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Submissions from entities in the United Nations system, international organizations and other stakeholders on their efforts in 2020 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 24th 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.

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Report on activities undertaken by the Food and Agriculture Organization of the United Nations (FAO) in facilitation, implementation and coordination of WSIS targets, recommendations and commitments.

Part 1: Executive Summary

The global food system continues to face considerable challenges in being able to provide enough food of adequate quality to feed an ever-growing population. The world is also changing at a fast pace with the emergence of an array of technologies. Before the COVID-19 crisis, digital technologies were changing the global economy, and agrifood systems were part of that transformation, however, COVID-19, has accelerated this trend. The immediate impact of COVID-19 has been on food supply chains, labour shortages, increased challenges for farmers to access local markets and information, logistics challenges and decreasing food imports for import dependent countries. COVID-19 offered the Food and Agriculture Organization of the United Nations (FAO) an opportunity to further implement digital technologies and the World Summit on the Information Society (WSIS) targets, recommendations and commitments. FAO is the custodian of the WSIS Action Line on E-Agriculture with the support of the International Telecommunication Union (ITU). FAO, further, acknowledges the UN resolution 70/125, which called for the continuation of annual reports on the implementation of WSIS outcomes and also follow-up and review of the 2030 Agenda for Sustainable Development.

In summary, FAO has continued with legacy WSIS projects such as the co-facilitation of the annual WSIS Forum Action Line C7 E-Agriculture; facilitating the e-Agriculture platform, supporting Members in Asia, Europe, and Africa in implementing E-Agriculture National Strategies, capacity development activities such as the E-Agriculture Solutions Forum[1] meetings in Asia. However, FAO has accelerated the digitalization agenda and programme, which was presented to FAO Council in July 2020; Regional Conferences for (i) Asia[2] and the Pacific (APRC); and (ii) Near East[3], and soon to the other regions in Africa, Latin America[4] and Europe[5]. These activities show a commitment to the ideals of World Summit on the Information Society targets.

More concretely, FAO has implemented specific enabling projects to the digitalization programme – this includes the International Platform for Digital Food and Agriculture, the Hand-in-Hand (HIH) Initiative, and application of Artificial Intelligence within FAO programmes, using digital technologies to track the desert locusts, FAO Digital Services Portfolio and other similar interventions in FAO programmes.

The biggest obstacle in 2020 has been the COVID-19 as it slowed down the delivery of many FAO projects; however, it also offered an opportunity for FAO to implement and integrate technologies in its work – with the organization holding all its meeting online and also continuing to support Members via policy briefs and other online interventions.

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[1] Now renamed to Digital Agriculture Solutions Forum.
[2] FAO-APRC35. http://www.fao.org/about/meetings/regional-conferences/aprc35/documents/en/
[3] FAO-NERC. http://www.fao.org/about/meetings/regional-conferences/nerc35/documents/en/
[4] FAO-LARC. http://www.fao.org/about/meetings/regional-conferences/larc36/documents/en/
[5] FAO-ERC. http://www.fao.org/about/meetings/regional-conferences/erc32/documents/en/

Part II: A brief review of the implementation of projects and activities in support if the WSIS outcomes

In this section, FAO provides an overview of various activities that support the WSIS outcomes and their status, in summary FAO highlights the major achievements and obstacles since WSIS and in light of the 2030 Agenda for Sustainable Development.

1. **FAO's commitment to adopt digitalization of Food and Agriculture in its mandate to meet the 2030 Agenda for Sustainable Development**. The FAO Director General assures[6] commitment to the Decade of Action to the UNGIS Dialogue, and assured that FAO will report on some activities and on a number of digital agriculture solutions developed to support Members in different aspects. FAO Council (July 2020), and Regional Conferences discussed digitalization as a key agenda for the organizational mandate, their schedule are as follows:-
   - *Regional Conference for Asia and the Pacific (APRC), 35th Session   - 1 - 4 September 2020*
   - *Regional Conference for the Near East (NERC), 35th Session - 21 – 22 September 2020*
   - *Regional Conference for Africa (ARC), 31st Session - TBD*
   - *Regional Conference for Latin America and the Caribbean (LARC), 36th Session - 19 – 21 October 2020*
   - *Regional Conference for Europe (ERC), 32nd Session - 2-4 November 2020*

2. **The establishment of the International Platform for Digital Food and Agriculture.** The platform will aim to provide a voluntary and inclusive multi-stakeholder mechanism to facilitate dialogue on how to strengthen the potential of digital technology applications on food and agriculture and how to address the related challenges. The initiative – requested by the 12th Berlin Agriculture Ministers' Conference on the occasion of the Global Forum for Food and Agriculture (GFFA) in January 2020, and endorsed by the FAO Council July 2020 – will add to United Nations-wide efforts on digital cooperation engaging governments, farmers, agro-business and the private sector, the civil and knowledge societies and international organizations in discussions to promote coordination and consensus. The International Platform for Digital Food and Agriculture has been adopted by FAO Governing Bodies and is currently being discussed in FAO Regional Conferences and FAO Committees.

3. **FAO continues to Co-facilitate with ITU the E-Agriculture Action yearly WSIS Forum.** Regarding the WSIS Forum 2020 Action Line meetings, FAO, ITU and the Zhejiang University, organized a 1-hour virtual Session on '*Action Line C7-Fostering an Enabling Ecosystem for Food and Agriculture through Digital Innovation*'[7]- held during the World Summit on the Information Society Forum (WSIS+15) 2020. This virtual session saw 289 participants joining the panellists. (see full report here)

4. **Facilitation of the e-Agriculture Community of Practice.** FAO continues to facilitate the 17, 912 Member e-Agriculture Community of Practice with discussions on upgrading the platform infrastructure. The global platform continues to offer capacity development

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[6] https://unctad.org/news/digital-technologies-will-affect-entire-global-food-system-what-fao-doing-about-it
[7] WSIS Forum Side Event https://www.itu.int/net4/wsis/forum/2020/Agenda/Session/330

activities, news and collect good and promising practices in digital agriculture. The mission of e-Agriculture is to facilitate the discussion on the adoption and use of ICTs and digital innovations in agriculture, forestry, fisheries, natural resource management and rural development. http://www.fao.org/e-agriculture/

5. **Support the development of National E-Agriculture (Digital) Strategies.** FAO teams in headquarters, the Regional Office for Europe and Regional Office for Asia are supporting the development on National Digital Agriculture Strategies in the following countries: Albania (planned), Armenia (pending government sign off), Benin (pending government sign off), Bosnia and Herzegovina (planned), Cambodia (at inception), Niger (at inception), Republic of Moldova (planned), Turkey (at inception). These strategies are developed jointly by FAO and ITU, in the framework of WSIS and TCP agreements. The teams are also working on improving the E-Agriculture Strategy Guide to further support FAO/ITU Members to implement these strategies.

6. **E-Agriculture Activities in Europe and Status of Digital Agriculture in 18 countries of Europe and Central Asia.** FAO Regional Office for Europe and Central Asia joined forces with ITU to undertake a survey in the summer 2019 on the status of digital agriculture in Europe and Central Asia; the first results were shared at ITU World Telecom'19 in September 2019. The work continued in gathering examples on policies and initiatives related to the digital transformation of agriculture and formed the basis of the publication entitled the Status of Digital Agriculture in 18 countries of Europe and Central Asia - www.fao.org/3/ca9578en/CA9578EN.pdf

7. **E-Agriculture Solutions Forum or Digital Agriculture Solutions Forum (DASF).** FAO and ITU have organized the E-Agriculture Solutions Forum bi-yearly and has been renamed Digital Agriculture Solutions Forum (DASF). DASF is organized biennially with the aim of bringing together digital agriculture stakeholders. In previous the Forum formally named E-Agriculture Solutions Forum (ESF) was held in Thailand (ESF 2016) and China (ESF 2018). In 2020, and given the exceptional circumstances under COVID-19, the ESF now relabelled DASF 2020 will be organized virtually from November 16 through 18, 2020.

8. **FAO's Hand-in-Hand Initiative**. Hand-in-Hand is an evidence-based, country-led and country-owned initiative of the FAO to accelerate agricultural transformation and sustainable rural development to eradicate poverty (SDG 1) and end hunger and all forms of malnutrition (SDG2). Fourteen countries have begun initial engagement in the HIH process, and several others, including middle-income countries, have expressed strong interest in joining.

9. **Niger Smart Villages**. FAO is part of other UN Agencies with the Niger Smart Villages project. The smart villages project will help create new opportunities for education, improve social protection, and strengthen resilience of vulnerable communities, which is in line with the objectives and priorities set by Niger's Sustainable Development. It is against that background that ITU in cooperation with other UN agencies (including WHO, FAO, and

UNICEF) have established and promoted a new holistic and inclusive approach to rural development through the establishment of "smart villages."

From the above, it shows that FAO has great expanded investments made in ICTs and also included these in its programmes. The Review of the WSIS outcomes and the UN resolution 70/125 clearly extend the mandate to the Decade of Action (2020-2030) and further allows for the alignment of the WSIS and SDG processes. Through the United Nations Group on Information Society (UNGIS), FAO has made a commitment that in the Decade of Action, FAO's goal is to drive sustainable digital solutions and innovation, while making space in the agriculture and food sector for rural communities and empowering the youth[8]. In light of the above changes and overarching acceptance digital technologies, FAO realizes that the E-Agriculture or ICTs as a concept are being replaced by digital agriculture or digital technologies, respectively. This natural transition will slowly also demands that the WSIS Action Line C7, and associated assets above, thus be renamed to Digital Agriculture to align with emerging trends.

Part III: Innovative projects and programmes implemented in fulfilment of WSIS Outcomes.

1. As seen from onset of this report FAO is adopting the use of digital technologies and innovation in fulfilling its mandate. In December 2019 (though not operational), *FAO established the Office of Innovation* designed to consolidate and strengthen FAO's innovative spirit, including innovation of mindset, innovation of cooperation models, and innovation of application by digitalization. The office' objective is to help ensure that FAO applies modern science and technology and adopts innovative approaches when facing new situations and challenges.

2. Nonetheless, FAO continues to invest its knowledge in new technologies such as big data analytics, artificial intelligence, machine learning, distributed ledger technologies (DLTs) and other digital innovations to offer solutions for emerging challenges facing agriculture and rural economy. Selected examples of FAO projects using AI and Machine learning include[9]:-

    ▪ **Fish Species Identification** - FAO has explored the use of Artificial Intelligence in Fish Species Identification by using Google Cloud AutoML.

    ▪ **Species recognition** -**iSharkFin** is an expert system that uses machine-learning techniques to identify shark species from shark fin shapes. Aimed at port inspectors, custom agents, fish traders and other users without formal taxonomic training, iSharkFin allows the identification of shark species from a picture of the fin.

    ▪ **Advanced Land Monitoring** - The FAO system for earth observations, data access, processing and analysis for land monitoring (SEPAL) helps countries measure, monitor and report on forests and land use, offering unparalleled access to granular satellite data and computing power, for improved climate change mitigation plans and better-informed land-use policies.

    ▪ **Plant pest detection** - Fall Armyworm is spreading fast across many parts of the world, including sub-Saharan Africa, devastating crops and farmers' livelihoods. A mobile

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[8] FAO DG's Speech. https://unctad.org/news/digital-technologies-will-affect-entire-global-food-system-what-fao-doing-about-it

[9] FAO Projects using AI and ML. https://aiforgood.itu.int/united-nations/fao/

phone application called **FAMEWS**[10], which uses machine learning and artificial intelligence, offers hope in tackling the pest problem. Farmers can easily detect Fall Armyworm damage by using mobile phones.

3. FAO is also employing digital technologies to manage the desert locust scourge, which has affected a number of African countries. Some of the tools and technologies applied in response, include :-

   - **ASDC** collects data on locust for the Caucasus and Central Asia Locust Management System
   - **CCALM** - Caucasus and Central Asia Locust Management System facilitates locust data analysis and forecasting at national and regional level
   - **DLIS** - Desert Locust Information service contains infrastructure and applications for all locust and locust-related information
   - **Desert Locust Response Dashboard** Tracking FAO's emergency response to the 2019-2020 Locust upsurge.
   - **Earth Ranger** provides real-time data dashboards to help manage protected areas and protect wildlife
   - **eLocust3** records and transmits locust swarms data in real time via satellite from the field to national locust centres
   - **Empres-i** - Emergency Prevention System supports veterinary services by facilitating regional and global disease information
   - ESRI ArcGIS provides leading mapping and analytics geospatial platform
   - FMT provides data collection and cash-based transfer capabilities in Somalia
   - KoboToolbox provides simple powerful and robust tools for data collection
   - Pl@ntNet provides a tool that identifies plants with pictures
   - PSMS - Pesticide Stock Management System supports countries to record and monitor their inventories of pesticides and their usage

Conclusion

FAO continues to map its activities in digital agriculture towards the fulfilment of the SDGs that FAO is a custodian of and the digitalization programme is set to allow further investments with the scope of WSIS outcomes and 2030 Agenda for Sustainable Development. COVID-19 has accelerated this need within FAO Members and therefore an opportunity for further inclusion. Currently, FAO and ITU are working on a vision document to see the investments in digital agriculture in Africa (a number of activities are foreseen) and guide WSIS co-facilitation with ITU; the FAO Regional Office for Africa is in the process of developing a Digital Strategy to guide investments in Africa; FAO Digital Portfolio is being developed to map digital investments in FAO and Members to better guide FAO's digitalization agenda. The International Platform for Digital Food and Agriculture is poised to be a multi-stakeholder mechanism for engaging governments, farmers, agro-business and the private sector, the civil and knowledge societies and international organizations.

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[10] FAMEWS. http://www.fao.org/fall-armyworm/monitoring-tools/famews-mobile-app/en/