



HEPCO Group

Aim for Carbon Neutrality by 2050

April 28, 2021

ともに輝く明日のために。
Light up your future.



**The HEPCO Group will do its utmost to meet
the challenge of achieving carbon neutrality for all energy use
in Hokkaido by 2050.**







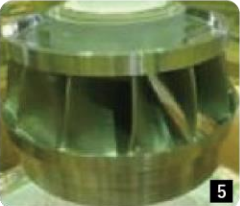


As a company with deep roots in Hokkaido, the HEPCO Group supports the Hokkaido economy and our customers lives,
contributing to both the sustainable growth of our businesses and the realization of a sustainable society.
While further deepening the initiatives of the HEPCO Group Management Vision 2030,
we will contribute to the development of the region
by doing our utmost to meet the challenge of realizing carbon neutrality for all energy use in Hokkaido by 2050.

Management Vision 2030

Carbon Neutral 2050

Initiatives taken to date to reduce CO₂ emissions

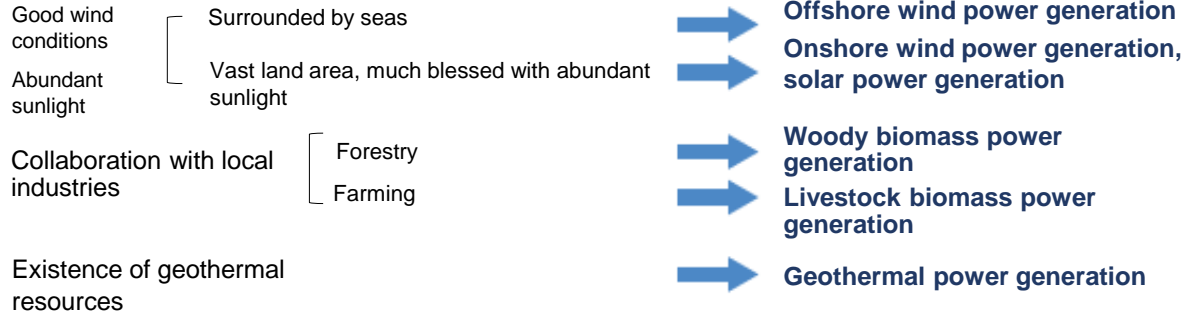
As a company deeply rooted in Hokkaido with its abundant nature, we have worked to reduce our environmental footprint in every facet of our business in order to preserve the natural environment for future generations.

 <p>1</p>	Renewable energy	<p>1 Offshore wind power generation</p>	<p>Signed a partnership agreement with Green Power Investment Corporation (GPI) to jointly work on offshore wind power generation in Ishikariwan Shinko port. Approx. 100,000 kW power generation facility will be operated in the port area in FY2024. <small>Photo provided by GPI</small></p>	 <p>6</p>
		<p>2 Solar power generation</p>	<p>Currently operating solar power generation facilities in Hokkaido, and investing in other mega-solar projects in Japan and abroad, including in Mexico.</p>	
		<p>3 Geothermal power generation</p>	<p>In addition to the operation of the Mori Geothermal Power Station (25,000 kW), unused re-injection water generated in the process of power generation is available. A binary power generation plant (2,000 kW) will be operated in FY2024 to make effective use of unused thermal energy.</p>	
		<p>4 Biomass power generation</p>	<p>Invest in biomass power generation in cooperation with the forestry industry which forms the base of local industries and participate in power generation using biomass from farming through research and development</p>	
		<p>5 Hydropower generation</p>	<p>Renovate water conduits and water intake facilities of existing hydropower stations to increase maximum output</p>	
 <p>3</p>	Thermal	<p>6 Phase out aging thermal power stations with the adoption of LNG-fired power generation</p>	<p>Start the operation of the Ishikariwan Shinko Power Station (fuel type: LNG) with a gas combined cycle system which has excellent environmental characteristics and suspend the aging Naie Thermal Power Station (fuel type: domestic coal)</p>	 <p>7</p>
 <p>4</p>	Network	<p>7 Large-scale storage battery system (power system development)</p>	<p>Use a large-scale storage battery (a redox flow battery) to adjust to fluctuations in output from renewable energy power sources</p>	 <p>8</p>
 <p>5</p>	Power demand control	<p>8 ZEB proposal</p>	<p>Significantly reduce energy consumption by introducing high-performance insulation and high-efficiency systems</p>	 <p>(c)H.N.F. 9</p>
		<p>9 ESG business</p>	<p>Curb energy use by adopting energy-saving high-efficiency equipment for the Hokkaido Nippon-Ham Fighters' new stadium ES CON Field Hokkaido and other facilities</p>	
	Electricity expansion	<p>10 EV leasing</p>	<p>Start electric vehicle (EV) leasing business</p>	 <p>10</p>

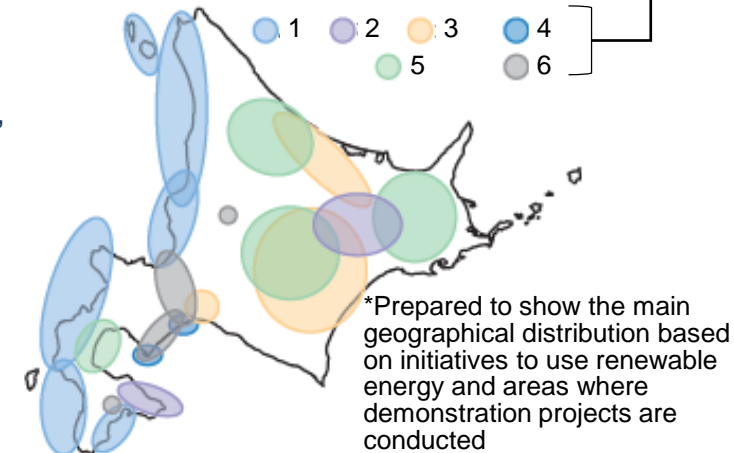
Initiatives using regional characteristics of Hokkaido

1 Wind 2 Geothermal 3 Solar
4 By-product hydrogen 5 Biomass
6 Major energy consuming area

Ideal environment for expanding the introduction of renewable energy



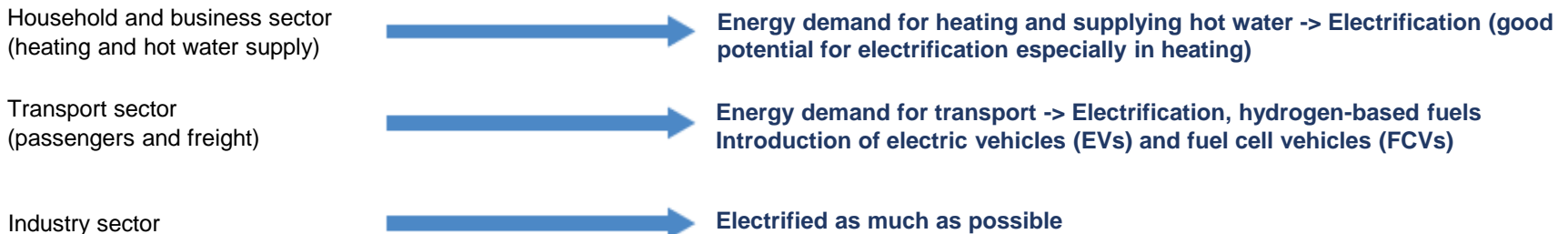
[Main geographical distribution of renewable energy sources, etc. in Hokkaido]



From the Vision to Achieve a Hydrogen Society in Hokkaido (revised edition) developed by the Hokkaido Government

Electrification potential in energy demand

As many cities, towns, and villages are scattered throughout the vast, cold and snowy land,
 · a large amount of energy is consumed for heating, hot water supply, travel, and transportation, and
 · there is good potential for electrification and utilization of hydrogen for the realization of carbon neutrality since petroleum-based energy is mainstream.

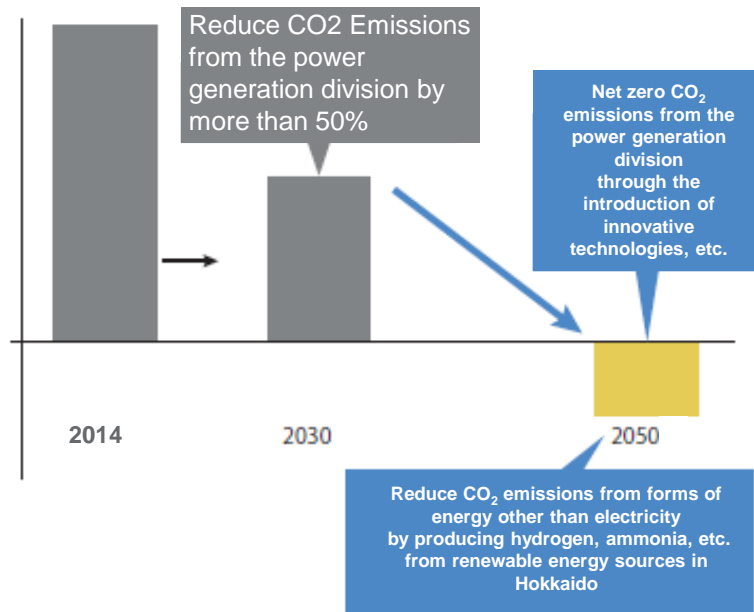


HEPCO Group's Vision

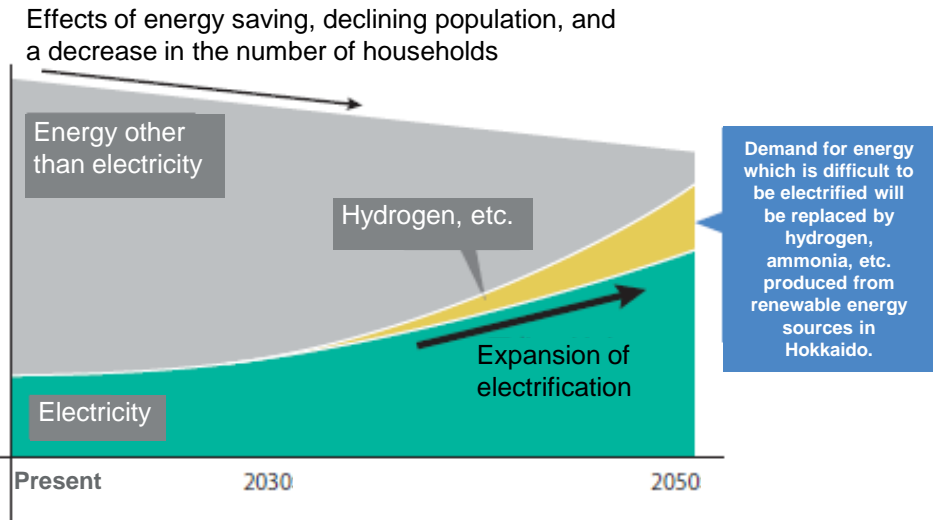
The HEPCO Group will do its utmost to meet the challenge of achieving carbon neutrality for all energy use in Hokkaido.

- ▶ In addition to achieving the HEPCO Group's environmental target for 2030 (reducing CO₂ emissions from the power generation division by more than 50% from FY2014 levels), we aim to achieve zero CO₂ emissions from the power generation division in the long term.
- ▶ Through the expansion of electrification and the use of green hydrogen, we aim to achieve carbon neutrality in Hokkaido, including other forms of energy other than electricity.

■ Image of future reduction of CO₂ emissions

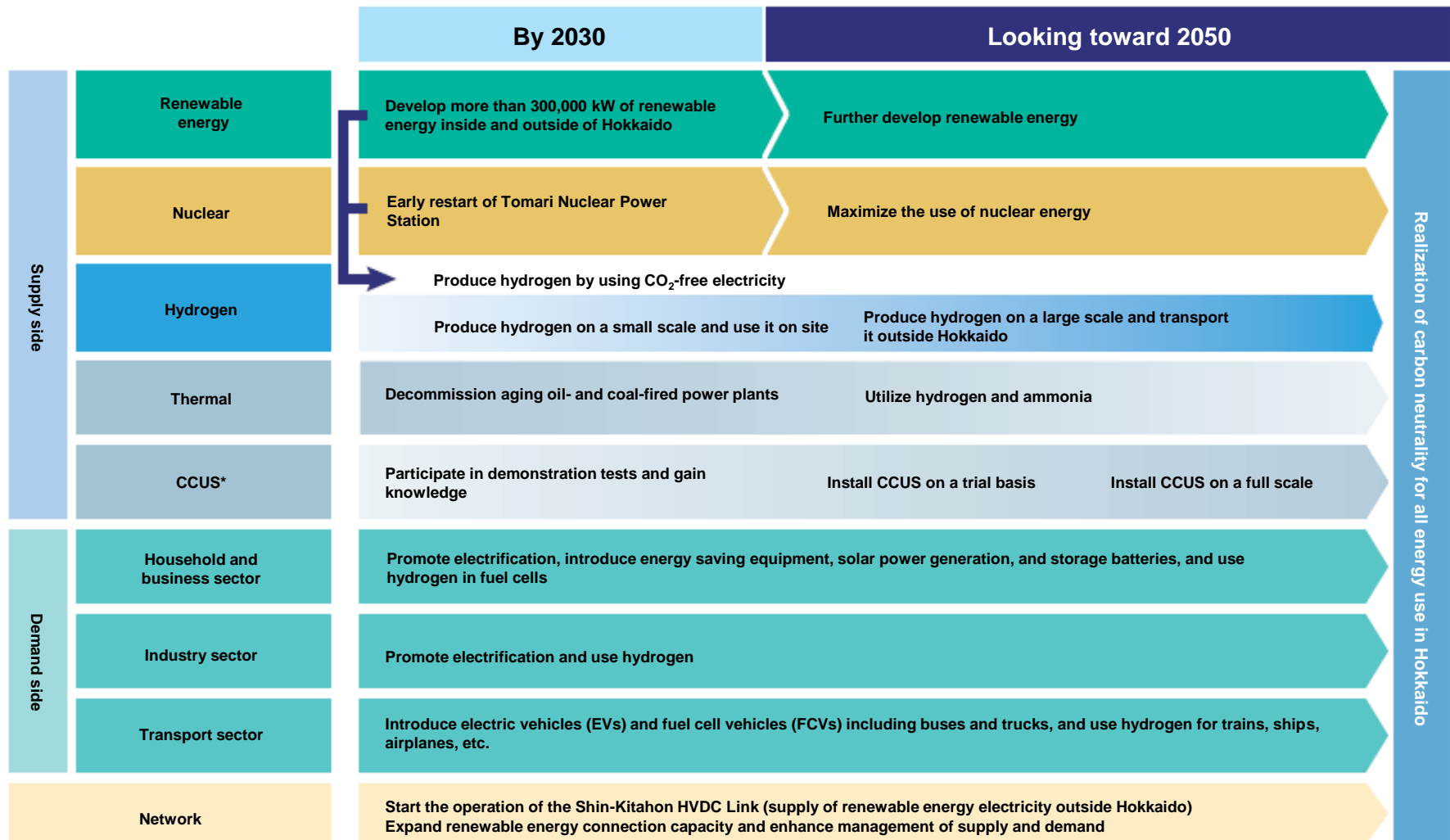


■ Image of future energy demand



Roadmap to Carbon Neutral 2050

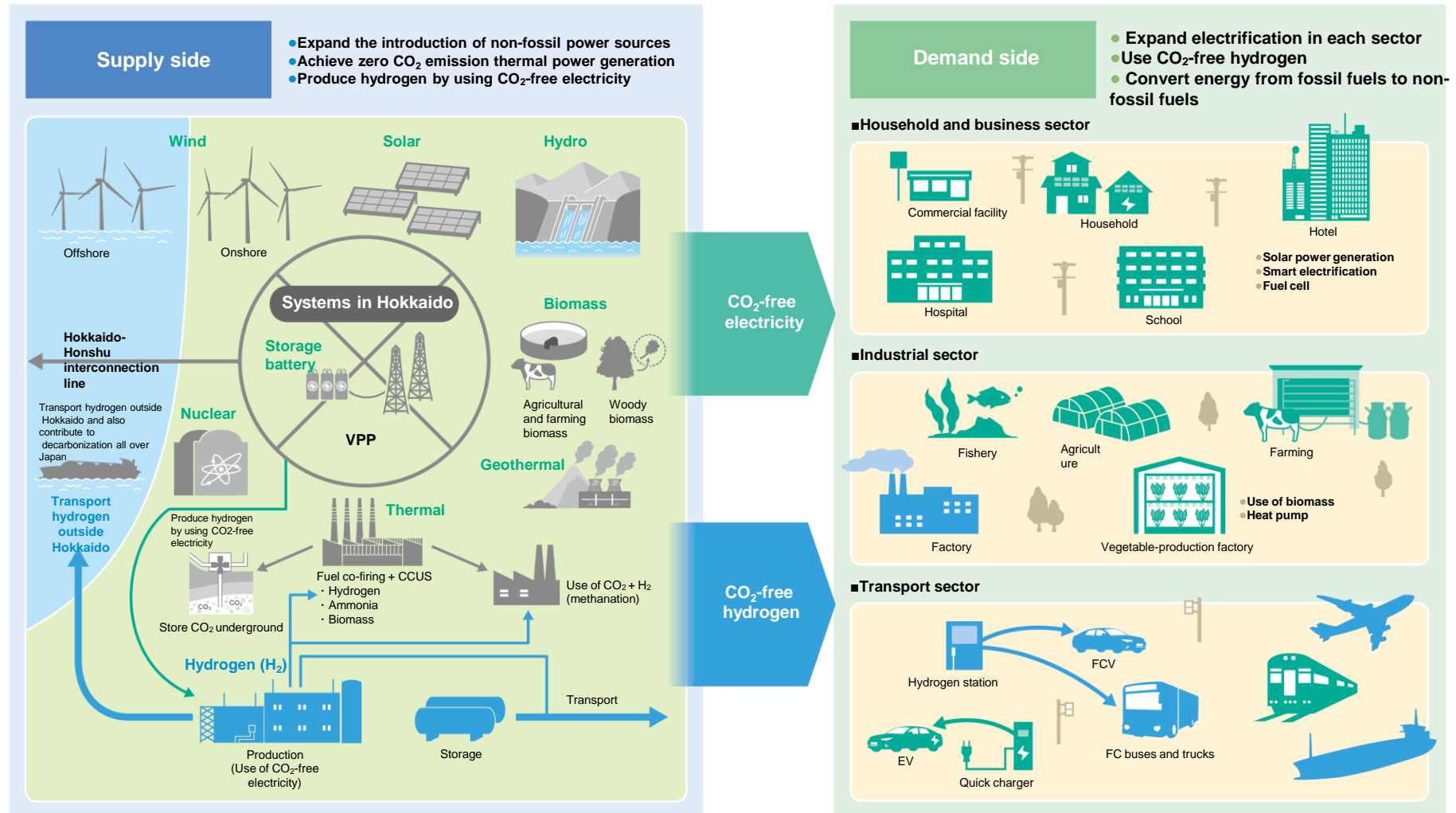
The HEPCO Group will mobilize all available means such as the use of innovative technologies, in addition to the measures taken so far including an increase in the adoption of renewable energy and the restart of Tomari Nuclear Power Station.



*CCUS (Carbon Capture, Utilization and Storage): Technology to separate and capture CO₂ for reuse or underground storage, etc.

Image of carbon neutrality in Hokkaido

On the supply side, we will maximize the introduction of non-fossil power sources and promote initiatives that contribute to decarbonization, such as hydrogen production. On the demand side, we will promote energy conversion from fossil fuels to other forms of energy by expanding electrification and using hydrogen, etc.



Direction of initiatives toward the realization of carbon neutrality

Take on the challenge of achieving carbon neutrality from both the supply and demand sides

Achieve stable energy supply while expanding renewable energy through sophisticated management of supply and demand and appropriate equipment deployment

Carbon neutrality on the supply side

We aim to achieve zero CO₂ emissions from the power generation division through the introduction of innovative technologies, etc., in addition to the expansion of renewable power generation and the use of nuclear power generation.

Renewable energy

- ▼ Renewable energy includes power sources that will play an important role in carbon neutrality and we will further expand hydropower, wind power, solar power, geothermal power, biomass, and other renewable sources.

Nuclear

- ▼ It will significantly contribute to the reduction of CO₂ emissions and power generation costs.

CO₂-free thermal power generation

- ▼ We aim to achieve zero CO₂ emissions in the long term through the combustion of hydrogen and ammonia and the use of CCUS.
- ▼ It will contribute to stable power supply, as a power source which can adjust output and has inertia and synchronizing power.*

Carbon neutrality on the demand side

While promoting the electrification of the heating needs specific to Hokkaido, we will consider the use of hydrogen and other energy produced from CO₂-free electricity.

Customers and companies in Hokkaido

- ▼ Household and business sector (heating, hot water supply, etc.)
- ▼ Transport sector (passengers, freight, etc.)
- ▼ Industrial sector (factories, etc.)

Offer diverse options that satisfy customers' different power usage needs

Promote electrification

Use hydrogen, etc.

Supply CO₂-free electricity

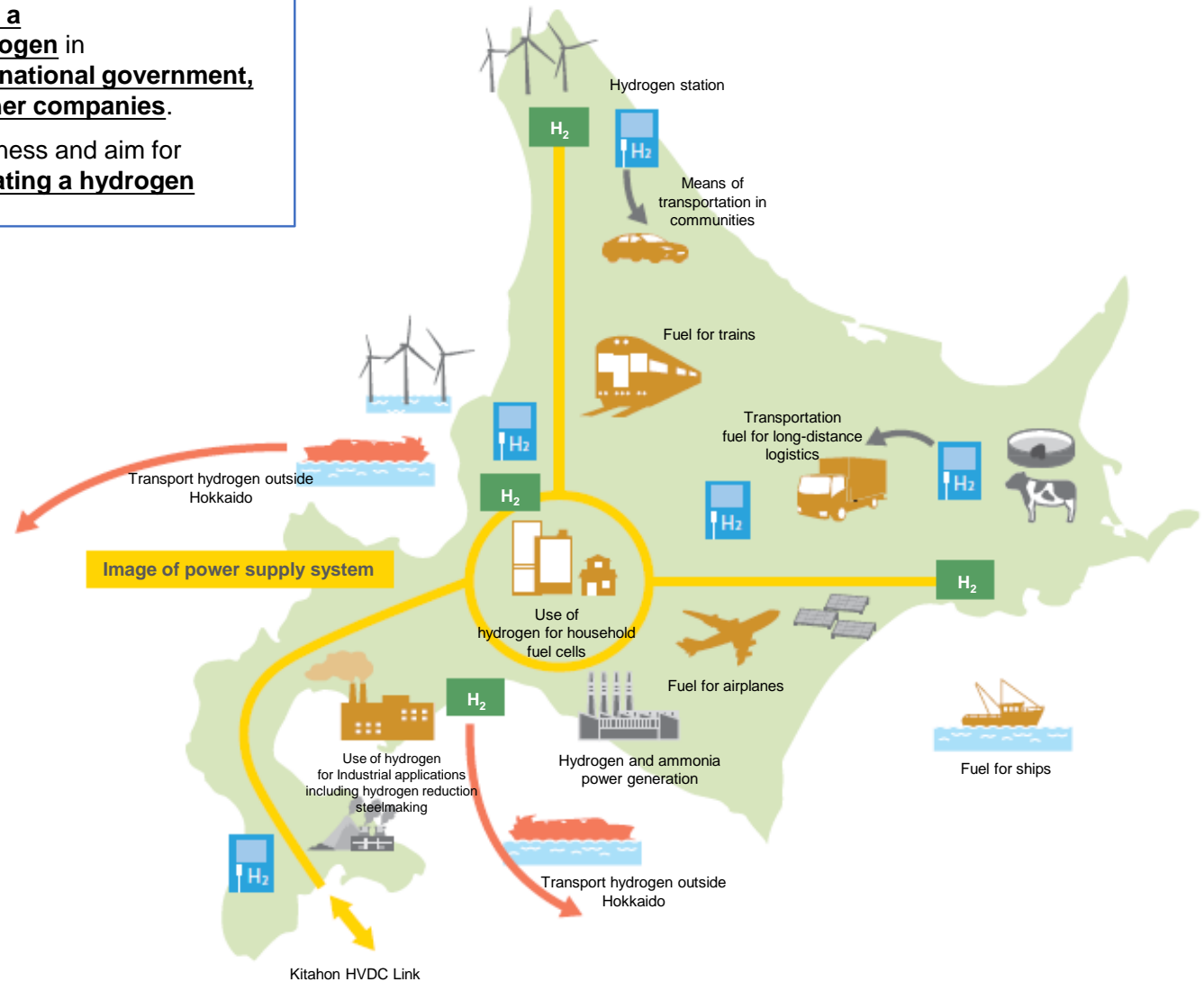
Construction of power grid (network) to support carbon neutrality

- We aim to achieve both stable supply of electricity and carbon neutrality by enhancing management of supply and demand and appropriate equipment deployment.

*Power sources such as thermal power and nuclear power that generate electricity by rotating turbines at a constant rate have the power to keep rotation going at the same rate (inertia) and to return to a steady state (synchronizing power) in case of sudden change in frequency or a current. Therefore, they can maintain frequency and thus contribute to the stability of the electric power grid, compared to solar power and wind power which do not have inertia or synchronizing power.

Image of future use of hydrogen in Hokkaido

- We will **produce hydrogen from the abundant renewable energy electricity generated in Hokkaido, and establish a “hydrogen supply chain” to use hydrogen** in various fields, **in cooperation with the national government, Hokkaido local governments, and other companies.**
- We will drive forward our hydrogen business and aim for **Hokkaido to become a pioneer in creating a hydrogen society.**



Reference: Our initiatives up to 2030

From “HEPCO Group Management Vision 2030” announced in April 2020

