Carbon Recycling

Ministry of Economy, Trade and Industry
Carbon Recycling Promotion Office

- Carbon recycling: Considering Carbon dioxide (CO_2) as source for Carbon, capture CO_2 then utilize and recycle it as Carbon compounds. **Promoting R&D for these technologies more efficiently**
- Solve climate change problems by reducing CO_2 in the air as well as secure stable supply of new resources. Challenging innovative technologies contributing both at once.
- Taking following actions to **establish a new eco-system**
  - ① Reduce cost and improve efficiency rate for capturing CO_2
  - ② R&D for producing, converting and processing CO_2 as materials and resources (chemical products, fuels, minerals, etc.)
  - ③ Develop variety of utilization sectors for materials and resources oriented from carbon.

Current and future activities

- Establishment of Carbon Recycling Promotion Office in ANRE※1/METI※2 as of February 1st, 2019
- Drafting roadmap for carbon recycling technologies by June 2019 (TBC)
- Hosting International Conference on Carbon Recycling among industries, academia and governments (TBC) in Fall 2019.
- Promoting necessary measures to support R&D or any other innovation on carbon recycling

※1 : Agency for Natural Resources and Energy, ※2 : Ministry of Economy, Trade and Industry

Concept of Carbon Recycling
～ Strongly promote R&D to realize carbon recycling

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Fuel

CH_3OH

CH_4

Fuel

Methane, Methanol

CH_4

CH_3OH

C_2H_4

$CaCO_3$

Fertilizer

Chemical materials, Mineral etc.

Packages, containers, chemical products

Building materials

Vegetables

Carbon Recycling (R&D)

Catalysis, Artificial photosynthesis, Algae, Biomass, Methanation, Concretization, Plant factory, etc.

Thermal power generations/gas/ steel/chemistry/ cements/pulp/etc.

Variety of utilization sectors

CO_2

CO_2

CO_2

CO_2

CO_2

CO_2

Capture

Physical absorption method, chemical absorption method, Membrane separation method, etc.

DAC
(Direct Air Capture of CO_2)

AMBIENT AIR

ENERGY

Air Contactor

Storage/Utilization (EOR)

Carbon Recycling in CCUS

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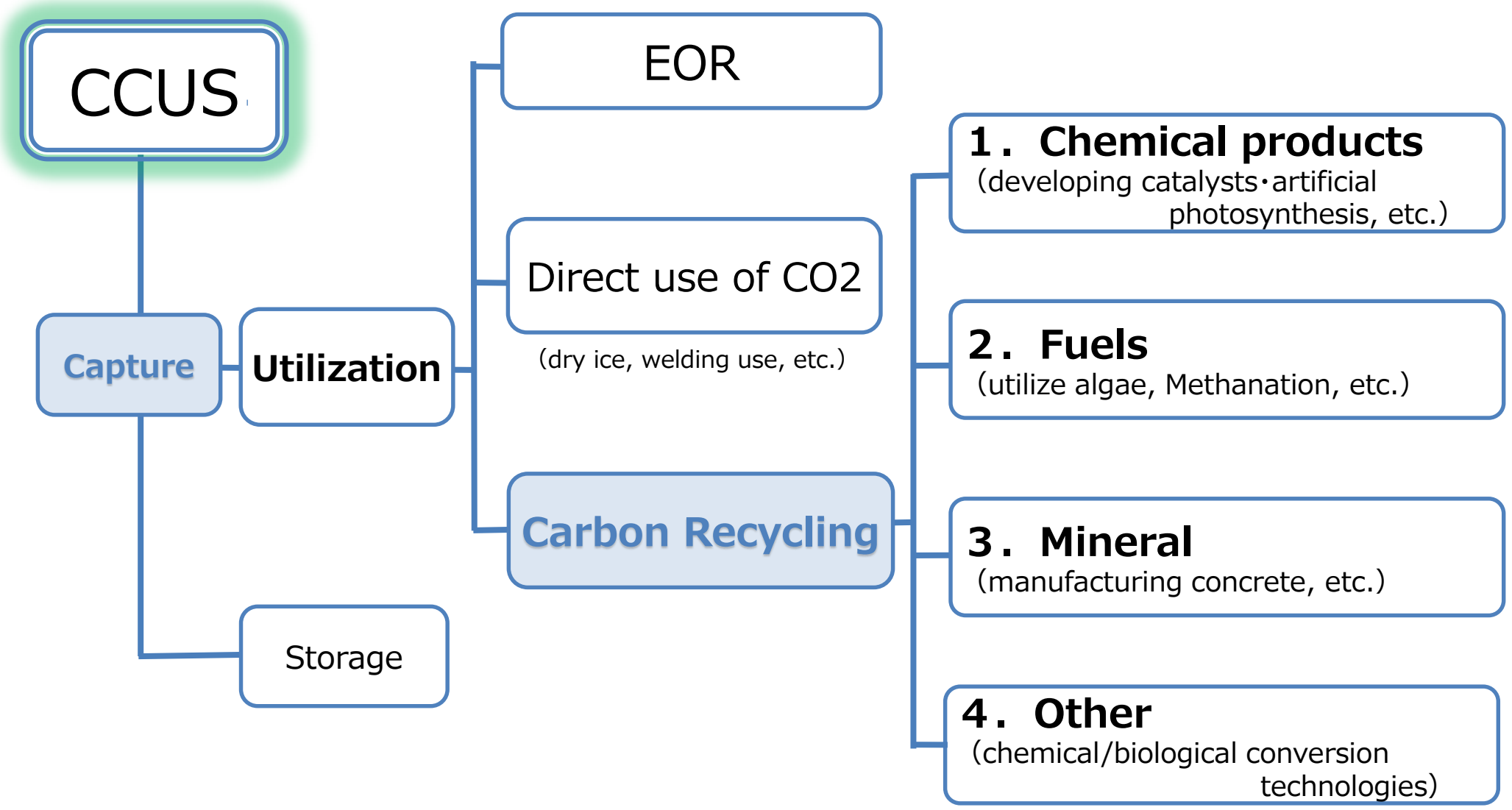
Carbon Recycling Promotion Office

- Carbon Recycling: Focusing on utilization of CO2, in order to contribute to the energy security issues as well as climate change problems by innovative R&D with industries, academia and public from all over the world.



Speech by Prime Minister Abe at the World Economic Forum Annual Meeting (23 January 2019)

I would very much like to highlight what innovation does and how much innovation counts in tackling climate change, because, and this is an important "because," we NEED disruptions. To remind us of that, the IPCC, in its recent "1.5-degree report," tells us that global net human-caused emissions of CO2 should reach "net zero" around 2050, meaning that any remaining emissions would need to be balanced out by removing CO2 from the air.

We must invite more and still more disruptive innovations before it's too late. CO2, ladies and gentlemen, could well be the best and most affordable resource for multiple uses. There is artificial photosynthesis, for which a key discovery, one for photocatalysis, was made by Akira Fujishima, a Japanese scientist. An old technology of methanation is getting attention anew to remove CO2. It's time now to think about CCU, Carbon Capture AND Utilization. Hydrogen, as both a primary source, and more importantly, a carrier of energy, must become cheaper and more easily affordable. My government is aiming to reduce the production cost of hydrogen by at least 90 per cent by the year 2050, to make it cheaper than natural gas.

We will be inviting to Japan topmost experts in science and technology from G20 member countries to combine forces in accelerating innovations. I am also pleased to tell you that my government, first among others, published a guidance paper in December last year along with the TCFD, or Task Force on Climate-related Financial Disclosures. ESG investment world-wide has grown over the last five years by more than 9 trillion US dollars. That's a big amount, but we must channel even more into green innovation. And the guideline we put together will help motivate more companies to spend greater amounts on disruptive innovations.

I must say that spending money for a green earth and a blue ocean, once deemed costly, is now a growth generator. Decarbonization and profit making can happen in tandem. We policy makers must be held responsible to make it happen, as I will be stressing in Osaka this year.