



## Toward Achieving Carbon Neutrality by 2050

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The Research Institute of Innovative Technology for the Earth (RITE) was established on August 1, 1990, and has now been in existence for more than 35 years. Over this period, global efforts to prevent climate change have undergone significant shifts.

Around five years ago, in 2020, countries around the world set the goal of achieving carbon neutrality by 2050, and the Government of Japan also adopted this target. The year 2050 will mark the 60th anniversary of RITE's founding—equivalent to the traditional *kanreki* milestone in a person's life. If the research achievements that RITE has steadily accumulated in the field of climate change mitigation can contribute to achieving carbon neutrality, it would represent a meaningful milestone.

Meanwhile, in recent years, the international landscape has grown increasingly complex, influenced by developments such as the outbreak of the war in Ukraine and the emergence of a second Trump administration. As a result, global efforts to combat climate change have become more uncertain. Discussions at last year's Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change and Intergovernmental Panel on Climate Change (IPCC) suggest that, in addition to the long-standing divide between developed and developing countries, the alignment among developed countries themselves has weakened. Furthermore, the outbreak of the conflict involving Iran have clouded the outlook for the global energy situation, prompting renewed debate over the role of fossil fuels.

Nevertheless, considering the recent rise in global average temperatures and the increasing frequency of extreme weather events worldwide, the need to address climate change is not diminishing; rather, it is becoming ever more urgent.

Under these circumstances, as a research institute dedicated to climate change mitigation, RITE is expected to fulfill its core mission while actively disseminating its research achievements to the global community. Expo 2025 Osaka, Kansai, Japan provided an excellent opportunity to do so. Recognizing this, RITE presented the RITE Future Forest, an exhibition centered on negative emission technologies, including Direct Air Capture (DAC) of carbon dioxide from the atmosphere, Carbon Capture and Storage (CCS), and carbon fixation in concrete materials (carbon sequestration).

The details of the RITE Future Forest is explained in the special feature section that follows. At the Expo venue, RITE introduced many visitors to the current state of climate change, the necessity of mitigation efforts, and the specific technologies involved—through visual presentations, live operation of actual plants, and displays of tools used in CCS. Through these efforts, RITE has deepened public understanding of climate change issues. RITE will continue such initiatives, not only advancing research on climate change mitigation but also strongly advocating the importance of achieving carbon neutrality. In doing so, RITE aims to contribute meaningfully to the realization of carbon neutrality by 2050.