



## Thematic Dialogue

### Accelerating climate innovation and technology in the water-energy-food systems for inclusive NDC and NAP implementation

#### Objectives

The aim of this dialogue is to bring relevant stakeholders together to discuss innovative technology practices and solutions related to water-energy-food systems. In particular, the dialogue aims to:

- Shed light on relevant adaptation technologies (i.e. indigenous, innovative and digital technologies), with a view to strengthen adaptation planning (NAPs) and NDC ambitions in agrifood systems;
- Inform the future work of the TEC on the topic, including with regard to scoping possible thematic focus in the development of a knowledge product in 2024.

This TD will contribute to better understanding the options, ways and barriers to achieving progress under SDG 2 and the goals under the Paris Agreement.

#### Background

This TD will build on the previous work by TEC on climate-smart agriculture. It will explore the options and barriers to fostering innovation and technology development and transfer in agri-food systems including through integrating relevant considerations and measures into the planning and implementation processes of nationally determined contributions (NDCs) and national adaptation plans (NAPs).

In the TEC rolling workplan for 2023–2027, which is part of the joint work programme of the Technology Mechanism, the committee has identified the work on Water-Energy-Food nexus as a key activity under the ‘transformative and innovative solutions’ workstream. The FAO’s office of Climate Change, Biodiversity and Environment, building on their rich experience and unique expertise in the agri-food systems, has contributed to the development of this activity through their submission to the TEC call for inputs for the preparation of its new rolling workplan,<sup>1</sup> as well as bilateral engagements with the TEC at SB56 and COP27, in pursuit of closer engagement and collaboration. The TEC has welcomed the interest and contributions of the FAO and agreed to undertake this activity (C.1.1) in close collaboration with FAO.

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<sup>1</sup>See stakeholder submissions:

[https://unfccc.int/ttclear/misc/\\_StaticFiles/gnwoerk\\_static/TEC\\_documents/88dba8f79c234bbba96084322c3f0bf4/3dc400123716424ea1642d3cbac6a30f.pdf](https://unfccc.int/ttclear/misc/_StaticFiles/gnwoerk_static/TEC_documents/88dba8f79c234bbba96084322c3f0bf4/3dc400123716424ea1642d3cbac6a30f.pdf).



## Context

Agricultural sectors are responsible for about 13–21% of global total anthropogenic greenhouse gas (GHG) (IPCC, 2022), but they are also a key part of the climate solution to achieve the goals of the Paris Agreement and SDGs. According to the FAO's analysis, around 90 percent of the countries' NDCs refer to the agriculture sectors (FAO 2021),<sup>2</sup> indicating the important role of agricultural sectors in the implementation of climate agendas. Findings from the latest (fourth) synthesis report of technology needs,<sup>3</sup> published by the UNFCCC, emphasizes the significance of energy, agriculture, and water sectors in achieving the climate goals of countries. For mitigation, almost all of the reviewed reports in this study (53 non-Annex I parties) prioritized the energy sector. For adaptation, agriculture and water were the most prioritized sectors.

Addressing the water-energy-food nexus through technology-based solutions in the context of climate change is key for achieving the long-term temperature goal of the Paris Agreement and SDG2 on Zero Hunger. The Sharm-el-Sheikh Implementation Plan (decision 1/CP.27)<sup>4</sup> highlights the importance of cooperation on technology development and transfer and innovation in implementing the joint work programme activities.

Water, energy and food are essential for human well-being, poverty reduction and sustainable development. Global projections indicate that demand for freshwater, energy and food will increase significantly over the next decades under the pressure of population growth and mobility, economic development, international trade, urbanization, diversifying diets, cultural and technological changes, and climate change (FAO, 2014).<sup>5</sup>

Limited or inadequate access to energy along the agri-food chains has negative impacts, including increased food loss, limited capacity to produce higher value products and limitations in the ability of farmers to increase incomes and improve livelihoods. Reducing energy-related emissions from agri-food chains requires the promotion and scaling up of renewable energy technologies and improvement of energy efficiency. Furthermore, this allows to reduce food losses caused by improper storage and handling, reduce deforestation by providing sustainable alternatives to using wood fuels for cooking and an overall increase in rural incomes and agricultural productivity.

In particular, water-energy-food nexus presents opportunities for achieving the climate goals. Agriculture accounts for 72 percent of freshwater withdrawals so action and investment are needed to produce more with less water and support adaptation to climate change. Water is

<sup>2</sup><https://www.fao.org/3/cb7442en/cb7442en.pdf>

<sup>3</sup>[https://unfccc.int/sites/default/files/resource/sbi2020\\_inf.01.pdf](https://unfccc.int/sites/default/files/resource/sbi2020_inf.01.pdf).

<sup>4</sup>[https://unfccc.int/sites/default/files/resource/cop27\\_auv\\_2\\_cover%20decision.pdf](https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf).

<sup>5</sup>FAO, 2014. The Water-Energy-Food Nexus. Available at: <https://www.fao.org/3/bl496e/bl496e.pdf>.



**United Nations**  
Framework Convention on  
Climate Change



**Food and Agriculture Organization  
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used for agricultural production, forestry and fishery, along the entire agri-food supply chain, and it is used to produce or transport energy in different forms.

At the same time, the food production and supply chain consumes about 30% of total energy consumed globally. Energy is required to produce, transport and distribute food as well as to extract, pump, lift, collect, transport and treat water. Cities, industry and other users, too, claim increasingly more water, energy and land resources, and at the same time, face problems of environmental degradation and in some cases, resources scarcity.

Various adaptation measures built upon improved land and water management practices conservation and its efficient use have the potential to create resilience to climate change and to enhance water, energy, and food security. In order to meet the challenge of food security, there is a need to understand the need of efficient use of water and energy.



### Draft provisional agenda (3 hours session)

**Date/Time:** Thursday 8<sup>th</sup> June 2023, 9am – 12pm

**Venue:** Langer Eugen building, meeting room LE 2312 in Bonn, Germany

[https://unfccc.int/ttclear/events/2023/2023\\_event02](https://unfccc.int/ttclear/events/2023/2023_event02)

Moderator: Mariana Castaño Cano, Climate Communication Expert

Time	Agenda item	Speakers
9:00 – 9:15 (15 min)	Opening remarks by high level officials	<ul style="list-style-type: none"> <li>- <b>Mr. Daniele Violette</b>, Senior Director, UNFCCC (TBC)</li> <li>- <b>Mr. Stig Svenningsen</b>, TEC Chair</li> <li>- <b>Mr Zitouni Ould- dada</b>, Deputy Director of the Office of Climate Change, Biodiversity and Environment FAO</li> <li>- UNIDO (TBC)</li> </ul>
9:15- 9:30 (15 min)	<i>Scene setting</i> “The role of innovation and technology in improving food security and promoting integrated solutions in Water-Energy-Food systems for implementation of NDCs and NAPs”	<b>Ms. Irene Sander</b> Head of the Nexus Regional Dialogues (NRD) Programme
9:30 – 9:45 (15 min)	<i>Voices from Indigenous Peoples and Youth</i> “Technologies and innovation for inclusive transformation of agrifood systems – good examples from Indigenous peoples’ knowledge, local practices, and youth-led solutions”	<ul style="list-style-type: none"> <li>- <b>Ms Glindys Virginia Luciano</b> Network Engagement Manager at Young Professionals for Agricultural Development (YPARD)</li> <li>-</li> </ul>



		<p><b>Ms Grace Balawag,</b> Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (LCIPP), UNFCCC</p>
<p><b>Expert Panel 1</b>  <b>“Identifying transformative climate innovations and adaptation technologies in the water-energy-food nexus with strong mitigation and SDG co-benefits”</b></p>		
<p>9:45 – 10: 20 (35 min)</p>	<p>Panel members will draw on their extensive experience and knowledge to illustrate inter-connectivity and inter-dependency of the water-energy-food systems through a diverse range of examples on transformative climate innovations and adaptation technologies.</p> <p>Key question for discussion:</p> <ol style="list-style-type: none"> <li>1. What are the most important knowledge gaps and how can they be overcome? (Dr Giriraj Amarnath/ Ms. Esther Makabe )</li> <li>2. What opportunities for climate innovations and adaptation technologies, are emerging on the water-energy-food nexus? (Mr Tounao Kiri/ Ms. Hila Cohen)</li> <li>3. How to achieve the Paris Agreement goal and SDGs that increases the productivity of water, energy and food? (all speakers )</li> </ol>	<p>- <b>Mr Tounao Kiri</b> Deputy Director , L’Institut de la Francophonie pour le développement durable (IFDD)</p> <p>- <b>Dr Giriraj Amarnath</b> CGIAR Research Group Leader on the water- food systems nexus</p> <p>- <b>Ms. Esther Makabe,</b> Capacity Development Coordinator, GEO Global Agriculture Monitoring Initiative (GEOGLAM)</p> <p>- <b>Ms. Hila Cohen</b> Chief of Staff &amp; Head of Business Development UN WFP – innovation challenge</p>



		- Representative from UAE (in-coming Presidency) (TBC)
10 minutes stretch break		
<b>Expert Panel 2</b> <b>“Accelerating the implementation and scaling up of technology solutions and innovation in water-energy-food systems”</b>		
10:30 – 11:05 (35 min)	<p>To translate the identified opportunities in the previous discussion, this session will focus on implementation on ground.</p> <p>Panel members will present their views and insights on different technology enablers to scale up implementation in the water-energy-food nexus.</p> <p>Key question for discussion:</p> <ol style="list-style-type: none"> <li>1. What approaches and tools are necessary to support nexus action in the NDC and NAP formulation, implementation and revision processes? Could you give us some good examples from your countries/organization? (all speakers)</li> <li>2. How to ensure collaborative processes among different actors for effective implementation? (all speakers)</li> </ol>	<p>- <b>Ms. Alyssa Maria Gomez,</b> Climate Change Specialist Adaptation Fund</p> <p>- <b>Ms. Eunice Ramos,</b> Energy Systems Analyst and Resource Nexus Expert, Delft University of Technology</p> <p>- <b>Prof. Buddhi Marambe,</b> Senior Professor University of Peradeniya, Sri Lanka</p> <p>- <b>Dr. Carol Franco,</b> Nature-based Solutions Advisor to the Ministry of Environment of the Dominican Republic</p>



<b>Break</b>		
<b>Interactive Discussion</b>		
<b>How can we transform water-energy-food systems more inclusive and sustainable?</b>		
<p>11:10 – 11: 50 (40 min)</p>	<p>Using an interactive tool (mentimeter), the moderator invites participants to share their knowledge and experienced on ground to capture and identify good practices.</p> <p>The outcomes of the discussions will feed into the TEC knowledge product, which will be produced in 2024.</p> <ul style="list-style-type: none"> <li>• <b>Identifying scoping of the thematic focus</b> <b>Q1:</b> Within water-energy-food nexus, <b>what are the technological challenges</b> that you face in implementing national climate policies and plans, such as NDCs and NAPs?</li> <li>• <b>Identifying good practices on ground</b> <b>Q2:</b> <b>Could you share good practices on technological solutions to climate change</b>, including available tools, mechanisms, and platforms etc., effectively addressing the water-energy-food nexus in national climate policies and planning?</li> </ul> <p><b>Key Takeaway</b></p> <ul style="list-style-type: none"> <li>- What are your key takeaways from today's session?</li> </ul>	<p>Moderator (Dr. Zitouni Ould-Dada, Deputy Director, Office of Climate Change, Biodiversity and Environment, FAO)</p> <p>- <a href="#">A representative from World Farmers Organization (TBC)</a></p>
<b>Wrap up and Closing</b>		
<p>11:50- 12:00 (10 min)</p>	<p>Wrap up &amp; Closing</p>	<p>TEC Chairs</p>
	<p>Light lunch to be served after the event</p>	