HARVESTING SUNLIGHT: SOLAR PHOTOVOLTAIC INDUSTRY IN CHINA

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Executive Summary

1. Though solar photovoltaic (PV) only takes up a tiny share of electric power generation in the world at present, it is likely to dominate primary energy supply in the long run.

2. At the world level, the cost of solar PV is still too high to replace traditional power generation due to technological constraints. As for China, the cost is much higher because of its weakness in producing PV raw material, polycrystalline silicon.

3. Solar PV power generation only saw larger market shares in countries receiving government financial support for the development of the industry. Due to the lack of feed-in-tariff, the development of China's solar PV applications has been lagging behind.

4. Since 2002, the government has initiated a number of programs, particularly as part of the Western Development Strategy, to solve power supply problems in rural areas, leading to the formation of a real solar PV market.

5. After the Renewable Energy Law and the 11th Five-Year Plan were put into effect in 2006, China's domestic PV market growth has picked up pace dramatically. In 2009, China's share in the world's solar PV market was ranked among the top ten for the first time.

6. Due to the lack of access to national power grid in remote areas, off-grid applications dominate China's PV market. The government made a strategic shift to the development of on-grid applications in anticipation of a nationwide expansion of power networks.

7. Large scale PV (LSPV) power stations and building integrated PV (BIPV) systems are the future trends of China's on-grid solar PV development. The

government is now taking great efforts in popularizing LSPV and BIPV in China.

8. Communication and industrial applications of solar PV have developed steadily in China. As for PV applications in electrical appliances, China has now become the largest producer of PV-powered products in the world.

9. China lacks core technology and the advancement in PV technologies has been slow. Since 2006, the government has made a radical move to extend financial support to solar PV R&D and projects, indicating a strategic shift from a reliance on foreign technologies to independent research.

10. The biggest challenge facing China's solar PV industry is the Both-Ends-Out problem. The industry is weak in the technology-intensive upstream of the industrial chain (overdependence on the import of materials) while it is very strong in the labor-intensive downstream (most of the finished products are exported). China is the world's largest manufacturer of solar cells.

11. It is one of the largest solar PV potential markets in the world. To ensure a sustainable development of the industry in China, the government would do well to explore the domestic market by implementing supportive policies and reduce the cost of solar electricity by developing the R&D on solar PV.