



**CARBON
RECYCLING
FUND INSTITUTE**

Paving the way for the Sustainable Carbon System

Carbon Recycling Fund Institute

Contribute to the creation of innovation by using CO₂ as a resource

Background and Objectives for Establishment

Carbon is a basic substance that is essential for sustaining life. We believe that the essence of the global warming problem is that human beings have used fossil fuels at an excessively fast rate since the Industrial Revolution, which has led to an increase in CO₂ in the atmosphere beyond the natural balance.

In order to achieve carbon neutrality by 2050, we believe that the concept of carbon recycling (Sustainable carbon system) is necessary, and that it is essential to innovate in this way. We believe that by promoting carbon recycling, it will be possible to address not only global warming but also issues such as energy access, biodiversity, and plastics waste at the same time.

The Carbon Recycling Fund (CRF) (established in August 2019) is a cross-industry organization based in the private sector that conducts research grant activities and public relations activities and so on. Through these activities, we will create innovation in carbon recycling, embody social implementation for regional revitalization and contribute to the realization of carbon neutrality around the world through international collaboration.

Overview

Name: Carbon Recycling Fund Institute

Established: August 30, 2019

Address: 3F Daiichi Misu Building, 2-34-7,
Nishi-Shimbashi, Minato-ku, Tokyo 105-0003

Membership categories (annual membership fee):

Corporate members: 200,000 yen/ unit

Individual members: 10,000 yen/ unit

Local government members (-)/ Academic members (-)

Membership list

Please refer to the attachment or our website for the latest list.

Chairperson: Tsugio MITSUOKA (Chairman of the Board, IHI Corporation)

Vice Chairperson: Toshifumi WATANABE (Representative Director Chairman, Electric Power Development Co., Ltd.)

Vice Chairperson: Noriyuki MITA (Executive Officer, Chief Sustainability Officer, Mitsubishi Chemical Corporation)

Senior Executive Director: Masamichi HASHIGUCHI

Director: Atsushi HIRANO (Representative Director and Vice President, Idemitsu Kosan Co., Ltd.)

Auditor: Kouji TAKEDA (Counselor, IHI Corporation)

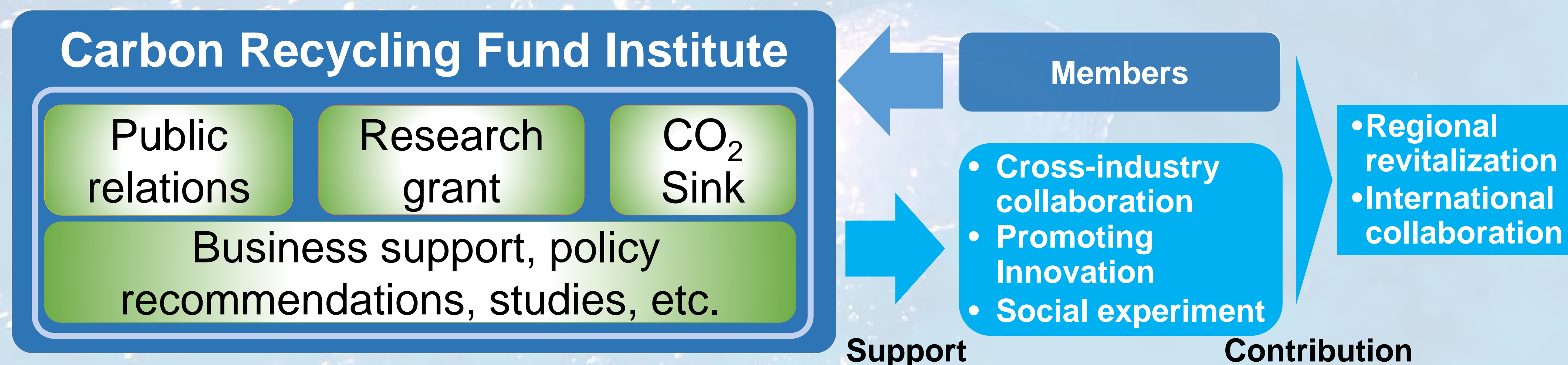
Top adviser: Yoshimitsu KOBAYASHI (Chairman of the Board, Tokyo Electric Power Company Holdings, Inc.)

Adviser: Takeo KIKKAWA (President, International University of Japan (IUJ))

Honorary Chairman: Masayoshi KITAMURA (Counselor, Electric Power Development Co., Ltd.)

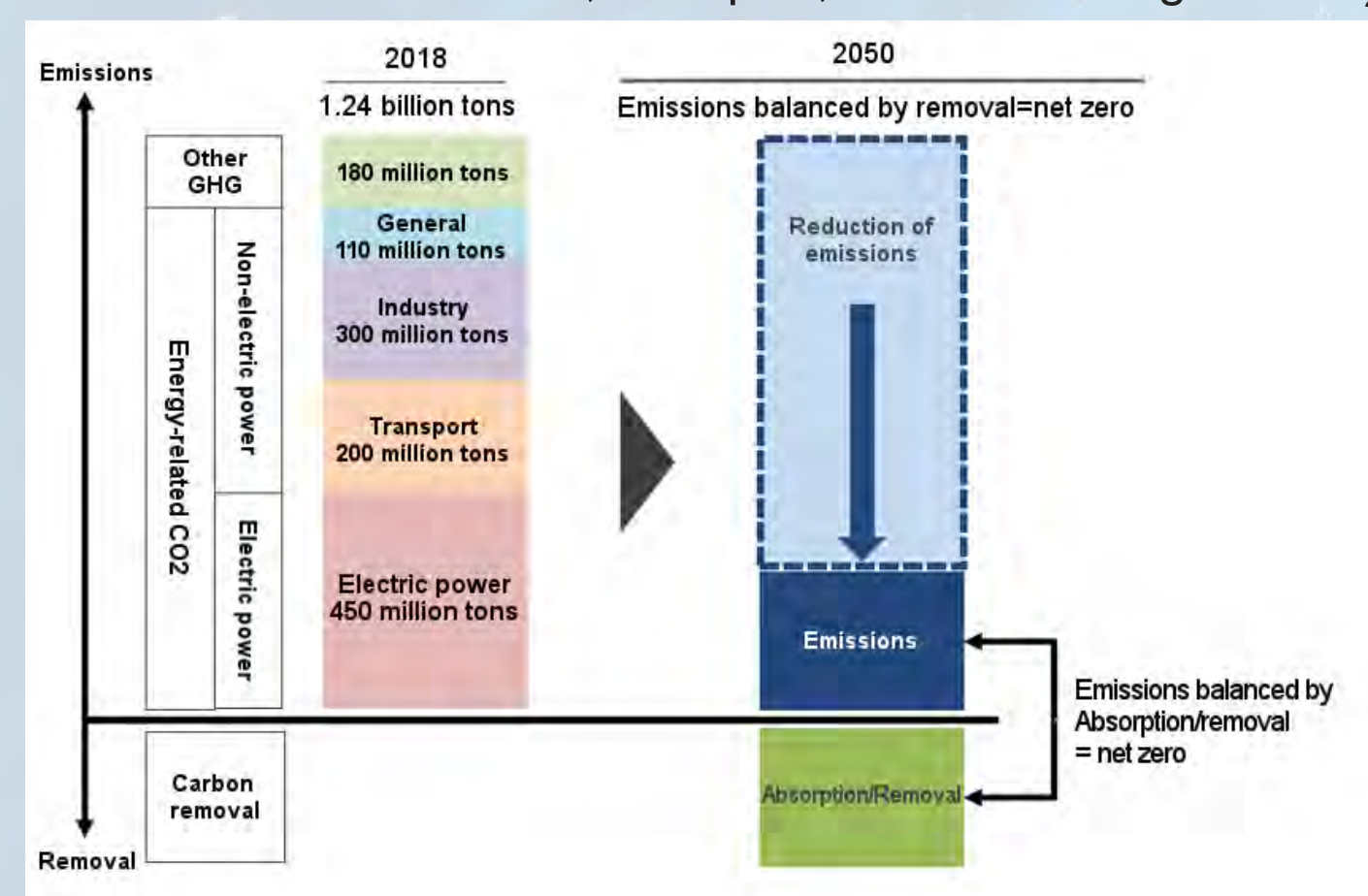
Activities

Membership fee, Donations



Towards achieving a sustainable carbon system

- It is important to **balance the amount of CO₂ emission with the amount of absorption and removal (usage and fixation).**
- Not only emission reduction, but **CCUS/ carbon recycling and absorption into forests, oceans, and soils** are key.
- It is important to **build a value chain for CO₂**, from the sources to the collection, transport, use and storage of CO₂.



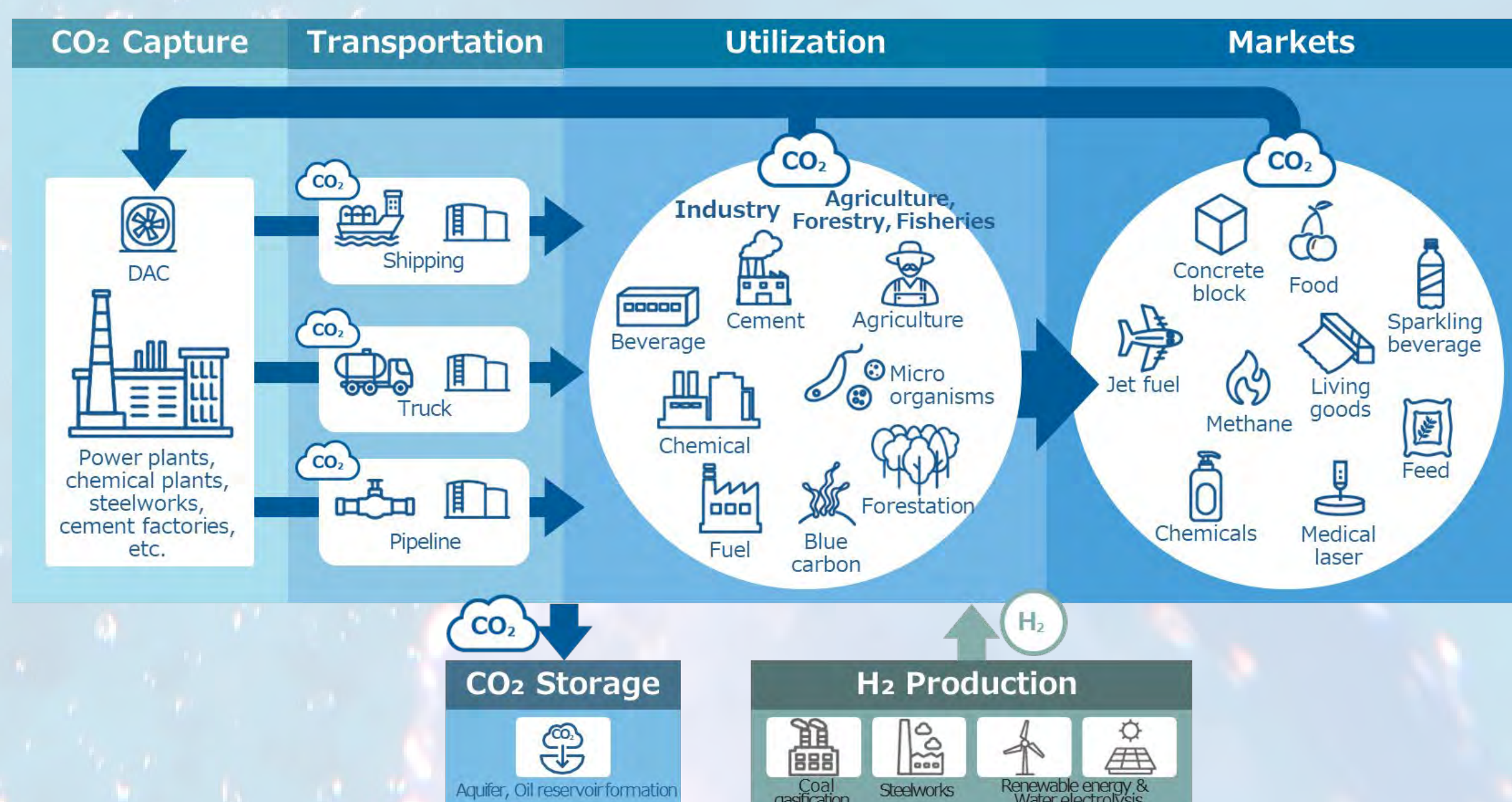
Carbon Neutrality image

(Reference: Ministry of Economy, Trade and Industry)

The society we should aim for to achieve carbon neutrality

Sustainable carbon system

Aiming for a global carbon cycle using the power of the earth and living organisms



CO₂ value chain

Activities

I. Public relations

The institute provides the latest information on carbon recycling in Japan and elsewhere through a variety of media including our website, participates in international exhibitions, holds events, symposiums, and training sessions in collaboration with various media, and conducts other public relations activities, such as awareness-raising activities related to carbon recycling.

Carbon recycling closed community



The institute holds online lectures on timely topics to share information and discuss carbon recycling/carbon neutrality among its members.
This program is for CRF members only.

Participation to exhibitions, symposiums etc.

The top management of the institute disseminates the significance of sustainable carbon to the world and participates in exhibitions to promote CR activities.

II. Research grants

A number of obstacles are blocking the practical viability of carbon recycling, including issues of cost, international competition, funding for fundamental research and others. The institute offers grants and member matchings to researchers and startups who are taking on these challenges to create innovation. We also promote working group activities for the purpose of social experimentation of various initiatives.

	Outline
Grant recipients	Grants are given to a researcher or a team of researchers belonging to a company, university, or corporation. A new startup support quota was established in FY2022.
Assessment points	Originality, innovation, superiority over conventional technologies, how to define issues, social feasibility such as collaboration with companies, etc.
Grant amount	Up to 10 million yen per project (Up to two years)
Application/ approved cases	FY2020～FY2025 : (total) 428 applications → 93 accepted (including adoption for startup support)



Presentation on the research grant activities (as membership benefit)

III. CO₂ Sink

We have engaged in considering the development of rules for CO₂ sinks and activities to spread understanding of CO₂ sinks by planting fast-growing trees with local communities and members.

CO₂ sink study group

Activities to spread understanding of CO₂ sink



Tree Planting with our members and local companies

IV. Business support, policy recommendations, information analysis, etc.

The institute provides business support and offers recommendations on national policies on energy, environment and technology development policies for the social implementation and commercialization of carbon recycling. We also collect the latest news from around the world about carbon recycling and CCUS and distribute dozens of articles each week to our members.

- Embodiment of social implementation of carbon recycling (social implementation working group)
 - ✓ Implement activities to link the carbon recycling value chain through social implementation working group.
 - ✓ Explore how carbon recycling can contribute to the revitalization of local industries by leveraging regional strengths.

University of Carbon Recycling



Carbon Recycling University is an education program which fosters problem-solving thinkers.
➢ Each year, twenty employees from member companies participate in the program.
➢ Collaboration with startup companies
➢ Presentation of discussion results and cross-industrial exchanges

Sharing information on websites etc.

Examples of carbon recycling and carbon neutral initiatives by CRF members posted on the website. (in Japanese)

The tale of Carbo and Risa

The tale of Carbo and Risa is an original digital content of the institute which conveys the significance and initiatives on carbon recycling to the next generation in a fun way.



Chairperson Tsugio Mitsuoka at 6th international Conference on Carbon Recycling 2024



Chairperson Nobuo FUKUDA (2023) during a speech at the UN STI Forum

Carbon recycling closed community

- The Institute is continuing to grow into a group that collaborates with various industries through our activities.
- Over 100 people participate and interact each other.

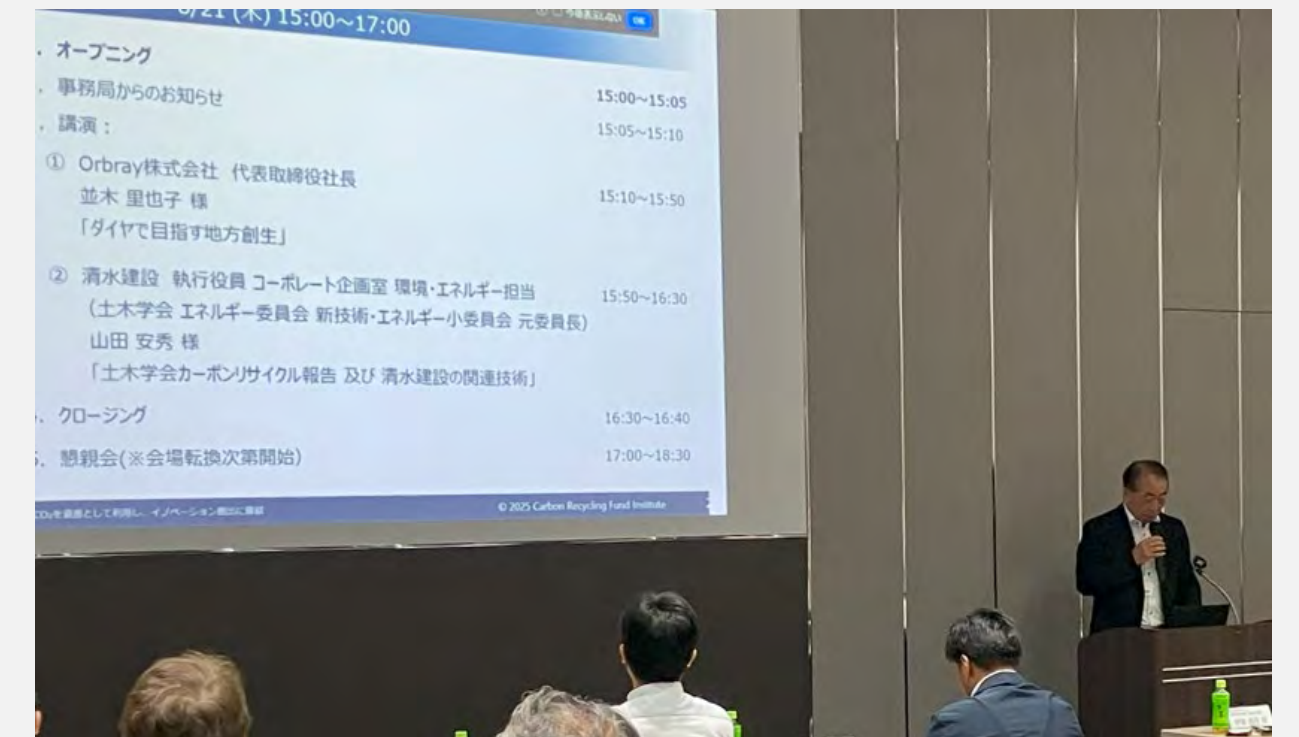
Deloitte.
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カーボンリサイクル製品の国際取引における環境価値を巡る最新動向
～2024年度NEDO事業成果のご共有～

2025年7月25日
デロイトトーマツコンサルティング合同会社 川村 淳貴

2025年度 第3回 CRサロン 8/21 (木) 15:00～17:00	
1. オープニング	15:00～15:05
2. 事務局からのお知らせ	15:05～15:10
3. 講演:	
① Orbray株式会社 代表取締役社長 並木 里也子 様 「ダイヤを目指す地方創生」	15:10～15:50
② 清水建設 執行役員 コーポレート企画室 環境・エネルギー担当 (土木学会 エネルギー委員会 新技術・エネルギー小委員会 元委員長) 山田 安秀 様 「土木学会カーボンサイクル報告 及び 清水建設の関連技術」	15:50～16:30
4. クロージング	16:30～16:40
5. 懇親会(※会場転換次第開始)	17:00～18:30



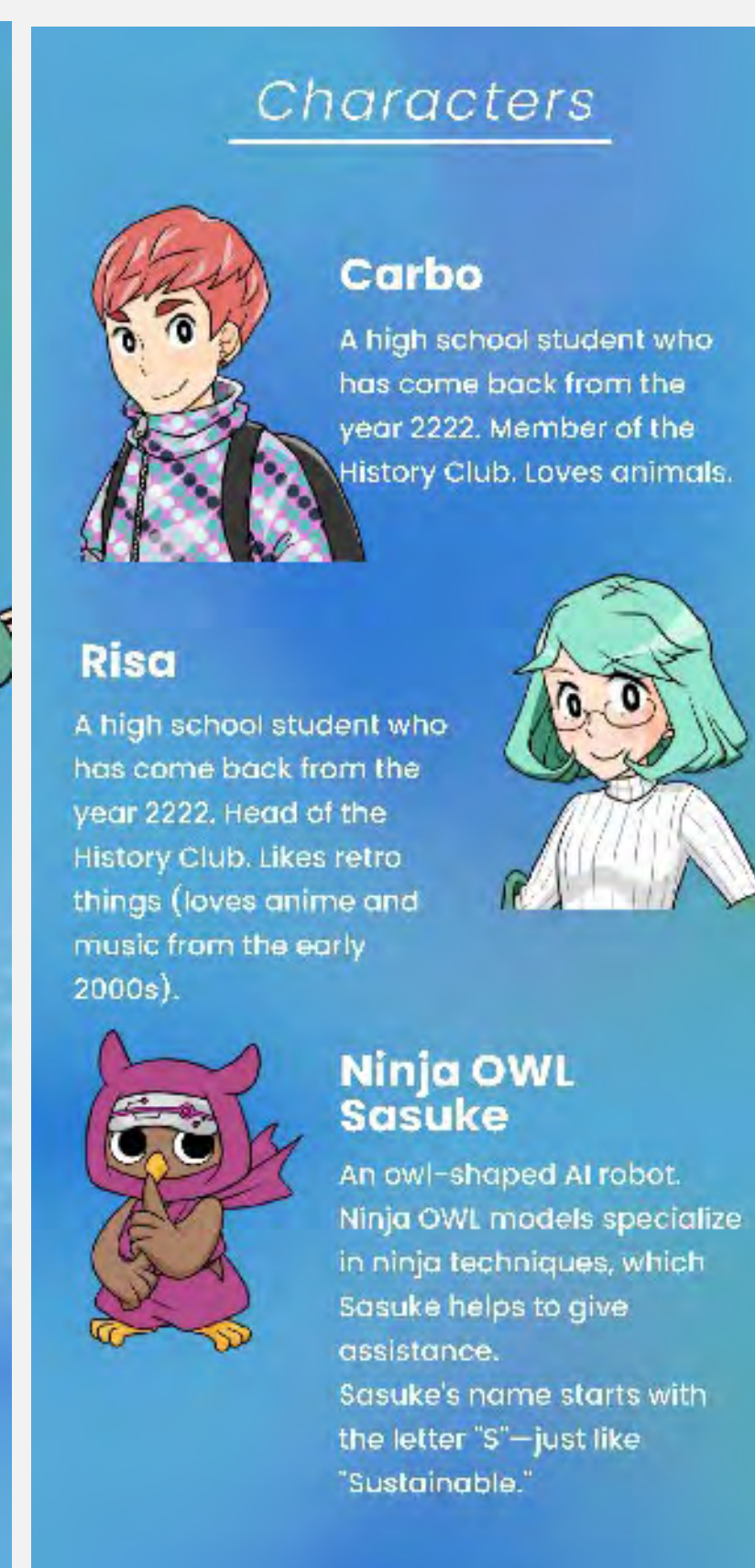
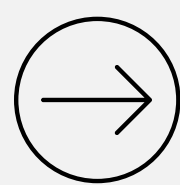
Speakers in Carbon Recycling closed community
(Speaker: Leading experts in a particular field, Researcher, Start-up Company, Our members)

The tales of Carbo and Risa

High schoolers from the future, Carbo and Risa, time travel back to the 2020s to study about carbon recycling.

With an eye on future generations, you can enjoy learning with this content the importance of carbon recycling and initiatives for it.
It's fun to learn about and easy to understand.

Scan here



Message from leaders

CRF leaders introduce endeavors of the Institute and its members at international conferences, exhibitions, etc.

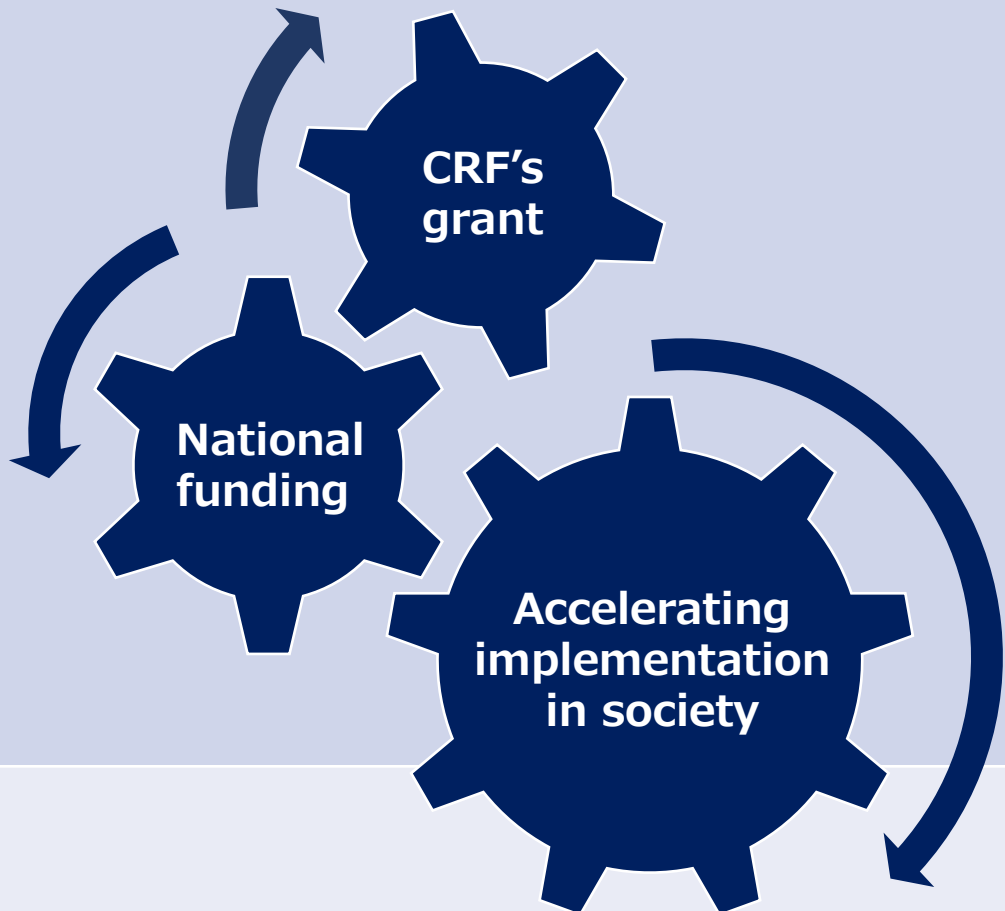


Chairperson Tsugio Mitsuoka
during a speech at 6th international
Conference on Carbon Recycling 2025



Chairperson Tsugio Mitsuoka
during a speech at the Smart Energy
Week 2025

	Features
Eligibility	Researchers or teams affiliated with companies, universities, etc. A startup support framework established in FY2022
Research targets	Research on carbon recycling that uses CO ₂ (or carbon atoms) as a resource, related technologies, and social science to solve social issues <Expected Fields> 1. CO ₂ fixation by mineralization (materials such as concrete) 2. Conversion to fuels 3. Conversion to chemicals 4. Separation and recovery (including direct-air capture) 5. Social science 6. Utilization of CO ₂ sinks (soil, forests, blue carbon, biologics, agriculture, forestry and fisheries) 7. Other (H ₂ production, geo-engineering, functional materials, medical fields, etc.)
Evaluation points	Creativity, innovativeness, superiority over conventional technologies, method to determine issues, and social realization potential through collaboration with companies
Grant scale	Up to 10 million yen per project (Up to two years)
Number of applications and accepted cases	FY2020~FY2025 : (total) 428 applications → 93 accepted FY2025: 56 applications → 19 accepted and 16 applications for startup support → 3 accepted
Attribution of research results	Research results basically belong to researchers



Projects that stepped up from CRF research grant (Excerpts from FY2022)

Research field	Grantee	CRF research projects thema (grant fiscal year)	Principal investigator name (affiliated institution)
Technologies for CO ₂ fixation	Hiroshima Prefecture	Development of a novel CO ₂ immobilization technology using microbial fuel cells (FY 2022)	Daisuke SANO (Tohoku University)
	Hiroshima Prefecture	Development of next-generation carbon dioxide solid absorbers that do not require water and heat. (FY 2022)	Kiminori SATO (Tokyo Gakugei University)
	NEDO and MOE	R&D on CO ₂ fixation technology into the goaf of a closed coal mine(FY 2024)	Shohei TAKEUCHI (Mikasa City, Hokkaido)
Technologies for conversion to fuels or chemicals	JST	Development of Heat Exchanger-less CO ₂ Methanation Process Using Advanced Thermal Storage Technology (FY2022)	Takahiro NOMURA (Hokkaido University)
	Hiroshima Prefecture	Development of Reaction System for Selective Conversion of CO ₂ to Chemicals with Waste Silicon as a Reducing Agent (FY 2023)	Ken MOTOKURA (Yokohama National University)
	ERCA	Methanol production by electrolytic CO ₂ reduction using 1 nanometer copper cluster (FY 2024)	Tokuhisa KAWAWAKI (Tokyo University of Science)
Technologies related to CO ₂ separation and capture	Hiroshima Prefecture	Development of highly efficient DAC technology using CO ₂ absorbing and releasing agents that separate even water (FY 2021,22,23)	Fuyuhiko INAGAKI (Kobe Gakuin University)
	NEDO	Development of DAC system with high CO ₂ concentration by zeolite-based pressure swing (FY 2023, 24)	Kenta IYOKI (Planet Savers Inc.)
	JSPS	Development of Defect-Free MOF Ultrathin Membranes for CO ₂ Capture (FY 2023)	Shunsuke Tanaka (Kansai University)
Social sciences	ERCA	Regime Change for Carbon-Neutral Agriculture, Forestry, and Fisheries (FY 2023)	Ayu WASHIZU (Waseda University)
Circulation of carbon resources	Launching a startup	A New Bio-Energy with Carbon Capture & Storage (FY 2023), Highly-Efficient Conversion of CO ₂ Utilizing Biomass, Brown Coal and Metal Ion Media (FY 2020)	Atsushi Alex Mazawa (Rhinoflux Inc.) ,Ryuichi ASHIDA (Kyoto University)
	Joint research with companies	Development of Direct Coating Process of Carbon Nanotube Films from Carbon Dioxide (FY2023)	Yuta SUZUKI (Doshisha University)
Utilization of CO ₂ sinks	JSPS	Enhancement of plant CO ₂ uptake using a chemical compound (FY 2022)	Yohei TAKAHASHI (Nagoya University)
CO ₂ direct utilization	Joint research with companies	CO ₂ hydrate storage and discharge system (FY 2023)	Shin'ya Obara (Kitami Institute of Technology)
	Launching a startup, Hiroshima Prefecture	Development of A Next-Generation Horticulture System Utilizing Atmospheric CO ₂ (FY 2024)	Naomi TANGA (ARCS LLC.)

Field	Study title	Name of Research Representative (Organization)
CO2 separation, capture and storage	Innovative high-purity CO2 purification technology: Development of CO2 separation system using “gate-adsorption-type zeolites”	Shunsuke Tanaka (Kansai University)
	Direct air capture using a combination of zeolite and a liquid-phase desorption system	Kenta IYOKI (Planet Savers)
	Development of a CO ₂ Fixation Process Converting Byproducts of Rare Earth Recovery from Coal Ash into Carbonated Granules	Yuko OGAWA (Hiroshima University) Collaborators: University of Wyoming
	Catalytic Conversion of Carbon Dioxide over Hybrid Nanoconfined Catalysts	Daichi Takami (The Univ. of Osaka)
	Development of a Multi-Material, Multi-Use DAC System for Cost Optimization Across CO2 Applications	Kei Kawasaki (CarbonNest Inc.)
Conversion to fuels or chemicals	Development of a water-cooled electrode-type direct methanol synthesis plasma reactor using a DC pulse power with CO2	Nobusuke KOBAYASHI (Gifu University)
	Development of Biomass Plastic Synthesis Utilizing Carbon Dioxide and Non-Edible Sugars	Masanari Kimura (Nagasaki University)
	CO2 Conversion to Useful Chemicals by Si Powder with Metal Cluster Catalysts	Shingo Hasegawa (Yokohama National University)
	Design of Coordination Polymer-Based Catalysts for Fast CO2 Electrolysis Without Resource Limitations	Kazuhiko Maeda (Institute of Science Tokyo)
	High-efficiency methanol conversion of CO2 using tungsten trioxide catalysts.	Hidetoshi Miyazaki (Shimane University)
Social sciences	Designing a voluntary credit system for green carbon ecosystem conservation	Ayu WASHIZU (Waseda University)
	Possibilities and Issues for Realizing Australia - Japan JCM: A Case Study of the CCS/CCUS Project in Australia	Toshi H. Arimura (Waseda University) Collaborators: Australian National University
Circulation of carbon resources	Porous copper-based electrodes for organic electrosynthesis and water hydrolysis	Sho HIDEISHIMA (Tokyo City University)
	Development of an Innovative Carbon Recycling Process for Acrylic Resins	Keita Koshiba (Mitsubishi Chemical Corporation Co., Ltd.)
	Development of Recycling Technologies for Highly Stable Plastics	Masanori Shigeno (Tohoku University)
	Catalytic plastic depolymerization and organic waste decomposition into hydrogen	Tadashi Kubo (AC Biode)
Utilization of living organisms	Carbon-negative electricity generation using photosynthetic microorganisms and enzymatic biofuel cells	Tsutomu MIKAWA (RIKEN)
	Bio-PET Circulation: Harnessing CO ₂ for Sustainable Growth	Tsutomu Tanaka (Kobe University)
Value Enhancement	Development of an Innovative Conversion Process from Carbon Dioxide to Acrylic Resin Precursors without Hydrogen Consumption	Teruoki Tago (Institute of Science Tokyo)
Utilization of CO2 sinks	Research and Development of a Seaweed Attachment System for Large-Scale Blue Carbon Creation	Nobuko Nishikawa (BLUABLE Co., Ltd.)
	Development of Functional Biochar as the Final Utilization Stage in the Material Flow of Wood-based Resources	Masako SEKI (National Institute of Advanced Industrial Science and Technology “AIST”)
H2 Carrier Usage	Ammonia Cracking at Low Temperature and High Rates with Precious-Metal-Lean Catalysts: From Discovery to Scale-Up	Akira Oda (Institute for Catalysis, Hokkaido University)

●CO₂ sink study group

【Object】 Sharing the prospects and challenges of the current CO₂ sink business with members

【Action】 In 2023, CO₂ sink study group performed lectures and a panel discussion had held three times. <Theme> Part 1 Green Carbon, Part 2 Blue Carbon, Part 3 Biochar



Part 2 of CO₂ sink study group (Dec. 2023)

●Activities to spread understanding of CO₂ sinks

【Object】 Through event holding, understanding CO₂ sinks

【Action】 Planting fast-growing trees with local communities and members



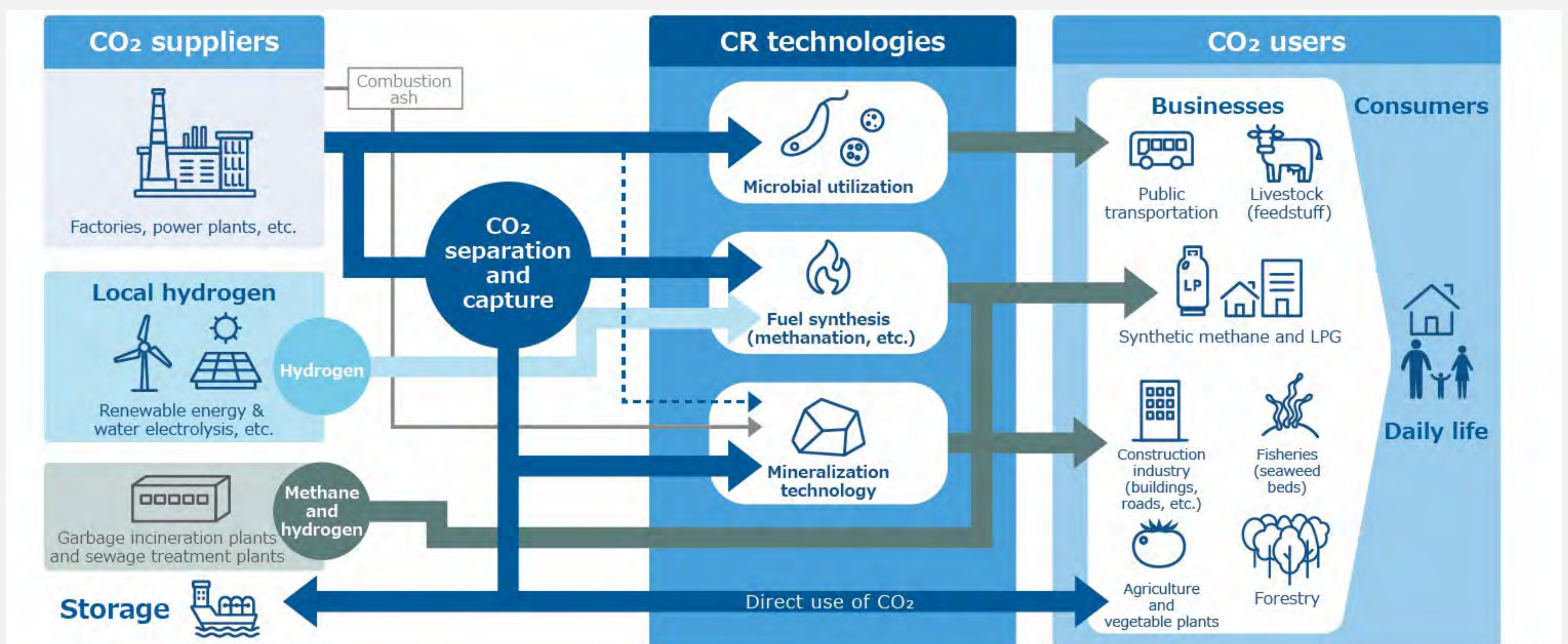
Planting fast-growing trees at City of higashimatsuyama
(Left: tree planting in 2023, Right: after 1 year in 2024)

Business Support

establishment of CO₂ value chain

Working Group for Social Implementation

- We studied how to connect CO₂ value chains in a locality
FY2022 in Takehara (Hiroshima)
FY2023 in Omuta (Fukuoka) and Sakata* (Yamagata) *ongoing
- Participants including CRF members, local government, and research institutes examined how carbon recycling can contribute to local rejuvenation together with local companies





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Web



Mail



X(Twitter)