

ChinaFAQs

The Network for Climate and Energy Information



Solar Energy

BACKGROUND ON SOLAR POWER IN CHINA

The prospects for solar power are getting brighter in China. Already the largest supplier of solar cells to the rest of world – and the planet’s biggest user of solar water heaters—China is now moving to create a thriving domestic market for solar power.

These solar initiatives, part of a larger effort to boost the use of renewable energy, could accelerate international efforts to develop more affordable technologies and curb greenhouse gas emissions.

Currently, China gets about 7% of its total energy from renewable sources, a share the government aims to boost to at least 15% by 2020. Solar currently provides less than 1% of China’s electricity, and overall is expected to remain a relatively small part of China’s energy mix.ⁱ Nevertheless, electricity generated from solar is expected to greatly exceed the original target of 1.8 GW by 2020, and a 20 GW solar target is being considered.ⁱⁱ

BOOSTING DOMESTIC CAPACITY

Increasing installed solar capacity will be no easy task, but China is well-positioned to make the jump. China is already the world’s largest maker

of solar photovoltaic (PV) panels, producing about 30% to 45% of global supplies, although more than 90% of domestically-manufactured PV cells are currently exported. Additionally, two-thirds of the country gets more than 2,200 hours of sunshine per year, plenty to make solar technology attractive.ⁱⁱⁱ

Boosting solar power deployment in China faces a variety of obstacles, however. Costs for solar electricity are still high relative to coal or hydropower. Large-scale solar technologies are relatively untested. It can be difficult for solar electricity projects, which typically produce power only when the sun shines, to connect to China’s outdated transmission grid. In addition, some of the best areas for generating solar power are not yet connected to urban consumers by transmission lines, and power-pricing rules can create disincentives for investing in solar projects.

POLICIES AND PROJECTS TO DEPLOY SOLAR POWER

To address those problems, the Chinese government is rolling out policies and programs designed to bolster solar manufacturers, accelerate the development of cheaper technologies, and encourage their deployment.

Key Points

- China is rolling out policies, subsidies and R&D programs aimed at encouraging the large-scale deployment of solar technologies – including a joint project with an American company to build the world’s largest solar electricity plant in the Mongolian desert.
- China is already the world’s largest manufacturer of solar photovoltaic cells, but most are exported. Now, it is moving to expand its domestic market.
- China’s solar push is part of a larger effort to get at least 15% of its energy from renewable sources by 2020.

In 2009, the government announced it would pay solar producers a subsidy up to 20 Yuan (US \$2.93) per watt for installed photovoltaic power, a figure equal to about 50-60% of production costs.^{iv} Under a program called “Golden Sun,” the government has also said it will provide from 50% to 70% of the cost of installing PV generation and transmission systems for certain projects selected by provincial governments, especially in rural areas. Each province is permitted projects with a total capacity of 20 megawatts (MW).^v

Such incentives have helped prompt announcements to build a number of major solar projects. Some are aimed at increasing the use of solar panels on rooftops and in “solar farms.” Others want to tap other solar technologies, such as solar thermal, also called “concentrating solar,” plants that use giant mirrors to convert water to steam to drive turbines. In 2009, China announced plans to build the world’s largest photovoltaic farm in the Mongolian Desert near the city of Ordos. The 2-gigawatt project, which will use technology developed by the U.S. company First Solar (Arizona), would start with a 30-megawatt facility to be built in 2010. Completion is projected for 2019.^{vi} California start-up eSolar also inked a deal with Penglai Electric, the latter licensing eSolar’s technology to develop 2 GW of solar thermal plants in Shaanxi province. ESolar claims the project will save 15 million tons of CO₂ annually.^{vii}

The government is also providing special incentives to install solar systems at hospitals and schools, and has launched several efforts to equip homes in rural areas with “microsolar” systems for household

lighting, cooking and appliances. In Sichuan province, for instance, a Canadian company has a contract to install some 80,000 micro systems.^{viii} And although solar electricity technology is not yet widely deployed, China has had great success with solar water heaters. Solar water heaters are installed in 1 in 10 Chinese households (with a 2020 target to reach 3 in 10 households), accounting for two-thirds of global production and use of the technology.^{ix}

Such projects have the potential to speed the development of new, less-expensive solar technologies that could be adopted worldwide. China’s growing interest in solar power offers an opportunity for international collaboration on developing low-cost, clean-energy technologies that are currently complex and expensive.^x

This ChinaFAQs Fact Brief is based in large part on “The China Greentech Report 2009,” China Greentech Initiative (September 2009) and “China’s Climate Revolution II: Opportunities for a Low-Carbon Future,” The Climate Group (August 2009).

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Notes

ⁱ U.S. Energy Information Administration, July 2009, “Country Analysis Brief: China.”

ⁱⁱ UPI, July 6, 2009, “China to increase renewable energy.” See: http://www.upi.com/Energy_Resources/2009/07/06/China-to-increase-renewable-energy/UPI-88591246919997.

ⁱⁱⁱ Liu, L. “Solar Energy Development in China: A Review.” *Renewable and Sustainable Energy Reviews*, Volume 14 Issue 1, January 2010; pp. 301-311. See: <http://dx.doi.org/10.1016/j.rser.2009.08.005>.

^{iv} The Climate Group (August 2009), “China’s Climate Revolution II: Opportunities for a Low Carbon Future,” p. 26.

^v The Central People’s Government of the PRC, July 21, 2009. “Notice on Implementing “Golden Sun” Demonstrative Project.” http://www.gov.cn/zwqk/2009-07/21/content_1370811.htm.

^{vi} First Solar. “First Solar To Team with Ordos City on Major Solar Power Plant in China Desert.” Press release, 9/08/2009. See: <http://investor.firstsolar.com/phoenix.zhtml?c=201491&p=irol-newsArticle&ID=1328913&highlight=>.

^{vii} eSolar Press Release (Jan 08, 2010), “eSolar Partners With Penglai on Landmark Solar Thermal Agreement For China,” see: http://www.esolar.com/news/press/2010_01_08.

^{viii} Burgermeister, Jane, 2009, “China’s New Focus on Solar,” *RenewableEnergyWorld.com*.

^{ix} Wong and Light, 2009, “Climate Progress in China: A Primer on Recent Developments,” see: www.americanprogress.org/issues/2009/06/china_energy.html.

^x Woetzel, Jonathan, August 2009, “China and the US: The potential of a clean-tech partnership.” McKinsey Reports.

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