OFFICIAL FEEDBACK FORM

DIALOGUE DATE	Tuesday, 14 November 2023 09:00 GMT +01:00
DIALOGUE TITLE	Digital technologies in sustainable food systems
CONVENED BY	Association Green Growth Platform
DIALOGUE EVENT PAGE	https://summitdialogues.org/dialogue/51932/
DIALOGUE TYPE	Independent
GEOGRAPHICAL FOCUS	Croatia, European Union, Greece, North Macedonia, Slovenia

The outcomes from a Food Systems Summit Dialogue will be of use in developing the pathway to sustainable food systems within the locality in which they take place. They will be a valuable contribution to the national pathways and also of interest to the different workstreams preparing for the Summit: the Action Tracks, Scientific Groups and Champions as well as for other Dialogues.

1. PARTICIPATION

TOTAL NUMBER OF PARTICIPANTS	100

PARTICIPATION BY AGE RANGE

15	0-18	20	19-30	50	31-50	15	51-65		66-80		80+

PARTICIPATION BY GENDER

	Male		Female		Prefer not to say or Other

NUMBER OF PARTICIPANTS IN EACH SECTOR

	Agriculture/crops		Education		Health care
	Fish and aquaculture		Communication		Nutrition
	Livestock		Food processing		National or local government
	Agro-forestry		Food retail, markets		Utilities
	Environment and ecology		Food industry		Industrial
	Trade and commerce		Financial Services		Other

NUMBER OF PARTICIPANTS FROM EACH STAKEHOLDER GROUP

	Small/medium enterprise/artisan		Workers and trade union
	Large national business		Member of Parliament
	Multi-national corporation		Local authority
	Small-scale farmer		Government and national institution
	Medium-scale farmer		Regional economic community
	Large-scale farmer		United Nations
	Local Non-Governmental Organization		International financial institution
	International Non-Governmental Organization		Private Foundation / Partnership / Alliance
	Indigenous People		Consumer group
	Science and academia		Other

Food Systems Summit Dialogues Official Feedback Form

Dialogue title	Digital technologies in sustainable food systems		Date published	12/01/2024

2. PRINCIPLES OF ENGAGEMENT

The Dialogue was organized by Green Growth Platform and AgFutura Technologies, supported by Cities2030 project and funded by EU Horizon 2020. Cities2030 project continuously promotes participation in the (FSDs). In this context, an Independent FSD was conducted in Skopje, North Macedonia on the 14-15 November 2023. It was locally based and locally led by North Macedonian partners, GGP and AGFutura. It was an excellent opportunity to connect experts from the region, interact, discuss and share experiences regarding the use of Digital Technologies in Sustainable Food Systems. The Dialogue was properly prepared, planned and promoted. Participants were invited. Green Growth Platform was the official Convenor of the Dialogue, and a Representative from AGFutura technologies was the host and Master of Ceremonies on the day (Curator). The Facilitators were chosen and prepared accordingly. Discussions were organized in 2 round tables. The standard dialogue format was used. There were 3core elements: opening plenary to frame the focus for the Dialogue; 2 discussion groups on specific topics, and closing plenary including a report back from each facilitator and the master of the ceremony. The main objective of the Dialogue was to bring together regional actors (farmers, policymakers, academia, advisors and tech providers) with different interests in food systems, so that they can interact and appreciate each other's perceptions and views on the digital transition and its impact on sustainability in the food systems and thus with joint efforts contribute to food systems transformation.

HOW DID YOUR DIALOGUE REFLECT SPECIFIC ASPECTS OF THE PRINCIPLES?

The principles of engagement were respected, different stakeholders' groups were represented in the participants so the inclusiveness was guaranteed, all stakeholders were committed to the dialogues, recognizing the complexity and importance of the topic- use of digital technologies in food systems, respecting each other's different perspectives and complementing each other's work, with a final effect of fostering and inspiring their mutual collaboration and networking.

DO YOU HAVE ADVICE FOR OTHER DIALOGUE CONVENORS ABOUT APPRECIATING THE PRINCIPLES OF ENGAGEMENT?

The main advice is to follow the guide for successful preparation of the Dialogue, consult with diverse stakeholders to decide the focus of the Dialogue and invite key actors from different stakeholder groups.

3. METHOD

The outcomes of a Dialogue are influenced by the method that is used.

✓ **Yes**   **No**

4. DIALOGUE FOCUS & OUTCOMES

MAJOR FOCUS

The main focus of the Dialogue on "Digital Technologies in Sustainable Food Systems" was the role of digital technologies in enhancing the sustainability of food systems. Some of the primary topics of discussion included:

Technological Readiness: Assessing the readiness of the agri-food sector to support a technological transition. This involves a multi-stakeholder approach that includes the perspectives of farmers, policymakers, tech providers, advisors, and academia.

Comparative Analysis: There was a comparison of agri-food systems between the European Union and the Western Balkans to understand the differences and similarities in terms of digital technology integration and sustainable practices.

Digital Technologies in Agriculture: The event explored the opportunities and challenges associated with the implementation of digital technologies in primary agricultural production and how these technologies can impact sustainable food systems.

Stakeholder Perceptions and Approaches: Discussions were held to understand how various stakeholders perceive digital transition and its impact on sustainability. Insights were provided from different perspectives including that of progressive farmers, tech providers, and policymakers.

Tech Sessions: Specific sessions focused on how digital technologies contribute to achieving sustainability principles, with examples from Switzerland, England, Hungary, Greece, Serbia, and North Macedonia. Technologies discussed included remote sensing, decision support systems, variable-rate technologies, yield monitoring, and GPS tractor navigation.

ACTION TRACKS

✓	Action Track 1: Ensure access to safe and nutritious food for all
	Action Track 2: Shift to sustainable consumption patterns
✓	Action Track 3: Boost nature-positive production
	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

✓	Finance	✓	Policy
✓	Innovation	✓	Data & Evidence
	Human rights	✓	Governance
✓	Women & Youth Empowerment		Trade-offs
		✓	Environment and Climate

MAIN FINDINGS

The main findings of the Round table 1: Readiness of the agri-food sector in the Balkan region to support technological (digital) transition for sustainability, was to understand the current state of the agro food sector and its capacity to comprehend, accept and implement new technologies that will contribute for compliance to the EU agriculture and improve the business results of the sector. In this round table different stakeholders' representatives participated: government, tech providers, donors, research and academia. The main outcomes and findings of the discussion suggest that it is very important to understand the real situation in the eco system of the agro food sector in order to develop a reform or a measure to be successful. The solution for technological transition needs to be consistent to the real needs and the technological readiness of those that drive the sector and those that create the enabling environment for the sector.

The main findings of the Round table 2: Transforming the Agri-Food Systems - EU vs Balkan (Multi stakeholder perception and approach) was to present the state and the perception of key stakeholders on the operational level of the agro food system. The main representatives from farmers, academia, tech providers, and policy makers as key operational actors in the digital transition participated in the discussion. Through the experience of progressive farmers that use digital technologies in agriculture combined with examples in regional countries such as Slovenia and Croatia, an insight of the level of awareness and the perceptions for the opportunities and challenges of those that are directly involved in the agro food system was generated. The gap between the actual users of modern technologies in agriculture and those that support this process has been definitely present since the transition in the region. Understanding those that implement or support implementation of modern technologies in agriculture, their specific socio economic and behavioral needs is essential for success in digital transition.

The specific tech sessions were dedicated to Digital technologies for achieving sustainability principles. Relevant experts from Switzerland, England, Hungary, Greece, Serbia and North Macedonia presented their technological solutions. Digital technologies play a crucial role in achieving sustainability principles by enabling organizations and individuals to monitor, manage, and mitigate their environmental impact, increase resource efficiency, and make informed decisions. Through the implementation of monitoring (remote sensing technologies), decision support (variable-rate technologies (VRT), yield monitoring, DSS, GPS tractor navigation, cloud computing), and communication technologies it's possible to achieve the cross-cutting agricultural sustainability principles: biomass production; climate change mitigation and adaptation; biodiversity conservation; soil protection and human health.

ACTION TRACKS

✓	Action Track 1: Ensure access to safe and nutritious food for all
	Action Track 2: Shift to sustainable consumption patterns
✓	Action Track 3: Boost nature-positive production
	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

✓	Finance		Policy
✓	Innovation	✓	Data & Evidence
	Human rights	✓	Governance
✓	Women & Youth Empowerment		Trade-offs
		✓	Environment and Climate

OUTCOMES FOR EACH DISCUSSION TOPIC

ACTION TRACKS

	Action Track 1: Ensure access to safe and nutritious food for all
	Action Track 2: Shift to sustainable consumption patterns
	Action Track 3: Boost nature-positive production
	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

	Finance		Policy
	Innovation		Data & Evidence
	Human rights		Governance
	Women & Youth Empowerment		Trade-offs
			Environment and Climate

AREAS OF DIVERGENCE

From the key experts' perspective, Macedonian and Balkan agro food sector are moderately prepared to accept and implement modern technologies such as digital agriculture in the context of sustainable food systems. The main identified challenges regarding the widespread adoption of digital technologies are related to the limited awareness, high initial costs, lack of digital literacy among farmers and the lack of adequate digital infrastructure. In relation to the compliance with European Markets and regulations, meeting and maintaining high-quality and safety standards required by the European market can be challenging for smaller producers; ensuring the traceability of products from farm to table; adapting to environmentally sustainable practices and complying with EU regulations on issues like pesticide use and water management.

Common challenges for farmers and donors in overcoming current development bottlenecks in the national and regional agro-food sector are limited access to finance, resistance to adopting new technologies, inadequate rural infrastructure, limited access to markets, policy and regulatory issues, capacity building issues, land ownership, social and gender equity, data and information access. Additionally, biggest challenge among food operators to achieve more rapid technological modernization are investment barriers, regulations related to safety, labeling, and traceability, and tailored solutions.

The academia recommends and supports better representation of digital agriculture in higher education programs through interdisciplinary approach: incorporating digital agriculture concepts into existing programs, developing specialized courses or dedicated degrees in precision agriculture or agricultural technology. The impact of digital technologies on young agronomists and farmers is generally positive, empowering them with skills and tools for more efficient and sustainable agricultural practices. However, overcoming challenges related to technology access and digital literacy is essential for widespread adoption and success. Familiarity with digital agriculture opens doors for young professionals to explore entrepreneurship in agricultural technology startups. Also, digital agriculture supports sustainable farming practices, aligning with the preferences of environmentally conscious consumers. General trends in the use of drone technologies in agriculture are precision agriculture, crop monitoring and management, mapping and surveying, livestock monitoring. Larger, more technologically advanced farms may be more aware of and receptive to these technologies. Farmers are generally willing to invest in technologies that offer tangible benefits such as increased productivity, cost savings, and improved decision-making. The willingness to pay may be influenced by factors such as farm size, available budget, and the perceived return on investment.

Additionally, the eco system is not enough fertile and supportive to overcome current challenges in the agro food sector through digital agriculture. The current applicative part of the academia in context of digital technologies in agriculture should be enhanced in order to transfer modern complex knowledge to those that directly work with farmers (advisors), or to the farmers themselves. Young farmers are motivated to delve into digital technologies for agriculture due to their higher awareness of the transformative potential these tools have in enhancing efficiency, sustainability, and overall farm management. While digital technologies bring tremendous value, challenges such as the initial cost of adoption, the need for training, and ensuring data security must be considered. However, the opportunities for increased efficiency, sustainable practices, and improved market competitiveness far outweigh these challenges. The government departments responsible for agriculture, rural development, or technology adoption in the agricultural and food sector are supporting the digital transition of this sector in the region with dedicated programs offering financial incentives, subsidies, or grants but there is still place for improvements in adding new specific measures covering bigger number of beneficiaries with higher amount for support.

ACTION TRACKS

✓	Action Track 1: Ensure access to safe and nutritious food for all
	Action Track 2: Shift to sustainable consumption patterns
✓	Action Track 3: Boost nature-positive production
	Action Track 4: Advance equitable livelihoods
	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

✓	Finance	✓	Policy
✓	Innovation	✓	Data & Evidence
	Human rights	✓	Governance
✓	Women & Youth Empowerment		Trade-offs
		✓	Environment and Climate

ATTACHMENTS AND RELEVANT LINKS

RELEVANT LINKS

- **Digital Technologies in Sustainable Food Systems**
  https://agrievents.mk