on topic 2(c).

Almost all the observers or groups of observers highlight in their submissions the importance of the agricultural sector to tackle climate change. In particular, many submissions refer to the need to reduce the vulnerability of agricultural systems, enhance their adaptive capacity and strength their resilience. Application of climate-resilient agriculture, sustainable management practices and innovative technologies are suggested as possible solutions by the majority of these submissions. Moreover, a great number of submissions underline that the achievement of these targets can only be boosted if supported by enabling policies and by coordinated action between international, regional, national and local-level initiatives.

Nine submissions (seven NGOs: BV-FIBL, CAN, EDF, NACSAA, Virginia Tech, WFO, WRI; two NAEs: CNA, 4 per 1000 and others) underline how the KJWA represents an important opportunity for countries to sustainably improve their agricultural systems and rural livelihoods, enhance adaptive capacity to changing climatic conditions, improve resilience, maintain ecosystem services, reduce and/or avoid greenhouse gas emissions and increase carbon sequestration. In particular, the KJWA is seen by these observers or groups of observers as an important process aimed at sharing best practices and lessons learned that can help countries to:

- ▶ Promote a common vision on the challenge that agriculture is facing in the context of climate change to foster adaptation and mitigation; and
- ▶ Identify both general and differentiate solutions according to local needs and conditions, including the adoption of innovative technology, the implementation of sustainable production and management practices, the enhancement of soil conservation and rational use of inputs and water.

Concrete results and progresses on the ground from the KJWA process are expected by ten submissions out of 18 (seven NGOs: GIZ, NACSAA, NWF and others, Virginia Tech, WBCSD, WRI, YOUNGO; three NAEs: CNA, ABDN and others, 4 per 1000 and others), in alignment with the main climate policies and climate national plans and programmes, and include:

- ▶ Facilitating the implementation of the NDCs and Nationally Appropriate Mitigation Actions (NAMAs) and of other relevant national strategies and plans for climate such as National Adaptation Programs of Actions (NAPAs) and NAPs (one NGO: YOUNGO; one NAE: 4 per 1000 and others);
- ▶ Optimizing the efforts on the land sector to reach SDGs (one NGO: NACSAA; one NAE: ABDN and others); and
- ▶ Strengthening the alignment among the elements under the KJWA and the goals of the climate-smart agriculture (CSA) as defined by FAO, that are, in their turn, implicitly aligned with the goals of the Paris Agreement (two NGOs: NACSAA, Virginia Tech).

Two submissions (two NGOs: NWF and others and WRI) underline that for many countries agriculture and climate change is a key point and is among the most cited priorities in NDCs, NAMAs, NAPAs, NAPs, and National Communications. The same submissions (two NGOs: NWF and others and WRI) highlight also that fostering climate finance, particularly for agriculture, is fundamental for adaptation to climate change, and that agriculture is already one of the highest-funded sectors in the adaptation portfolios of the Adaptation Fund, the Least Developed Countries Fund, the Pilot Program for Climate Resilience and the Green Climate Fund. However, considering the daunting challenge of making agriculture more resilient despite climate change, funding for agricultural adaptation is still not meeting the needs of annual adaptation costs of developing countries.

2.1 Views on topic 2(b): Methods and approaches for assessing adaptation, adaptation co-benefits and resilience

UN system intergovernmental organizations

Four observer submissions (three UN system: FAO, IFAD WFP; one IGO: EAC) express their views specifically on the element 2(b). These submissions highlight that gender-responsive adaptation, resilience and mitigation in agricultural sector are essential to achieve the broader aims of eliminating hunger, safeguarding food security and nutrition, reducing rural poverty, and making the agricultural sectors more productive and sustainable.

Three submissions (two UN system: IFAD and FAO; one IGO: EAC) highlighted that efforts in

assessing and monitoring progress on adaptation, adaptation co-benefits and resilience aim at accelerating and scaling up coherent actions to address the current and future climate threats and impacts on the agricultural sectors and to reduce vulnerability of affected people. At the same time targets seek to achieve sustainable food systems, to increase agricultural livelihoods, and to ensure food security and nutrition for most vulnerable people and countries.

According to three submissions (three UN System: FAO, IFAD and WFP), the objective of reducing vulnerability, enhancing adaptive capacity and strengthening resilience can be achieved by applying, for example, climate-resilient and sustainable management practices as well as innovative technologies, from the local level of community household to the subnational and landscape level. The achievement of these targets can be boosted if supported by an enabling legal, policy and institutional environment at the national level and by proper financial resources, both public and private.

In this regard, the three submissions (three UN System: FAO, IFAD and WFP) specifically refer to country experiences that can be used as examples of best practices at local, national and international levels, and that can help farmers to increase and/or track, measure and monitor adaptation, adaptation co-benefits and resilience in different agricultural systems (see Annex).

Two submissions (one UN System: FAO; one IGO: EAC) identify possible needs and priorities to be addressed when developing methods and approaches for assessing adaptation, adaptation co-benefits and resilience of agricultural systems. In particular, these submissions recognized that tracking the progress of adaptation and resilience at local and national levels is urgent, given that negative impacts of climate change continue to severely affect the livelihoods of the most vulnerable ecosystems and refer to:

- The lack of agreed methods, indicators and frameworks assessing progress towards adaptation and resilience, and the consequent need to develop a coherent indicator framework for designing, measuring and tracking mitigation, adaptation and resilience progress

in agriculture at the global, regional and national levels;

- ▶ The need to monitor and report the progress of adaptation and resilience measures achieved by countries, while considering the commitments under the Paris Agreement. However, also recognizing that countries are already advancing M&E frameworks to measure different aspects of adaptation and resilience processes and outcomes at the national level, based on their own targets and priorities stated in their climate change policies; and
- ▶ The need for countries to take into account possible future commitments under the UNFCCC COP 24 decision (UNFCCC, 2018d), requesting the Adaptation Committee and the IPCC to prepare a technical paper on methodologies for assessing adaptation needs and their application, as well as on the related gaps, good practices, lessons learned, and guidelines, for consideration and further guidance by the 57th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA 57) in November 2022.

One observer (one UN System: IFAD) highlights that adaptive capacity and resilience should be measured using proxy indicators, taking into account the interplay of an often complex mix of socio-economic and environmental factors.

Three submissions (two UN System: FAO and WFP; one IGO: EAC) recognize that the harmonized methods, metrics and indicators for M&E of adaptation and resilience in the agricultural sectors might encounter hindrances. These submissions specify that possible distortions can arise from the general application of specific quantitative indicators, due for example to:

- ▶ The country-specific nature of adaptation and socio-economic conditions, which are context specific and cross-sectoral;
- ▶ The reality that existing local and national adaptation M&E systems measure different aspects of adaptation, their results often are not directly comparable and do not lend themselves to globally standardized indicators; and
- ▶ The evolving objectives, scopes and purposes, as well as different levels of technical capacities

for assessing adaptation at various scales (local, national and global).

Therefore, these submissions (two UN System: FAO and WFP; one IGO: EAC) suggest that qualitative indicators can provide a more complete picture of outcomes. In this regard, strengthening M&E systems between the various levels, which complements the horizontal harmonization across the global frameworks at national level, is highly important. A shift is, therefore, suggested in the methods and approaches that should reduce silos and reinforce synergies, while promoting an integrated approach aiming also at the implementation of NAPs and NDCs.

Two submissions (UN System: FAO; IGO: EAC) propose possible actions for addressing the need of developing a coherent indicator framework to monitor progress towards the targets that countries have set for adaptation, adaptation co-benefits and resilience, as part of the overarching 2030 Agenda for Sustainable Development and the Paris Agreement. The submissions put forward a list of possible options that Parties could consider:

- ▶ Strengthen the coordination and engagement with the Adaptation Committee on developing supplementary guidance for voluntary use by Parties, and request to develop 'agriculture specific' guidance;
- ▶ Enhance statistical capacity development of countries in both technical and institutional aspects related to SDG indicators (such as SDG 1, SDG 13 and others) of relevance to the KJWA;
- ▶ Conduct a stocktake of existing methods and approaches for assessing adaptation, adaptation co-benefits and resilience and identifying the gaps, challenges and opportunities;
- ▶ Facilitate research, technology development and transfer, knowledge sharing and capacity building on methodologies, including vulnerability assessments, for tracking adaptation progress;
- ▶ Support integrated planning and implementation of global frameworks (NAPs, Sendai Framework, NDCs and SDGs); and
- ▶ Enhance international cooperation and financial support and ensure that climate finance, e.g. private sector investment and funds such as GCF,

GEF, the Adaptation Fund, the Least Developed Countries Fund, as well as national climate finance be aligned with the proposed indicators and measurement approaches to leverage action at the required scale, providing access to innovation and technologies, particularly in the least developed countries.

Non-governmental organizations and non-admitted entities

Thirteen out of eighteen submissions (12 NGOs: BV-FIBL, CAN, CARE and others, CropLife, EDF, Gender CC, NACSAA, NWF and others, Virginia Tech, WFO, WRI and YOUNGO; one NAE: CNA) express their views specifically on topic 2(b). These submissions highlight how adaptation is a key component of climate action, particularly for agriculture, and that methods and approaches for assessing adaptation, adaptation co-benefits and resilience in agriculture are important to ensure that progress is measured and gaps are addressed, especially for the most vulnerable populations.

Many of these submissions underline that adaptation efforts, and consequently the methods and approaches to assess them, may be different in each country, in relation to specific local conditions considering a combination of geology, ecosystems, weather patterns, local livelihood opportunities, crop patterns, culture, economy, power dynamics and gender relations.

Many submissions (11 NGOs: BV-FIBL, CAN, CARE and others, CropLife, EDF, Gender CC, NACSAA, WFO, WRI, YOUNGO; one NAE: CNA) identify specific actions and strategies that should be applied in order to encourage climate change adaptation and resilience of agricultural and food production systems. These submissions make specific reference to the importance of:

- ▶ Investing in actions that pre-empt negative impacts and restore systems with the aim of increasing resilience of existing agricultural systems and practices to climate change;
- ▶ Improving sustainable land management and good soil management practices (e.g. application of agroecology, protecting soil health and seed varieties, reducing nutrient losses, conserving water, and increasing species diversity) in

order to improve climate-resilient farming systems and increase the adaptive capacity of agricultural systems to climate extremes, such as droughts and floods;

- ▶ Conducting an analysis of the technology, finance and capacity building needs to enhance adaptation of agricultural systems in different regions of the world; and
- ▶ Carrying out cost assessments of adaptation, particularly for developing countries, and stimulating communities' economic resilience.

Two observers (two NGOs: WRI and YOUNGO) recommend to put agricultural systems on paths of transformational adaptation rather than apply incremental adaptation in order to have an effective and actual response to the climate risk.

The IPCC (2019) indicates that incremental adaptation refers to adaptation that maintains the essence and integrity of a system or process at a given scale; while transformational adaptation refers to adaptation that changes the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts.

The financial and technical support is highlighted as essential by four submissions (four NGOs: CARE and others, CropLife, Gender CC and WRI). These submissions underline the importance of ensuring adequate investments to enhance adaptation, adaptation co-benefits and resilience to help farmers to find and apply new sustainable solutions to maintain, enhance and evolve their production systems. According to these submissions, financial support should aim particularly at strengthening investments in research, knowledge sharing, capacity building and scientific capacity as well as fostering social protection to ensure food security at different population levels.

Moreover, some submissions (seven NGOs: BV-FIBL, CAN, Care and others, Gender CC, WFO, WRI and YOUNGO) recommend the application of measures at country level that can enhance adaptation in agriculture, with a focus on food security and social justice, including:

- ▶ The empowerment of food producers, encouraging bottom-up organization of value chains and farmers' access in the decision-making process, with the aim of prioritizing local knowledge and resources over reliance on external inputs; and
- ▶ The enhancement of knowledge sharing, research and education among farmers, with the aim of increasing their capacity in understanding and managing the level of risk they currently face under climate change.

These submissions emphasize the importance of social inclusiveness and gender-equity issues in enhancing adaptation, adaptation co-benefits and resilience of agricultural systems

underlining that a participatory approach should be ensured when applying and assessing measures to increase adaptation, adaptation co-benefits and resilience. The inclusion of farmers, women, youth, local communities and marginalized communities should be a priority in the design, development, implementation and M&E of appropriate adaptation strategies, in pursuing the global aim to eliminate hunger, safeguard food security and nutrition, reduce rural poverty and increase sustainable agricultural production. Some submissions deepen the discussion on topic 2(b) identifying possible needs and priorities to be addressed when developing methods and approaches to assess adaptation, adaptation co-benefits and resilience of agricultural systems. In general, these submissions refer to the complexity of the challenge to track progress in climate change adaptation and mitigation, pointing out that:

- ▶ M&E of adaptation, adaptation co-benefits and resilience should be multi-dimensional (e.g. including monitoring of the social, political and environmental dimensions, the ecosystem services and the resilience of social systems, with particular regard to smallholder farmers) and inclusive involving in a participatory and gender-responsive process all the interested stakeholders (e.g. women, youth, civil society, community based organisations, NGOs, Governments, etc.) (five NGOs: CAN, CARE and others, Gender CC, WFO and YOUNGO);
 - ▶ M&E of adaptation, adaptation co-benefits and resilience in the agricultural sectors should be performed using adequate, transparent and consistent indicators, based on rigorous scientific methods. The first step should start with a vulnerability assessment at national and subnational scales to understand how much the agricultural systems are affected by the impacts of climate change and to identify and prioritize adaptation options to be then applied, monitored and measured (five NGOs: CARE and others, NACSAA, NWF and others, WFO and YOUNGO);
 - ▶ Methods and approaches to assess adaptation, adaptation co-benefits and resilience of agricultural systems should use both quantitative and qualitative indicators for description, comparison, simulation, observation and measurements (four NGOs: CARE and others, NWF and others, WFO and YOUNGO); and
 - ▶ Assessments must also address cross-sectoral linkages and clearly establish priorities, considering the relationship and nexus between agriculture, water and energy (one NGO: YOUNGO). In this regard, assessments should be carried out with an integrated approach considering all the technical, social, cultural, economic and ecological aspects of agricultural systems at local level.
- Differentiated approaches are proposed by some submissions (two NGOs: NWF and others and WFO; one NAE: CNA) to be used in M&E in relation to the type of assessment under topic 2(b):
- ▶ The monitoring and assessment of the progress in the implementation of adaptation policies, strategies and actions, should rely on indicators that allow to quantify the progress towards specific adaptation targets. Due to the wide range of adaptation strategies in the different national and international contexts general adaptation indicators should be:
 - Simple and measurable;
 - Adaptable to regional or national circumstances;
 - A reference for implementation and post implementation phases, with baseline indicators to be measured before, during and after implementation of adaptation actions; and
 - Considered in an integrated way to highlight synergies, gaps and future needs.

- ▶ The assessment of adaptation co-benefits should take into account at least the mitigation, livelihood and biodiversity co-benefits, including the improvement of GHG emissions measurement and verification methodologies applied to agricultural and livestock activities (one NGO: NWF and others; one NAE: CNA), considering also the metrics applied in measuring reductions in absolute emissions (one NGO: WFO); and
- ▶ The assessment of resilience should be based on a range of scientific and participatory methods (e.g. using remote sensing, household surveys, focus group discussions, field measurements) and diverse stakeholders (e.g. researchers, smallholders, indigenous peoples, and women).

Two submissions (two NGOs: CARE and others and YOUNGO) report possible methods to be used to evaluate adaptation, adaptation co-benefits and resilience, including the Cost-Benefit Analysis, the Cost-Effectiveness Analysis and the Multi-Criteria Analysis. As each method has its benefits and limitations, they should be used depending on the adaptation objectives according to the main stakeholders, including (national and subnational) governments, the private sector, civil society and scientific communities.

To develop appropriate methods and approaches for M&E of adaption, adaptation co-benefits and resilience, some submissions (four NGOs: CAN, CARE and others, WFO and YOUNGO) suggest to take into consideration good practices like agroforestry, agroecology and sustainable management of agricultural land, as well as the effectiveness and efficiency of technologies (like forecasting), research results and practices already developed and applied.

The support provided by funds such as the GCF, the Adaptation Fund and other finance mechanisms, as well as additional funding sources from public and private sector, is seen by some observers (six NGOs: CARE and others, Gender CC, NWF and others, WFO, WRI, YOUNGO; one NAE: CNA) as an important input to develop appropriate methods and approaches for assessing adaptation, adaptation co-benefits and resilience and to help in achieving the potential contributions from agriculture under the NDCs.

2.2 Views on topic 2(c): Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management

UN System and intergovernmental organizations

Three observer submissions (one UN system: FAO; two IGOs: CGIAR-CIAT-WB and EAC) express their view specifically on the element 2(c). Two submissions (one UN system: FAO; one IGO: CGIAR-CIAT-WB) highlight the following:

- ▶ Healthy soils that store carbon and sustainable water management are important for their contributions to food production, ensuring food security as well as mitigation and adaptation to climate change;
- ▶ Soil organic matter (SOM) content or carbon content is an excellent indicator for overall soil health; and
- ▶ Healthy soils are associated with enhanced biodiversity, water availability, nutrient holding capacity, better structure and aggregate stability, as well as climate change adaptation and mitigation benefits, therefore soil health should be recognized as a global public good, much more than a private good.

One submission (one IGO: CGIAR-CIAT-WB) highlights that increasing SOM content is urgent and critically important to achieve a 1.5°C world, as reported in the 2018 IPCC special report. Another

submission (one UN System: FAO) mentions the issue of the direct impact of nutrient pollution on soils and clean water, which, therefore, should also be considered during the KJWA process when addressing topic 2(d) – Improved nutrient and manure management towards sustainable and resilient agricultural systems.

A list of initiatives and experiences undertaken at international level is reported by some submissions from observers of the UN system and IGOs.

These initiatives could be considered as best practices (see Annex) for countries towards fostering SOC sequestration and improving soil health and sustainable water management, and are aligned also with the Land Degradation Neutrality target established by the UNCCD.

Three submissions (one UN System: FAO; two IGOs: CGIAR-CIAT-WB and EAC) identify possible needs and priorities to be addressed in order to improve soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management, as comprised in topic 2(c) of the KJWA. In this regard, these submissions highlight the following:

- ▶ The urgent need to create and strengthen a cross-sectoral global agenda for collective action on soil carbon;
 - ▶ Public and private efforts should be promoted and access to investment should be facilitated in order to improve soil health, considering sustainable intensification and improving farmers' incomes while building resilience and enhancing climate change mitigation;
 - ▶ Importance of strengthening the role of soil health in adaptation and mitigation commitments under the NDCs by supporting countries to better identify the public and private benefits in the climate change context and in relation to the SDGs;
 - ▶ The importance of access to innovative technologies for soil and water management in order to enhance protection while facilitating agricultural production and addressing food security;
 - ▶ Agricultural development investments should prioritize soil health and prevent further degradation of soils, enhancing sustainable soil management and promoting CSA at watershed and landscape level; and
 - ▶ The importance of addressing technical and procedural issues around the Measuring, Reporting and Verification (MRV) of soil health and SOC.
- Actions for addressing the identified needs are proposed by three submissions (one UN System: FAO; two IGOs: CGIAR-CIAT-WB and EAC) and include the following issue to be discussed at the in-session SB 50 workshop:
- ▶ The generation of updated information on carbon sequestration in different regions and countries, including SOC mapping and the global assessment of SOC sequestration potential, through fostering access to research, analysis and tools for sustainable soil and water management that respond to the adaptation and mitigation needs of countries;
 - ▶ The facilitation of country-to-country knowledge exchange and capacity building in particular to implement sustainable soil and water management at the national and local levels. This may include, implementation of integrated systems in the agricultural sectors to improve soil health and soil fertility, as well as water availability and quality such as integrated crop-livestock, rice-fish, food-energy, integrated watershed management, and agroforestry systems;
 - ▶ The reversal of the trend in water scarcity for agriculture through sustainable agriculture water use, drought preparedness, saline agriculture, and wastewater nutrient recovery, reuse for irrigated agriculture, and urban reclaimed water for irrigation;
 - ▶ The identification and application of robust ways to increase long-term soil carbon sequestration and avoid loss of the existing soil carbon pools, through for example, the elimination of burning, halting surface erosion, residue recycling, avoidance of excessive ploughing, and not draining organic soils and peatlands;
 - ▶ The facilitation of international cooperation and access to finance and investment in sustainable soil and water management to help achieve multiple benefits in terms of food security and nutrition, poverty reduction, climate change

adaptation and mitigation, the provision of ecosystem services and overall sustainable development; and

- ▶ The enhancement of policies aimed at removing barriers to investment in soil health, including the important barrier of the low and insecure private return on investment into soil health by farmers.

Non governmental organizations and non-admitted entities

Seventeen out of eighteen observers submissions (14 NGOs: BV-FIBL, CAN, CARE and others, CropLife, EDF, Gender CC, GIZ, IFA, NACSAA, NWF and others, Virginia Tech, WBCSD, WFO, YOUNGO; three NAEs: ABDN and others, CNA, 4 per 1000 and others) express their view on topic 2(c).

Despite the differences among the submissions in structure, length, degree of detail and focus on different priority issues, all submissions highlight the importance of improving soil carbon, soil health, soil fertility and water management. These issues are considered as priority in order to increase food security and meet the growing global food demand as well as to contribute to adaptation to and mitigation of climate change in view of the Paris Agreement goals, to protect biodiversity resources and enhance the livelihoods of the people worldwide who work in agriculture. Therefore, according to these submissions, the improvement of soil and water management practices encompasses a wide range of questions, e.g. environmental, climatic, governance, sociological, economical and ethical ones.

Many submissions (six NGOs: CARE and others, CropLife, GIZ, NWF and others, Virginia Tech and YOUNGO; two NAEs: ABDN and others and 4 per 1000 and others) suggest to take into consideration existing best practices, technologies and know-how, research experiences and results, programmes, initiatives, policy instruments and tools developed and undertaken at local, national and international level.

The most common sustainable management practices highlighted by these observers as priorities to improve soil carbon, soil health and soil fertility and water management in cropland, grassland and integrated systems include:

- ▶ Promotion of conservation agriculture, CSA, permaculture, agroecology that include practices as reduced tillage or no-till, strip-tillage or mulch sowing, permanent organic soil cover, use of compost and organic fertilizers like livestock manures, rationalization of the use of inputs, restoration of degraded areas and pastures (11 NGOs: BV-FIBL, CAN, CARE and others, CropLife, EDF, Gender CC, GIZ, NACSAA, Virginia Tech, WFO and YOUNGO; three NAEs: ABDN and others, CNA and 4 per 1000 and others);
- ▶ Cover cropping that increases the overall resiliency of agricultural systems reducing soil compaction, protecting soil from wind and water erosion, providing habitat for beneficial pollinators and increasing water retention and soil nutrients, among other benefits (two NGOs: NWF and others and YOUNGO);
- ▶ Use of nature-based solutions to increase SOC uptake and water protection through agroforestry and protecting and restoring natural forests, peatlands and grasslands, avoiding their land use conversion for cultivated land (three NGOs: EDF, Gender CC and YOUNGO; three NAEs: ABDN and others, CNA and 4 per 1000 and others);
- ▶ Precision Agriculture that permits a more precise execution of farm operations and applications in the field in order to increase production efficiency, while reducing on-site degradation of resources and off-site environmental problems, such as carbon emissions (one NGO: CropLife);
- ▶ Protection of crop diversity avoiding monocrop, low genetic diversity crops, pesticides and genetically modified organisms and enhancing the co-plantation of flora species in fields (one NGO: YOUNGO);
- ▶ Implementation of technologies, including biotechnologies, as for example a combination of 'soil smart' (reducing soil disturbances), 'rainfall smart' (increasing capture and storage) and 'irrigation smart' (using small-scale and precision irrigation) practices (two NGOs: CARE and others and CropLife); and
- ▶ Application of soil management strategies that should take into account the overall impacts of both the intensity and absolute GHG emissions reduction, assuring that no displacement of

emissions or new emissions of other GHGs occur. This can be achieved, among other ways, through a reduction of chemical inputs and encouraging closed nutrient cycles (three NGOs: BV-FIBL, EDF and NWF and others; two NAEs: CNA and 4 per 1000 and others).

On the last point, some submissions (three NGOs: CropLife, IFA and NACSAA) express their view on the application of chemicals according to Integrated Plant Nutrient Management practices, which entail applying mineral fertilizers combined with organic fertilizers, or to new farming biotechnologies that combine no-till farming with herbicides and herbicide-tolerant biotech crops in order to prevent weeds competing with crops for water and to reduce erosion. These observers (mainly agribusiness representatives) see these practices as a possible climate solution for achieving global food security, focusing on productivity intensification and the subsequent increase of soil carbon and reduction of GHG emissions per unit of agricultural products. However, many other observers disagree on the use of chemicals considering the risks of increasing absolute (total) GHG emissions of the agriculture sector and the threats posed to biodiversity, pushing for a reduction of chemicals inputs as a general aim to improve soil health and fertility.

Many submissions deepen the discussion on the needs and priorities they see as paramount to improve soil carbon, soil health and fertility and water management in cropland, grassland and integrated systems both at the local and the global scales. In particular, they refer to the implementation of practices that increase soil carbon sequestration, enhance nutrient cycling, and water storage, support soil biodiversity and increase food security and climate resilience, delivering multiple ecosystem services and co-benefits. Specifically, the following needs and priorities are pointed out, underling the importance to:

- ▶ Develop and implement action plans and mechanisms to monitor and evaluate soils facilitating cost-efficient soil carbon MRV systems. This could include an update of the global assessment of soils based on country-level spatial data and a new global SOC map, a refinement of the IPCC inventory guidelines,

and the production of a set of reference criteria for project assessment on agricultural soil carbon sequestration (four NGOs: CAN, GIZ, WBCSD and YOUNGO; two NAEs: ABDN and others and 4 per 1000 and others);

- ▶ Provide research, technical and scientific support to farmers, based on the needs of specific countries, agriculture systems and stakeholders (five NGOs: BV-FIBL, IFA, NACSAA, NWF and others and Virginia Tech; two NAEs: ABDN and others and 4 per 1000 and others), in order to improve soil and water protection in agriculture, and promote knowledge sharing on good practices, innovation and technology through conferences, trainings, online platforms, etc. (eight NGOs: BV-FIBL, GIZ, IFA, NACSAA, NWF and others, WBCSD, WFO and YOUNGO; two NAEs: CNA and 4 per 1000 and others) as well as learning from indigenous and traditional practices and knowledge (three NGOs: WBCSD, WFO and YOUNGO; one NAE: 4 per 1000 and others);
- ▶ Encourage and facilitate private sector engagement in delivering soil health and promote partnerships between all relevant stakeholders that are key to achieving the multiple co-benefits of soil health (ranging from fertility and water management to climate mitigation and biodiversity conservation and enhancing livelihoods). Farmers should be considered, within gender inclusive strategies, as key stakeholders in processes of supply chain cooperation, public-private partnerships and landscape alliances (nine NGOs: CAN, CARE and others, CropLife, EDF, Gender CC, IFA, NWF and others, WFO and WBCSD; two NAEs: ABDN and others and 4 per 1000 and others);
- ▶ Have a long-term vision, avoiding short-term profits from agricultural systems that can compromise soil health and biodiversity in the long-term through management practices that reduce biodiversity, threaten food security, violate human rights, undermine the land access to farmers and determinate land grabbing (three NGOs: GIZ, WFO and YOUNGO). This can be achieved through coordinated work with institutions and local communities, promoting appropriate practices and technologies, and strengthening livelihoods and social resilience (three NGOs: WBCSD, WFO and YOUNGO; three

NAEs: ABDN and others, CNA and 4 per 1000 and others);

- ▶ Build an enabling environment through the strengthening of national environmental policies and the alignment with climate commitments of national strategies and plans such as NAPs and NDCs of the same countries (six NGOs: BV-FIBL, GIZ, NACSAA, NWF and others, WBCSD and YOUNGO; two NAEs: ABDN and others and 4 per 1000 and others);
- ▶ Incentivize business innovations (e.g. in finance, insurance, delivery of extension services, digital agronomy) to unlock the potential of smallholder farmers and facilitate financial investments to foster sustainable agricultural management, by for example maintaining or increasing revenues, reducing or avoiding costs, enhancing reputation, providing technical support, supporting research, and improving irrigation systems (six NGOs: BV-FIBL, NACSAA, Virginia Tech, WBCSD, WFO and YOUNGO; two NAEs: ABDN and others and 4 per 1000 and others); and
- ▶ Promote climate finance and facilitate access to funds for small-holder farmers and incentivize payments for ecosystem services offered by carbon markets in order to help achieve the potential contributions from agriculture (eight NGOs: CropLife, EDF, GIZ, NACSAA, NWF and others, Virginia Tech, WFO and YOUNGO; two NAEs: ABDN and others, 4 per 1000 and others).

particular some observers give certain suggestions regarding the workshops' format that should:

- ▶ Ensure an inclusive participation, avoiding potential conflicts of interest, of all relevant stakeholders, i.e. through the constitution of round tables for an effective discussion, active participation and presentations by observers, farmers and other constituencies (in particular NGOs, the Indigenous Peoples and the Gender Constituency), who have significant and relevant expertise to share with the process (six NGOs: CAN, CARE and others, NWF and others, EDF, WFO and YOUNGO; one NAE: 4 per 1000 and others); and
- ▶ Case studies and examples of policy actions for improving soil carbon, health and fertility and water management (one NGO: YOUNGO; one NAE: 4 per 1000 and others) as well as question and answers sessions between participants.

Possible elements and inputs to be considered and discussed in the workshop SB 50 on topic 2(b) and 2(c), include discussions on:

- ▶ Way to share best practices and lessons learned to increase the knowledge on measuring adaptation, adaptation co-benefit and resilience and improve soil carbon, health and fertility and water management (one NGO: YOUNGO; one NAE: 4 per 1000 and others);
- ▶ How funding can be made readily available for projects addressing soils and water in terms of adaptation and mitigation including initiatives by local actors (one NGO: YOUNGO). In this sense a report written by international funding institutions could help Parties and observers in understanding the challenges of financing climate action in relation to soil in agriculture and in mapping the existing sums, regions and type of initiatives already in place and targeted at soil health, soil conservation, carbon sequestration and water protection; and
- ▶ The drawing of safeguards in relation to each topic in the Koronivia road map (three NGOs: EDF, NWF and others and YOUNGO; one NAE: 4 per 1000 and others), with particular emphasis on developing institutional capacities to:

2.3 Views on the workshops on topics 2(b) and 2(c)

Only eight observer submissions from NGOs and NAEs (six NGOs: CAN, CARE and others, NWF and others, EDF, WFO and YOUNGO; two NAEs: ABDN and others and 4 per 1000 and others) present considerations regarding the SB 50 workshop on topic 2(b) and 2(c), introducing possible inputs, main themes for consideration, the expected participation and the desired outcomes. In

- Apply efficient MRV systems of adaptation, adaptation co-benefits and resilience;
- Implement sustainable land management to preserve and increase SOC stocks, reduce water stress and GHG emissions and improve water management (one NGO: EDF); and
- Focus on the commitments of the national planning documents, such as NAPs and NDCs, as an opportunities for enhancing goals under KJWA (one NGO: YOUNGO, one NAE: 4 per 1000 and others).

One observer (one NGO: CARE and others) sees as possible outcome of the workshop on topics 2(b) and 2(c) a clear guidance, including good practices and principles or criteria for action to drive effective, participatory, gender-transformative activities, both to enhance methods and approaches for assessing adaptation, adaptation co-benefits and resilience and to improve soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management.

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ANNEX

Main initiatives and programmes undertaken by observers or in which they are actively involved recalled in the observer submissions

LINK TO THE KJWA DECISION ELEMENT 2(B) / Observer: UN System		
OBSERVER who mentioned the Programme/Project/Report	PROGRAMME/PROJECT/REPORT	WEB LINK
FAO	Tracking adaptation in agricultural sectors	www.fao.org/3/a-i8145e.pdf
FAO	Strengthening M&E for adaptation in the agriculture sectors	forthcoming
FAO	Cost-benefit analysis for climate change adaptation policies and investments in the agriculture sectors	www.fao.org/in-action/naps/resources/detail/en/c/1114149/
FAO	Impact evaluation to improve policymaking for climate change adaptation in the agriculture sectors	www.fao.org/in-action/naps/resources/detail/en/c/1110771/
FAO	Estimating greenhouse gas emissions in agriculture. A manual to address data requirements for developing countries	www.fao.org/3/a-i4260e.pdf
FAO	National GHG inventory for agriculture	https://elearning.fao.org/course/view.php?id=327
FAO	National GHG inventory for land use	https://elearning.fao.org/course/view.php?id=453
FAO	Ex-ante carbon-balance tool	www.fao.org/tc/exact/ex-act-home/en/
FAO	Global livestock environmental assessment model	www.fao.org/glead/en/
FAO	Global forests resources assessment	www.fao.org/forest-resources-assessment/en/
FAO	Collect earth	www.openforis.org/tools/collect-earth.html
FAO	Climate-smart agriculture (CSA) sourcebook	www.fao.org/climate-smart-agriculture-sourcebook/en/
FAO	Operational guidelines for the design, implementation and harmonization of monitoring and evaluation systems for climate-smart agriculture	www.fao.org/3/ca6077en/CA6077EN.pdf
FAO	State of food security and nutrition in the world (SOFI) 2018	www.fao.org/3/I9553EN/i9553en.pdf
FAO	Voluntary guidelines to support the integration of genetic diversity into national climate change adaptation planning	www.fao.org/3/a-i4940e.pdf
FAO	Resilience index measurement and analysis (RIMA)	www.fao.org/resilience/resources/resources-detail/en/c/317275/
FAO	Self-evaluation and holistic assessment of climate resilience of farmers and pastoralists (SHARP)	www.fao.org/in-action/sharp/background/en/
IFAD	Adaptation for smallholder agriculture programme (ASAP) - Indicators 1 to 8	https://webapps.ifad.org/members/ec/102/docs/EC-2018-102-W-P-7.pdf
IFAD	Report on IFAD's development effectiveness (RIDE)	https://webapps.ifad.org/members/eb/124/docs/EB-2018-124-R-13-Rev-1.pdf
IFAD	Climate action report	www.ifad.org/en/web/knowledge/publication/asset/40864597
WFP	R4 rural resilience initiative	https://www1.wfp.org/publications/r4-rural-resilience-initiative
WFP	Resilience index measurement and analysis (RIMA)	www.fao.org/resilience/background/tools/rima/en/
WFP	MERET (Managing environmental resources to enable transitions)	https://m.wfp.org/sites/default/files/MERET%20Factsheet.pdf

WFP	The influence of the MERET programme on resilience to the 2015 el Niño-induced drought in Ethiopia: adapting to climate change	https://docs.wfp.org/api/documents/WFP-0000103305/download/
WFP	Enhancing resilience to disasters and the effects of climate change	https://www1.wfp.org/publications/enhancing-resilience-disasters-and-effects-climate-change
WFP	Evaluation report of WFP's enhancing resilience programme	https://www1.wfp.org/publications/evaluation-report-wfps-enhancing-resilience-programme
WFP	WFP's corporate results framework (CRF)	https://docs.wfp.org/api/documents/WFP-0000099356/download/
WFP	WFP Strategic plan (2017-2021)	https://www1.wfp.org/publications/wfp-strategic-plan-2017-2021

LINK TO THE KJWA DECISION ELEMENT 2(C) / Observer: UN System

OBSERVER who mentioned the Programme/Project/Report	PROGRAMME/PROJECT/REPORT	WEB LINK
FAO	Unlocking the potential of soil organic carbon	www.fao.org/3/b-i7268e.pdf
FAO	Global soil organic carbon map (GSOC Map)	www.fao.org/global-soil-partnership/pillars-action/4-information-and-data-new/global-soil-organic-carbon-gsoc-map/en/
FAO	Measuring and modelling soil organic carbon stocks and stock changes in livestock production systems	www.fao.org/3/19693EN/i9693en.pdf
FAO	Guidelines for measuring, mapping, monitoring and reporting SOC	forthcoming
FAO	International network on black soils	www.fao.org/global-soil-partnership/intergovernmental-technical-panel-soils/gsoc17-implementation/internationalnetworkblacksoils/en/
FAO	Global soil laboratory network	www.fao.org/global-soil-partnership/pillars-action/5-harmonization/glosolan/en/
FAO	International code of conduct for the use and management of fertilizers	www.fao.org/fsnforum/activities/discussions/CoCoFe_II
FAO	International code of conduct on pesticide management	www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/Code_ENG_2017updated.pdf
FAO	Soil doctors programme	www.fao.org/global-soil-partnership/pillars-action/2-awareness-raising/soil-doctor/en/
FAO	Wealth of waste: the economics of wastewater use in agriculture	www.fao.org/3/i1629e/i1629e.pdf
FAO	Global framework on water scarcity in agriculture (WASAG)	www.fao.org/land-water/overview/wasag/en/
FAO	Nature-based solutions for agricultural water management and food security	www.fao.org/3/CA2525EN/ca2525en.pdf
FAO	Water productivity through open access of remotely sensed delivered data (WaPOR)	https://wapor.apps.fao.org/home/1
FAO	AQUASTAT	www.fao.org/nr/water/aquastat/main/index.stm
FAO	Land degradation assessment in dryland	www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/category/details/en/c/1036360
FAO	Guidelines for the safe use of wastewater, excreta and greywater	https://apps.who.int/iris/bitstream/handle/10665/78265/9241546824_eng.pdf?sequence=1
FAO	World overview of conservation approaches and technologies	www.wocat.net/en/



The historic Koronivia Joint Work on Agriculture decision was adopted at the 2017 international climate conference, COP23.

The decision recognizes the fundamental importance of agriculture in responding to climate change, and calls for joint work between the two Subsidiary Bodies of the United Nations Framework Convention on Climate Change.

The Koronivia decision represents the first conclusions adopted on the agenda item on “issues relating to agriculture” since its inception in 2011. Importantly, it broadens the conversation on agriculture from its former scientific and technical focus to also consider implementation. The six elements specifically mentioned in the decision cover many of the most promising areas for action, including soil, livestock, nutrient and water management as well as the assessment of adaptation, socio-economic and food security dimensions.

Parties and observers were invited to submit their views on topics 2(b) – methods and approaches for assessing adaptation, adaptation co-benefits and resilience; and 2(c) – Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management by 6 May 2019. This working paper summarizes 17 submissions made by Parties and Party groups and the 23 submissions from observers that were published on the UNFCCC submission portal by 20 June 2019.

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