

ITU Regional Forum for Europe on Meaningful Connectivity

8 March 2021

Session 2 Connecting rural areas in Europe: regional and national approaches for digital agriculture

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**Food and Agriculture Organization
of the United Nations**

Digital Agriculture

Opportunities and Challenges

Opportunities

Technological innovation is crucial for economic growth

Digital technologies *can*:

- Improve efficiencies
- Reduce transaction costs
- Better manage risks
- Strengthen trust between actors
- Facilitate inclusion and access to finance

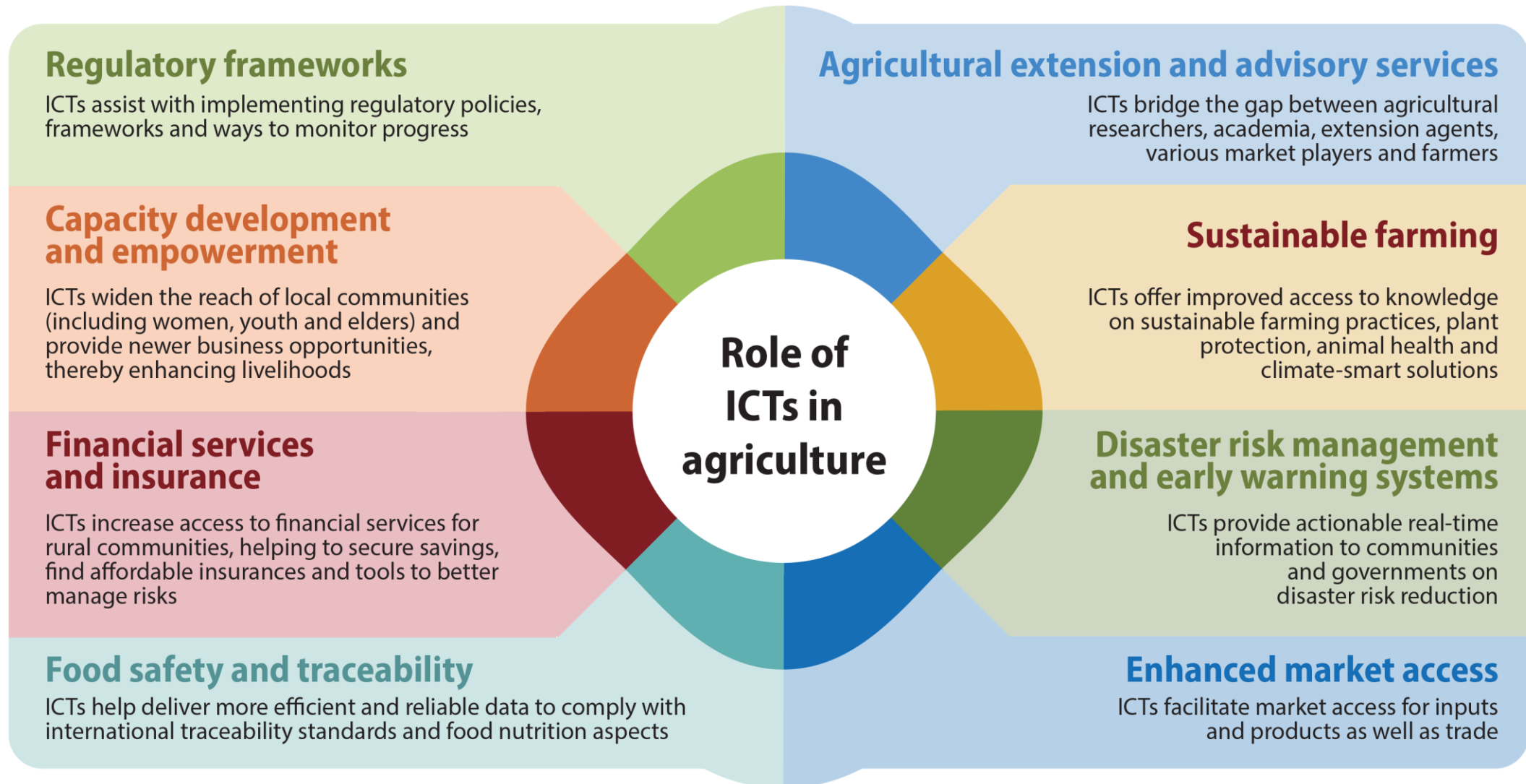
Challenges

Digital divide is most evident in agriculture sector

Digital divide *exists*:

- Across countries, reflecting differences in access to information and technologies
- Within countries between rural and urban areas
- Between people (age, sex, social class ...)
- And across sectors

Diversity of opportunities



Human challenges

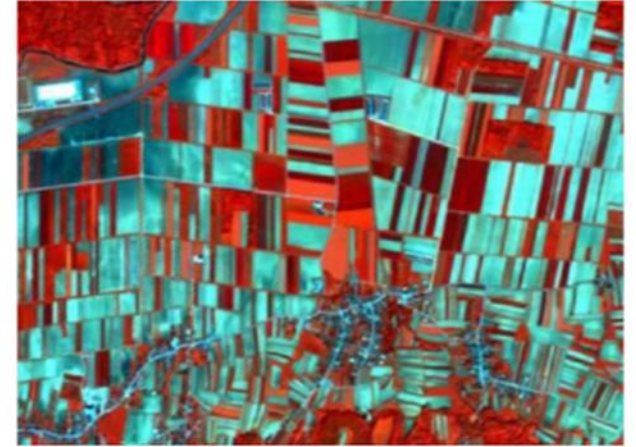
- **Young** generation is **leaving** rural areas
- Farming population is **ageing**
- Majority of farmers are **smallholders**
- Shortage of farm **labour** in some countries
- **Suicide** rate among farmers
- **Conservative** attitude of farmers vis-à-vis new technologies
- Lack of basic digital **skills**
- Expert skills needed for IT maintenance



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Smallholder farmers' challenges

- **Farm size** and diversity
- **Technologies** often not adequate for smallholder farmers realities
- Exclusion of smallholders from **policy incentives** and **rural services**
- **Low capacities to generate, use and manage data and information** – at level of farmers, service providers, regulators
- **Ownership and privacy issues** – on-farm data
- **Access to and control of data in agri-food systems:** limited integration in market chains and limited decision power



Rural digital divide is a reality

- **Instable and irregular internet connectivity**
- **Poor quality** of connectivity in rural areas compared to cities, for **same price**
- **Increased demand** of connectivity due to COVID-19: e-commerce, teleworking, ... **high demand but low response**
- **Low use of digital technology in agriculture and rural areas** ... due to poor connectivity and lack of Return over Investment for smallholders



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Response

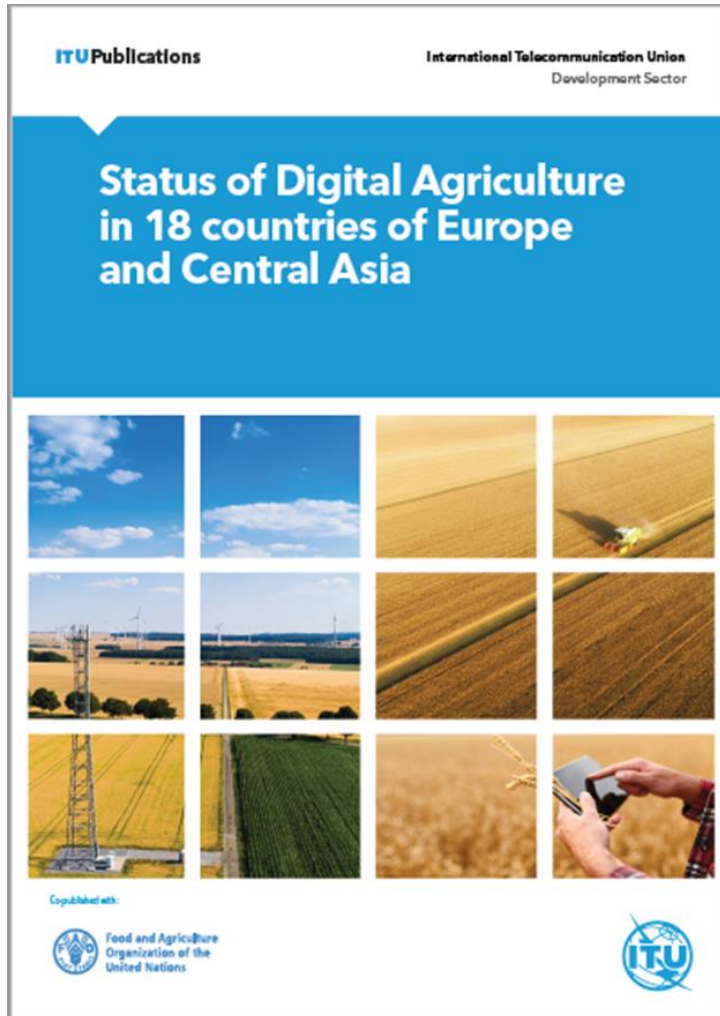
**Assessments
at national and
regional levels**

**Policy
framework**

Projects

**Knowledge
exchange**

FAO-ITU Response with assessments



- Albania
- Armenia
- Azerbaijan
- Belarus
- Bosnia & Herzegovina
- Georgia
- Kazakhstan
- Kyrgyzstan
- Moldova
- Montenegro
- North Macedonia
- Russian Federation
- Serbia
- Tajikistan
- Turkey
- Turkmenistan
- Ukraine
- Uzbekistan

Digital Excellence in Agriculture in Europe and Central Asia



Building blocks of policy framework



Regulatory Framework

required to integrate their digital economies

Policies

encourage innovation, incentives to uptake of digital services/solutions.

Data Governance

regulate data and consumer protection, data ownership, security and e-transactions

Infrastructure

improve digital infrastructure

invest in roads, storage facilities, warehouses, and regional trade facilities

Capacities

improve technical education, capacity development at all levels to participate in the digital ecosystem

Closing the Triple Divide

Digital

Rural - Urban

Gender

-

Investments

To increase technology adoption rates in rural areas requires investments in **supply-side** and **demand-side factors**

- **Supply-side**
Rural network coverage and availability of digital applications are needed
- **Demand-side**
digital skills and literacy, especially for smallholders

Addressing such factors necessitates a range of public policy interventions, and most importantly a regulatory environment that attracts private sector investment

- *Participation of Governments* in investments, through public-private partnerships, can ensure that gaps in infrastructure and access are bridged also in rural areas
- *Public-private partnerships* will be important to provide incentives for private investments



FAO Geospatial Platform

Search for locations

Explore Data

DATA SETS [2] Remove All

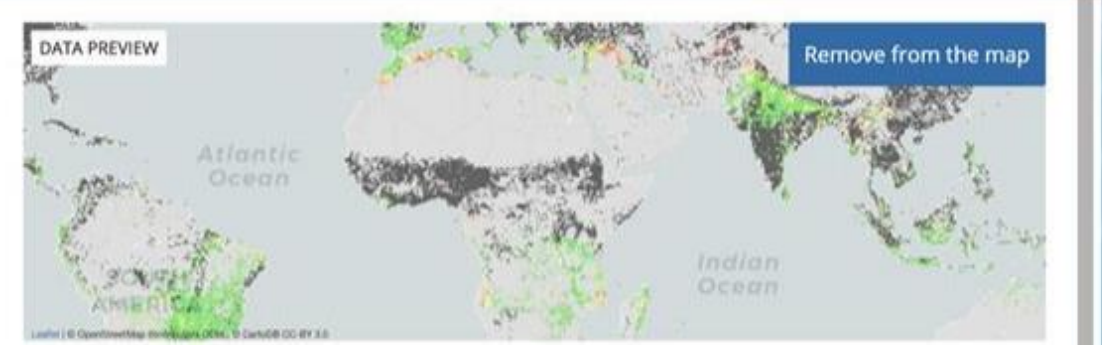
- Country Boundaries
- Agricultural Stress Index (ASI) - Near Real Time (Global - Dekadal - 1 Km) - ASIS
 - Zoom To Extent
 - About This Data
 - Split
 - Remove
 - Opacity: 60 %
 - Season: Season 1
 - Land: Cropland (ha)
 - Time: 20/02/2021, 01:00:00
 - Legend:
 - < 10
 - 10 - 25
 - 25 - 40
 - 40 - 55
 - 55 - 70
 - 70 - 85
 - > = 85
 - insufficient data
 - no seasons
 - no cropland
 - no data

Food Security | **Crops and Vegetation** | Livestock | Trade and Production | Land | Water | Climate | Fishery | Forestry | Done

Socioeconomic and Demographic | Novel Coronavirus (COVID-19) | Boundaries and Backgrounds | Tools | My Data

Search the catalogue

- Hotspots (Countries with unfavourable prospects for current crops)
- Production, Yield and Harvested Area
- Agricultural Stress Index (ASI)
 - Agricultural Stress Index (ASI) - Near Real Time (Global - Dekadal - 1 Km) - ASIS
 - Agricultural Stress Index (ASI) - Annual Summary (Global - Annual - 1 Km) - ASIS
 - Historic Agricultural Drought Frequency (Global - 1 Km - ASIS)
 - Crop/Pasture Phenology (Global - 1 Km - ASIS)
 - Vegetation Condition Index (VCI) - Near Real Time (Global - Dekadal - 1 Km) - ASIS
 - Vegetation Condition Index (VCI) - Monthly Summary (Global - Monthly - 1 Km) - ASIS
 - Vegetation Health Index (VHI) - Near Real Time (Global - Dekadal - 1 Km) - ASIS
 - Vegetation Health Index (VHI) - Monthly Summary (Global - Monthly - 1 Km) - ASIS
 - Mean Vegetation Health Index (Mean VHI) - Near Real Time (Global - Dekadal - 1 Km) - ASIS
 - Mean Vegetation Health Index (Mean VHI) - Annual Summary



Agricultural Stress Index (ASI) - Near Real Time (Global - Dekadal - 1 Km) - ASIS

Description

Agricultural Stress Index (ASI) - Near Real Time is a quick-look indicator that facilitates the early identification of cropped land with a high likelihood of water stress (drought). It depicts the percentage of arable land, within an administrative area, that has been affected by drought conditions from the start of the season up to the current dekadal. It differs from ASI Annual product which describes the drought conditions over the entire crop season.

The Index is based on the integration of the Vegetation Health Index (VHI) in two dimensions that are critical in the assessment of a drought event in agriculture: temporal and spatial. The first step of the ASI calculation is a temporal averaging of the VHI, assessing the intensity and duration of dry periods occurring during the crop cycle at the pixel level; this calculation includes the use of crop coefficients, which introduces sensitivity of a crop to water stress during each phenological phase. The second step determines the spatial extent of drought events by calculating the percentage of pixels in arable areas with a VHI value below a critical threshold (this value was identified as a critical threshold in assessing the extent of drought in research by Kogan, 1995). Each administrative area is classified according to the percentage of

International Platform for Digital Food and Agriculture

Why a 'Platform'?

An inclusive multi-stakeholder forum to:

- discuss the potential benefits and risks of digitalization of agriculture
- provide policy advice and guidance

What role?

Maximize benefits

- Sustainable production
- low costs & efficiency
- analytics to support decisions
- inclusive markets

Address challenges

- digital divide, public goods
- data ownership/privacy
- human rights, environment, animal welfare
- long-term impacts, rural development

What gap?



What deliverables?

bridge the gap and increase awareness

facilitate discussions and common understanding

best practices

policy recommendations

voluntary guidelines

In conclusion

A conducive environment for the digitalization of agriculture requires:

- Expanding and improving infrastructure – both for ICT and otherwise
- Improving people's ability to use internet effectively so that they benefit from digitalization and
- Designing a regulatory framework that is both conducive to innovation and takes into account the specificities and risks digitalization entails



Thank you

For more information

www.fao.org/digital-agriculture

www.fao.org/e-agriculture

www.fao.org/europe/resources/e-agriculture



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