Professor Kosuke Kurokawa, JCRE Representative, speaks on Premier Naoto Kan's speech "PV Panel for 10,000,000 houses in Japan"

This information was compiled by Mr. Junichi Taki of Nikkei Shinbun-sha through his interview to Prof. K. Kurokawa on June 22, 2011. Prime minister Naoto Kan spoke in G8 held in May, 2011 that Japanese energy structure will achieve renewable energy 20% in the earliest opportunity in 2020th including photovoltaic panel installation onto roof of 10,000,000 houses in Japan. This means to accelerate last year's government decision of Japan Energy Plan clearly. We heard about this statement to the professional, professor Kosuke Kurokawa of Tokyo Institute of Technology.

Q1. How do you feel Kan's speech ?

While the premier statement analytical background is not necessarily clarified, PV has assuredly the tremendous potentiality. This potentiality values 8 holds of Japanese total power demand in 2030 in maximum. This assumption is to use all undeveloped or wasted lands at all. Practically, the realization point is whether such power supply can keep good coordination with existing main power system managed by electric power company. Considering PV manufacturers stance also, step by step development of this issue should be progressed as same as the pace of manufacturers. JPEA, Japan Society of Photovoltaic Energy Association, prepared the load map, stating cumulative PV introduction 100,000,000 kW by 2030 which is equivalent about to 10% of total power demand. With less than this amount, the value of existence will not be able to appeal.

Q2. Do you think PV can place a position of base electricity source ?

In order to introduce PV in such a tremendous amount into power system, the structural modification of power system is indispensable. Infra-structure change needs a lot of time, but it is possible if plan is firmed toward 2030. Current system like nuclear initiative is the stream flow to be upstream to downstream. To modify, system is integrated with distributed type equipping the talent power accumulator, battery system. Because of expensive cost arisen if each house installs battery, it is recommended that the big capacity battery is installed in collecting 1000 houses in residential unit, or power distribution station is installed covering 20,000 houses properly. The thinking to reduce cost is important factor to reduce household burden. The cost can be reduced in two figures compared with each house installation of battery.

EV, Electric Vehicle, is also very worth for power management. NEDO is under large scale performance test in Okazaki factory of Mitsubishi Automobile Company, where many employees are obliged to have EV, and PV panel is installed onto all parking area roofs. Peak power demand in factory occurs in daytime afternoon, where power from solar panel and EV supplies to factory power system to cut outside power purchasing. EV can be charged during the power when it comes room. EV can be also charged at own house up to full charge in the night in cheap power price.

When PV introduced such a big amount, peak power demand will be shifted from current daytime to evening. But, it will be supplemented from EV since many personnel arrived at own home. The power to electric driven hot water system at present is normally supplied in night time, but if daytime peak is moved away, this power supply will be conducted in daytime. The change of energy supply structure leads the change of energy value. By means of using smart technology of power demand and supply, the pricing system of power can be also changed dynamically. The best mix of energy will come flexible in timely manner.

The importance is that only PV promotion does not matter especially after 3.11 big crisis, but all renewable energies should be equally emphasized. This trend is quite natural. In addition, the effort on how to formulate the best mix involving fossil fuel, gas and oil, is needed to materialize practical smart energy network.

Q3. Can PV cost really be reduced ?

Load map by 2030 states three steps such as the 1st step, 24yen/kWh of parity with household power price, 2nd step, 14yen/kWh of parity with industry, and 3rd step, 7yen/kWh of parity with wholesale price in power company. By 2030, we believe it is possible by 3rd step. Last year, buy-in price by power company started in 48yen/kWh, but this year, it might have been 40yen/kWh. Price down will be realized soon by 24yen/kWh, I think.

The cost reduction speed of PV is fast compared with other power resources, since it is largely effected by mass production and technology development. Technology is dependent to battery development and production management by manufacturing and inventory processes. These maturity will reduce the cost per panel, which leads increase of production volume. Subsidy system is worthwhile to take off to profitable industry. This return will be recovered when industry has firmly established.

Q4. How do you think about imported goods ?

Suntech, China company, has had great extended sales volume, resulting in influence to price. Japan is the case there are a lot of manufacturers, meaning step by step progress. Maybe, strategy will be different. But, Showa-Shell only is a petroleum base company while others are manufacturing company of white electric goods . Their investment strategy looks dynamic.

To show the existence in the international market, more than 30% share is a key. Because worldwide volume of PV in 2030 seems to be 200,000,000kW, thus, the production volume in Japan should be 66,000,000kW or more. Otherwise, it becomes gloomy sun shine.

Q5. Discussion of FIT does not progress, how do you think about ?

Introduction of Feed in Tariff is indispensable. To make it plan, government has ceased subsidy system except PV to private house. Without FIT, a lot of difficulties will come arisen in promoting renewable energy development. In the case as it has been, even the PV, its amount does not reach to 50% of 100,000,000kW because of no monetary support for mega-solar investment. In order to conquer, power pricing system which is formulated by power company must be changed and re-structured. Wholesale retailer system in power marketing has not been functioned so far.

Q6. How do you think about innovation of domestic power market, of which discussion is actuated.

This time when the tremendous crisis by earthquake happened, we found out the bottleneck of power transfer from west to east is difference of frequency. In the past there was a time that power company had thought about installation of DC line throughout Japan, but it was gone away, in spite that DC main line installation was progressed in US and China. Considering power security in Japan, two main DC lines are desirable both alongside Pacific ocean and Japan sea sides. Expensive investment will be recovered and born the value, supposing that economic damage occurs in the power shutdown by planned scheme or sudden shutdown also in future.

As of power allowance to the capacity, the case in totaling power companies is more efficient than each power company has allowance. If the national initiative company like government sponsored company or J-Power builds the main line, every power generation holders can enter into business because of easiness in connection to main line, resulting in enlarging power market structure. This will or may instruct independence of power generation and power distribution functions. The discussion, saying that FIT introduction makes power price hike, will be true, but the idea creation to suppress cost will be also arisen and development speed will be accelerated. Therefore, the importance is how to think it having strategic vision, not to be bound in so close foot-print.