Ending hunger and achieving food security for all

Answers to Guiding questions - UNOOSA

Key messages:

Space technologies, including satellite remote sensing integrated with geospatial technologies and location-based services, have demonstrated the capabilities in addressing challenges related to sustainable agriculture, be it from a stress created due to increasing demand for food, conversion of productive land to a different purpose, impacts of natural disasters or long-term impacts of a changing climate.

Continuous Earth observation from space is crucial to manage and monitor agricultural resources for the benefit of humankind and the environment, as well as to provide important forecasting services to prevent water-related disasters such as floods and droughts that could increasingly affect agricultural production and food security. Remote sensing satellites that provide data on several key variables related to soil, crop, water or weather at various spatial and temporal scales are highly appropriate for reliable agricultural planning and management. Satellite-based navigation systems are widely used for expansion of precision farming and more efficient use of resources. Precision farming technologies often use global navigation satellite systems (GNSS) to improve efficiency with products and techniques that can cut unnecessary expenses on seed, fuel, agrochemicals and time.

United Nations entities employ space technology in their routine operations aimed at enhancing food security and sustainable food production. They also support Member States in advancing their capacities, promoting policy-science dialogue, developing institutional frameworks and bridging the gap between knowledge, governance and capacity to use such technology to enable early detection of threats to agriculture and food security and informed decision-making in preventing and mitigating the effects of such threats

For example, satellite imagery obtained from Earth observation systems informs decision-making in agriculture, aquaculture and forestry, and provides inputs for yield forecasting and risk assessments of pest, disease and other threats in those sectors. In addition to space-derived geospatial data and information, space technology and its applications provide other solutions that could be effectively employed to address global supply uncertainty and improve the productivity and resilience of food production, in combination with other sources of data and information from terrestrial applications. The effective use of existing Earth observation information, in combination with data gathered in the field, provides tools that enhance the collection, storage, analysis and dissemination of food security information.

Furthermore, the availability of historical remote sensing data also allows the analysis of past trends that have led up to the current situation. In particular, it assists in the assessment of areas where agriculture can be recognized as unsustainable, as well as the factors leading up to that point, for example how agricultural development might have led to land degradation, desertification or salinization. Changes in agricultural practice that lead to improved

sustainability can also be assessed. In addition, there are opportunities for real-time assessment of the broader impacts of agriculture on land and water, for example, by correlating current agriculture (including by location and agricultural practice) with associated ecosystem change.

1. **Which areas and socio-economic groups** are especially vulnerable to poor nutrition and food insecurity and what are ways to ensure that food systems transformations leave no one behind?
2. **What fundamental changes are needed** to make our food systems an engine for inclusive growth and contribute to accelerating progress towards ending hunger and achieving food security for all in the Decade of Action?
    a) How could they be designed and implemented to generate synergies and strengthen existing ones with other Goals and Targets?
    b) What are some of the possible trade-offs from these changes and how can they be mitigated?
3. **How might COVID-19 facilitate or complicate** the implementation of needed food systems changes?
    a) Will it aggravate and/or reduce vulnerabilities?
    b) What are the changes in design and implementation of policies affecting food systems which are necessary to prevent and better deal with food security and nutrition impacts of infectious disease outbreaks and pandemics in the future?
    c) What of the current immediate actions we are seeing will contribute to the long-term resilience of food systems?
4. **What knowledge and data gaps need to be filled** for better analyzing current successes and failures in food systems and the trade-offs and synergies, across SDGs, in implementing food systems changes to fix these failures?
5. **What partnerships and initiatives are needed** to harness synergies and/or reduce trade-offs in food systems?
    a) What are the most critical interventions and partnerships needed over next 2 years, 5 years, 10 years?
    b) Can these be scaled up or adjusted to fit other contexts?
    c) How can private sector support investments for sustainable agriculture production and supply reduce food insecurity?