

Appropriate Promotion of Energy Conservation and Renewable Energy

Ken Koyama, PhD
Chief Economist, Managing Director
The Institute of Energy Economics, Japan

Discussions are underway to fix Japan's energy mix. A long-term energy supply/demand outlook subcommittee of the Advisory Committee for Natural Resources and Energy started the discussions on January 27 and has met twice a month to work out the energy mix. As a participant in the subcommittee, I would like to summarize some points that I have viewed as important through the past four meetings.

The past discussions focused on potential energy demand, energy conservation and renewable energy diffusion through 2030 and relevant challenges. This is because great expectations are placed on energy conservation and renewable energy from the viewpoints of the Fukushima Daiichi Nuclear Power Plant accident and the present shutdown of all nuclear power plants in Japan following the accident, as well as massive fossil energy consumption to cover the nuclear power loss, which has great impacts on energy security, environmental load and the macro economy.

Both energy conservation and renewable energy are expected to have great utility and benefits. Energy conservation can contribute to improving energy self-sufficiency and reducing carbon dioxide emissions by holding down energy demand (including demand for fossil fuels for which Japan has no choice but to depend on imports). Improving energy efficiency contributes to raising productivity to enhance Japan's economic productivity. Furthermore, Japan is a global leader in energy conservation and energy efficiency technology. Its relevant technology and know-how accumulation and energy conservation achievements have been excellent so that great expectations are placed on their further effective utilization. As for renewable energy, we can expect great supply potential because solar, wind power and renewable energy sources are domestically and naturally available. This is a great advantage for renewable energy. We should also remember renewable energy's advantage of being free from carbon dioxide emissions.

Therefore, it is very important to appropriately promote energy conservation and renewable energy to exploit these advantages. This has been an undisputed common understanding at the subcommittee. At a symposium on Japan's energy mix, sponsored by the Ministry of Economy, Trade and Industry in Fukui City on March 12, I heard many participants expressing their great expectations on energy conservation and renewable energy, and the importance of their promotion.

An estimate given in the meetings at the subcommittee indicates that energy conservation measures could reduce final energy consumption in 2030 by 12% and electricity consumption by 18%. Renewable energy electricity generation capacity is projected at some 210 billion kilowatt-hours for 2030, based on the present capacity, conditions of electricity source development projects and their feasible connection with electric grids. Future discussions will deal with the details

of each renewable energy source from the viewpoints of economic efficiency and technology.

The most important point may be an analysis from the viewpoint of economic efficiency. Unless based on this viewpoint, we may depict an excessively optimistic or unrealistic picture rather than an aggressive or ambitious picture. This may lead to an illusion that energy conservation or renewable energy alone, or their combination alone may resolve all Japanese energy problems. Regrettably, no perfect energy option without defects exists. Therefore, we must pursue the best mix to make the most effective use of all available options in a way to utilize their advantages and overcome their disadvantages.

The above energy conservation projection for 2030 is a very high target. This projection given at the subcommittee is almost equal to or greater than the energy conservation projection in an analysis titled "Selecting an Energy Mix" released by the Institute of Energy Economics, Japan on January 16. The IEEJ energy conservation projection is very high-level energy conservation, which is equivalent to that Japan achieved in the 1970-1990 period including oil crises in the 1970s in terms of improvement in the final energy consumption intensity. The conservation projection that is equal to or greater than the IEEJ projection can be viewed as very ambitious. Such conservation may not necessarily be impossible. But it may require considerable efforts and costs. Combining such efforts with economic rationality will be important.

At the subcommittee, some members have taken note of the possibility that energy conservation could exert excessive burdens on some parties, while understanding energy conservation as important. They are from large companies that have already made considerable energy-saving efforts and thus have less room to further save energy, as well as small and medium-sized companies that have relatively weaker economic resources to make substantial investment for energy conservation. Representatives from energy intensive industries noted that if energy-saving requirements exceed a certain level, such industries may relocate their plants overseas instead of saving energy. In this sense, the viewpoint of the sustainability of Japan's economy and industry is required for promoting energy conservation. While promoting energy conservation in the building and transportation sectors as well as the industrial sector, Japan should determine a target energy conservation level from the viewpoint of economic rationality.

Renewable energy should also be considered from the viewpoint of economic efficiency or effects on the Japanese economy. Particularly, the massive introduction of intermittent solar and wind power energy supply could sharply boost electricity supply costs including power generation, grid connection and backup costs due to their costliness and a geographic gap between their electricity generation and consumption locations (particularly for wind power). We must find an appropriate level of introduction of renewable energy power generation and how to appropriately promote renewable energy to such level, while learning lessons from relevant problems that have already emerged in Germany. The abovementioned IEEJ analysis estimated the total electricity cost at 14.8 yen/kWh for a case of renewable energy share at 20% (50% for fossil energy and 30% for nuclear energy) and at 19.0 yen/kWh for a case of the renewable share at 30% (55% for fossil fuels and 15% for nuclear) in 2030, indicating a gap of 4 yen/kWh between the two cases. A new working group has been created to analyze power generation costs based on the latest data. The abovementioned cost analysis may also have to be updated with the latest data and study results of the working group. From the viewpoint of economic efficiency and effects, we may have to pursue

an energy mix to hold down a rise in electricity costs as much as possible.

It is important to appropriately promote energy conservation and renewable energy to make effective use of their advantages. In this sense, we should pursue a well-balanced best energy mix based on objective and quantitative analyses and studies.

Contact: report@tky.iej.or.jp

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