The issue

Timely, issue driven and evidence-based early warning information, supported by objective monitoring and assessments, are imperative to identify food security hotspots as well as intervention points.

Curtailed mobility, physical distancing and economic recessions brought about by the COVID-19 pandemic have challenged the entire workflow of existing early warning systems. Concurrently, the pandemic has raised unprecedented demands for reliable and granular data, multidisciplinary information and holistic approach to address both immediate and longer-term impacts of pandemic on food security, especially in countries affected by multiple crises. These countries, unfortunately, also face digital inequality and have been left behind in the era of Big Data.

The Agricultural Stress Index System (ASIS) is a global agricultural drought information system operated by the Food and Agriculture Organization of the United Nations (FAO) Global Information and Early Warning System on Food and Agriculture (GIEWS) to support its food security monitoring and assessment work. It uses near real time (NRT), middle resolution (1 km) remote sensing raster imagery in the public domain as key input data, and as such overcomes the traditional on-site data collection constraints. The ASIS has two parts: a global version and a country-level tool. Global ASIS produces publish and analysis-ready map/spatial-aggregated tabular products every 10 days. The country-level version of the ASIS, already deployed and tested in several countries, is calibrated with key local information and, therefore, provides more precise results.

The present action sheet offers an innovative digital solution to empower national early warning systems and address existing data and knowledge gaps, which have been further underscored by effects of the COVID-19 pandemic.

The action

Establish food security monitoring and early warning domain model on FAO Hand in Hand Geospatial platform through further integration global ASIS dataset, as well as other online remote sensing/geospatial products from accredited partners and sources into the platform, provide users an easy access to the digital geospatial resources in the format that facilities the transformation of data into timely, context-specific and targeted early warning information.

Through country-level ASIS, provide regions and/or countries identified a complete package to establish/optimize its early warning system: (a) tailored key input data (1 km resolution raster imagery, both archive and NRT); (b) open source software
package ensuring fully automation of data processing and online dissemination; (c) training on context-specific analysis using the outputs of the ASIS and other digital early warning tools.

Collect scientific and ground evidence to further improve the methodology on agricultural drought and further development and improvement the ASIS system.

Expected results

1. The food security monitoring and early warning geospatial domain model is established and training provided on utilizing the ASIS and other online remote sensing/geospatial products in the context of food security monitoring and early warning through online and/or face to face training sessions and workshops as well as remote technical assistance.

2. Regional/country drought morning and early warning systems established following the GIEWS model. Outputs will be disseminated on local institutions’ websites, following agreed data sharing policy, as well as contribute to the FAO Hand in Hand Geospatial Platform and other well-known Geospatial cloud platform (such as ArcGIS Online, Google Earth Engine) to maximize the usage.

3. Scientific and ground evidence will be collected and strengthened, contributing to the further development of the ASIS system. Relevant methodologies and indicators will be developed and tested with ground information using mobile technology or drones.

4. Together with other instruments/tools, national/regional institutions will develop/improve the capacities of early warning systems using innovative digital solutions to convey evidence-based, context-specific early warning information for decision-making and early actions.

Partnerships

European Union and Flemish Institute for Technological Research (VITO)

Programme links

The programme will tie in with traditional partners of GIEWS, such as the World Food Programme (WFP) Vulnerability Analysis and Mapping (VAM), the United States Agency for International Development (USAID) Famine Early Warning Systems Network (FEWS NET), the EU Joint Research Center, the Agricultural Market Information System (AMIS), the Group on Earth Observations Global Agricultural Monitoring Initiative (GEOGLAM) and the International Food Policy Research Institute (IFPRI), as well as the United Nations Convention to Combat Desertification (UNCCD), the World Meteorological Organization (WMO), the Global Framework on Water Scarcity in Agriculture (WASAG), the EU Earth Observation Programme (COPERNICUS), the NASA Harvest Consortium and the China Academy of Science’s Digital Belt & Road Initiative (DBAR). It will support FAO and countries to identify potential bottlenecks and logistical disruptions as well as intervention points in the form of joint COVID-19 Response Programmes. Its results will also feed into Hand-in-Hand Initiative.

Regional and country focus

Least Developed Countries (LDC), Landlocked Developing Countries (LLDC), Small Island Developing States (SIDS) facing recurrent agricultural water stress.

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