



Note: The following is an English translation of the Japanese-language original

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Formulation of “JAPEX2050” for the Realization of a Carbon-Neutral Society in 2050

Japan Petroleum Exploration Co., Ltd. (JAPEX) hereby announced that it has formulated “JAPEX2050: Toward a Carbon-Neutral Society” (hereinafter “JAPEX2050”), which sets forth JAPEX’s direction as a comprehensive energy company in light of the government’s “Realizing Carbon-Neutral Society in 2050” initiative.

JAPEX’s mission is to provide a stable supply of energy, and to complement its longstanding core business of E&P (Exploration and Production) and supply of oil and natural gas. On top of this, it is working to transform its business structure to grow as a “comprehensive energy company” in light of worldwide calls for a decarbonized society. To date, JAPEX has participated in demonstration tests aimed at the practical application of carbon dioxide (CO₂) capture and storage technologies, strengthened its renewable energy business organization, and commenced operation of a natural gas power plant in which it is the lead participant, in addition to promote fuel conversion to natural gas with lower environmental impact compared to the other fossil fuels.

JAPEX2050 provides a fresh outline of the responsibilities and challenges that JAPEX must take on in order to achieve the goal of net-zero CO₂ emissions by 2050 worldwide, and presents a clearer direction for JAPEX’s future actions and business development. By steadily implementing JAPEX2050, JAPEX will pursue new possibilities for the stable supply of energy in the carbon-neutral society, while aiming for further growth as a comprehensive energy company.

Below is a summary of JAPEX2050. For more details, please refer to the appendix.

Outline of “JAPEX2050: Toward a Carbon-Neutral Society”

[GHG emission reduction target]

- ✓ **Achieve net-zero emissions (Scope1 + Scope2) from JAPEX operations in 2050**
 - As a first step, reduce the CO₂ emission intensity of JAPEX operations by 40% in FY2030 compared to FY2019.
- ✓ **Strengthen line of business that contribute to the reduction of our supply chain emissions (Scope3)**
 - Contribute to establish new technologies and energy supply with lower environmental impact, for reducing CO₂ emissions in our supply chain.

[Focused efforts to realize a carbon-neutral society]

1. Turn carbon neutral into a profitable business based on CO₂ injection and storage technology

- Aim to achieve the early implementation and commercialization of CCS (Carbon dioxide Capture and Storage)/CCUS (Carbon dioxide Capture, Utilization, and Storage) as a pioneer in Japan.
 - Make the most of JAPEX strengths accumulated through oil and natural gas E&P in exploring and selecting candidate deep saline aquifers* for implementations, drilling injection wells, and monitoring stored CO₂.
 - Make contributions to CO₂ transportation by leveraging our experience and expertise in natural gas and LNG (liquefied natural gas) supply.
- Strive to collaborate and enter into carbon-neutral businesses areas, where synergies with CCS and CCUS can be expected.
 - Focus on BECCS (Bio-energy with Carbon Capture and Storage) and natural gas-fired power plants with CCS as assumed areas of collaboration
 - Consider entering into business areas of carbon-recycling, including blue hydrogen and methanation.

2. Expand participation in renewable energy projects

- Aim to increase renewable energy projects in which JAPEX participates while utilizing knowledge and experience in conventional businesses.
 - Increase the business opportunities and examine commercialization, mainly in biomass power generation leveraging experiences in natural gas power generation business and offshore wind power generation which have an affinity with knowledge and experience of E&P.

3. Stable supply of oil and natural gas

- Recognizing that oil and natural gas will remain as one of the major energy sources worldwide, continue to meet the demand for them.
- As a comprehensive energy company, aim to achieve a carbon-neutral society through the use of CCS/CCUS and other decarbonization technologies, rather than through a complete shift away from oil and natural gas.
 - Participate in natural gas development projects and consider employing CCS/CCUS in them.
 - Horizontally deploy various supply methods for natural gas and LNG to meet demand for fuel switching from coal and heavy oil.

Note)

*Deep saline aquifer: Sandstone layer in deep underground that includes ancient sea water (salt water) which are not suitable for drinking. Its geographical distributions are broader compared to oil and natural gas reservoirs, and CO₂ storage capacity is anticipated.

Appendix: “JAPEX2050: Toward a Carbon-Neutral Society as a Comprehensive Energy Company”

JAPEX 2050

Toward a Carbon-Neutral Society

May 13, 2021

Japan Petroleum Exploration Co., Ltd.

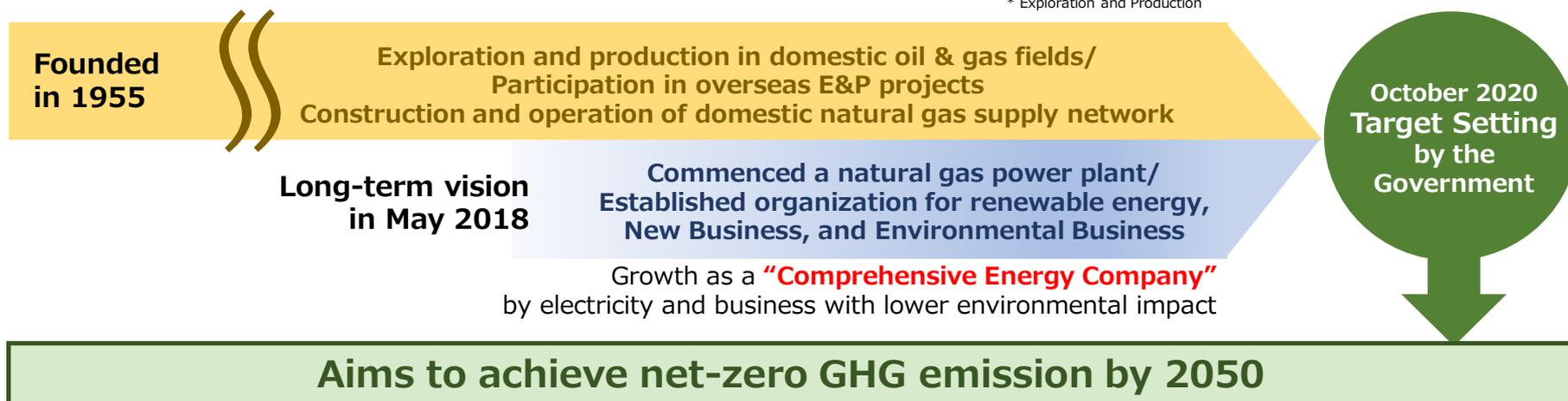
Background of “JAPEX 2050” Formulation

Reorganized our responsibility and role for the Carbon-Neutral Society

JAPEX’s efforts under the mission of **“stable energy supply”**

Oil and gas E&P*, and natural gas supply as lower environmental impact fuel for many years

* Exploration and Production



“JAPEX2050 ~ for the Realization of a Carbon-Neutral Society ~”
formulated in May 2021

- Reorganized efforts to date, **clarified our responsibility and focus area toward the carbon-neutral society**
- Pursue new possibilities as a **“Comprehensive Energy Company”** that contributes to realize net-zero in 2050

Specified JAPEX's target and focused contribution areas toward 2050

GHG Emission Reduction Target

Scope1+2

- **Reduce by 40%** in FY2030 compared to FY2019 of CO₂ emission intensity of the JAPEX group's operations
- Achieve the **net-zero CO₂ emission of our group's operation in 2050**

Scope3

- **Contribute to establish new technologies and energy supply with low environmental impact**, for achieving the net-zero CO₂ emission in our supply chain

Contribution Areas for Net-zero

CCS/CCUS

- **Realize and commercialize CCS/CCUS technologies**
- Enter the business areas related to CCS/CCUS, such as blue hydrogen, methanation, and natural gas-fired power plants with CCS

Renewable Energy

- **BECCS** (Biomass power generation with CCS/CCUS that enables negative emissions)
- **Offshore wind power generation** to leverage our E&P experience and expertise

Stable Supply of Oil and Natural Gas

Natural Gas Use Promotion

- Respond to the **demand for fuel switching** from other fossil fuel such as coal and heavy oil
- Strengthen our responses for meeting various future demands to LNG

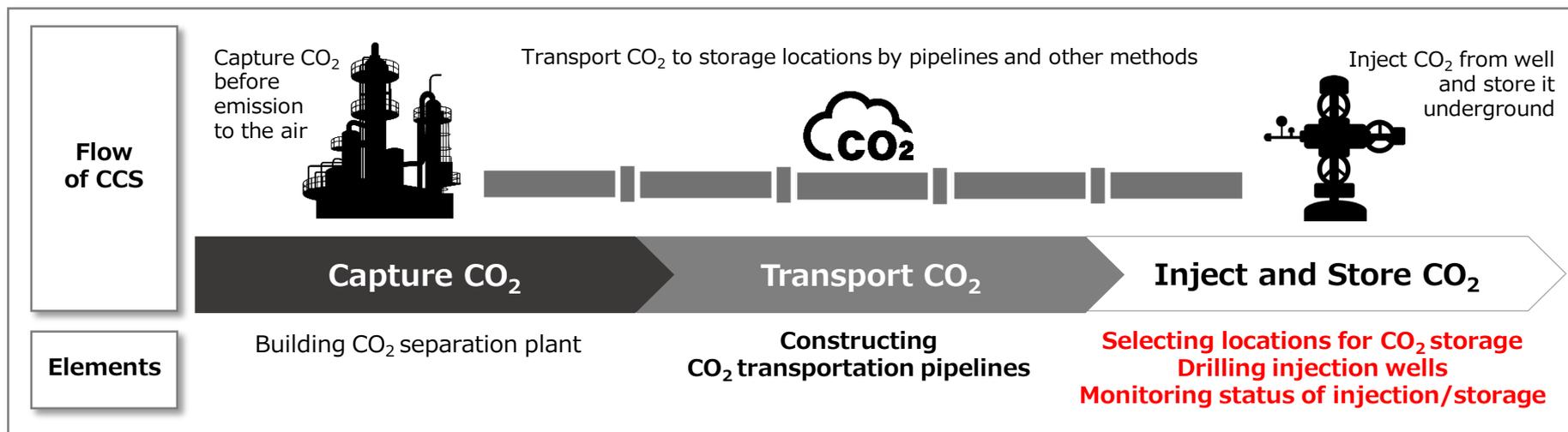
Interest Acquisition and Development

- **Recognize that oil and natural gas will remain as one of the major energy sources**
- Focus on the acquisition of oil and gas interests, as well as its development and production continuously

Reducing CO₂ emission by capture, injection, and storage underground

CCS: Carbon dioxide Capture and Storage
 CCUS: Carbon dioxide capture, Utilization, and Storage

- Proceeding examination and verification for implementation worldwide to achieve “net-zero” by 2050
- In Japan, undertaking verifications including a large-scale governmental one at Tomakomai, Hokkaido
 - ✓ JAPEX has been participating in the [Tomakomai CCS verification test](#) as the top shareholder of Japan CCS Ltd.



CCS/CCUS has high affinities with E&P which are JAPEX’s significant strengths

Aiming the early realization of CCS/CCUS as a pioneer in Japan

Subsurface investigation (Geophysical Exploration)



Well drilling from land to seafloor



Well management/monitoring



Select candidate locations for CCS/CCUS, and execute CO₂ injection, storage, and monitoring

- ✓ **Technical capabilities to complete all elements in the JAPEX group** for realization including exploration, drilling, and monitoring
- ✓ Utilize the data concerning deep saline aquifers*, acquired by our investigations and explorations in Japan

Capture CO₂

Transport CO₂

Utilize CO₂

Inject and Store CO₂

Transport separated and captured CO₂

- ✓ Establish CO₂ transportation infrastructures leveraging **our expertise in natural gas and LNG supply**



Such as high-pressure gas pipeline and coastal vessels



Collaborate and Enter Carbon-Neutral Business

- ✓ **Apply CCS/CCUS to power generation** by gas and biomass
- ✓ Consider to enter **blue hydrogen and methanation** business

Focus on gas-fired and biomass plant, including facility owned by other companies



[Blue Hydrogen] Discompose natural gas, and capture CO₂ after production



[Methanation] Produce Methane (CH₄) from H₂ and CO₂

(Note) * Sandstone layer in deep underground that includes ancient sea water (salt water) which are not suitable for drinking. Its geographical distributions are broader compared to oil and natural gas reservoirs, and CO₂ storage capacity is anticipated.

Strengthen our response to increasing demands for specific energies

Participation in Renewable Energy Projects

Increase and examine candidates mainly biomass and offshore wind power while utilizing our conventional capabilities

Biomass Power Generation

- ✓ Utilize **expertise in natural gas power project**
 - Process management of plant construction
 - Procurement of fuel LNG, and others



Offshore Wind Power

- ✓ Utilize **expertise in oil and natural gas E&P**
 - Offshore platform operation and management
 - Subsurface examination of installation location



CCUS/CCS Collaboration

- Consider to apply **BECCS*** in biomass power generation plants
 - * Bioenergy with Carbon Capture and Storage

Respond to Demands for Natural Gas with Lower Environmental Impact

Expand gas utilization as well as conduct natural gas E&P and LNG procurement, with assumption of its long-term gas demands

Respond to Increasing Natural Gas Demand

- ✓ **Demand for switching** from coal and heavy oil
 - Such as power plants and large scale facilities
 - Horizontal expanding various supply methods including overseas



Stable Natural Gas Production and Supply

- ✓ Acquire new overseas interests/
new and additional development in Japan
- ✓ Flexible and competitive LNG marketing
 - Consider carbon-free LNG procurement

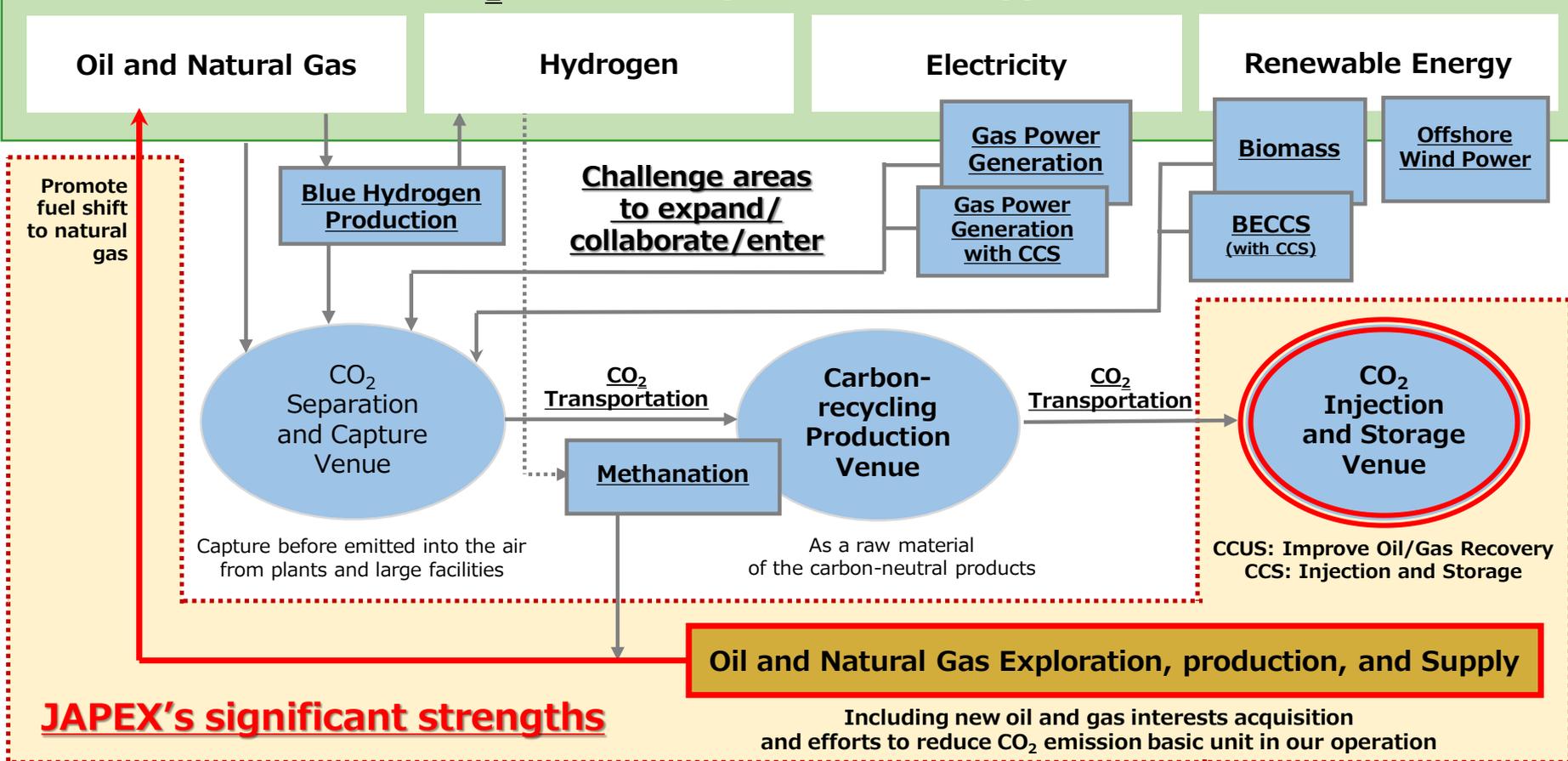


CCS/CCUS Collaboration

- Consider to apply **CCS/CCUS to natural gas power plant**
- Challenge to enter blue hydrogen and methanation business areas

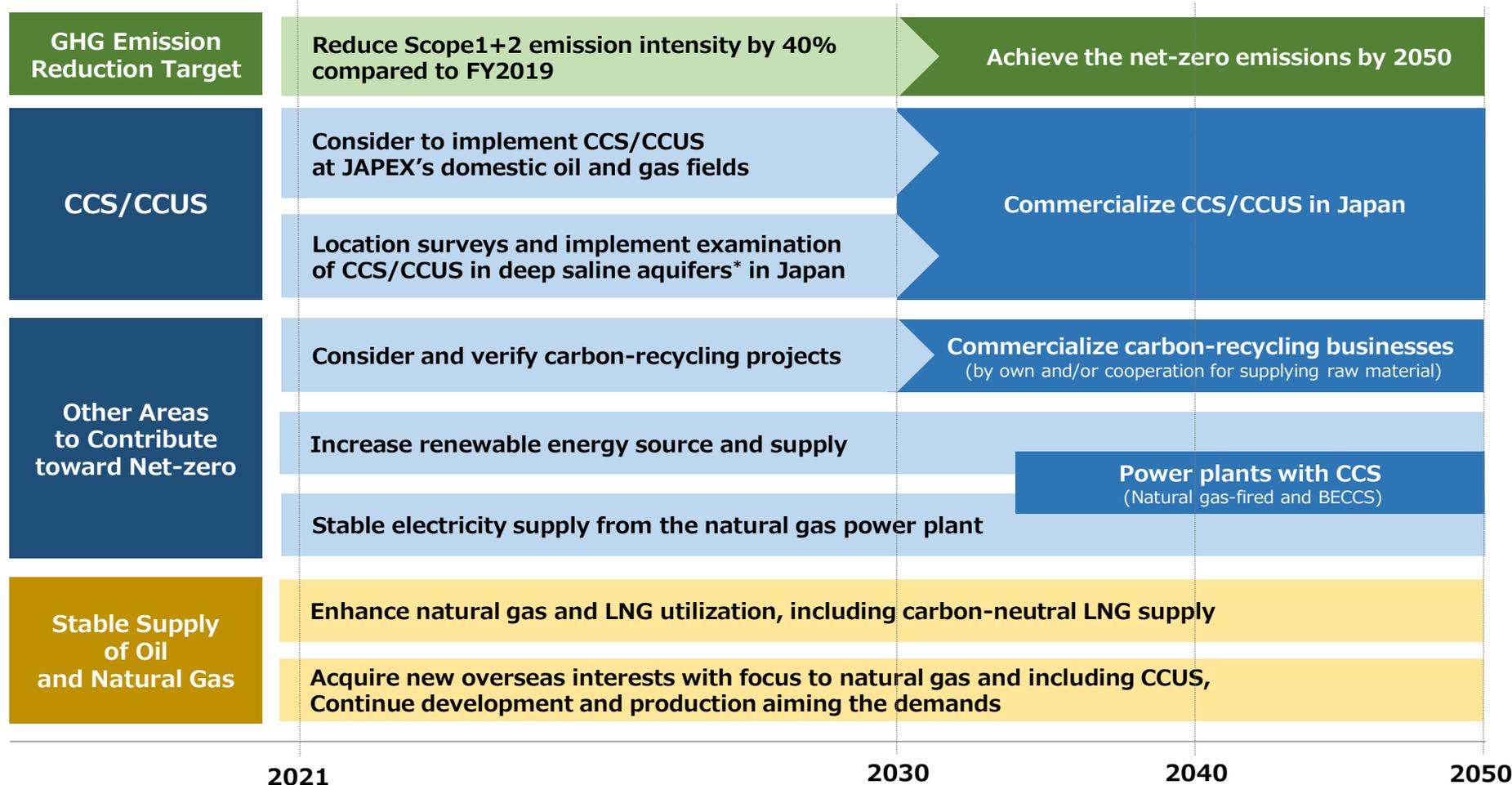
CCS/CCUS centered business cycle toward the carbon-neutral society

Clients: Achieve the CO₂ Net-zero by various energy utilization and CCS/CCUS



Roadmap toward 2050

Reduce Scope1+2 emission intensity and implement CCS/CCUS in 2030



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