



**Submission by the Food and Agriculture Organization of the United Nations (FAO)
To the United Nations Framework Convention on Climate Change (UNFCCC)
In relation to the Dialogue on the relationship between land and climate change adaptation related
matters (Decision 1/CP.25)**

FAO welcomes the request to Subsidiary Body for Scientific and Technological Advice (SBSTA) to convene at its 52nd session a dialogue on the relationship between land and climate change adaptation related matters and the invitation to submit views related to these matters (decision 1/CP.25 paragraphs 32-33).

Land, including agricultural sectors^a, is essential for livelihoods of billions of people and plays key role in addressing socioeconomic, environmental and food security dimensions of climate change. Therefore, it is vital to adopt resilient and integrated land use systems, better land use governance and planning, and shift to the approaches that safeguard biodiversity, use natural resources sustainably and promote ecosystem services. For those reasons, the dialogue should build on the momentum of the *IPCC Special Report on Climate Change and Land*^b and point out that mutually supportive climate and land policies have the potential to save resources, amplify social adaptation and resilience, support ecological restoration, and foster engagement and collaboration between multiple stakeholders. Whilst, policies that enable and incentivize sustainable land management, including improved access to markets and financial services, empowering woman and indigenous peoples, reforming subsidies and promoting an enabling trade system, are also part of tackling climate change.

FAO proposes the following themes to be included in the dialogue:

1. Building climate resilient land sectors

Enhancing the climate adaptation and resilience of land use policies and practices to climate shocks and stresses is highly important to address the current climate crisis, which foresees the increase in frequency and severity of extreme weather events. These extreme events together with changing seasonal patterns, land degradation and loss of biodiversity have already adversely affected agricultural livelihoods and related food security and nutrition. In addition, there is a lack of understanding between links of climate, finance, business, humanitarian and development of climate risks management priorities. Therefore, it is not possible tackle multiple risks within and across key sectors, especially for transforming the land and agricultural sectors as one of the main climate solutions.

Discussion in the dialogue should lead to agree on a concise and coherent measures for climate adaptation and resilience across sectors in general and for the land use related sectors. Building on local, national, regional and global level experiences, initiatives and funding mechanisms, these shared measures will enable all public-private and community actors to shape policies, investments and practices towards climate risk management measures to build climate resilient and sustainable land sectors.

2. Leveraging social protection to promote climate adaptive land use change by resource poor farmers

The IPCC has recognized that the smallholder farmers, women, youth, local communities and indigenous people are the most dependent on the land resources, but also likely to be the most vulnerable to the impact of climate change. For the most vulnerable, adapting to climate change often involves changing land use practices, with implications for how they allocate their scarce labour and capital. This exacerbates the poor conditions of the vulnerable groups and leads to higher food insecurity and instability. This is partly due to the nature of climate

^a For the purposes of this document, the 'agricultural sectors' are understood to comprise crops, livestock, fisheries and aquaculture, forestry.

^b IPCC, 2019. *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. In press.

adaptive land use practices, which involve immediate costs, which may only generate benefits after several years or only manifest under adverse weather conditions. As a result, adoption of many climate adaptive land use practice by vulnerable groups is limited.

The dialogue should address inclusive national policies and programs for land management that do not lead to further inequalities which drive negative coping behaviours and unsustainable use of land. For example, the dialogue may showcase the following:

- Public policies that ensure the poorest get specific support in terms of managing risks and building adaptive capacity, through information access, social protection mechanisms and incentives.
- Co-benefits of social protection and land use policies such as nutrition and food security, reduced poverty, employment, climate change mitigation, and downstream environmental benefits.

3. *Healthy, balanced and sustainable diets to transform land sectors*

Shaping a sustainable future will depend on how we support stakeholders throughout the food systems in designing integrated solutions to meet our needs for healthy diets as well as reduce pressure on the environment. The dialogue should discuss strategies for sustainable healthy diets^c, emphasising the role of food biodiversity in human nutrition and poverty alleviation, and environmental impact associated Guiding Principles for Sustainable Healthy Diets^d.

4. *Reducing food loss and waste*

One-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year. Food loss and waste amount to major loss of resources, including water, land, energy, labour and capital and leads to greenhouse gas emissions, contributing to climate change.

Reducing food wastage is a logical priority to establish more sustainable patterns of production and consumption. Investments in food wastage reduction can achieve economic, environmental and social dividends, while contributing to food security and reducing greenhouse gas emissions.

5. *Ecosystem restoration*^e

The degradation of land and marine ecosystems is negatively impacting the well-being of at least 3.2 billion people due to loss of biodiversity and ecosystem services. Key ecosystems that deliver numerous services essential to food and agriculture, including supply of freshwater, protection against hazards and provision of habitat for species such as fish and pollinators, are declining rapidly. Currently, about 20% of the planet's vegetated surface shows declining trends in productivity with fertility losses linked to erosion, depletion and pollution in all parts of the world.

The dialogue should promote ecosystem restoration through a landscape approach, which integrates land uses where ecological, social and developmental priorities are balanced, while enhancing the conservation and facilitating landscape connectivity. Furthermore, the dialogue should also promote the importance and goals of the UN Decade on Ecosystem Restoration (2021 – 2030).

6. *Biofortification: a response to climate change adaptation with a nutrition-added value*

Climate change and variability have a greater impact on the most vulnerable people, especially those dependent on agriculture. Innovations in technology will be the catalyst for the food systems transformation needed to address malnutrition and sustainability. Solutions lie in the diversification of agricultural strategies based on ecological suitability as well as the adoption of drought tolerant strains of staple crops that are bio-fortified through conventional breeding techniques to protect the diet quality of vulnerable rural communities.

7. *The contribution of sustainable bioenergy to forest landscape restoration and to climate targets*

On the one hand, most climate mitigation pathways include substantial deployment of modern bioenergy technologies. This confirms the findings of the 2017 IEA Technology Roadmap on Sustainable Bioenergy^f; which

^c Sustainable Healthy Diets are dietary patterns that promote all dimensions of individuals' health and wellbeing; have low environmental pressure and impact; are accessible, affordable, safe and equitable; and are culturally acceptable.

^d FAO and WHO. 2019. Sustainable healthy diets – Guiding principles. Rome. Available online: <http://www.fao.org/3/ca6640en/ca6640en.pdf>

^e *Ecosystem restoration is understood as assisting the recovery of degraded, damaged and destroyed ecosystems to regain ecological functionality and provide the goods and services that people value.*

^f IEA. 2017. Technology Roadmap on Sustainable Bioenergy. Available online: https://www.ieabioenergy.com/wp-content/uploads/2017/11/Technology_Roadmap_Delivering_Sustainable_Bioenergy.pdf

states that modern bioenergy plays an essential role in the IEA 2°C Scenario, providing nearly 17% of final energy demand in 2060 compared to 4.5% in 2015. On the other hand, pathways with large levels of land conversion, including for the deployment of bioenergy, can have adverse environmental impacts (on forests, land, water and biodiversity) if not carefully managed, therefore sustainability considerations are key.

To address the above, the dialogue should discuss preferred bioenergy solutions regarding the use of biomass residues, taking into account possible competing use of residues, in particular for soil management, and integrated land use systems like agroforestry, that allow for the production of food, feed and energy production.

8. *Recarbonization of soils*

The IPCC Special Report on Climate Change and Land^b highlights that increased soil organic carbon (SOC) content is one of the most cost-effective options for climate change adaptation and mitigation, and combat desertification, land degradation and food insecurity. World's cultivated soils have lost between 50 to 70% of their original carbon stock.

Maintaining current SOC stocks and fostering SOC sequestration could greatly contribute to the climate change challenge. Farmers are central to this aim as they can be the vehicles for action on the ground and can make contribution by adopting a set of good practices to maintain current and to sequester more SOC. However, farmers require the technical know-how and the means to implement good practices. Therefore, incentives should be provided based on robust Monitoring Reporting and Verification (MRV) farm protocol. RECSOIL: recarbonization of global soils constitutes the initiative to move this action forward. Currently RECSOIL is building the set of tools to move this IPCC recommendation into action, so that the multiple benefits provided by soils can be unlocked.

9. *Soil carbon sequestration in grazing lands*

Vast quantities of carbon are sequestered in the cropland used to produce feed, and the grazing lands on which ruminant livestock are raised. In fact, a large proportion of the world's rangelands are degraded and could capture far more carbon in soil organic matter if restored. Regenerative forms of grazing can provide needed carbon offsets. Well-adapted grazing systems - with improved pasture and optimized grazing regimes - have the potential to stimulate plant growth and capture carbon in the soil, particularly in areas where degradation is not yet severe. The introduction of trees in tropical pastures on previously forested land (silvo-pastoralism) can help stabilize productivity and generate many social, economic and environmental benefits. Regenerative grazing can also contribute to improved biodiversity and water use efficiency, as well as making the land more resilient to a changing and more variable climate.

10. *Water scarcity in agriculture in a changing climate*

Countries worldwide need to urgently adapt agricultural and food systems to and mitigate the impacts of water scarcity and climate change. FAO water scarcity framework encompasses range of available coping and adaptation mechanisms for water, both in the agriculture sectors and beyond. It addresses sustainable production, food loss and waste, diets and nutrition, nexus approaches, diversification, wastewater reuse, trade, sustainable livestock and forest management, innovative landscape approaches, water productivity and private sector engagement in financing water for multiple use, harvesting, reuse, rainwater capture and integration of management approaches and sound governance to ensure equity and sustainability throughout agriculture supply chain.

11. *Responding to frequency, intensity, damage and loss from wildfires, pests and diseases*

Globally, fire affects about 370 million hectares of land every year with large damaging fires causing most loss of life, property, infrastructure, and environmental impacts; such as in Greece and California in 2018 and 2019, Bolivia in 2019, Amazon Region in 2019, and Australia in 2019-2020. Forests have also been subject to severe outbreaks of insect pests and diseases causing millions of dollars' worth of damage and immeasurable impacts to the environment and socio-cultural values. Forest insect pests are estimated to damage some 35 million hectares of the world's forest annually. Drought, fuel accumulation, extreme weather events and other impacts of climate change provide preconditions for fire and pest and disease outbreaks and exacerbate their intensity. The dialogue should address the relationship between fires, pests and diseases, the way they interact with land and increasing the resilience of forest to the impacts of climate change.