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MEETING NET-ZERO TARGETS USING BLENDED FINANCING AND SPACE BASED SOLAR POWER

Abstract

Space Based Solar Power (SBSP) has been identified as a key tool for addressing net-zero energy targets, improving energy security, and expanding energy capacity. Blended Finance has proven to be an effective tool in accelerating the implementation of terrestrial renewable energy technologies and could be as effective for SBSP. This paper examines the efficacy of using blended financing to promote the development and construction of SBSP systems based on case studies in municipal water and terrestrial solar power production.

Humanity's rapid electricity demand growth in the last century has provided high quality of life, but traditional power sources have taken a heavy toll in terms of pollution and global warming, putting ecosystems we rely on at risk. They also created several geopolitical pressures and wars to ensure fuel supply. Recently, exponential growth of renewable energy, especially in wind and solar, offers alternative methods which are cheaper than traditional fossil sources. However, their intermittent nature limits their use to around 40

Unlike most renewable energy sources, SBSP produces baseload capacity with continuous power delivery. SBSP uses rectennas to receive the power collected in space and as result has the smallest footprint of any generation source, with the flexibility to be located close to cities where power is most needed. Despite these potential benefits, SBSP development is still in its infancy and the perceived risk is still high. This matches the ideal profile for blended financing because SBSP has a strong public benefit, high capital demands, and funding/direction from the public sector would strongly stimulate profitable private market participation.

To analyze the efficacy of blended financing, this paper investigates terrestrial solar and municipal water projects based on three different funding methods: public funding, private funding, and projects using blended financing. Our key performance indicators will include time to implementation and the success/scale of the solution.

Creating enough sustainable electricity production is a major problem and SBSP has the potential to be a very useful tool for addressing it. This paper shows that blended financing is a cost-effective method for governments to steer development and promote a self-sustaining SBSP economy. It leverages the private market's strength in the efficient use of capital and fosters the high-level of innovation required in these initial stages.