



## Community development for reconstruction in HigashiMatsushima City

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Never forgetting that day and together for the future  
- United HigashiMatsushima

HigashiMatsushima City

# HigashiMatsushima City

## Outline of HigashiMatsushima



■ Population : 40,151 (As of 1 May 2017)  
(Population before the disaster : 43,142)

### 【Location and climate】

HigashiMatsushima is located in the center of Miyagi Prefecture and next to Ishinomaki and Matsushima. It is about 30 minutes from Sendai, with JR Senishi Line and Sanriku Expressway across the city center. It is a warm area with little snow compared to other parts of Tohoku Region.

【City flower: Sakura  
(cherry blossoms)】



【City tree: Matsu (pine)】



### 【Experience and exchange】

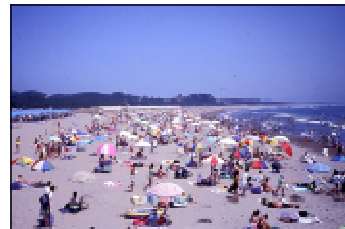
HigashiMatsushima is blessed with nature with a spectacular view of the sea, mountains and rivers. It is particularly rich in marine leisure opportunities such as swimming, clam digging, sightseeing boat and fishing. About 1.1 million tourists used to visit the city annually before the disaster. At Matsushima Base of the Air Self-Defense Force, the air show is held every summer and fans of airplanes from around the country used to gather to see the Blue Impulse fly.



Air show (Blue Impulse)



Sagakei sightseeing boat



Nobiru Coast



Seaweed(Nori)



Oyster

# HigashiMatsushima City



**65% of urban areas was submerged  
(the highest rate in disaster-stricken  
municipalities in Japan)**

## Situation of damage in HigashiMatsushima

(As of May 1<sup>st</sup>, 2016)

### ■ Life damage (citizens)

Dead	1,110
	(Dead 1,044+Disaster-related death 66)
Missing	24
Total	1,134 (3% of the city's population)

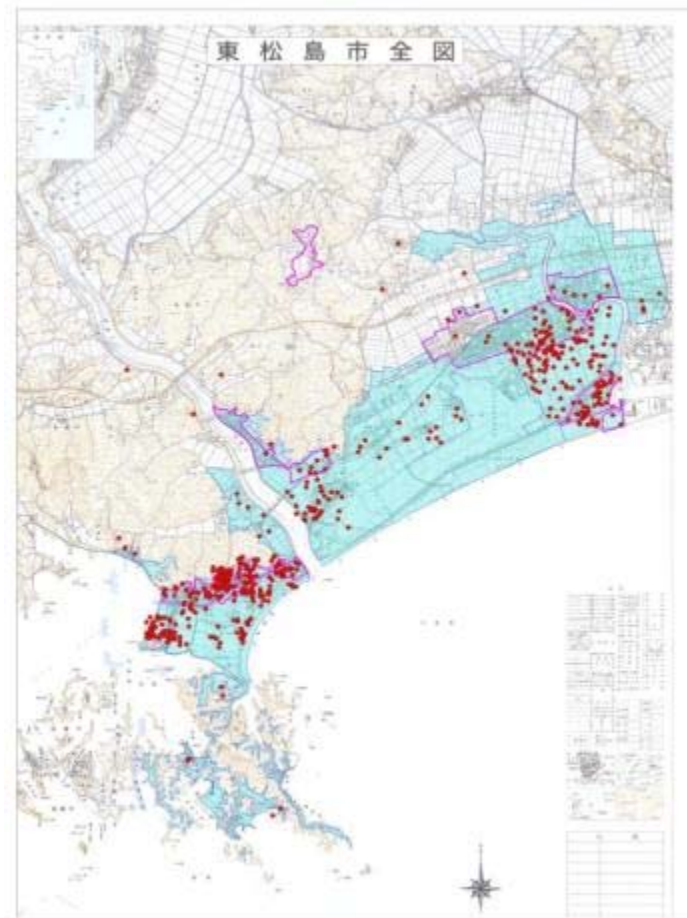
### ■ Housing damage

Totally destroyed	5,518
Largely destroyed	3,059
Partially destroyed	2,500
Total	11,077
	(approx. 73% of all housings)

### ■ Evacuees (maximum) 15,185

### ■ Shelters (maximum) 106

### ■ Flooded agricultural land 1,465ha/Total agricultural land 3,349ha





## Promotion of regional disaster-prevention by citizens

System of regional governance in  
HigashiMatsushima: 8 self-governing bodies

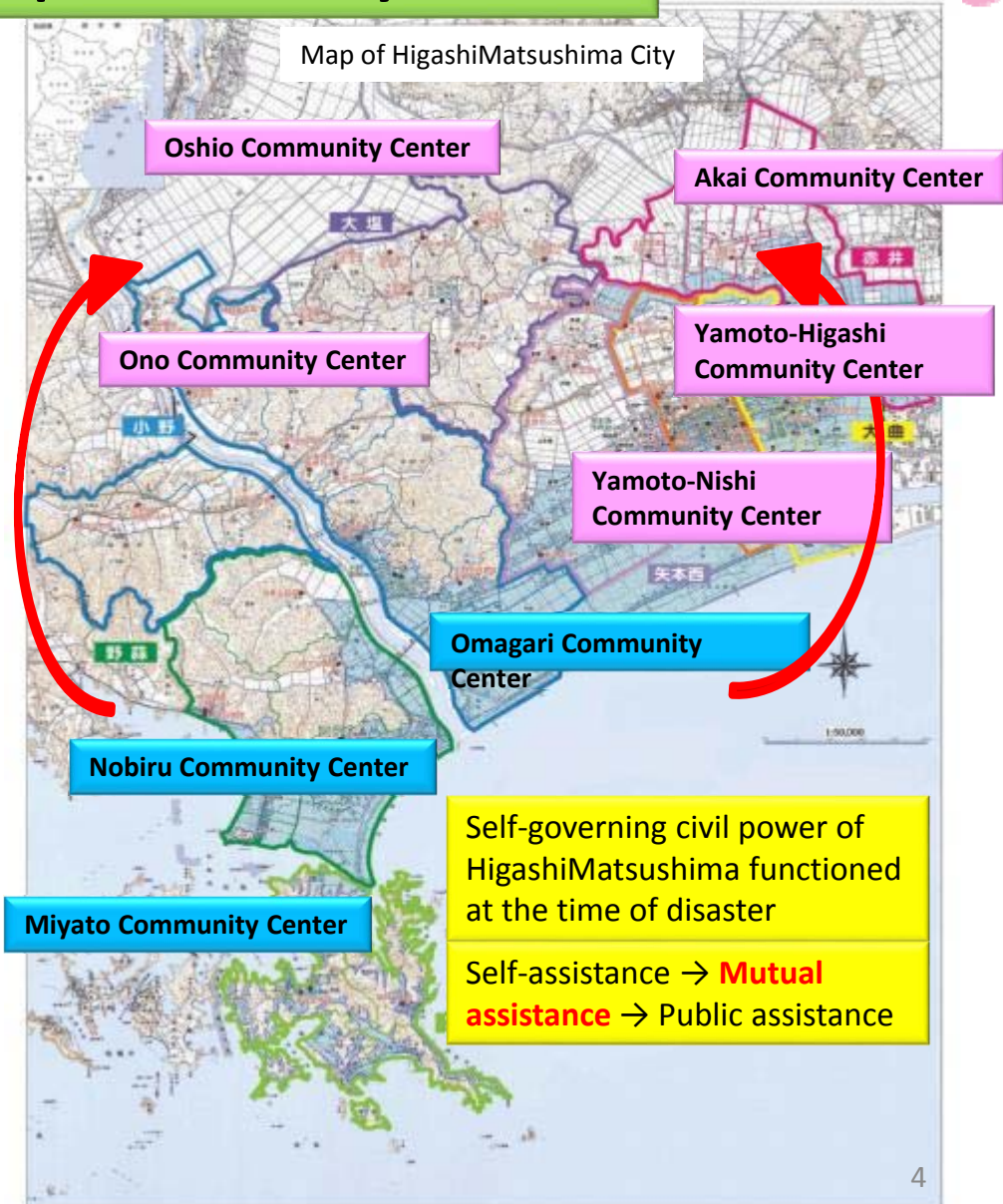


Shelters managed by self-governing bodies



Mutual assistance  
agreement by the  
city's self-  
governing bodies

Inland self-governing bodies assisted coastal areas



## “Bond” of the community played an important role in devastated HigashiMatsushima

Self-governing civil  
power of  
HigashiMatsushima  
functioned at the  
time of disaster

Self-  
assistance



Mutual  
assistance



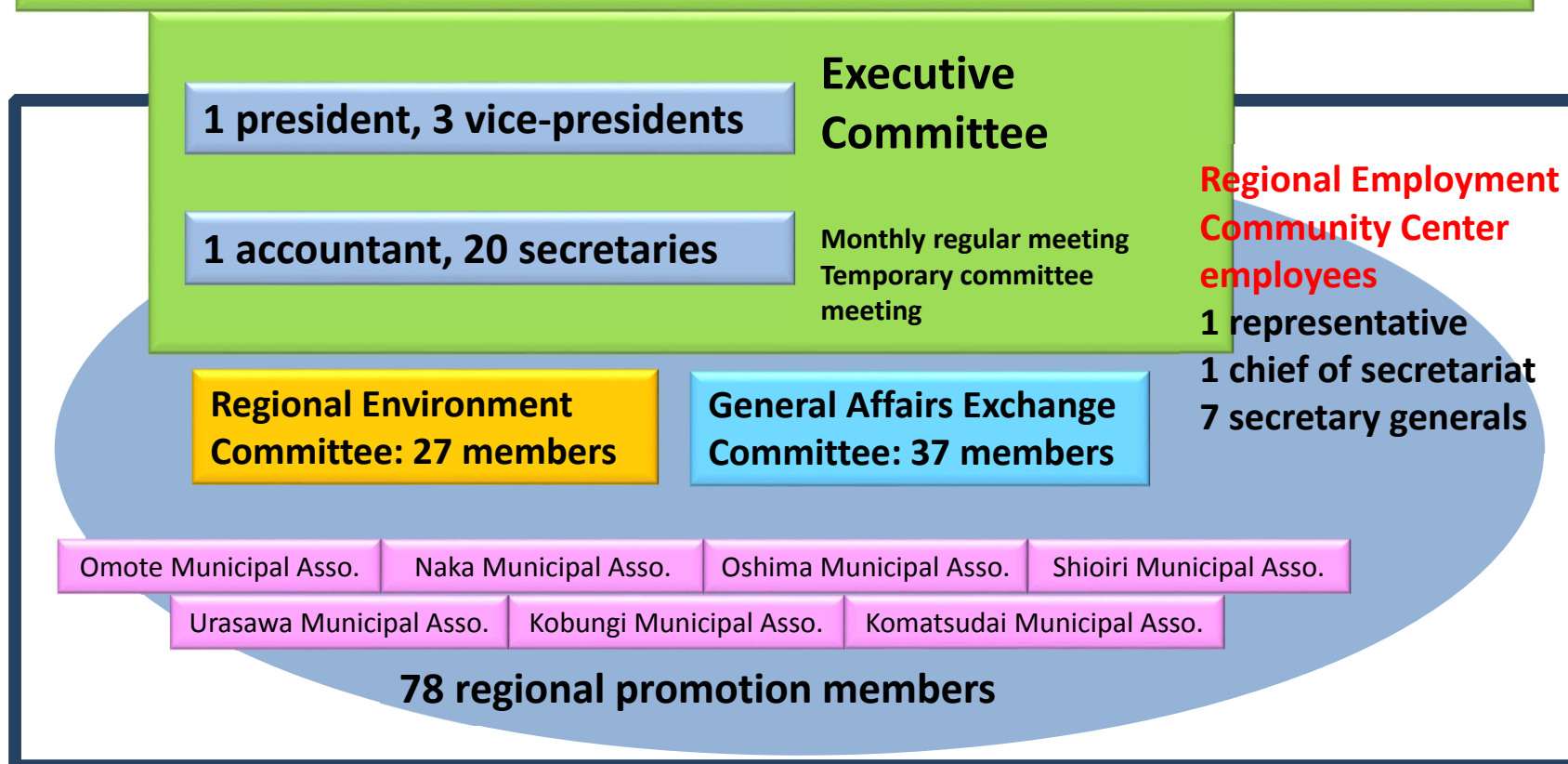
Public  
assistance



Community development through cooperation of regionally decentralized self-governing bodies



## System of regional self-governing bodies in HigashiMatsushima (example of Oshio area)



## 2013 Budget of Community Development Council (example of Oshio District)

Related to community development (estimate): approx. 3 million yen

Related to designated administrative tasks: approx. 20 million yen

**Total: approx. 23 million yen**



## Recovery-Reconstruction Policy issued 1 month after the disaster



11 April 2011

### HigashiMatsushima City “The Great East Japan Earthquake” Recovery-Reconstruction Policy

Mayor of HigashiMatsushima

We lost many precious lives in HigashiMatsushima by the Great East Japan Earthquake on 11 March. We lost a central part of our lives, such as our houses where we used to live, communities, fishing and agricultural facilities and public facilities, by the big tsunami.

HigashiMatsushima being on the coastal area and characterized with many rivers and canals, approximately 65% of the city was flooded, which was the highest rate in disaster-stricken municipalities around Japan.

In this unprecedented situation, we are working hard on the search of missing persons and recovery of the citizens' livelihood. To implement future recovery-reconstruction measures efficiently and effectively, we hereby establish a detailed action plan specifying the departments in charge and the implementation period and hasten the promotional system for environment in which citizens can live safely.

#### 1. Civil livelihood recovery-reconstruction policy

Following points will be tackled for the moment to hasten the quick recovery of environment in which disaster victims and citizens can live safely.

(Omitted)

(1) Supply of safe, hygienic housing and support for livelihood rehabilitation

(Implementation period: mid-April, department in charge: Disaster Recovery Office)

① Reception of application for temporary housing and its quick delivery, arrangement of plots

(Omitted)

(4) Quick recovery of lifelines, road maintenance, drainage measure, etc.

(Continuous implementation, departments in charge: Counter-Disaster Headquarters, Construction Department)

① Request for quick recovery of electricity, water and telephones

② Maintenance of recovered roads

③ Recovery of water systems

④ Drainage measure

(5) Removal of rubbles, waste caused by the disaster, effluent

(Continuous implementation, departments in charge: Counter-Disaster Headquarters, Civil Livelihood Department)

① Quick removal of rubbles and promotion of environmental maintenance

② Smooth treatment and strict sorting of the disaster waste

③ Removal, handing and disposal of outflowed vehicles and ships

④ Preservation of dead bodies, burial

## “HigashiMatsushima Method”: Recycling of rubbles caused by the disaster



- Rubbles caused by the disaster: 1.098 million tons  
99% of the total amount to be recycled  
(110 times of general waste generated annually in HigashiMatsushima)



① Rubbles from disaster-stricken houses etc. are divided on site into 14 categories

② Primary treatment using mobile construction machines

③ Final treatment to divide rubbles into 19 categories through strict manual sorting

### “Waste” if mixed, “resources” if sorted

This initiative through industrial-administrative-public cooperation (local construction association + HigashiMatsushima + citizens) can be implemented in any community with preparation in advance.

- **Total recycling rate of the disaster waste: 99.22%**  
including 2,160,800 tons of tsunami deposits which were entirely recycled

### Amount of rubbles caused by the disaster

Wood/wood scraps	371,000t
Mixed waste	79,000t
Concrete pieces	404,000t
Asphalt pieces	34,000t
Metals	25,000t
Incombustible mixed waste	185,000t
<b>Total</b>	<b>1,098,000t</b>
<b>(Recycled amount)</b>	<b>1,073,000t</b>
<b>(Incinerated amount: fishing nets, plastics)</b>	<b>28,000t</b>
<b>(Difficult-to-process objects: asbestos, PCB, etc.)</b>	<b>3,115t</b>

Unit price for treatment of the disaster waste conducted by Miyagi Prefecture

	Project cost (million yen)	Treated amount (thousand tons)			Treatment unit price (10 thousands yen per ton)
		Rubbles	Sand	Total	
Kisenuma	113,893	1,138	893	1,977	5.8
MinamiSanriku	32,982	556	167	723	4.6
Ishimaki	194,230	3,589	736	4,326	4.5
Onagawa	17,297	577	0	577	3.0
<b>HigashiMatsushima</b>	<b>58,067</b>	<b>1,098</b>	<b>2,161</b>	<b>3,259</b>	<b>1.8</b>
Shiokama	15,863	239	10	249	6.4
Shichigahama	16,688	228	304	532	3.1
Takashiro	15,222	242	108	350	4.3
Natori	31,799	741	222	963	3.3
Iwanuma	25,860	473	154	627	4.1
Watari	47,876	495	361	856	5.6
Yamamoto	43,888	784	856	1,641	2.7
<b>Total</b>	<b>613,665</b>	<b>10,160</b>	<b>5,919</b>	<b>16,079</b>	<b>3.8</b>

Note: Treated amount was rounded off to one decimal point.  
Total is thus approximate.  
Source: Kawakita Shinpo (6 July 2014)



## (Pre-)Agreement on cooperation for assistance measures at the time of disaster

**Based on experience of continuous earthquakes in north of Miyagi Prefecture, HigashiMatsushima prepared for the coming disaster by concluding the original agreement on disaster with local Construction Association in 2003.**

**Concluded in July 2005**



The Agreement was concluded in preparation for 90% probability of the earthquake on the shore of Miyagi Prefecture occurring within 20 years.

Cooperation is requested to Construction Association in case of disaster based on this Agreement which consists of 10 Articles (as right) on items such as implementation and charging of expenses.

**\* On 26 July 2003, 3 earthquakes of maximum seismic intensity of lower 6 occurred as a part of continuous earthquake with the seismic center in north of Miyagi Prefecture (former Naruse, Yamoto and Konan Town).**

(Outline)

● Concerning assistance measures at the time of disaster, this Agreement determines the necessary items in case of HigashiMatsushima requesting the cooperation of Construction Association or HigashiMatsushima cooperating upon request from Construction Association.

(Request for cooperation)

● If the cooperation of Construction Association is necessary at the time of disaster, HigashiMatsushima will clarify the following points to Construction Association and make a written request. In case of emergency, the request can be made first by telephone and the written form will be submitted later.

- 1) Situation of the disaster and request for cooperation
- 2) Necessary personnel
- 3) Necessary materials, their kinds and numbers
- 4) Sites, contents and periods
- 5) Other necessary items

● Construction Association will dispatch their organized work team immediately upon request for cooperation on previous items.

The request to Construction Association of HigashiMatsushima will be made by the Mayor of HigashiMatsushima.

(Implementation of cooperation)

● Workers deployed at the disaster-stricken site upon request will conduct assistance measures under the leadership of the city hall employees.

● If the city hall employees are not dispatched on site, workers will conduct assistance measures according to the requested items. (omitted)



## Creation of Reconstruction Plan Exchange of opinions with over 2000 citizens



Farmers



Fishermen



Community Center

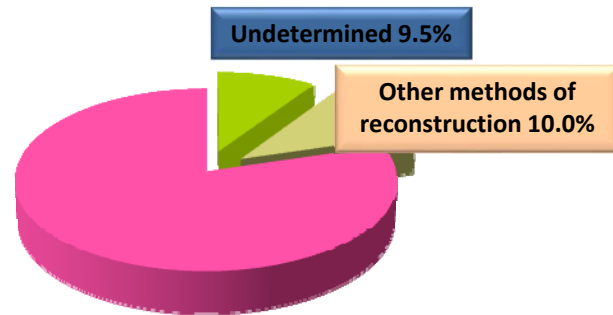


Shelters



Junior high school students

### Creation of HigashiMatsushima Reconstruction Plan with guidance and advice from committees of experts



Agreed to collective relocation 80.5%

\* At the time of creation of Reconstruction Plan

Collective relocation

Energy

Community

Population ageing

Reconstruction projects

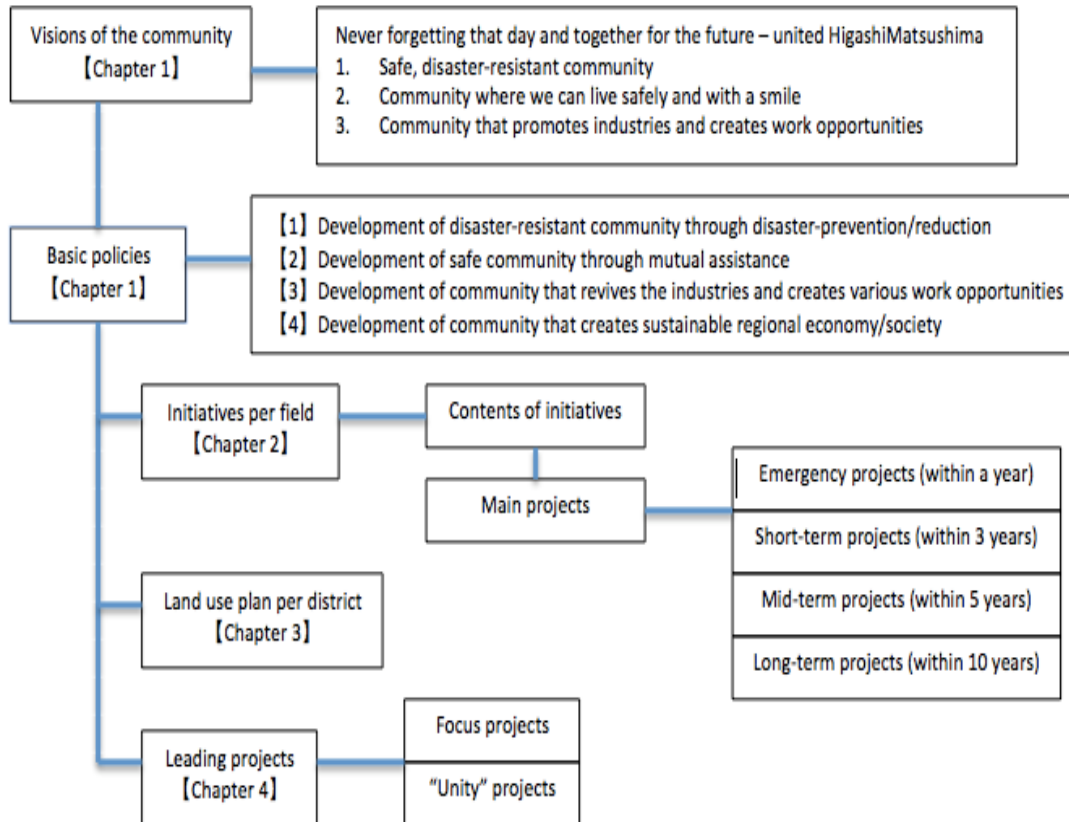


"FutureCity" Initiative



## Structure and content of Reconstruction Plan

### Structure and content of Reconstruction Plan



**1. Achievable plan**  
to realize the visions

**2. Feasible plan**

- ① Input resources (budget, people, material)
- ② Period

**3. Planning and process**  
**(application) with civil participation**



Reconstruction Plan Civil Committee





## Community development through reconstruction initiatives – going beyond recovery



### Recovery (“fukkyu”)

The action of returning something damaged to its former state. Return to the original condition.

### Reconstruction (“fukko”)

The action of making something damaged better than before.

- ① Disaster recovery cost
- ② Disaster reconstruction cost
- ③ HigashiMatsushima recovery cost

Recovery to the original state



- ④ “FutureCity” (Cabinet Office)
- ⑤ Environment and ageing population measures (related ministries, etc.)

- ⑥ Private sectors
- ⑦ Citizens

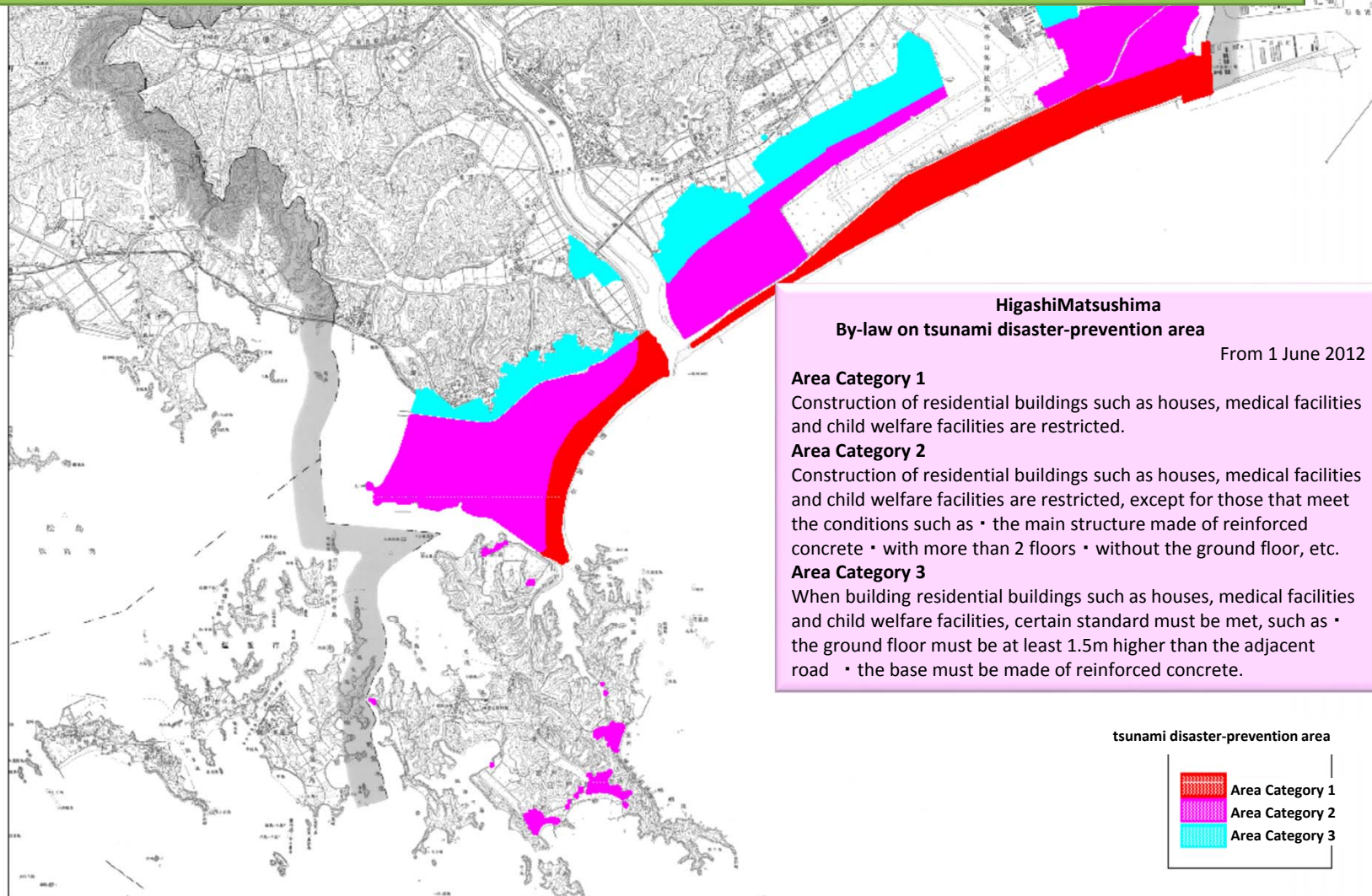
Realization of  
**“New HigashiMatsushima”**  
that is adapted to the environment, ageing  
population and disaster-prevention

**Build Back Better**





## Establishment of the by-law on tsunami disaster-prevention area (building restrictions area)





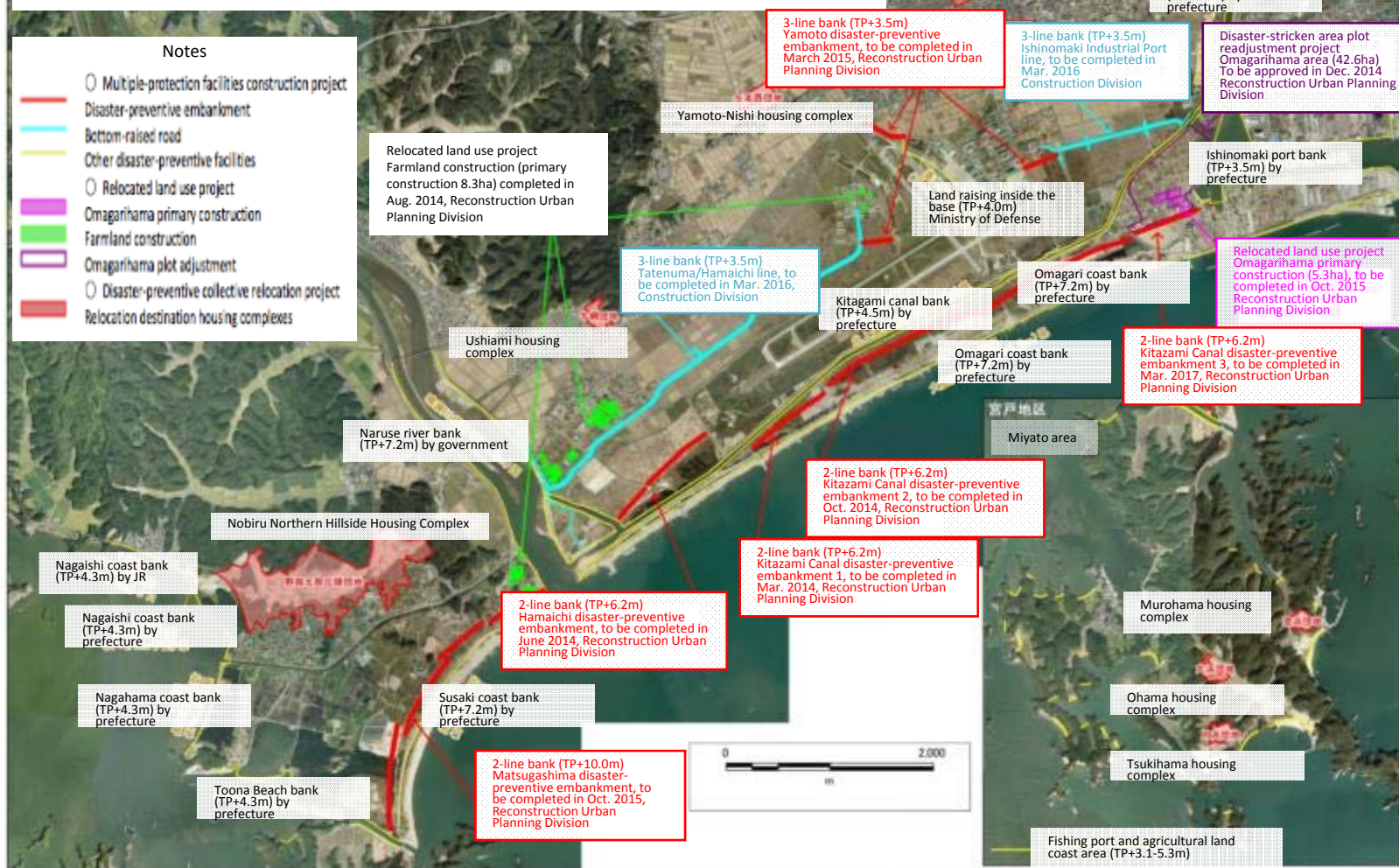


## Disaster reduction by multiple protections

○ Disaster-preventive embankment project map (multiple-protection facilities)

○ Relocated land use promotion project map

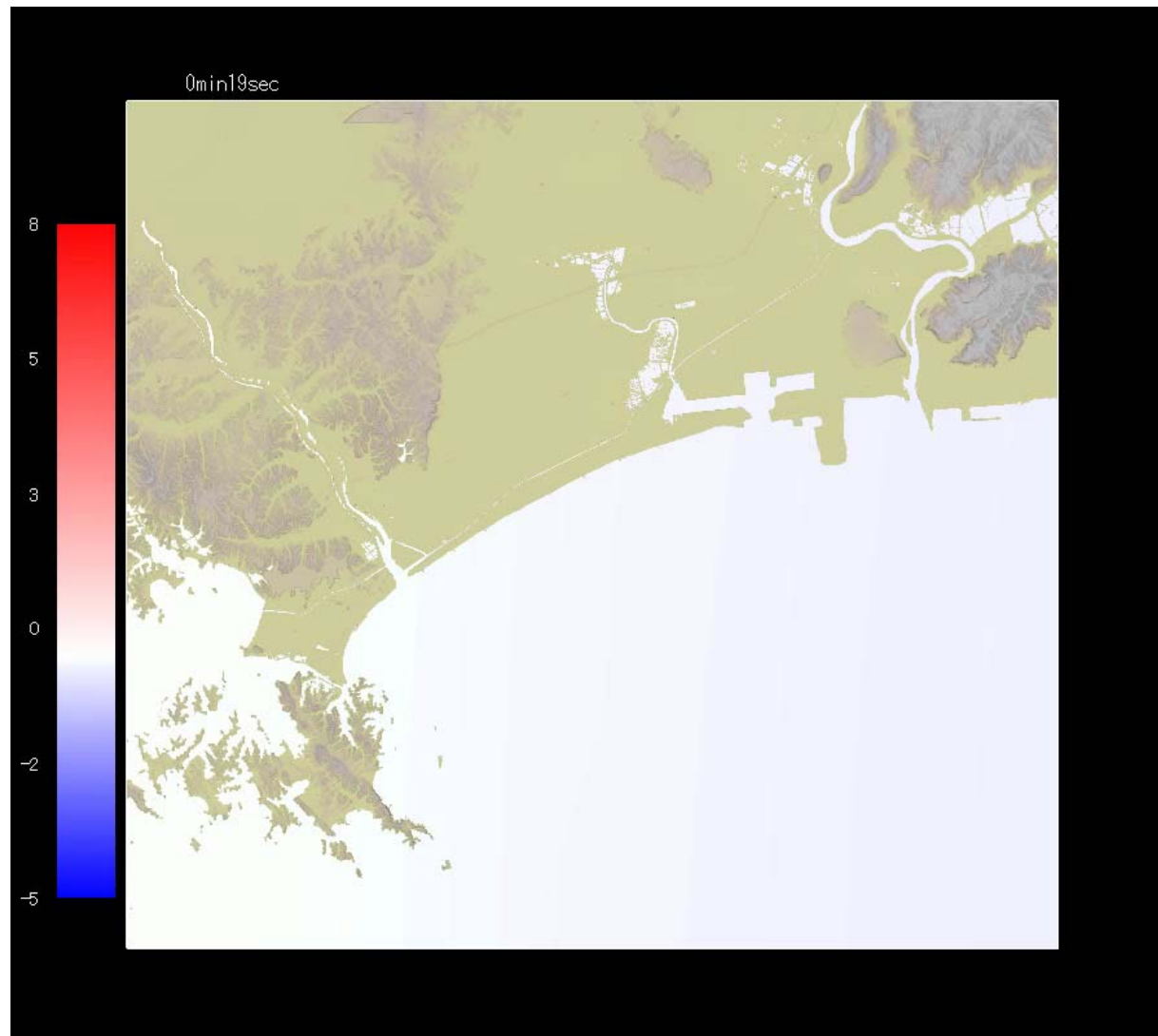
Source: Urban Planning Council document [created by Reconstruction Urban Planning Division] 27 May 2014







## Detailed simulation to create a disaster-prevention plan



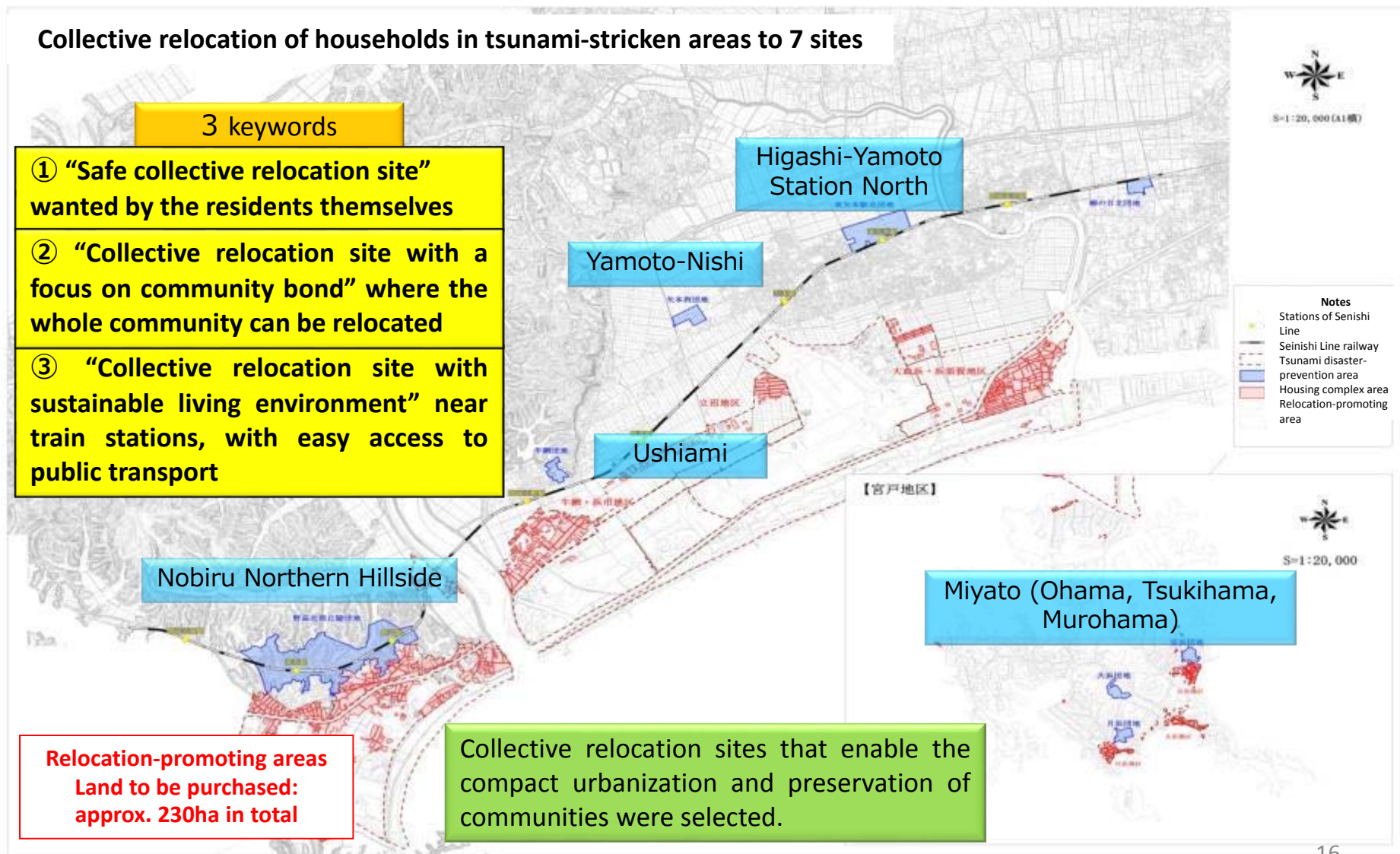


## Safe city for the future (disaster-preventive collective relocation map)

Collective relocation of households in tsunami-stricken areas to 7 sites

3 keywords

- ① “Safe collective relocation site” wanted by the residents themselves
- ② “Collective relocation site with a focus on community bond” where the whole community can be relocated
- ③ “Collective relocation site with sustainable living environment” near train stations, with easy access to public transport





## Housing reconstruction, together with citizens

### 1. Development of disaster-preventive collective relocation site (individual housing plot) (As of December, 2016)

Disaster-preventive collective relocation for 7 housing complexes, 1,285 households in total (717 individual housing plots)

→already completed and delivered.

The last site, Nobiru Northern Hill 278 plots for individual housing, has delivered in stages on 2016 and completed on November.



### 2. Construction of public housings for disaster victims (As of May , 2017)

- ① Public housings for disaster victims (1,010 households in total) under construction. Besides, 112 households under planning.
- ② 831 out of 1,010 households already completed and delivered. Completion rate: 82.3%
- ③ 814 households occupied after a close consultation with residents' organizations (Relocation Committee, etc.) Occupation rate: 98.0%



Apartment buildings



Individual houses





## Situation of temporary housing as of December, 2016



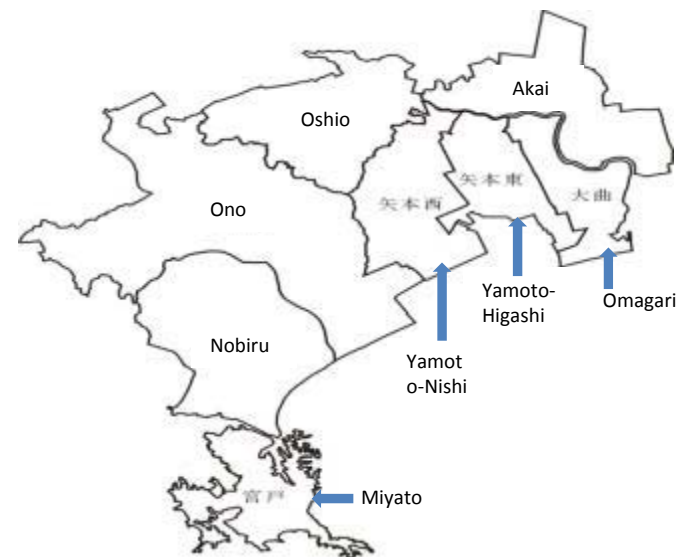
- Emergency temporary housing  
Number of households: 344, number of residents: 785
- Public-funded rental housing  
Number of households: 303, number of residents: 701
- **Total: 647 households, 1,459 residents**  
**(approx. 3.6 % of the city's population)**





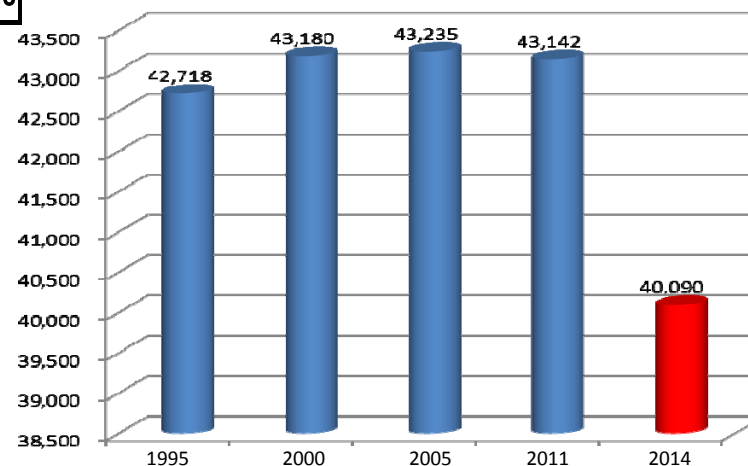
## Transition of pre- and post-disaster population and households (per district)

District	Before disaster 2011.2		Present 2014.4		Increase/decrease	
	Population	Households	Population	Households	Population	Households
Yamoto-Higashi	6946	2738	6587	2676	▲ 359	▲ 62
Yamoto-Nishi	7922	2860	7873	3007	▲ 49	147
Omagari	7070	2416	5973	2261	▲ 1097	▲ 155
Akai	7394	2661	7634	2873	240	212
Oshio	2833	907	3860	1350	1027	443
Ono	5396	1693	5780	1976	384	283
Nobiru	4615	1545	1756	608	▲ 2859	▲ 937
Miyato	966	260	627	211	▲ 339	▲ 49
Total	43142	15080	40090	14962	▲ 3052	▲ 118



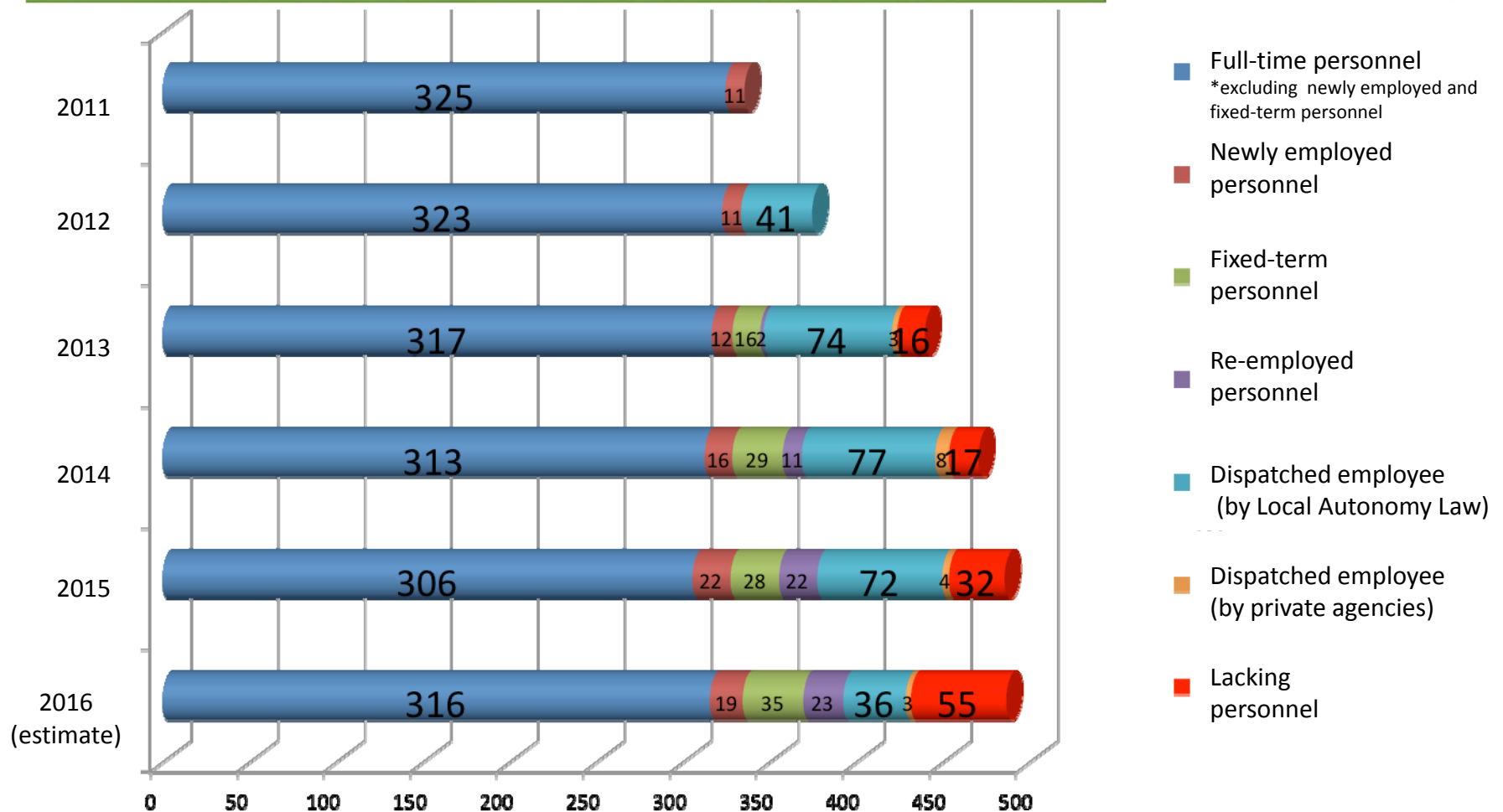
Population decreased/flowed out by 3,000 due to the disaster

※ Population is expected to decrease to 33,000 in 2040





## Too much office work and lack of man power



### ■ 10 times more work than usual

Pre-disaster general account settlement amount: **15.3 billion yen** (2010)

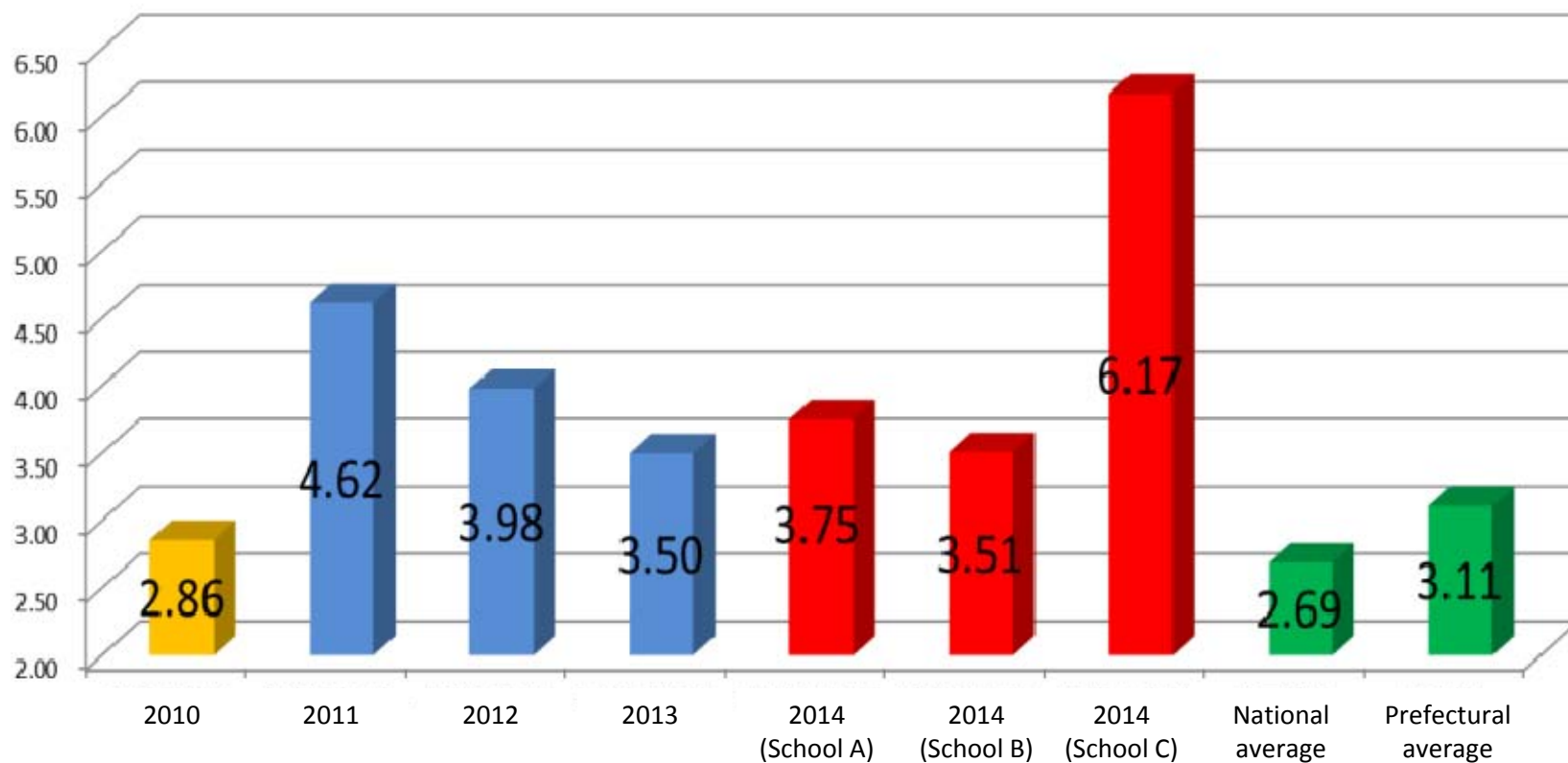
Post-disaster general account settlement amount: **131.3 billion yen** (2012), **108.8 billion yen** (2013)





## Need for “reconstruction of the heart” - increase of school absenteeism

Junior high schools in HigashiMatsushima  
Students who were absent for more than 30 days in a year (%)



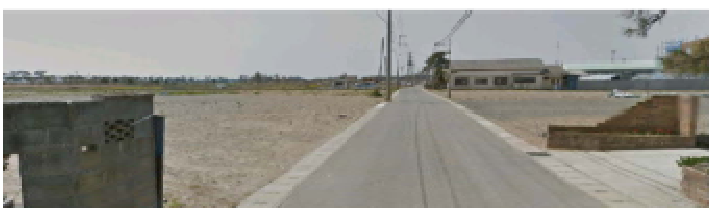
## Reconstruction situation of industries

### 1. Reconstruction of agriculture

- ① Restored farms: approx. 90% (as of 2015)
- ② Grouping of agricultural land is in rapid progress. 10 new organization started farming after the disaster.

### 2. Conversion of disaster-stricken residential land to agricultural land

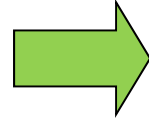
- ① Residential land, purchased for disaster-preventive collective relocation project, is rented to agricultural organizations as agricultural land (farmland) (approx. 20ha)



No	Agricultural corporation	Est. year	Main produce	Note
1	Miyato Kantaku Nobiru Producers' Union	1971	Rice, soy beans	
2	Miyato Kantaku Miyato Producers' Union	1975	Rice	
3	Nobiru Rice Producers' Union	1984	Rice	
4	Tsuno Farm Ltd.	1989	Pork	
5	Ogata Engei Ltd.	1989	Flower	
6	Marufuku Farm Ltd.	1996	Rice, vegetables	
7	Sun Farm OkuMatsushima Ltd.	1998	Vegetables	
8	Aglead Naruse Ltd.	2006	Rice, soy beans, vegetables	
9	Miyagi Mizuho-kai Ltd.	2006	Rice	
10	Sun Eight Co. Ltd.	2006	Rice, soy beans, vegetables	
11	Mizuho Farming Agricultural Cooperative Corporation	2007	Rice, soy beans, vegetables	
12	Igunal Farm Co. Ltd.	2011	Vegetables, processing, direct sales	Created after the disaster
13	Yotsuba Farm Co. Ltd.	2012	Rice, vegetables	
14	Pal Farm Omagari Co. Ltd.	2012	Rice, vegetables	
15	Kimura Noen Co. Ltd.	2012	Rice, processing	
16	Tsutsumi Co. Ltd.	2013	Rice, soy beans, processing	
17	Takahashi Nosan Co. Ltd.	2013	Rice, soy beans	
18	Kibou no Izumi Co. Ltd.	2013	Vegetables	
19	Megu Eat Co. Ltd.	2013	Rice, vegetables	
20	Pasca Farm Tatenuma Co. Ltd.	2013	Rice, vegetables	
21	Lawson Farm Co. Ltd.	2014	Vegetables	



## Use of disaster-stricken residential land: conversion to agricultural land







## Reconstruction state of industries

### 3. Reconstruction of fishery

- ① Fishermen are very motivated for reconstruction, and number of Fishery Union members decreased very little after the disaster, from 307 to 292.
- ② Reconstruction state of main fishing produce  
(Not the amount but production base-related)
  - Recovery rate of dried seaweed facilities      approx. 100%
  - Recovery rate of oyster facilities      approx. 90%
  - Recovery rate of fixed net fishing      approx. 90%  
(decrease for gillnetting, etc.)



Seedling of dried seaweed (nori) on land

### 4. Reconstruction state of non-resident population (tourism)

- ① Annual non-resident population decreased from 1.1 million to 30,000 after the disaster.
- ② Despite of restart of sightseeing boat and opening of 1 of 6 beaches, true reconstruction still needs time.
- ③ There are many requests for disaster education and study tours and preparations are in progress.



OkuMatsushima Sagakei sightseeing boat 24



## Pre- and post-disaster HigashiMatsushima compared in numbers

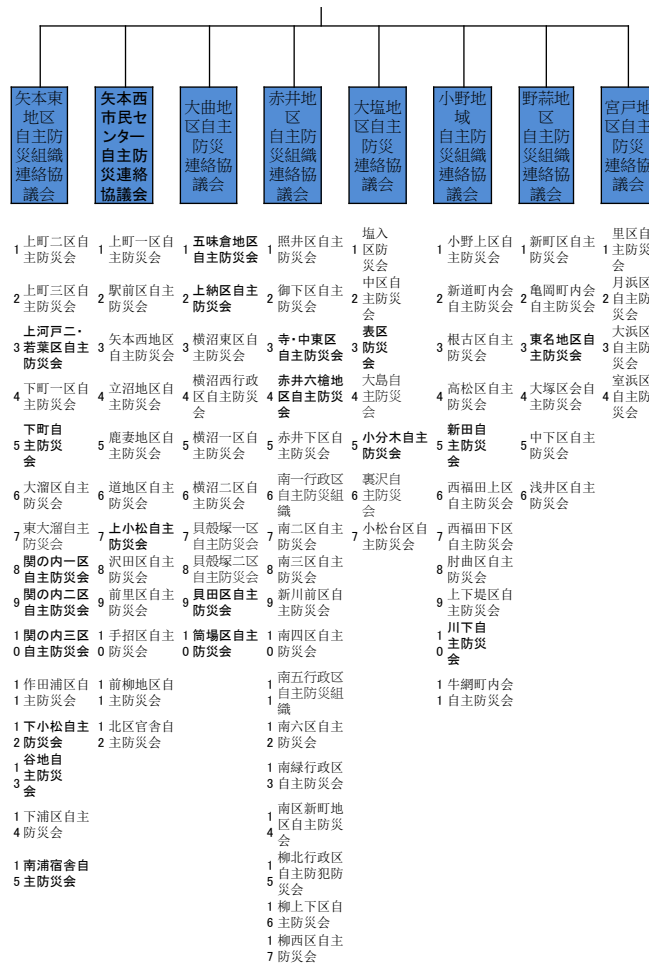
Items	Pre-disaster (2010)	2013	Increase/decrease
Population (reproduced)	43,142	40,090	△3,052
Population ageing rate	22.4%	25.2%	+ 2.8%
Shipping amount of manufactured goods	16.9 billion yen	13 billion yen	△3.9 billion yen
Annual sales of wholesalers	13.3 billion yen	7.7 billion yen	△5.6 billion yen
Annual sales of retailers	32.5 billion yen	28.5 billion yen	△4 billion yen
Income per tax payer	2.759 million yen	2.529 million yen	△230,000 yen

※ From "City Data Pack" (Toyo Keizai)

## Examples of disaster-prevention plan project (promotion of regional disaster-prevention)

### 1. Strengthening of independent disaster-prevention organizations

82 independent disaster-prevention organizations which cover all the citizens and communities



### 2. Tsunami surveillance camera

Installment of 4 surveillance cameras that can transmit independently with renewable energy and wireless cable even in case of the break-down of power source or internet connection at the time of disaster

#### Functions

- Remote control camera with zoom function
- High tide measuring equipment
- Solar power generation device
- Wind power generation device
- Storage battery
- Wireless transmission system

#### Price

10 million yen/camera



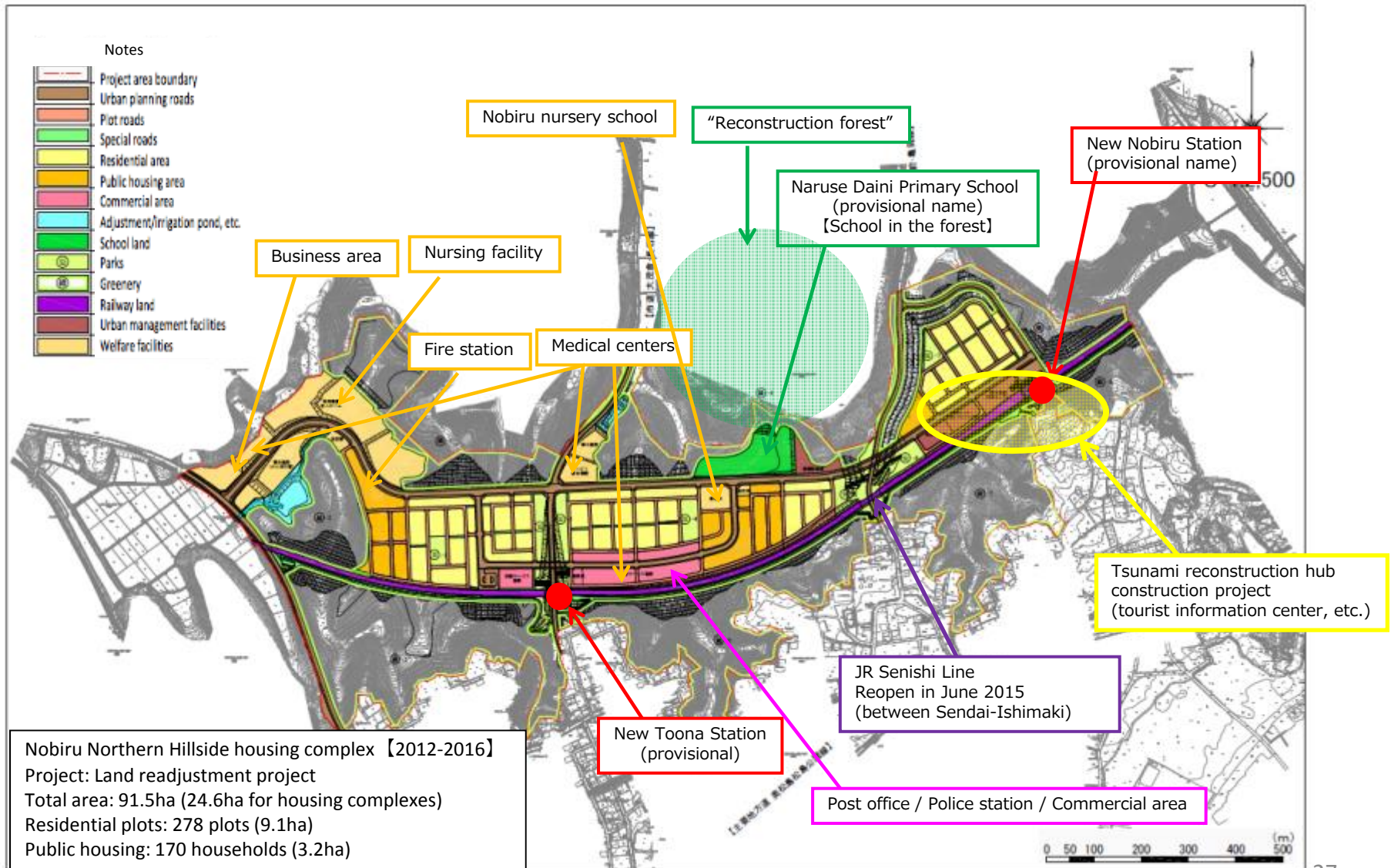
### 3. Redistribution of disaster-prevention radio receptors to every household







## Nobiru Northern Hillside Area (model area for relocation of the whole community)



# HigashiMatsushima City

【Model project for “FutureCity” Initiative】

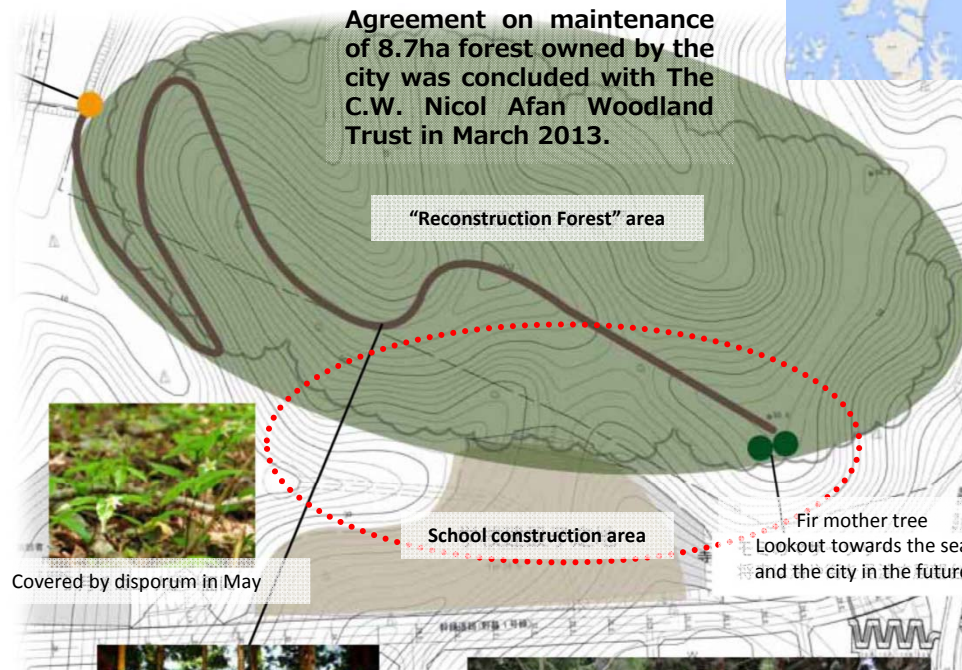
## Creating “Reconstruction Forest” together with citizens

～ For stress care and health of children and the disaster victims ～



### “Tree Dragon”: tree house

Symbol of the forest created as a relaxing space that connects the forest and the people. Designed with the image of a flying dragon that carries hopes.



Covered by katakuri in April



Rhododendrons



### Path made by horsemen

Path was made to enable the horses to carry lumbers, etc. without harming the forest.



### Start of forest school

Forest-making program in “Reconstruction Forest” to feel proud and attached to the native land and have hopes for the future through revival of local forest.



# HigashiMatsushima City

【Model project for “FutureCity” Initiative】

## OkuMatsushima “Kizuna” Solar Park First in the area flooded by tsunami HigashiMatsushima “Kizuna” Car Port Solar Rental of the public facility’s roof



### OkuMatsushima “Kizuna” Solar Park

- ① Operator: Mitsui & Co., Ltd. (currently Rakuten Trust Co. Ltd.)
- ② Site: a part of former HigashiMatsushima OkuMatsushima Park (approx. 47,000m<sup>2</sup>)
- ③ Connected capacity: **1,990km (approx. 2 mega watts)**
- ④ Output: approx. 2.1 million Kwh/year  
(equivalent to the annual electric power used by 600 families)



**“Generate hopes, not only electricity”**

It was featured in Financial Times as “mega solar facility” and communicated internationally.

### HigashiMatsushima “Kizuna” Car Port Solar

- ① Operator: Mitsui & Co., Ltd. (currently Rakuten Trust Co. Ltd.)
  - ② Sites and capacity
    - Parking lot of community centers: approx. 180Kw
    - Parking lot of Takagi Woods Athletic Park: approx. 63Kw
    - Parking lot of Oshio Community Center: approx. 26Kw
- Total: approx. 269 Kwh**



Car Port Solar will enable the generation of electricity and the supply of electricity as a dispersing power plant in case of emergency/disaster. Car Port facilities will be also supplied to create double effects.

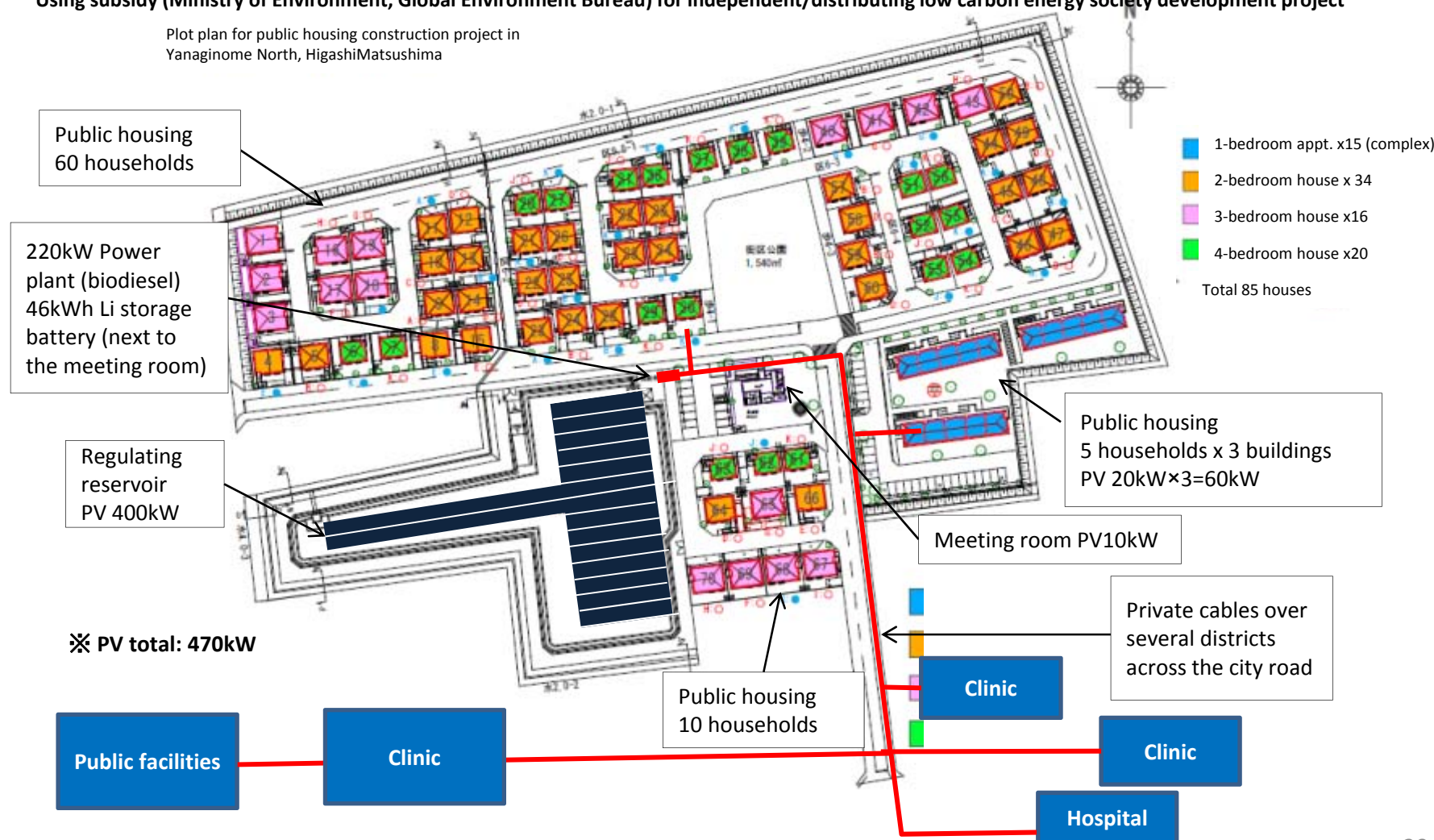


【Model project for “FutureCity” Initiative】

## “HigashiMatsushima Smart Disaster-preventive Eco Town”

\* Using subsidy (Ministry of Environment, Global Environment Bureau) for independent/distributing low carbon energy society development project

Plot plan for public housing construction project in  
Yanaginome North, HigashiMatsushima



# HigashiMatsushima City

【Model project for “FutureCity” Initiative】

## Discovery Center Hub for environmental education with Japan’s first scientific 3-dimensional globe



### Hub for education and tourism promotion – Complex facility in HigashiMatsushima opening on 27<sup>th</sup>

Complex facility “Discovery Center”, built by HigashiMatsushima Miraitoshi Organization, an industrial-administrative-private cooperation organization in HigashiMatsushima, Miyagi Prefecture, and Hashimoto Roads, a construction company, will open on 26<sup>th</sup>. It will be open to public from 27<sup>th</sup>. Its centerpiece is the scientific globe, the 1<sup>st</sup> of the kind displayed in Japan. This facility in the disaster-stricken area aims to contribute to the environmental education and industrial promotion.

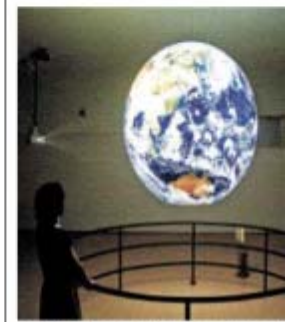
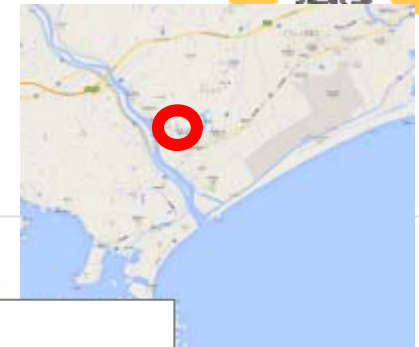
The Center is a 1-floor building made of reinforced concrete, with the floor area of 2,700m<sup>2</sup>. Hashimoto Roads purchased the former factory site on the north of Ono Community Center and renovated the building.

The scientific globe is 1.7m in diameter and the data sent by the satellite will be projected by the projector from 4 directions. It displays the real-time movement of the clouds, as well as 400 kinds of data such as ocean temperature and earthquakes.

Visitors will be able to experience advanced information on earth sciences. The Center is expected to be used for education and tourism and plans a film program with explanation 4 times a day.

The Center also has a laboratory of Agricultural Studies Department of Tohoku University Graduate School that develops food and fuels using microalgae, as well as the activity hub of HigashiMatsushima Stitch Girls, the local women’s group that produces Danish traditional embroideries.

A person in charge of Miraitoshi Organization expects that “the creation of a new industry can vitalize the community. The scientific globe will be a reason for many people to come visit HigashiMatsushima.”



気象や海洋に関する多様なデータが映し出される科学地球儀



2014年07月19日土



## HigashiMatsushima “FutureCity” Initiative model







## Towards a Future City “HigashiMatsushima”



New Nobiru Station

“Kizuna” mega-solar project



Tsunami surveillance camera

Nobiru North Hillside  
collective relocation area



Tree house  
by Afan Foundation



School in the forest “Miyanomori Primary School”



New Toona Station



## International exchange after the disaster

### Memorandum on agreement on cooperation for reconstruction (example of Banda Aceh City, Indonesia)



#### «Main fields of cooperation»

- ① Urban planning, disaster-prevention planning
- ② Education, health, culture
- ③ Tourism, trade, small- and medium-scale industries
- ④ Technical development, communication system development

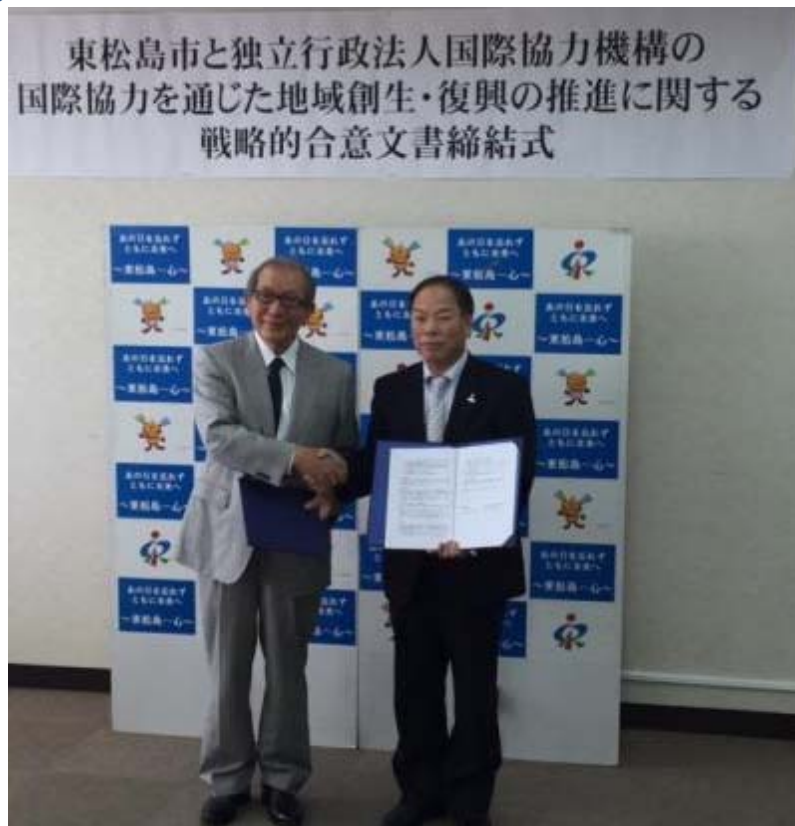
Disaster-prevention education (Banda Aceh City)

#### «Example of the project»

● Reception of trainees from Banda Aceh (HigashiMatsushima)  
30 trainees in total  
(As of June 2016)



● Training on 10-year reconstruction project as an advanced reconstruction site  
▪ Information sharing (Banda Aceh)



HigashiMatsushima and JICA agreed on regional revitalization and promotion of reconstruction through international cooperation on 31 July 2015.





# 【UN SDGs】leaving no one left behind

Goals to Transform Our World

Popularise SDGs, Spur Action and Leverage and Scale Up Partnerships



to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

