

## **International Energy Companies' Strategies and Initiatives for Decarbonization**

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

Abnormal weather has attracted global attention this year due to unprecedentedly high temperatures recorded in numerous countries or regions. As a result, climate change and its countermeasures have become a key matter of interest in the world, leading the world to pay attention to the annual United Nations Climate Action Summit opening in New York on September 23.

As climate change has attracted attention, how to use energy in response to climate change has become controversial. A focus of discussion is energy transition including the reduction of energy consumption and the switching from fossil fuels to non-fossil fuels to cut greenhouse gas (GHG) emissions to which climate change is attributed. Particularly, plans to cut GHG emissions by more than 80% by 2050 and a “net zero emission” initiative seen in some European countries represent fundamental GHG emission reduction measures or great innovations that could be described as decarbonization rather than low-carbonization.

Energy transition has become a complex, difficult issue as energy is an indispensable good for humans, society and economy and it is important to provide energy stably at affordable prices. The reason fossil fuels such as oil, natural gas and coal account for 85% of global energy supply at present is that fossil fuels are selected as excellent in terms of stable supply and affordability in the world. Decarbonization to prevent climate change represents a solution to the difficult issue of how to balance climate change countermeasures with the stable supply and affordability of energy.

Complicating the issue further is the fact that circumstances of national governments taking climate change countermeasures are varied. While the prevention of global climate change represents a global interest, national governments that implement climate change countermeasures act according to national interests that differ widely depending on their circumstances. Climate change negotiations cannot avoid becoming a complicated, difficult international negotiation process.

Attracting attention are not only national governments but also companies that play key roles in tackling climate change. Remarkably, a growing number of companies have been emphasizing their aggressive efforts to switch to renewable energy-based electricity. In Western countries, particularly, companies have increasingly recognized the significance of their responsibility for and contributions to environmental protection and publicized such recognition.

In response to such changes in the energy demand side, companies in the energy supply side have taken various initiatives in consideration of long-term decarbonization. These initiatives represent serious challenges for major energy companies that have been responsible for global

energy supply at present. Under such challenges, their future courses are at stake.

This is because fossil fuels dominate the present assets of these major energy companies responsible for present energy supply and because their organizations and infrastructure are adapted to the present energy supply system. They must make optimum use of their present assets and infrastructure to secure profits while considering balancing the stable supply and affordability of energy with the decarbonization trend. At the same time, however, they must develop and implement strategies for reforming their business portfolios toward future energy transition. In such circumstances, decarbonization-related challenges widely differ from company to company and from industry to industry. However, the present conditions of major energy companies in the world indicate that they have the following common problems or challenges.

First, they have the problem of how to take effective advantage of fossil fuels as their present dominant assets over a long term while reducing their environmental load as much as possible. The promotion of clean fossil fuel combustion technologies and the improvement of vehicle fuel efficiency remain effective, realistic solutions for low-carbonization. The effective use of natural gas emitting less GHG than other fossil fuels is also significant. For preventing carbon emissions, meanwhile, the development of carbon capture and storage (CCS) technology will remain important over a long term. Carbon recycling and other CO<sub>2</sub> use technologies are also important. Furthermore, initiatives have been taken to explore the potential to use CCS technology for producing CO<sub>2</sub>-free hydrogen from fossil fuels.

Second, major energy companies are remarkably trying to enhance their renewable energy business, the area that has attracted the greatest attention and expectations in today's world. Renewable energy, which includes wind and solar photovoltaics and is expected to play a role as distributed power sources free from CO<sub>2</sub> emissions, has rapidly expanded in the world thanks to rapid declines in renewable energy power generation costs in recent years. At a time when renewable energy is increasingly expected to play a great role in decarbonization, renewable energy business: though producing less earnings than present fossil fuel assets, has become significant for major energy companies in the world from a multifaceted viewpoint.

Third, advanced or innovative technologies: and how to respond to changes through their potential penetration, have grown strategically important. For example, how to respond to oil demand's peaking amid rapid progress in the electrification of automobiles has become a problem for major energy companies. The abovementioned potential of CO<sub>2</sub>-free hydrogen is also a significant problem for existing energy companies. CCS and carbon recycling technologies are expected to dramatically change society and the future course of energy companies. Advanced nuclear technologies, though in a different field, have potential to exert great influence on the future picture of energy and are greatly significant for relevant energy companies. How to deal with these advanced or innovative technologies and how to position them in business strategies are significant challenges for major energy companies in the world.

How to secure and expand profits for their survival while being conscious of decarbonization as a matter of interest to society and responding to social needs has become a matter of commonly shared significance for major energy companies' long-term survival strategies. Climate change prevention and decarbonization initiatives have become complex, difficult challenges for national governments and companies.

Contact: [report@tky.ieej.or.jp](mailto:report@tky.ieej.or.jp)

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