
FOOD SECURITY

Climate change is very likely to affect **food security** at the global, regional and local level and can disrupt food availability, reduce access to food and affect food quality.

The key organisations influencing the framework for food security policies are the United Nations and the European Commission. Through specialized agencies, such as the Food and Agriculture Organization (FAO) and the World Food Programme (WFP), the UN measure and monitor food (in)security globally.

The global goal of achieving 'zero hunger' by 2030, set by the Sustainable Development Goal (SDG 2), unfortunately seems to be receding: the number of people exposed to severe food insecurity, in need of immediate assistance for food, nutrition and livelihoods has increased in recent years.

It is crucial to establish international frameworks and response mechanisms to address these issues, due to the effects and outcomes that weather events, conflicts and economic shocks can have on food security. In particular, with regard to climatic events, changes in rainfall and temperature alter the microbiomes in soils, changing their health and productivity.

The use of Earth observation (EO) technologies can provide knowledge frameworks useful for planning short-term humanitarian response to food crises, but also promote the building of long-term development partnerships to improve food security and increase the sustainability of food systems.

Remote sensing and meteorological data from EO support the creation of early warning systems to prevent food emergencies and to guide rural development. By successfully detecting, monitoring, and preventing disturbances in food production, this data can help affected nations become more resilient to food emergencies. Additionally, EO can help with natural resource management, biodiversity protection, and sustainable food systems that lower the likelihood of food poverty. These factors all contribute to longer-term development.

EO can provide a solid information base for the implementation of efficient food security strategies. Since the beginning of EO, low spatial resolution satellite-based vegetation health indicators have been used extensively for agricultural monitoring and drought detection, while lately, crop management and agricultural monitoring have been greatly improved by higher resolution data from the Copernicus mission.

The service proposed by **UpToEarth** involves the use of satellite images with time series, reliably acquired over the entire area of interest. The time series make it possible to reliably discriminate crop types and derive growth indices for crop productivity. The service is able to support the performance of complex analysis activities for the implementation of regulatory and planning functions, improves agricultural monitoring capabilities and enables new measures for climate change adaptation and maintenance of food security.