

Challenge for Carbon Neutrality through Regional Collaboration

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Efforts are accelerating worldwide to achieve net-zero greenhouse gas emissions by 2050, with multifaceted approaches including technology, policy, and regional collaboration. Achieving net-zero emissions requires a transformation in various sectors, such as realizing net-zero in the energy transition, achieving net-zero mobility through electrification, and attaining net-zero in manufacturing. Among these, achieving net-zero in manufacturing presents the greatest challenges.

In scenarios for achieving net-zero emissions, industries involving carbon as a material include steel production, where coke made from coal is used to reduce iron ore; chemicals, which produce plastics, rubber, and synthetic fibers from crude oil; cement, made from calcium carbonate; and paper and pulp, made from wood pulp. Therefore, it is necessary to synthesize renewable chemicals or establish entirely new manufacturing methods, which is why these industries are classified as "Hard to Abate."

By leading the world in achieving net-zero emissions in Hard to Abate industries, it is possible to drive the revitalization of strong manufacturing as a source of competitive advantage. In this presentation, I will outline the concept of a carbon cycle that enables the use of independent carbon resources, moving away from reliance on fossil resources, and summarize the amount of hydrogen required for this carbon cycle.