42 JP yen for Solar Power Is Too Expensive — Concerns That Renewable Energy Will Not Spread After Increasing Consumer Burden

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The "Renewable Energy Buyback Program" is to be implemented in July of this year in Japan. The Ministry of Economy, Trade and Industry's Procurement Cost Appraisal Committee calculates that the renewable energy purchase price will "equal ¥42 per kilowatt hour," and will be taking public commentary until the first of June. This is indistinguishable from the energy companies' "fully distributed cost method" of recent infamy, and it is a system that guarantees solar energy profits for power companies. This would not be a problem if it were a reasonable price, but the current status of the world's solar cell market indicates otherwise.

The Successive Failures of Major Solar Cell Manufacturers

Q-Cells, a German solar cell manufacturer, announced plans this April that it will apply for legal liquidation. Q-Cells is a company that symbolizes Germany's status as a "Solar Energy Superpower," and in 2007, after having listed its shares in 2005, it overtook Japan's Sharp Corporation as the world's largest maker of solar cells.

However, the company lost its top position in 2009, primarily due to pressure from rising Chinese manufacturers. It's financial situation then rapidly deteriorated, peaking in 2007 at roughly €8 billion, but decreasing by roughly 93% within the past year. No sooner had Q-Cells applied for bankruptcy that California's Solar Trust of America made its petition for bankruptcy public. The company had been carrying out plans for a mega solar panel with an output of one million kilowatts – the world's largest. However, their cash flow could not be sustained which lead to the bankruptcy.

The failure of major solar cell manufacturers has actually increased within the past half year. In August of last year, Solyndra (California), which had received a loan guarantee of $527 million from the United States government, collapsed. The management of SpectraWatt (New York), Evergreen Solar (Massachusetts), and similar companies is also in a deadlock, and BP Solar has been forced to downsize. In addition to Q-Cells, German companies such as Solon and Solar Millennium are caught in a bankruptcy domino effect.

What could possibly lie behind this string of failed solar cell manufacturers? In a column from November 15 of last year, I wrote, "the 'Shale Gas Revolution' is the reason behind the United States' sluggishness in adopting clean energy." (The Wall Street Journal – Japan Edition link is to the Hiroyuki Ozaki Homepage) In addition to this, the cause of the bankruptcies is the reduction of public subsidies for clean energy due to global economic downturn and a sharp drop in solar cell prices.

The Solar Cell Market in Continuing Price Collapse

First off, the global solar panel market is rapidly commoditizing (or maturing), and is caught in a period of tremendous price decline. According to research firm GTM Research, the current price of solar modules (meaning practically the same as panels) in the United States has fallen as much as 65% in the past two years, with a 50% drop in 2011 alone. Manufacturers don't stand a chance in such an environment.

The cause of this decline in solar cell prices is the competitive cost advantage of Chinese companies that is sweeping across the world market. According to a survey by GTM Research, the global market share of Chinese companies amounted to 58.5% in 2010 (16.4% in Europe, and 10.5% in Japan). Compare this to 2005, in which Japan controlled just under 50% of the market, and the combined share of Japan, Germany, and the United States was over 75%.

Although China's share has increased, they are not much better off. As of the first quarter of this year, the current world share leader, Suntech Power, is down 33.4% as compared to the same period last year, and its net income has been reported at a

huge loss of $992 million. It can be seen that even China's cost competitiveness cannot overcome the current level of price decrease. There are even acquisition rumors surrounding American company First Solar, which increased its share to the third largest in the world by selling cheap solar panels made in developing countries. Total, a French oil giant, acquired US company SunPower in May 2011 for roughly $13.8 billion, and there will probably be a scramble of similar reorganizations and company revivals in the near future.

Reduction in Clean Energy Subsidies and Criticism of Solar Power Promotion

One more reason behind these successive bankruptcies is the reduction of public subsidies for clean energy. Because of the economic downturn common to developed countries, governments currently do not have the flexibility to provide subsidiary aid or tax cuts. Furthermore, in addition to the simple deterioration of finances, the use of solar power itself faces unfavorable circumstances.

In the United States, the failure of major companies has caused scrutiny of the Obama administration. Solyndra originated from the "Green New Deal" (a plan to invest $150 billion in clean energy over 10 years and create jobs for 5 million people), and received a loan guarantee of $527 million from the government. There are questions within Congress as to whether the Obama administration has been pressuring the Office of Management and Budget (OMB) in the loan guarantee decision process.

The bipartisan Committee On Oversight and Government Reform in United States Congress made statements such as, "The Obama administration spent $157,000 for each job produced." They are carrying on a critical campaign against "green energy mismanagement" and calling for a review of the necessity of solar industry assistance. President Obama appealed for an expansion of renewable energy in his 2012 State of the Union address, but future prospects are grim.

In Germany, despite subsidization to help alleviate massive financial burden and electricity price-hikes, the percentage of solar power being utilized is low, and it is criticized as being ineffective. Even though roughly 60% of clean energy subsidies goes towards solar power, the power it generates is no more that 3% of the total available. Although subsidized to a much lesser degree, biomass and wind energy sources produce a much large proportion of power than do solar sources.

Moreover, Germany's huge burdens are problematic. In an article this January titled "Solar Subsidy Sinkhole", the weekly German publication Der Spiegel introduces the argument that the benefits of solar power in Germany do not properly counterbalance the cumulative total cost of €100 billion (¥10 trillion) in the 11 years that have passed since the year 2000. It argued that "Solar energy has the potential to become the most expensive mistake in German environmental policy."

So, what kind of impact will these changes in the solar cell market cause on Japan's "Renewable Energy Buyback Program" to be implemented in July of this year?

Solar Energy Purchase Prices Should Reflect the Declining Price of Solar Cells

Firstly, the price collapse of solar cells should be properly reflected in the cost of solar power. This means that the unit price of electric power that power companies purchase from solar power businesses must fall in accordance with the drop in price of solar cells. By law, the purchase period and sale price is supposed to be determined by the Minister of Economy, Trade and Industry. However, the April 24 Nikkei Newspaper reports that the ministry's committee began its regulations with setting the purchasing price of solar power to "¥42 per kilowatt hour."

The question is whether or not the purchasing price of ¥42 per kilowatt hour is reasonable. As it turns out, this level of pricing is far too high. According to the New Energy Foundation, the breakdown of the installation costs for residential solar panels is currently 66% solar cells, 19% auxiliary equipment, and 8.6% installation. In July of last year, it is uncertain on what data the then Minister of Economy, Trade and Industry Kaieda based his estimate of about ¥40. However, the price of solar cells has dropped by 50% since last year. As for mega solar panels, they can be obtained for even lower costs than residential panels because of the large quantities in which they are bought, and the cost of auxiliary equipment and installation naturally falls as well. It is even reasonable to estimate that costs would be within the 20's of yen per hour.

For reference, let us note that the prices for Germany's solar power systems (including solar cells, auxiliary equipment, and

installation fees) have greatly fallen. The installation price for a rooftop system generating less than 100 kilowatts has fallen by roughly 23% in the past year, and 50% in the past three years. In addition, when looking at the purchase prices of the feed-in tariff (FIT: power companies purchase clean energy from power-generating companies and households), the cost of rooftop systems generating over 1,000 kilowatts has fallen by 51% in the past three years (both statistics are taken from the German Board of Solar Energy).

Looking at a law passed August of last year in Japan, it is written that, "the purchase period and prices will be revised after three years of enforcement" and, "The profits of the power companies will be carefully considered in the first three years." These provisions are somehow unsettling. Won't that result in power generating companies （businesses that install mega solar panels, etc.） obtaining excessive profits? This situation demands substantial transparency for the process used to determine prices.

As I wrote in my July 5, 2010 column "Who Burst the 'Solar Power Bubble?'" (WSJ site, paid article), if this point is disregarded, it is possible that a Solar Power Bubble will form, which will only exacerbate current problems in the economy. Therefore, because the solar cell market is in a state of upheaval, it is necessary that the terms of this law be changed to be more flexible in the short-term, rather than for a period of three years. Germany's FIT program is currently revising its terms to allow for a period of three to six months.

Is the Buyback Program Already Outdated?

Seeing the Germany's FIT system, which is similar to Japan's buyback program, it is losing its reason for existence. The cost of solar cells was much higher back during the first half of the 2000's in which Germany promoted its FIT program. Without regular upkeep, there was no way for FIT to spread clean energy. However, circumstances have completely changed. The buyback system may be in process of rapidly becoming obsolete.

As was written in Der Spiegel magazine, it was determined that solar energy should not be publicly promoted due to it's lack of utilization (or efficiency). On the other hand, wind power was shown to be five times as efficient as solar power, and hydroelectric power – six times as efficient. Nevertheless, Japan's buyback program is supremely focused on subsidizing solar energy. It seems that we have learned nothing from Germany's past mistakes.

In conclusion, as the costs of solar energy decline, there will be a point at which it will spread without incentive plans such as FIT, which is called "grid parity." The cost of nuclear and thermal power will influence to determine whether this has occurred.

Grid parity will be achieved once "solar energy cost ≦ nuclear / thermal energy cost." However, note that this equation is connected not only to the costs of solar cells, but also to the costs of natural gas, crude oil, and the decommissioning of nuclear reactors. Coming from this perspective, any buyback program must be flexible in its application.

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