Presentation material for the 2021 NICE

新潟県

Policy on Renewable and Next Generation Energy of Niigata Prefecture

February 2021

Industry Promotion Division
Department of Industry and Labor
Niigata Prefectural Government

(Ref: Kanto Bureau of Economy, Trade and Industry)

PM Suga's pledge to "Carbon Neutral by 2050"

- PM Yoshihide Suga declared that by 2050 Japan will aim to realize a carbon-neutral, decarbonized society, on 26th of October, 2020, during the 203rd extraordinary diet session.

Policy Speech by the Prime Minister to the 203rd Session of the Diet (October 26, 2020)

- My administration will devote itself to the greatest possible extent to bring about a green society, while focusing on a virtuous cycle of the economy and the environment as a pillar of our growth strategy. We hereby declare that by 2050 Japan will aim to reduce greenhouse gas emissions to net-zero, that is, to realize a carbon-neutral, decarbonized society. Addressing climate change is no longer a constraint on economic growth. We need to adjust our mindset to a paradigm shift that proactive climate change measures bring transformation of industrial structures as well as our economy and society, leading to dynamic economic growth.
- The key here is revolutionary innovations, such as next-generation solar cells and carbon recycling. We will accelerate research and development aimed at realizing utilization of such technologies in society. We will make our utmost efforts in this area, such as establishing a forum for the national and local governments to conduct a review towards realizing a decarbonized society, while making green investment more common through the full mobilization of regulatory reforms and other policy measures. Also, we will advance green transformation more efficiently and effectively through digital transformation in fields related to the environment. We will lead the green industry globally and realize a virtuous cycle of the economy and the environment.
- We will establish a stable supply of energy by thoroughly conserving energy and introducing renewable energies to the greatest possible extent, as well as by advancing our nuclear energy policy with the highest priority on safety. We will also drastically change our longstanding policies on coal-fired power generation.

Source）2050年カーボンニュートラルを巡る国内外の動き　令和2年12月　経済産業省

(Ref: Kanto Bureau of Economy, Trade and Industry)

Framework of "Green Growth Strategy towards 2050 Carbon Neutrality"

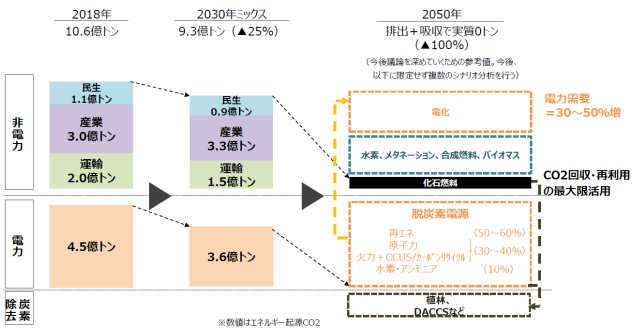
- Set an ambitious goal of redirecting the cash and deposits of domestic companies (240 trillion yen) to investment (with an awareness of global ESG investment (3,000 trillion yen)).
- As an action plan, a timeline by 2050 was presented for each of the key technology areas.
- A 2 trillion yen fund will be used to support the development and demonstration of technologies over a long period of time to achieve high goals.

Framework of Green Growth Strategy"

- **企業の現預金（240兆円）を投資に向かわせる**ため、**意欲的な目標を設定。**予算、税、規制・標準化、民間の資金誘導など、**政策ツールを総動員**。グローバル市場や世界のESG投資（3,000兆円）を意識し、**国際連携**を推進。
- 実行計画として、重点技術**分野別**に、開発・導入フェーズに応じて、2050年までの時間軸をもった**工程表**に落とし込む。技術分野によってはフェーズを飛び越えて導入が進展する可能性にも留意が必要。
  - ①研究開発フェーズ：政府の基金＋民間の研究開発投資
  - ②実証フェーズ　　：民間投資の誘発を前提とした官民協調投資
  - ③導入拡大フェーズ：公共調達、規制・標準化を通じた需要拡大→量産化によるコスト低減
  - ④自立商用フェーズ：規制・標準化を前提に、公的支援が無くとも自立的に商用化が進む
- 2050年カーボンニュートラルを見据えた**技術開発から足下の設備投資まで**、企業ニーズをカバー。**規制改革、標準化、金融市場を通じた需要創出**と**民間投資拡大を通じた価格低減**に政策の重点。
  - 予算（高い目標を目指した、**長期にわたる技術の開発・実証**を、2兆円の**基金で支援**）
  - 税（**黒字企業：　投資促進税制**、研究開発促進税制、　**赤字企業：　繰越欠損金**）
  - **規制改革**（水素ステーション、系統利用ルール、ガソリン自動車、CO2配慮公共調達）
  - **規格・標準化**（急速充電、バイオジェット燃料、浮体式風力の安全基準）
  - **民間の資金誘導**（情報開示・評価の基準など金融市場のルールづくり）

Source) 2050年カーボンニュートラルに伴うグリーン成長戦略
経済産業省　令和２年12月

Toward the 2050 Carbon Neutrality



Source) 2050年カーボンニュートラルに伴うグリーン成長戦略
経済産業省　令和２年12月

Niigata Pref. = Japan's leading energy supply base

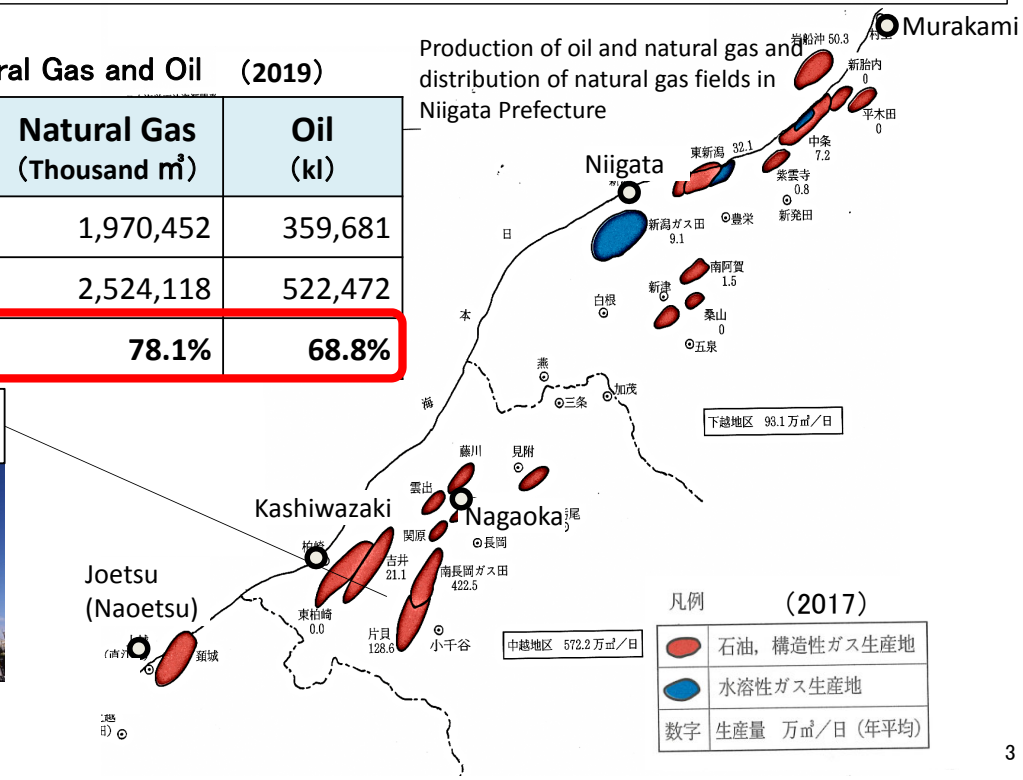
○ Niigata is a major energy supply prefecture, accounting for approximately 80% of Japan's natural gas production and 70% of crude oil production. The machinery and petrochemical industries have developed taking advantage of these resources.

Production of Natural Gas and Oil　(2019)

	Natural Gas (Thousand ㎥)	Oil (kl)
Niigata pref.	1,970,452	359,681
Japan total	2,524,118	522,472
Niigata/Japan	**78.1%**	**68.8%**

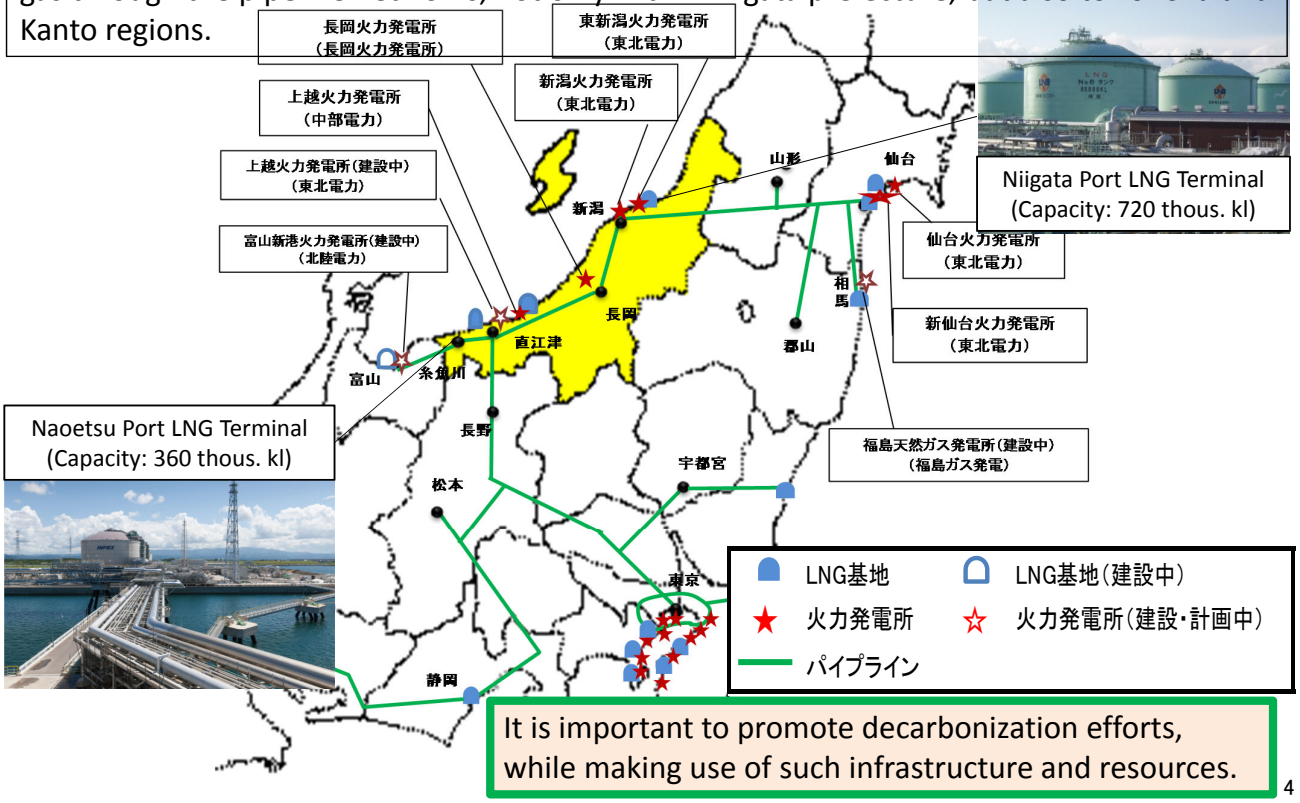
Minami Nagaoka Gas Field (the largest in Japan)

Production of oil and natural gas and distribution of natural gas fields in Niigata Prefecture



LNG terminals and gas pipeline networks to supply to Tohoku & Kanto regions

Ports of Niigata and Naoetsu have LNG terminals, playing a significant role to supply natural gas through the pipeline networks, not only within Niigata prefecture, but also to Tohoku and Kanto regions.



Niigata Port LNG Terminal
(Capacity: 720 thous. kl)

Naoetsu Port LNG Terminal
(Capacity: 360 thous. kl)

It is important to promote decarbonization efforts, while making use of such infrastructure and resources.

Power Supply & Demand in Niigata Pref.

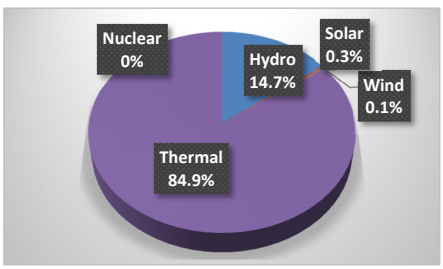
- Of the total amount of electricity generated in the prefecture in FY 2018, about 85% was generated by thermal power and about 15% by renewable energy (most of which was hydroelectric power).
- In FY 2018, the prefecture generated about three times as much electricity as it used, and is responsible for supplying electricity to other prefectures.

●Power Generated in the Prefecture in 2018 [thous. kWh]

Source：新潟県の電力概況

Renewables				Thermal (B)	Nuclear (C)	Total (A+B+C)
Hydro	Solar	Wind	Sub-total (A)			
7,153,880 (14.7%)	167,264 (0.3%)	40,384 (0.1%)	7,361,528 (15.1%)	41,421,539 (84.9%)	0 (0.0%)	48,783,067 (100.0%)

●Power by Source (FY2018)



●Power Generation & Consumption (FY2018)

[mil. kWh]

	Generation	Consumption
Japan total	1,008,433	852,560
Niigata Pref.	48,783	16,923
Share [%]	4.8	2.0

Renewable Energy Power Generation Capacity

- The FIT has led to the nationwide introduction of solar power generation and others.
- In our prefecture, solar power generation has been sluggish due to snow cover in winter, and as a result, the level of solar power generation has remained low.

● Installed FIT-registared Capacity (as of March 2020)

[thous. kW]

	Solar	Wind	Hydro	Geo-thermal	Biomass	Total
Japan	55,191	4,111	722	79	3,505	63,608
Niigata Pref.	340	28	64	0	25	456
[Rank in 47 prefectures]	33	27	4	14	32	40

Promotion of Renewable and Next Generation Energy

● By promoting the introduction of renewable energy taking advantage of the unique characteristics and local resources of the prefecture, and by providing support and improving the environment for companies in the prefecture to enter the field of renewable and next-generation energy, we aim to expand the range of future energy choices and promote the entry of the local companies into related industries.

Challenges	Introduction of RE making use of local resources	Limited power grid capacity restricting RE introduction	Introduction of RE in remote islands (weak power supply capacity)	Mass use of hydrogen (measures toward the hydrogen society)	Promotion of related industry, with forward looking measures
Measures	Utilizing local potential, **Wind power promotion**	Not relying on the grid: **RE self-consumption**	Through RE promotion, **"Natural Energy Island" vision**	Through hydrogen promotion, **Hydrogen Society**	RE and NGE enable to **Promote local industry**
	➢ A study group prepared a zoning map of the prefecture. ➢ A subcommittee for the Murakami-Tainai area.	➢ Support to RE facilities introduction for self-consumption ➢ Promotion of RE-based heat utilization	➢ Identifying challenges & examining measures for the "Natural Energy Island" vision	➢ Niigata Carbon Neutral Core and hydrogen promotion ➢ R&D for small FC bus ➢ Study for hydrogen supply chain pilot project ➢ FC forklift testing and pilot FCV taxi ➢ Purchasing FCV	➢ Support to R&D and other activities of local companies into new energy industries (subsidies, seminars etc.)

Major directions : (I) Promotion of off-shore wind power generation, (II) Promotion of hydrogen use and (III) Study for "Natural Energy Island Vision"

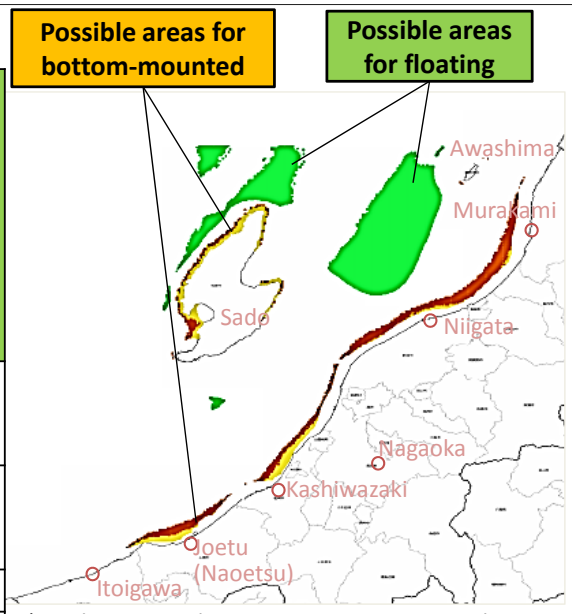
(I) Promotion of Offshore Wind Power Generation
Potential of wind power generation in Niigata pref.

- In FY 2008, the prefecture conducted a survey of the potential for offshore wind power generation off the coast of the prefecture, and prepared a "potential map" to confirm the existence of wind speed and other constraints.
- Confirmed the existence of areas with enough potential for offshore wind power.

[Survey results]

Possible areas for offshore wind power and their potential

	Bottom-mounted	Floating
		
Criteria*	Yearly avg. wind speed: 6.5m/s & more Depth: 50m or less	Yearly avg. wind speed: 8.0m/s & more Depth: 50m - 200m
Areas	・Jyo-Chu-Kaetsu shore ・Ohsado shore	・Between Sado and Awashima ・Ohsado offshore
Size	615k㎡	1,379k㎡
Potential **	16,612GWh/y	52,261GWh/y
	68,873GWh/y	

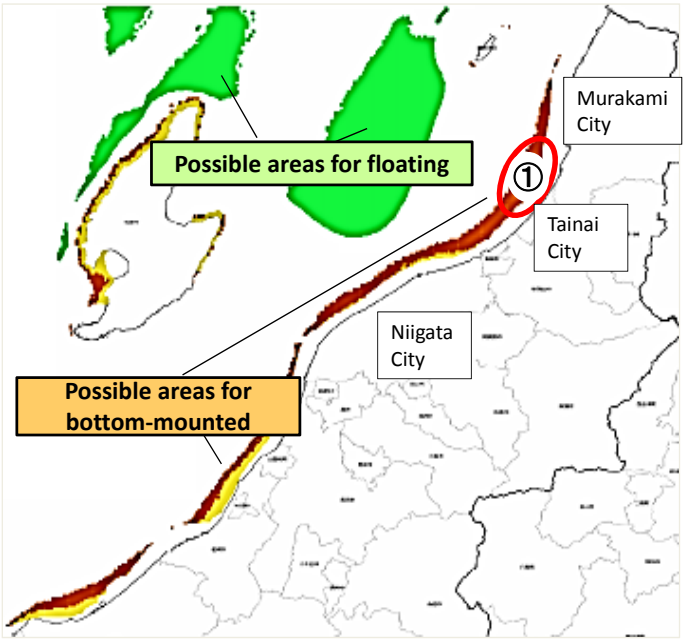


* Without consideration on restrictions, such as fishing rights

** In case of large-scale turbine (8MW)

Regional SC of the Offshore Wind Power Study Group

- For each region where a certain degree of feasibility is expected based on the zoning of the possible areas by the study group and the state of coordination in the respective region, a "regional subcommittee" shall be established and specific studies shall be carried out.



① Regional SC for Murakami & Tainai Cities' shore

- In November 2019, a regional subcommittee was established prior to the other regions, which coordinates interests among stakeholders.
- In the national selection process, it was classified as "an area where certain preparations are underway for the designation of a promotion area."

Types	Yearly avg. wind speed & depth	Areas
Bottom-mounted	Wind speed: 6.5m/s & more Depth: 30m or less	Yellow
	Wind speed: 6.5m/s & more Depth: 30m - 50m	Orange
Floating	Wind speed: 8.0m/s & more Depth: 50m - 200m	Green

(II) Hydrogen Utilization

National energy policy issues and key features of hydrogen energy

Structural Challenges National Energy Supply & Demand

(1) Energy Security / Self-sufficiency (as of 2015)

- About 94% of primary energy supply depends on foreign fossil fuels. 98% of automobile fuel is petroleum-based, of which about 87% comes from the Middle East.
- Energy self-sufficiency is stagnant at 6-7%, the second lowest among the 34 OECD countries.

(2) CO2 Emissions

- Target: 26% reduction to FY 2013 until FY 2030 (25.4% of FY 2005)
- PM Suga declared that by 2050 Japan will aim to reduce greenhouse gas emissions to net-zero, to realize a carbon-neutral, decarbonized society in his policy speech.

(3) Expansion of RE Use

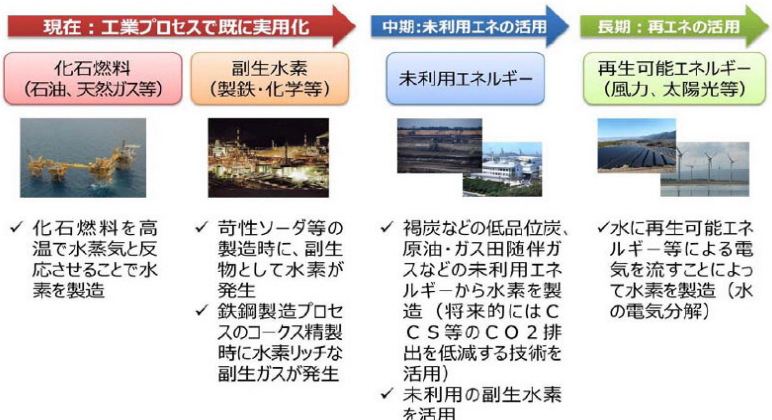
- To expand the RE use, adjusting power sources and surplus power storage technology are needed.

Key Features of Hydrogen Energy & Hydrogen Production

1 Only water is generated when energy is used.

2 Energy can be converted to hydrogen and stored.

3 Can be produced from a variety of resources.



Source:「水素・燃料電池戦略ロードマップ」経済産業省（2016年3月改定）

Niigata Prefecture Hydrogen Core Promotion Project

In order to maintain the prefecture's position as an energy hub in the age of hydrogen, the next generation of energy, the prefecture will work on various measures to realize a hydrogen society in the prefecture and to utilize hydrogen.

(1) Promotion measures toward a Hydrogen Core

- A public-private council, including the national government, was set up in FY 2020 to study pilot projects based on Niigata's regional characteristics and formulate a long-term vision in order to change the energy structure with a focus on the use of hydrogen.

(2) Support for entering into hydrogen-related industries

- Design and development of a small FC bus and introduction of a hydrogen supply system with solar power generation (for the small FC bus), and acquisition of technology and information for entry into the market by having companies in the prefecture take part in the manufacturing stage.
- A Hydrogen-related Industry Entry Study Group was established in FY 2020 to share information on hydrogen-related technologies and market entry and to conduct R&D.

(3) Raising awareness of hydrogen

- Exhibition and test drive of FCVs, which the prefecture and Niigata City have taken the initiative in introducing to raise awareness of the spread of FCVs (for residents)
- Demonstrative operation of four FCVs as cabs in Niigata City (for residents)
- Lease of FCVs to companies for a certain period of time (for businesses)
- FC forklift truck rental to forklift-using businesses (for businesses)

(Ref: Kanto Bureau of Economy, Trade and Industry)

Purpose of the Event and Goals for This Year

- Following PM Suga's declaration in October last year to "aim for a carbon-neutral, carbon-free society in 2050," the Kanto Bureau of Economy, Trade and Industry has been promoting carbon neutralization efforts in the region based on the "Green Growth Strategy for Carbon Neutralization in 2050" formulated in December last year.
- Niigata Prefecture announced in the last September its intention to achieve net zero GHG emissions (carbon neutrality) by 2050, and has crude oil and natural gas fields with the largest production volume in Japan, as well as a concentration of energy facilities such as LNG and oil storage terminals at Niigata Port and long gas pipelines to transport natural gas to the Tokyo area. Thus, Niigata is an important energy supply base for Japan. In addition, various initiatives for a decarbonized society have been implemented in Niigata Prefecture, such as formulation of the "Hydrogen Supply Chain Vision," pilot tests of methanation technology, and studies of the possibilities and challenges of introducing offshore wind power generation. Therefore, Niigata is a region with high potential for leading the way toward a carbon-neutral society.
- Based on the above, a consultative meeting will be held to discuss a long-term vision and specific projects for the entire Niigata Prefecture, with a focus on Niigata Port.

With the "Green Growth Strategy for Carbon Neutralization in 2050" in mind, in order to realize carbon neutrality in Niigata Prefecture, an advanced model region, a long-term vision will be formulated and social pilot projects will be organized.

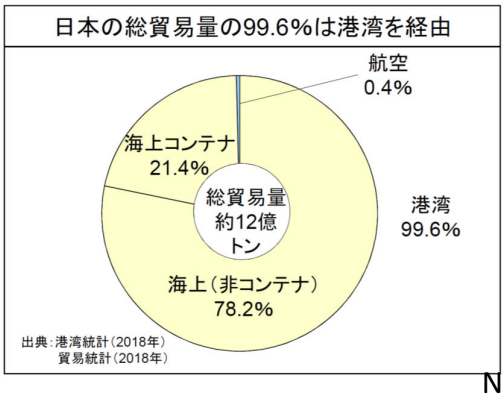
Goal 1: Formulation of a Carbon Neutral Industry Vision of Niigata Pref.

Goal 2: Formation of a model carbon neutral port (CNP) in Niigata port, in coordination with MLIT

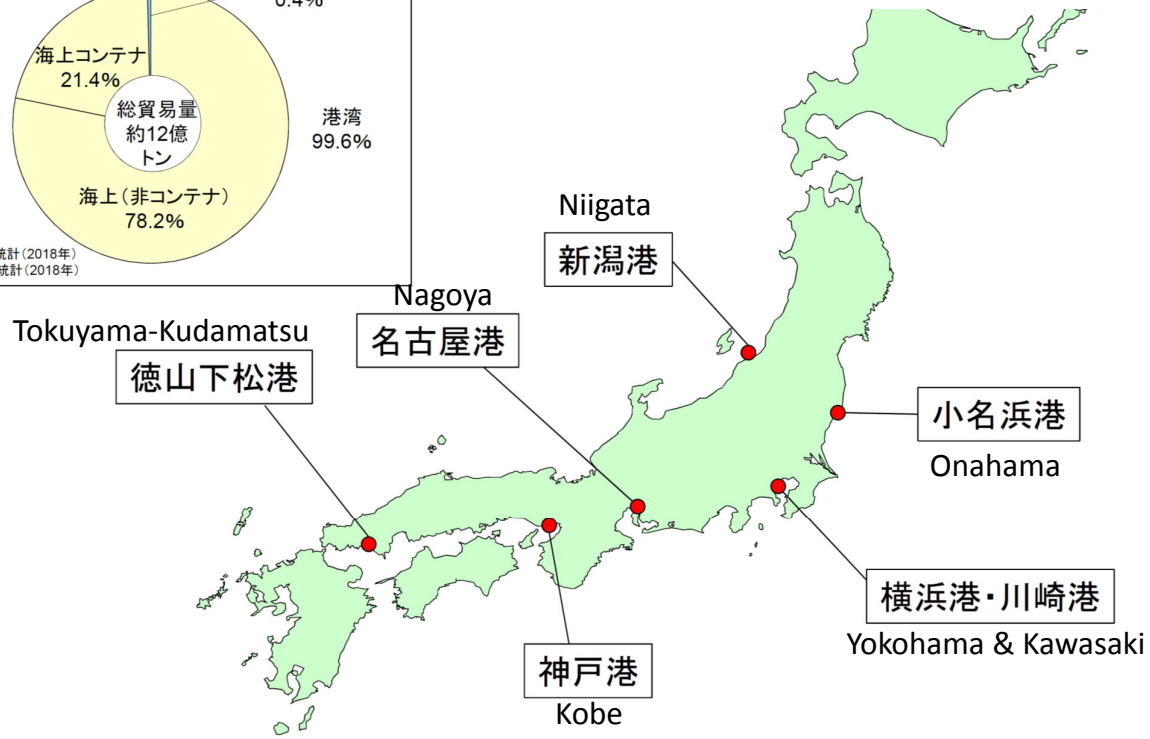
Goal 3: Preparation of a roadmap of social pilot projects etc. to realize the vision

カーボンニュートラルポート検討会の対象港湾

国土交通省



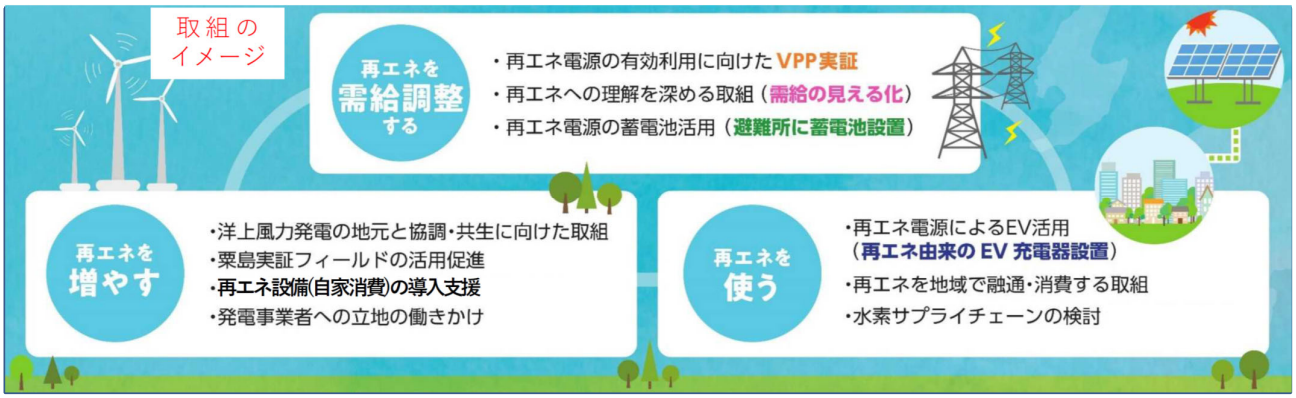
Ports under Assessment by the Study Group for Carbon Neutral Port



< Source: Press release of MLIT>

(III) Natural Energy Island Vision

➢ **To examine renewable and next generation energy-related initiatives and projects in remote islands in the prefecture, in cooperation with Tohoku EPC and related businesses**



Niigata Prefecture Renewable Energy Island Vision Study Group

It was established to study ways to utilize RE-based power and the measures to be taken, making use of the island's regional characteristics, with participation of Tohoku EPC, local governments, related businesses, and academics.

Members: 19 person/organizations
Meetings: 3-4 times/year

[Date] 1st Meeting: September 23rd, 2020
2nd Meeting: November 27th, 2020
[Agenda] Current status and issues of electricity supply on Sado & Awashima Islands, implementation of electricity demand survey on both islands, and study tour of advanced regions.

Images