

Kansai Consular Forum

Kansai Tour

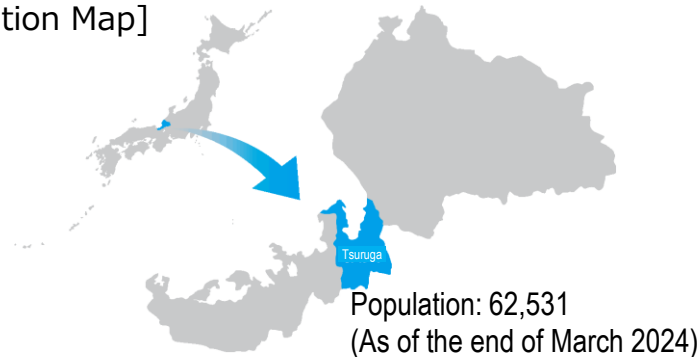
October 8, 2024

Tsuruga City

Introduction to Tsuruga City

- Tsuruga City, with a population of 62,531, is a port city centrally located on the Sea of Japan side of Honshu and is home to the important port of Tsuruga.
- Tsuruga has historically developed as a key junction for maritime and land transportation due to its proximity to the Keihanshin and Chukyo regions.
- Furthermore, while contributing as an energy supply city, Tsuruga is currently working on new industrial and energy policies in response to the present situation.

[Location Map]



Energy

Tsuruga has contributed as an energy supply city for half a century. Meanwhile, the decommissioning of the nuclear power plants is underway.

Power Plant	Facility Capacity	Current Status
Tsuruga Power Plant Unit 1	0.357 million kW	Under decommissioning
Tsuruga Power Plant Unit 2	1.16 million kW	Under conformity assessment
Advanced thermal reactor prototype Fugen	0.165 million kW	Under decommissioning
Fast breeder reactor prototype Monju	0.28 million kW	Under decommissioning
Tsuruga Thermal Power Plant Unit 1	0.5 million kW	In commercial operation
Tsuruga Thermal Power Plant Unit 2	0.7 million kW	In commercial operation
Total	3.162 million kW	

Land transportation network

Tsuruga is close to the two major metropolitan areas of Chukyo and Kansai, and with the Hokuriku Shinkansen, a direct route from Tokyo has opened.



July 2014: Maizuru-Wakasa Expressway fully opened.



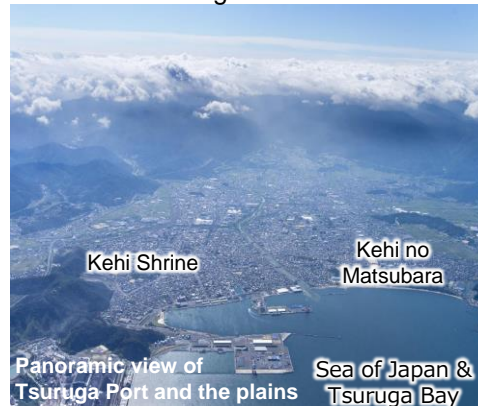
March 2024: Hokuriku Shinkansen extension from Kanazawa to Tsuruga to open



Expressway network (Proximity to Keihanshin and Chukyo metropolitan areas)

Maritime transportation network

Tsuruga Port, an important port on the Sea of Japan side, has sufficient **depth** to accommodate large vessels and is the closest such port to the Pacific side.



Panoramic view of Tsuruga Port and the plains Sea of Japan & Tsuruga Bay



Sea route (Container ships, RORO ships, etc.)

While enhancing its presence as a key junction for both maritime and land transportation, Tsuruga is also working on new industrial and energy policies.

Challenges towards Diversifying the Industrial Structure

- In 2019, a new industrial and energy policy was formulated to address Tsuruga City's fundamental challenges.
- The policy aims to build new supply chains for goods and energy based on broad regional collaboration (inter-regional cooperation).
- Tsuruga City became the first city in the prefecture to use hydrogen energy and support the recycling chain for EV batteries.

[Development of New Industrial and Energy Policies (from June 2019)]

Diversification of the industrial structure

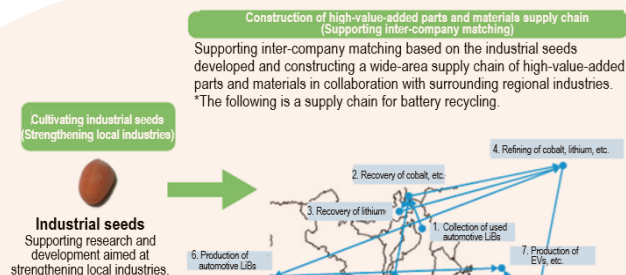
Diversification of energy sources

Establishing new supply chains for goods and energy with surrounding regions
*Building new economic relationships between Tsuruga City and surrounding regions.



↑ Hydrogen ST derived from renewable energy and R&D/PR Center
*From December 2019

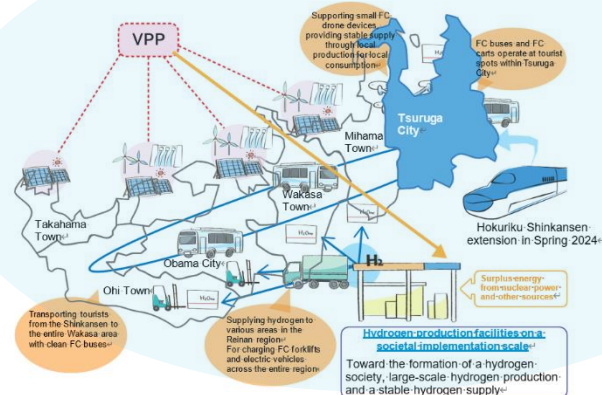
[Diversification of the Industrial Structure = New Supply Chains for Goods]



Utilizing cement manufacturing processes → Recycling chain for EV batteries, etc.
*From January 2022



[Diversification of Energy Sources = New Supply Chains for Energy]



Aiming to diversify the industrial structure and energy sources and to establish new supply chains for goods and energy

[Tsuruga-Takashima Connecting Road = New Logistics Network, etc.]



Formulation of the Fukui Prefecture Reinan E-Coast Plan

Overview of the Reinan E-Coast Plan

(*) E: Energy, Economy, Ecology, Expansion, etc.

[Core Philosophy] Centered on the Reinan region, the plan aims to revitalize the regional economy and develop towns by utilizing various energies, including nuclear and renewable energy, to create an area that attracts people, businesses, technology, and investment.

[Target Period] Approximately 10 years from the 2020 fiscal year

Promoting eight projects based on four key strategies.

Key Strategy I: Promotion of Nuclear-Related Research and Human Resource Development

[Future Vision] Establishing a hub for research and human resource development that attracts a wide range of talent from universities and institutions both domestically and internationally, revitalizing the region.

1. Formation of a research and human resource development hub that attracts researchers and experts from around the world

(Policy Direction)

Strengthening the recruitment and development of nuclear-related personnel within the prefecture, fostering overseas talent, and promoting research and development related to aging nuclear facilities.

(Key Initiatives)

- Support for securing and developing human resources for nuclear-related companies within the prefecture
- Conducting international conferences and training in collaboration with the IAEA
- Promoting research that contributes to innovation in nuclear-related technologies, including measures for aging facilities, small modular reactors, etc.



International Symposium in Tsuruga

2. Creating Innovation and Promoting the Utilization of a New Test Research Reactor

(Policy Direction)

Conducting outreach and providing support for utilization to uncover needs for using the new test research reactor.

(Key Initiatives)

- Establishing a utilization promotion council involving companies both within and outside the prefecture
- Supporting local companies conducting research and development using existing test research reactors, etc.



Kyoto University Research Reactor (KUR)

Key Strategy II: Development of the Decommissioning Business

[Future Vision] Expanding the participation of local companies in decommissioning projects within and outside the prefecture, fostering pioneering business development nationwide.

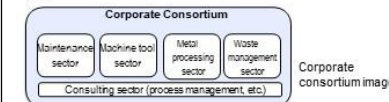
1. Promoting the Participation of Local Companies in Decommissioning Projects and Expanding the Supply of Products and Technologies

(Policy Direction)

Supporting the expansion of orders for local companies by securing a business foundation, enhancing technological capabilities, and assisting in the research, development, and market expansion of products and technologies.

(Key Initiatives)

- Supporting the formation of consortiums of local companies to expand orders as prime contractors, etc.
- Promoting research and development that leads to the advancement of decommissioning-related technologies, supporting the market expansion of developed products, etc.



2. Promoting the Business Development of Recycling Decommissioning Waste

(Policy Direction)

Promoting the reuse of waste below clearance levels through national and industry-led reuse initiatives and awareness activities, aiming to build a business model for recycling such waste.

(Key Initiatives)

- Promoting awareness activities to establish the clearance system in society
- Reusing waste generated from nuclear power plants within the prefecture, etc.



Recycled products from clearance-level waste (metal)

Key Strategy III: Regional Revitalization Utilizing Various Energies

[Future Vision] Creating an environmentally friendly smart area that leads to the realization of the "WAKASA Refresh Area"

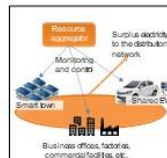
1. Promoting the Formation of a Smart Energy Area in Collaboration with Reinan Municipalities

(Policy Direction)

Promoting the construction of smart areas and using renewable energy, aiming to create regions that attract people and businesses.

(Key Initiatives)

- Promoting the development of smart areas.
- Conducting VPP (Virtual Power Plant) system demonstration experiments.
- Conducting research, development, and demonstration experiments on hydrogen stations and others.



VPP construction image

2. Providing Opportunities to Learn Broadly About Nuclear and Renewable Energy and Promoting Human Interaction

(Policy Direction)

In addition to utilizing energy-related facilities as tourism resources, providing opportunities for elementary, junior high, and high school students, as well as the general public, to deepen their understanding of energy.

(Key Initiatives)

- Conducting PR activities that combine tourism facilities with energy-related facilities.
- Promoting nuclear and energy education for elementary and junior high school students, etc.



KeyPass (Mihama Town Energy and Environmental Education Experience Center)

Key Strategy IV: Development of Diverse Regional Industries

[Future Vision] Developing new industries that utilize new agriculture, forestry, and fisheries technologies and leveraging test research reactors.

1. Achieving next-generation agriculture, forestry, and fisheries through technological advancement and technology transfer to local companies

(Policy Direction)

Developing new technologies to reduce costs and labor and make agriculture, forestry, and fisheries profitable industries.

(Key Initiatives)

- Promoting smart agriculture and research on high-value-added crops.
- Researching and introducing advanced technologies such as IoT and AI in aquaculture, artificial seedling technologies, etc.



Utilization of IoT in aquaculture

2. Fostering diverse industries through support for local businesses and attracting companies

(Policy Direction)

Strengthening the functions of the Wakasa Bay Energy Research Center, fostering industries in the Reinan region, and leveraging the strengths of location conditions to attract businesses.

(Key Initiatives)

- Focusing research areas at the Wakasa Bay Energy Research Center (e.g., space, breeding) and strengthening industry support functions
- Developing industrial parks and attracting a diverse range of companies, etc.



Image of prefectural satellite "Suisen"

The city's previous independent efforts have been integrated into the prefectural plan, scaling up to a broader project covering the entire prefecture!

Tsuruga City's Progress Toward a Hydrogen Society

- As part of new energy and industrial policies, attention has been focused on hydrogen, a key solution to climate change.
- In 2015, a study was conducted, and despite the lack of resources and players, a plan was initiated from scratch, leading to several demonstration projects.
- The goal is to transition to public implementation by targeting the opening of the Hokuriku Shinkansen extension to Tsuruga and the Expo Osaka, Kansai.

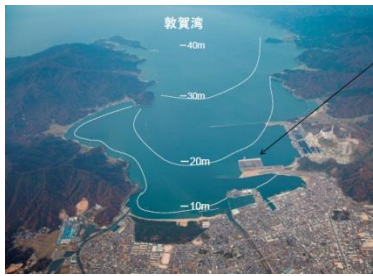
Category			Period			Details		
Phase 1: Investigation and Planning Period	1	From October 2015	[Feasibility Study] Conducted a feasibility study on the formation of a hydrogen society in Tsuruga City.					
	2	December 2017	[Government Support Declaration] The government expressed its support for developing hydrogen infrastructure in Tsuruga City at the Liaison Council on Monju Decommissioning, which the government organized in connection with decommissioning the fast breeder reactor prototype Monju.					
	3	August 2018	[Collaboration with Toshiba ESS] A basic agreement was signed with Toshiba ESS regarding constructing a hydrogen supply chain.					
	4	June 2019	[Plan Formulation] The Tsuruga City Harmonious Hydrogen Society Formation Plan was formulated to build a hydrogen supply chain, and a roadmap and other guidelines were presented.					
Phase 2: Demonstration Project Period	5	December 2019	[Start of Demonstration (Step 1)] The first renewable energy-derived hydrogen station and R&D/PR center in Japan was established.					
	6	From April 2020	[Demonstration Step 2] In collaboration with Kansai Electric Power and Toshiba ESS, a demonstration was conducted to produce and store hydrogen using a renewable energy-derived hydrogen station, utilizing it as a balancing power for renewable energy-formed VPPs and FCVs.					
	7	From April 2022	[Demonstration Step 3] In collaboration with Kansai Electric Power and Toshiba ESS, Japan’s first project to produce and store hydrogen derived from nuclear power was implemented using a hydrogen station derived from renewable energy.					
	8	From April 2023	[Demonstration Step 4] In collaboration with Hokuriku Electric Power, Kansai Electric Power, and Toshiba ESS, hydrogen produced from renewable energy and nuclear power will be utilized to cool power plant turbines as part of efforts to build a hydrogen supply chain.					
Phase 3: Transition to the Public Implementation Phase by spring 2024, with the opening of the Hokuriku Shinkansen extension to Tsuruga as a target.								

Phase 1: Investigation and Planning Period

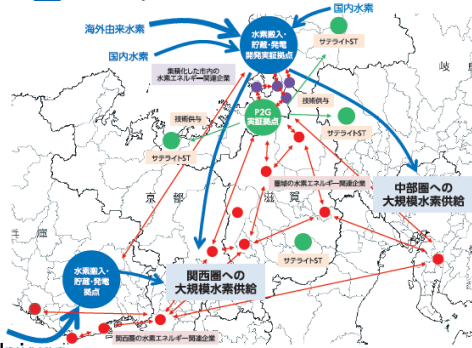
- As the first step, efforts were made in investigation and planning, focusing on R&D and demonstration support, given that this is an underdeveloped field.
- Before the formulation of the plan, government support was received, and a collaborative relationship with Toshiba ESS was established.
- Based on these efforts, a plan was formulated in June 2019, emphasizing the acceptance and expansion of demonstration projects.

1. Feasibility Study on Hydrogen Society Formation (from October 2015)

Exploring the potential for building domestic and international hydrogen supply chains utilizing Tsuruga Port, which has deep waters and is the largest coastal shipping route on the Sea of Japan side.



↑ Tsuruga Port, an important port with deep waters, requires no dredging.



2. Government Support Declaration at the Monju-Related Council (December 2017)

At the Liaison Council on Monju Decommissioning, organized by the government in connection with decommissioning the fast breeder reactor prototype Monju, the government expressed its support for the feasibility study (FS) and hydrogen infrastructure development conducted by Tsuruga City.



↑ Attendees included the Chief Cabinet Secretary, relevant ministers, the Fukui Prefecture Governor, and the Tsuruga City Mayor.

3. Signing of a Basic Agreement for Collaboration with Toshiba ESS (August 2018)

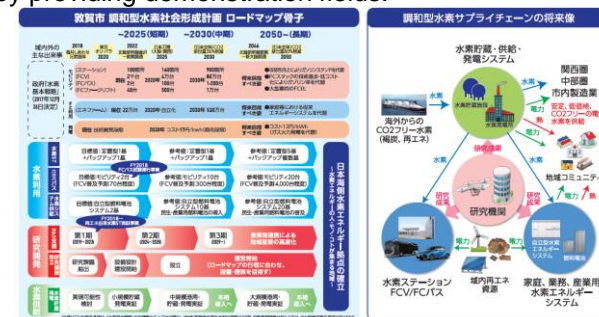
Before formulating the hydrogen society formation plan and accepting and expanding demonstration projects based on it, a basic agreement was signed with Toshiba ESS regarding the construction of a hydrogen supply chain.



↑ The signing of the agreement

4. Formulation of the Tsuruga City Harmonious Hydrogen Society Formation Plan (June 2019)

A roadmap was formulated for the formation of a hydrogen society by 2050. The plan includes goals for the development of hydrogen infrastructure and the active acceptance and expansion of demonstration projects by providing demonstration fields.



↑ The roadmap defined in the plan

A plan was formulated that emphasizes the provision of demonstration fields and the active acceptance of R&D and demonstration projects.

Phase 2: Demonstration Project Period

- Based on the plan to actively solicit demonstration projects, a renewable energy-derived hydrogen station was established in collaboration with Toshiba ESS.
- A demonstration project was conducted in collaboration with Kansai Electric Power to utilize hydrogen as a balancing power for renewable energy without being limited to the hydrogen sector.
- The collaboration between the two companies was further advanced, and a demonstration project was conducted to produce hydrogen derived from nuclear power, aiming for cost-effective, large-scale hydrogen production.

5. Demonstration (1) - Renewable Energy-Derived Hydrogen Station (from December 2019)

As the first step of the demonstration project, based on the collaboration agreement with Toshiba ESS, Japan's first renewable energy-derived hydrogen station was installed at the Tsuruga City Public Wholesale Market, utilizing an improved autonomous hydrogen supply system.



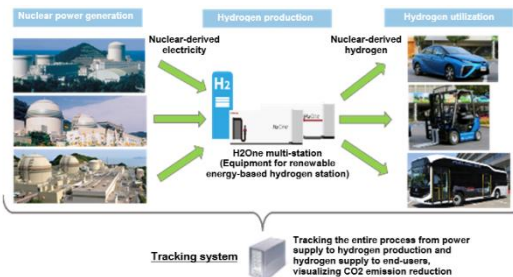
↑ Opening ceremony of the Renewable Energy-Derived Hydrogen Station and R&D Center

Purpose

Production and utilization of CO₂-free hydrogen through a decentralized, autonomous system aimed at building a local supply chain

7. Demonstration (3) - Hydrogen Production from Nuclear Power (from April 2022)

As the third phase of the demonstration project, based on the collaboration agreement with Kansai Electric Power and Toshiba ESS, a demonstration of hydrogen production using nuclear power was conducted utilizing the Renewable Energy-Derived Hydrogen Station.



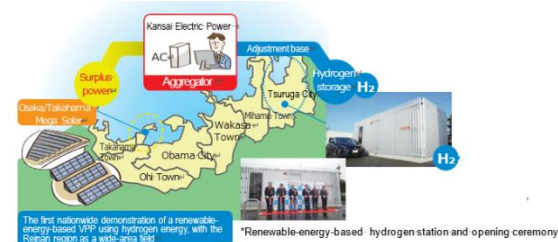
↑ Conceptual diagram of hydrogen production from nuclear power

Purpose

Production and utilization of large-scale, cost-effective CO₂-free hydrogen to build a broad supply chain

6. Demonstration (2) - Hydrogen Station + VPP Demonstration (from April 2020)

As the second step of the demonstration project, based on the collaboration agreement with Kansai Electric Power and Toshiba ESS, hydrogen was produced and stored at the Renewable Energy-Derived Hydrogen Station as balancing power for Kansai Electric Power's mega solar facility and utilized for mobility and other applications.



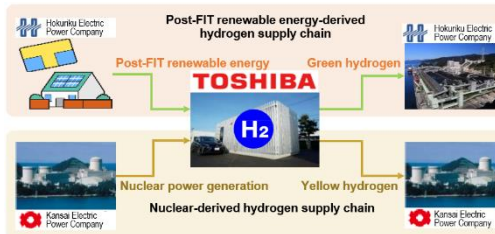
↑ Conceptual diagram of a demonstration project for renewable energy-formed VPPs utilizing hydrogen

Purpose

Storage and utilization of CO₂-free hydrogen, in conjunction with the transition to renewable energy as the main power source, to build a broad supply chain

8. Demonstration (4) - Hydrogen Supply Chain Construction Demonstration (from April 2023)

As the fourth step of the demonstration project, based on the collaboration agreement with Hokuriku Electric Power, Kansai Electric Power, and Toshiba ESS, hydrogen produced from renewable energy and nuclear power will be utilized for cooling power plant turbines as part of efforts to build a hydrogen supply chain.



↑ Scheme for the demonstration of hydrogen supply chain construction

Purpose

Production of CO₂-free hydrogen and creation of new private-sector demand to build a broad supply chain

Pioneering demonstrations were conducted in collaboration with private companies and were not confined to local initiatives, focusing on a broader supply chain.

Toward the Construction of a Hydrogen Supply Chain (Phase 3: Public Implementation Phase)

- This fiscal year, Fukui Prefecture has begun formulating a hydrogen and ammonia supply chain concept, scaling up the pioneering hydrogen policies that Tsuruga City has been leading as part of a broader prefectural policy.
- Additionally, under the leadership of the national government, the Conference for Co-creating the Future of Host Municipalities of Nuclear Power Plants in Fukui Prefecture was established to discuss the future of nuclear power plant hosting regions, aiming to make Tsuruga Port a hub for the hydrogen supply chain through strong collaboration between public and private sector players.

Conference for Co-creating the Future of Host Municipalities of Nuclear Power Plants in Fukui Prefecture

Purpose

As the long-term shutdown and decommissioning of nuclear power plants progresses, discussions are being held through public-private collaboration on the future vision for the development of the host regions.

Members

National government, prefecture, host municipalities, electric power companies, etc.

Future Vision

Promoting initiatives with the future vision of a region leading the way in zero carbon and a smart, sustainable region in harmony with nature.

6. Roadmap for Efforts Towards the Realization of the Future Vision

(Towards the establishment of hydrogen and ammonia supply hubs)

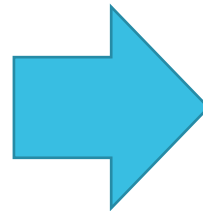
We aim to establish supply hubs equipped with storage tanks, and pipelines centered on Tsuruga Port, promoting the regional use and industrialization of hydrogen and ammonia through power generation, utilization by local businesses, and other measures within the region.

(I-2-2) Construction of Hydrogen and Ammonia Supply Chains

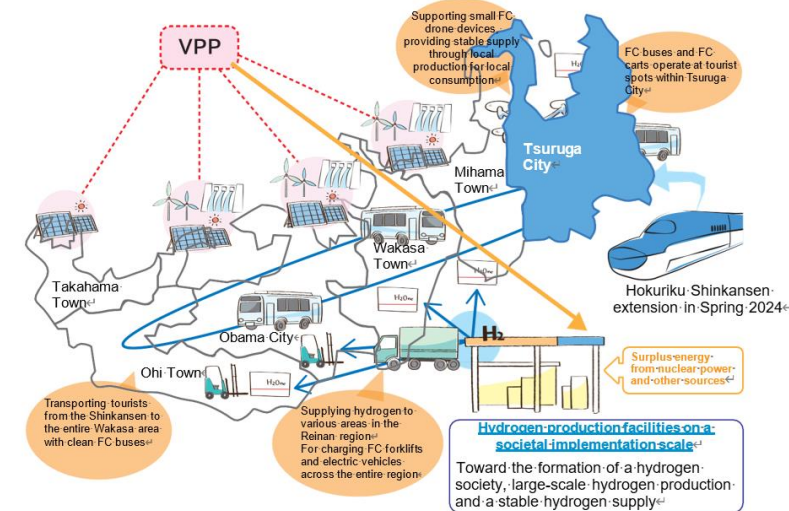
Efforts Toward the Realization of the Future Vision	Implementing Entities, etc.	Launch Phase (2022-2024)	Deepening and Enrichment Phase (2025-2031)
Formulating a plan for carbon-neutral port development at Tsuruga Port.	Ministry of Economy, Trade and Industry, Ministry of Land, Infrastructure, Transport and Tourism, and other related ministries and agencies, prefectures, cities, private businesses		
Implementing the nation's first demonstration project utilizing electricity derived from nuclear power, establishing a high-performance, large-scale hydrogen production demonstration plant, and executing the demonstration project.	Ministry of Economy, Trade and Industry, municipalities, Kansai Electric Power Company, private operators		
Conducting feasibility studies and research and development for the formation of a hydrogen and ammonia supply chain, taking into account the topography of the Reinan region.	Ministry of Economy, Trade and Industry, prefectures, municipalities, Kansai Electric Power Company, Hokuriku Electric Power Company, private operators		
Conducting surveys on hydrogen and ammonia demand to support the energy structure transformation of local businesses.	Ministry of Economy, Trade and Industry, prefectures, cities, and towns		
Collaborating with Kansai Electric Power and Hokuriku Electric Power to establish a demonstration plant for hydrogen power generation and implement the demonstration project as part of the hydrogen supply chain formation.	Ministry of Economy, Trade and Industry, prefectural government, private sector		
Supplying and utilizing hydrogen produced in the Reinan region at the 2025 Osaka-Kansai Expo.	Ministry of Economy, Trade and Industry, Kansai Electric Power Company, private sector		



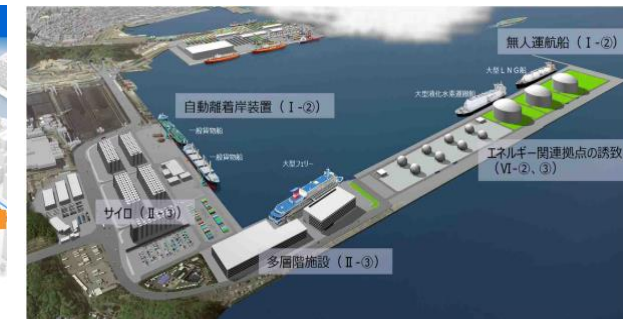
Conference (July 26, 2024)



Future image of local energy production and consumption throughout the Reinan region of Tsuruga City



Tsuruga City's Vision: Aiming to be the Future City of Energy



Fukui Prefecture's Tsuruga Port Long-Term Vision Concept