

# - Fukushima Today - Steps for Reconstruction and Revitalization in Fukushima Prefecture



## A~E Tamura City (Miyakoji District) “Specialty products of Miyakoji toward revitalization”

**A~C “Hop Garden Brewery”** Established in a renovated building in Green Park Miyakoji, which had been idle due to the effects of the Great East Japan Earthquake, the brewery conducts all activities related to hop production, beer processing, distribution and sales within the town. It has also developed a regional recycling model centred around beer, such as utilising hop and wheat by-products from the brewing process as fertiliser. The brewery received the National Federation of Depopulating Regions President's Award in October 2023 at the awards ceremony for Excellence for Sustainable Development in Depopulating Regions, organised by the Ministry of Internal Affairs and Communications and other organisations.

**D “YUI pudding”** The pudding, made with locally sourced eggs, is a product of Miyakoji Sweets Yui, a local confectionery organised by the Tamura City Miyakoji Sixth Industrialization Executive Committee, led by the Miyakoji Town Chamber of Commerce.

**E “Miyakoji Kyuuri Man”** A jam made from locally grown cucumbers, developed by sixth graders at Miyakoji Elementary School.

As mentioned above, after the evacuation orders were lifted, various specialty products were developed through the AFFrinnovation, or Sixth Sector Industrialisation efforts, of local industries, contributing to the reconstruction of the region.

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# Towards achieving revitalization

Thanks to the hard work of Fukushima residents and kind support from Japan and abroad, **reconstruction has progressed steadily** in the 13 years since the earthquake and nuclear disaster. Evacuation orders have been lifted for all of the Specified Reconstruction and Revitalization Base Areas, and approval has been granted for Specified Living Areas for Returnees in the towns of Okuma, Futaba, Namie, and Tomioka. Living environments have been improved, and export volumes of products from the prefecture have surpassed previous records.

On the other hand, **about 26,000 residents of the prefecture are still living as evacuees (as of Feb. 2024)**. In addition, the Prefecture is faced with numerous challenges, such as **rebuilding the livelihoods of disaster affected residents, population recovery through the return and relocation of residents, revitalization of local industries, fighting deeply rooted harmful rumours and fading memories of the disaster, measures for the contaminated/treated water and decommissioning of the reactors**.

## Prerequisite measures for revitalization

- Promoting safe and steady initiatives for decommissioning
- Responsibly dealing with work related to the disposal of ALPS-treated water



⇒P.15

TEPCO's Fukushima Daiichi NPS Unit 1

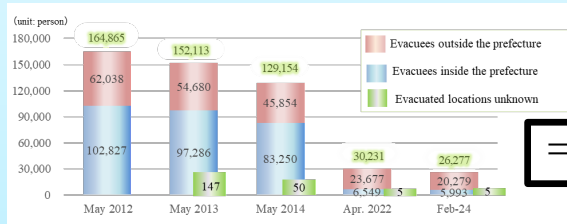
Photo by Fukushima Prefecture



⇒P.16

## Revitalization efforts still in progress

- About 27,000 people remain in a state of evacuation
- Final disposal of contaminated soil outside the Prefecture within 30 years after launching the Interim Storage Facility



⇒P.2



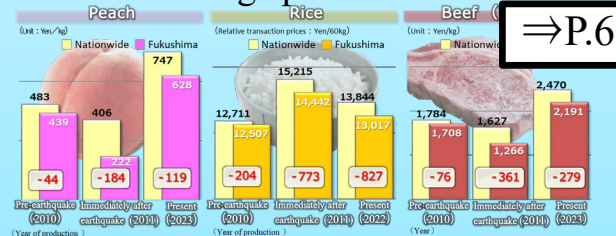
⇒P.1

- Measures against deeply rooted harmful rumours and fading memories of the disaster
- The disparity between the price of Fukushima's agricultural, forestry and fisheries products and the national average price still remains



⇒P.17

The Hama Festival in Tokyo



⇒P.6

## Revitalization efforts that have shown great progress

- Atmospheric radiation levels have significantly dropped
- Promotion of tourism



⇒P.1



⇒P.9

- Development of transportation networks such as roads
- Promotion of the Fukushima Innovation Coast Framework initiatives



⇒P.5

National Route 349 (Otsunagi District in Kawamata Town) Open to public on 21 March, 2023



Fukushima Robot Test Field



Fukushima Hydrogen Energy Research Field

⇒P.11

- Export promotion for produce grown in Fukushima
- Passing down the records and lessons of the complex disasters to future generations



⇒P.7



⇒P.12

The Great East Japan Earthquake and Nuclear disaster Memorial Museum

It is necessary to flexibly and carefully respond to new challenges which arise as revitalization progresses as well as the different issues faced in different areas according to their revitalization progress, and to realize them one at a time.

**Promoting the reconstruction and revitalization of Fukushima to transform it from a "disaster affected area" to a "revitalization area"**

# 1. Revitalization efforts and challenges

## (1) Decontamination

Current Status

The transfer of removed soil and waste to the Interim Storage Facility has mostly been completed by March 2022, except in the Difficult-to-return Zones, and the restoration of land at Temporary Storage Sites is in progress. In the Difficult-to-return Zones, evacuation orders for all Specified Reconstruction and Revitalization Base Areas had been lifted by November 2023, and decontamination in Specified Living Areas for Returnees began in December 2023. **Atmospheric radiation levels in the prefecture significantly dropped, and are the same as other major cities throughout the world.**

### Municipality led decontamination

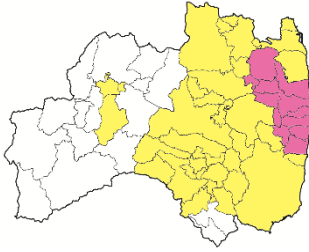


Decontamination of homes

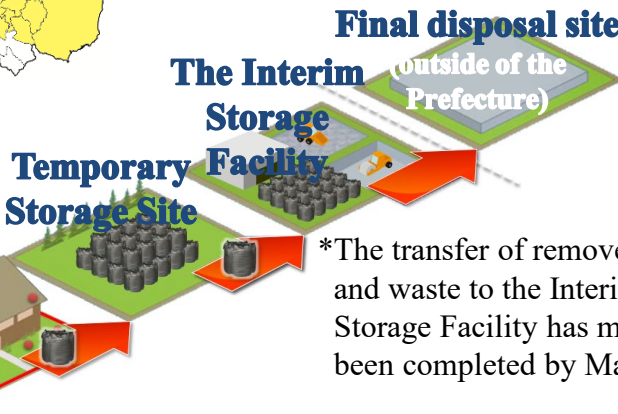
**Completed in Mar. 2018**

**Area the national government conducts decontamination (Red)** ( Excludes difficult-to-return zones )

**Area each municipality conducts decontamination (Yellow)**



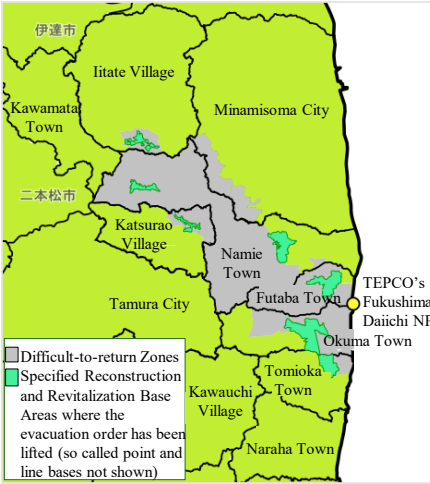
Disposal process for soil and waste removed from decontamination



\*The transfer of removed soil and waste to the Interim Storage Facility has mostly been completed by March 2022.

### Decontamination of Difficult-to-return Zones

Decontamination of Specified Reconstruction and Revitalization Base Areas has mostly been completed. Decontamination of Specified Living Areas for Returnees began in December 2023.



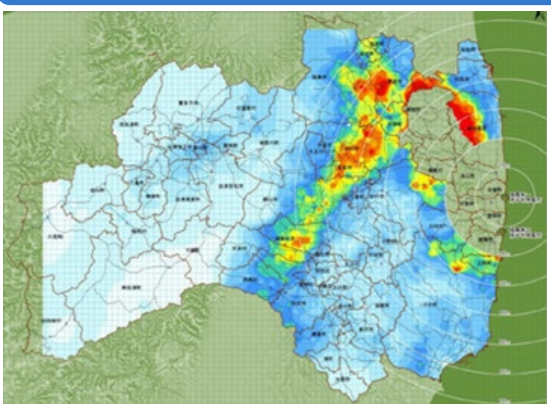
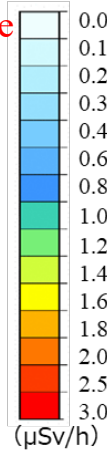
### The Interim Storage Facility

The law stipulates that the removed soil and waste in the prefecture generated by decontamination must be transferred to the Interim Storage Facility, and **finally disposed of outside the prefecture within 30 years since the commencement of the Facility (by March 2045).**

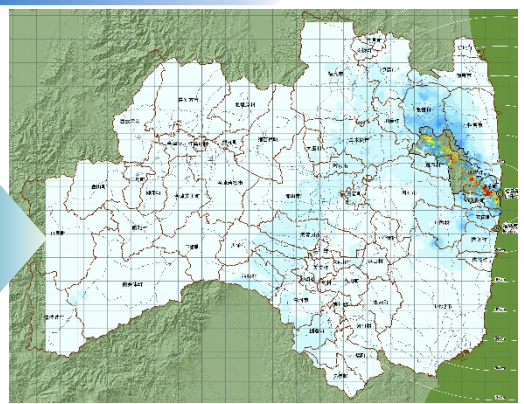


Location of the Interim Storage Facility  
Okuma Town, Futaba Town

### Air radiation dose in Fukushima Prefecture

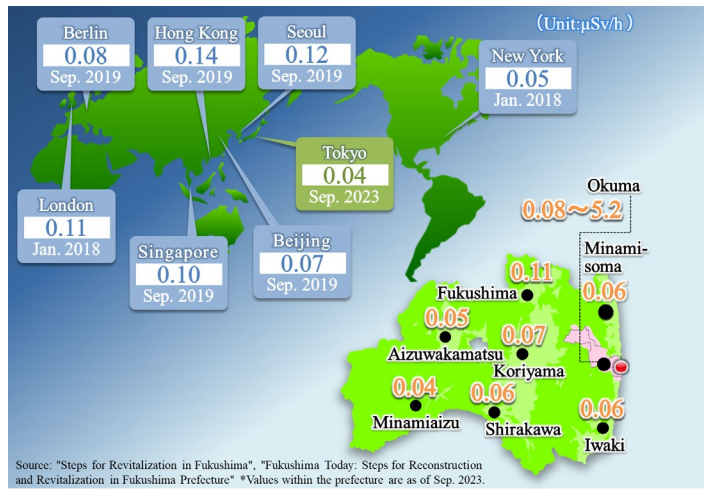


12 Apr. - 16 Apr. 2011



10 Apr. - 9 May 2023

### Environmental radiation dose rate in the prefecture and major cities



Source: "Steps for Revitalization in Fukushima", "Fukushima Today: Steps for Reconstruction and Revitalization in Fukushima Prefecture" \*Values within the prefecture are as of Sep. 2023.

Challenges

- Acceleration of initiatives by the national government towards the final disposal of removed soil and waste outside the prefecture
- Safe and secure operation of the Interim Storage Facility until final disposal outside the prefecture
- Ensuring restoration of land used for Temporary Storage Sites
- Sufficient decontamination of Difficult-to-return Zones (Specified Living Areas for Returnees)
- Disposal of designated waste newly identified in the prefecture

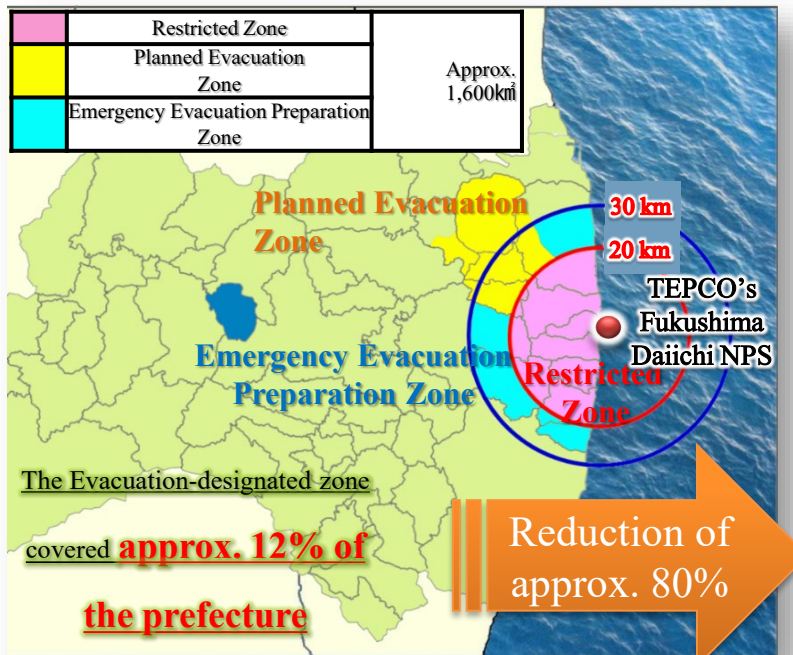
## (2) State of Designated Evacuation Zones and Changes in Number of Evacuees

### Current Status

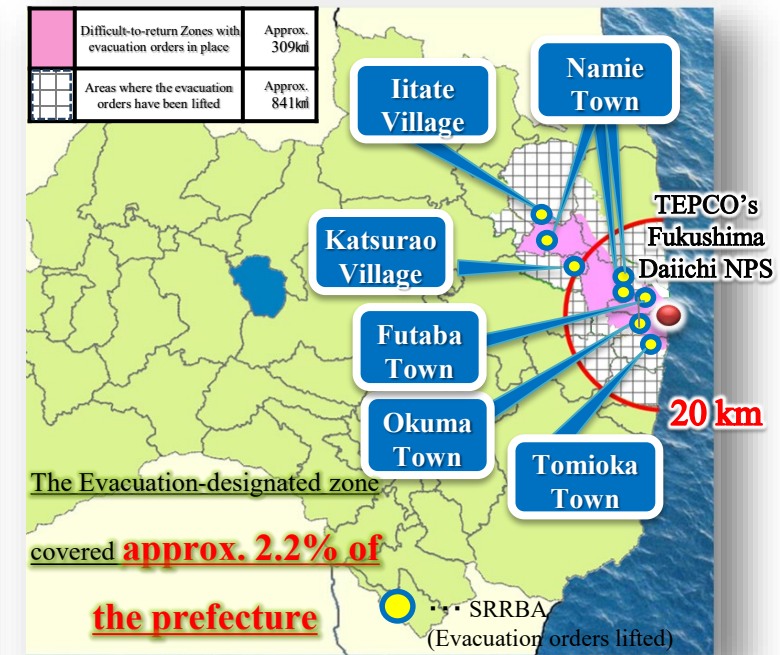
Improvement of living environment has led to the lifting of evacuation orders, **reducing the areas under evacuation orders from approximately 12% to 2.2% of the entire prefectural landscape. Approximately 26,000 evacuees remain inside and outside of the prefecture.**

### Transition of the Evacuation-Designated Zones

○ As of 23 Apr. 2011



○ As of 25 Mar. 2024



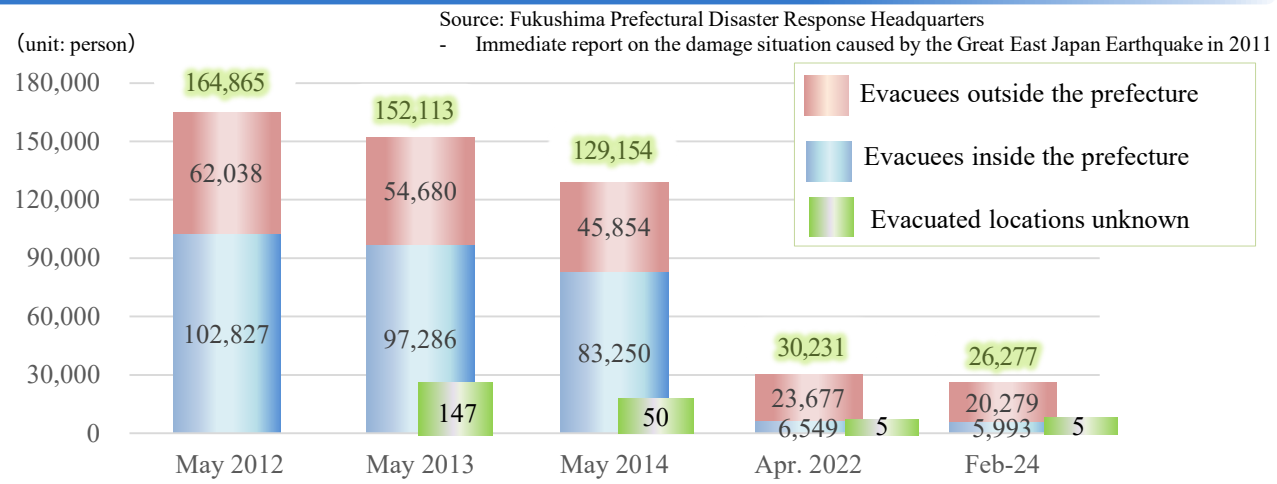
### Proportion of residents in the 12 municipalities of the evacuation areas

Municipalities	Rate of residents
Hirono Town	90.7%
Tamura City (Miyakoji District)	86.4%
Kawauchi Village	83.0%
Naraha Town	67.5%
Minamisoma City (Odaka District)	62.9%
Kawamata Town (Yamakiya District)	51.2%
Katsurao Village	36.9%
Iitate Village	33.0%
Tomioka Town	20.4%
Namie Town	14.5%
Okuma Town	6.5%
Futaba Town	1.9%

(As of 29 Feb. 2024)

\*The area of the Evacuation-Designated Zone includes the former Emergency Evacuation Preparation Zone.

### Transition of evacuees: Earthquake, Tsunami, NPS accident



### 【Specified Reconstruction and Revitalization Bases Area(SRRBA)】

Areas within the Difficult-to-return Zone where residence would have been restricted into the future but was made possible when evacuation orders were lifted. Established in 6 towns and villages in the prefecture, where evacuation orders were lifted from June 2022 to November 2023.

### 【Specified Living Areas for Returnees (SLAR)】

A zone established outside of SRRBA in the Difficult-to-Return Zone to help residents return to their homes and rebuild their lives, stipulated by the revision of the Act on Special Measures for the Reconstruction and Revitalization of Fukushima of June 2023. For the towns of Okuma and Futaba, decontamination began in December 2023.

### Challenges

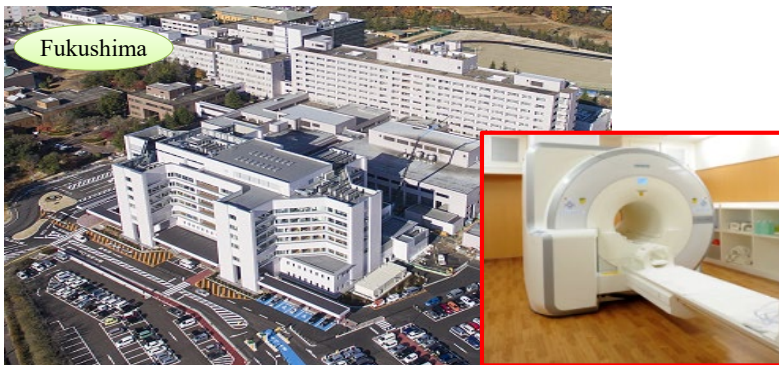
- **Improvements of infrastructure and living environment in SRRBA** tailored to the actual circumstances of each region
- **Thorough decontamination and other efforts** aimed for early lifting of evacuation orders in **SLAR**
- **Maintaining a support system and consultation services** for evacuees, providing **psychological care** for those affected by the disaster
- **Improvement of the living environment** for returnees, including shopping, medical and welfare services, education, transport, housing and wildlife damage control
- **Lifting of evacuation orders to the whole area of the Difficult-to-return Zone**

## Current Status

To alleviate health concerns resulting from the Great East Japan Earthquake and the nuclear disaster, **cutting-edge research and medical institutes such as the Fukushima Global Medical Science Center at Fukushima Medical University have been established**, and initiatives aimed at healthy longevity and the Fukushima Health Management Survey have been promoted.

## Development of a hub for cutting-edge radiological research and medical care & fostering of human resources in medical fields

### Fukushima Global Medical Science Center



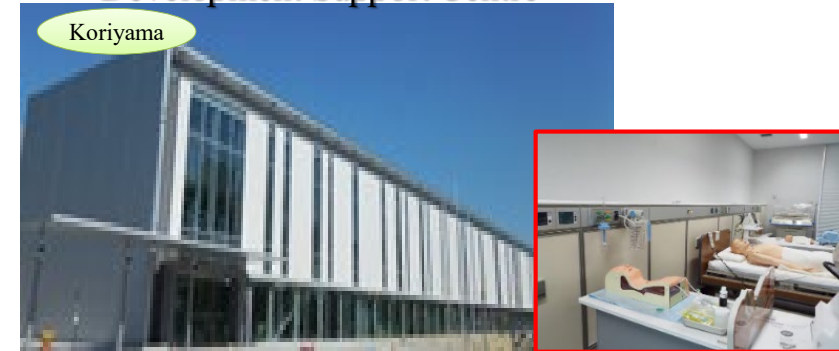
Base for supporting the revitalization of Fukushima on the medical front

### School of Health Sciences Fukushima Medical University



Training medical professionals responsible for local medical care.

### Fukushima Medical Device Development Support Centre



Promotion of the domestic medical equipment industry and improving medical skills through training.

## The Projects for a Long and Healthy Life

- Health indices in Fukushima have been lower than the national average since the disaster; as such, the Prefecture will take measures to promote the health of residents focusing on the three pillars of food, exercise, and social participation. This is so that everyone can review their lifestyle and improve their physical fitness while getting to know and understand their health.
- Launch of "Kenkou Fukushima (Health Fukushima) Portal Site", an informational platform concerning health promotion.
- Release of "Fukushima Kenmin (Healthy Citizen) App" to promote better lifestyle for better health.



Health & Longevity Fukushima Conference Panel Discussion



Fukushima Healthy App

## An overview of Fukushima Health Management Survey

- 【Basic Survey】
  - External exposure doses were estimated for a 4-month period immediately after the nuclear accident to 11 Jul. 2011, based on a self-administered questionnaire.
  - Results of estimate on external exposure dose (All citizens surveyed) Ratio of dose from 0 to 2mSv accounts for 93.8% of all.
- 【Detailed Survey (Thyroid Ultrasound Examination)】
  - It covers residents of Fukushima Prefecture aged 18 years and younger at the time of the disaster.
  - \*Preliminary Baseline Screening: FY2011-FY2013 Full-scale Thyroid Screening: FY2014-
  - (Primary Examination) Ultrasonography
  - (Confirmatory Examination) Advanced ultrasonography, blood test, etc.



Thyroid examination (Ultrasound imaging diagnostics)

## Challenges

- **Reducing the residents' concerns about the health effects of radiation**
- **Educating the next generation** through child health promotion programs
- **Support for securing medical and caregiving professionals**, as well as facility operations, etc
- **Increasing cancer screening rates**
- The number (or rate) of people with **metabolic syndrome, child obesity is high**, compared with the national average
- **Extending people's healthy life expectancy** by encouraging a healthy lifestyle

## (4) Re-establishing the living environment for people to return and relocate

### Current Status

While the return and relocation to the evacuated areas are increasing with more evacuation orders being lifted, **the development of living environments for people to return and relocate has progressed**, such as public housing, commercial, medical and caregiving facilities in evacuation areas.

### Examples of facilities having been built

#### ◆ Revitalization Public Housing



Iwaki City: Iwasaki housing complex

#### ◆ Shopping facilities



Namie Town:  
Roadside-Station "Namie"

#### ◆ Medical and caregiving services



Tomioka Town: Futaba Medical  
Center-affiliated Hospital

#### ◆ Educational facilities



Minamisoma City: Odaka Industrial  
Technology and Commerce High School



Futaba Town:  
Disaster public housing



Okuma Town: Okumart, Hot Okuma,  
and Linkru Okuma complex facilities



Futaba Town:  
Futaba Town Clinic



Okuma Town:  
Manabiya Yumenomori

### Efforts in evacuation areas to promote relocation

#### Fukushima Prefecture's Relocation Support Centre for 12 Municipalities

Established on July 1, 2021 in order to facilitate relocation and permanent settlement in the 12 municipalities affected by evacuation orders resulting from the Fukushima Daiichi Nuclear Power Station Accident, this organisation engages in public projects better suited for wider-area collaboration and supports policies to promote relocation implemented by the aforementioned municipalities.



"Relocation Seminar at Future Work Fukushima"

#### "Future Work Fukushima", an information website for relocation

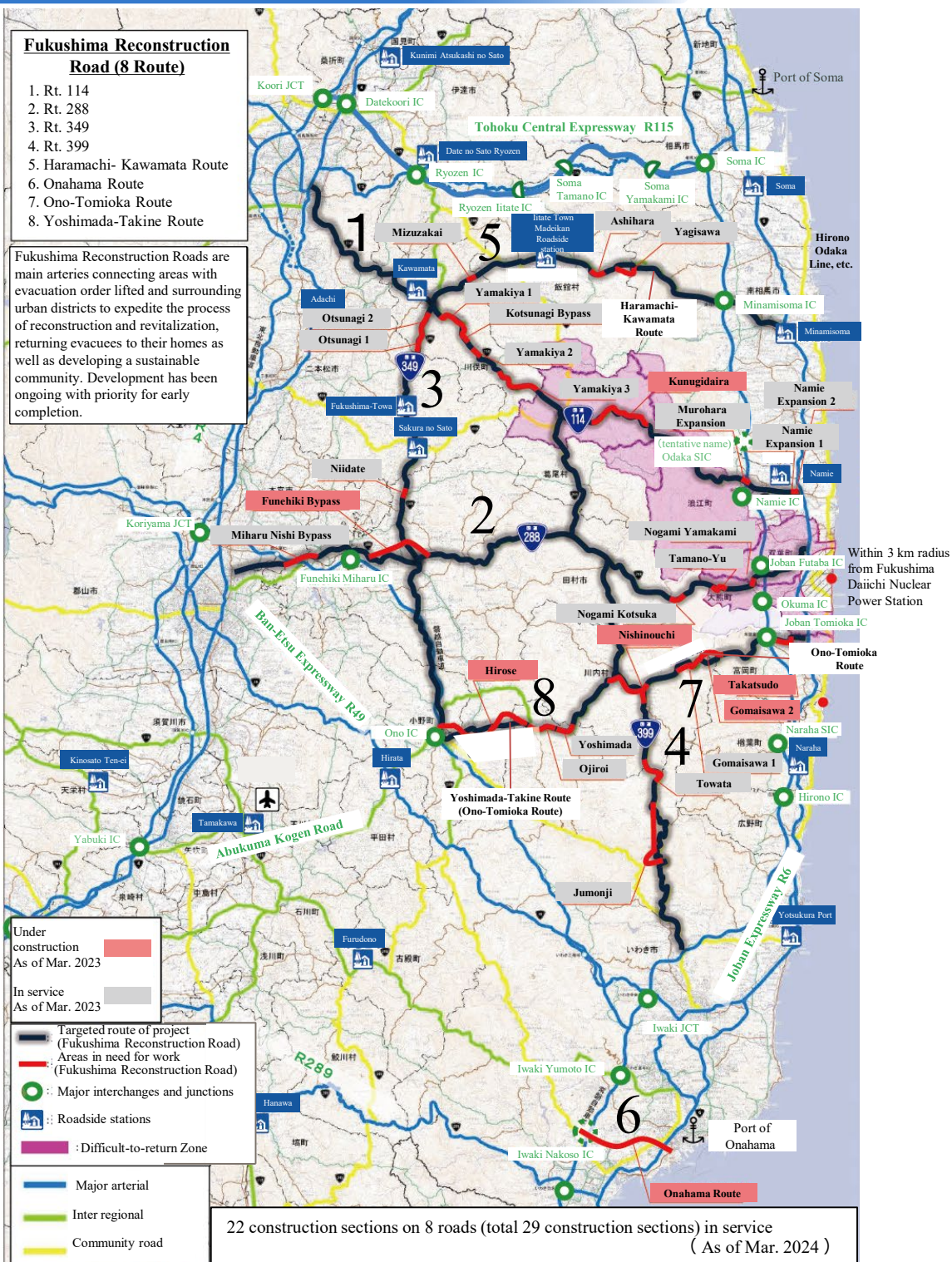
Website serving as an information hub on relocation to the 12 municipalities in the prefecture, presenting job opportunities, living conditions and unique characteristics of each region.

### Challenges

- **Creating an environment where the disaster-affected and evacuees can rebuild their lives securely**
- **Continuing to provide consultation** regarding housing and rebuilding of livelihoods, as well as **looking after residents, providing support for everyday life and community building**
- **Providing a comprehensive medical and caregiving system based** on the needs of residents
- Further promotion of **distinctive and engaging education**
- **Encouraging people from outside the Prefecture to relocate and settle down as well as increasing the number of people visiting the Prefecture**

**Current Status** 99% of the initiated reconstruction projects related to the damages caused by the Great East Japan Earthquake has been completed, while the Fukushima Reconstruction Roads and other integral projects to the revitalization are underway.

Transportation networks such as roads



Reconstruction work (\*1)

Starting construction work 100% Completion 99% 【As of 29 Feb. 2024】

【The regions】

Aizu	26	Completion 100.0%
Central	535	Completion 100.0%
Coastal	1,597	Completion 99.7%

【The Areas】

Percentage of completion

- 100% ... Port and harbors, Fishing port, Sewage, Park, Public housing, Bridge, Sand erosion control, Road
- About 99% ... River
- About 98% ... Coast

【Evacuation-Designated Zones】 (\*2)



There are 372 disaster recovery projects that were determined through assessment. All of them (100%) have started construction, and 367 sites (98%) have been completed. Construction plans in Difficult-to-return Zone will be adjusted with the progress of the decontamination work conducted by the national government.

- \*1 Reconstruction work for public infrastructure facilities of the prefecture damaged by the Great East Japan Earthquake.
- \*2 The Evacuation-Designated Zones include Difficult-to-return Zones, former Restricted Residence Zones, and former Preparation Areas for Lift of Evacuation Orders.



National Route 349 (Otsunagi District in Kawamata Town) In service as of March 21, 2023



National Route 399 (Iwaki City Jumonji construction section) In service as of September 17, 2022

Challenges

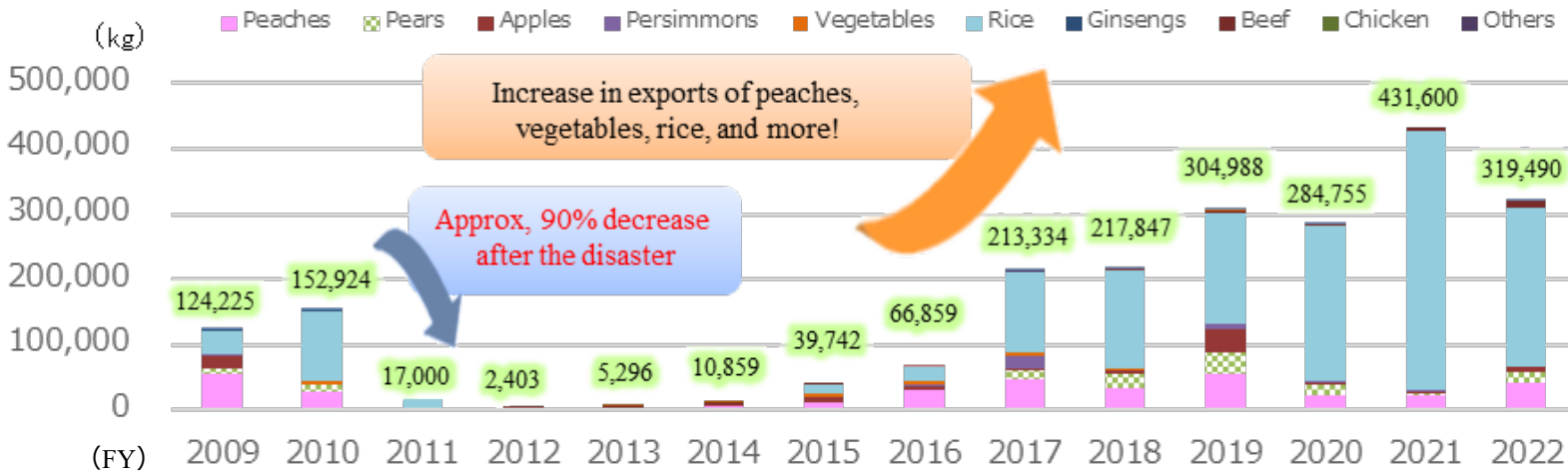
- Reconstruction of public works facilities and coasts in the Difficult-to-return Zone
- Development of the Fukushima Reconstruction and Revitalization road, development of roads in the 12 municipalities where evacuation orders had been issued



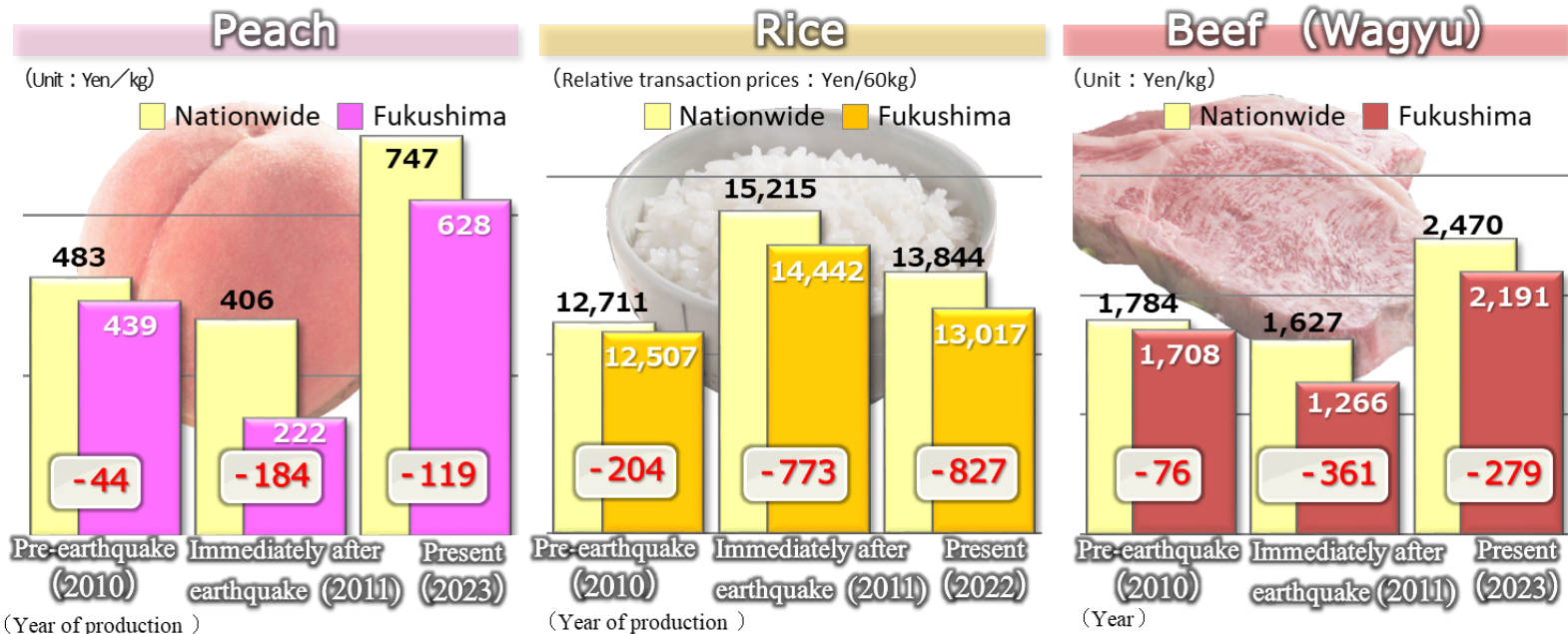
**Current Status**

The number of countries and regions restricting import of Fukushima products **down to 7 from 55 in the aftermath of the nuclear accident**. Exports exceeded pre-disaster levels, reaching the second highest export volume ever in FY2022. On the other hand, while the price of locally produced agricultural products of Fukushima generally shows signs of recovery, the price difference from the national average has not yet been restored for some items.

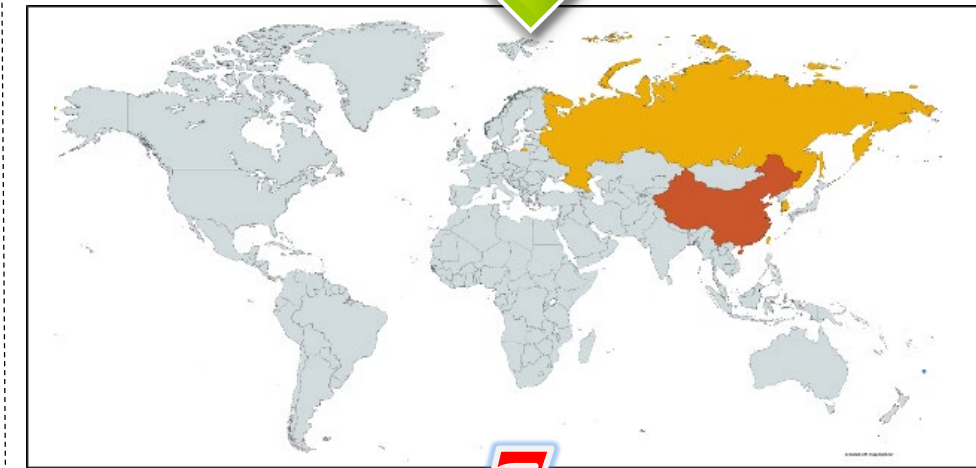
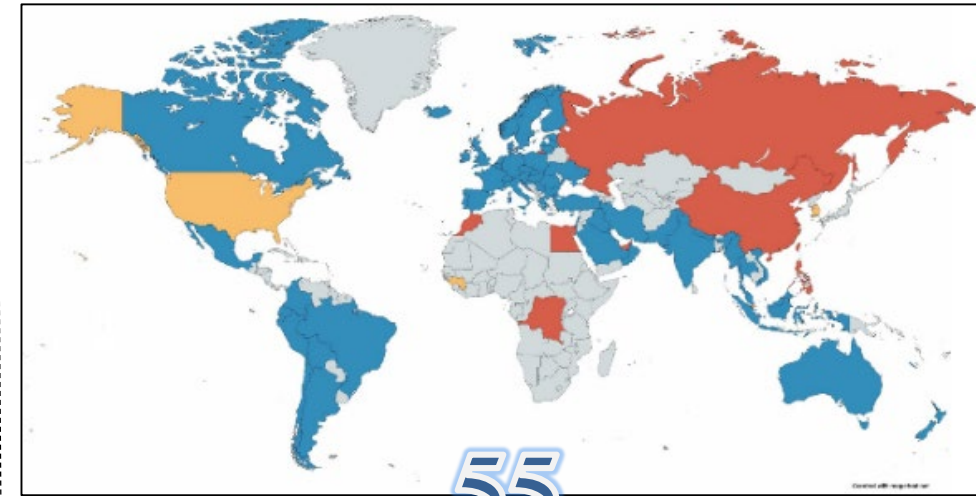
**Agricultural product exports**



**Transition of prices of major agricultural products and price differences from the national average**



**Number of countries or regions with import restrictions**



(As of 16 Oct. 2023)

- Countries and regions imposing an import ban on a wide range of products produced in Fukushima (12→3) China, Hong Kong, Macao
- Countries and regions imposing an import ban on some of the products produced in Fukushima (4→3) Korea, Taiwan, Russia
- Countries and regions allowing import of foods only when inspection certificates are attached (39→1) French Polynesia

**Strengthening distribution and sales capabilities**

◆ **Strategic branding**



Improving the image and pricing of the prefecture's original varieties

◆ **Expanding consumption and sales channels**



Top sales for Fukushima-produced fruits and vegetables

◆ **Ensuring food safety and security**

Monitoring inspections on Fukushima's agricultural, forestry and fisheries products for radioactive materials (1 Apr. 2023 ~ 31 Jan. 2024)

FY 2023	Item	Number of Inspections	Number of cases exceeding the standard
	Brown Rice (*1)	424	0
	Vegetables & Fruit	1,817	0
	Livestock products	1,480	0
	Cultivated mushrooms & mountain plants	540	0
	Fisheries products (Marine & cultivated products)	2,702	0
	Wild mushrooms & mountain plants	389	0
	Fisheries products (River, lake, pond)	88	0

\*1 While inspections of all grains of all bags had been implemented for brown rice throughout the prefecture by the 2019 rice harvest, this practice transitioned to monitoring starting from the 2020 rice harvest, except for the municipalities that were subject to evacuation orders. Therefore, the number of brown rice samples aligns with those undergoing monitoring. Currently, the blanket inspections are implemented only in 9 municipalities, with no samples exceeding the standard limit.



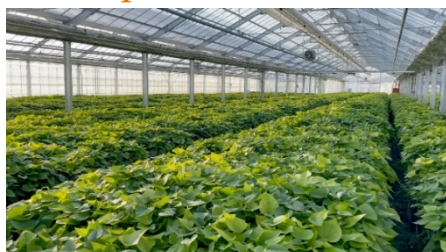
The standard amount of radioactive cesium allowed in food (Becquerels/kg) (\*2)

Japan	EU	USA	CODEX
100	1,250	1,200	1,000

\*2 International food standards

**Strengthening productivity and competitiveness**

◆ **Establishing high-value-added production areas**



Supporting the establishment of areas broadly developing high-value-added production

◆ **Fukushima Model fisheries**



Production of high-value-added products and branding through premium fresh shipping

◆ **Obtaining GAP and other certifications**



Efforts to dispel harmful rumours and build trust in producers

◆ **Research and development supporting production**



Development of robot tractors to overcome labour shortages in evacuation areas

**Challenges**

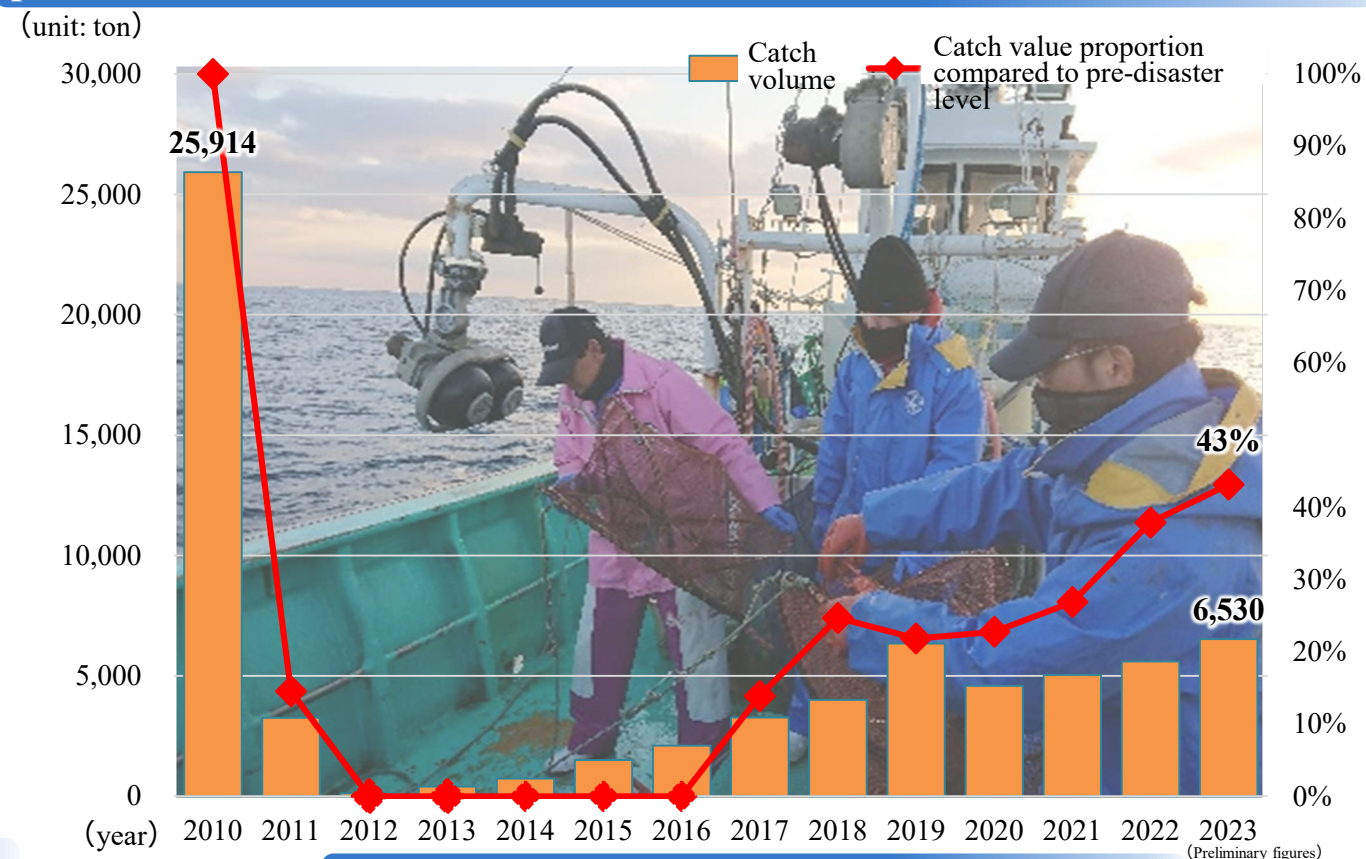
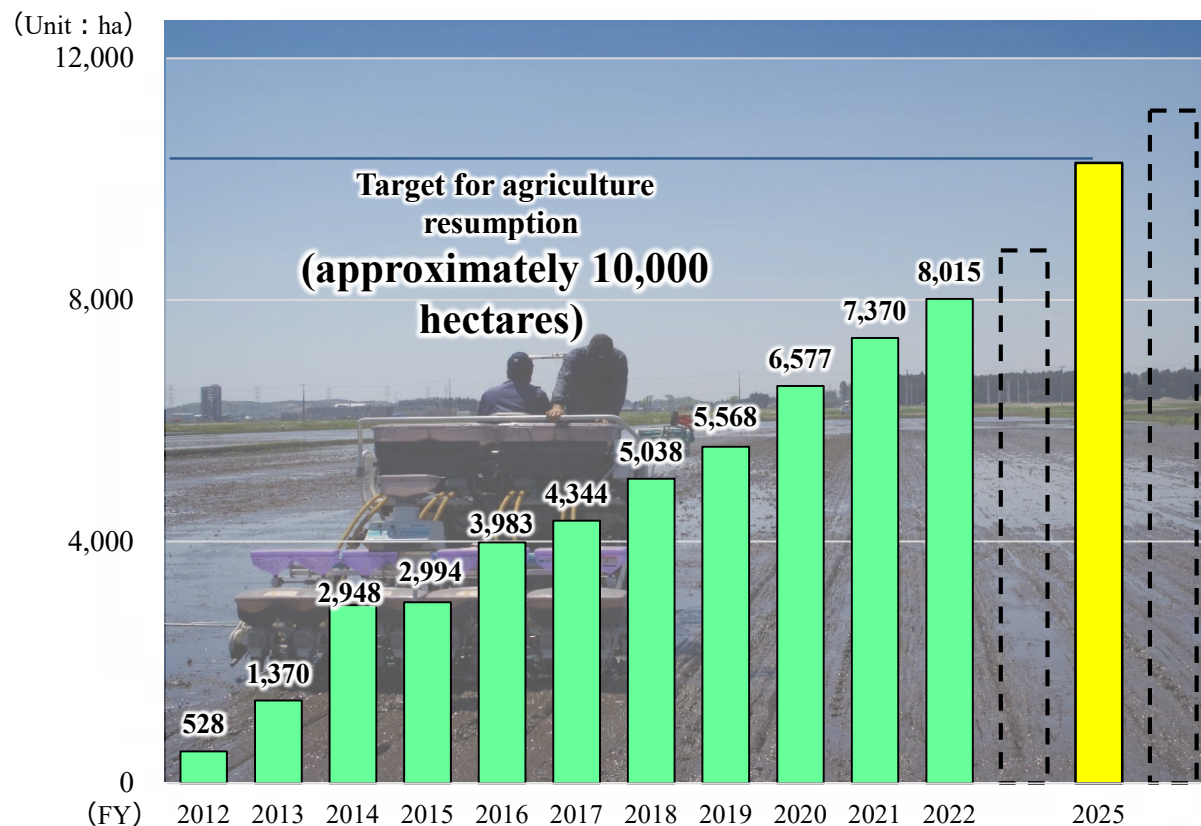
- **Regaining the price of agricultural products** to the national average (**Promoting branding of Fukushima products**)
- **Disseminating information about safety** based on scientific evidence **nationally and internationally**
- **Promoting "Fukushima Model of Fisheries"** aimed at **higher profits with less effort than before the disaster**
- **Strengthening productivity and competitiveness** by establishing high-value-added production areas, obtaining GAP and other certifications and development/demonstration of advanced technologies

**Current Status**

Agriculture has gradually resumed in areas where evacuation orders have been lifted, reaching a **resumption rate of 46.3% (8,015ha) as of the end of March 2023**. In addition, for **the coastal fishing industry, which is working towards the recovery of full-scale operations, the catch volume in 2023 reached 6,530 tons**, with **the catch value amounting to 43% of the pre-disaster level**.

**Transition of agriculture resumption areas in evacuation areas**

**Coastal fisheries catch volume / Transition of catch value proportion to pre-disaster level**



**Securing and developing new agricultural practitioners**

**Strengthening production infrastructure**



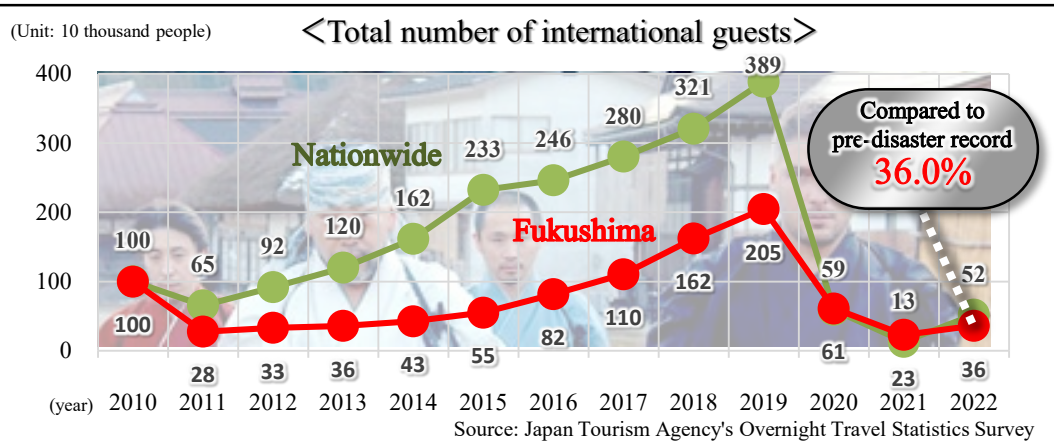
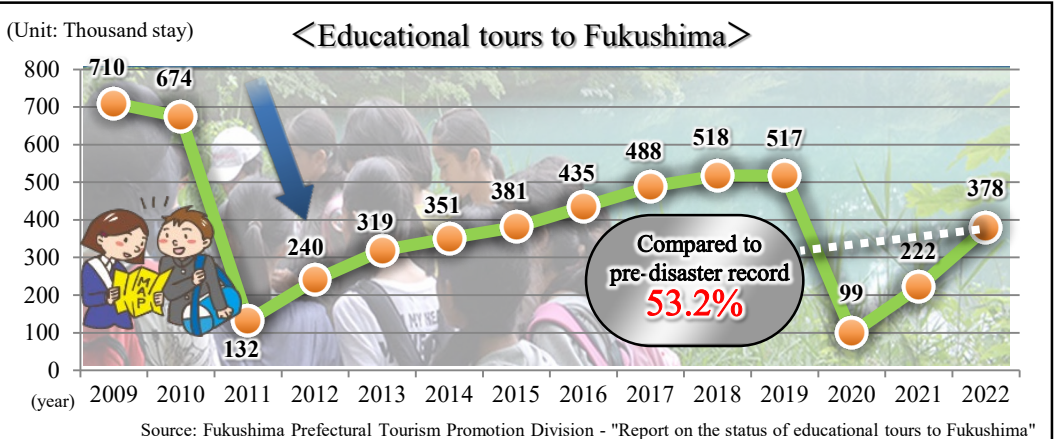
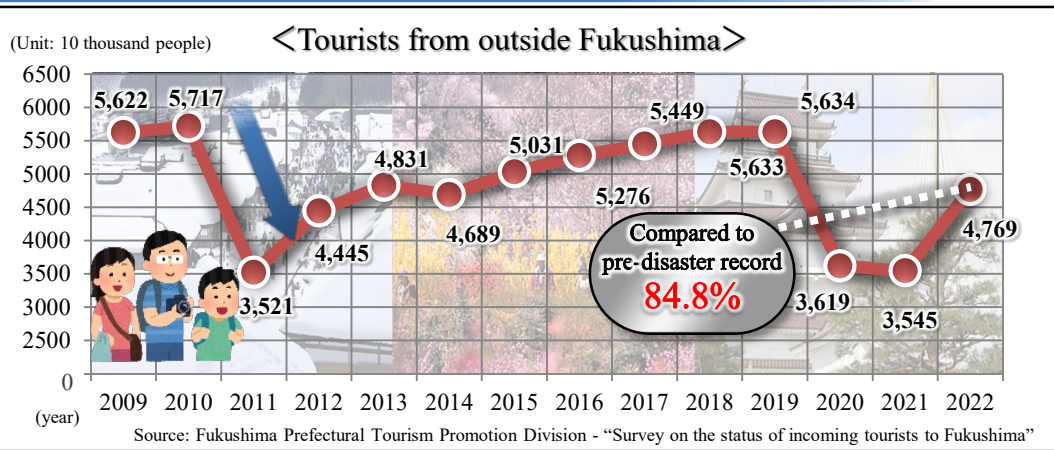
**Challenges**

- **Further acceleration of agricultural resumption**
- **Securing and developing new practitioners** in agriculture, forestry and fisheries industries
- Developing farmland for practice of Smart Agriculture throughout the field expansion, versatile use/conversion to dry field of rice paddy
- Promoting measures **against radioactive materials necessary for the maintenance of forests** as well as **revitalizing the forest areas** for logs and minor forest products
- **Resumption of coastal fishery**

**Current Status**

Decline in incoming tourist population due to the impact of COVID-19 pandemic and repeated Fukushima-Oki (offshore) earthquakes in 2021 and 2022. **After the pandemic, the number of tourists and educational tours have been on a recovery trend. Export shipments of Fukushima products reached an all-time high in FY2022.**

**Changes in the number of tourists visiting**



**Implementation of various projects focusing on Hope Tourism to stimulate tourist attraction**

**Hamadori blue tourism**  
Fukushima Prefecture's Hamadori blue tourism promotion project

**Adventure tourism**  
Project to promote the branding of adventure tourism and other activities

**Fermentation tourism**  
Fukushima Prefecture's fermented food and culture promotion project

**Green tourism**  
Fukushima Prefecture's green tourism promotion project

**Hope Tourism**

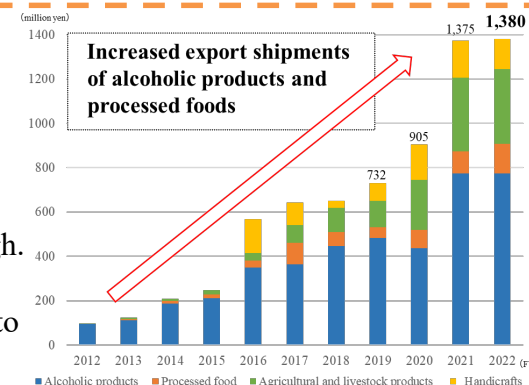
Disaster remains of Ukedo Elementary School of Namie Town

The Great East Japan Earthquake and Nuclear Disaster Memorial Museum

J-Village

**Transition of export shipments of Fukushima products**

- The value of export shipments of Fukushima products (alcoholic products, processed foods, agricultural and livestock products, handicrafts) in FY2022 was 1.38 billion yen, reaching an all-time high.
- The prefecture will work to further expand exports by developing effective promotions that firmly convey the appeal of local products to people overseas.



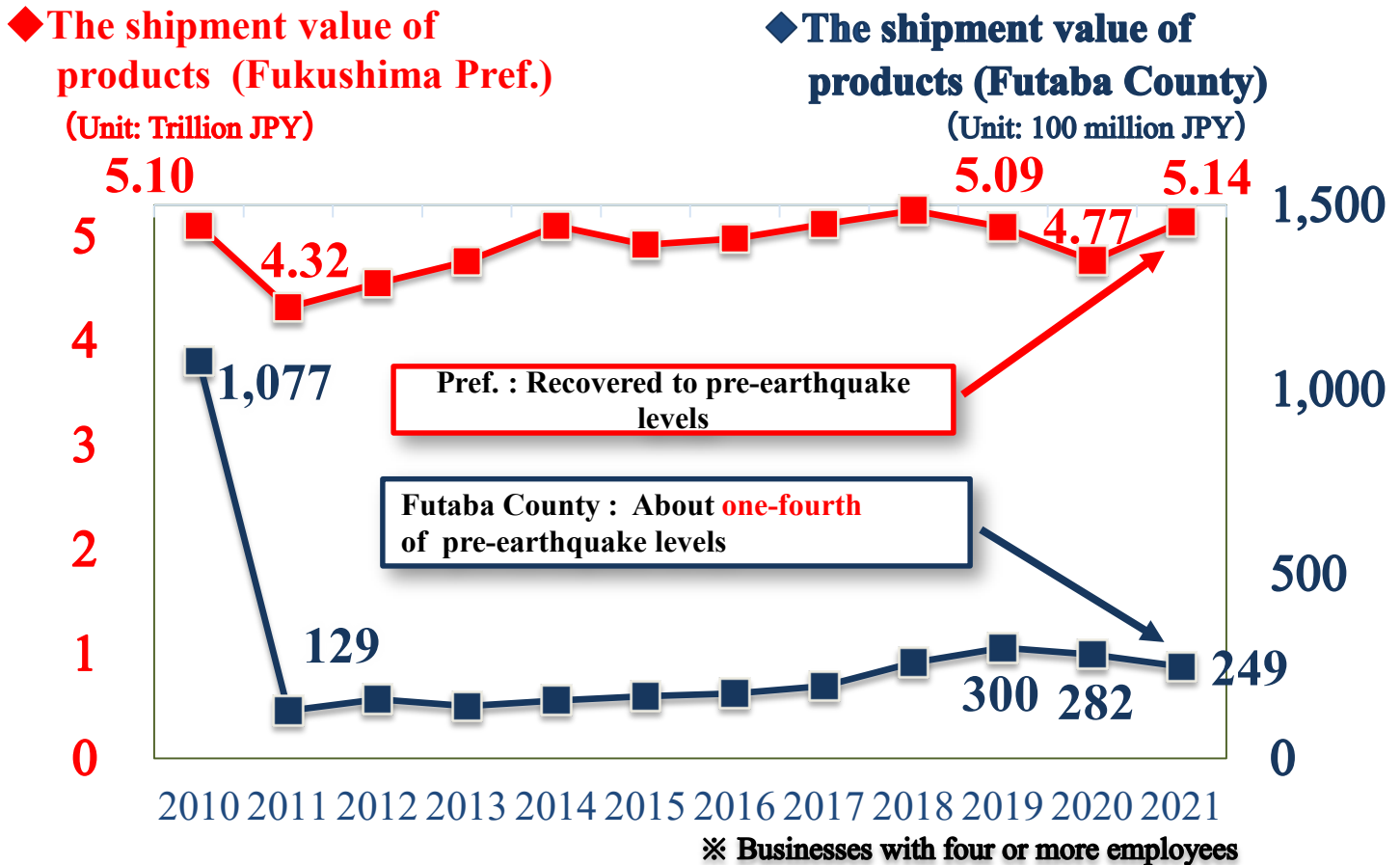
**Challenges**

- **Attracting more visitors to Fukushima through various projects** in order to accelerate the revitalization of Fukushima, the 18th goal of the SDGs
- **Recovering educational tours by inquiry-based learning programmes focusing on Hope Tourism** as well as by continuously spreading information and marketing
- **Spreading information to attract more foreign tourists** in a post-pandemic world

(6) Industry 3. Business investment and employment creation

**Current Status** Promoting business investment. Manufactured product shipment has recovered to pre-earthquake level for the prefecture in general. However, **in Futaba County**, factors such as the slow progress of factory investment have resulted in the product shipment remaining at only about one fourth of the pre-earthquake levels.

The shipment value of products



Business investment support utilising the Fukushima business investment subsidy

① Fukushima business investment subsidy for revitalization of industries (FY2012-FY2021)

**Allotted to 601 entities**  
(As of 31 May 2021)

**7,405 jobs created (projection)**

② Subsidy to business investment for employment creation in the tsunami and nuclear disaster-affected areas (FY2013-)

**212 entities**  
(As of 22 Dec. 2023)

**2,715 jobs created (projection)**

③ Subsidy for investment promotion for the support of self-help and return and the employment creation (FY2016-)

**140 entities**  
(As of 29 Sep. 2023)

**1,444 Jobs created (projection)**

④ Fukushima business investment subsidy for industrial vitalization (FY2020-)

**Allotted to 35 entities**  
(As of 20 Dec. 2023)

**373 jobs created (projection)**



“Signing ceremony for the basic agreement on factory investment”

Employment within the prefecture  
988 companies 11,937 employees  
Employment in Hamadori(Coastal) Region  
398 companies 4,466 employees

Business investment support utilising special provisions for taxation (preferential tax system)

In Fukushima Prefecture, when businesses designated by law establish or expand production equipment or facilities, or employ disaster-affected citizens, preferential tax treatment for corporate taxes (income tax) and local taxes (for business, real estate acquisition and fixed property) may be applied subject to meeting certain conditions.

- Challenges**
- **Introducing new vitality** through business investment
  - Recovery of the industrial bases in Futaba County and the Coastal Region. **Accelerating the Fukushima Innovation Coast Framework** to develop self-sustaining and continuous industry growth (**Creation of new industries with the involvement of local companies in Hamadori (Coastal) Region** through support for technological development)
  - **Supporting** disaster affected companies in Futaba County and other businesses **to resume operations** and **promoting expansion of business from outside of the Prefecture**

# (6) Industry 4. The Fukushima Innovation Coast Framework I

**Current Status** In order to recover the industries in the Hamadori and other areas lost due to the Great East Japan Earthquake and nuclear disaster, strategic installations in the priority fields of **the Innovation Coast Initiative** are progressing, and **efforts are being made to implement the initiative**, such as industrial integration through inviting business investment and promoting business start-ups within and outside of the prefecture, education/human resource development and increasing the number of people visiting the prefecture.

## The Fukushima Innovation Coast Framework

The Hamadori (Coastal) Region, among other regions, faced the loss of workplaces due to the earthquake and nuclear disaster. **To achieve the region's revitalization**, it is essential to **create a new industrial infrastructure** while advancing the resolution of the Fukushima Daiichi Nuclear Power Station Accident as a prerequisite for that.

**A national project** that aims to build a new industrial infrastructure to regain the lost industries in the region. Six priority fields have been identified, and initiatives are being pursued, such as **industrial integration, education/human resource development and increasing number of visitors**, in addition to **the implementation of major projects** including completion of installations such as Fukushima Robot Test Field, among others.

## 6 priority fields

### I Decommissioning

Developing technology by gathering wisdom from Japan and around the world



Demonstration tests necessary for decommissioning, etc. are carried out at Naraha Center for Remote Control Technology Development

### II Robots and Drones

Integrating robotics industry with the Fukushima Robot Test Field positioned as its core



The Fukushima Robot Test Field replicating the operating environment of land, sea and air field robots

### III Energy, the Environment and Recycling

Establishment of advanced renewable energy and recycling technologies



Promotion of renewable energy introduction and accelerating implementation by developing shared transmission lines

### IV Agriculture, Forestry and Fisheries Industries

Revitalization of agriculture, forestry and fisheries industries utilising ICT and robotic technologies



Establishing an agricultural model utilising ICT "Demonstration of unmanned tractor operation"

### V Healthcare-related industries

Promoting an integration of pharmaceutical industry through technology development support



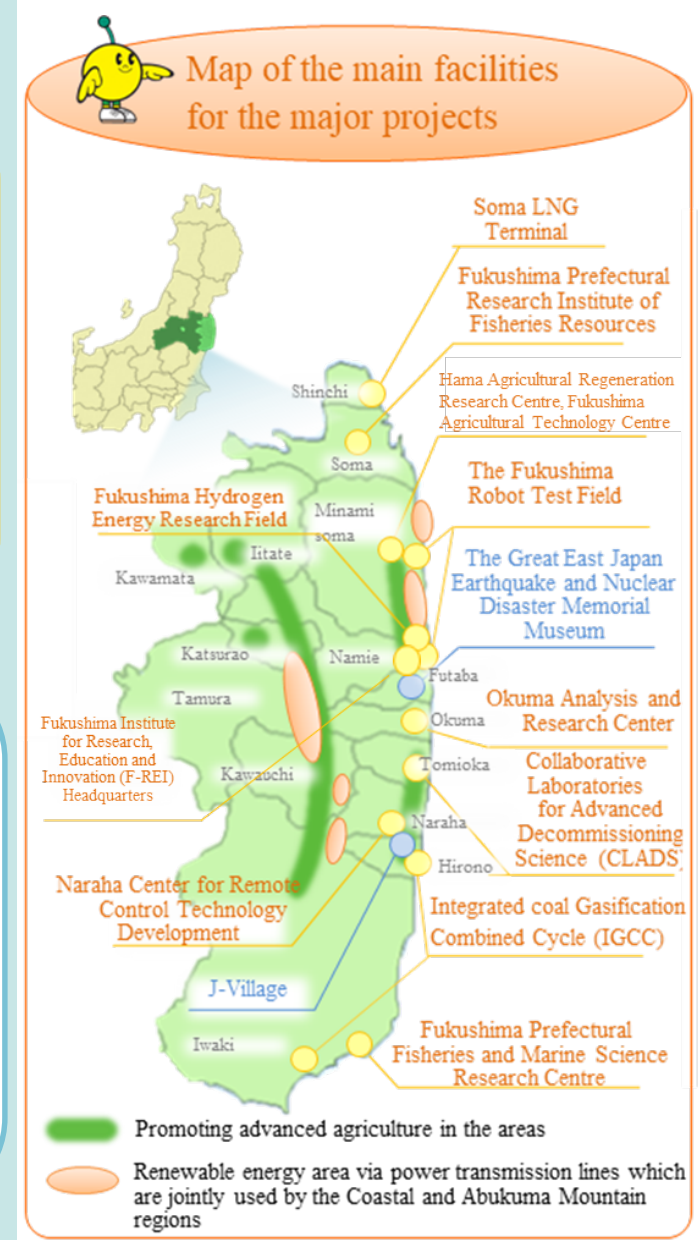
"Medical-Industrial Translational Research Center"

### VI Aerospace industries

Demonstration of 'Flying Cars' and attraction of related companies



"Aerospace Festa Fukushima"



# (6) Industry 4. The Fukushima Innovation Coast Framework II

## Initiatives towards the realization of the framework

### Clustering of industries

◆ Fukushima Prefecture Business Investment Seminar



Helping to promote business investment and supporting companies inside and outside the region to start business

◆ A pitch event for start-ups in the Hamadori area aiming to start a business or develop technology to demonstrate the results of their research and work (Fukushima Tech Create program)



### Expanding the non-resident population

◆ Conducting social interaction project inviting businesses and youths to create bonds with communities of Hamadori (Coastal) Region.



Expanding the non-resident population in the Coastal Region and other areas where the number of residents has decreased due to evacuation

◆ Robotics and programming classes The Fukushima Robot Test Field hosts programs for elementary and junior high school students of Fukushima



### Re-establishment of the living environment

◆ Development is progressing for public infrastructure

- Tohoku Chuo Expressway
- Joban Expressway
- JR Joban Line

Creating an environment necessary for people to safely live

◆ Scheduled bus service available

- From Futaba Station to Fukushima Station West Exit via Fukushima Robot Test Field

### Spreading information

Passing down the records and lessons learnt from the compound disaster to future generations

◆ In January 2024, the number of visitors reached 260,000 at the Great East Japan Earthquake and Nuclear Disaster Memorial Museum, which opened in September 2020.



Inside the Great East Japan Earthquake and Nuclear Disaster Memorial Museum

◆ A symposium was held on 9 December, 2023, with the theme of "For a Future Paved by the Innovation Coast Framework and an Attractive Region".



### Fostering human resources in education

Fostering the youth force who will carry the future of the Coastal Region

◆ The Revitalization Knowledge Project



◆ Seminars have been held for residents for them be familiar with the efforts of the Fukushima Innovation Coast Framework



### ◆ Odaka Industrial Technology and Commerce High School

The school has been designated as one of the Meister high schools, which is a project of the Ministry of Education, Culture, Sports, Science and Technology. It is working to develop human resources with advanced knowledge and skills that can handle new industries through the human resource development system linked to these industries as well as the collaboration between commercial and industrial academic courses.



### ◆ Futaba Future School Junior and Senior High school

Fostering future global leaders as core schools of the Ministry of Education, Culture, Sports, Science and Technology's "Project to Support Development of the World Wide Learning (WWL)", establishing curriculums of Community Development, Search for Future Creation and fostering top-class athletes.



## The preferential tax system to promote the Fukushima Innovation Coast Framework

Special provision for taxation will be applied to businesses that invest in equipment, employ people affected by the disaster and carry out R&D in relation to the development of new products in the priority fields of the initiative.

### Challenges

➤ **Creating an economic ripple effect in the Prefecture by connecting businesses to the innovation projects and enhancing industrial clustering**

**Current Status** On 1 April 2023, **the Fukushima Institute for Research, Education and Innovation (F-REI) was established** in Namie Town as a world-class core centre for "creative reconstruction". It is necessary for its effects to be widely and quickly realised.  
※ F-REI stands for Fukushima Institute for Research, Education and Innovation

**Overview of F-REI**

- F-REI is a legal entity established by the Government of Japan as a world-class core centre for creative reconstruction with the goal of realising the revitalization of Fukushima and other parts of the Tohoku region, as well as contributing to Japan's scientific and technological capabilities and industrial competitiveness. F-REI is expected to drive the Fukushima Innovation Coast Framework further ahead.
- F-REI headquarters were opened at "Fureai Center Namie" in Namie Town on 1 April 2023. Facilities and research equipment will be in place hereafter.

**Innovation Coast Framework and F-REI**

- Accelerating research and development, industrialization and human resource development by further developing Fukushima Innovation Coast Framework and establishing a command post that coordinates initiatives at existing research facilities.
- The initiatives in industrial integration under the Innovation Coast Framework contribute to research, development and industrialisation at F-REI.

**Four Functions of F-REI**

**1. Research & Development**  
Promotion of five research and development areas


**2. Industrialization**  
Establishing industry-academia collaboration system

**3. Fostering human resources**  
Development of research personnel and collaboration with technical colleges

**4. Control Tower**  
Organising council to coordinate initiatives at existing facilities



**Five Areas in R&D**

**1. Robots**





Drones and robots for harsh environments

**2. Agriculture, Forestry and Fisheries Industries**




Smartification of agriculture, forestry, and fisheries (agricultural control systems)

**3. Energy**





Achieving carbon neutrality (manufacturing chemical products using biochemical processes)

**4. Radiation Science, Medicine and Drug Development & Industrial Applications for Radiation**



Research and development in radiation imaging technology

**5. Collection and Dissemination of Data and Knowledge on Nuclear Disasters**



Practice and impact assessment of revitalization/community reconstruction

**Project progress**



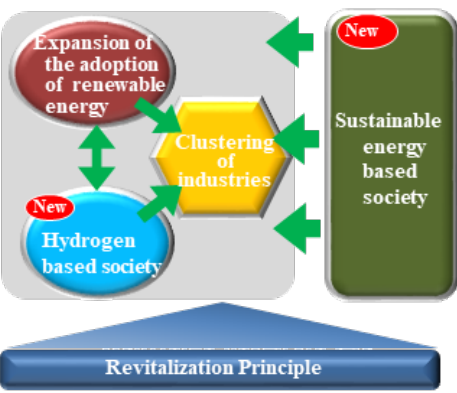
**Challenges** ➤ Collaboration with the national government and relevant organisations for **the best practice of F-REI's R&D, industrialisation and HR development functionality**



(6) Industry 6. Renewable energy

Current Status

Under the revitalization principle (building a safe, secure and sustainably developing society free from nuclear power) and renewable energy promotion vision, efforts are being made to expand **the renewable energy adoption, promote the integration of related industries and realise a hydrogen based society, with the aim of becoming a pioneering region in renewable energy.**



Revitalization principle and renewable energy promotion vision

- ◆ Revitalization Principle : Building a safe, secure sustainably developing society free from nuclear power
- 1. Switch to low carbon/circular society with less environmental impact
- 2. Revitalization (Promotion of local community)
- ◆ Initiatives will be conducted focusing on the four pillars under the “renewable energy promotion vision”

Targets of adoption

Index	Targets	Present state
Amount of the adoption of renewable energy in relation to the Prefecture's energy demand	100%(2040)	52.1%(FY2022)
Amount of the adoption of renewable energy for the amount of power consumed in the Prefecture	100%(FY2025)	96.2%(FY2022)
Number of stationary hydrogen station installed	20 Units (FY2030)	4 Units (FY2022)

Hubs for renewable energy in the Prefecture

**Hub for research**

Fukushima Renewable Energy Institute, AIST (FREIA)

Koriyama City

**Small-scale hydropower**

Shinobuyama Endogataki Otama Daiichi small-scale hydropower station

Otama Village

**Biomass**

Green Power Aizu Woody biomass power station

Aizuwakamatsu City

**Geothermal**

Tsuchiyu Onsen Source No. 16 Binary Power Plant

Fukushima City

**Wind Power**

Koriyama-Nunobiki Kogen wind farm

Koriyama City

**Solar power**

Fukushima Airport Mega Solar

Sukagawa City  
Tamakawa Village

Clustering of industries

- ◆ Promotion for development of technologies related to renewable energy/hydrogen, commercialization, expansion of market channels and overseas expansion
- ◆ Promotion of recycling of solar power, etc.



Sustainable energy based society

- ◆ Local production and local consumption of energy in communities, promotion of Smart Community
  - ◆ Consideration of environment and landscape, etc.
  - ◆ Implementation conservation
- 
- Katsurao Village Smart Community

Realising hydrogen based society

- ◆ Hydrogen can be generated from renewable energy and other resources, stored for a long period of time and does not emit CO<sub>2</sub> while being utilized.
  - ◆ Hydrogen stations, fuel cell bus, and fuel cell vehicles were adopted in various places.
- Namie Town

Fukushima Hydrogen Energy Research Field (FH2R)

Iwaki City

fuel cell bus

**Tohoku's first FC bus**

Challenges

- **Switch to low-carbon society** through efforts to save natural resources and conserve energy
- **Create systems that gives back profit to the local community**
- **Local production for local consumption of energy**
- **Attract companies related to the industries. Foster new industries and create jobs**

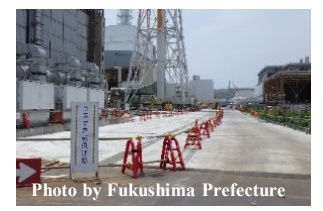
**Current Status** Efforts toward decommissioning of TEPCO Fukushima Daiichi and Daini Nuclear Power Stations are ongoing. The Association for Monitoring of Safety in Decommissioning and other entities are continuing to monitor the process **to ensure safe and steady decommissioning work.**

## Fukushima Daiichi NPS

### Contaminated Water Measures

In order to reduce the volume of contaminated water, steps have been implemented to prevent the influx of groundwater and to deter rainwater from seeping in.

Facing (covering work using asphalt, etc.) of the ground surface within the premises is currently in progress.



Before facing (near Unit 3)

After facing

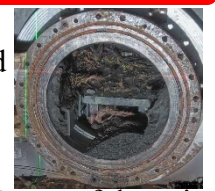
### Examples of the initiatives towards decommissioning

### Fuel Debris Retrieval

Examinations and preparations are underway for the test retrieval of melted fuel (fuel debris).

**Unit 1:** From February 2024, investigation of non-submerged area inside the primary reactor containment vessel began using small drones.

**Unit 2:** Preparations are underway for fuel debris retrieval testing. In January 2024, work began to remove deposits from the PCV penetration.



Status of deposits in the Unit 2 primary containment vessel  
(© Tokyo Electric Power Company Holdings, Inc.)

**Unit 3:** An additional investigation and analysis inside the primary containment vessel are being planned.

### Fuel Removal from Spent Fuel Pools

Work is proceeding to remove fuel that was used to generate electricity.

**Unit 1:** Operation of installing a large cover has been in progress to remove rubble from the upper part of the pool from Apr. 2022.

**Unit 2:** Foundation construction of stand for removal has been completed, and the steel framework has been under construction since Jan. 2023.



Installing a large cover for Unit 1

**Unit 3:** Fuel removal was completed in Feb. 2021.

**Unit 4:** Fuel removal was completed in Dec. 2014.

## Pathway to decommissioning

11 Mar. 2023 The Great East Japan Earthquake and Fukushima Daiichi Nuclear Power Station Accident



Unit 3 immediately after the hydrogen explosion

Apr. 2012 Decision to decommission Fukushima Daiichi Nuclear Power Station Unit 1 to 4

Jan. 2014 Decision to decommission Fukushima Daiichi Nuclear Reactors 1 to 4

Sep. 2019 Decision to decommission Fukushima Daini Nuclear Reactors 1 to 4

Decision to decommission all nuclear reactors within the prefecture



Current unit 3

## Key milestones for the future

Around Oct. 2024 Commencement of test retrieval of fuel debris

Within 2025 Suppression of daily generation of contaminated water to less than 100m<sup>3</sup> per day (achieved 90m<sup>3</sup> in FY2022)

Within FY2028 Eliminating outside temporary storage areas for rubble and other waste

Within 2031 Fuel removal from spent fuel pools in Units 1-6 completed

**Daiichi NPS: Completion of decommissioning expected in 30 to 40 years (around 2041 to 2051)**

**Daini NPS: Completion of decommissioning expected in 44 years (around 2065)**

## Fukushima Daini NPS

◆ For the decommissioning of all four units, TEPCO has formulated a 44-year "Decommissioning Plan", implementing the decommissioning process in four stages.  
◆ At this point, activities such as the investigation of contamination levels and the decontamination works are underway in the first stage, known as the "Dismantling Preparation Period".

ALPS treated water

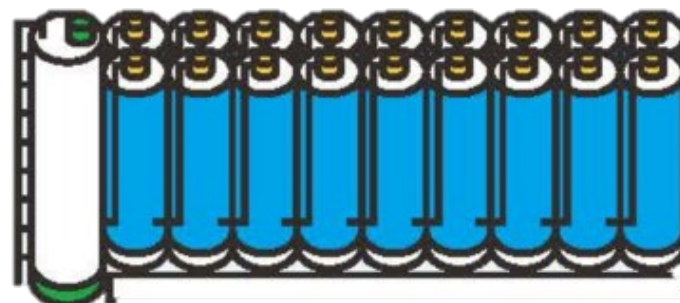
- ◆ The cooling water for the melted fuel (fuel debris) due to the nuclear accident, as well as rainwater and groundwater that flowed into the reactor buildings and subsequently came into contact with debris, results in the generation of contaminated water containing radioactive materials.
- ◆ Water in which radionuclides, except tritium, are removed from the contaminated water below the national regulatory standards by using the multi nuclide removal equipment (ALPS) is referred to as **ALPS treated water**.
- ◆ The inter-ministerial council reached a decision to start the discharge of the water into the sea on 24 Aug., 2023, and the discharge started on that day.

Contaminated water



Source: Created based on the Ministry of Economy, Trade and Industry website [https://www.meti.go.jp/earthquake/nuclear/hairo\\_osensui/pdf/alps\\_02.pdf](https://www.meti.go.jp/earthquake/nuclear/hairo_osensui/pdf/alps_02.pdf)

Multi-nuclide removal equipment (ALPS) \*and other equipment



\*Equipment to purify radioactive materials except for tritium to below national standards

Source: TEPCO's Fukushima Daiichi Nuclear Power Station "Hairo Michi" vol40

ALPS treated water



Source: An edited version of the METI website [https://www.meti.go.jp/earthquake/nuclear/hairo\\_osensui/pdf/alps\\_02.pdf](https://www.meti.go.jp/earthquake/nuclear/hairo_osensui/pdf/alps_02.pdf)

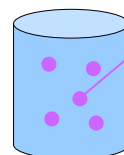
Water Storage Tank



Photo by Fukushima Prefecture

Analysis of 69 radioactive materials including tritium

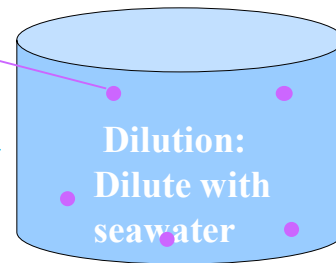
ALPS treated water before dilution



Verify radioactive materials other than tritium being below national regulatory standard

dilution

ALPS treated water after dilution (1,500Bq/L)



Dilute tritium to below the national safety standard (60,000 Bq/L)

Discharge into the sea

Challenges

- It is necessary **to have continuous surveillance carried out by the Association for Monitoring the Safety in Decommissioning** to ensure the decommissioning progresses safely and steadily
- For the discharge of the treated water into the sea, **the national government should take the lead role and full responsibility up** to the completion of the mission ensuring safety of the work, dissemination of accurate information both in and out of the country, comprehensive measures against harmful rumours as well as prompt and solid compensation by the coordinated efforts of whole government



# (8) Strengthening the countermeasures against harmful rumours and the fading awareness of the disaster

**Current Status** As 13 years have passed since the earthquake, **persistent rumours still remain, while public awareness fades** as interest in the prefecture declines.

## Fukushima Prefecture's strategies to strengthen measures to fight harmful rumours and fading public interest

- ◆ Policies to strengthen countermeasures
  1. Continuing persistent initiatives and taking on new challenges
  2. Spreading the latest and accurate information to have further updated information
  3. Build trusting relations through collaboration and co-creation

◆ Policies in each sector (Direction and Main Initiatives for Strengthening Measures)

<b>Agricultural, forestry, and fisheries products and Fukushima products</b>	<b>Tourism</b>	<b>Priority measures</b>	 <p>The Hama Festival in Tokyo</p>	
<ul style="list-style-type: none"> <li>◆ Strengthen measures for distribution and sales</li> <li>◆ Improve the brand power and expand exports</li> <li>◆ Increase consumer confidence</li> </ul>	<ul style="list-style-type: none"> <li>◆ Attracting visitors from domestically and internationally</li> <li>◆ Promoting international charter flights</li> </ul>			<b>Promoting understanding at home and abroad</b> <ul style="list-style-type: none"> <li>◆ Spread accurate information</li> <li>◆ Spread the charms</li> <li>◆ Spread information using bonds</li> </ul>
<b>Spreading information (cooperation, co-creation, etc.)</b>	<b>Underlying measures</b>			
<ul style="list-style-type: none"> <li>◆ Spread information in cooperation with each department</li> <li>◆ Spread information about the current situation and the charms of Fukushima</li> <li>◆ Expand the collaboration and co-creation</li> </ul>	<ul style="list-style-type: none"> <li>◆ Thoroughly inspect the food</li> <li>◆ Have risk communication concerning radiation</li> <li>◆ Spread information about the progress in restoring the environment</li> </ul>	 <p>Promoting agricultural, forestry, and fishery products overseas</p>		

## Achievements and Current Status of Countermeasures against Harmful Rumours and Fading Awareness

■ Analysis of Social Recognition related to Rumours and Fading Awareness (Sep.2022)  
 “Percentage of people with a good image of Fukushima”  
 ■ As of Sep. 2022, "Good image" group ("Good" and "Somewhat good" combined) is 52.0% (compared to 20.4% immediately after the disaster)


◆ Field Survey on Consumer Awareness Related to Harmful Rumors (Consumer Affairs Agency 3 Mar. 2023)

“Place of food production consumers are reluctant to purchase because of radioactive materials”  
**“Reluctant to purchase products from Fukushima”**  
 (Of those concerned about radioactive materials in food products)  
**5.8% (2013.2...19.4%)**

“Inspection of radioactive materials in food products”  
**“Do not know that inspection is conducted” 63.0%**  
**(2013.2...22.4%)**

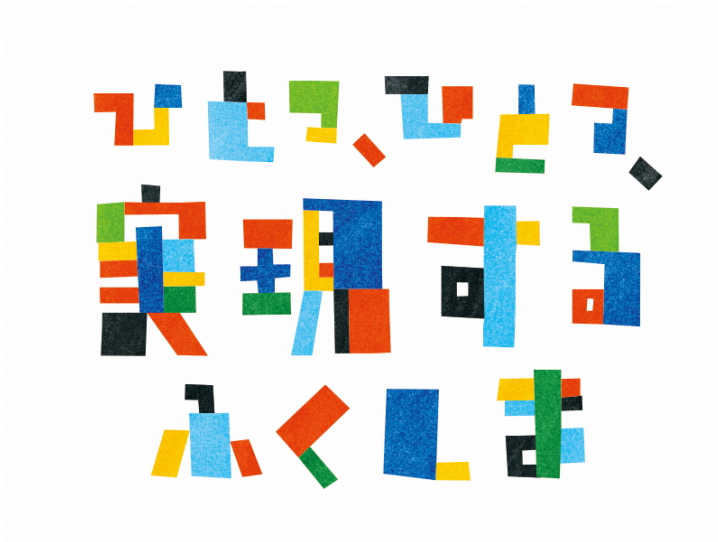
The preferential tax system for measures against harmful rumours

A preferential tax system is in place for businesses that combat harmful rumours about industries such as agriculture, forestry, fishery and tourism.





**Challenges** ➤ **Dispelling harmful rumours, preventing fading awareness** through publicity, expanding sales channels and establishing brands



Published by the Fukushima Prefectural Government  
Address: 2-16 Sugitsuma-cho, Fukushima City, Japan  
Telephone: (+81) 24- 521-7109  
E-mail [fukkoukeikaku@pref.fukushima.lg.jp](mailto:fukkoukeikaku@pref.fukushima.lg.jp)

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Fukushima Prefecture website



Please visit this website for other updates and recovery-related information.