

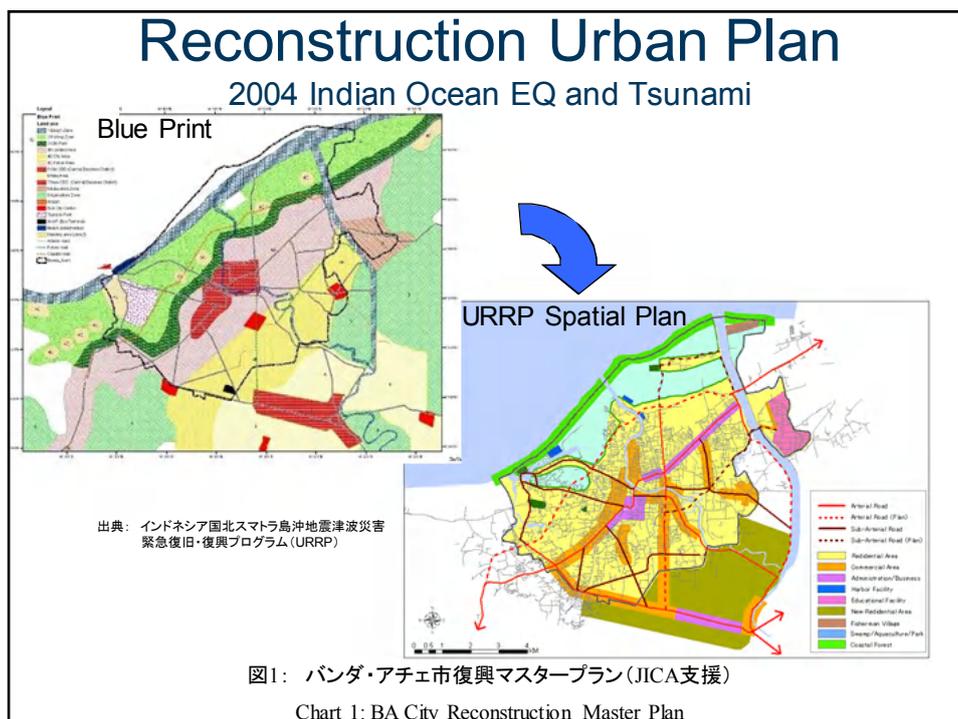


GEJE Reconstruction Process and JICA Assistance

Kozo NAGAMI, Advisor, Reconstruction
Assistance Unit, JICA Tohoku Branch

2004 Indian Ocean Earthquake and Tsunami
2006 Central Java Earthquake
2011 Great East Japan Earthquake and Tsunami

 **PERSONAL EXPERIENCE**



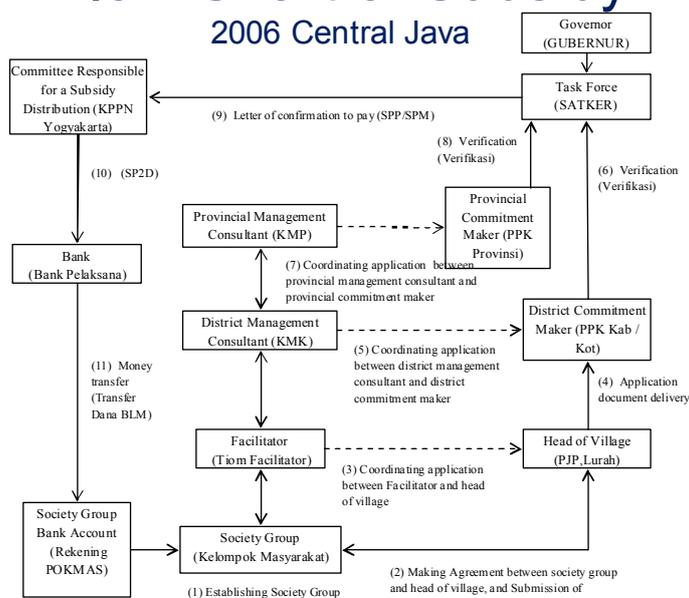
Livelihood Revitalization Assistance



写真2: 住民生計向上支援 / Photo 2: Livelihood Revitalization Activity
 バンダ・アチエ市ウレレ地区(2006年) / Ulee Lheue, Banda Aceh City (2006)

Flow Chart of Subsidy

2006 Central Java



出典: JICAジャワ島中部地震災害復興支援プロジェクト杉山専門家報告(2007)

図5: 補助金支給の流れ / Chart 5: Flow mechanism of subsidy

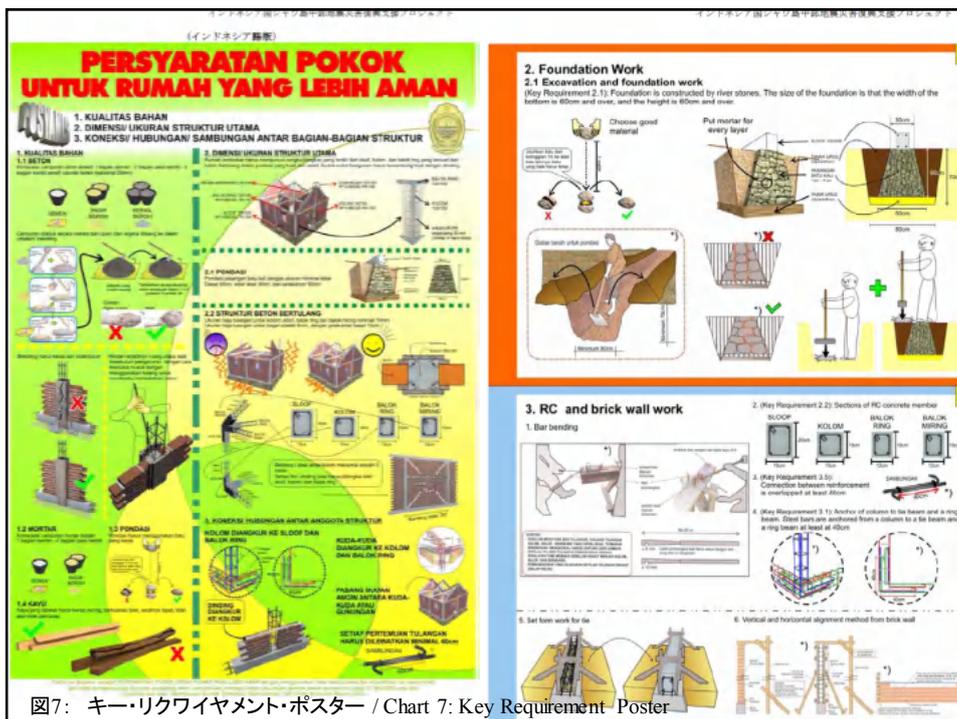


図7: キー・リクワイヤメント・ポスター / Chart 7: Key Requirement - Poster

What is reconstruction?

RECONSTRUCTION FACTORS

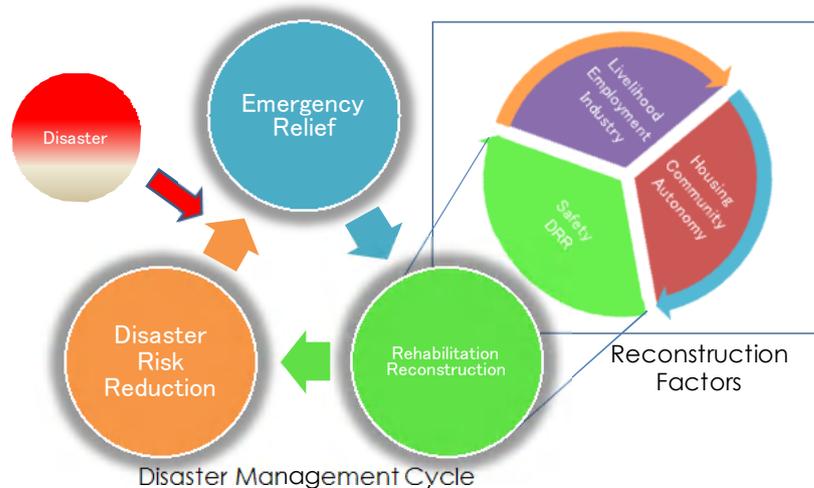
Reconstruction Factors

“Recovery of human life”

= 「人間の復興」 (Tokuzo FUKUDA, 1924)

- **Livelihood**
 - Swiftmess in indigenous livelihood/ employment recovery
- **Housing**
 - Swiftmess in housing recovery
- **Safety**
 - Disaster vulnerability reduction

Reconstruction ≠ DRR





Human Life Recovery

Lessons learned in past reconstruction

(Tomohiro OKADA, 2012)

- “Disaster Capitalism”, “Shock Doctrine”
 - Great Kanto EQ (1923)
 - “Metropolis reconstruction” than “human recovery”
 - Great Hanshin EQ (1995)
 - Reconstruction special demand for external major capital
- Mid Niigata Prefecture EQ (2004)
 - “Return to Yamakoshi (original village)” slogan

Challenges in GEJE reconstruction

- **GREAT EAST JAPAN EQ
2011**

東日本大震災の被害 Impact of the 3.11 Disaster

Earthquake Magnitude: 9.0



(1) Casualties:

Deceased: over 15,800

Unaccounted for: over 2,600

Injured: over 6,000

Related death: over 2,600

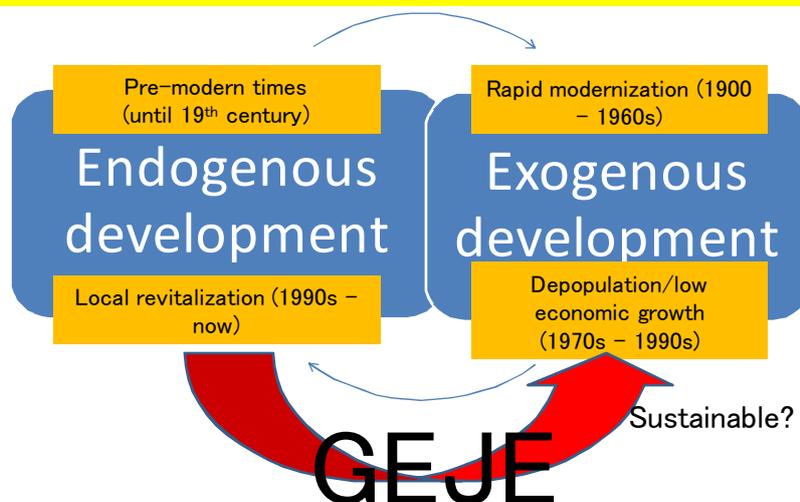
(2) Damaged buildings: 1.14 million
(Completely 0.13, half 0.27, partially 0.74)

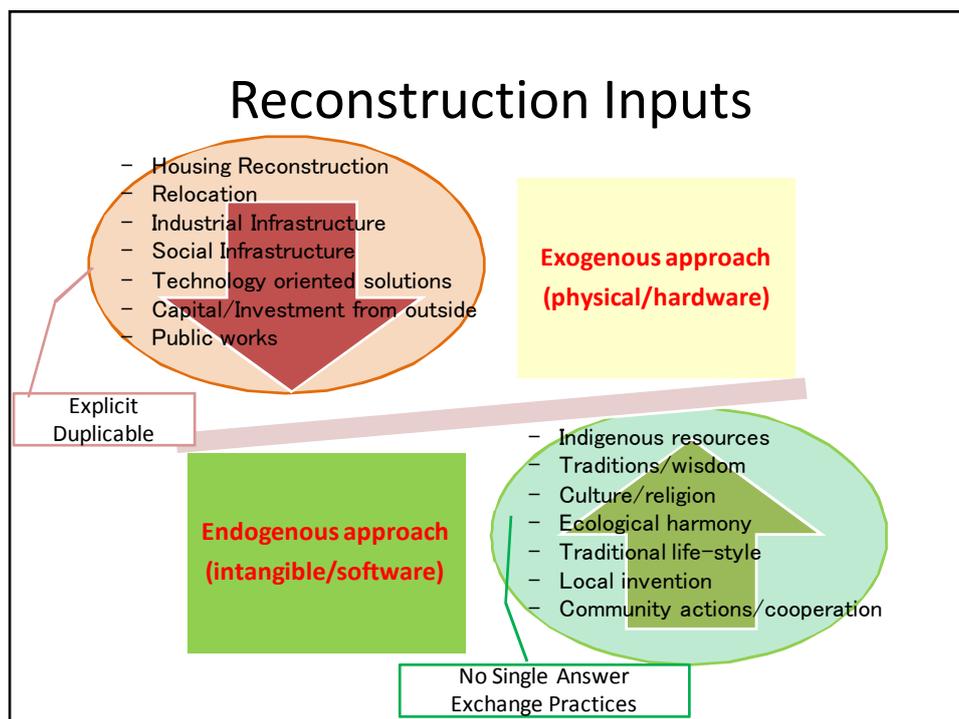
(3) Evacuees: over 274,000 as of December 2013

(4) Economical Damage: about 16.9 trillion yen

Historical transition

Tohoku (GEJE affected region) is standing at a critical juncture





New challenge in GEJE recon.

- Recycling economy
 - Departure from past dependent economy as “supplier” for metropolis
 - Local production for local consumption
 - “Rural prosperity” (UNSDSN)
 - Mutual support in community than “money”
 - Environmentally friendly society
 - Future City Initiative



Sustainable Reconstruction

≡ Endogenous Approach

JICA Training Course “GEJE Reconstruction Process”



JICA Training Course “GEJE Reconstruction Process”



Mutual Reconstruction Model Project with Aceh,
Indonesia

HIGASHIMATSUSHIMA RECONSTRUCTION



Higashimatsushima City

東松島市

65% of the city area was submerged
The greatest proportion out of all the municipalities affected throughout Japan



The situation of damage in Higashimatsushima City
 (As of end December, 2013)

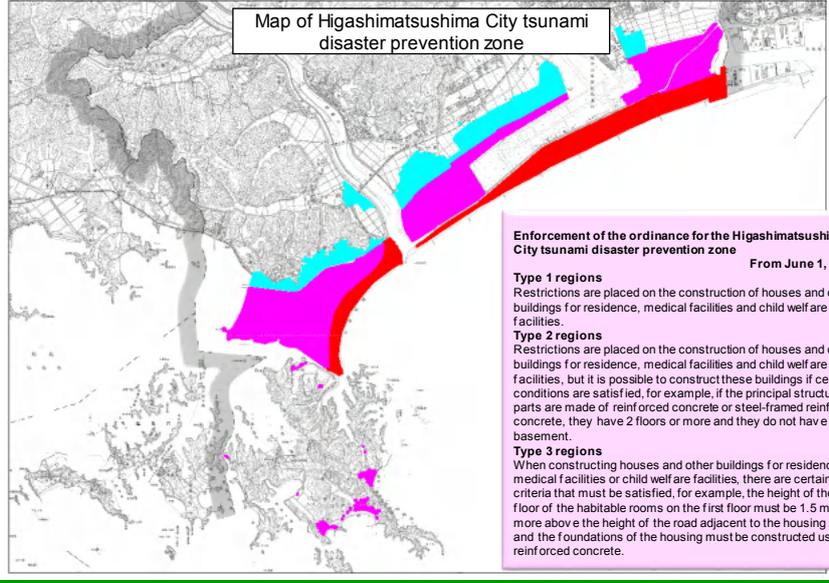
- **Human casualties (citizens)**
 - Deaths: 1,109
 - Missing: 25
 - Total: 1,132
 - (Approx. 3% of the total population)
- **Housing damage**
 - Households completely destroyed: 5,499 buildings
 - Large-scale partial destruction: 3,054 buildings
 - Households partially destroyed: 2,501 buildings
 - Total: 11,054 buildings
 - (Approx. 73% of all households)
- **Automobiles swept out to sea or submerged:**
 Approx. 11,000 vehicles
- **Evacuees (at peak):** 15,185 people
- **Evacuation shelters (at peak):** 86 locations

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Higashimatsushima City

東松島市

Map of Higashimatsushima City tsunami disaster prevention zone



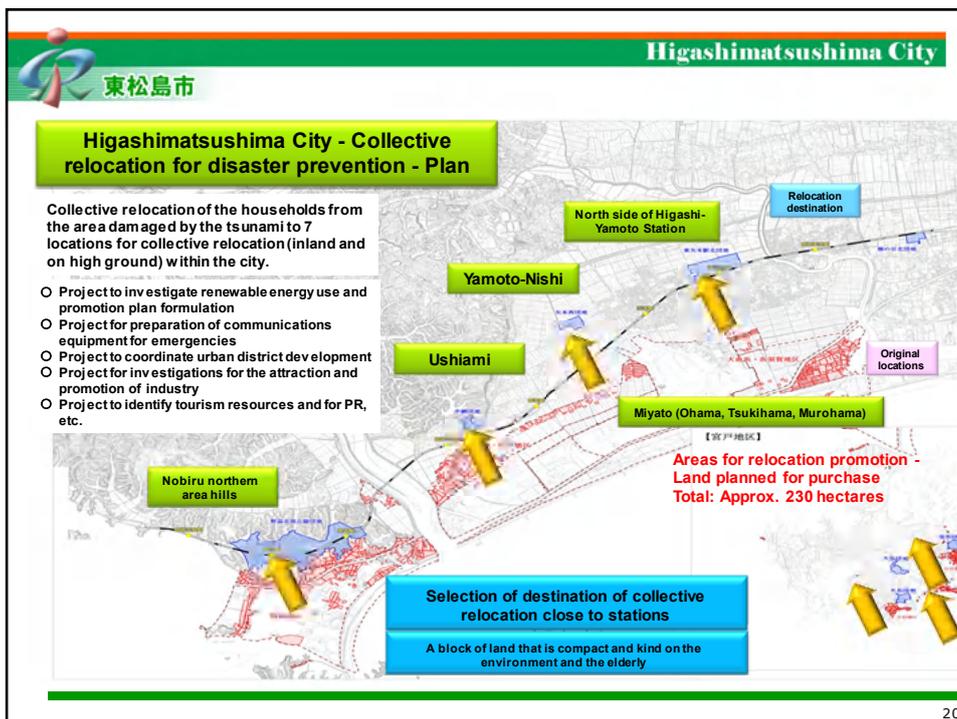
Enforcement of the ordinance for the Higashimatsushima City tsunami disaster prevention zone From June 1, 2012

Type 1 regions
 Restrictions are placed on the construction of houses and other buildings for residence, medical facilities and child welfare facilities.

Type 2 regions
 Restrictions are placed on the construction of houses and other buildings for residence, medical facilities and child welfare facilities, but it is possible to construct these buildings if certain conditions are satisfied, for example, if the principal structural parts are made of reinforced concrete or steel-framed reinforced concrete, they have 2 floors or more and they do not have a basement.

Type 3 regions
 When constructing houses and other buildings for residence, medical facilities or child welfare facilities, there are certain criteria that must be satisfied, for example, the height of the floor of the habitable rooms on the first floor must be 1.5 m or more above the height of the road adjacent to the housing site, and the foundations of the housing must be constructed using reinforced concrete.

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◆ Support to the new community building ◆

Transfer to safer high ground
from seaside affected villages



Support

- Connect between the Local Residents and Local Government
- Supporting the village planning based on the community participation.
- Creation and opportunity for the women and young generation participation.



◆ Support for Revival of livelihood ◆ (seaweed aquaculture)

Fish farmers lose ships, facilities,
all equipment by the tsunami.



Support

- Providing Information of grants, financial supports and donors.
- Advices to creation of the application form
- Support for the creation of Web Site, Sales etc.
- Recruitment of disaster volunteers



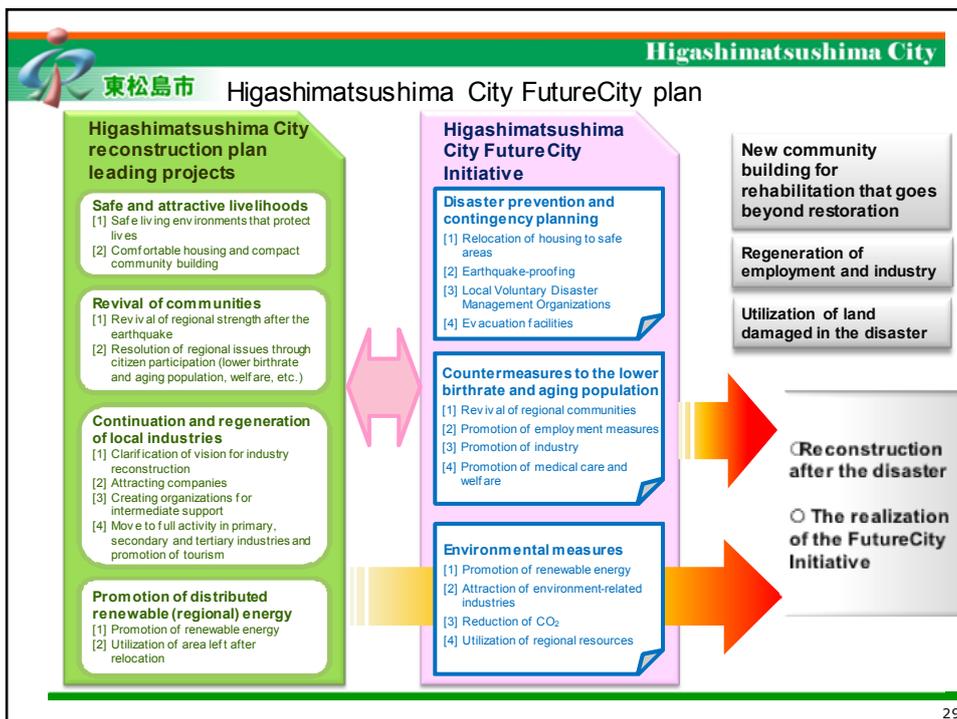
◆ Support to the new community building ◆



JICA facilitate community meeting in Higashi Matsushima City, Miyagi

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Leading projects in the FutureCity Initiative

Through the strength of the private sector and with speed as the priority, the advanced works are proceeding for the introduction of a 2 MW class megasolar installation and photovoltaic power generation facilities totaling approx. 269 kW installed on carports at evacuation shelters (and public facilities) within the city. In addition to their use in the electric utility industry, the carport solar installations are also able to supply power to citizens as distributed power generation systems at times of emergency or disaster. Furthermore, they also provide carport facilities, so there are great expectations for them as something offering two benefits.

"Higashimatsushima 'Kizuna' Carport Solar"

[1] Operator: MITSUI & CO., LTD.
 [2] Planned location, etc.:
 - Car park in front of Higashimatsushima City community center (Approx. 180 kW)
 - Car park at Higashimatsushima City Takegi Woods Athletic Park (Approx. 63 kW)
 - Oshio Civic Center car park (Approx. 26 kW)
Total: Approx. 269 kW

[3] Effects: The generating facilities can be used as emergency power supplies during a power failure due to a disaster or other causes and at normal times they can be used as carports and shelters from rain and sunlight when events are held, with no burden on the local government.
 * At normal times, the operator uses the Feed-in Tariff system and sells the electricity.

"Okumatsushima 'Kizuna' Solar Park"

[1] Operator: MITSUI & CO., LTD.
 [2] Planned location: Part of the former site of the Higashimatsushima City Okumatsushima Park (Approx. 47,000 m²)

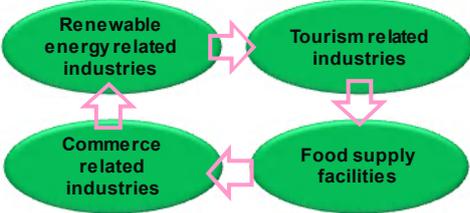
[3] Combined capacity: **1,990 kW (Approx. 2 MW)**
 [4] Electric power generation: Approx. 2.1 million kWh per year (Equivalent to the electric power used by approximately 600 ordinary households in one year)
 [5] Environmental effects: Reduction of approx. 1,000 tons of CO₂ per year (Equivalent to the amount discharged by approximately 200 ordinary households in one year)

東松島市 Higashimatsushima City

Higashimatsushima City recognized as an Environmental Development Zone (Special Zone for Reconstruction) (December 14, 2012)

■ The types of industries we aim to accumulate (targeted industries)

- Renewable energy related industries (Electric utility industry, heat supply industry, etc.)**
We will aim to effectively utilize the land flooded in the tsunami (the damaged areas) and gather together renewable energy industries.
- Tourism related industries (Tourism industry, accommodation industry, etc.)**
We will utilize the natural environment of Matsushima and aim to gather together tourism related industries, including through cooperation with primary industries.
- Commerce related industries (Retailing, service industry, etc.)**
We will aim to gather commerce related industries to ensure the convenience of the residents of the region as part of the collective relocation for disaster prevention.
- Food supply facilities (Agriculture, foodstuff manufacturers, etc.)**
We will aim to gather together food related industries in order to create new industries as a path to reconstruction.

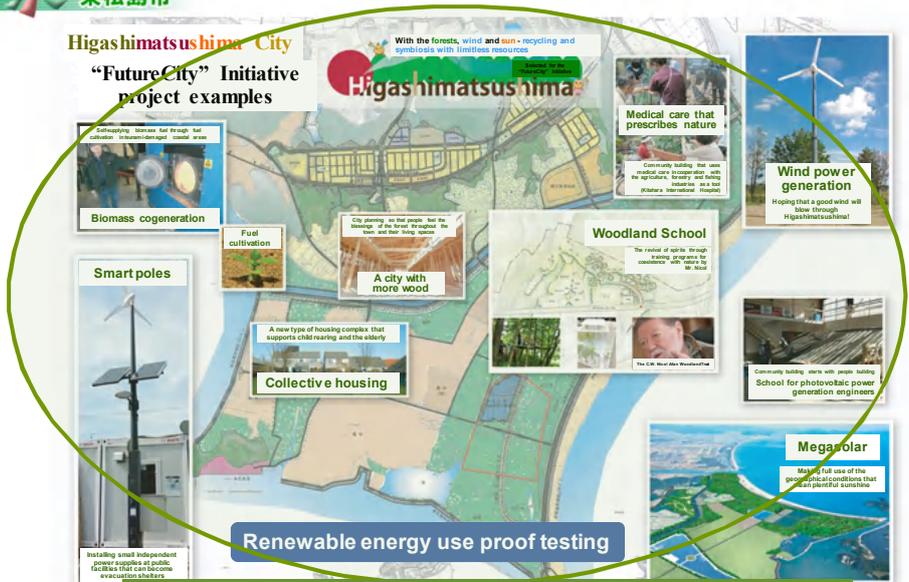
In the areas of industrial agglomeration for reconstruction, there are special tax provisions for the relevant national and local tax items for businesses that newly establish or expand their business and employ earthquake victims in a way that contributes to the creation of employment in regions where employment has been badly affected.

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東松島市 Higashimatsushima City

Higashimatsushima City "Future City" Initiative project examples

With the forests, wind and sun - recycling and symbiosis with limitless resources



- Biomass cogeneration**: Biomass cogeneration system that through fuel cultivation in tsunami-damaged coastal areas.
- Smart poles**: Installing small independent power supplies at public facilities that can become evacuation shelters.
- Fuel cultivation**: City planning so that people feel the "breeze" of the forest through the sun and sea living spaces.
- Collective housing**: A new type of housing complex that supports child-rearing and the elderly.
- Medical care that prescribes nature**: Community building that uses medical care recovery and living facilities as a tool (Kibara International Hospital).
- Woodland School**: The raising of spirits through nature, agriculture and coexistence with nature by the school.
- Wind power generation**: Hoping that a good wind will blow through Higashimatsushima!
- Megapolar**: Maximize use of the geographical conditions that can plentiful sunshine.

Renewable energy use proof testing

Endogenous ≡ Sustainable Development

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Aceh/Indonesia visited Higashimatsuhima (May 2011)



Higashimatsushima visited Aceh, Indonesia (Nov. 2012)



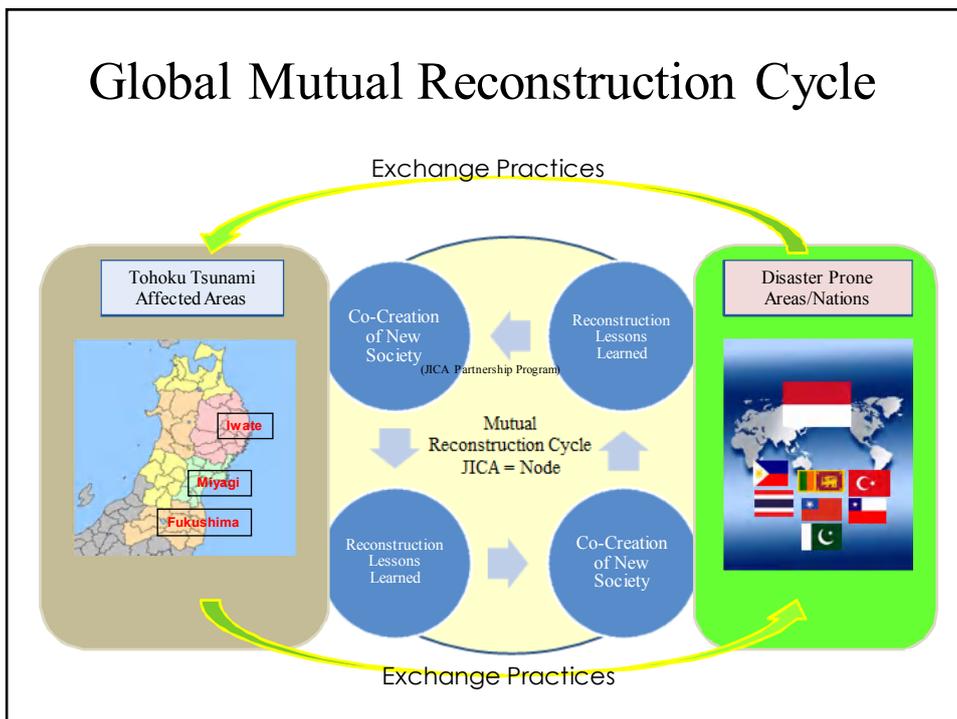
Higashimatsushima visited Aceh, Indonesia (Nov. 2012)



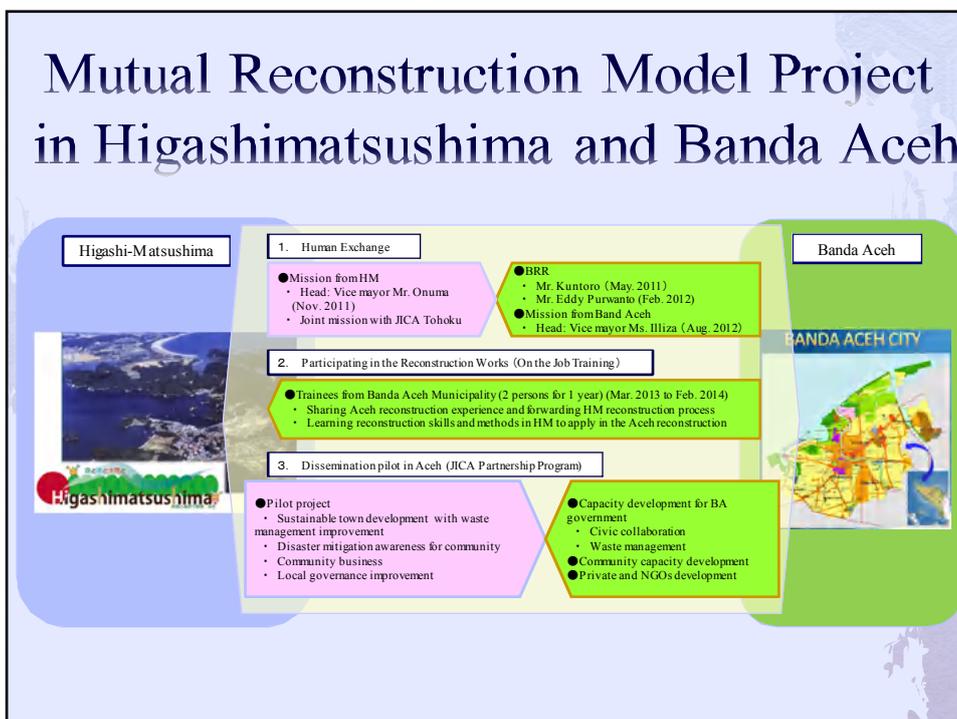
8 years after in Aceh



Global Mutual Reconstruction Cycle



Mutual Reconstruction Model Project in Higashimatsushima and Banda Aceh



Banda Aceh Trainees



Aceh trainees in Japan

Yuli Martunis (L) and Hafriza, trainees from Banda Aceh, Indonesia, pose for a photo at the Japan International Cooperation Agency's headquarters in Tokyo on March 13, 2013. The two workers of the Banda Aceh municipal government will join a one-year training program in the city of Higashimatsushima, Miyagi Prefecture, hit hard by the March 2011 earthquake and tsunami, to share their experience and knowledge from the 2004 Indian Ocean tsunami. (Kyodo)

Sharing Experience

インドネシア・バンダアチェ市から2職員

スマトラの経験教訓に

東松島市 まちづくり研修会

アチェ市職員が震災復興発表

9年前、スマトラ沖地震で大きな被害を受けたインドネシアのバンダアチェ市の職員が、東日本大震災からの復興に向けた課題について考えようと、東松島市長らにアチェ市の復興の歩みについて発表しました。東松島市ではアチェ市での経験を市の復興に役立てようと、こと3月からアチェ市の職員2人を研修生として受け入れています。15日は市役所で、2人の研修生がアチェ市の復興の歩みについて市長ら幹部職員およそ40人に発表しました。発表では、アチェ市が事務的な手続きを簡素化することで寄付金を迅速に配分し、復旧を進めることができたという成果があった一方で、防災にかける十分な予算がないため避難路の整備が進まないなど実効性のある対策が立てられない現状などが報告されました。市の幹部らは、アチェ市の事例を参考にしようとする積極的に質問を行うなど復興に向けた課題に関心を寄せていました。研修生の1人、ハフリザさんは、「震災のときは国際的な援助を受けたので、今度は東松島市で復興の手伝いをしたいと思っている。困難もあるが、諦めず希望を捨てないでほしい」と市民にメッセージを送りました。今後、2人の研修生による一般市民向けの講演会も検討されているということです。

04月15日 13時01分

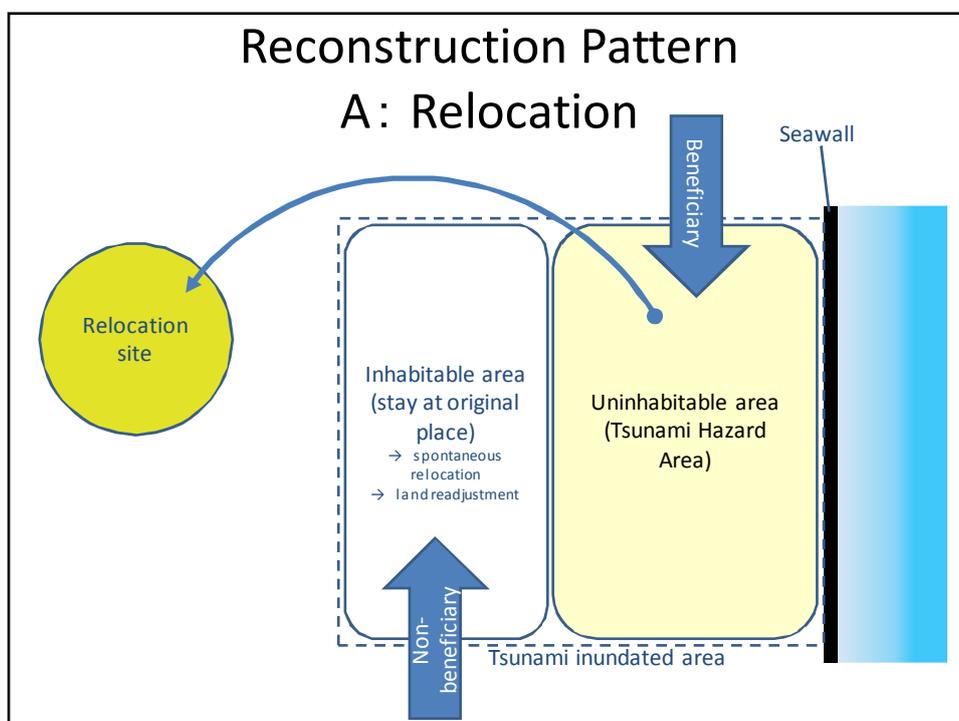
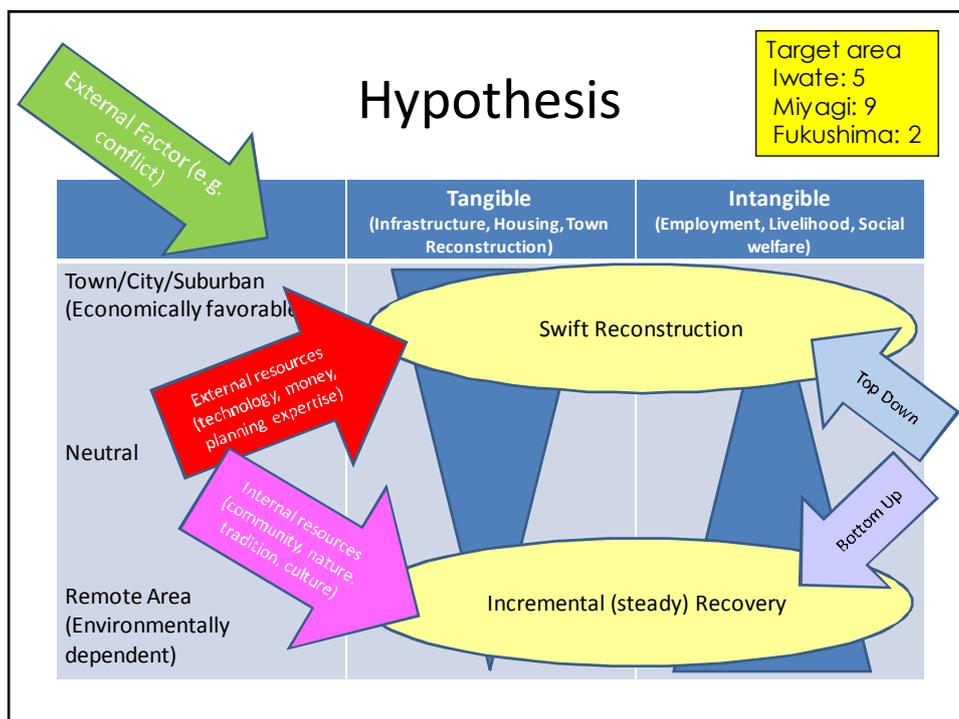
Philippines Typhoon Yolanda

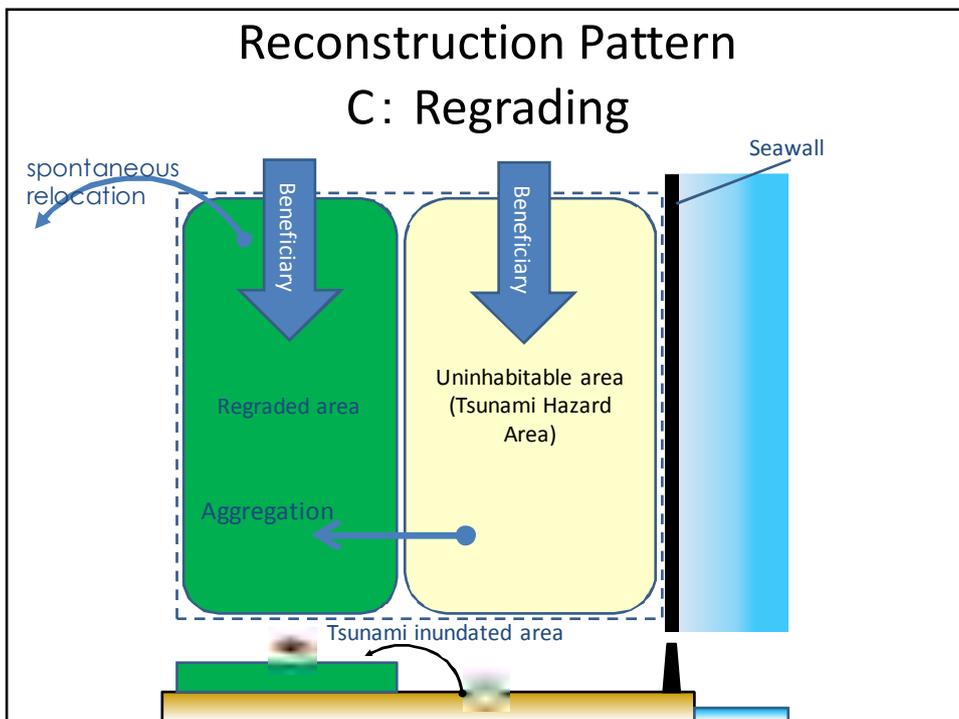
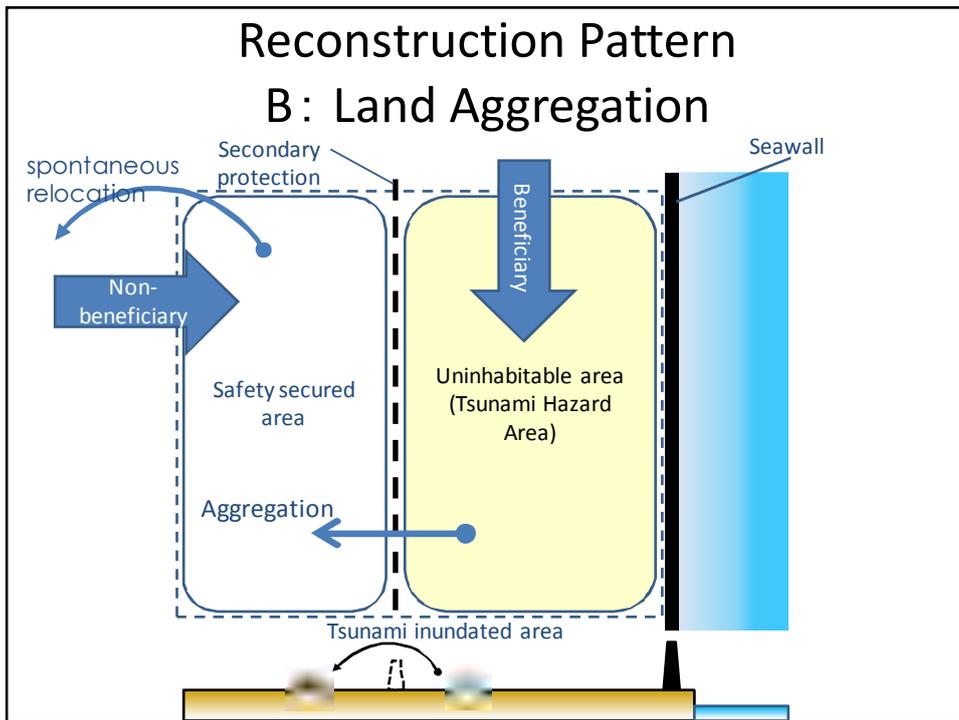
- HM+JICA joint mission for Yolanda (Jan. 2014)

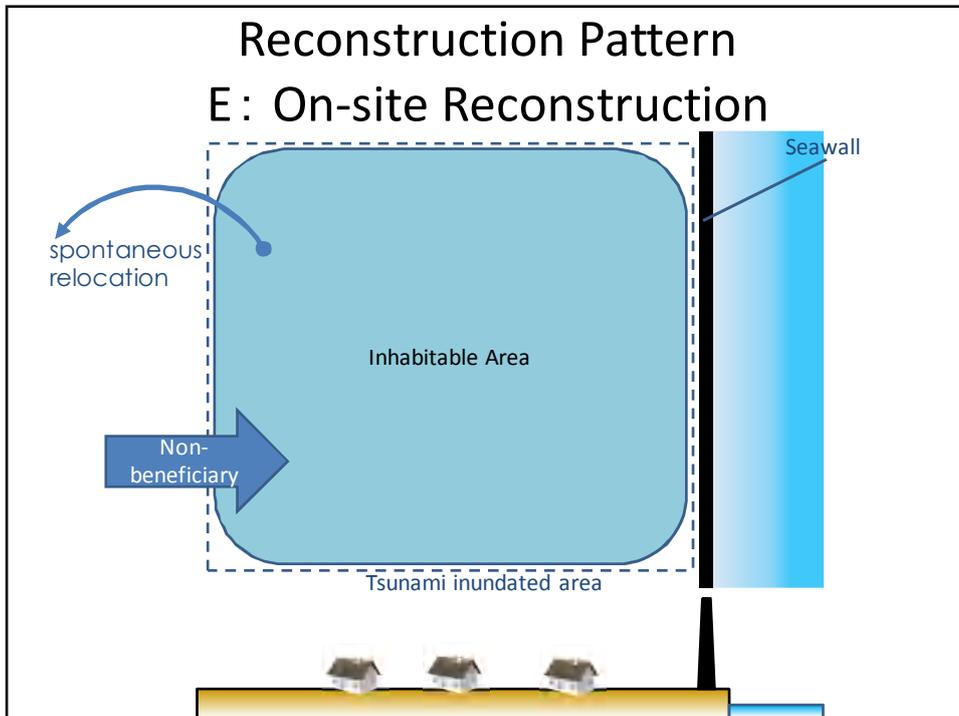
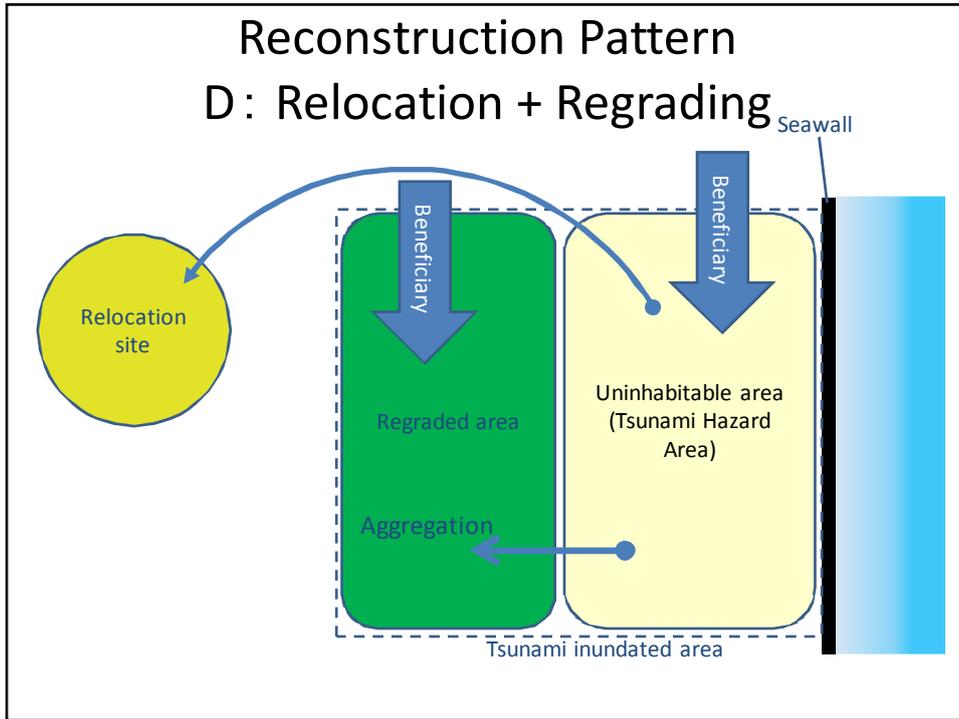


Comparative analysis of 16 target areas

RECONSTRUCTION PROCESS SURVEY



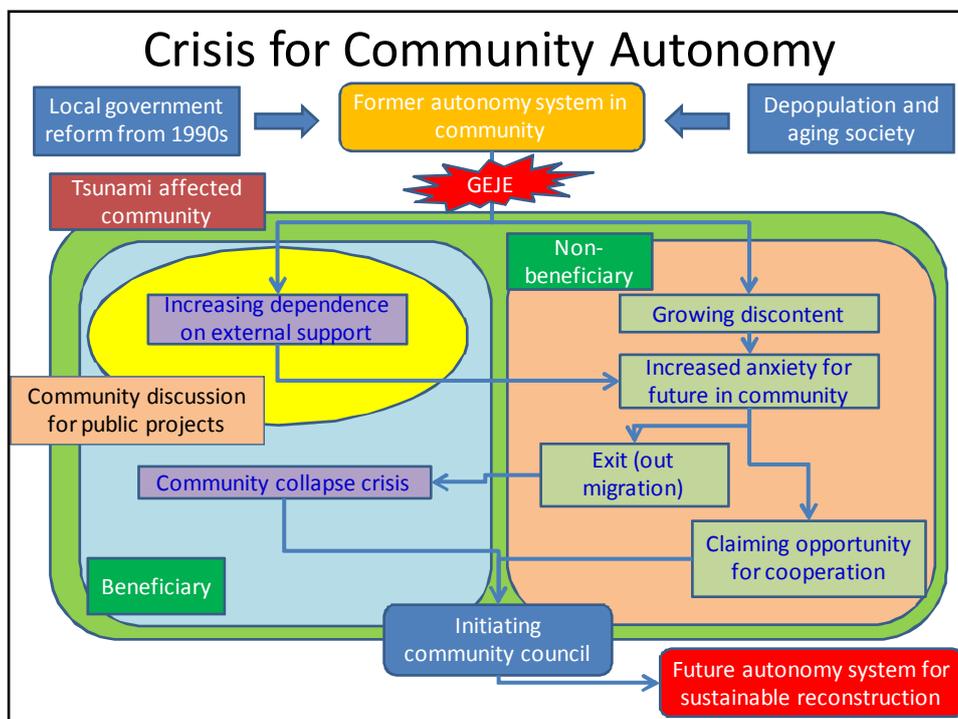




Difference in Individual Reconstruction Process

Public Reconstruction	Tsunami inundated area		No inundation area
	Disaster hazard area	Inhabitable area	
Participating	1. Group relocation 2. Individual relocation 3. Public housing	5. Spontaneous relocation with subsidy 6. Land intensification with/without regrading	-
Not-participating	4. Restoring damaged house	7. On-site reconstruction 8. Restoring damaged house 9. Spontaneous relocation without subsidy	10. All residents

Crisis for Community Autonomy



JICA Survey on Community Reconstruction Process

	Characteristics	Recon pattern	Unfairness*	Autonomy
Sample area 1: Higashimatsushima	Residential area for commuter. Tourism with beautiful beach. Agriculture and fishery resource.	A: Relocation	B>N	Started (July, 2012)
Sample area 2: Sendai	Residential area for commuter. Side-job agriculture.	E: On-site reconstruction	B<<N	Started (Jan., 2012)
Sample area 3: Ishinomaki	Rural area for fishery.	A: Relocation	B>>N	Starting
Sample area 4: Kamaishi	Rural residential area surrounded by fishery villages and industrial cities.	C: Regrading	B>>N	Not yet

*: assumption from interview

Reconstruction Criteria for “Human Life Recovery”

	Secondary/Tertiary Industry Household	Primary Industry Household
Swiftness in Indigenous Livelihood/ Employment Recovery	△ Can find jobs in near city. Many are commuters.	◎ Agriculture and fishery relying on the indigenous natural resources.
Swiftness in Housing Recovery	◎ Swiftness is highly important to hinder out migration.	○ Location should be near from their “working place”. Accommodate their needs for livelihood.
Safety Level of Reconstruction	◎ Less familiar with nature wisdom. DRR measures are indispensable.	△ Safety is the last criteria when considering the trade-offs with above two elements.

JICA Survey on Community Reconstruction Process

	Recon pattern	Primary industry	Situation		
			Livelihood	Housing	Safety
Sample area 1: Higashimatsushima a	A: Relocation	P: 6.0%	△ Less active yet	△ After 2016	◎ Relocation site in the hill behind
Sample area 2: Sendai	E: On-site reconstruction	P: 1.0%	△ Less active yet	◎ Already	○ 7.2m seawall and secondary barrier
Sample area 3: Ishinomaki	A: Relocation	P: 13.9%	○ Gradual recovery in fishery	△ After 2016	◎ Relocation site in the hill behind
Sample area 4: Kamaishi	C: Regrading	P: 3.0%	△ Less active yet	△ After 2016	◎ 14m seawall with regrading

Should be continuously observed the consequences.
 Safety >? Swift housing
 Livelihood >? Safety

Seawall Dispute

異なる被災状況 分かれる県の対応

防潮堤建設 3県に差

岩手100%、宮城69%

福島、原発事故で進まず

Source: Kahoku shimpo (C) 河北新報社

- Same standard different policy
- L1 level: 100-150 year
- Iwate: Community consensus
- Miyagi: Unified enforcement
- Seawall ↔ Fishery and tourism

Seawall Dispute

東日本大震災から2年半 防波堤

整備、復興計画に影響

目次形接点離す 位置で協議難航 構想に住民疑問 目がけき材を活用

- Conflict with indigenous natural resources (beach, scenery, fishery, muddy flat, bio-diversity)

Source: Kahoku shimpo
(C) 河北新報社

Out Migration

被災地のいま①沿岸自治体アンケート 7市町「人口10%超減」

3年 東日本大震災

復興遅れ 仙台圏へ流出

- Failure to secure swiftness induces outflowing to metropolis/inner city
- Kamaishi: 39,996 ⇒ 36,940 (92.4%)
- Higashimatsushima: 43,142 ⇒ 40,222 (93.2%)
- Ishinomaki: 162,822 ⇒ 150,966 (92.7%)
- Sendai: 1,016,049 ⇒ 1,049,578 (103.3%)

Source: Kahoku shimpo
(C) 河北新報社

Interim Observation

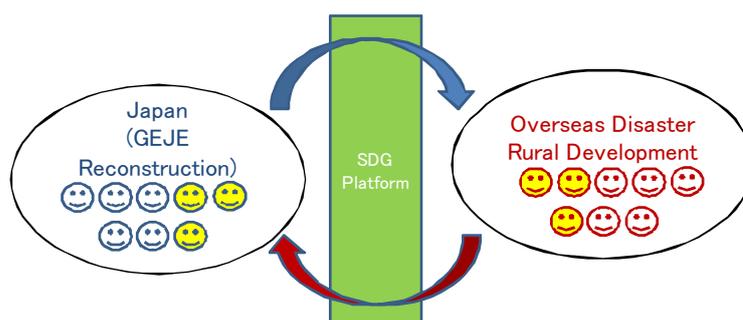
- Unfairness or crisis might lead autonomy in the affected community \Rightarrow External assistance can resolve/intervene the situation
- Safety-swiftness trade-offs
- Safety-livelihood trade-offs
- Delay induces out-migration particularly for non-primary industry population
- Urban area \Leftrightarrow Rural area

Sharing practical knowledge for future

 **SDG PRACTITIONER
PLATFORM**

Vision:

Providing global opportunity cycle for Reconstruction and SDG practitioners while upgrading their expertise and knowledge through practical education programs.



Summary of presentation

- Reconstruction Factors
 - Reconstruction ≠ DRR
 - Human Life Recovery
 - Reconstruction ⇒ Sustainable Development
- Endogenous approach
 - No single answer
 - Exchange practices (Aceh and Leyte with HM)
- Reconstruction Process Survey
 - Public reconstruction participation level affects community autonomy
 - Livelihood affects reconstruction criteria
 - Housing swiftness ⇔ Safety ⇔ Livelihood
- SDG Practitioner Platform