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PROGRAMME COMMITTEE

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The Agrifood Systems Technologies and Innovations Outlook

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EXECUTIVE SUMMARY

- The Agrifood Systems Technologies and Innovations Outlook (ATIO) initiative aims to accelerate the transformation of agrifood systems, particularly in low- and middle-income countries (LMICs), by promoting science, technology, and innovation (STI). Despite STI's potential to advance the 2030 Agenda for Sustainable Development, many LMICs lag in adopting innovations due to limited investments, weak policy alignment, and inadequate evidence-based decision-making.
- FAO leads the ATIO initiative to provide data and analysis on agrifood STI, supporting better policies and investments. The initiative aligns with the FAO Strategic Framework 2022-31 and the Science and Innovation Strategy and emphasizes the role of STI in creating equitable and sustainable agrifood systems. The initiative includes the production of a biennial report and the management of an open-data Knowledge Base, both focused on driving informed decisions.
- The first ATIO report in 2025 will provide insights on agrifood systems transformation with a special focus on LMICs, while the Knowledge Base will continuously monitor and analyze global agrifood systems technologies and innovations. This initiative is expected to drive the adoption of context-specific technologies and innovations, helping policymakers prioritize innovations that benefit small-scale producers and agrifood actors, while fostering international cooperation and increased investment in STI for more efficient, inclusive, resilient and sustainable agrifood systems.

GUIDANCE SOUGHT FROM THE PROGRAMME COMMITTEE

- The Programme Committee is invited to review the content of the document and provide guidance as deemed appropriate.

Draft Advice

The Committee:

- **welcomes the FAO ATIO initiative, which includes the biennial ATIO report and the ATIO Knowledge Base with a vision to guide science, technology, and innovation policy and investment decisions by FAO Members and other stakeholders.**
- **urges FAO Members to invest in the co-development of the ATIO Knowledge Base as a key capability of the Organization to support the implementation of the Science and Innovation Strategy under the FAO Strategic Framework 2022-31.**
- **recommended FAO to strengthen its capacity to ensure a long term and sustainable support and maintenance of the ATIO Knowledge Base by creating the required capability and integrate it in FAO's regular programme.**
- **encourages FAO to work closely and build constructive partnerships with other UN agencies and institutions that are working on related services on agrifood technologies and innovations; and,**
- **recommended FAO to engage with a wide range of stakeholders to ensure ATIO is a collective and inclusive effort, that leaves no innovation behind.**

I. Overview

A. Context

1. Technology and innovation are key accelerators contributing towards achieving the 2030 Agenda for Sustainable Development and the sustainable transformation of agrifood systems for *better production, better nutrition, a better environment* and a *better life*, leaving no one behind. However, across the globe, and particularly in many low- and middle-income countries (LMICs), the development and adoption of science, technology and innovation (STI) in the agrifood sector are falling behind, thus inhibiting a key trigger for the sustainable and inclusive transformation of agrifood systems. The Agrifood Systems Technologies and Innovations Outlook (ATIO) initiative will provide access to relevant data, evidence and critical reflections on how to accelerate progress towards equitable agrifood systems transformation.

2. While investments in agrifood research, development, and innovation (RDI) are significant in several middle-income countries, overall, LMICs are underinvesting in agrifood RDI. Moreover, investments in RDI are often not aligned with market demands, the needs of smallholder producers and small and medium enterprises (SMEs). Furthermore, science and evidence are insufficiently used for decision-making and policy prioritization in LMICS. In many cases, a “bundled” approach to innovation, i.e. by accompanying the emergence of new technologies with the relevant institutional, policy, financial, and social innovations to accelerate their uptake, is necessary. This often includes strengthening capacities among producers, building transformative partnerships, promoting international cooperation, empowering communities, and addressing climate change. Private sector actors are key partners in these endeavors as their investment decisions will shape future agrifood systems.

B. The objective of the ATIO initiative

3. FAO has a distinct role and mandate in supporting its Members in identifying, piloting, and scaling technologies and innovations adapted to their specific needs and context. As the lead UN agency on food and agriculture, FAO bears special responsibility, and has unparalleled convening capacity, to integrate and develop data sources and analyses of those data that might helpfully inform public and private decision-makers. The ATIO initiative supports the delivery of FAO Strategic Framework 2022-31 by reinforcing the role of technology and innovation as accelerators of agrifood systems transformation. ATIO will also play an important role in delivering the FAO Science and Innovation Strategy launched in 2022 by significantly contributing to enhanced access to, and use of, inclusive, affordable and context-specific innovations and technologies aimed at achieving sustainable agrifood systems by small-scale producers, family farmers, and agrifood systems actors. Moreover, the ATIO initiative provides important contributions to the implementation of the FAO Strategy on Climate Change, in particular by promoting innovative solutions and supporting access to and dissemination of the latest data¹. In line with the FAO Strategy for Private Sector Engagement 2021-2025, the ATIO initiative will also contribute towards FAO and the private sector’s collaborative work to ensure that innovative approaches are used and brought to scale towards achieving a world free from hunger, poverty and malnutrition.

4. The ATIO initiative responds to the guidance from the 138th Session of the Programme Committee², where the Agricultural Science and Technology Indicators (ASTI) will gradually expand to ATIO Knowledge Base that will be the knowledge engine of the forthcoming STI Portal. ATIO will reinforce the use of strategic foresight and promote “more coherent and integrated Agricultural Innovation Systems (AIS) by strengthening national agricultural research and extension systems,” as noted by the 28th Session of the Committee on Agriculture (COAG). The 27th Session of the Committee on Forestry (COFO) recommended that FAO support its Members by “facilitating knowledge exchange, technology transfer on mutually agreed terms, and ways to enhance and apply

¹ Action Areas 1.1.2 of the FAO Action Plan 2022 – 2025 for the implementation of the FAO Strategy on Climate Change

² [PC 138/8](#)

forest-sector innovations”. The Committee on Fisheries (COFI) also has recognized the important role of STI in supporting aquaculture production and fisheries management.

5. The overall objective of the ATIO initiative is to provide information on the current, measurable state of STI in agrifood systems and likely upcoming changes, as well as STI’s transformative potential to inform evidence-based policy dialogue and decisions, including on investments. ATIO will provide reliable and up-to-date open data on STI technologies and innovations, including investments, policy implications, and analysis of impacts, considering the environmental and social trade-offs.

II. Key components of ATIO

6. FAO has a clear leadership in the production of the biennial ATIO publication and the related ATIO Knowledge Base, which are the two key components of this initiative. Today’s existing and frontier technologies and innovations will unquestionably transform agrifood systems in depth, but the pace, directions and impacts of such transformation can and should be influenced by actionable evidence regarding the technology and innovation frontier. The ATIO initiative can make a useful contribution by helping to foster constructive policy dialogue, and induce urgently needed increased investment in agrifood systems and STI, especially for LMICs.

7. As an important mechanism to solicit and integrate stakeholder engagement and feedback, the ATIO initiative is guided by a Technical Advisory Committee (TAC) composed of experts representing various stakeholder groups that are directly engaged in the development and uptake of agrifood technologies and innovations.

The biennial ATIO publication

8. A key component of the initiative is a new strategic knowledge product, the Agrifood Systems Technologies and Innovations Outlook (ATIO). This biennial publication, produced by FAO, will curate up-to-date information on the global state of STI and current patterns, as well as build in foresight and horizon scanning for agrifood systems.

9. The 2025 edition of the ATIO report builds on the results of the Harvesting Change project³, where foresight and horizon scanning of emerging technologies have been carried out in collaboration with a wide audience of stakeholders in the global agrifood sector. Moving forward, future ATIO report series will systematically integrate these methodologies to identify policy and investment priorities in agrifood technologies and innovations at the global level.

10. The ATIO publication series will target different audiences, with the objective of strengthening science-policy-society interfaces. This includes decision-makers, policy-makers, leaders of farmer organizations (FOs) and organizations regulating and enforcing intellectual property (IP) rights, government institutions such as research and extension organizations, development partners, private sector actors operating at local, national, regional, and global level, academia, and the broader public.

The ATIO Knowledge Base

11. The second component of the ATIO initiative includes the ATIO Knowledge Base, which will complement, support, and synergize with, the ATIO publication. It will provide functionalities to scan the agrifood innovations ecosystem regularly, store, structure, and systematize the results, and support their analysis. The Knowledge Base will be a core public service taking the shape of a regularly updated open-data catalog that prospective users can consult at any time to support evidence-based decision-making processes that they are part of, thus ensuring an appropriate application of STI solutions. The Knowledge Base will be a key tool to foster agrifood systems science, policy, and society interfaces.

III. ATIO’s impact and next steps

³ [Harvesting change: Harnessing emerging technologies and innovations for agrifood systems transformation](#)

12. The ATIO initiative, including the ATIO publication and the ATIO Knowledge Base, is expected to contribute to increasing the utilization by small scale producers, family farmers and other agrifood systems actors of context-specific and appropriate technologies and innovations for *better production, better nutrition, a better environment, and a better life*, leaving no one behind.

13. The first edition of the ATIO publication will be published in 2025 with a working title: *Accelerating innovation towards equitable agrifood systems transformation*. The report will consist of six main chapters developed in collaboration with top researchers and think-tanks, across different regions.