



2016 Top Markets Report **Renewable Energy** Country Case Study

Japan

Type: Large Market; Small Market Share

Japan remains one of the premier markets in Asia for renewables investment. However, policy reforms in 2015 make longer-term export projections less clear. While acknowledging some downside risk, ITA nonetheless remains bullish on the ability of the Japanese market to support U.S. exports, despite a persistent lack of market share captured by U.S. suppliers. Successful exporters often enjoy strong partnerships with Japanese conglomerates, who have traditionally dominated the market. While these firms manufacture most products themselves, American suppliers can help fill gaps in Japan’s supply chain.

Sector Rankings

Geothermal	Hydropower
11	20
Solar	Wind
1	40

Overall Ranking



Since the earthquake and tsunami that significantly damaged the Fukushima Daiichi nuclear plant in 2011, and led to its shutdown Japan’s power sector has been marked by significant turmoil. Almost immediately, Japan switched off its nuclear fleet, creating an important and unprecedented opportunity for renewable energy developers.

While the Japanese renewable energy market has always been significant, the decision to use policy incentives to adjust its energy mix meant that growth was all-but-assured. Over the last four years, these early projections were borne out and today, Japan is one of the world’s largest markets with significant growth projected well into the future.

Demand has been so strong for renewable energy equipment that U.S. companies, despite a historic lack of market share, have often found that Japanese buyers are showing a greater interest in their products. ITA expects this to continue, including in the solar industry, where the extent of Japan’s investment

should create important export opportunities for many U.S. suppliers. Over the next two years, ITA expects Japan to account for roughly 11 percent of all renewable energy exports – and nearly one-third of all solar exports.

However, ITA notes some downside risk to these projections, due to economic concerns and potential policy changes that could restrict growth in the clean energy sector. Economic conditions have been mixed over the past several years, and Japan faces some long-term challenges due to an aging population, persistent deflationary forces, and a high level of national debt. Furthermore, the reelection of Prime Minister Shinzo Abe has signaled a rejuvenated mandate to restart Japan’s nuclear capacity.¹ Despite the fact that only a small number of reactors have been brought back online, there has been increased interest in restarting others and maintaining a robust security and monitoring regime. This could crowd out and limit renewable energy development.

Prime Minister Abe is a clear advocate for the nuclear industry and seems to have sided with Japan's ten vertically-integrated and politically-important electric utilities, who have argued forcefully for the right to curtail renewable energy deployed on their grids. However, Abe has also spearheaded electricity market reforms in order to secure supply and reduce costs for consumers.² In April 2016 Japan opened the market to independent power producers, as continued reforms transform the market over the next five years.

Overview of the Renewable Energy Market

While previously supported through targets and some tax incentives, Japan's clean energy push was substantially improved with the launch of one of the highest feed-in-tariff (FIT) regimes in the world in July 2012. Almost immediately international investors and developers flocked to the market, making it one of the most attractive in the world. In the months that followed, almost every major renewable energy manufacturer had either signed an agreement with a Japanese conglomerate to supply the market, or was seeking to enter the market under its own label. In the year following the introduction of the FIT, Japan brought 7 GW of new renewable energy capacity online. By 2015, renewables accounted for 65GW, compared to 34GW at the end of 2012. The overwhelming majority (96 percent) of this new capacity has been in the solar sector, but wind, biomass, and geothermal projects have also been approved.

Despite an almost ten percent reduction in the solar FIT in April 2013 and a further 11 percent reduction in 2014, the rate was relatively attractive to investors and developers. Finally, in early 2015 the Japanese Government began to discuss introducing power auctioning to replace the country's FIT regime for large scale solar projects.³ This system still needs to be approved by the Japanese parliament, but if it is confirmed, it will begin in April 2017 and the FIT will be phased out.

Challenges and Barriers to Renewable Energy Exports

Despite the size of the Japanese market and the near-term export opportunity associated with continued investment in the sector, renewable energy exports are limited by the persistent lack of market share captured by U.S. suppliers. Since a large portion of Japan's overall demand for clean energy projects will

be met by domestic suppliers, as well as from manufacturing established overseas by Japanese companies, the share of the overall market supplied by U.S. firms remains small.

Moreover, questions remain as to whether all the approved projects will be fully commissioned. Changes to grid connection and curtailment rules could make renewable energy projects more difficult to finance and construct. The new rules allow Japan's utilities to reject previously approved renewable energy projects and stop accepting renewable power generating at existing facilities for up to 30 days a year without compensation.⁴ In many ways, these changes are far more troubling than potential lowering of the FIT rates, as they impact previously installed projects and could reduce or even exhaust the profitability of some assets.

At the same time, Japan is having a difficult time merging its renewables capacity with its grid system.⁵ In December 2014, a report from the Ministry of Economy, Trade and Industry, said that seven out of the ten utilities would not be able to integrate the planned solar capacity under the FIT mechanism with their existing network. This conclusion has been confirmed by other renewable actors in the country, including the Japan Renewable Energy Foundation.

Opportunities for U.S. Companies

In April 2014, Japan's Cabinet approved the country's first Basic Energy Plan since the Fukushima disaster. In it, the Government calls for Japan to surpass its previous targets of 13.5 percent power generation from renewable sources by 2020 and 20 percent by 2030.⁶ While opportunities should exist in every clean energy sector, ITA projects the most promising and most valuable opportunities will be in the solar sector.

Solar

Japan ranks first on ITA's list of top solar export markets through 2016. The government does not impose any local content policies or import tariffs and thus U.S. exporters benefit from a market in which they should compete fairly with foreign and domestic suppliers.

Nonetheless, intense competition from lower cost suppliers elsewhere in Asia continues to limit the share of the solar import market captured by U.S. exporters.

Chinese, Korean, and Taiwanese firms have all captured a significant share of the import market and many of these firms have partnered successfully with Japanese distributors, making further market penetration difficult for American manufacturers.

Many domestic Japanese firms that produce technology abroad for other markets have also begun shipping products back to Japan from their facilities elsewhere. Sharp and Kyocera, for example, now “export” solar products from Mexico and Eastern Europe back to Japan.⁷

U.S. firms may find a willing partner with Japanese manufacturers not currently involved in the solar sector. Many of these firms appear to be taking steps to either enter the solar market for the first time or to deploy more resources to growing their solar business. Licensing solar technologies to these conglomerates or providing equipment to manufacture solar panels could be two areas of potential export growth to this market segment.

A further opportunity may result from the sharing of best practices associated with financing off-grid solar systems in the United States. In particular, solar leasing arrangements may find a ready market in Japan thanks to the country’s well established financial sector and growing demand for roof-mounted PV.

Wind

U.S. exports in the wind sector are expected to be limited to niche opportunities, as the United States enjoys very little market share in Japan. According to trade data, imports seem to historically favor European (particularly German) manufacturers. Anecdotal evidence suggests that small wind turbines, for example, may provide an opportunity for American companies to compete. Another issue is that some of the most promising wind resources in northern Japan are also the most difficult to connect to the grid.

Hydropower

Japan’s hydropower market is expected to be limited through 2016 with only modest export growth projected into the future. Small hydro FIT rates have facilitated the approval of several small hydropower projects.⁸ As these projects are developed, U.S. firms may find some opportunities exporting hydropower services, like environmental assessment consulting or engineering expertise. Most hydro products, however, are expected to be procured locally.⁹

In the medium-term, Japan is expected to develop more hydropower, as it seeks to develop new baseload electricity sources. Should the nuclear industry experience a renaissance in Japan, additional hydropower development would likely be limited.

Geothermal

Estimates indicate that Japan has the third most geothermal potential of any country in the world, ranking behind the United States and Indonesia (15.7 GW of geothermal potential).¹⁰ Due to permitting, public opposition and land use issues (most of the best geothermal spots are near national parks or hot springs), however, only 537 MW of this potential has been developed. Ironically, three Japanese companies - - Mitsubishi, Fuji, and Toshiba – collectively dominate the geothermal market (see Geothermal Snapshot).

Japan’s need to produce baseload power suggests that this resource can no longer be ignored. Japan may begin to revise its environmental regulations over the next several years to enable greater use of its geothermal resources, especially if anti-nuclear sentiment persists. While no megaprojects are expected to be constructed through 2016, exports of equipment and services may be possible in the surveying, drilling, and resource assessment sectors.¹¹

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- ¹ Business Monitor International, “Japan Renewables Report Q2 2016,” January 2016.
 - ² Business Monitor International, “Japan Renewables Report Q2 2016,” January 2016.
 - ³ PV Magazine, “Japan solar auctions approved by cabinet,” 9 February 2016.
 - ⁴ Bloomberg New Energy Finance, “Japan Toughens Rules for Renewable Energy Incentive Payments” 18 December 2014.
 - ⁵ Business Monitor International, “Japan Renewables Report Q2 2016,” January 2016.
 - ⁶ Business Monitor International, “Japan Renewables Report,” 16 October 2014.
 - ⁷ Ibid.
 - ⁸ Bloomberg New Energy Finance, “H1 2013 Japan Market Outlook: FIT Drives Solar Surge,” 21 June 2013.
 - ⁹ Bloomberg New Energy Finance, “H1 2012 Japan Market Outlook.”
 - ¹⁰ Bloomberg New Energy Finance, “H1 2013 Japan Market Outlook: FIT Drives Solar Surge,” 21 June 2013.
 - ¹¹ Ibid.