



Bachelor Thesis

Analysis of Costs and Potential of Space Based Solar Power

The basic idea of space based solar power (SBSP) is to collect and convert solar energy in space and then transmit it to Earth. The idea was conceived in the 1970s, receiving considerable attention, as necessary components, e.g. photovoltaic cells were developed. Research into SBSP ultimately subsided as it was deemed economically unrealistic at the time.

Recently SBSP has gained new traction as Chinese and American research institutes have announced their plans to launch SBSP stations in hopes of providing SBSP within the next two decades.

SBSP is particularly attractive because the usual energy “loss” that occurs when solar power travels through the Earth’s atmosphere could be eliminated. Therefore, SBSP could be a potential grand opportunity to secure environmental, economic and energy security on the planet.

A major impediment to the deployment of SBSP are the initial investment costs, e.g. the transportation costs. Transporting the necessary equipment to space comes at a price.

The objective of this thesis is to provide an overview of the current state of research on SBSP. This includes an analysis of the costs and the perspectives of the technology.

Key tasks and objectives of the thesis

- Familiarising with different SBSP technologies
- Assessing of potential to provide commercial amounts of energy
- Analysing costs of different technologies
- Pointing out possible caveats of SBSP

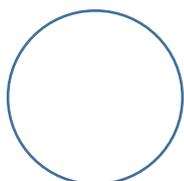
Your profile

- Study of economics, best with focuses on energy economics
- Interest in technical topics such as aeronautics
- Independent, with a drive to acquire new knowledge

Literature

- Caton, J.L. (2015): “*Space Based Solar Power: A technical, economic, and operational assessment*”. United States Army War College Press; Strategic Studies Institute, Pennsylvania, USA.
- Zerta, M.; Blandow, V.; Collins, P.; Guillet, J.; Nordmann, T.; Schmidt, P.; Weindorf, W. and Zittel, W. (2004): “*Earth & Space-Based Power Generation Systems-A Comparison Study*”. In: *Solar Power from Space-SPS'04*, Vol. 567, pp. 29.

Contact



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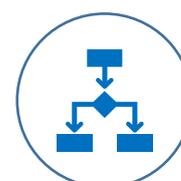
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Topics



- Space based solar power
- Renewable energies
- Electricity generation

Methods



- Literature analysis
- Cost-benefit analysis