

Distributed Solar PV to Increase 18% p.a. to 2015, Growing Pains Notwithstanding

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Solar photovoltaic (PV) systems were the fastest growing renewable energy technology worldwide between 2006 and 2010. A forecast from Pike Research foresees the global market for distributed solar energy generation expanding at a compound annual growth rate (CAGR) of 18% out to 2015, with revenue increasing from \$66 billion in 2010 to more than \$154 billion. Total installed distributed PV generation capacity is projected to increase from 9.5 gigawatts (GW) to more than 15 GW.

Financial incentives from governments around the world have provided the impetus for a growing, wholesale shift away from fossil fuel energy to development of clean, renewable energy resources.

That impetus is shrinking, however.

Ballooning government budget deficits and debt associated with bailing out the banking system and counteracting the recession of 2008-2009, along with a host of other factors now threaten the momentum that's built up behind the transition to "green" and zero-carbon economies in key, leading markets. Among these are the costs and technical challenges of smart grid modernization and expansion, the growing pains associated with developing and proving new renewable energy technologies, and the search for new ways to finance and pay for renewable energy systems.

All's not lost, however, according to Pike Research. "Other factors, in particular price reductions, new residential financing mechanisms, and third party ownership models – will become the key drivers for the solar PV market for the foreseeable future," according to Pike Research analysts write in "[Distributed Solar Energy Generation](#)" report.

Where the solar PV market's been, where it is...

Market-based government incentives and industry subsidies coupled with enthusiastic demand from consumers, businesses and utilities led to an outright boom in renewable investment during the past five years. Global renewable energy capacity grew at rates ranging from around 15% to nearly 50% annually between 2006 and 2010. At 72%, solar PV grew the fastest, Pike's research shows.

"Solar PV capacity was added in more than 100 countries during 2010, and a similar number in 2011," research analyst Dexter Gauntlett stated in [a press release](#). "The market is led by residential and commercial grid-connected PV systems and is concentrated in regions with favorable financial incentives, such as premium feed-in tariffs for PV, including Germany, Italy, France, Czech Republic, Japan, Canada, and the United States, led by California."

There's such a thing as too much of a good thing, however. Enthusiasm for renewable energy and the unleashing of economic "animal spirits" led supply to far outstrip demand along the solar and wind power value chains. Improvements in manufacturing processes and energy conversion efficiencies, along with massive Chinese manufacturing and export subsidies, led to a precipitous decline in the costs of generating electricity from solar and wind systems, to the point where once pioneering industry leaders have gone bankrupt while even the most successful solar PV manufacturers and suppliers are losing money.

At the same time, these developments, coupled with the hangover from the housing and property development-led debt boom of the early 2000s is leading euro zone countries, including global clean energy market leader Germany, to scale back their incentive and subsidy programs. In the US,

another leading market in terms of solar PV and renewable energy demand, the US Congress continues to waffle and be capriciously inconsistent in terms of support for clean energy.

“Markets that are dependent on financial incentives, however, can shift suddenly,” Pike notes. “In 2008, a 500 megawatt (MW) cap in the tariff caused the Spanish PV market to collapse, creating a glut of solar PV modules on the market.”

“Germany, by far the largest market for solar PV systems, recently cut its tariff as well. Using the lessons learned from these markets, other countries are proceeding more cautiously by incorporating caps, local content rules, and restrictions into their programs to help predict and manage the costs.”

And where it may be going...

Nonetheless, Pike Research analysts are on balance sanguine about global prospects for distributed solar PV, forecasting that the distributed solar PV value chain will generate nearly \$600 billion in revenue between 2011 and 2015.

“Combined with innovative financing and leasing options, third-party and utility ownership models, and highly-effective feed-in tariff programs, solar PV is expanding faster than most expected,” according to Pike’s analysis. “Today’s solar PV market is all about cost, which is good for consumers and installers, but brutal for manufacturers. Costs are expected to continue their rapid decline as Chinese crystalline silicon manufacturers gain market share and thin-film increases in efficiency.”

Installed distributed solar PV generation is concentrated in locations that have three things in common, Pike points out: Adequate sun; financial incentives—preferably a premium FiT (Feed-in Tariff), and high electricity prices.

“Adequate” is the operative word when it comes to solar insolation levels. “Consider the fact that Germany – the leading country for solar PV installations – has a similar insolation as the rainy U.S. state of Oregon. Japan and other U.S. states, including New Jersey and Pennsylvania, do not have world-class solar insolation, but solar PV is still expected to grow rapidly in these markets.”

When it comes to financial incentives, Renewable Portfolio Standards (RPS) and other forms of renewable energy goals drive solar PV market and industry development and broad adoption. Supporting these program goals are “price supports, including FiTs, tax rebates and/or grants

stimulate the nascent market.”

The Drive to Grid Parity

Grid parity being the objective, high electricity prices add impetus to distributed solar PV market development. They shorten payback periods and increase return on investment (ROI), making distributed solar PV more economic.

“Italy, Spain, Greece, Portugal, Japan, and Hawaii are some of the markets where solar PV is expected to reach grid parity within 2 years. (Note: some countries/states are already at or close to grid parity.)” according to Pike’s report.

“Reaching grid parity represents a paradigm shift in the RDEG industry. Technologies that require price supports are not sustainable over the long term. Once the technologies reach a price that can compete with conventional (or low-cost) power sources, they become an economic option for generating electricity and developing a sustainable industry.”

Meanwhile the development, growing commercial use and consumer adoption of a variety of solar PV leasing options, power purchase agreements (PPAs) and utility-owned distributed assets—where utilities and independent power producers (IPPs) lease commercial and industrial rooftops across urban areas to create “virtual” power plants— is blurring the lines between distributed and centralized, utility-scale solar PV farms, Pike Research analysts write.

