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Submissions from entities in the United Nations system, international organizations and other stakeholders on their efforts in 2023 to implement the outcomes of the WSIS

Submission by

Food and Agriculture Organization

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 27th session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

The Food and Agriculture Organization of the United Nations

Report[1] on activities facilitated, implemented and/or coordinated by FAO with regard to the action line(s) and main themes of WSIS outcomes

Part One: Executive Summary

According to "Food Security and Nutrition in the World 2023" co-published by FAO, IFAD, UNICEF, WHO and WFP, 2.4 billion people are moderately or severely food insecure in 2022, which takes 29.6% of the world's population. An estimated 691 to 783 million people worldwide face hunger. Digitalization is one of the tools that can transform our agrifood systems, help achieve Zero hunger and Agenda 2030. FAO facilitates and co-facilitates actions lines, C3. Access to information and knowledge - facilitators ITU /FAO/UNIDO, and C7. ICT Applications (E-Agriculture) – facilitator FAO. FAO, further, acknowledges the UN resolution 70/125, which called for the continuation of annual reports on the implementation of WSIS outcomes and follow-up and review of the 2030 Agenda for Sustainable Development.

Digitalization and Science-Technology-and-Innovation (STI)[2] have always been the focus of FAO's work to support the agrifood system transformation. By focusing on accessibility of digital technologies, innovative practices in agrifood systems, takes action towards the WSIS targets. The FAO Strategic focus (as enunciated in the FAO Strategic Framework 2022-31) recognizes the importance of the digital transformation of the agrifood systems by placing digital agriculture as one of the Organization's programmes corporative priority areas.

The Organization continued to advance activities related to the WSIS in line with the UN Res. A/70/125, Res. A/70/1 and as reaffirmed by the ECOSOC Res. 2021/12. Hence, in 2021 FAO participated in the WSIS Forum process, which included (1) Open Consultation Process, (2) Special Tracks, (3) High-Level Tracks, (4) Best Practices and (5) WSIS Prizes. Yearly, FAO Director General, officiates in the WSIS Forums opening ceremony; and the FAO Hand-in-Hand Initiative was nominated for WSIS prices under the Action Line C3 Access to information and knowledge. FAO continues to facilitate the e-Agriculture CoP, as capacity development for its 20,781 members; and continues to collect good practices in the application of ICTs in agriculture. FAO's interventions have supported members in developing national digital agriculture policies, and flagship digital programmes (such as FAO's hand-in-hand initiative and Geospatial platform, FAO 1000 village initiatives), digital skills development and provided toolkits and other global knowledge products in the digital area. In policy support, for example, FAO has successfully assisted goverments to develop and implement National Digital Agriculture Strategies in Asia, Europe, and Africa, and the work is in progress. In March 2023, FAO co-facilitated the session with ITU themed "DIGITAL IN ACTION - Agrifood Systems Transformation for SDGs Achievement" with a panel discussion. The session reached consensus that digital agriculture is essential in advancing with the agrifood transformation agenda by speeding resilience, access to information, knowledge, finance and services, however digital dividents are not automatic: to avoid digital divide, we have to promote a conducive innovation environment that is broader than just digital or technological. Advancing in open access, data sovereignty, digital or e-agriculture strategies while building set of Innovation skills is critical.

Part Two: Overview of trends and experiences in implementation at the national, regional and international levels and by all stakeholders

2.1 FAO observes several trends and shifts of the demand for assistance of its members, as follows:

- Gradual shift of the demand from digital solution provision towards institutional capacity development and a systemic approach (such as digital extension);
- Transition from supporting opportunistic initiatives towards coordinated partnership platforms and strategies.
- Evolution from promoting digital solutions to contextualizing and comprehensive analysis, which includes ex-ante and ex post feedback mechanisms and trade-offs assessment.
- FAO keeps a stable focus on the digital inclusion of women and youth during the transformation process of the agrifood systems through digitalization.
- FAO notes the increasing interest of its members in emerging digital technologies including AI, blockchain, Big data, metaverse, autonomous aerial vehicles and the guidance south on ethical and regulatory issues that may arise with their use.

Examples are provided below.

Global level

FAO supports Digital approaches, with technology, innovation, and data as key crosscutting accelerators across all FAO's work to reach impact at scale, as set out in the FAO Strategic Framework 2022-31. Science, technology and innovation are critical parts of FAO's overall work. FAO Science and Innovation Strategy provides an overarching strategic guide on broader innovations in the organization including digital.

FAO continues with implementation of programme/service to accelerate progress towards the Four Betters and the SDGs, including the **Digital Village Initiative** to promote digital innovations to rural communities towards inclusive and sustainable rural development and agrifood transformation, **Hand-in-Hand (HiH) Initiative** which aims to accelerate agricultural transformation and sustainable rural development to eradicate poverty (SDG 1) and end hunger and all forms of malnutrition (SDG2); the **Hand-in-Hand Geospatial Platform** which supports all stakeholders with rich, shareable data, respecting the proper protocols of data confidentiality; the **Digital Agriculture and Innovation Hubs** to foster innovation ecosystem and culture; and maintaining the operation on the e-Agriculture Community of Practice[3]. Digital risk assessment framework provides a structured step-wise framework to guide an ex-ante assessment of hazards and risks: environmental, socio-economic and technology-based, and provides insights on actions to be taken to avoid or manage them through an appropriate design, access, and complexity navigation.

FAO's efforts in advancing agrifood system transformation also reflect in the inputs in AI field. FAO is working on the development of Large Language Model, and acquired the acknowledgement of the need of integrating AI and Large Language Models into FAO's capability model. Blockchain Community of Practice and Artificial Intelligence Community of Practice is also launched within FAO. Meanwhile, supporting on innovation events and activities to discuss and explore the upper limit of AI application and practices is also one of FAO's key actions. FAO together with the International Atomic Energy Agency, the International Telecommunication Union, UNESCO and the World Bank launched "the Innovation Factory Start-up Pitching Challenge" for start-ups in August 2023.

Under the ''1000 Digital Villages Initiative (DVI)'' corporate programme, FAO has put into much effort to support digital rural transformation to address the challenges faced in food and agriculture area.

- Europe and Central Asia: In 2023, REU successfully launched the implementation of DVI in seven programme countries (Albania, Azerbaijan, Bosnia and Herzegovina, Georgia, Tajikistan, Turkiye, and Uzbekistan). More than 30 villages across the region have been assessed for readiness to undergo a digital rural transformation and five have been selected as DVI target villages. So far, two village-level DVI Roadmaps have been developed in Uzbekistan and Tajikistan, outlining short- and long-term objectives and interventions for digitalization in agriculture and rural development. In the scope of the "Digital Villages Initiative in Action", FAO REU will be following this approach throughout 2024 in Albania, Bosnia and Herzegovina, Georgia and Turkiye.

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[3] *E-Agriculture is a global community of practice that facilitates dialogue, information exchange and sharing of ideas related to the use of information and communication technologies (ICTs) for sustainable agriculture and rural development. The CoP has more than 20,000 members from over 180 countries.*

- Liberia: The FAO Liberia Country Office is working on building resilience of youth, women, and vulnerable groups through social protection floor in Liberia with ICT. Started as a pilot case, the project's objective is to enhance the human security of the most vulnerable populations, particularly youths, women, and persons with disabilities in the North-Central region of Liberia. The project is at the initial stage, and being implemented in collaboration with other UN agencies, governments, the private sector and civil society organizations.

- Sub Saharan Africa: The publication "Pilot Digital Villages Initiative in Africa" has been released. It highlights key findings of country assessments in initial country targeted and recommendations for effective implementation. These recommendations are relevant to similar projects that target rural transformation using digital tools. In Zimbabwe and Liberia, scoping assessment missions and studies have been undertaken better understand the landscape, the conditions for effective implementation and characterize locations that would be targeted. In Liberia, the DVI is being undertaken as part of a joint UN project and with the partnership of entities including ITU. In Malawi and Senegal, activities have been launched notably to explore how generative AI can support advisory services so that DVI beneficiaries ultimately benefit from these innovations and are not left behind.

African Region

In Africa FAO implemented digital activities in crop production and protection systems; digital trade and market opportunities; scaling up climate smart agriculture; inclusive agri-business (notably strengthening value chains, youth, and women engagement); resilience of livelihoods and agri-food systems; data management and data analytics for agri-food system programing and innovative service delivery.

In Malawi and Senegal, FAO is currently working to create awareness on the opportunities and limitations of generative AI particularly for advisory services. There is also an increased interest from private service providers in offering AI-based solutions, such as apps that can diagnose crop diseases, that can recommend optimal fertilizer and water application, provide near real-time advisory services when possible, and facilitate alternative access to finance.

FAO presented an increased use of data analytics for the management of agriculture programs and the delivery of innovative services by government, civil society, and private sector stakeholders. As the use of digital agriculture expands, farmers are becoming more conscious of concerns such as the need to protect their data and engage in schemes that also reward them for the exploitation of their data by private service providers. Drones and satellite imagery are more and more used to collect data on crop health, soil conditions, and water availability, as well as to offer other precision agriculture services such as pesticide and fertilizer spraying.

In Liberia, FAO has facilitated and established a data collection and information management platform and an extension knowledge-sharing hub which has been linked with the MOA website of Liberia, linking extension and research to farmers for sustainable agriculture, food security and nutrition. FAO strengthened soil analysis to enhance the digitalization of sustainable soil management and support evidence based decision making (such as land-use planning and other agricultural aspects) in Liberia, through the establishment of a national soil information system. The project has successfully set up the first operational soil laboratory nationally at the University of Liberia, established a digital soil information system, Liberia Soil Information System LibSIS and developed Laboratory Standard Procedures, Standard Operating Procedures SoPs for soil analysis, and a first draft of soil manual. It strengthened capacities among stakeholders, including young graduates on basic soil parameters analysis for crop production and recommendations on fertilizers usage as well as soil data collection and digital information management.

Europe and Central Asia Region

FAO conducted an extensive assessment to thoroughly examine the current state of digital agriculture in Kosovo, meanwhile developing a roadmap for the digitalization of agriculture and rural areas on basis of the assessment. This comprehensive analysis encompassed various facets, including the significance of the agriculture sector, its primary challenges, the overall landscape of ICT infrastructure and rural connectivity, the innovation ecosystem, and an evaluation of farmers' accessibility to technology and proficiency in digital skills. Same pattern was applied in Tajikistan to assess the agriculture sector's importance, its key obstacles, the broader landscape of ICT infrastructure and rural

connectivity, the innovation ecosystem, and an examination of farmers' access to technology and their proficiency in digital skills. Based on the findings and recommendations, FAO initiated contact with potential donors and partners to support the implementation. FAO assessed digital needs and capacities of farmers and rural communities in Uzbekistan to explore the existing and potential use of innovations and digital tools by farmers and especially smallholder farmers, their access to ICTs, level of capacities, main barriers (including cultural barriers), providers of choice, and their willingness to pay for innovations/digital services and solutions.

Asia and the Pacific Region
FAO supported the Ministry of Agriculture of Bangladesh to hold the Bangladesh Agricultural Investment Forum 2023 (BAIF) on 27-28 August 2023. The event, which is part of FAO's Hand-in-Hand Initiative, aims to increase targeted investment and access to finance. It will open doors to rewarding investment opportunities by fostering knowledge sharing and networking, bringing together key stakeholders along the agrifood value chains. Under the Digital Village Initiative, FAO piloted a village-level multi-actor survey to collect baseline information on the village digital readiness status. Using the Digital Village Ecosystem Approach, this multi-actor survey is being conducted over 100 designated villages in 10 countries in Asia and the Pacific, including Bangladesh, Thailand, Cambodia, Indonesia, Mongolia, Pakistan, Papua New New Guinea, the Philippines, Sri Lanka, and Viet Nam.

Latin American and Caribbean Region
FAO has collaborated with ITU on digital agriculture studies in 33 countries of Latin American and Caribbean. The main objective of the study is to explore and understand the current status of innovation and digital agriculture in Latin America and the Caribbean countries to support the productive transition to a more sustainable and efficient agriculture through the adoption of digital technologies and enhance an enabling environment and sustainable innovation and digital agriculture ecosystems. It will identify the main challenges and opportunities for adoption and upscaling digital technologies in LAC region, identify the main agricultural innovation actors and their initiatives that boost and contribute to the digital agriculture ecosystem in the region and determine the actions needed to foster digital technologies that meet the specific needs of the different production systems in the agrifood system of LAC.

2.2 FAO kept working with all partners from all scopes to jointly promote the work towards achieving WSIS targets.

UN agencies
FAO continues to collaborate in the area of digital with other international organizations such as the International Telecommunications Union (ITU), Broadband Commission, and other partners. Some of the notable projects:

- **Digital skills and innovation capabilities to foster agripreneurship among youth and women programme** is to support youth and women agripreneurs, but also practitioners, various types of training institutions, and relevant agribusiness stakeholders by facilitating the development and enhancement of digital capabilities and innovation to meet agripreneurs and agricultural labour market needs and be more flexible in anticipating future skills' gaps in food and agriculture sector.

- **Status of Digital agriculture in 47 Sub-saharan African Countries** to better understand the status of digital agriculture transformation in sub-Saharan Africa, the Food and Agriculture Organization of the United Nations (FAO) and the International Telecommunication Union (ITU) commissioned this study to assess and document the status of digital agriculture in the region, summarize key findings, and infer potential opportunities for digital agriculture transformation in sub-Saharan Africa in the respective 47 countries.

The Report "Digital excellence in agriculture" have exhibited the remarkable outcome of FAO-ITU regional contest on advancing digital agriculture in Europe and Central Asia, summarizing the main trends in digital services and products, the most important technologies used, as well as the difficulties and challenges that arise in the development of digital agricultural applications.

Enterprise
In Uganda, FAO started a partnership with Amplio (a US based nonprofit social enterprise) to pilot the use of the Amplio Talking Book (digital technology designed to reach remote, under-served, illiterate populations that are often

missed by other communications for development initiatives) in Uganda, as a strategy to overcome those barriers and improve knowledge about women's land rights and role in agriculture, as well as climate change.

An analysis of baseline and endline data about women' s land rights knowledge and support showed statistically significant increases over the course of the project: overall knowledge of land rights laws and policies increased by 30% (from 21% to 28%), while attitudes supportive of women's land ownership increased 12% (from 69% to 77%).

Academia

FAO has cooperated with Zhejiang University (a public university in China) in digital agriculture area with fruitful deliverable, including the annual "Global AgriInno Challenge" which aims to identify, accelerate and scale-up youth-led innovative business models and innovative solutions for agrifood system issues; the annual "Digital Agriculture Forum" to host policy and technical discussions and to share knowledge and good practices in the area of digital agriculture and digital innovation; and joint publications like the 'Digital Agriculture Report: Rural e-commerce development experience from China' which systematically compares the current development status of China's rural e-commerce, analyzing the characteristics and operation of different models, explaining the contribution of rural e-commerce to poverty alleviation and rural revitalization.

Organization

FAO collaborated with various organizations to support business development for youth-led companies which offer innovative services for the transformation of agri-food system. FAO supported the African Green Revolution Forum (now called African Food System Forum) as well as the consortium involving Radio France International (RFI) and France 24 (international TV) on the organization respectively of the "Pitch AgriHack 2022" and the "Challenge App Afrique 2022" competitions which promoted young digital agriculture entrepreneurs via facilitating their capacity building and networking. The African Development Bank and FAO are supporting Burundi, Comoros, Somalia, and South Sudan to develop resilience in face of shocks in the framework of a new project, with activities undertaken to expand and integrate digital platforms for early warning and anticipatory actions, in order to provide quicker and more efficient response to farmers and rural stakeholders at the advent of crises.

2.3 Obstacles and lessons learnt.

Main observed obstacles were as follows:

- Lack of capacities of national and local partner organizations
- Relatively backward digital infrastructure and connectivity in the Global South
- Insufficient time and resource allocation for strategic planning in complex initiatives as a roadmap for digitalization in Tajikistan
- Lack of synergies at local and country level between development partners
- Low stakeholder engagement
- Structural differences between participant groups
- Political factors

Lessons learned and proposed mitigation actions:

Fostering constructive communication and collaboration with stakeholders with government, farmers, advisory services and academia, and private sector are of vital importance to mitigate potential delays and enhance the delivery and sustainability of the action. Furthermore, maintaining proactive communication and collaboration with national stakeholders guarantees the consistency of initiatives objectives.

Strengthening the access to information, developing more intense periodic training and developing stronger partnerships with various agencies and partners would be key in the process of building resilience of youth, women, and vulnerable groups through social protection using ICT. Moreover, development of innovation strategies and capacity building are still important, but should not only targeting farmers, but also the higher levels such as policymaker to expand the impact. Hence, FAO will continue to invest in empowerment of youth and women, and

intergenerational linkage with respect to facilitating digital agrifood system transformation. Furthermore, FAO will seek transition on solution provision towards more systematical and holistic mode to cope with the increasing challenges appearing in the digital transformation of food and agriculture sector.

Part Three: I**nnovative policies, programmes and projects which have been undertaken by all stakeholders to implement the outcomes.**

3.1 Innovative policies on digital agriculture have been formulated in Bosnia and Herzegovina, Kosovo, Türkiye, Uzbekistan and Tajikistan. **A National Action Plan** for the Digitalization of Agriculture in the Kyrgyz Republic is under review and revamped by FAO, with a focus on the governmental information management systems. Additionally, FAO is providing recommendations on the organizational and governance structures for the digitalization domain of the Ministry of Agriculture of the Kyrgyz Republic for possible organizational redesign of the Ministry.

3.2 Innovative programmes and projects

- [Digital excellence in agriculture in Europe and Central Asia](#): The joint FAO-ITU review on the Status of Digital Agriculture in 18 countries of Europe and Central Asia (ITU-FAO, 2020) and provides evidence on how Information and Communication Technologies (ICTs) play an emerging role in the agriculture landscapes of the regions, acting as an engine for agricultural development.
- [Digital Village Initiative:](#) An initiative to expand digital innovations in rural villages for inclusive rural and agrifood systems transformation and promote digital innovations to support inclusive, gender-sensitive rural development and sustainable agri-food transformation to meet Agenda 2030 goals.
- Flexible Voluntary Contribution, is FAO's main flexible multi-partner instrument for the achievement of results under FAO＇s Strategic Framework and the realization of catalytic impacts. It allows resource partners to respond to development challenges in a timely and cost-effective manner.
- In South Sudan, FAO has collaborated with the government for the development of an **e-Voucher Management System** that will facilitate disbursement of entitlement of communities facing various shocks. The various system helps build synergy between farmers, traders, input suppliers and government agencies. The Crop and Livestock Management Information System (CLIMIS), an online database designed to store, analyze, and disseminate food security and nutrition information to various stakeholders across the country for timely and informed decision making, has also been strengthened
- In Somalia, in the framework of the project **"Promoting inclusive action in peace building" (PIAP)** implemented by FAO and the International Organization for Migration (IOM), an android-based application has been developed and is being used by community members in selecting local projects to be funded (these include agriculture as well projects). The game's design encourages positive competition, promoting peace building as well.
- **[The Global Network of Digital Agriculture Innovation Hubs](#)** is a network of in-country innovation hubs established by Office of Innovation (OIN) in conjunction with country institutions to accelerate the development and uptake of digital innovations and support farmers and value chain actors, especially youth and women, to be more competitive. The programme seeks to support countries designing respective national digital agriculture innovation hub models meeting national agriculture, forestry, and fisheries priorities while involving local partners, including public-private partnerships. The sub-programme has implementations currently ongoing in Dominica, Ethiopia, Grenada and Morocco.
  In Ethiopia, country situation assessment and stakeholder mapping as well as various digital agriculture awareness creation activities have been implemented, notably on the use of drones. Training modules on digital agriculture have been developed. Unrest in identified implementation area have been an important obstacle to the execution of some activities.
- **Blockchain Community of Practice** is a FAO internal group using FAO MSTEAMS even though the related organized events vary in scope from merely FAO to RBA and UN. FAO is also working on the building of **Artificial Intelligence Community of Practice** to strengthen the knowledge exchange and good practices sharing.

- **Innovative tools** have been developed such as ePhyto good practice, online platform "Digital Villages Initiative for Europe and Central Asia", AgriD: an open Agri-Database of digital initiatives, aiming at documenting, categorizing and showcasing digital solutions and best practices in the agricultural and food sector in Europe and Central Asia. Digital Village Ecosystem Assessment Tool is a village-level survey instrument based on the Digital Village Ecosystem Approach. Digital risk assessment framework provides a structured stepwise framework to guide an ex-ante assessment of hazards and risks: environmental, socio-economic and technology-based, and provides insights on actions to be taken to avoid or manage them through an appropriate design, access, and complexity navigation.

3.3 Future actions or initiatives to be taken

FAO will continue to focus on capacity development in digital agriculture to empower the most vulnerable, women, youth, and elderly. FAO will expand the digital innovation hub network to seek further multistakeholder commitment and engagement for the digital agrifood system transformation at local levels. FAO will expand the coverage of the Digital Village and Hand-in Hand initiative and strengthen its focus on strategic processes and improving of the enabling environment for e-agriculture.