

The Roadmap to Zero Carbon Emissions

By Naoyuki Haraoka

Global climate change is one of the key common challenges facing the world. It is an issue that will need to be tackled for decades and will only be resolved with all nations committing to reduce their emissions. Many countries today understand the nature of the issue and have fixed a target year for zero carbon emissions. Japan has committed to achieve zero carbon emissions in 2050. COP26 held in Glasgow in November 2021 confirmed this global consensus to prepare for achieving zero carbon emissions.

We have to think about the social implementation of this goal. Otherwise, global climate change cannot be stopped. In thinking about achieving the goal, we find reduction of carbon emissions will seriously impact the economy, society and politics. Naturally, the nature of energy sources used for economic and social activities would have to change from fossil fuels to renewable sources. While zero carbon emissions must be achieved, economic growth must also be achieved inclusively to meet the needs of nations, such as social welfare in aging societies. We need mutual collaboration and understanding between developed and developing nations to achieve global carbon emission reductions. For example, technology transfer from developed nations to developing ones for energy conservation, or developing renewable energy sources, must be

implemented to achieve significant reductions of carbon emissions among developing countries without greatly hurting their economic growth. With geopolitical risks among developing nations to bear in mind, and with the US-China political regime conflict affecting global politics, it will not be easy to achieve collaborative relations among nations. The issue of global climate change should therefore be studied from a multi-faceted interdisciplinary approach.

The complex roadmap to zero carbon emissions will become clear to readers of our Roundtable discussion among distinguished experts and from Prof. Arima's assessment of COP26 in this issue. These two key articles are followed by articles on specific issues: Prof. Takeuchi talks about future directions for Japan's energy policy and Dr. Akimoto discusses the role of emission reduction technologies for carbon neutrality in Japan. More specifically, Ms. Nakamura talks about the potential and challenges of renewable energy deployment in Japan, while Dr. Wang elaborates on the role of nuclear power in advancing Japan's economic and climate goals. Overall, Japan's roadmap to a zero-carbon emission society will be clearly presented.

(Brief Introductions)

COVER STORY 1

Roundtable with Teiko Kudo, Prof. Yukari Takamura, Tatsuya Terazawa, & Masakazu Toyoda

Assessment of COP26 & the Challenges Ahead on Japan's Path to Carbon Neutrality

By *Japan SPOTLIGHT*

COP26 was successful in achieving a global consensus on a 1.5°C rise in temperature on the Earth. But to achieve this goal, we will need to tackle a number of economic, social and political challenges.

COVER STORY 2

COP26 & Japan's Carbon Neutrality Challenge

By Jun Arima

Japan faces great challenges in its pursuit of carbon neutrality. In order to achieve it, the construction of new and more advanced nuclear power plants is essential.

COVER STORY 3

Future Directions for Japan's Energy Policy – a Realistic Take on Climate Change Policy

By Sumiko Takeuchi

Electrifying final demand as much as possible and decarbonizing power generation by utilizing hydrogen will greatly contribute to achieving zero-carbon emissions.

COVER STORY 4

The Role of Emission Reduction Measures for Carbon Neutrality & the Scenarios for Japan

By Keigo Akimoto

Several emission reduction measures should be considered, such as renewable energies and electrification, CCUS, nuclear power, hydrogen and ammonia. But there are no silver bullet technologies.



COVER STORY 5

The Potential & Challenges of Renewable Energy Deployment in Japan

By Hiroko Nakamura

We can use much of the unlocked potential of renewable energy in Japan with creative market and business models as well as innovative technologies.

COVER STORY 6

The Role of Nuclear Power in Advancing Japan's Economic & Climate Goals

By Seaver Wang

Excluding nuclear energy from Japan's chosen climate strategies will only aggravate the energy-related risks that the Japanese economy faces today and in the future.

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