

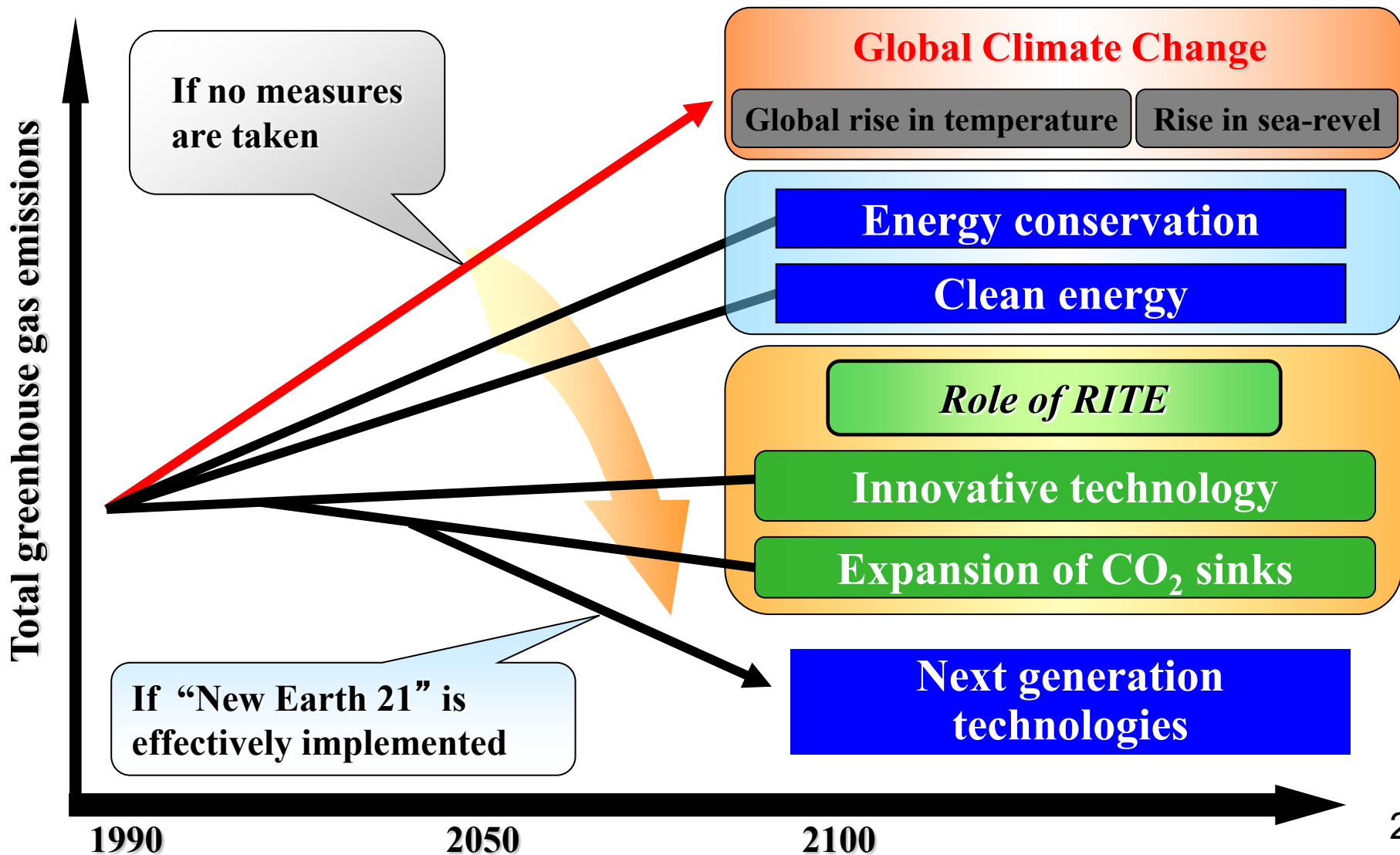
# *Overview of RITE*

**Takashi Honjo**  
**Senior Managing Director**

**Research Institute of  
Innovative Technology for the Earth**

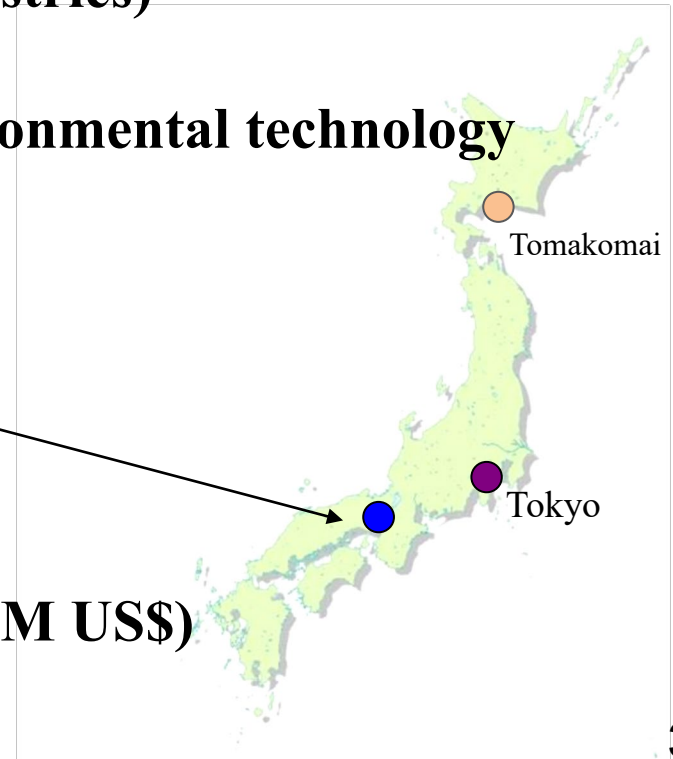
# “New Earth 21”: Earth Regeneration Plan

proposed by Japanese government in 1990 Houston Summit

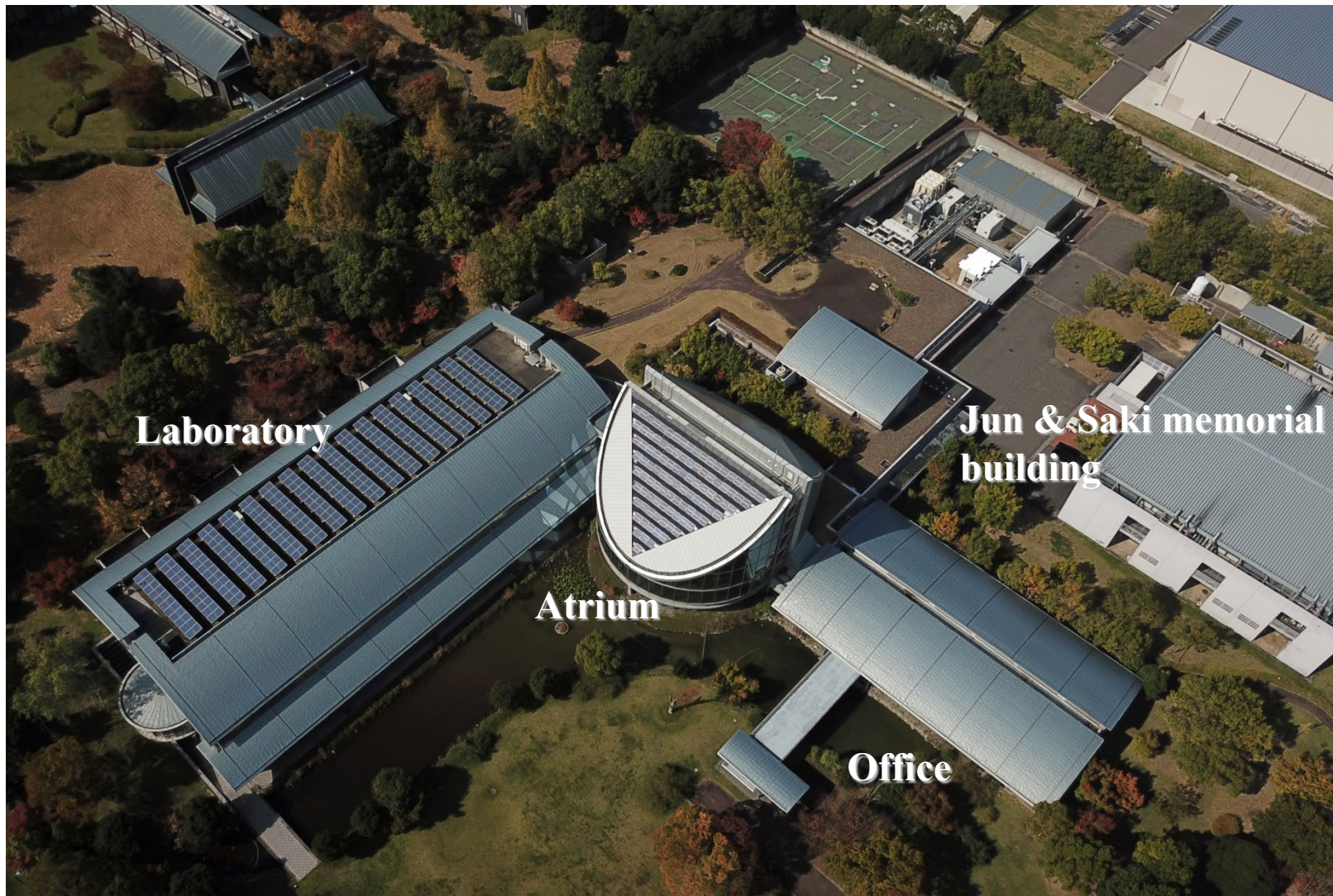


# *Profile of RITE*

- **Objective** : R&D of industrial technologies that contribute to the conservation of the global environment and the progress of the world economy
- **Establishment** : July 1990 (Supported by MITI, local governments, academic circles and industries)
- **Activities** : Development of innovative environmental technology  
Expansion of CO<sub>2</sub> sinks
- **Location** : Kansai Science City
- **Staffs** : 173 (August 2021)
- **Annual budget** : Approx. 3.1 billion JPY (28M US\$)  
(105 JPY/US\$)



# *Headquarters*



# ***Focuses of RITE Activities***

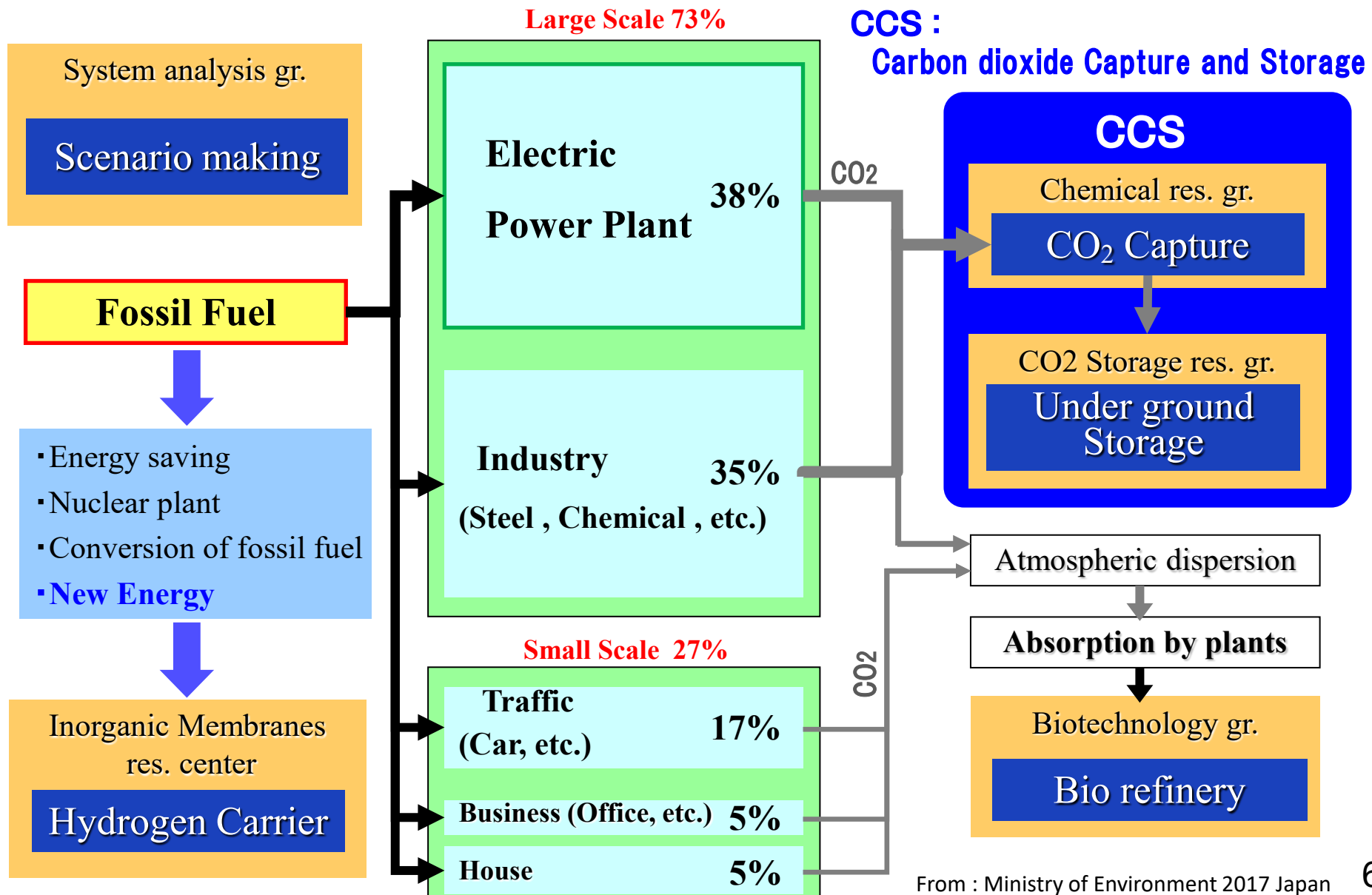
***Development of  
CO<sub>2</sub> Capture & Storage  
Technologies***

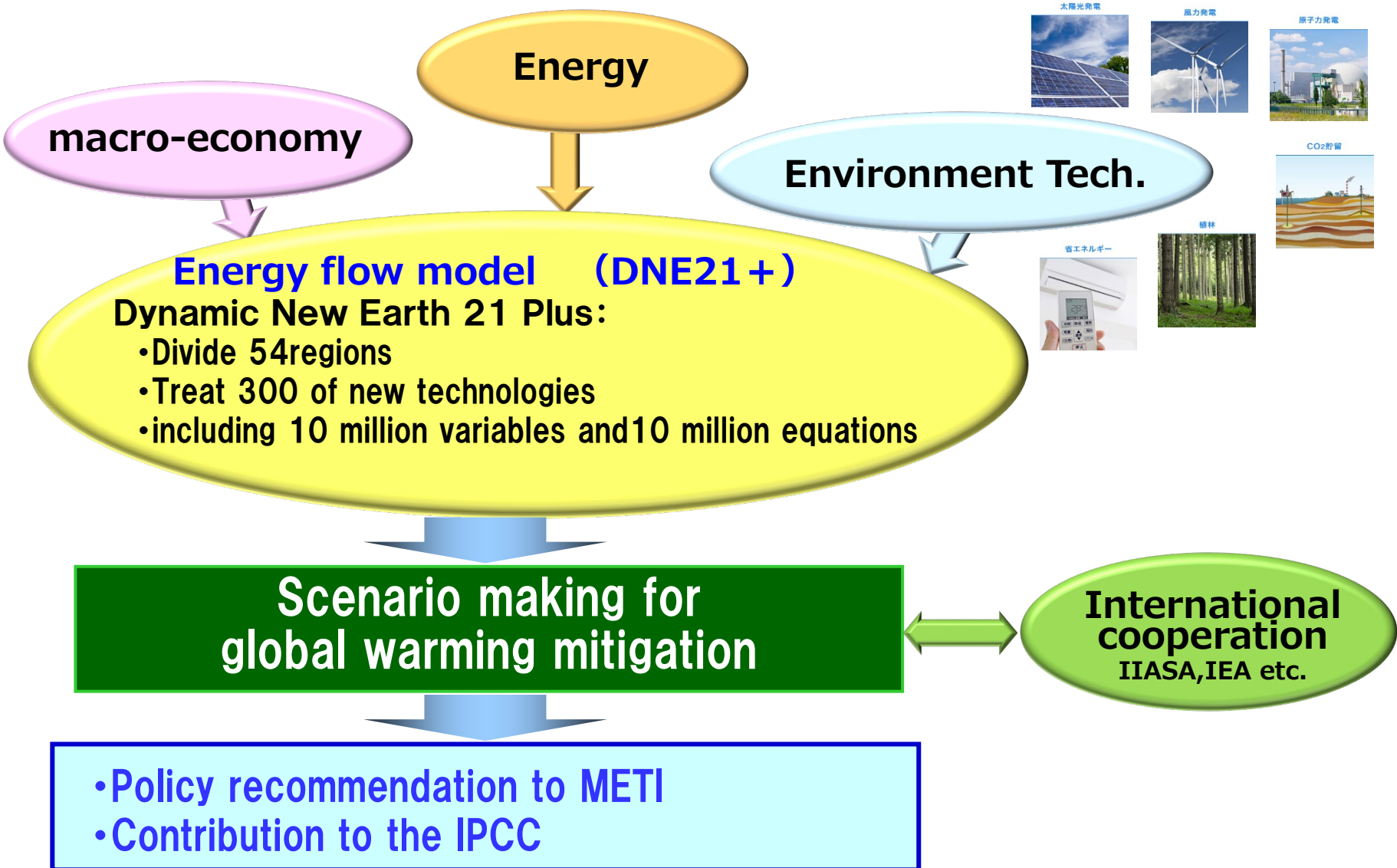
***Development of  
Innovative Technologies  
based on  
Inorganic Membranes***

***Development of  
Bio refinery  
Technologies***

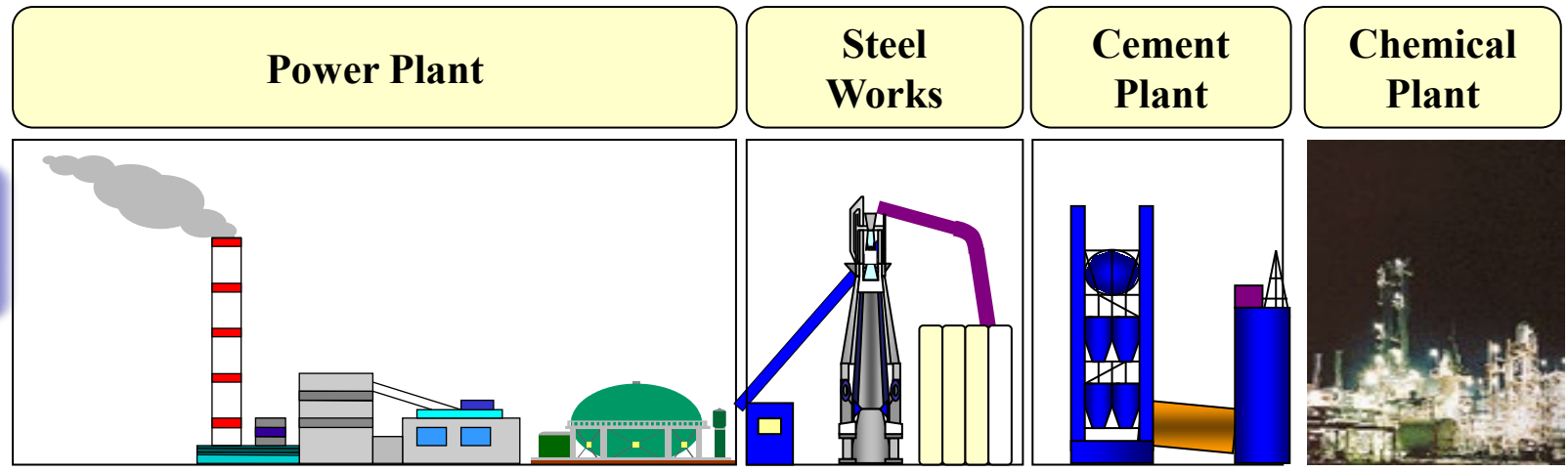
***Research on  
Strategies to Respond  
to Global Warming***

# Our Projects to Reduce CO<sub>2</sub> emission





# CO<sub>2</sub> Separation and Capture



**Emission Source**

From :  
Ministry of Environment  
in 2017 Japan

Amount of CO <sub>2</sub> In Japan / year	450Mton	160Mton	60Mton	90Mton
CO <sub>2</sub> Conc.	7%-14%	25%	20%	30-50%
CO <sub>2</sub> pressure	Low to High	Low	Low	Low to Middle

**Application**

Low to High Pressure      Mid. to High Pressure

Large Scale      Any Size

Low to High

Small to Middle Scale

**Developing Technology**

**Chemical Absorption**

**Polymeric Membrane**

**Solid Sorbents**

**Stage**

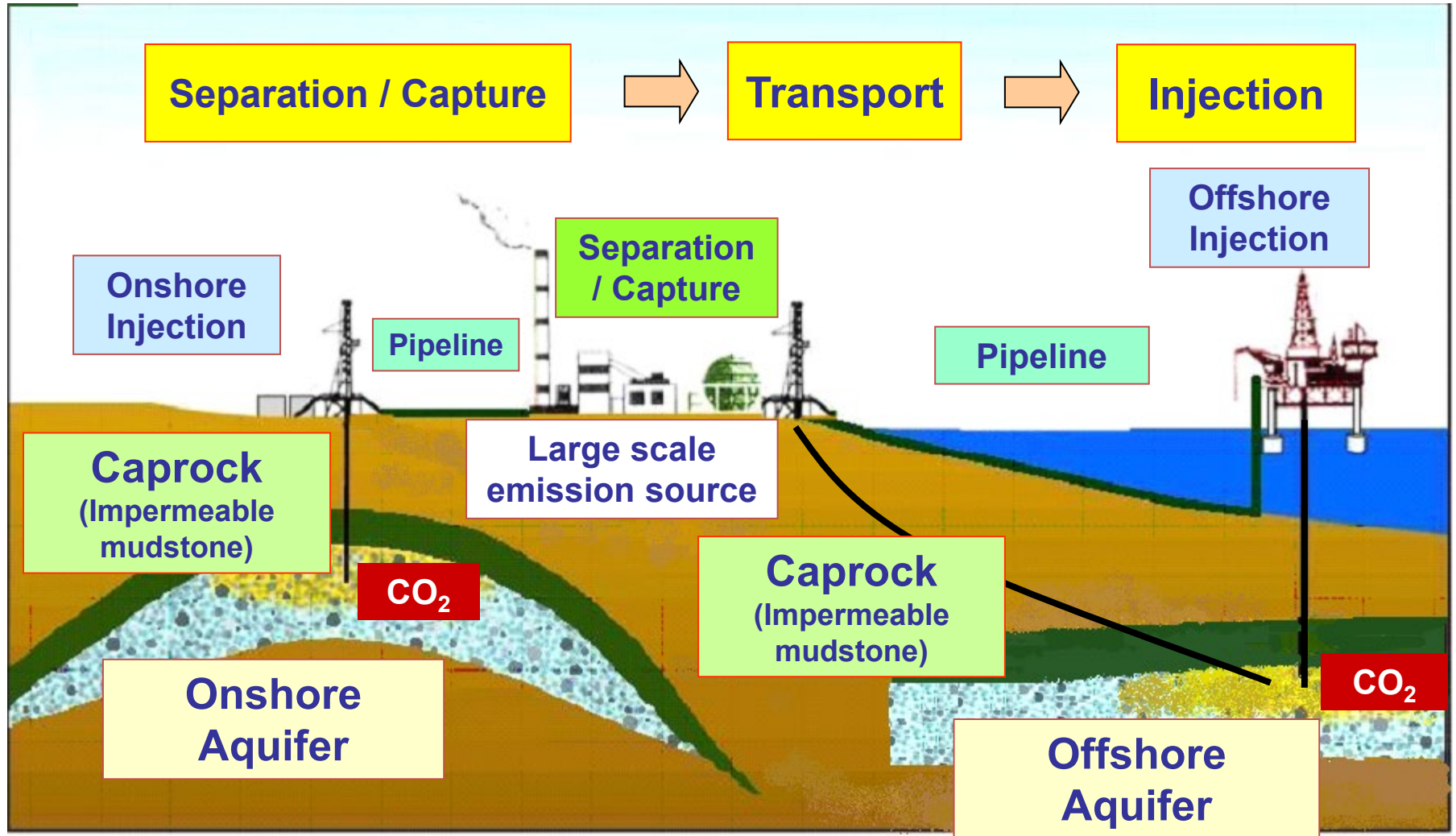
**In Use**

**Under Development**

**Under Development**



# CCS: Carbon Dioxide Capture and Storage



non-food  
cellulose



C6sugar **6**

70 ⇒ 45%

C5sugar **5**

9 ⇒ 30%

Corn ⇒ Straw

**RITE Bioprocess**  
(growth-arrested bioprocess)

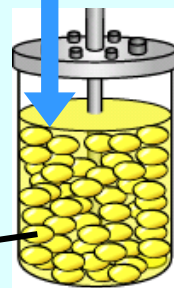
Simultaneous  
Utilization of  
Mixed sugars

High  
productivity

Tolerance to  
fermentation  
inhibitors

Microbial catalyst  
(Growth arrested)

SEM  
observation



C2  
Ethanol

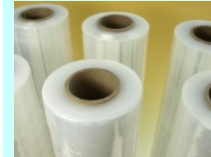
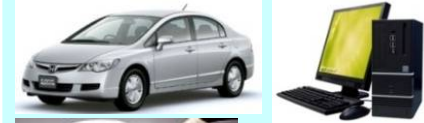
C3  
Propanol

C4  
Butanol

Aromatics,  
Carboxylic  
acid

Chemical conversion suitable for green chemicals

Automobile materials,  
Electric parts, carbon  
fiber, various resin



**Green chemical technology**  
**Innovative technology strategy**

# *International Cooperation*

## United States

- **Lawrence Berkeley National Laboratory (LBNL)**  
Research collaboration on monitoring technology by optical fiber
- **The National Renewable Energy Laboratory (NREL)**  
Research collaboration on bio-butanol and bio-hydrogen

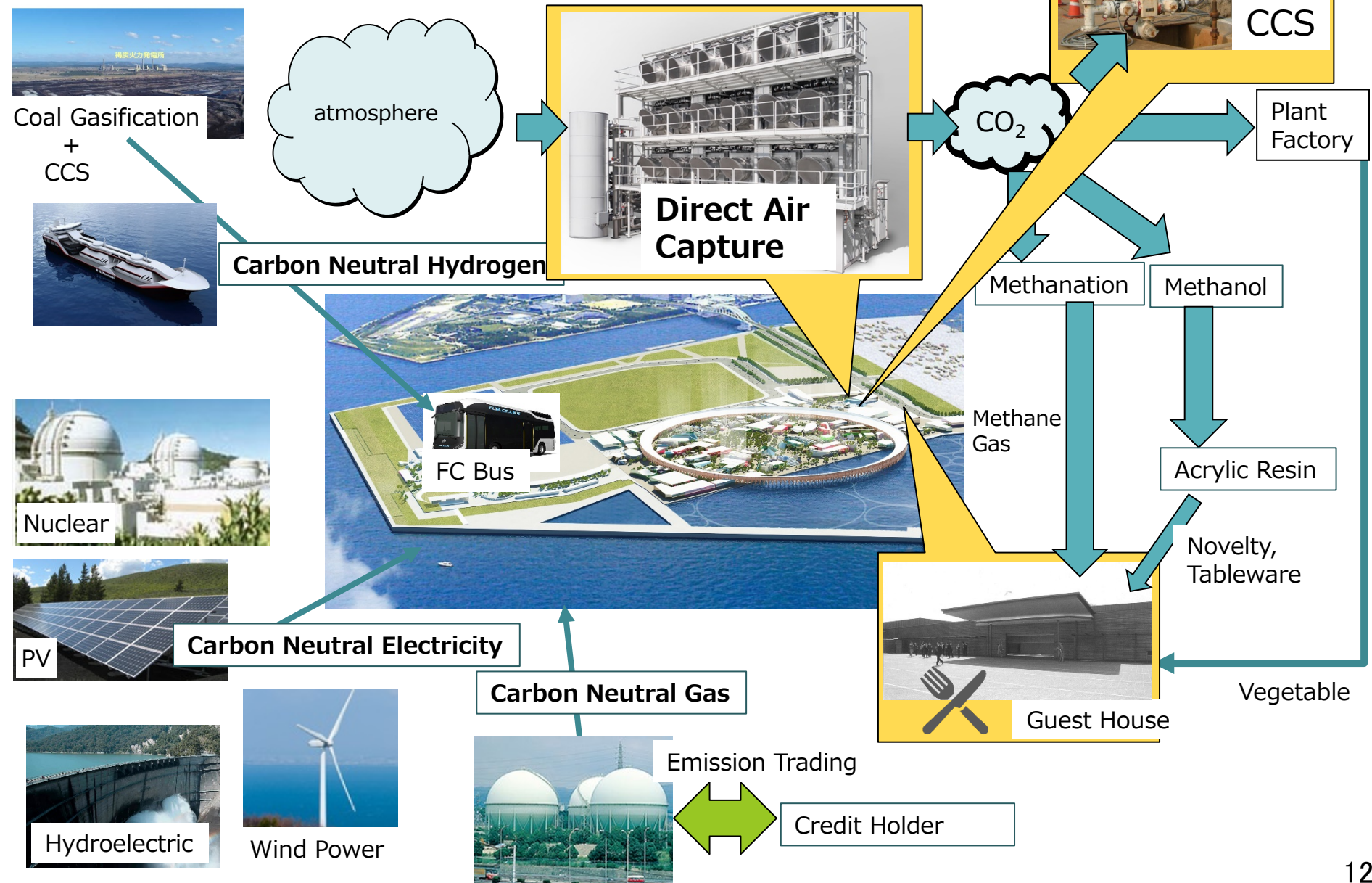
## France

- **National Center for Scientific Research (CNRS)**  
Research collaboration on bio-hydrogen

## Inter-national

- **International Institute for Applied System Analysis (IIASA)**
- **Standardization of CCS (ISO/TC265)**
- **Intergovernmental Panel on Climate Change (IPCC)**  
Support Japanese government

# Beyond Zero at Osaka EXPO 2025



# *Management Team*



**President**  
**Prof. Kenji Yamaji**



**Advisor**  
**Prof. Yoichi Kaya**



**Deputy Director-General**  
**Yoshiaki Sugitani**



**Senior Managing Director**  
**Takashi Honjo**



**Managing Director**  
**Yutaka Kawakami**



**Group Leader**  
**Dr. Masayuki Inui**



**Group Leader**  
**Prof. Shin-ichi Nakao**



**Group Leader**  
**Isamu Yagyu**



**Group Leader**  
**Dr. Keigo Akimoto**



**Group Leader**  
**Dr. Ziqiu Xue**

***Thank you for your attention***

A photograph of a modern building with a curved, metallic roof and glass facade, surrounded by greenery. The building is the central focus, with a large tree to its right and a grassy area in the foreground. The sky is clear and blue.

**Takashi Honjo**  
**Senior Managing Director**

**Research Institute  
of  
Innovative Technology for the Earth**