

1 – No Poverty



Goal 1: End Poverty in All its Forms Everywhere



EO Products/Services supporting the SDGs



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Goal: End poverty in all its forms everywhere.

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 1.1: By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day.

(eo services focus on: [Mapping spatial distribution of risk of poverty](#))

Target 1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

Earth Observation (EO) data can be used to track and target poverty, and aid the allocation of scarce resources which can help improve human livelihoods. EO can be used to map spatial distribution of socioeconomic deprivations, as well as providing information that may indicate areas at risk of poverty (e.g. contribute towards famine early warning systems) (NASA, 2018). EO data can be used to forecast weather, monitor fires, determine populations at risk from flooding/landslides, analyse climate change and map land cover change (e.g. deforestation and degradation). These factors can all help identify areas currently at risk from poverty, and in the future.

Satellite images can also be used to estimate economic activity (e.g. through monitoring night lights) and mapping houses (e.g. slums), which can be identified through satellite images using physical parameters, clustering of structures with or without a road network, irregular and haphazardly grouped temporary, poorly-constructed or semi-permanent households (Montana et al., 2016). Further, these datasets can be combined with in-field survey data (from socioeconomic household surveys, social media, mobile phone networks) (Leidig & Teeuw, 2015), and often by additionally using machine learning algorithms (Jean et al., 2016), can estimate consumption expenditure and asset wealth of the region analysed. Such approaches can assist efforts to track and target poverty.

(eo services focus on: [Estimate economic activity, mapping areas and its resources](#))

Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.

Improving human well-being and access to services, EO data can help develop various proxy indicators of human well-being, for example access to services such as electric power, as well as patterns of human interaction

Remote sensing and call data records can help monitor access to basic services. Call Data Records (CDR) provide information on where, when, how and with whom someone made a mobile phone call – mainly used for billing purposes, but also provide spatial information on patterns of human interaction. Mobile phone usage and movement can indicate household access to financial resources and services, for example, via electronic money schemes such as M-Pesa. Remote sensing can capture information on biophysical properties such as rainfall, temperature and vegetation cover as well to variables such as infrastructure (e.g. railway, main roads, waterways), distance to water sources and power plants, electricity use, agriculture productivity and distance to roads and urban areas (which reflects access to markets and information). The state of the road network (e.g. if it's a dirt track or an impervious road) can be derived through Open Street Map, but can be combined with remote sensing data to provide a more detailed picture.

(eo services focus on: [Estimate economic activity and access to basic services](#))

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

The frequency and severity of natural disasters have been increasing in the last decades. Research has revealed that it is generally the poor who tend to suffer worst from disasters. The fact that climate change is expected to increase the frequency and intensity of these events threaten to derail international efforts to eradicate poverty.

The importance of EO in disaster management and assessment has gained increasing significance over the past years. One of the ways EO can contribute to build resilience of vulnerable populations is through disaster-risk reduction. EO datasets and methods can contribute to disaster risk management and reduction by providing relevant information to the full cycle of disaster and environmental shock management: mitigation, preparedness, warning and response.

EO has proven successful for a wide range of disaster types, particularly for flooding, extreme drought events, earthquakes, landslides and volcanic eruptions. In fact, EO data is providing a reliable data basis for deriving useful information such as the extent of damaged area along with the land-use types as well as the population affected. This can be done through hazard mapping and risk modelling, real time monitoring, producing input data for feeding early warning systems, or for producing maps to support disaster response actions. For a comprehensive review on how EO can contribute to disaster-risk management, see ESA (2015). EO data lies also at the heart of climate modelling, which represent key tools to inform actions aiming to reduce vulnerability to climate change.

(eo services focus on: [Build resilience of vulnerable populations contributing to management of disaster risk reduction. Indicator 1.5.2: Disaster Damage](#))

Relevant Success Stories

- [Image support for land tenure mapping](#)
- [Satellite images contributing to rescue persons](#)
- [Infrastructure Development Planning](#)
- [Supporting agricultural and food security decisions](#)