

9 – Industry, Innovation and Infrastructures



Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation >

EO Products/Services supporting the SDGs





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Goal: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.

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 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans- border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

Infrastructures that are sustainable, durable and disaster-resilient, provide the basic and essential structures to a country to effectively function, but also allow to generate employment and wealth and drive economic development. This target is strongly linked to other sustainable development goals, including zero hunger, no poverty, good health and well-being, as well as quality education. Rural development processes, including access to markets, education and health services, cannot succeed without a reliable access to roads year-round. EO data can inform the production of efficient and effective plans for infrastructures development and management. The global coverage of remote sensing images allows the identification of areas currently lacking infrastructures for transportation or energy access. These data coupled with information on topography, land cover, precipitation patterns, climate change scenarios, can support the development of climate resilient infrastructures. EO data has been widely used to extract infrastructures such as urban areas, roads and dams using data at different spatial resolution (e.g. rural roads can be detected just with high resolution images) and different techniques (e.g. supervised and unsupervised classification, neural networks, and mathematical morphology). Research is also currently focused on using high resolution or radar data to monitor the status of infrastructures, particularly in areas prone to natural disasters, such as flooding, but also in areas affected by conflicts. The need to plan for regional and trans-border infrastructure is also well served by EO since it is technology that crosses borders and is not limited by a single country's or region's national data collection systems. In theory, open access EO data should help countries collaborate on shared infrastructure projects.

(eo services based on Inform on infrastructures development & planning. Indicator 9.1.1: All season roads)

Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

EO data can be used to measure pollutants that arise from industries and infrastructure. Satellite data can also be used to locate potential pollutant hotspots through analysis of global emissions, and monitoring pollution plumes. Satellites also collect weather and climate data, which can aid decision-making in relation to clean energy installations. For example, satellites can be used to forecast surface wind field data to guide operations of wind turbines, and predict their energy input into power grids. It can also be used to map photovoltaic solar electricity potential, based on solar irradiance climatology – which can be used to aid solar energy installation.

(eo services based on Mapping & measurement of pollutants emissions)

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- [Ship arrival time service](#)
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