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Submissions from entities in the United Nations system and elsewhere on their efforts in 2016 to implement the outcome of the WSIS

Submission by

The Food and Agriculture Organization of the United Nations

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 20th 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.

Action Line C7. ICT Applications: e-agriculture – 2016 Year Report

Part 1: Executive summary

Following the World Summit on the Information Society (WSIS), the Food and Agriculture Organization of the United Nations (FAO) and the International Telecommunication Union (ITU) were assigned responsibility for the facilitation of the e-agriculture Action Line. The mandate was extended in the WSIS+10 Vision. Building on work to date, it encouraged the use of ICTs to reinforce the resilience of communities faced with natural and man-made disasters and environmental change.

Launched in 2007, the **e-Agriculture Community of Practice** is an online space to facilitate and exchange knowledge and experiences related to initiatives using ICTs for agriculture and rural development. In 2016, the Community of Practice (CoP) accounted for over 14 000 registered members and about 45 000 followers through social media channels. Many people consider this CoP as a reliable source of information on ICT4Ag, and the statistics seem to confirm this: from January to September 2016 more than 300,000 page views and more than 200,000 sessions were registered. In 2016, the CoP continued documenting case studies and good practices, gathered resources, created two new pages (audio-visual page and ICT Update page) and hosted an interactive forum on the use of ICTs for resilience. The CoP and FAO, in collaboration with ITU, also actively engage in face-to-face activities and play an active role in the WSIS Process.

In May 2016, during the **WSIS Forum 2016**, ITU and FAO organized a joint session with Action Line C7: E-Health entitled *"ICT and Nutrition: Federating actions towards eradication of hunger and food insecurity (SDG2) and healthy lives and wellbeing for all (SDG3)"*. The session focused on the inter-linkages that exist among the SDGs and the different WSIS Action Lines in their support to the implementation of the SDGs. The session discussed the potential of ICT as a cross-cutting enabler to address the multifaceted nature of nutrition and how ICTs can federate actions by addressing multiple interlinked goals. The session is documented in the **WSIS Forum 2016 Outcome document**. The facilitators of the Action Line C7: E-Agriculture also participated in several other sessions as well as in the UNGIS and Action-Line facilitators meeting. The **2016 WSIS Project Prize** for e-agriculture was awarded to the Harmonized Information of Agriculture, Revenue and Irrigation for a Transformation Agenda- Precision Technology for Agriculture Initiative in India. The **2016 WSIS Prize Champions** were awarded to 1) the FAO initiated the Somalia Water and Land Information Management (SWALIM) Programme, 2) Krishoker Janala (Farmer's Window) project in Bangladesh, 3) City-to-Farm Agriculture Assisting launched by Advanced Info Services (AIS) of Thailand and 4) Increasing Food Production through ICT Research and Development project implemented by the University of the West Indies in Trinidad and Tobago.

During the course of 2016, many important developments took place regarding the development of **National e-agriculture Strategies**. FAO and ITU published the national e-agriculture strategy guide and toolkit and as a result of the workshops held in 2015 **Sri Lanka and Bhutan** had their national e-agriculture strategies approved and are now working on the second phase developing the solutions and services. **Fiji and Papua New Guinea** are in advanced stages of finalizing their strategy and the **Philippines and Vanautu** have also started the process over the course of 2016.

In June 2016, the **Expert Consultation on e-Government aspects of national e-Agriculture strategies for sustainable family farming**, organized by FAO Regional Office for Europe and Central Asia and GAK in Hungary at Gödöllö Agricultural University brought together decision makers and agricultural information management experts from Eastern Europe and Central Asia to discuss current initiatives

at national level. Participants clarified their own countries concepts and needs to implement a national e-agriculture strategy.

In August 2016, FAO and ITU organized a three-day **E-agriculture Solutions Forum** in Thailand followed by a two-day **training of trainers on the development of national e-agriculture strategies** in September. The forum brought together 120 participants from 29 countries, including a large number of solutions providers, academia, research institutes and governments to share their expertise and solutions. An informal consultation was organized in the margin of this event with a number of participants to gauge and explore means to facilitate sharing of expertise between private sector, academia, research institutes and countries. As an outcome of the consultation an informal group of experts was set up (IE4E-ag).

In December 2016, a **Regional Central Asia and the Caucasus consultation on e-Agriculture for Research and Extension** was organized by FAO and the Central Asian and Southern Caucasus Association of Agricultural Research Institutions (CACAARI) in Bishkek, Kyrgyz Republic to understand the framework to develop a national e-Agriculture vision and strategy.

In November-December 2016, FAO and e-Agriculture organized an **Online Forum on "ICTs for resilience"** with subject matter experts and case studies from different international organizations. The conclusions and recommendations of this forum will be published in a **policy brief**.

The following **face-to-face events around the world** were organized during the past year, with a strong focus on the use of ICTs in agriculture and rural development:

- **Global Forum for Innovation in Agriculture (GFIA)(Abu Dhabi, Emirates - February 2016):** In its fourth edition, GFIA is the world's largest showcase of sustainable agriculture innovations for increased profits and environmentally responsible farming practices.
- **ICT4D Conference – Building resilience through innovation (Nairobi, Kenya - May 2016):** The conference in Nairobi was organized by Accenture, CRS, Hewlett Packard enterprise, Nethope and Oxfam focussing on ICT solutions that have significant impact in development, government ICT strategies and their alignment wit the SDGs, intersection between government ICT strategies and the strategies of the private sector and civil society.
- **Harnessing the Data Revolution for Resilience Summit (Bangkok, Thailand – May 2016):** The summit, organized by USAID/RDMA and FHI360, focussed on harnessing the power of digital data to transform the design, implementation, and monitoring of international development programs to support resilience capacities at various scales. It highlighted both existing case studies and promising new approaches that use advances in data and technology to build resilience.
- **Unmanned Aerial Vehicles (UAV) for Agriculture (UAV4Ag) Community of Practice workshop (Nairobi, Kenya – June 2016):** The CoP workshop was organized by the International Potato Center (CIP), University of Missouri (MU-USA) and the University of Nairobi (UoN) to identify and strengthen the CoP in support of UAV and Agriculture Remote Sensing Information Systems (ARSIS) Innovation and to share with participants lessons learned to date by various stakeholders.
- **ICT4Ag Conference (Washington DC, USA, June 2016):** The conference, supported by Abt Associates, DAI, FHI360 and TechChange brought together about 275 leaders and decision makers in agriculture and technology to examine how new innovations can empower smallholder farmers and the entire value chains that support them through the use of ICTs.
- **Expert Consultation on e-Government aspects of national e-Agriculture strategies for sustainable family farming (Visegrad, Hungary - June 2016)** (see above)
- **Experience Sharing on ICT4Ag (Wageningen, The Netherlands, July 2016):** CTA organized this workshop involving the local project partner organizations to document experiences and

capitalise on the knowledge gained during the implementation of seven projects involving ICTs within the agricultural sector in the ACP region.

- **E-Agriculture Solutions Forum (Bangkok, Thailand – August 2016)** (see above)
- **GODAN Summit 2016 – Join the open data revolution to zero hunger (New York, USA, September 2016):** The GODAN summit brought together world leaders, researchers, farmers, students and others united around a collaboration on agriculture and nutrition data openness. GODAN supports the proactive sharing of open data to make information about agriculture and nutrition available, accessible and usable to deal with the urgent challenge of ensuring world food security.
- **ICT in Agribusiness Conference (Skopje, Macedonia – November 2016):** The conference, organized by the ICT Chamber of Commerce MASIT, ProCredit Bank and AgFutura, aimed at gathering players from both the ICT and the agribusiness sector in order to present the trends in both sectors, identify potential for cooperation, exchange expertise and best practices and to facilitate the matchmaking and encourage mutual cooperation.
- **Regional Central Asia and the Caucasus consultation on e-Agriculture for Research and Extension (Bishkek, Kyrgyz Republic – December 2016)** (see above)

During the year 2016, two new pages were created on the e-Agriculture platform. An **Audiovisual page** was created in order to respond to emerging trends. Radio and video are an excellent way of using ICTs to share experiences and good practices from projects in agricultural and rural development with a large audience. A specific page was alto created to feature **ICT Update**, a bimonthly printed bulletin, a web magazine, and an accompanying email newsletter and mobile website focusing on ICT4Ag. ICT Update is published by the Technical Centre for Agricultural and Rural Cooperation ACP–EU (CTA), one of the founding partners of e-Agriculture.

The following **publications**, supported by FAO were or will be published by the end of 2016.

- FAO and ITU, 2016, E-agriculture Strategy Guide, www.fao.org/3/a-i5564e.pdf
- FAO and ITU, 2016, E-agriculture Strategy Guide brochure, www.fao.org/3/a-i5448e.pdf
- FAO, 2016, eLocust: an innovative tool for crop pest control, www.fao.org/3/a-i6058e.pdf
- FAO 2016, SMS Gateway: Improving animal health through ICTs
- FAO 2016, SWALIM Digniin - SMS-based flood alert application in Somalia
- FAO 2016, SWALIM Land and Water data collection using low-cost smartphones in Somalia
- FAO 2016, SWALIM Using Remote Sensing to monitor charcoal production
- FAO 2016, SWALIM Remote sensing: monitoring the Cash for Work programme
- FAO, 2016, Gender and the use of ICTs for agriculture and rural development
- FAO, 2016, Policy brief on the use of ICTs for resilience

Part 2: Analytical overview of trends and experiences in implementation

Throughout the activities of the stakeholders we see a continuity regarding the **trends** that were brought forward in the report of the year 2015 such as 3D Virtual Reality, increased use of digital financial services, open data, big data and Internet of Things.

For 2016 we can see a particular emphasis on the following trends:

- **Use of Unmanned Aerial Vehicles (UAV):** UAVs are able to gather large amounts of information cheaply and efficiently by virtue of their aerial perspective. Those data are crucial for precision agriculture, using advanced tools and technologies to observe and measure conditions in the field and then respond appropriately to optimize returns and preserve resources. UAVs can be used for community-based forest monitoring, land rights, detecting deforestation, degradation and erosion of land, crop production monitoring, livestock monitoring and pest control.

- **Agriculture Remote Sensing Information Systems (ARSIS):** A radical price decrease in new remote sensing technologies, including cheap soil, air, water and plant sensors will enable precise in-farm data and guide input delivery even on small farms.
- **Satellite Imagery:** Satellite providers have made massive improvements to both the resolution and the frequency of imaging. This means farmers can have access to high definition imaging of their land on a weekly basis. Almost every satellite-imaging provider on the market is able to analyse the data they collect in order to give accurate estimates for a season's yield. This allows farmers to better plan year-to-year variations in income and expenses.

Part 3: Innovative policies, programmes and projects and future actions or initiatives

a) *Innovative policies, programmes and projects*
➢ **Towards national e-agriculture strategies**

Even though in many countries there are no specific ICTs for agriculture strategies, e-agriculture strategy initiatives have been or are being put in place in a few countries such as Bolivia, Côte d'Ivoire, Ghana, Mali and Rwanda, Bhutan and Sri Lanka. Moreover, in most ICT policies developed with the support of organizations such as UNECA, IICD, ITU and UNDP, there are provisions on sectoral strategies for agriculture. However, approaches differ in different regions and countries. As described above, FAO and ITU are providing significant efforts to promote e-agriculture strategies and to provide technical assistance to countries in developing their own strategy.

b) *Future actions or initiatives*
➢ **National e-agriculture strategies**

FAO and ITU will continue their collaboration working on the dissemination of the E-Agriculture Strategy Guide and its implementation in countries. In continuation of the technical assistance to member countries in developing their e-agriculture strategy, in 2017 the Philippines, Fiji and Papua New Guinea and Vanuatu will receive continued support. A training of trainers was organized to ensure capacity development within the different countries. During the Expert Consultation on e-Government aspects of national e-Agriculture strategies for sustainable family farming in Hungary, the presentations of the different participating countries showed a growing number of coordinated and systematic activities related to e-agriculture, compared to 2015. Countries such as Hungary, Albania, Armenia, Azerbaijan, Macedonia and Moldova are strengthening their activities. Uzbekistan started the translation of the e-agriculture strategy guide in the Russian language.

➢ **Scaling up**

While there are many valuable initiatives on the use of ICTs for agriculture, the sustainability of pilot initiatives is an issue. Too often after the pilot phase, projects cease because of many financial, human or other constraints. Scaling up should be integrated in the formulation and the implementation of initiatives. Costs of ICTs need to be reduced, and the use of ICTs needs to be made financially sustainable, a goal in which public-private partnerships will play an important role.

➢ **E-Agriculture Community of Practice**

E-Agriculture provides the basis for the global community to monitor development and validation of models and methodologies, and to package and disseminate them once tested. The e-Agriculture Community must continue to play a role in collecting and disseminating good practices on the use of ICTs in agriculture and rural development and in examining emerging trends, the evolving role of ICTs and the challenges faced in reaching scaled, sustainable information service models.