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Technical Expert Meetings on Mitigation: Session Plan

Organized as part of Technical Examination Process on Mitigation

Organizer: Food and Agriculture Organization of the United Nations (FAO)

Session III: Circular economy solutions/innovations in water and energy management for the agri-food chains

Date	Time	Venue
20 June 2019	15:30-17:00	Room GENF The World Conference Center Bonn

This **session will focus** on various **Circular Economy based solutions** involving energy and water consumption in the agri-food chain development. Nowadays, consumer chains and markets follow a linear consumption model based on picking, using and disposing. This model is not sustainable. Food chains are facing the challenge of an increasing population that is projected to reach 9 billion people by the year 2050. The increase in demand for food from this growing population will have a significant impact on water and energy consumption required in the food production and distribution. Many places in the world are already subject to water stress and if the trend continues, the increase in water demand will be impossible to meet.

Agriculture already accounts for an average of 70 percent of the withdrawals of fresh water throughout the world, and it will have to face both the pressure caused by the increase in population and the water variability caused by climate change. On the other hand, globally, agri-food systems use about 30 percent of available energy, mostly in post-harvest stages and in the form of fossil fuels.

To address this situation, the **circular economy** is proposed as a solution to the problem of consumptive water use, of nutrients needed for food production, and of energy savings. **Wastewater or reclaimed water recycling and nutrient recovery** can in fact reduce the water footprint and energy consumption. Reclaimed water can be reused for agricultural irrigation, energy can be recovered from wastewater plants - as there is potentially five times more energy in wastewater than is needed for treatment - and the nutrients recovered can provide useful fertilizer for crop production. In addition, the implementation of more efficient treatment systems such as bioreactors, reverse osmosis membranes, anaerobic digestion with bacteria, etc. can contribute to lower energy consumption. Moreover, important developments in the energy-water-food nexus operationalize the CO2-free energy deliveries through solar cells and wind mills that can meet the demand for agricultural water management processes like water treatment, pumping and irrigation. The water-energy-food nexus perspective is also important regarding the water needs to produce energy from agriculture residues (e.g. biogas).

There are other ways to introduce the circular economy in the agri-food chain: obtaining food by-products from production processes in other industries such as the brewing industry, producing bioplastics from agro-food wastes and producing energy from agricultural residues and food waste.

Innovation in these and other areas will help to achieve the Sustainable Development Goals: **SDG 2** (Zero Hunger) **SDG 6** (efficient use of water resources), **SDG 7** (improvement of energy efficiency), **SDG 12** (sustainable consumption and production) and **SDG 13** (resilience and the ability to adapt to risks related to climate and natural disasters in all countries).

The 90-minute session will have expert interventions followed by a moderated roundtable discussion, which shall be structured as follows:

05'	Brief introduction of the topic and speakers by the moderator • **Mr. Ben Sonneveld**, Deputy Director, Amsterdam Centre for World Food Studies/Athena Institute VU University Amsterdam
25'	**First round of the expert interventions on what have been done so far and lessons learnt** To set the scene for the session, the experts will be asked to address some questions related to **learning from what works** and **where we are** regarding circular economy solutions in water and energy management for agri-food chains drawing up on any relevant case study, example and their work experience: • What circular solutions are available/used to better manage energy and water use in the agri-food chain? • How these solutions benefit the agri-food chain, including emission reductions and sustainable development benefits? • What can Parties and non-Party stakeholders learn from these solutions, including the enablers and challenges/barriers to result in emission reductions and sustainable development co-benefits? **Possible expert contributors :** • **Mr. Belal Shaqareen (Remote-online participation), Ministry of Agriculture, Environment and Water, Jordan**: The representative will deliver expert contributions drawing upon experience of *"integrating biogas and solar energy in water management and agriculture"* • **Mr. Miquel Salgot (In-person participation)**, Universidad de Barcelona : The representative will deliver expert contributions drawing upon experience of "*Figuig Oasis case in Morocco"* • **Gabriel Okello (Remote-online participation),** Green Heat (Uganda, Rwanda, Ethiopia) *"Slurry-separation system – green heat in Uganda*"
15'	Interventions from other participants round the table, building up on the expert interventions and focusing on above-mentioned key guiding questions.
25'	**Second round of the expert interventions on what do we want and how do we get there** The second round of the expert interventions will delve into discussing **what do we want** to achieve to enhance opportunities in the circular economy solutions that are actionable in the short term, and **how do we get there**, including :

	• How to nurture enablers and overcome challenges/barriers for circular solutions? • What are the specific financial, technology and capacity building resources necessary to upscale and replicate innovative circular solutions? • What roles Parties and non-Party stakeholders can play to meet identified financial, technological and capacity building needs for implementing circular solutions? **Possible expert contributors :** • **Mr. Kalanithy Vairavamoorthy (Remote-online participation)**, Executive Director, IWA : The representative will deliver expert contributions drawing upon experience of "*Struvite Recovery*" • **Ms. Sasha Koo-Oshima (In-person participation)**, Deputy Director, Land and Water Division, FAO: The representative will deliver policy perspectives drawing from global experience of FAO and national experience from governments in innovation incentives and technology roadmaps • **Mr. Oriol Bellot (In-person participation),** Agriculture Projects Director, Suez
15'	Interventions from other participants round the table, building up on the expert interventions and focusing on above-mentioned key guiding questions.
5'	Final summary/wrap-up by the moderator