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SPACE FOR THE GREEN ENERGY SECTOR: USE CASES AND COMMERCIAL OPPORTUNITIES

Abstract

The green energy sector is at an important crossroad which is characterised by increasing consumption on one hand (electric consumption will probably double by 2050) and tight efficiency targets for primary and final energy consumption on the other. European and national public authorities are increasing standards for energy efficiency and the share of renewable energies. Setting climate targets, establishing low emission zones, increasing emission monitoring, or correcting prices by CO2 emissions, is changing the landscape of the market. This changing legal framework for the clean energy transition is complemented by public investments schemes to attract and support needed private investments. The ongoing privatisation and digitalisation (accelerated by the COVID-19 crisis) including the application of related enabling technologies, is further supporting the achievement of European and national goals.

Space-based systems play important roles in the energy industry, but this represents only a minor part of their potential. Space-based data has widespread applications in renewable energy (e.g. for mapping and measuring wind, wave, tidal and solar resources) and satellite communications, navigation and Earth observation have established roles in the hydrocarbon and nuclear sectors. Space-based products and services can deliver benefits throughout all the phases of energy production and supply, ranging from identifying resources, to controlling and monitoring distribution networks and informing policy formulation and enforcement.

Moreover, space research under microgravity conditions allows the study of heat transfer processes to find ground-breaking new models that can be used to inform the design of tools and methods relevant across various industries, leading to more efficient applications. This is very important considering that an estimated two percent of the world's energy consumption is used for the cooling of data centers, an area that is developing rapidly.

The European Space Agency envisions space-based solutions as key to combating the climate crisis and enabling a green future. It supports and promotes innovative developments using space applications and data as well as offering collaboration, technical assistance and funding. The presentation will present the needs of green energy actors and map associated commercial space-based solutions developed to overcome the challenges of securing a climate proof future providing sustainable, accessible energy for everyone.