# 2 – Zero Hunger


**Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture**

**EO Products/Services supporting the SDGs**

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## Goal: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

EO data offer an invaluable opportunity for better-informing development policies and quantifying various targets. How can EO be used to help countries achieve specific targets? *Source:* ***ESA compendium of EO contributions to the SDG Targets and Indicators***

**Target 2.3: By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.**

*Smallholder farmers play a key role in global food production, particularly in developing countries. Is estimated that small-scale farming systems provide up to 80 percent of the food supply in Asian and sub-Saharan Africa. These systems usually host the majority of poor and hungry people worldwide. Therefore, increasing agricultural productivity in these systems would be key to achieve food security.*

*Even though EO has been proven potentially useful to contribute to the management of farming, pastoral and forestry systems at regional scales, particularly by generating data to feed crop simulation models and early warning systems, it still has limitations to provide the type of fine scale data needed to feed models operating at the farm scale. This is mainly due to the need for high spatial and temporal resolution and repeat monitoring on demand, which satellites cannot yet guarantee (Jin et al. 2018, Kasampalis et al. 2018). The Global Ecosystem Dynamics Investigation Lidar (GEDI), to be launched in 2018, is expected to produce promising data to fill this gap, at least for forestry systems.*

*Further efforts are needed in order to implement ways to put the information derived from crop simulation models and early warning systems in the hands of small-scale food producers, as required by this target. Recent pilot cases suggest that information derived from EO, such as weather forecasts, can be made accessible to small-scale food producers even in isolated areas in a way that can inform crop management decisions, such as the time to plant and crop variety selection (UNDP, 2016).*

*As this indicator is classified as Tier 3, no internationally established methodology or standards are yet available.*

*(eo services focus on Management of farming)*

**Target 2.4:** **By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.**

*Continuing population and consumption growth is likely to increase the global demand for food in the next decades. The achievement of food security will require profound changes in the global food and agriculture system. At the same time, unsustainable agriculture expansion has created numerous environmental problems, such as soil erosion, water pollution as well as greenhouse gases emissions. This target aims to contribute to this goal by increasing the economic, social and environmental sustainability of agricultural practices, including through enhancing the resilience to climate change and extreme whether events.*

*EO methods can play an important role in increasing agricultural productivity as well as minimising the environmental impact of the agricultural sector. Some of the ways EO has proven successful to contribute to increase the sustainability of agricultural production include: (1) yield estimation, (2) vegetation vigour and drought stress monitoring, (3) assessment of crop phenological development, (4) crop acreage estimation and cropland mapping and (5) mapping of disturbances and land use/land cover (LULC) changes (Atzberger, 2014). EO datasets can also be used by countries to inform spatial land use planning and minimize the potential environmental impact of crop expansion through optimizing the allocation of lands (Laurence et al. 2014). In addition to crops, satellite remote sensing techniques can also be applied for rangeland monitoring and management (Ali et al. 2016). EO data and methods can be useful for assessing the future exposure to climate change as well as to extreme weather events, as explained in the 1.5.2 indicator factsheet.*

*(eo services focus on Agricultural productivity & env. impact of agriculture. Indicator 2.4.1: Sustainable agriculture)*

**Relevant Success Stories**

- Implementing & managing agriculture projects
- Infrastructure Development Planning
- Supporting agricultural and food security decisions