

IAF EARTH OBSERVATION SYMPOSIUM (B1)  
Earth Observation Societal and Economic Applications, Challenges and Benefits (5)

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ENVIRONMENTAL SUSTAINABILITY FROM EARTH OBSERVATION: OUTCOMES FROM CASE  
STUDIES IN EC R&D PROJECTS FOR COPERNICUS SERVICES EVOLUTION

**Abstract**

Ensuring equitable access to energy and natural resources is essential to free an enormous percentage of the world's population from the yoke of poverty and underdevelopment. Poverty is a multidimensional concept that includes the multiple deprivations experienced by people in their daily lives: poor health, lack of education, inadequate living standards, poor quality of work, violence, daily life threatened by natural and anthropogenic risks. Economic, social and environmental sustainability are therefore intertwined and the 17 global SDG goals designed to "achieve a better and more sustainable future for all" of the 2030 Agenda are the basis of the programs of the main international bodies, United Nations, FAO, World Bank, European Commission, in their proper areas of action. Earth observation techniques from space are a key element of the Global Monitoring Leonardo Group capabilities, able to provide quantitative information supporting the metrics necessary to verify progress towards sustainability-related objectives and to assess, above all, environmental sustainability topics (quality of water, air, soil, balance of open spaces and built-up areas, agro-forestry balance, fragility of territories...). e-GEOS, a company of the Leonardo group and joint venture between ASI and Telespazio, has always been active on environmental sustainability issues, providing cutting-edge geoinformation technologies and products, based on multisource EO satellites and heterogeneous proximity data (e.g. from in-situ, airborne sensors) and developed within European and national RD/Innovation projects. The global asset of the whole set of EO satellites, allow the in-depth monitoring of very different geographical areas, impacted by different environmental and anthropic conditions, through the proper selection of data and advanced processing techniques. The technological products developed and tested in real use cases within two selected RD projects, led by e-GEOS and focussed on environmental sustainability, will be presented: H2020 ARCOS (closed at the end of 2023) and HEU CENTAUR (active) represent in a clear way the demand by the European Community and the Copernicus Services (CEMS and CSS-SESA) to evolve through the adoption of innovative monitoring tools to solve, or at least mitigate, sustainability-related challenges of Arctic region (ice shift, pollution, marine traffic) and of African urban areas (flash flood, droughts and correlated food scarcity), respectively. The relevant platforms and innovative service components have been developed by European project teams, including renowned academic/research organisation, technological providers (large enterprises, SMEs) and institutional key end-users/stakeholders (e.g. SATCEN, ECMWF), whose role will be enlightened in the presentation.