

Topics (T)

Space Technology for Climate Adaptation and Mitigation [2] (6B)

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ENERGY FROM SPACE - HOW SPACE-BASED SOLAR POWER COULD MAKE A SIGNIFICANT CONTRIBUTION TO MITIGATING CLIMATE CHANGE**Abstract**

The challenge of mitigating climate change is one driven by energy. The world needs reliable, clean, and affordable energy that can be scaled into the future - while energy demands rise over the coming decades - to reach its goal of Net Zero by 2050. Space-Based Solar Power (SBSP) - acquiring solar energy directly in space and transmitting it to the terrestrial energy grid to provide continuous, clean and reliable energy - has been studied internationally over a few decades, but has yet to be subjected to a major development effort even though it has the potential to be a significant contributor to the balanced portfolio of clean energy solutions that will be needed to meet the 2050 goal.

This paper introduces the concept of Space-Based Solar Power, explains how it can contribute to the energy transition challenges and presents recent study results on the required investments, associated costs and risks and expected strategic, environmental, economic and societal benefits. It introduces ESA's SOLARIS initiative, which is a new, dedicated research and technology development effort that has the objective to fully understand the benefits, costs, feasibility, and risks of SBSP so that a timely and informed decision can be made by 2025 regarding whether Europe should embark on a development programme of SBSP to help address our clean energy needs of the future.