

**Dutch Energy Transition Focusing on a single “E” principle,
“Environment protection”**

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Between December 10 and 14, I visited the United Kingdom and the Netherlands for talks with local energy experts and industry people on the international energy situation involving mainly Europe. The talks included interesting discussions on a future energy supply and demand structure reform or energy transition facing the Netherlands. In the following, I summarize my personal impressions on the matter based on the discussion with the experts:

According to BP statistics, oil in 2016 accounted for 47% of Dutch primary energy supply, followed by 36% for natural gas and 12% for coal. Fossil fuels thus capture 95% of Dutch primary energy supply. Renewable energy including wind accounted for only 4% and nuclear energy for 1%. Non-fossil energies' share is limited at present.

As for oil as the largest energy source for the Netherlands, the country depends almost fully on imports in the absence of domestic oil resources. Regarding natural gas as the second largest energy source, however, the Netherlands produced 40.2 billion cubic meters against 33.6 Bcm in consumption in 2016, indicating a net export position. Natural gas is thus the cornerstone of the Netherlands' domestically produced energy.

Playing a central role in Dutch natural production has been the Groningen gas field, one of the largest gas fields in Europe. The gas field was discovered in 1959 and started production in 1964. Its development and production reportedly paved the way for the development of the North Sea oil and gas field development later. Thanks to growing production in the Groningen gas field, Dutch gas production peaked at 82.3 Bcm in 1977 and remained in a 60-80 Bcm range for more than 30 years, allowing the country to export gas to its neighbors while satisfying domestic demand. The gas field has played a key role in supporting energy supply and the economy in the Netherlands.

However, a major change has occurred at the Groningen gas field. Since the 2000s, gas production has growingly been alleged to have caused frequent earthquakes around the gas field, developing into a social problem. In November 2015, the Dutch government came up with a policy of limiting Groningen gas field production to 27 Bcm per year at last. It has gradually toughened the restriction in response to the growing social problem. In October 2016, the government lowered the annual production ceiling to 21.6 Bcm. Some people have branded the restriction as insufficient and called for a further reduction in production. How the government would respond to such call has been attracting attention. In fact, Dutch gas production declined rapidly from 68.6 Bcm in 2013 to the abovementioned level of 40.2 Bcm in 2016.

Through the talks in the Netherlands, I acknowledged that production at the Groningen gas field is certain to sharply decrease, though with no specific level known, and that how to make up for the gas production decline is the most important energy challenge facing the Netherlands.

A priority energy source expected to solve the challenge is renewable energy including wind power. The Netherlands has already proceeded with large-scale onshore wind power development and now is expected to launch offshore wind power development in the future. As wind and other renewable energy power generation has seen a rapid global fall in power generation costs and emits no carbon dioxide, renewable energy is expected to make great contributions to the Netherlands' building of a low-carbon society. A particularly interesting fact is that the Netherlands is considering a large-scale scheme to cooperate with neighboring countries in developing the entire North Sea, known for oil and gas production center, into a CO₂-free wind power generation region, without limiting offshore wind power development to waters off the country, to secure its own electricity supply.

Another interesting point is that the Netherlands is planning to take advantage of its existing natural gas infrastructure to use gas energy other than domestically produced natural gas. Short to medium-term options include LNG in which international trade has been expanding. Known as an agricultural giant, the Netherlands is also considering using abundant domestic agricultural residues for biogas production. A long-term option under discussion is a power-to-gas concept in which surplus electricity emerging from expanding wind power generation and an electricity demand pattern change would be used for producing CO₂-free hydrogen for existing gas infrastructure. In this respect, a scheme to develop a green hydrogen economy is under consideration.

Through the talks in the Netherlands, however, I felt that Dutch energy experts were seeking an energy transition including a shift from domestically produced gas to renewable energy and hydrogen only in the context of reducing CO₂ emissions or building a low-carbon society. As a matter of course, a key purpose of the energy transition is to reduce carbon emissions. Like a mantra, however, they repeated CO₂ emission reduction, decarbonation and a sustainable society. My impression is that the Dutch situation differs sharply from the Japanese situation. When I asked if how to make up for a decline in the domestic energy production that has played a key role should be viewed as a key energy security problem, my discussion counterparts acknowledged this point for the first time.

Energy security concepts differ from country to country. The Netherlands has had rich domestic gas resources, has been considering domestic or regional renewable energy as an alternative to natural gas, can depend on regional energy cooperation using the existing energy supply network linking itself to neighboring countries, and benefits from abundant energy supply in the glut-ridden international energy market. Through my discussions with Dutch energy experts, I felt that these points led them to pay little attention to energy security. Rather, carbon reduction has been apparently established as the most important agenda for the Dutch government and industry, resulting in energy transition discussions focusing only on the context of carbon reduction.

The Japanese situation is different. Based on changing domestic and overseas situations, we will have to consider Japan's key agenda including not only carbon reduction but also energy security, greater market efficiency and safety in a balanced manner and discuss its energy transition

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