



Growing the global solar sector – Will investors take a short-term or holistic perspective?

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Earlier this month, Bloomberg New Energy Finance (BNEF) released figures showing that overall global investment in clean energy reached record highs in 2011, with investment in solar technologies by far the highest. Yet at the same time, 2011 saw a drop in spending on clean energy R&D, and further reductions are expected. Given the increasing dominance of the solar sector, what does this mean for countries, particularly emerging economies, seeking to incorporate solar and other clean energy sources into their energy supplies?

This briefing will examine the impact of reduced funding targeting R&D on solar energy, taking the solar market in China as a case study.

Clean energy R&D investment today

According to BNEF's figures released January 12 total investment in solar technology surged by 36% in 2011, bringing investment to over \$136 billion, while investment in the second big energy sector – wind power – experienced nearly half that level.¹

Most of the investment targeted existing technologies and products, particularly utility-scale projects and supply of renewable energy products (especially rooftop photovoltaic installations).

Yet, corporate R&D dropped from over \$15 billion to just over \$13 billion, and government R&D decreased from \$16.2 billion to \$12.7 billion. Part of this decline is due to the conclusion of many "green stimulus" programs introduced by major economies in the wake of the 2008-2009 financial and economic crisis. China's considerable expenditure on green stimulus (over \$218 billion) faded out in 2010, as did other G8 countries' such as France and Germany.²

The decline in R&D spending on clean energy is only set to increase in 2012, since most of the over \$117 billion worth of funding on green projects included in the American Recovery and Reinvestment Act came to an end in 2011.³

The importance of maintaining spending on solar R&D

This decline is problematic because new technologies are needed to grow the market for clean energy, including the solar sector.

The global solar energy market has picked up momentum in recent years. In 2011, the price of photovoltaic (PV) or solar panels was 75% lower than three years prior. At the same time, the



global production of solar panels has expanded nearly tenfold over the past five years.⁴ According to some calculations, the solar PV industry is projected to grow by over 40% between 2010 and 2020.⁵

However, several challenges still remain to effectively scale up solar power to a widespread utility-level power source. These include:

- Further reductions in the price of individual solar modules
- Introducing appropriate regulatory frameworks and policy mechanisms which provide price certainty and long-term contracts with solar energy producers, such as feed-in tariffs; and
- Developing supporting infrastructure, especially for the transmission of solar power to end users.⁶

As such, it is still critical to focus efforts on researching and developing new solar technologies to help meet these key challenges.

Case study of China

China is a striking illustration of the need to continue investing in R&D in order to effectively meet demand for solar energy, both domestically and in foreign markets.

It is the world's leading producer of solar PV cells; according to data from *The Washington Post*, in 2010 China grabbed almost 48% of the global market for solar cell production.⁷

Yet it exports the overwhelming majority. Currently, China's production capacity for solar cells is about 30-40 GW; its own market size is only about 2 GW. Among other factors, this is because China lacks the transmission infrastructure to make use of its own solar cells. The National Energy Administration (NEA) recently recognized a dearth of local engineering know-how as one barrier hindering the development of a network system for connecting existing utility-level renewable energy projects to the grid.⁸

However, demand for increasing domestic consumption of solar energy is stronger than ever. China continues to face a pressing need for expanding and diversifying its energy sources – BP's latest forecast predicts that China's energy deficit across all fuels will widen by more than five times between now and 2030.⁹ Furthermore, China now faces accusations by the Coalition for American Solar Manufacturing for “dumping” solar panel products in the US – selling their products in the US at below market prices.¹⁰ In this context, the Chinese government is now under increased pressure to change the focus of its energy spending in order to transform China into a major consumer of its solar products.



The NEA indicated in December 2011 that it is aiming to expand China's installed solar power generating capacity to 15 GW by 2015.¹¹ Part of its plan involves opening up to foreign investment in solar (and other renewable) technologies as well as bringing in technological expertise to create and fit transmission networks that can handle renewable energy.

Thus, for China, it would seem that stimulating and facilitating R&D activities in the solar sector, including international collaboration and strategic development partnerships, is now more crucial than ever.

Conclusion

China's case demonstrates one of the many pitfalls of cutting spending on solar, indeed all clean energy, R&D – a saturated market abroad and a limited market at home due to lack of investment in developing complementary and enabling technologies.

To not continue targeting R&D in both corporate and public expenditure on clean energy is short-sighted, if countries (especially emerging economies) are going to effectively incorporate clean energy into their energy supplies. Instead, companies and policymakers need to take on a more holistic view of solar energy development in order to actually realize renewable energy targets.

Certainly, for long-term R&D, government funding especially in the form of subsidies and loans may in fact be counter-productive as government funding is often short-term and primarily based on political will rather than market demand.

¹ Bloomberg New Energy Finance, "Solar surge drives record clean energy investment in 2011", Jan 12 2012, <https://www.bnef.com/PressReleases/view/180>

² Barbier, E. (2011), *Linking green stimulus, energy efficiency and technological innovation: The need for complementary policies*, European Commission DG External Relations Project, "Transatlantic Opportunities for Meeting Global Challenges in Energy Efficiency and Low Carbon Technologies", http://transatlanticenergyefficiency.eu/sites/default/files/Green%20Stimulus_Barbarier.pdf

³ Bloomberg News, "US Clean Energy Needs Private Funding as Stimulus Wanes", Nov 21, 2011, <http://www.bloomberg.com/news/2011-11-21/u-s-clean-energy-needs-private-funding-as-stimulus-wanes.html>

⁴ The Washington Post, "The global market for solar cells", http://www.washingtonpost.com/business/the-global-market-for-solar-cells/2011/12/16/gIQA7wQyO_graphic.html

⁵ Ibid.

⁶ Goure, D. (2011), *Harnessing the Power of the Sun: Investing in Utility-Scale Solar Technologies*, Lexington Institute, <http://www.lexingtoninstitute.org/library/resources/documents/Energy/HarnessingthePoweroftheSun.pdf>

⁷ The Washington Post, "The global market for solar cells",

⁸ Renewable Energy World, "Asia Report: China Takes Sharp Turn in Push for Solar Energy", Dec 19 2011, <http://www.renewableenergyworld.com/rea/news/article/2011/12/asia-report-china-takes-sharp-turn-in-push-for-solar-energy>

⁹ BP, "BP Forecasts Robust Global Energy Demand to 2030 Despite Efficiency Gains", Jan 18 2012, <http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7073055>

¹⁰ Reuters, "US rivals accuse China of dumping solar panels", Jan 25 2012, <http://www.reuters.com/article/2012/01/25/us-solar-imports-idUSTRE80O2AB20120125>

¹¹ Reuters, "China scales up solar power capacity plan by 50 percent", Dec 15 2011, <http://www.reuters.com/article/2011/12/15/us-china-renewables-idUSTRE7BE0H320111215>