

OFFICIAL FEEDBACK FORM

DIALOGUE DATE	Thursday, 9 September 2021 10:00 GMT +02:00
DIALOGUE TITLE	Space applications for food systems
CONVENED BY	United Nations Office for Outer Space Affairs
DIALOGUE EVENT PAGE	https://summitdialogues.org/dialogue/8203/
DIALOGUE TYPE	Independent
GEOGRAPHICAL FOCUS	Austria, No borders

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

30

PARTICIPATION BY AGE RANGE

6 0-18

147 19-30

148 31-50

29 51-65

3 66-80

0 80+

PARTICIPATION BY GENDER

203 Male

126 Female

4 Prefer not to say or Other

NUMBER OF PARTICIPANTS IN EACH SECTOR

20 Agriculture/crops

0 Fish and aquaculture

0 Livestock

3 Agro-forestry

33 Environment and ecology

2 Trade and commerce

91 Education

12 Communication

10 Food processing

0 Food retail, markets

6 Food industry

3 Financial Services

11 Health care

1 Nutrition

48 National or local government

1 Utilities

12 Industrial

81 Other

NUMBER OF PARTICIPANTS FROM EACH STAKEHOLDER GROUP

27 Small/medium enterprise/artisan

5 Large national business

4 Multi-national corporation

2 Small-scale farmer

1 Medium-scale farmer

0 Large-scale farmer

12 Local Non-Governmental Organization

25 International Non-Governmental Organization

3 Indigenous People

114 Science and academia

2 Workers and trade union

0 Member of Parliament

1 Local authority

64 Government and national institution

1 Regional economic community

15 United Nations

5 International financial institution

15 Private Foundation / Partnership / Alliance

0 Consumer group

37 Other

2. PRINCIPLES OF ENGAGEMENT

HOW DID YOU ORGANIZE THE DIALOGUE SO THAT THE PRINCIPLES WERE INCORPORATED, REINFORCED AND ENHANCED?

The dialogue was organised on the last day of the UN/Austria Symposium on Space Applications for Food System, that brought together academia, scientists, entrepreneurs and many other participants from more than 70 countries to discuss and demonstrate how space data and applications support food systems. For two days before the Dialogue, users of space applications presented their experience and experts discussed the role of space data and applications within the food value chain. The Symposium was wide-ranging, both in terms of topics addressed and diversity of attendees, with 333 registrations covering all age groups and all world regions. This diversity enabled a varied group of individuals to choose whether to participate in the Dialogue and about 30 individuals contributed actively to one or several discussion topics.

HOW DID YOUR DIALOGUE REFLECT SPECIFIC ASPECTS OF THE PRINCIPLES?

Not applicable

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

No specific advice

3. METHOD

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

DID YOU USE THE SAME METHOD AS RECOMMENDED BY THE CONVENORS REFERENCE MANUAL?

Yes

No

4. DIALOGUE FOCUS & OUTCOMES

MAJOR FOCUS

The Dialogue was focused on five topics that were directly relevant to the audience of the UN/Austria Symposium on space applications for food systems. For each of the five topics, specific open questions were made available to participants well-ahead of the Dialogue, so they could prepare their contribution. Out of 333 persons registered to attend the Symposium, 30 chose to actively participate in one or more discussion topics. The five discussion topics were as follows:

(1) Raising awareness

- How to raise awareness of what space solutions can bring to farming/fishing communities?
- What actions have worked in the past at national or regional level?
- What information channels are used by the farming/fishing communities?

(2) User requirements

- How can academia and R&D institutes better understand the real needs of the user community and translate these needs into technical requirements?
- What are the difficulties in moving from pilot projects to sustainable deployments of solutions?
- How do users want to be more involved?

(3) Financing for development

- What are the difficulties faced by farmers seeking financing for adoption of technology to improve agricultural productivity?
- What incentives and funding mechanisms could be put in place to mobilize resources (both public and private) in support of the deployment of technology in agriculture?
- How to promote innovative financing solutions for investment in agricultural technology? What can we learn from successful examples?

(4) Technology transfer

- How can technologies used to produce food in space be brought to solve Earth-based problems in food systems?
- What is required for spin-off initiatives to succeed?

(5) Youth engagement

- What actions can young people take to advocate for the use of space technologies in agriculture?
- How can young people get involved themselves?

Each group was in a position to discuss what had been presented during the sessions and panel discussions of the Symposium during the previous two days, as well as explore the participants' own experience.

ACTION TRACKS

<input type="checkbox"/>	Action Track 1: Ensure access to safe and nutritious food for all
<input type="checkbox"/>	Action Track 2: Shift to sustainable consumption patterns
<input checked="" type="checkbox"/>	Action Track 3: Boost nature-positive production
<input type="checkbox"/>	Action Track 4: Advance equitable livelihoods
<input checked="" type="checkbox"/>	Action Track 5: Build resilience to vulnerabilities, shocks and stress

KEYWORDS

<input checked="" type="checkbox"/>	Finance	<input type="checkbox"/>	Policy
<input checked="" type="checkbox"/>	Innovation	<input checked="" type="checkbox"/>	Data & Evidence
<input type="checkbox"/>	Human rights	<input type="checkbox"/>	Governance
<input checked="" type="checkbox"/>	Women & Youth Empowerment	<input type="checkbox"/>	Trade-offs
<input type="checkbox"/>		<input checked="" type="checkbox"/>	Environment and Climate

MAIN FINDINGS

The user requirements and technology transfer groups raised the same four main recommendations:

- 1 – technology development would benefit from improved availability of funding for new initiatives, to reduce their risk.
- 2 – technology developers need first to understand users' needs, the context in which they operate, and what motivation they would have to adopt new techniques in their work. Agriculture schools and colleges have a role to play in raising awareness at all levels.
- 3 – the specific technical limitations of what can be provided need to be clearly communicated to users, and local capacity developed to use the technology autonomously.
- 4 – it is essential to keep the user interface simple

The Financing group concluded that mobilising both public and private funds is critical to bridging the current financing gap and to scale-up the adoption of space-based technologies in agriculture, with three recommendations:

- 1 - Crowd-in private investments
- 2 - Increase collaborations to optimize use of public and private funds
- 3 - Investments in an enabling environment

The youth group considers that the role of youth is to bridge the gap between people who are familiar with technology and those who are not, with two complementary approaches:

- 1 - Young people can take advantage of the multiple social media platforms, networks, and applications on mobile phones already available to promote and educate, not only users of the technology but also people active with the development of policy and legislation related to space technology and to agriculture.
- 2 - Beyond digital means, young people are also eager to be active directly, for instance conducting field research and having direct conversations with food producers, strengthening existing communities for more collaboration between educational institutions and cross-sector innovation.

Outcomes of the Dialogue will be reported to the UN Committee on the Peaceful Uses of Outer Space in 2022, as part of the formal report on the UN/Austria Symposium on space applications for food systems.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 1/3

The awareness, user requirements and technology transfer groups raised the same four main recommendations:

1 – availability of funding for new initiatives.

In some countries, aversion to risk and lack of financial support for technical start-ups eager to develop applications of space technologies for food systems hampers their development. There is a role for government agencies in charge of space activities to support the development of their applications with pilot projects of new technologies that directly involve users. Afterwards, the incubation phase towards a sustainable business still needs support. It would be beneficial if, for instance, more space agencies, institutions and private entities had strategy funds for start-ups in the field of space applications, with low levels of bureaucracy to obtain access to such funding. Obtaining these conditions would require to raise awareness at government and policy level, but also to raise awareness towards consumers about how their food has been produced, so that consumers can choose more sustainable food and, thereby, impact the way it is produced in a demand-driven process.

2 – understanding of users needs

Participants referred to the need for better communication between end users and those who develop technical solutions, as it is difficult to make information easy to understand for users of every sector of food systems, who are all different. Technology developers need to understand the environment and the conditions in which their users work. In this context, it is essential to develop prototypes and iterate with users throughout the development process, building partnerships with early adopters and champions for adoption of the new techniques. These early adopters are not necessarily young people, rather individuals with a mindset open to change, who can act as a bridge between technical experts and their own community. Overall, it takes time to build knowledge and local academic institutions need to develop capacity-building opportunities, with support from international organisations if required. Incentives need to be available for farmers to adopt a new technology, as adaptation to new techniques will require additional work; in some cases users see a direct, quantifiable and short-term benefit, but in other cases improvements are less straightforward and a subsidy might be required. It is essential to understand users' motivation for new technology to be adopted.

3 – understanding of technical limitations of what can be provided

In cases where satellite data is provided for free, interpretation of these satellite images into actionable information for food system stakeholders might still require specific expertise that is not readily available locally. In such cases, users do not have the ownership of the whole data processing process and depend on others; they need to be able to rely upon partners in their own country and not only organisations outside. A local eco-system around users of the technology needs to be built locally to make the use of that technology sustainable. In some cases, technical limitations remain the main obstacle to broader adoption of new techniques: although information might be provided to farmers at no cost, the data precision (for instance, when assessing nitrogen content in the soil) might still be inadequate, due to spatial and temporal limitations of the satellite imagery, to be directly applicable to improve agricultural yield.

4 – keeping the user interface simple

The device or the information used by actors of food systems need to be as simple and as familiar as possible. It needs to be adapted to the conditions where the person works (e.g. outside, with a small screen, without access to electrical power). The solution developer needs to adapt this user segment to the need of the community. Reducing its cost would reduce the financial barrier to take-up of the technology; using mobile phones as user device is successful in several domains. Youth is very familiar with such a device and mobile phones are the most pervasive technology in many countries. Design of the user interface needs to remain simple to be successful.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 2/3

The Financing group considered the constraints facing innovators and farmers in accessing financing and concluded that mobilising both public and private funds is critical to bridging the current financing gap and to scale-up the adoption of space-based technologies in agriculture.

The group arrived at the following three recommendations:

1. Crowd-in private investments

- Capacity building is critical to provide necessary skill transfer to financial institutions in order to better understand the space-technology for agriculture, analyze risks, and develop appropriate lending and other financial products. This also includes encouraging a shift in perception from viewing space start-ups as capital-expenditure intensive “deep space technology” to a digital firms where value creation lies in data collection and data analytics.
- Space-based technology is able to optimize use of resources to increase farm yield, forecast yield and monitor crop growth. The aggregated data and higher transparency would allow credit providers to mitigate the risk of non-repayment of loans and improve lending quantity and interest rates to farmers. The data is also useful for other downstream players such as insurance companies, financial institutions and agricultural companies. Investments in such “one-stop” technology should be boosted.
- A demand-driven business model for space start-ups that is sustainable and profitable should be promoted as it will attract private investment naturally.

2. Increase collaborations to optimize use of public and private funds

- To reduce transaction costs and risks, blended finance could be encouraged where concessional funds catalyze investments by other private investors. Also, support for first loss/guarantee funds for agriculture focusing on smallholder farmers could be promoted.
- Promote private-public partnerships by which governments could leverage private sector funding and management.
- Space agencies could cooperate with multi-lateral development banks to bring space-technology to the field. Space agencies would bring in the technical know-how while multi-lateral development banks could bring in funds and organize capacity building activities on the ground. An example is the European Space Agency Global Development Assistance (GDA)

3. Investments in enabling environment

- The policy and regulatory environment on data collection, analysis and usage of data (how will the data be used; who can use what data?) should be improved to enable the growth of data-driven space-technologies.
- Last but not least, there is a crucial need for public resources to finance essential public goods and services such as human capital, agricultural research, and enabling public infrastructure such as in internet connectivity.

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OUTCOMES FOR EACH DISCUSSION TOPIC - 3/3

The youth group provided recommendations on young people's actions:

1 - Actions that young people can take to advocate for the use of space technologies in agriculture

The group discussed education, and the need to raise awareness within the general public on how space technologies can benefit farmers. The concrete example of Central Europe was discussed, where the farming industry underwent major changes in recent years and more technology-savvy young farmers, who are very well educated in agricultural institutes, bring innovations to their daily work. In this region, technology is perceived positively, and the discussion focuses on how to incorporate new technology compared to old ones. Participants noted that, in Africa, many young women work in agriculture and would need better access to education and capacity-building opportunities to empower them. Most people have mobile phones but have no access to higher levels of technology such as computers or internet. Until government support can broaden accessibility of information and communication technology in the region, people need easy to use and accessible technology. In regions where advanced technology is available, such as autonomous agriculture machines or data integrated watering systems, food production systems and technical infrastructure need to be integrated, with a user interface easy to use such as apps on mobile phones.

Regarding how to raise awareness, "Story-telling" is an effective way to convey information from farmers to policy makers and it would be important to strengthen scientific networks locally in addition.

2 - How can young people get involved themselves?

An effective way to sharing information with and between young persons is to use mobile phones, who are seen as the most convenient and most ubiquitous interface. Beyond accessibility, the content needs however to be tailored to farmers or fishers in their local context, for instance provided in a local language. Many young people do not have access to land, to be in a position to influence of new space-based technologies could be adopted, young people would first need to be integrated into decision processes about how the land is managed. To do so, they need to integrate themselves into the community, with immersion into the local food systems eco-system; they can bridge the gap between people who are familiar with technology and those who are not. Young people are keen to be the interface that engages with local groups and users to understand their real needs and communicate in their language. Young people who study have been promoting the take-up of new technologies thanks to student organizations and scientific communities focusing on space applications, that are supported by professionals such as the UN Office for Outer Space Affairs acting as advisor. Young people are keen to use digital technologies but also to direct their energy into hands-on activities locally that do not require technology and might be resource-intensive, for instance conducting field research and having direct conversations with remote farmers to better understand what is needed.

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AREAS OF DIVERGENCE

Not applicable

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ATTACHMENTS AND RELEVANT LINKS

RELEVANT LINKS

- **UN/Austria Symposium on Space Applications for Food Systems - all presentations**
<https://www.unoosa.org/oosa/en/ourwork/psa/schedule/2021/2021Graz.html>
- **Outcomes of the UN/Austria Symposium and the Dialogue will be reported to the UN Committee on the Peaceful Uses of Outer Space in 2022**
<https://www.unoosa.org/oosa/en/ourwork/copuos/current.html>