Energy Efficiency Policies of Japan

The latest amendments to the Law concerning the Rational Use of Energy take effect in April 2009. **Toshiyuki Sakamoto**, director of the Energy Efficiency and Conservation Division of the Agency for Natural Resources and Energy, explains their significance.

The International Energy Agency (IEA) estimates that about 60% of the global potential for various technologies to deliver CO_2 reductions between now and 2030 will come from energy efficiency. In developing countries, about 70% of this potential comes from energy efficiency.

Over the past thirty years since the oil shock, energy efficiency in Japan has improved by 37% as a result of the concerted efforts of both the public and the private sectors. This is due to energy efficiency initiatives that involve both regulation and government support. Regulation has been based on the Law concerning the Rational Use of Energy, and government support has taken the forms of budgetary, tax and financial measures. The budget for energy efficiency measures now amounts to approximately 100 billion yen in METI alone. Industry has also made a significant contribution to energy efficiency through its voluntary action plan.

EICHIRO IWASA

The Law concerning the Rational Use of Energy that was passed in 1979 established a framework that requires energy management in manufacturing and commercial sectors and sets out energy efficiency standards for houses and buildings, and machinery and equipment. This law has been recently amended every few years, and its framework now covers all sectors within the economy.

For manufacturing and commercial sectors, including not only factories but also office buildings, hospitals, department stores and so on, there is a system of designated energy management sites, which requires improvement of energy use intensity by 1% annually, submission of annual reports on their energy use and investment plans to the Government and assignment of a nationally qualified energy manager. As a result of the amendments in 2005, transport operators were also added to this regulatory system with the owners of cargo now subject to regulations as well. In the housing and building sector, regulations have been progressively strengthened, and for the machinery and equipment sector, the Top Runner Program was introduced as part of the 1998 amendments. This program establishes a series of energy efficiency targets that set high standards manufacturers need to meet in several years' time. So far standards have been established for twenty-one products, including automobiles, household appliances and lighting.

In 1999, for example, when the Top Runner standards for automobiles were announced, automobile manufacturers expressed concerns that the standards were too strict but in the end this led to a market competition among automobile manufacturers to reach the goals for the future sooner than others. In 2002, Mitsubishi Motors announced the ambitious target of achieving the 2010 goals by 2005. Some other automobile manufacturers followed this move, announcing that they would also reach the goals ahead of schedule. Then actually these goals were achieved in 2005, five years earlier than the schedule.

The Latest Amendments

Let us now turn to the amendments to the Law concerning the Rational Use of Energy that go into effect in April 2009.

Looking at ratios of the current energy consumption for each sector in Japan to the 1990 level as the base year, we see that the manufacturing sector remains unchanged at 1.0. The transport sector has increased at 1.2, while for the last five or six years this sector has continued to decrease energy consumption largely thanks to the Top Runner approach. However the ratio for commercial and household sectors is 1.4, showing a contin-

Companies will now be required to appoint an "energy management supervisor" at the board member level to be responsible for energy management of the whole company.

—Toshiyuki Sakamoto, director of the Energy Efficiency and Conservation Division of the Agency for Natural Resources and Energy

uously increasing trend. Therefore the latest amendments of the law will address these two sectors by strengthening the regulations.

First, in the business sector, both manufacturing and commercial, the regulatory system will be changed from site-regulation to company-wide regulation. Before the amendments, whether or not a factory or workplace is subject to the regulations has been determined based on the amount of energy consumption at an individual factory or workplace. This will be changed to a new regulatory system where if the total energy consumption for the entire company is above a certain level, then the entire company will be subject to regulation. One feature of the commercial sector is that the energy consumption of individual shops or offices is small but the total energy consumption of the entire company is quite large. The aim of this amendment is to promote energy efficiency in the commercial sector by making it subject to such a company-wide regulation. It is expected that this will result in the increased coverage of the Law concerning the Rational Use of Energy from about 10% to about 50% of total energy consumption of the commercial sector.

Before the amendments, the law has required the appointment of an energy manager for each designated factory or workplace. But with the change to a system that regulates companies as a whole rather than individual sites, companies will now be required to appoint an "energy management supervisor" at the board member level to be responsible for energy management of the whole company and also an "energy management and planning leader" to assist this supervisor at the headquarter level.

The latest amendments to the Law concerning the Rational Use of Energy also introduce a sector-based approach. For key energy-intensive industries such as iron and steel, power generation and cement manufacturing, the amended law sets a benchmark for each sector. Before the amendments, the law had set a goal of improving by an average of 1% every year energy use intensity. Now, however, benchmarking indicators, such as the amount of energy consumed to produce one crude iron ton, are decided, and then these indicators are used to set the target that each company should aim for in the medium and long term. This is the first attempt in the world to apply sectoral approaches to national regulations.

Secondly the amendments promote energy efficiency in the household sector by strengthening regulations for houses and buildings. Whereas previously buildings with a total floor area of more than 2,000 square meters were required to report individual energy conservation measures to the authority, this requirement will now be extended to buildings with 300 square meters of floor space or more. In addition, a "Housing Top Runner Standard" will be introduced to constructors of ready-built houses with a view to facilitating energy efficient houses.

International Developments

Japan has been making efforts in international cooperation with respect to energy efficiency. This has a strategic significance relating to strengthening Japan's energy security, responding to climate change, and developing energy efficiency businesses. However, there are several challenges in developing business in Asia. Specifically, the energy conservation incentives in developing countries are not sufficient; the regulatory system is not well-established; companies tend to give more priority to increasing production capacity rather than focusing on energy efficiency; and the initial cost of introducing Japanese energy efficient technologies is high.

Initiatives to address these challenges are making progress. One such initiative is to train people with the necessary skills. Between 2004 and 2008, about 1,000 people from abroad, mainly Asia, who are responsible for designing energy efficiency policies came to Japan to receive training. During the same period about 400 experts from Japan were sent overseas. Such support for Asian countries aims at introducing, enacting and implementing laws for energy efficiency.

Another initiative is the introduction of a national qualification system for energy managers. Japan's Law concerning the Rational Use of Energy requires that large-scale factories appoint an energy manager who holds the energy management national qualification. At present there are about 5,700 such factories and about 36,000 people who hold the national qualification as energy managers. The reason why there are much more qualified people than the regulations require is because companies are encouraging their employees with a wide range of age or rank to take this national qualification in order to improve their energy efficiency skills and deepen their understanding of energy management, regardless of what is needed in order to comply with the regulations. This qualification system is working well in Japan, and is highly appreciated in Asia as well. Therefore Japan is actively cooperating with Asian countries based on their needs. Japan and China have already held three Energy-Saving and Environmental Forums, and have exchanged a memorandum on cooperation with regard to the introduction of an energy manager system.

Japan is now working with the International Standards Organization (ISO) by contributing to the creation of a standard for energy management systems, with a view to completing it by 2010. Japan is also considering making a new proposal to create an additional international standard for energy managers on the basis of its national qualification system.

In October 2008, the Japan Business Alliance for Smart Energy Worldwide was established. This organization was jointly established by the government and the business community as an umbrella organization for initiatives to communicate Japan's energy efficient technologies to the outside world. These efforts have already started, with 162 technical case studies in seven different fields being compiled into Japanese State-of-the-art Smart Energy Products and Technologies.

Toshiyuki Sakamoto is director of the Energy Efficiency and Conservation Division of the Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry.