(Nomura Securities Investor Seminar Materials)

Sumitomo Corporation's Hydrogen Business

April 22, 2021

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Carbon-neutral Society and the Role of Hydrogen

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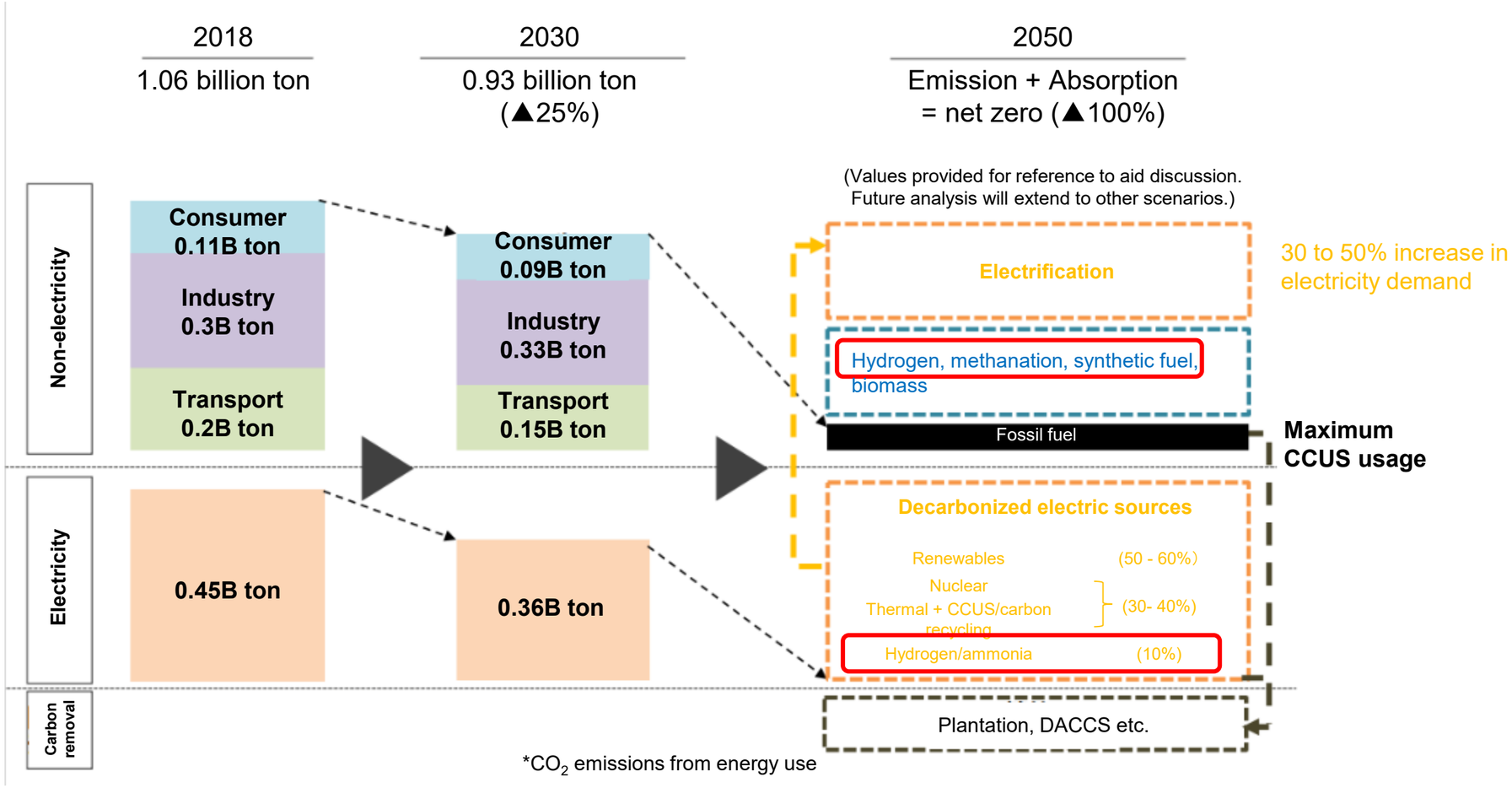
- The key to electricity sector decarbonization is greater use of renewable energy, but destabilization of base electric sources is a challenge. → Hydrogen storage
- The key to non-electricity sector decarbonization is boosting electrification, but it may be technologically challenging in some sectors. → Direct hydrogen combustion



(Sources: Ministry of Economy, Trade and Industry, and Agency for Natural Resources and Energy materials)

Hydrogen Production, Storage, Transport, and Use

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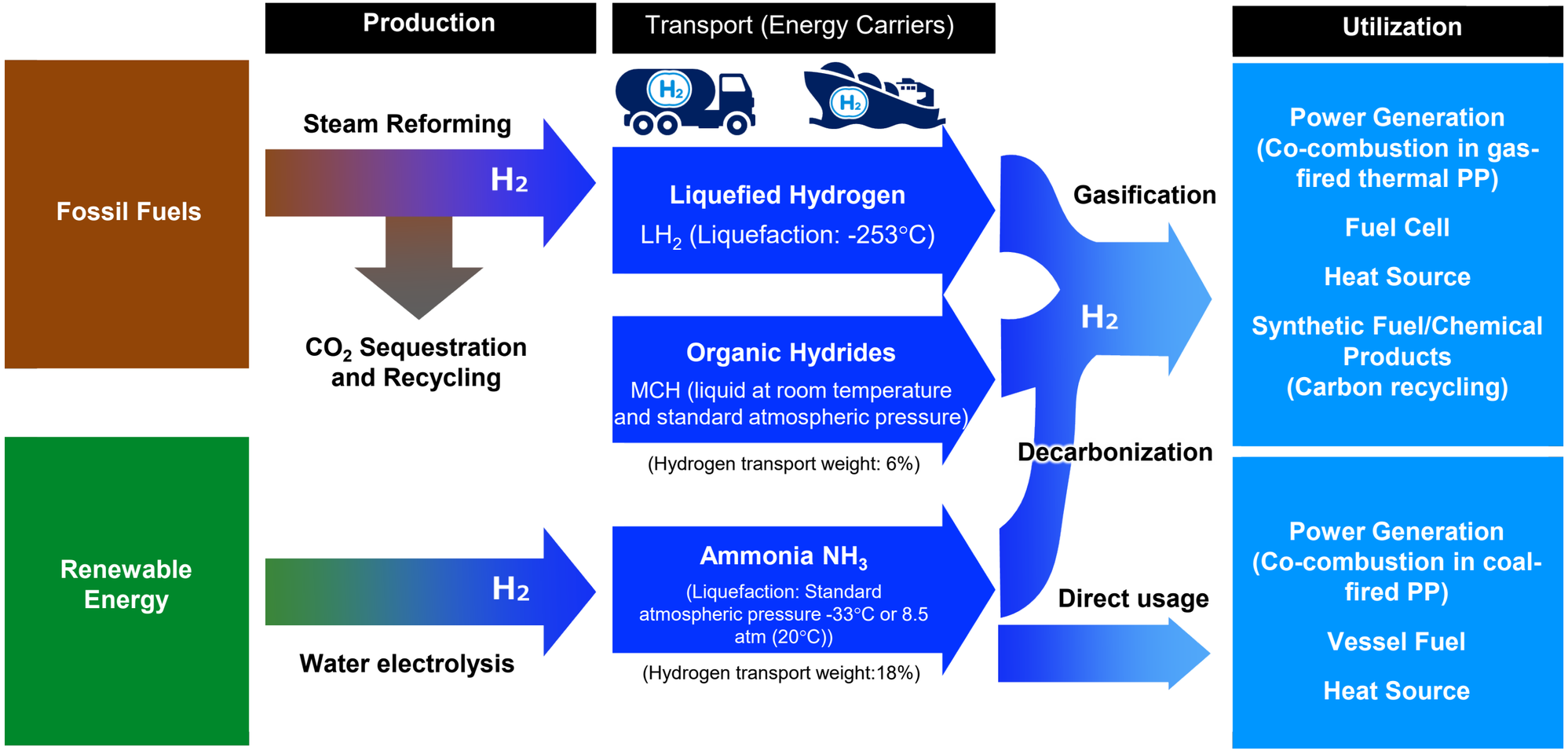
- Hydrogen is a secondary energy source, like electricity. But as a molecular chemical energy medium, it can be stored long-term, burns at high temperature, functions as a stable energy carrier by binding with nitrogen or carbon, and promotes carbon recycling by binding with carbon.



Sumitomo Corporation's Hydrogen Business

Sumitomo Corporation's Hydrogen Business Timeline

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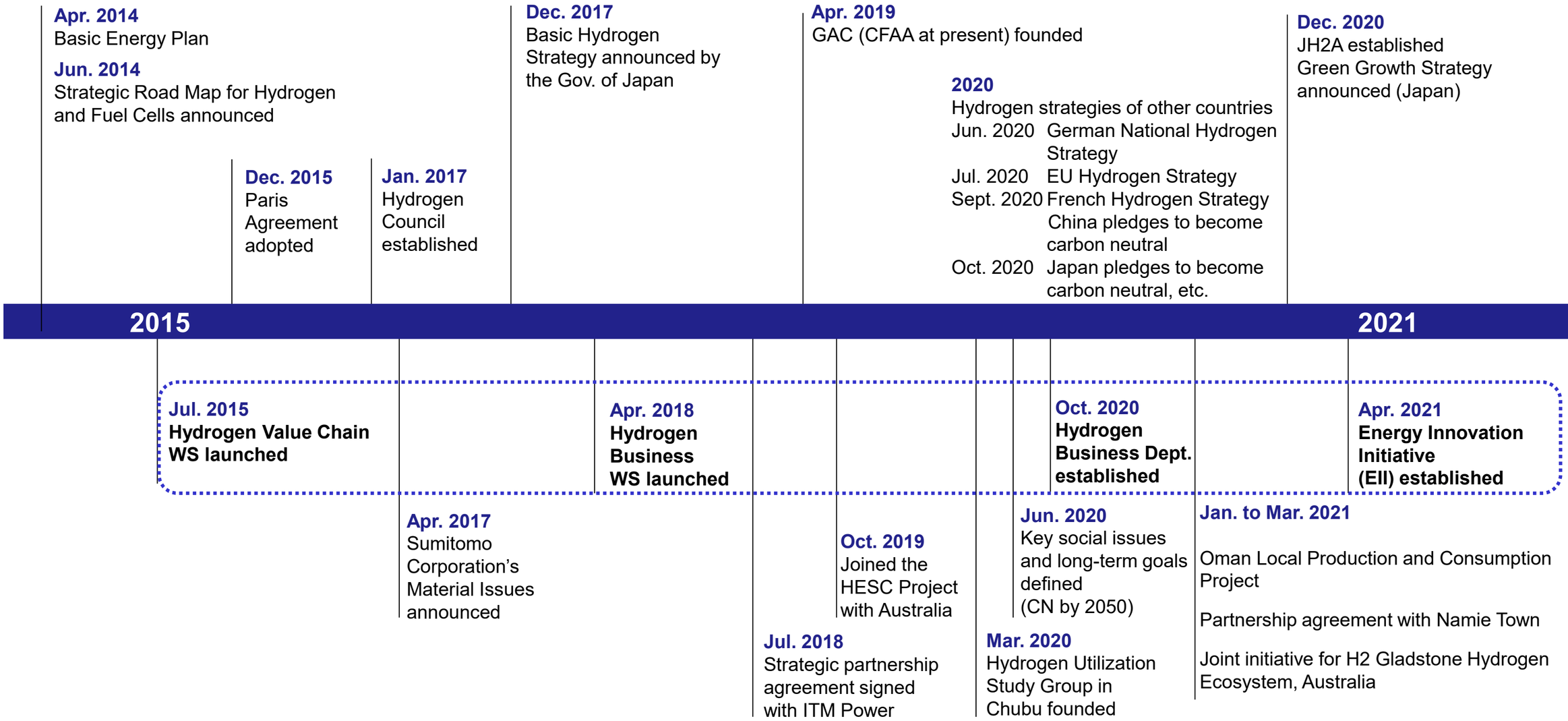

Organization & Structure

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- Dynamic and effective project-based organization & structure

Management

(Job titles are as scheduled for April 2021)

Shingo Ueno
Head of EII,
Senior Managing
Executive Officer

Seiji Kitajima
Director of EII
GM of EII Design &
Strategy Dept.

Hajime Mori
Director of EII
GM of Energy
Division

Keiichi Mihara
Director of EII
GM of Global Power
Infrastructure Business
Division

Takayuki Sumita
Assistant CSO
Sumitomo Corporation
Global Research Co. Ltd
EII Design & Strategy Dept.

Business Dept. / Team / Project

- Design & Strategy Dept.
- Hydrogen Business Dept.
- Zero Emission Solution Business Dept.
- Wood Resources Business Dept.
- Woodchip & Biomass Dept.
- Team Power Frontier
- Subsurface Energy Team
- Next-generation Bioenergy Project

Total Staff: Around 100

Main business fields for EII

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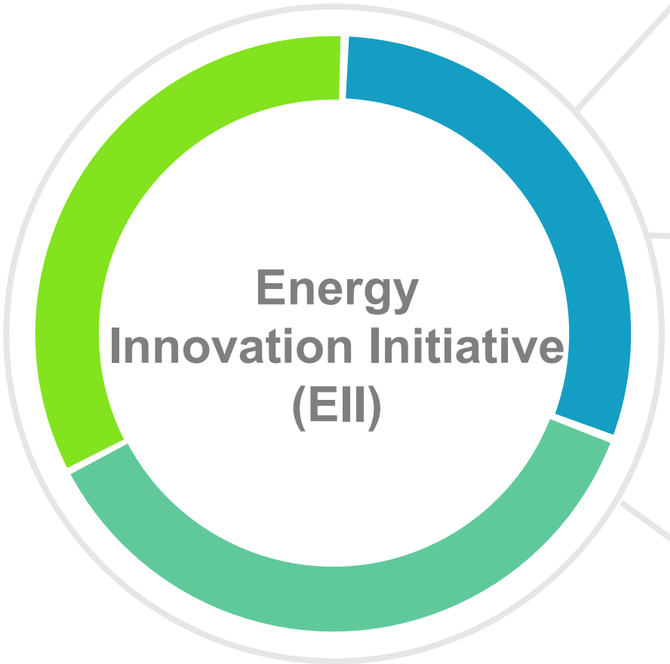
- Cross-organizational business development in three business areas
- Local business development fit to each country and region



Developing Carbon-Free Energy

- New energy supply business for hydrogen
- CO2 free hydrogen and ammonium etc.

Expanding Power & Energy Services

- Large-scale storage batteries & reusable batteries business
- Power Energy platform business using distributed power resources and environmental attributes
- Zero-emissions-type combined energy services business etc.

CO2 Capture, Storage and Utilization

- Non-edible plant-derived next-generation bio-energy business
- Methanation and other carbon recycling
- Forest and marine-based environmental value creation business, carbon capture and storage (CCS), carbon emissions trading etc.

New Efforts for the Creation of Next-generation Businesses

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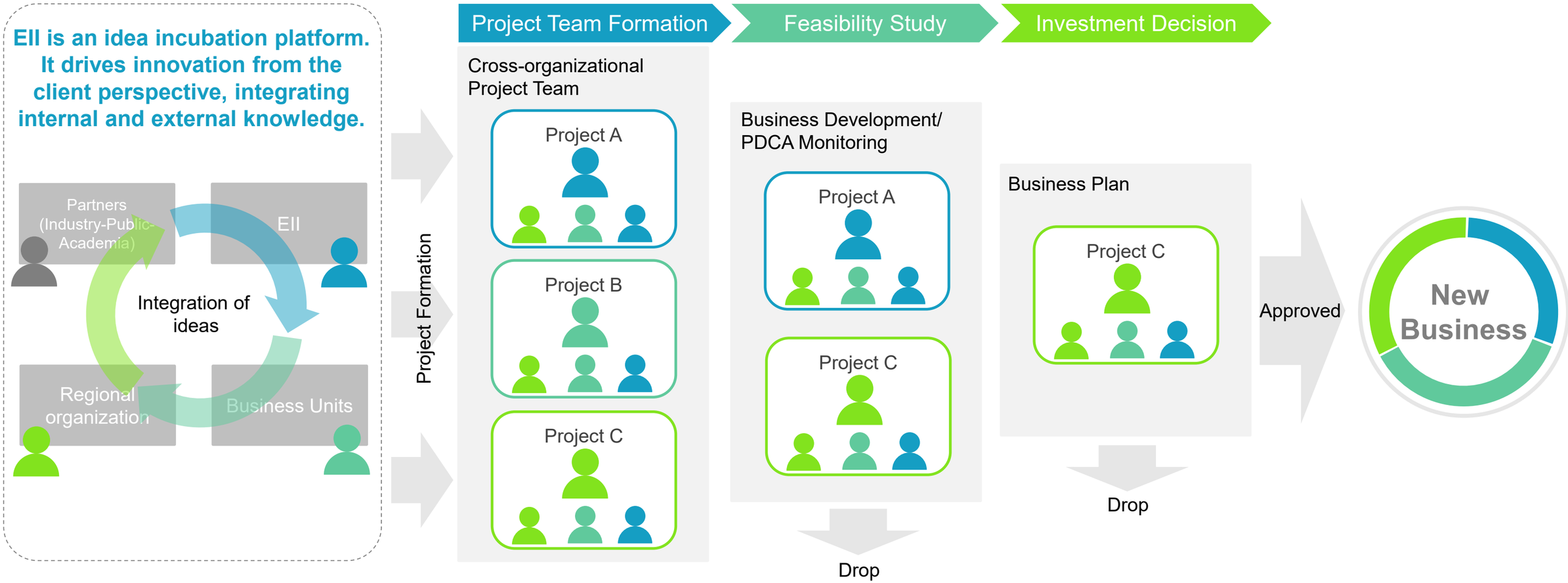
- Promote energy innovation with new ideas in addition to existing business development
- Drive business development with cross-organizational project teams between other business units and regional organizations.



Hydrogen Value Chain (Hypothetical)

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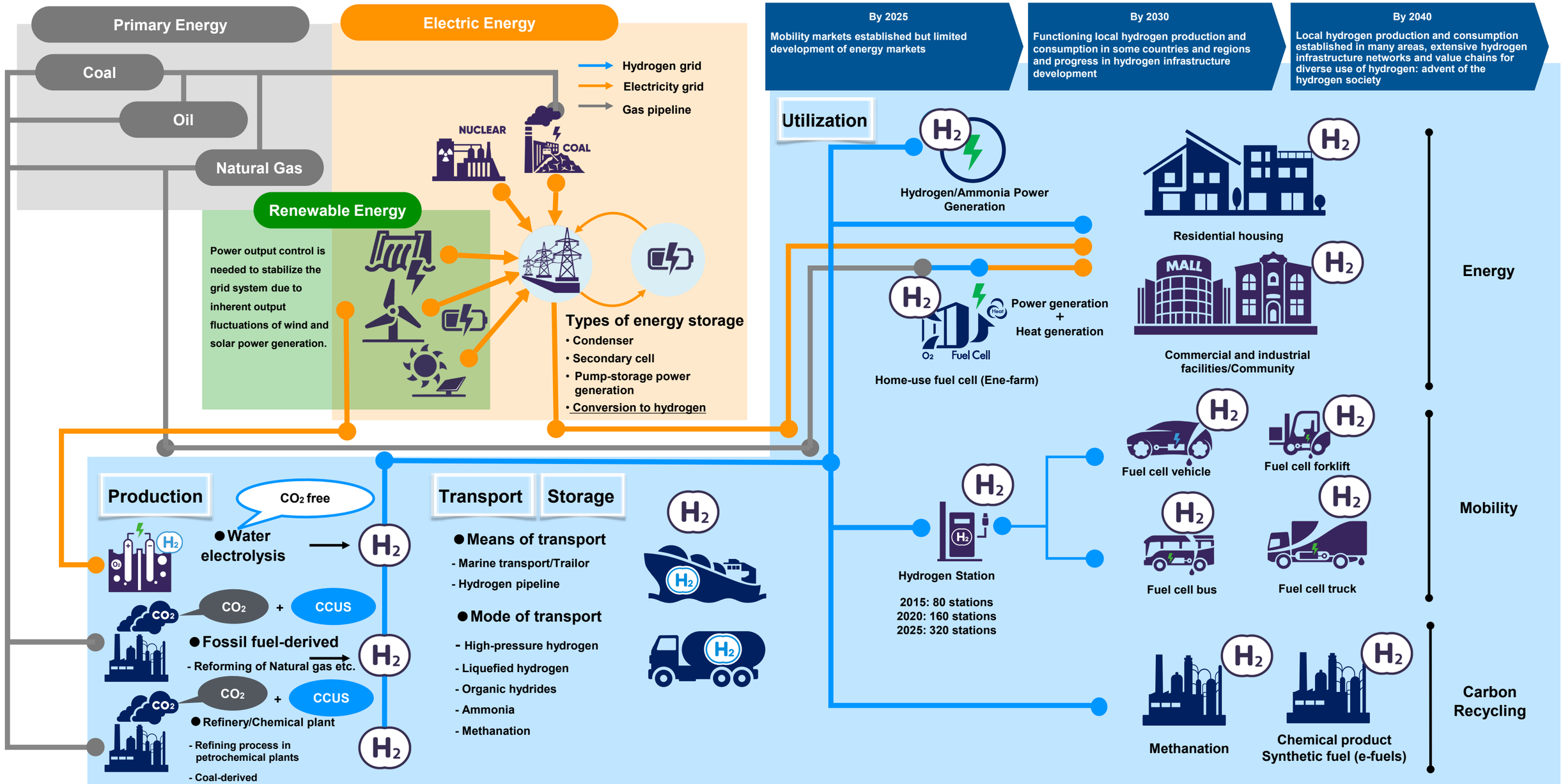

Major Hydrogen Projects of Sumitomo Corporation

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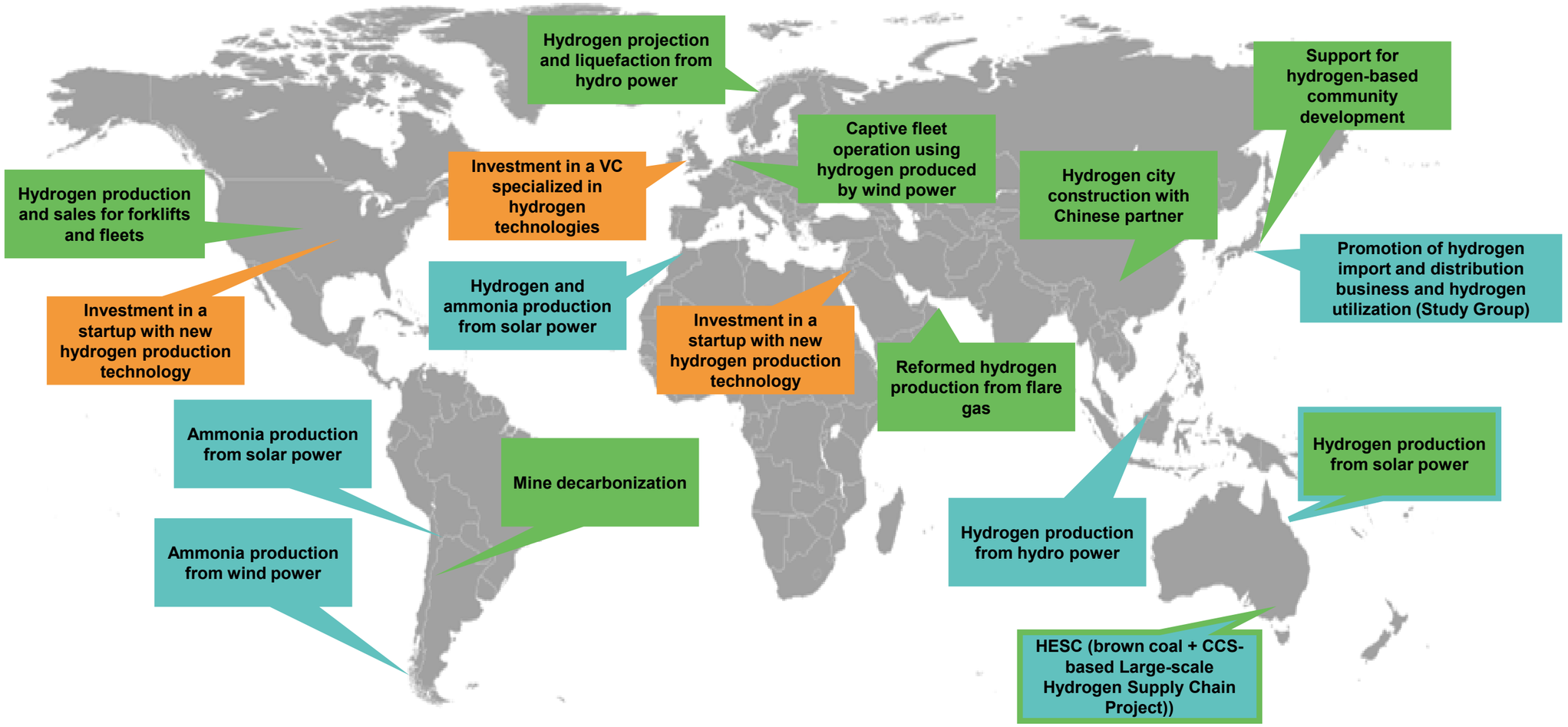
- ✓**Local production and consumption** : Development of decentralized hydrogen supply chains in hydrogen-advanced areas, such as Japan, Europe, China, Australia.
- ✓**Large-scale value chain** : Mass hydrogen production in regions with low renewable energy costs, to build large-scale hydrogen supply chains to Japan etc.
- ✓**New technology investment** : Secure access to new technologies that achieve a cost breakthrough, and consider their utilization in our company's projects.



Direction of Hydrogen Strategy

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By 2025

- Local production/consumption projects in Japan, Europe, Australia and other hydrogen-advanced countries/regions
- Local production/consumption models utilizing Sumitomo Corp.'s multiple function strengths

By 2030

Horizontal expansion of local production/ consumption & Building of large-scale value chains (VCs)

- Horizontal expansion of local production/consumption models to boost scale
- Develop service platform business
- Develop large-scale value chains in cost-competitive regions

2030 and beyond

Full expansion of local production/consumption & Building large-scale VCs in multiple areas

- Further expand scale of local production/consumption models in peripheral sectors
- Extend service platform business horizontally in a wide range of sectors
- Build large-scale value chains in multiple regions

Hydrogen-based Community Development: Namie

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- ✓ Sumitomo Corp. signed a Hydrogen Use and Community Development Agreement with Namie Town, Fukushima Prefecture, in January 2021
- ✓ The aims are to develop "Fukushima model“, a model of hydrogen utilization and optimal energy management and expand it to other communities

- Support hydrogen use and community development in view of residents' lifestyles
- Specific directions of the partnership with Namie Town (Two pillars):

1. <u>Community development using hydrogen energy</u>
   Introduce FC mobility (cars, buses, trucks, bicycles, etc.) to give the community "feet" and evaluate business feasibility of multi-hydrogen station installation.
   Consider collaboration with local firms and business partners, and conduct economic assessments.
2. <u>Mechanisms and settings to coordinate actions and maintain "connections"</u>
   Leverage functions of MIRAI LAB PALETTE (in Otemachi) to give intangible support for Namie Town's idea to develop a platform for public, private and academic sector exchange. Provide expertise on integrated management of intangible and tangible resources to create a flow of people from the public, private and academic sectors to support sustained development.

Local production and consumption | Large-scale value chain | Investment in new technologies

Solar Hydrogen Production and Consumption in Australia

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- ✓ Solar-powered “green hydrogen” production and consumption in Queensland, Australia
- ✓ Produce hydrogen with abundant, low-cost solar power to help reduce local CO_2 emissions
- ✓ Start with a small-scale hydrogen production business, expand hydrogen use to mobility and beyond, aiming to create a zero-emission city through local hydrogen production/ consumption.

- Phase 1 Pre-F/S completed, and FEED scheduled to complete in 2021
- Aim to reach the first FID in 2022

Solar PV

Electrolyzer

Phase 1 2022 to 2023

Hydrogen for Gladstone’s existing industries (Natural gas→Hydrogen)

Phase 1’ 2023 to 2024

Concept of Smart City that utilizes hydrogen

Phase 2 2025 -

Bio fuel

Decarbonization of Gladstone

Phase 3 -

Export to Japan in future

Profile of Gladstone City

- Area: 250 km^2 (approx. 70% of Fukuoka City), Population: 70,000
- Suitable for solar power generation with average 314 sunny days/year
- Center for coal, LNG, and material industries
- Existing trunk roads, railways, and public transportation
- 27,000 ha available for development (4× the area of Yamanote line)

Local production and consumption | Large-scale value chain | Investment in new technologies

Hydrogen Smart City in Chengdu, Sichuan, China

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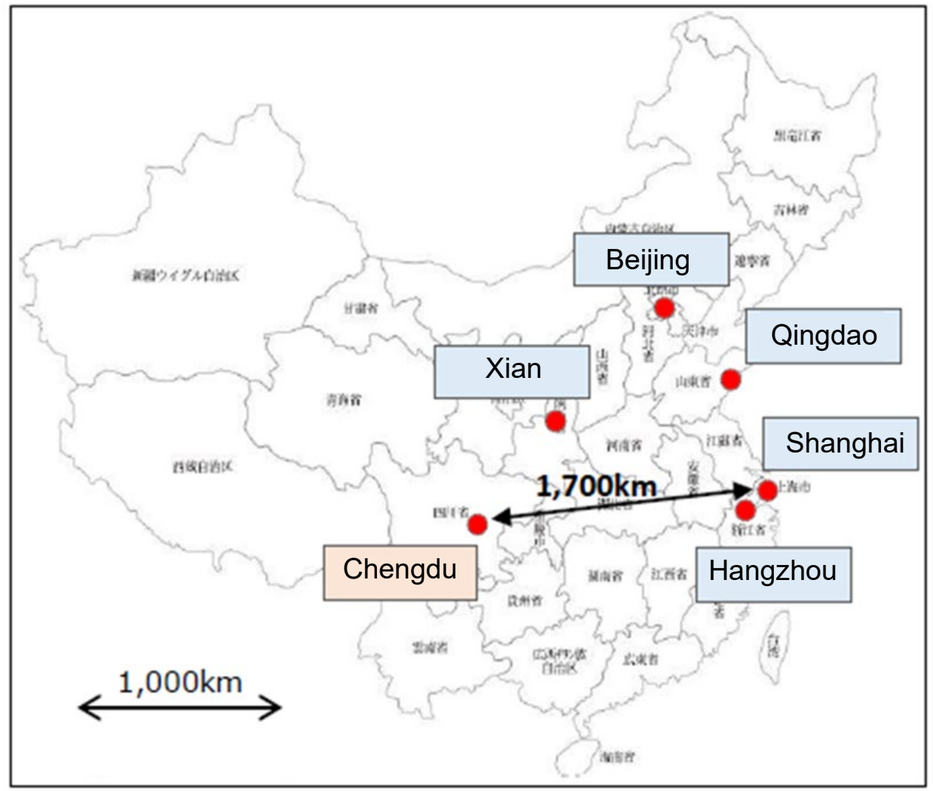
✓ Hydrogen-based smart city development project in partnership with Zhaotai Group, a leading developer in China

- “Sichuan Province Hydrogen Energy Industry Development Plan (2021-2025)” (Announced in September 2020)
  The Plan outlines plans to promote the development of hydrogen supply infrastructure including production, storage, transport and filling facilities, to transform Sichuan Province into a hydrogen industry cluster area.
- Sichuan Province has high hydro power generation capacity, and around 5% of water is discharged to balance power supply and demand. This waste water could potentially be used for low-cost green hydrogen production.
- In the initial phase of hydrogen infrastructure introduction, an effective alternative would be to use hydrogen procurable in a large quantity as a bi-product of Sichan’s key industries: chemical and steel.



Local production and consumption | Large-scale value chain | Investment in new technologies

Hydrogen Energy Supply Chain Project, Australia

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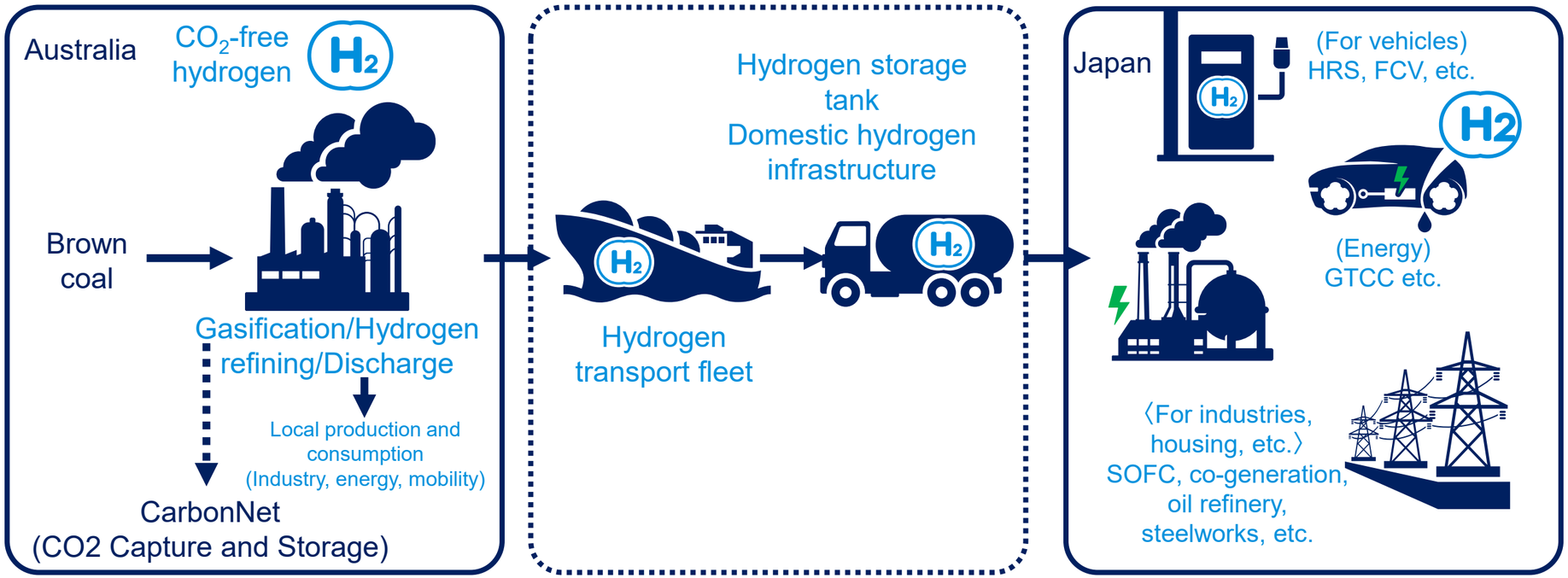
- ✓ Project to produce CO_2-free hydrogen and develop a large-scale value chain, using Australia's abundant brown coal (equivalent to 240 years of Japan's electricity needs) and CCS
- ✓ With full support of the Australian and Japanese governments, the project aims to commercialize by 2030 in three phases: (1) piloting, (2) demonstration, and (3) commercialization.



Local production and consumption | Large-scale value chain | Investment in new technologies

Hydropowered Hydrogen Production in Sarawak, Malaysia

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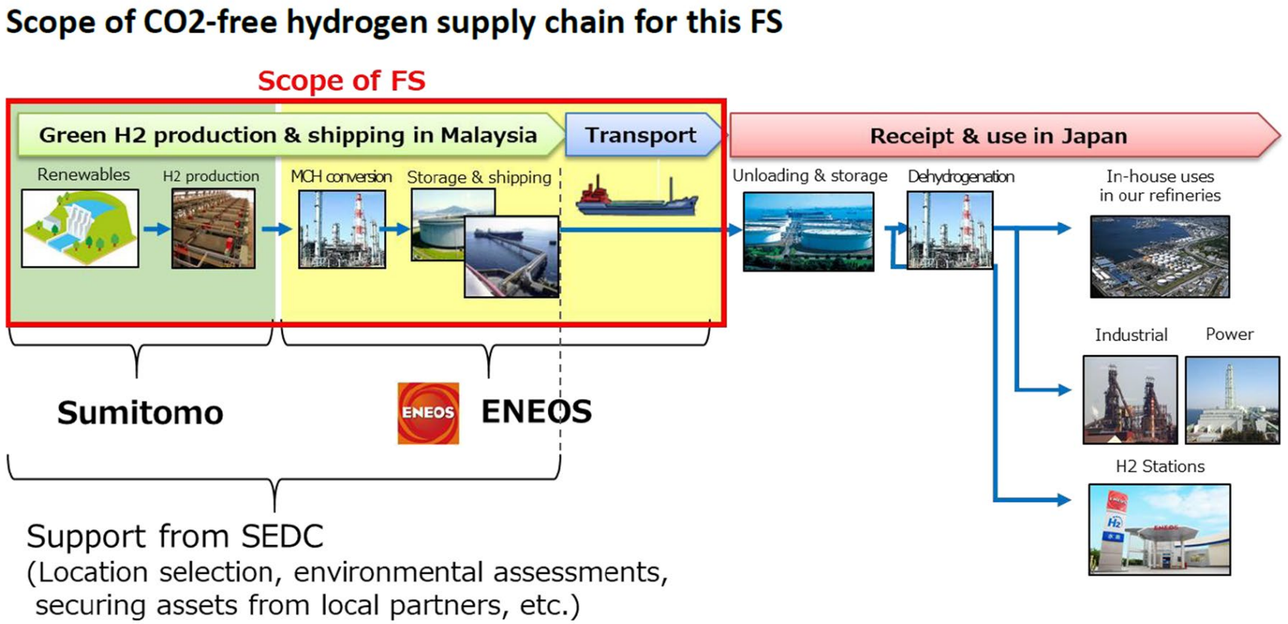
- ✓ Project to produce green hydrogen utilizing the abundant, inexpensive hydro power of Sarawak
- ✓ MOU with Sarawak Economic Development Corporation (SEDC). Pre-F/S from November 2019.
- ✓ ENEOS joined in October 2020. The 3-party consortium ran a commercialization F/S in fiscal 2021.
- ✓ Plans to produce thousands of tons of hydrogen annually targeting the acquisition of prior demands by the earlier production initiation, exporting hydrogen to Japan thereafter, and increasing production in mass-production stage.



(Source: Press Release, ENEOS Corporation)

Local production and consumption | Large-scale value chain | Investment in new technologies

Chubu Study Group: Hydrogen Import and Distribution Terminal

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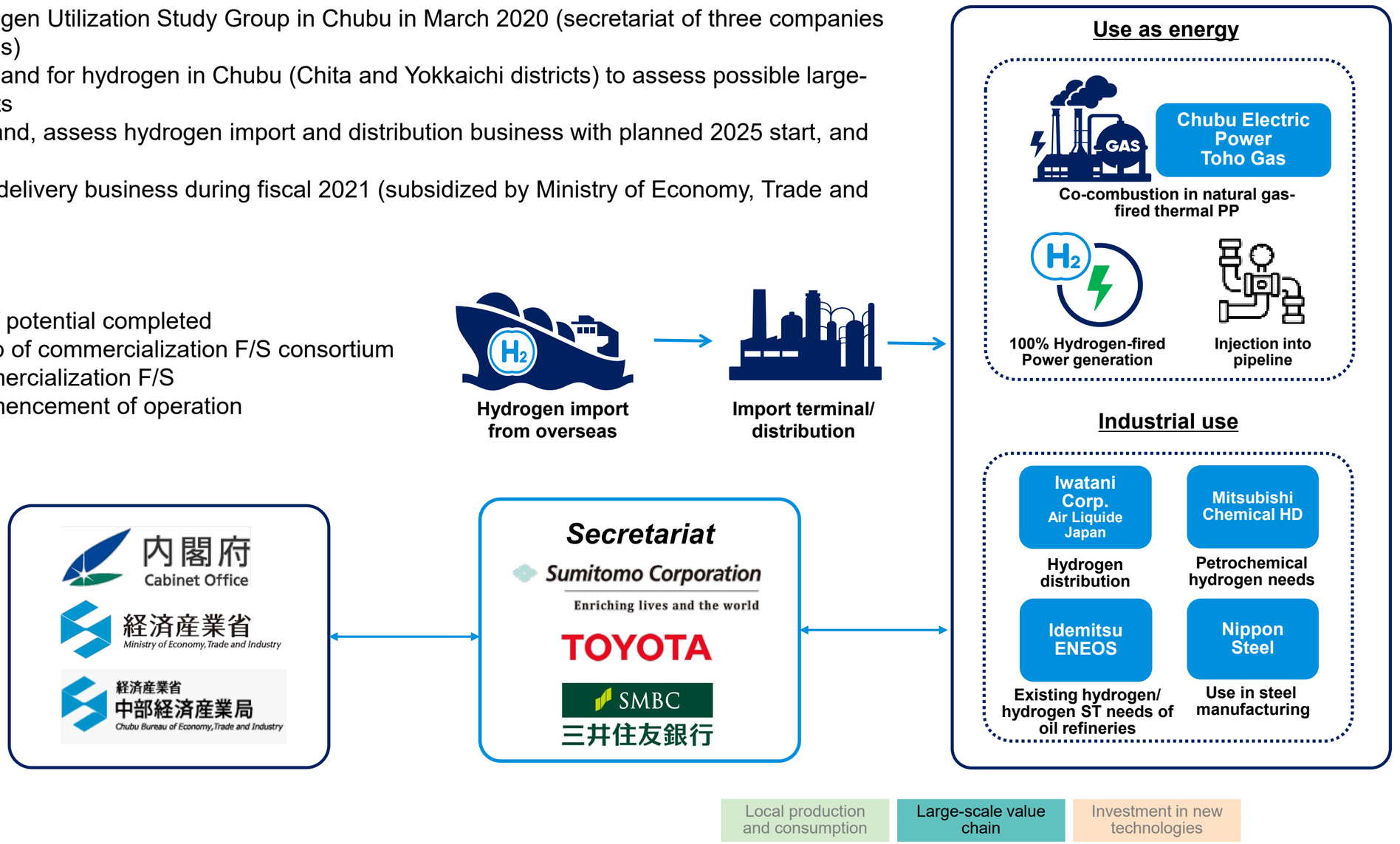
- ✓ Founding of the Hydrogen Utilization Study Group in Chubu in March 2020 (secretariat of three companies + eight user companies)
- ✓ Analyze potential demand for hydrogen in Chubu (Chita and Yokkaichi districts) to assess possible large-scale hydrogen imports
- ✓ Survey potential demand, assess hydrogen import and distribution business with planned 2025 start, and policy proposal.
- ✓ F/S of the import and delivery business during fiscal 2021 (subsidized by Ministry of Economy, Trade and Industry, etc.)

(Planned schedule)

Oct. 2020	:	F/S of potential completed
- Jan. 2021	:	Set up of commercialization F/S consortium
2021	:	Commercialization F/S
2025	:	Commencement of operation



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Investment in Hydrogen Technologies

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- ✓ Secure ways to systematically access startups with new technologies that may lead to hydrogen cost breakthroughs
- ✓ Form partnerships with manufacturers, engineering companies, etc. to scale up and systemize these technologies for use in Sumitomo Corp.'s projects

APVentures
ADVANCE & PIONEER

- UK-based hydrogen-focused venture capital firm
- LP investment in October 2020
- AP Ventures' portfolio:

altergy, HyET Hydrogen, ERGOSUP, Insplorion, hydrogenious LOHC TECHNOLOGIES, PLUG POWER, Starfire Energy, ZEG Power, GREYROCK ENERGY, Czero ENGINEERING TOMORROW, BALLARD, HazerGroup Local Technology for Global Markets, infintium

(Source: AP Ventures)

SYZYGY PLASMONICS

- US startup developing a new type of photocatalytic chemical reactor technology for hydrogen generation
- Investment via Sumitomo Corp's CVC in September 2019

H_2PRO

- Israeli startup with next-gen water electrolysis technology
- Investment via Sumitomo Corp's CVC in August 2020

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Strategic Partnership with ITM Power in the U.K.

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- ✓ Alliance with the leading electrolyser manufacturer, which holds a key to cutting hydrogen production costs
- ✓ PEM electrolysers well-adapted to the fluctuating power output of renewable energy
- ✓ Container-shaped, compact system module (2 MW at present ⇒ 5 MW)
- ✓ Cost-cutting via construction of second plant, increased semi-automation, and up-scaling.
- ✓ Sumitomo Corp. partnered with ITM Power in 2018 (also becoming agent for the Japan market)

(Source: ITM Power)

ITM POWER
Energy Storage | Clean Fuel

(Source: ITM Power)

[Deployments]

- 10 MW system for Shell Germany's Rhineland refinery and many others (Significant market share among major PEM electrolyser manufacturers)

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Hydrogen Service Platform of US-firm OneH2

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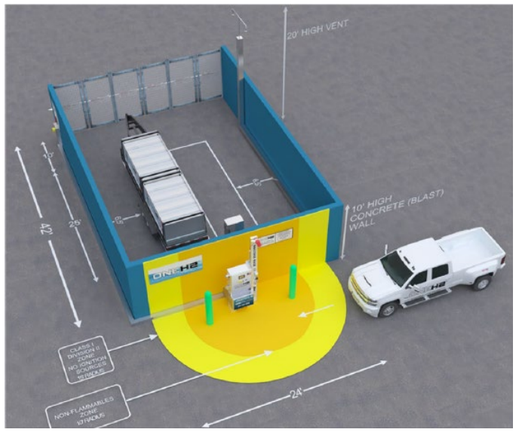
- ✓ Equity participation in North Carolina-based firm OneH2 since January 2021
- ✓ On-site hydrogen production using compact gas reformers, a unique transportation system, and simple dispensers achieve a low-cost, highly-adaptable hydrogen supply service platform.
- ✓ Secured a market share in the U.S. centered on fuel cell forklifts used at mass distribution warehouses
- ✓ Aims to grow commercial vehicle-related business, where hydrogen demand is set to grow, with GM, Toyota, and other major clients.

ONEH2®

Hydrogen production using a compact gas reformer

Unique transportation using a compact, high-pressure tank trailer and pickup truck



Mobile hydrogen station equipped with a simple dispenser

(Source: OneH2)

Local production and consumption | Large-scale value chain | Investment in new technologies

Thank you for your attention!