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FAO REGIONAL CONFERENCE FOR THE NEAR EAST

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Digital innovation strategy for the Near East and North Africa

Executive Summary

The Near East and North Africa region faces a range of intersecting challenges and threats. To overcome these obstacles, there is a need to combine innovative approaches where the use of digital innovation tools can play a key role for the improvement of agriculture and agrifood systems. This document outlines the emerging regional strategy framework aimed at **empowering** ministries and government agencies with better collection, management and analysis of data including that to manage transformation with support from the FAO Geospatial System which includes the Hand-in-Hand Geospatial Platform as well as the proposed Regional Food Security and Nutrition Observatory by the regional office; **enabling** digital agricultural development through incentives and supportive institutions such as a proposed regional agricultural innovation hub; **embedding** digital solutions in agricultural development projects by supporting digital ecosystems, for example through digital villages; and **scaling** successful solutions for national adoption. The regional digital innovation strategy will sit within the FAO Science and Innovation Strategy, and is contributing to the regional consultation, it subsequently supports the same objectives

Suggested action by the Regional Conference

The Regional Conference calls upon Members to:

- a) Acknowledge the formulation and implementation of a regional digital innovation strategy to support the digitalization of agriculture considering the priorities and digital environment of countries in the region. In particular to consider how the four areas below can be supported.
 - **Empower** – Consider, in particular, how agricultural development decisions can be enhanced by efficient data collection, management and analysis using digital innovations. In particular, consider the support to government provided by good data management and investigate the possibilities of tools such as the Hand-in-Hand Initiative (HiH) to develop this. Also, consider small-scale producers and respective data ownership, privacy and security, as well as support the capacity for use of the digital tools.

Documents can be consulted at www.fao.org

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- **Enable** - Review how the digitalization of agriculture can be supported by government, specifically considering the building blocks required to support an e-agriculture national policy and consider cohesive actions by FAO and the International Telecommunication Union (ITU) to support their development.
- **Embed** - To implement this strategy, identify where the four programmatic Regional Priorities for FAO in the NENA region can be enhanced by digitalization and matching them to existing innovations and solutions. Provide a policy framework to tap into private sector and social impact investment and innovations in digital agriculture in order to extend the benefits of digital agriculture to small-scale farmers, comprising showcasing digital technologies for use in rural areas potentially through the digital villages initiative.
- **Scale up** – Support actions which result in scaling up and transfer solutions to new areas. Consider using and contributing to the evidence base of applications benefitting smallholder farmers and rural beneficiaries. Examine incentives to support scaling in conjunction with private sector support. Support research and analysis into digital agriculture.

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I. Introduction

1. The region faces a series of challenges related to food security and nutrition which compromise sustainable agrifood systems. The region has a 2 percent population growth rate (compared with the 1.2 percent global average) with 70 percent of the poor living in rural areas and 30 percent youth unemployment. More than 80 percent of agricultural production is provided by family farmers and 34 percent population dependent on agriculture for employment. There has been a 66 percent decrease in water availability in the past 40 years.^{1,2}

2. Four priorities have been identified and endorsed at the 35th Session of the Near East Regional Conference (NERC35) to transform the region's agrifood systems: 1) Rural transformation and inclusive value chains; 2) Food security and healthy diets for all - focussing on trade, food safety and quality, and nutrition education; 3) Greening agriculture - addressing water scarcity and ensuring environmental sustainability and climate action; and 4) Building resilience - to multiple shocks, protracted crises and emergency situations along the humanitarian development nexus.

3. At the NERC35, the role of digital technology in addressing these challenges was recognized. There is now an opportunity to coordinate efforts and structure actions around a regional strategy.

4. Recent work by FAO in the region has highlighted the opportunities to bring innovative solutions to communities in the region to address many of the challenges for agriculture identified in the region. A regional innovations database is building profiles of enterprises and products. FAO's own digital services portfolio also documents relevant applications across the region. In the last year there have been major changes in the innovations applied, for example, to address the problem of locust infestation in Yemen and further mobile applications for improving food systems efficiency have been identified and showcased through a series of regional webinars.

II. How the regional digital innovation strategy fulfils the SDGs by reinforcing the FAO Strategic Framework 2022-31

5. The regional digital innovation strategy uses the four accelerators identified in the FAO Strategic Framework 2022-31 technology, innovation, data and governance, human capital and institutions.

- a. **Technology** -The strategy covers a wide range of digital technologies and how to apply them to address the regional priorities. It takes account of the direction and scope of the FAO Programme Priority Area on digital agriculture (BP5³) focusing on ensuring affordable and equitable access to digital technologies for poor and vulnerable rural communities.
- b. **Innovation:** The digital innovation strategy is built on the UN innovation framework and will be closely aligned to the FAO Science and Innovation Strategy. The strategy uses the SPACE approach (strategy, partnerships, architecture, culture and evaluation) to supporting innovation and draws on some of the tools and services of the UN innovation site.
- c. **Data:** This is considered particularly in the empower pillar where data enables improved decision-making, particularly in government, but also is at the heart of smallholder farmer advisory services.
- d. **Governance, Human capital and Institutions:** The development of human capacities for the application of digital solutions is at the heart of the digitalization for agrifood systems and

¹ Fact sheet Regional Conference for the Near East (NERC-32) <https://www.fao.org/3/as214e/as214e.pdf>

² Regional Initiative of Small-Scale Family Farming RI-SSFF 2018-2021
https://www.fao.org/fileadmin/user_upload/reu/europe/documents/events2018/SFF/4.pdf

³ P16 Strategic framework Better Production 5: Digital agriculture

agriculture. Governance issues in terms of data and software ownership and the development process for digital solutions is emphasized through the use of the digital principles⁴.

6. The regional digital innovation strategy will sit within the FAO Science and Innovation Strategy⁵, and is contributing to the regional consultation, it subsequently supports the same objectives:

- a. to enhance FAO's technical interventions and normative guidance by translating science and innovation into tools for development;
- b. to strengthen the science- and evidence-base of FAO's technical interventions and normative guidance;
- c. to provide guidance, coherence and Organization-wide alignment on science and innovation;
- d. to promote access to, affordability and uptake of innovation (including indigenous and local knowledge) in a way that leaves no one behind and ensures the inclusion and participation of marginalized groups, including women, youth, small-scale producers and indigenous peoples, in decision-making to ensure impacts that benefit them; and
- e. to ensure that FAO contributes to relevant regionally and internationally agreed frameworks and that it informs research priorities and agrifood systems policies at country, regional, and global levels.

7. The regional digital innovation strategy will be based on pillars that define its thematic priorities. The pillars will cover key issues such as strengthening the evidence base, assessing innovation impacts, assessing and mitigating risks, increasing uptake (adaptation and scaling), identifying and addressing trade-offs, internal (FAO) capacity building, coordination, resource mobilization and partnerships.

8. In particular, the regional digital innovation strategy needs to support the strategic foresight, horizon scanning and scenario-building exercises in the region involved in assessing and measuring the impact of digital developments and accessing their sustainability. The idea of strengthening systemic approaches to programmes, policies and investments is at the core of the strategy, improving decision-making on investments and looking for opportunities to learn from previous experience.

9. Other strategies that have been particularly considered for the development of this approach include the cross-cutting elements of the FAO gender⁶ and private sector engagement strategies, the UN Youth 2030 Strategy⁷ and the UN Innovation Network and toolkit⁸.

III. Support for digital agriculture in the region

10. There are a number of complementary approaches supported at global level for the development of digital agriculture. These cover better informed policy – through data banks with analytical interfaces for monitoring across a country the existing state of agriculture and the environment and parameters affecting agricultural decision-making at a national level. They also include the approach to matching solutions to issues by identifying successful applications. Finally, and most crucially, they include the area of ensuring a sustainable digital ecosystem in the country to maintain and scale these systems. These have been categorized in an emerging strategy framework aimed at **empowering** ministries and government agencies with better collection, management and analysis of data including that to manage transformation with support from the FAO Geospatial

⁴ digitalprinciples.org

⁵ Outline and roadmap of the FAO Science and Innovation Strategy <https://www.fao.org/3/ng734en/ng734en.pdf>

⁶ FAO Policy on Gender Equality 2020-2030 <https://www.fao.org/3/cb1583en/cb1583en.pdf>

⁷ UN Youth 2030 Strategy https://5d962978-9e17-4b96-91be-93983605fae8.filesusr.com/ugd/b1d674_9f63445fc59a41b6bb50cbd4f800922b.pdf

⁸ UN Innovation Network <https://www.uninnovation.network/> and toolkit <https://www.uninnovation.network/un-innovation-toolkit>

System which includes the Hand-in-Hand Geospatial Platform as well as the proposed Regional Food Security and Nutrition Observatory by the regional office; **enabling** digital agricultural development through incentives and supportive institutions such as a proposed regional agricultural innovation hub; **embedding** digital solutions in agricultural development projects by supporting digital ecosystems, for example through digital villages; and **scaling** successful solutions for national adoption.

A. Empowering: The role of data acquisition, scanning and decision systems

11. Decision-making in agricultural systems and food security management is enhanced through access to timely accurate data analysed by digital systems. By exchanging data to improve the impact of systems and consolidating information on innovative solutions a government or agency can more effectively support agricultural and agrifood systems development. This applies not only to managing agrifood systems and food security issues but also the process of reviewing innovations, linking opportunities for project planning and mapping locations for intervention. Support is available from the FAO Geospatial System, including in the form of the Hand-in-Hand geoportal for agricultural country data and the digital services portfolio for digital solutions. To create a competitive digital ecosystem, other stakeholders, aside from ministries and farmers, have to be empowered, such as Small and Medium Enterprises (SMEs) and start-ups, to use the FAO HiH data to create digital solutions. To support capacity development and public-private partnership, these stakeholders should be encouraged to engage in this field.

Hand-in-Hand initiatives in NENA region

Syria - *The Government is committed to reviving the agriculture sector, and the HIH framework is being used to help identify some of the main priorities for national investment to restore local water supply and irrigation. These include a focus on promoting sustainable use of natural resources, especially water, in areas of high agro-economic potential.*

Yemen - *HIH is supporting the development of a comprehensive national policy and investment framework for sustainable agriculture, food and nutrition security, and resilience. As such, HIH contributes to the Government's 2030 National Agriculture Sector Strategy and the 2025 National Agriculture Investment Plan.*

B. Enabling: Digital agriculture development

12. Laying out a policy to prioritize country needs and set in place the policies to enable digital agriculture and the digitalization of food systems requires policy development and support.

13. A third of countries in the region have developed an E-agriculture strategy or are being supported by FAO and International Telecommunication Union (ITU) to guide policies and actions to enable solutions to address a range of SDG challenges related to food systems and agriculture. These solutions range from emergency payments to farmers to allay COVID-19 disruption to better water management in crop production. Education through e-learning courses and farmer field schools can increase digital awareness.

Digital agricultural development

Egypt, Morocco and Tunisia - *Digital Agriculture development strategy support using the E-agriculture approach⁹. This comprises linking the national agriculture vision with the information and communication technology (ICT) sector, leverage opportunity and intersectoral developments to build*

⁹ FAO-ITU E-agriculture Strategy Guide <http://www.fao.org/3/a/i5564e.pdf>

an E-agriculture vision with action plan and monitoring and evaluation mechanism. It is an output of a comprehensive multistakeholder consultative process.

Morocco, Tunisia – *FAO with ITU: Support for 3 Digital Villages in each country including ICT Infrastructure (Internet, ICT Equipment), ICT Training Curriculum with two digital solutions developed: AgriMarketPlace – which connects producers and traders to facilitate trade and access to prices; and the Weather and Crop Calendar which combines information on weather forecasts and crop calendars, providing early warning services and increase resilience. In both countries there is also support for the digitalization of food supply chains to allow better management of cropping activities at the level of agricultural product units (UPAs) and better access to the national and international market.*

C. Embedding: Ensuring sustainable solutions

14. The aforementioned actions may not be meaningful if the resultant solutions and development activities are not embedded within the country digital strategy. This means harnessing the opportunity of research and innovation centres by developing an innovation hub approach to encourage the development of locally relevant solutions and building support to adapt solutions from elsewhere. It means engaging the private sector to develop partnerships which will address the needs of smallholder farmers and address the gender and rural/urban divide. It is also important to instil a principled approach to software development that focusses on a human centred design and follows an inclusive project approach. At the same time, the solution needs to be within a sustainable business model.

Youth and innovation

Mauritania - *FAO's Youth Innovation Hub works with NENA youth at different stages of the entrepreneurial cycle (formation, validation and growth) to support youth innovation and engagement in agrifood system transformation in the NENA region. In Mauritania, the initiative is working to strengthen the entrepreneurship system through agri-business incubation, digital literacy training, introducing young agriculture producers to innovative techniques and technologies, and fostering youth agri-business networking and exchange.*

Global AgriInno Challenge - *Global AgriInno Challenge 2021¹⁰ aims to harness innovation, entrepreneurship and digital technologies to address challenges related to the transformation from rural villages into 'Digital Villages' that contribute to the four betters: better production, better nutrition, a better environment and a better life, while leaving no one behind. The challenge will implement the following actions: a) transforming rural villages into digital villages through innovative solutions under the framework of the four betters; b) sharing the latest information, knowledge, and best practices in rural digital transformation innovations, digital technologies, and business models; c) building an enabling environment through Public-Private Partnerships and co-creation opportunities with diverse participants, practitioners, and experts; and d) engaging and empowering young agripreneurs and innovators to tackle development challenges through FAO and partners' global networks with continuous support during and after the innovation challenge including a digital agriculture bootcamp.*

D. Scaling: repeating this approach

15. Actions at an individual project level need to be considered in the context of how these solutions could scale up across the country and region. These solutions must be affordable,

¹⁰ [The Global AgriInno Challenge 2021: Connecting Youth-Led Innovation to the Agrifood Sector | E-Agriculture \(fao.org\)](https://www.fao.org/agriculture)

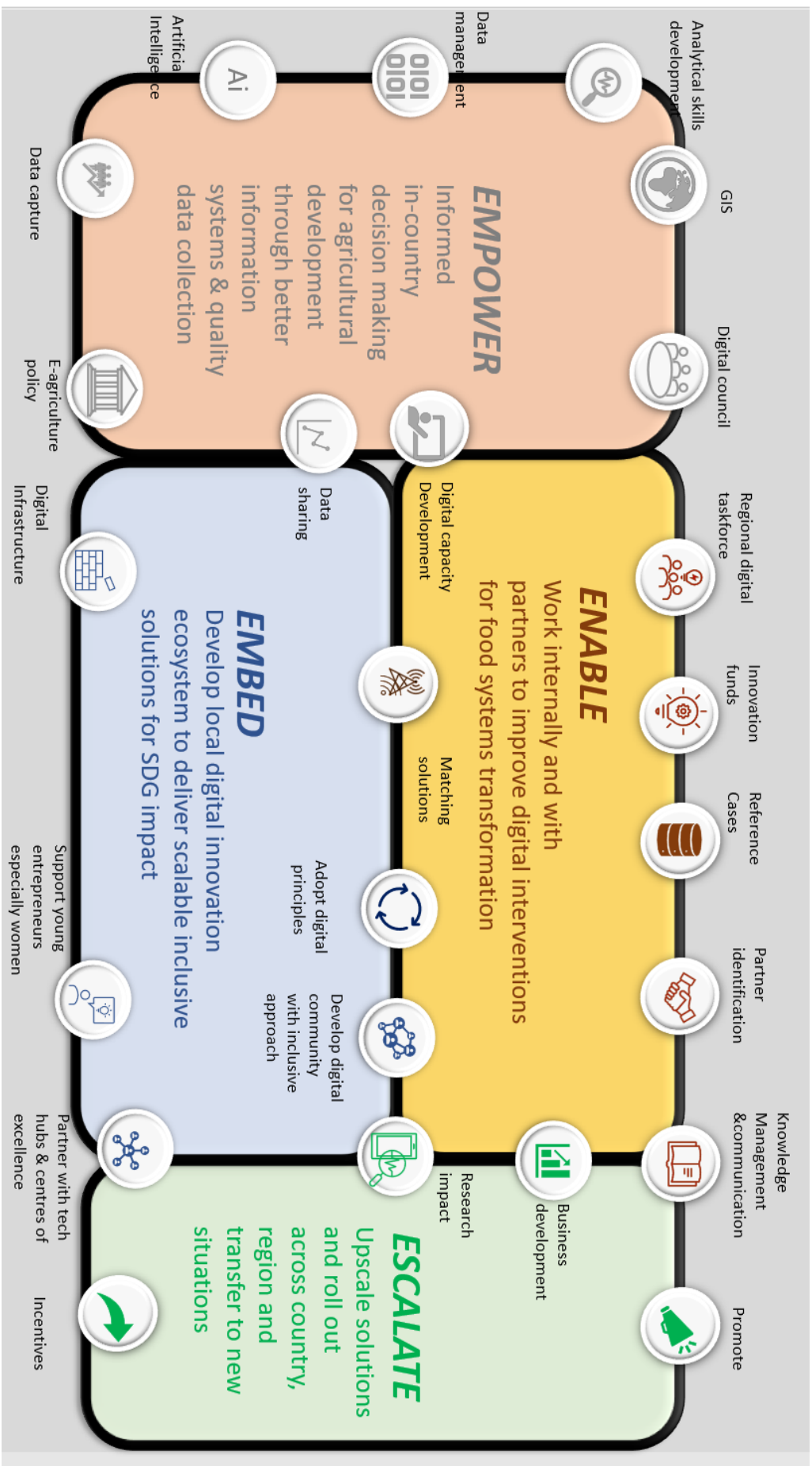
available and accessible in local contexts and locally tailor-made. It is therefore essential to ensure that the evidence of impact is collected during these projects (both positive and negative) to demonstrate the value of the applications to potential investors and to minimize adverse effects. Incentives to support scaling up need to be considered. A better understanding of the adoption of new innovation is needed to better roll out new solutions. To resource the upscaling, it is worth considering how to attract investment from venture capital and in particular social impact investors.

IV. The way forward

16. There is a need to invest in agriculture-related human capital, particularly to consider the links between education and agriculture and the role of the digital sector linked with sustainable agrifood systems. With the development of digital systems comes the concern as to how the resultant data is equitably utilized. There is, therefore, a need to strengthen frameworks and policies on data governance. FAO's proposed Observatory may be tasked with ensuring the equitable access and benefits of such data and analytics across the countries of the region.

17. To avoid digital solutions which worsen existing divides, policies need to ensure that no one is left behind in this transition and everyone is provided with digital literacy and inclusion. It is particularly important to actively reduce the gender gap, the urban/rural divide and include youth in the design and implementation of projects. Sustainability needs to be built at the grassroots level supporting agri-entrepreneurs, youth and innovation. To continue to support innovation it is key to strengthen institutions and partnerships to ensure gaps in agriscience can be addressed and overcome.

Annex 1: FAORNE Digital innovation strategy describing the elements



Annex 2: FAORNE Digital innovation strategy supporting the FAO strategy

