CENTRE FOR JOINT WARFARE STUDIES

CENJOWS

CHINESE SOLAR POWERED SATELLITE

1. **CHINA PLANS TO LAUNCH SPACE-BASED SOLAR POWER SATELLITE.[1],[2].** China is planning to build the world's first solar power station in space to provide "inexhaustible clean energy" according to a story in Science and Technology Daily, the official newspaper of China's Ministry of Science and Technology. As per the China Academy of Space Technology, a space solar power system orbiting the Earth at an altitude of 36,000 kilometers could tap the energy of the sun's rays without disruption from atmospheric conditions or loss of sunlight at night.

2. Chinese are already testing the technology and intend to build the station by 2050. Xie Gengxin, deputy head of the Chongqing Collaborative Innovation Research Institute for Civil-Military Integration in Southwestern China, told the China Daily newspaper that a testing facility in Chongqing's Bishan district is being built that will be used to test the theoretical viability of a space-based solar power station.

3. A 33 acre test facility will develop space transmission technologies while studying the effect of microwaves beamed back to Earth on living organisms. The initial investment of 100 million yuan ($15 million) will be made by the Bishan district government and construction could take up to two years, but once it begins operations, scientists and engineers will use tethered balloons equipped with solar panels to verify microwave transmission technologies.

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[1] https://www.forbes.com/sites/scottsnowden/2019/03/05/china-plans-to-build-the-worlds-first-solar-power-station-in-space/#4793f72d5c94

[2] https://thehill.com/opinion/technology/431178-first-the-moon-now-china-plans-to-launch-space-based-solar-power-satellite

4. The plan is to launch four to six tethered balloons from the testing base and connect them with each other to set up a network at an altitude of around 1,000 meters. These balloons will collect sunlight and convert solar energy to microwave before beaming it back to Earth. Receiving stations on the ground will convert such microwaves to electricity and distribute it to a grid.

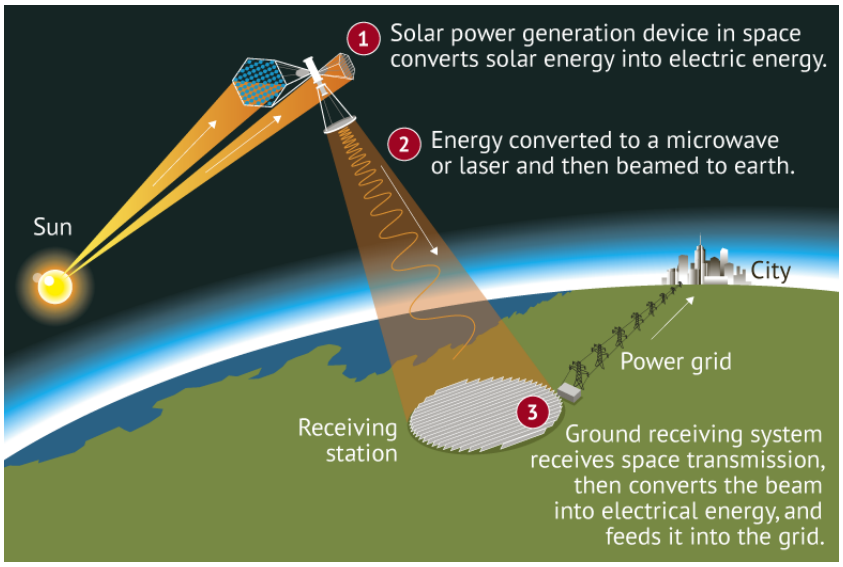
5. The concept was first proposed in 1968 by aerospace engineer Peter Glaser. At present, this notion may sound farfetched, but the space agencies of both China and Japan are taking the ideas forward.

6. Beijing is pledging to invest 2.5 trillion yuan ($367 billion) in renewable power generation i.e. solar, wind, hydro and nuclear by 2020, indicating China's willingness to invest in advanced concepts.

7. Space-based solar power has two advantages over the ground-based kind. First, the satellites can collect sunlight 24/7 and not just during the day when the weather is clear. Second, the solar power satellites collect much more of the sunlight since it does not have to go through the Earth’s atmosphere.

8. The problem with space-based solar power satellites is that, with football-field-sized solar arrays, they would be too large to be launched on a rocket. They would have to be assembled in space. Materials for the satellites would be mined on the moon or from Earth-approaching asteroids. The parts would be fabricated with 3D printer technology and then assembled in Earth orbit with tele-operated robots. Hence, China is making a strong push for the moon and its resources. Space-based solar power would change the world’s energy economy for the better if it could be done in an economically feasible manner. Space solar power would supplant fossil fuels.

9. China, a country has the heaviest carbon footprint on the planet, would especially find space-based solar power attractive. If the system can be made to work and China gets out in front with developing the technology, it could become the Saudi Arabia of solar power, providing dominance as a source of energy for the 21st century. A space-based solar power market dominated by China would go a long way toward making China the supreme superpower on the plane. The ability to provide or withhold energy could give a country like China a great deal of power.



Graphic: Jamie Brown