

## **India Seeking to Reach Carbon Neutrality by 2070**

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On November 1, Indian Prime Minister Narendra Modi declared that his country would seek to reach carbon neutrality by 2070. He made the declaration in his address at the 26th conference of the parties to the United Nations Framework Convention on Climate Change, known as COP26, in Glasgow, the United Kingdom. India had been the only major greenhouse gas emitter that had yet to announce a carbon neutrality goal. At last, the world's third largest GHG emitter after China and the United States officially announced the goal at COP26.

COP26, which opened on October 31 to discuss global warming prevention until November 12, is an important meeting attracting global attention. It had been scheduled for last year but has been delayed due to the COVID-19 pandemic. Since the second half of 2020, major countries have announced their respective carbon neutrality goals for the middle of the 21st century one after another, leading to a growing global wave of decarbonization initiatives. During the past year, the United States inaugurated the Biden administration that has positioned climate change countermeasures as one of its top priorities and activated its climate change diplomacy in a manner to accelerate the momentum for enhancing climate change initiatives. The United Kingdom that hosts COP26 is making national efforts to achieve the enhancement of climate change countermeasures through the conference. In such a situation, Prime Minister Modi announced India's 2070 carbon neutrality commitment.

Advanced economies including Japan, the United States and the European Union have already declared their respective 2050 carbon neutrality goals. China, the world's largest GHG emitter, announced its 2060 carbon neutrality goal in September 2020. In a run-up to COP26, Indonesia announced its 2060 carbon neutrality goal, followed by resource-rich countries such as Saudi Arabia, the United Arab Emirates and Russia. On October 26, Australia came up with its 2050 carbon neutrality goal. In this sense, what attitude India would indicate at COP26 was attracting global attention.

Some observers noted that India was reluctant to announce any carbon neutrality goal due to its negative impacts on economic development and would refrain from declaring such a goal at COP26. For such observers, Prime Minister Modi's announcement of the goal might have come as a surprise move to overcome the reluctance and join other countries to seek carbon neutrality. As India designated 2070 as the target year for carbon neutrality, some people have called on India to be more ambitious to prevent climate change. However, India for its part might have carefully balanced economic growth and development as its top priority with the commitment to enhancing climate change countermeasures. In this sense, India's commitment should be understood and given high ratings.

India's participation in the carbon neutrality club will contribute to enhancing global initiatives to realize carbon neutrality. Countries that have made carbon neutrality commitments will have to seriously consider how to achieve the commitments. From the viewpoint of global interests, it is desirable for the world to tackle the prevention of climate change under ambitious goals. Given that carbon neutrality is a difficult challenge, however, how to tackle future difficulties may be a grave global issue.

While carbon neutrality commitment is the first step forward to taking measures to achieve the goal, it may end up being a pie in the sky without specific pathways or roadmaps to the goal. At present, only a small number of major economies have officially given comprehensive energy scenarios or outlooks for carbon neutrality goals. Among them are the European Union, the United Kingdom, France, Germany and China. Japan's Strategic Energy Plan does not necessarily indicate any pathway to the 2050 carbon neutrality goal. Even the United States known for its proactive climate change diplomacy has not provided any comprehensive energy scenario for the 2030 goal of cutting GHG emissions by 50-52%, as well as the 2050 carbon neutrality goal. As a matter of course, India, which has just declared the 2070 carbon neutrality goal, has not given any such scenario.

Even if comprehensive energy scenarios or outlooks for achieving carbon neutrality are developed, how to achieve carbon neutrality may be left as a grave issue. Energy scenarios given by the abovementioned economies commonly include (1) thorough energy efficiency enhancement, (2) substantial expansion of renewable energy and nuclear power generation to increase non-fossil sources' share of the energy mix, (3) promotion of electrification and decarbonization of electricity generation, (4) substantial expansion of hydrogen use and (5) introduction of negative emission technologies such as forest sinks and direct air capture of CO<sub>2</sub>. The five common measures have various challenges and will not necessarily be easy for advanced economies as well as developing ones to realize.

In a scenario for the maximum introduction of advanced technologies in the IEEJ Outlook 2022 published recently by the Institute of Energy Economics, Japan, global CO<sub>2</sub> emissions in 2050 will still total 21.7 billion tons, though being 42% less than in a reference scenario for the continuation of current trends, falling far short of reaching zero and failing to be halved from the current level. Particularly, emissions from heating demand and non-electric energy use in the industry, transport and buildings sectors would be difficult to reduce. Then, it would be important to further promote electrification and expand hydrogen use in these sectors. In a circular carbon economy scenario in the IEEJ Outlook, the world will promote the decarbonization of fossil fuels to expand hydrogen use in these sectors and substantially reduce CO<sub>2</sub> emissions without changing fossil fuel consumption so much. It indicates a pragmatic pathway to reducing emissions substantially while adequately using fossil fuels accounting for most of current global energy supply and their supply systems and infrastructure.

Carbon neutrality initiatives may vary depending on national economic, technological and energy resource endowment conditions, indicating that it would be important to take an inclusive approach on various initiatives. As well as India that has just made a carbon neutrality commitment, other developing economies that may follow suit will have to adopt their respective optimum pathways to achieve the ultimate goal of carbon neutrality. This approach may be important for the entire world to pursue carbon neutrality as a global interest while preventing the escalation or radicalization of the north-south conflict as a potential constraint on climate change countermeasures.

As challenges and issues toward carbon neutrality, the IEEJ Outlook cited how to view carbon neutrality initiatives' impacts on economic growth, whether the enhancement of such initiatives would generate gaps between advanced and developing economies and between various layers, the significance of stable electricity supply as well as energy security regarding traditional fossil fuels, the presence of new risks or threats regarding electricity supply, stable supply of rare minerals indispensable for energy transition and the complication of energy security. Stable fossil fuel supply during a long transition to carbon neutrality may also be a grave issue. Countries may face various challenges when enhancing climate change countermeasures toward carbon neutrality to protect global interests. Overcoming such challenges may also serve global interests.

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