

Evaluation of housing reconstruction in the disaster-hit areas of northeast Japan based on macro-scale data

Tadayoshi TADA^{1, 2}

¹Economist, Norinchukin Research Institute Co., Ltd., 1-1-12, Uchikanda, Chiyoda-ku, Tokyo, 101-0047, Japan, tada@nochuri.co.jp

²Research Fellow, Meiji University

ABSTRACT

The study analyzes macro-scale housing reconstruction data and elucidates progress and obstacles to housing reconstruction in disaster-hit areas of northeast Japan. This work analyzes time series data collected by the Reconstruction Agency regarding the number of displaced people and the numbers of planned public housing projects and residential lots, as well as data provided by the Cabinet Office and the prefectural offices regarding the number of applications for the *Kasan Shienkin* additional reconstruction support funds, which are available only to victims from households affected by the disaster. Interviews were conducted to understand the data. The study determined the following: 1) from the perspective of macro-scale analysis, continuous, voluntary housing reconstruction has been recognized as a net migration of displaced people from 2012 to the present. 2) However, from the perspective of micro-scale analysis, some disaster victims have only recently become new tenants of temporary housing, and their relationship with housing reconstruction must be grasped. 3) Furthermore, the difficulty of finding land for public/voluntary housing (re)construction is an obstacle that is in the process of being solved, but measures to encourage bidding for public housing construction projects must be undertaken.

Keywords: Housing reconstruction, open tendering, displacement, the Great East Japan Earthquake

1. INTRODUCTION

Almost three and a half years have passed since the Great East Japan Earthquake, which occurred off the Pacific Coast of Tohoku in 2011. Disaster victims continue to reconstruct their homes. However, studies on the progress of reconstruction based on official statistics are nonexistent. To bridge this research gap, the current study analyzes macro-scale housing reconstruction data and elucidates the progress of and obstacles to housing reconstruction in disaster-hit areas of Northeast Japan.

2. DATA AND METHODOLOGY

This work analyzes time series data collected by the Reconstruction Agency on the number of displaced people and the numbers of planned public housing projects and residential lots, as well as data provided by the Cabinet Office and the prefectural offices on the number of applications for *Kasan Shienkin* additional reconstruction support funds, which are available only to victims from households affected by the disaster. The additional reconstruction support funds can be regarded as a benchmark because applications for such funds must be submitted prior to initiating housing reconstruction. In addition, the study also interviewed officials.

3. DISPLACEMENT: STILL MORE THAN A QUARTER MILLION

The number of displaced people reached 346,987 in July 2012. This number decreased by 48,954 to 298,033 in June 2013 and by 34,641 to 263,392 in April 2014. At the same time, the number of temporary housing occupants reached 136,057 in July 2012 and subsequently decreased by 21,898 to 114,159 in June 2013 and by 9,128 to 105,031 in February 2014. These numbers indicate that about 20,000 households per year continue to engage in the process of housing reconstruction and that the pace of reconstruction has not substantially changed in the last two years.

4. MACRO-SCALE DATA ANALYSIS: KASAN SHIENKIN APPLICATIONS

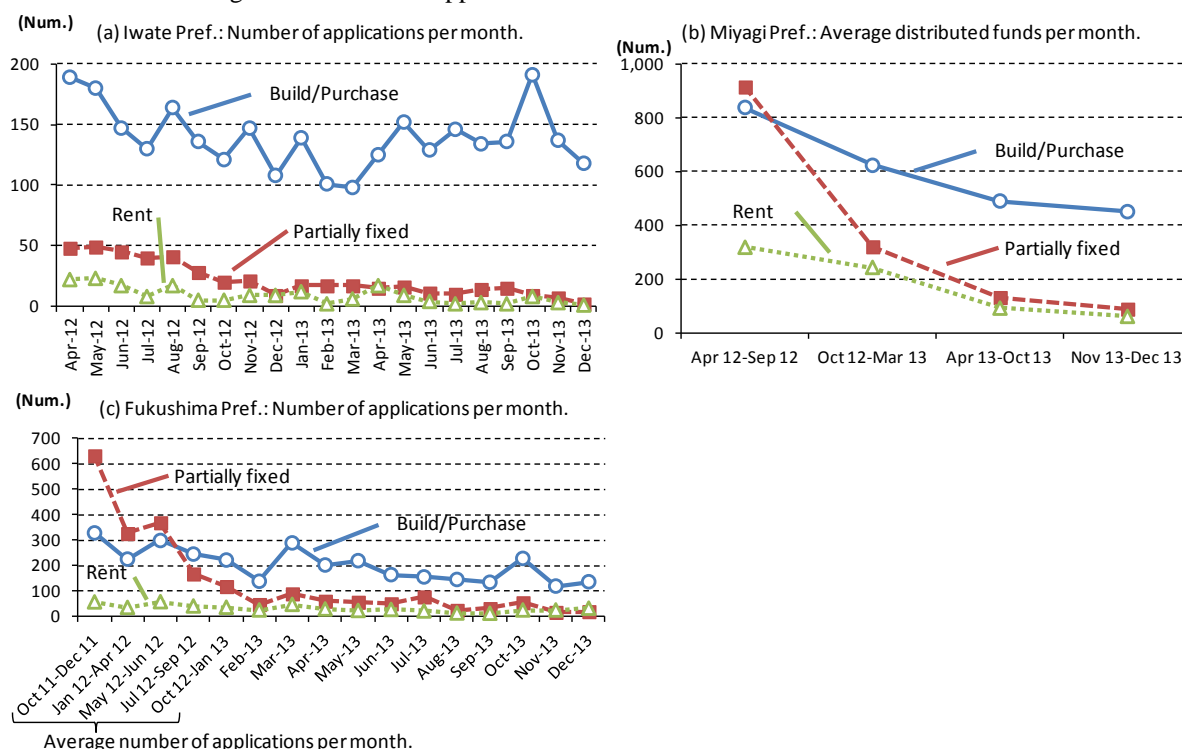
1) *Kasan Shienkin* as an indicator of housing reconstruction

The number of applications for the *Kasan Shienkin* was analyzed to capture the progress of housing reconstruction. In accordance with the Disaster Victims Livelihood Recovery Support System in Japan, disaster victims may apply for and receive funds from two government programs: *Kiso Shienkin* basic reconstruction support funds and *Kasan Shienkin*. Victims can receive the *Kiso Shienkin* on the condition that they have obtained a Disaster Victim Certificate issued by their local office. Those who receive the *Kiso Shienkin* can only receive the *Kasan Shienkin* when they rebuild their homes.

2) The continuation of voluntary housing reconstruction

The number of households that received the *Kiso Shienkin* reached 189,251 (172,218 in the three severely damaged prefectures of Iwate, Miyagi, and Fukushima) by the end of December 2013. Half of those eligible to receive the *Kiso Shienkin* have applied. Since peaking and declining in 2012, the number of applications for in Iwate and Fukushima Prefectures and the distribution of funds in Miyagi Prefecture have exhibited a continuous, stable trend (Figure 1). This phenomenon was also observed in an analysis of mortgage applications (Tada 2013a; 2013b; 2013c). Therefore, displaced people continue to engage in voluntary housing reconstruction. Furthermore, the decreasing number of planned public housing projects and residential lots (Table 1) also indicates that some displaced people have decided to reconstruct their homes voluntarily (Tada 2014).

Figure 1. Number of applications and distribution of *Kasan Shienkin* funds



Source: (a-c) Iwate, Miyagi, and Fukushima Prefectures; (d) ESRI Japan

Note: Data on the number of applications for the *Kasan Shienkin* were available for Iwate and Fukushima Prefectures, whereas data on the distribution of funds in Miyagi Prefecture were available.

5. LIMITS OF MACRO-SCALE DATA ANALYSIS

1) Net and gross movement

Interviews with prefectural officials indicated that some victims of the disaster have become new tenants of temporary housing only recently, and that some temporary housing residents face eviction due to landowners' demands to return their land. The interviews indicated that a complete understanding of the gross movement of displaced people cannot be obtained based solely on an analysis of macro-scale data, and that the micro-scale perspective must be kept in mind. Furthermore, officials also stated that displaced people have pursued extremely diverse paths to recovery. Thus, caution is warranted when drawing conclusions from macro-scale data.

Table 1. Planned public housing and residential lots

		2012	2013				2014
		At the end of Dec.	Mar.	Jul.	Sep.	Dec.	Mar.
Iwate	Private residential lots	10,087	9,722	8,743	8,837	8,405	8,291
	Public housing (no. of rooms)	5,639	5,972	6,097	6,079	6,038	5,969
Miyagi	Private residential lots	15,432	13,068	13,027	12,057	11,808	11,575
	Public housing (no. of rooms)	15,485	15,381	15,442	15,342	15,543	15,465
Fukushima	Private residential lots	2,541	2,525	2,501	2,469	2,075	2,205
	Public housing (no. of rooms)	3,132	3,098	3,138	3,606	4,139	7,609
	for earthquake and tsunami evacuees	-	-	-	-	-	2,719
	for nuclear power plant evacuees	-	-	-	-	-	4,890

Source: Reconstruction Agency

<http://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-12/20130730105832.html> (accessed 14 May 2014)

Note: Areas that exhibit a decreasing trend are highlighted.

2) Obstacles: from land to open tendering

Certain land issues that were pointed out by Tada (2013a; 2013b; 2013c) have nearly been solved. However, the failure to encourage bidding on public housing construction projects has slowed the pace of housing reconstruction. According to local government officials, there are several reasons as to why open tenders may fail to attract bidders: 1) because of a lack of skilled labor and materials, a bidder may be unable to meet the target price, or 2) the project may be excessively small and/or short in duration. The authorities have already taken certain measures to ameliorate these issues (Table 2).

Table 2. Reasons for bidders to fail in open tenders for public housing construction projects

Prefecture	Failure/Bids	Reasons (multiple reasons may apply)			
		Low bid price	Lack of contractor	Duration of the project is excessively short	Project is excessively small
Iwate	10/59	8	4	2	0
Miyagi	16/83	9	6	3	2
Fukushima	4/49	4	0	2	0
Total	30/191	21	10	7	2

Source: Ministry of Land, Infrastructure, Transport and Tourism. <http://www.mlit.go.jp/common/001038810.pdf> (accessed 28 May 2014)

6. CONCLUSION

The study determined the following: 1) from the perspective of macro-scale analysis, continuous, voluntary housing reconstruction has been recognized as a net migration of displaced people from 2012 to the present. 2) However, from the perspective of micro-scale analysis, some disaster victims have only recently become tenants of temporary housing, and their relationship with housing reconstruction must be grasped. 3) Furthermore, the difficulty of finding land for public/voluntary housing (re)construction is an obstacle that is in the process of being solved, but measures to encourage bidding for public housing construction projects must be undertaken. The Reconstruction Agency expects most public housing construction projects to be finished between late March 2015 and March 2017. Although housing reconstruction continues to progress at a fast pace, the number of people who decide to voluntarily engage in housing reconstruction can be expected to increase if obstacles to public housing construction projects are not appropriately addressed.

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TADA Tadayoshi^{1*}, 2

1: Economist, Norinchukin Research Institute Co., Ltd.

*Email: tada@nochuri.co.jp

2: Research Fellow, Meiji University



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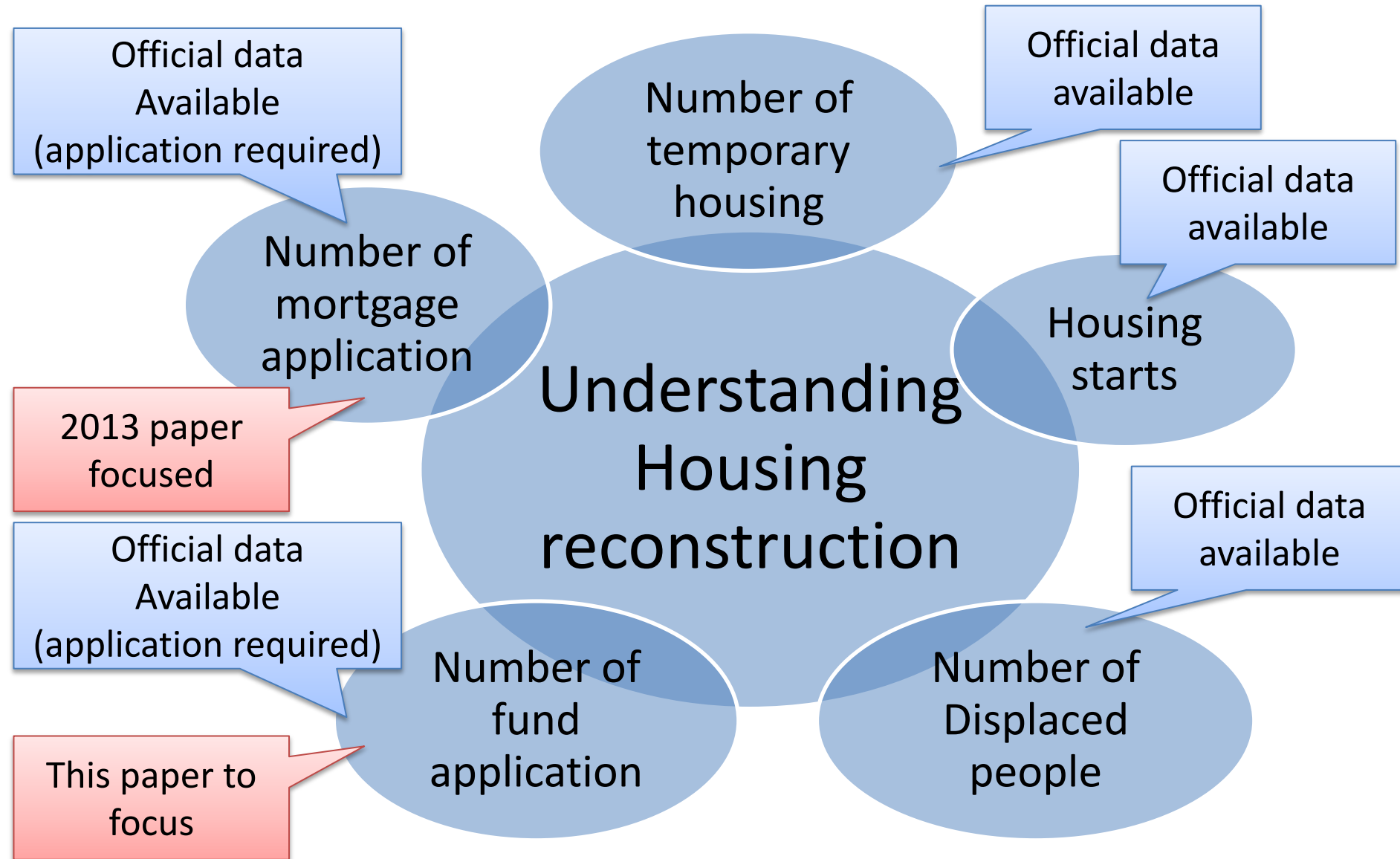
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Introduction

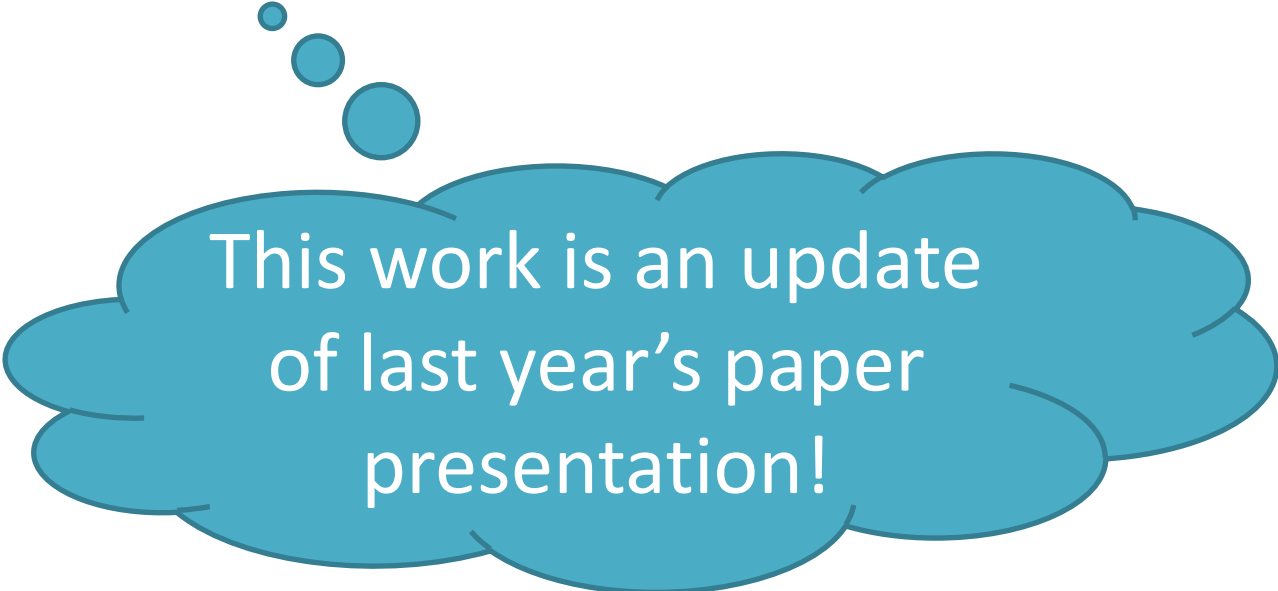
- Almost three and a half years have passed since the Great East Japan Earthquake, the quake that occurred off the Pacific Coast of Tohoku in 2011.
- Disaster victims continue to reconstruct their homes. Their options are;
 - Voluntarily relocation & Self-reconstruction (to build a detached house; to purchase a room of condominium/private-owned flat)
 - Collective relocation & Self-reconstruction
 - To move into public housing (extra construction for the disaster)
 - To move into rental housing

Research gap



Research Aim

- The study analyzes
 - macro-scale housing reconstruction data
- and elucidates
 - the progress of and obstacles to housing reconstruction in disaster-hit areas of Northeast Japan

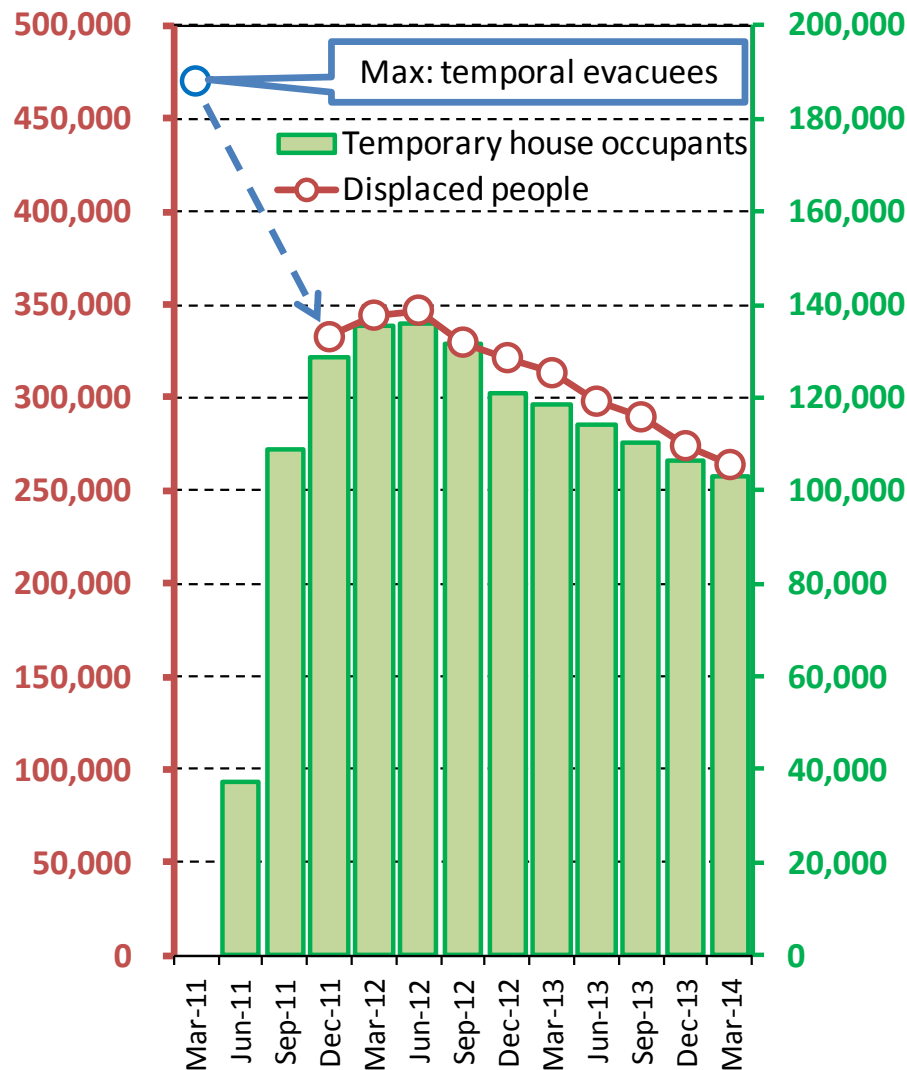


This work is an update
of last year's paper
presentation!

Data & Methodology

- This work analyzes **two** data:
 - time series data on the number of **displaced people** and the numbers of **planned public housing projects** and **residential lots** (collected by the Reconstruction Agency),
 - as well as data on the number of **applications for *Kasan Shienkin*** (additional reconstruction support funds), which are available only to victims from households affected by the disaster (provided by the Cabinet Office and the prefectural offices).
- The study also interviewed officials.

Displaced People and Temporary House Occupants

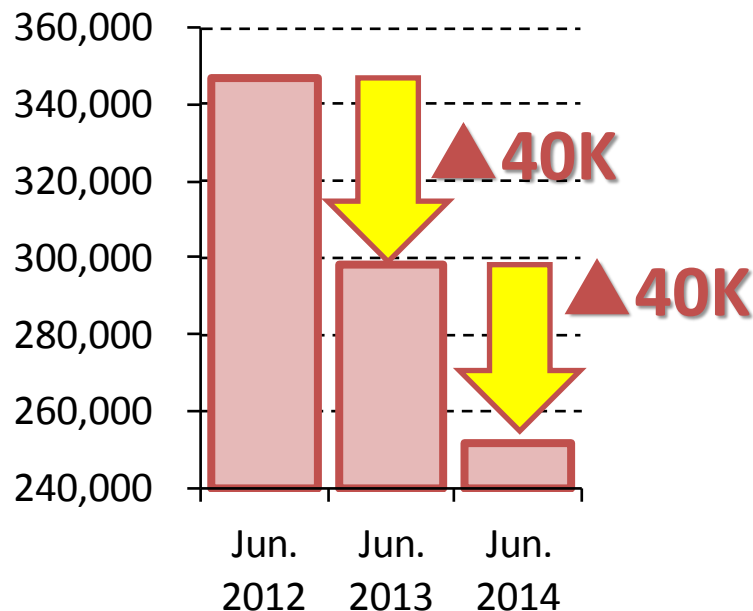


Source: Reconstruction Agency of Japan

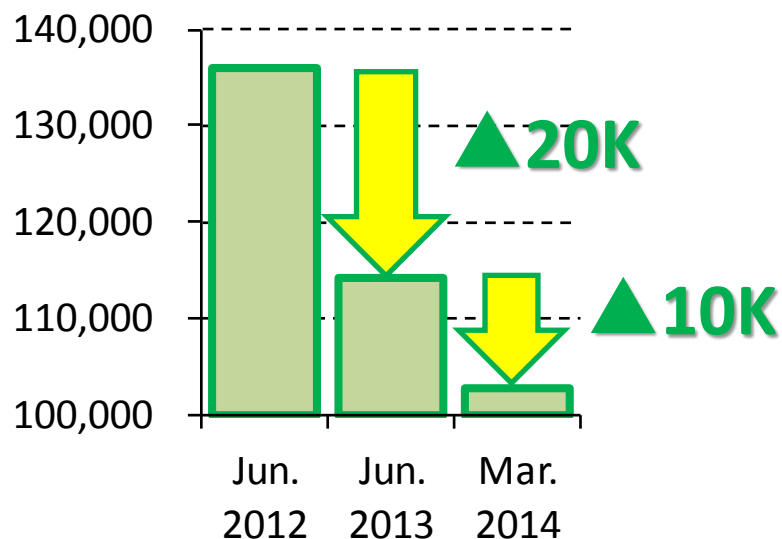
- **Mar. 2011: Temporal evacuees reached about 470,000.**
- **Jun. 2012: Displaced people (= Escaped temporal evacuation but still in the state of secondary evacuation; they occupy temporary house) reached the maximum, about 350,000.**

Present: a quarter million still displaced

Displaced people



Temporary house occupants



Source: Reconstruction Agency

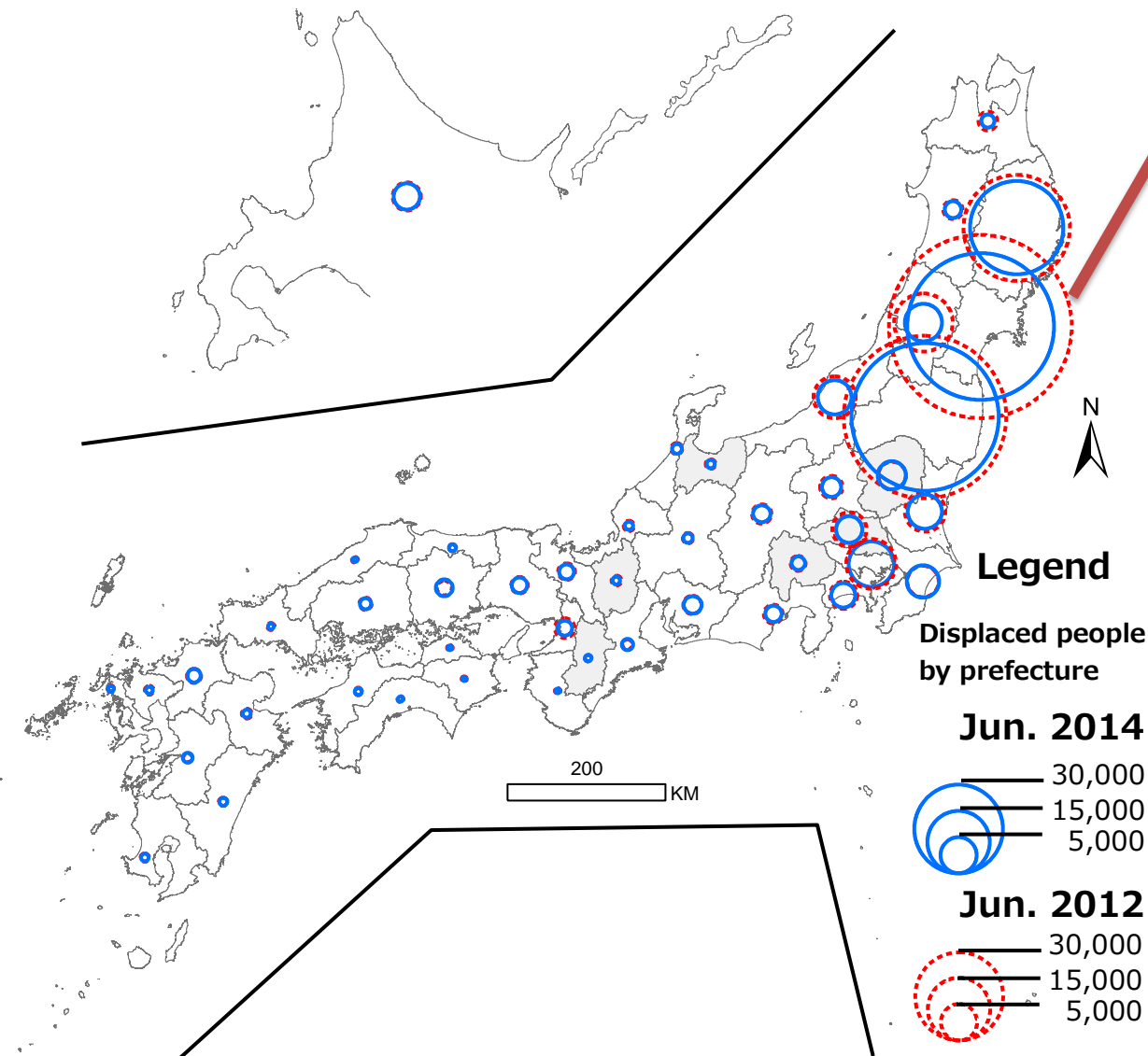
- **The number of displaced people: decreased 40K every year**
- **Temporary house occupants: decreased 10K-20K every year**

Displaced people by prefecture

Except Miyagi Pref., Most of the red and blue rings are overlapped.



Most of displaced people are still facing difficulties in reconstructing their housing.



Source: Reconstruction Agency, ESRI Japan

2014/07/08



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Kasan Shienkin as an indicator of housing reconstruction

Basic condition

- Totally/half collapsed house
- “Disaster Victim Certificate” is required to apply and receive the fund



Kiso Shienkin (The basic reconstruction support fund)

- Up to 1M JPY=1,000 USD
- For immediate spending



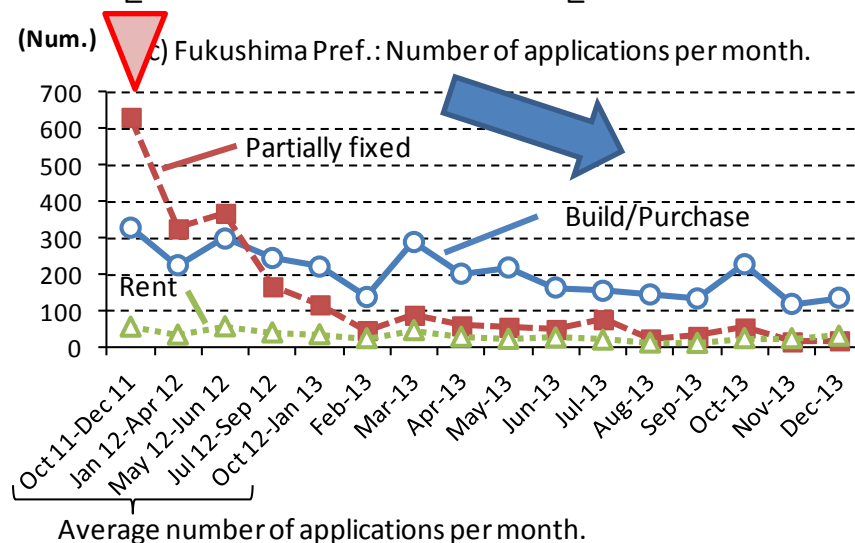
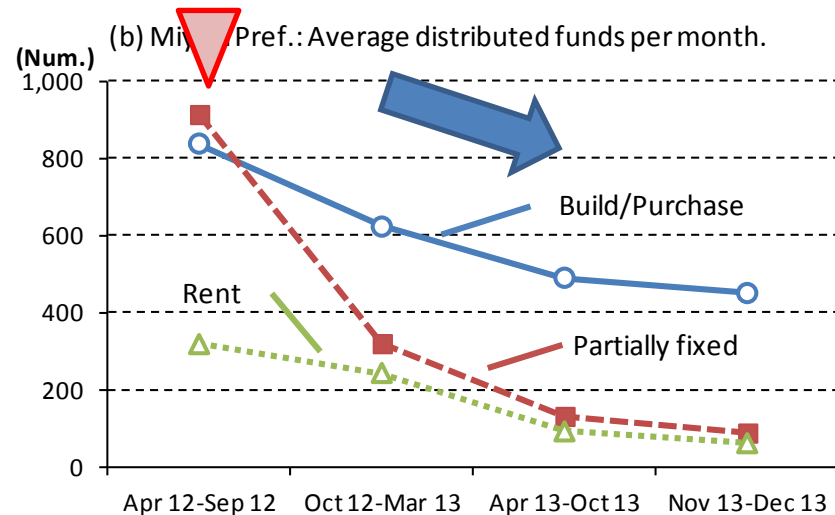
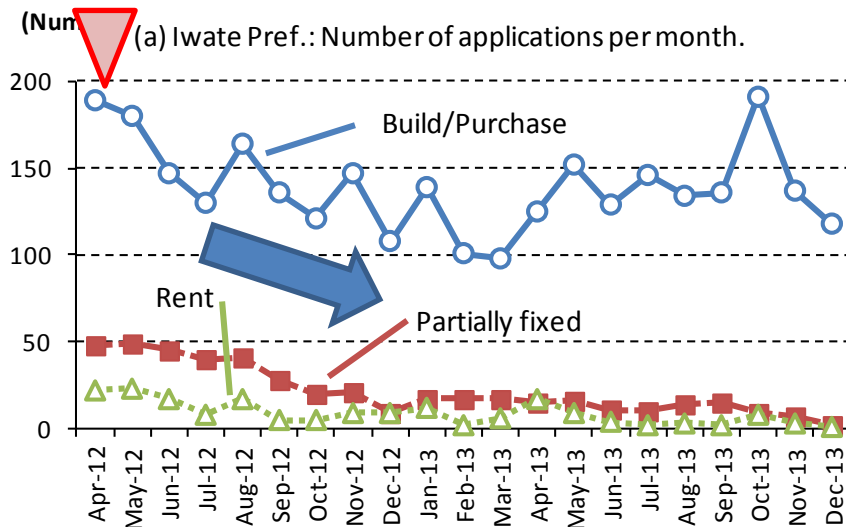
Kasan Shienkin (The additional reconstruction support funds)

- When they reconstruct/purchase house, partially fix house or rent a room (Up to 2M JPY)
- Those who received *Kiso Shienkin* can only apply.

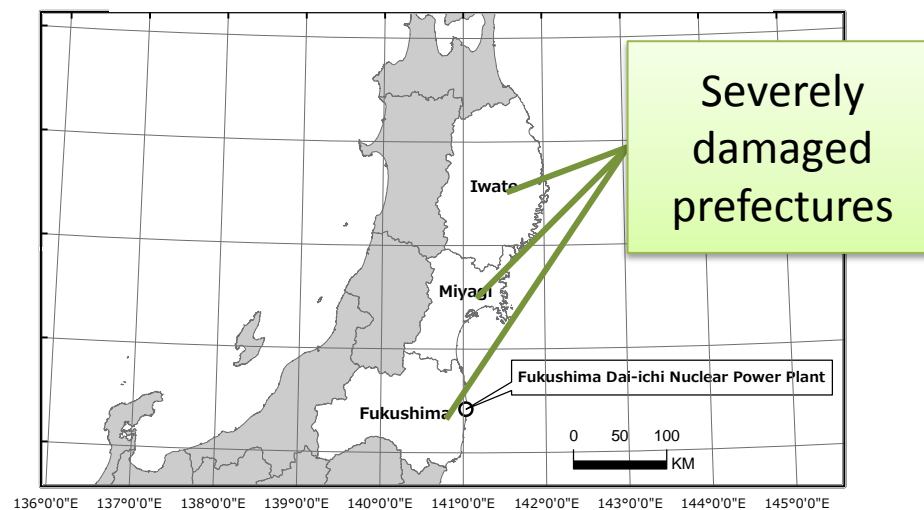
As of 31/MAR/ 2014	Num. of household	
	Total	Severely damaged pref.
<i>Kiso</i>	189,896	172,694
<i>Kasan</i>	111,216	97,881

Benchmark!!
of reconstruction

The continuation of voluntary housing reconstruction



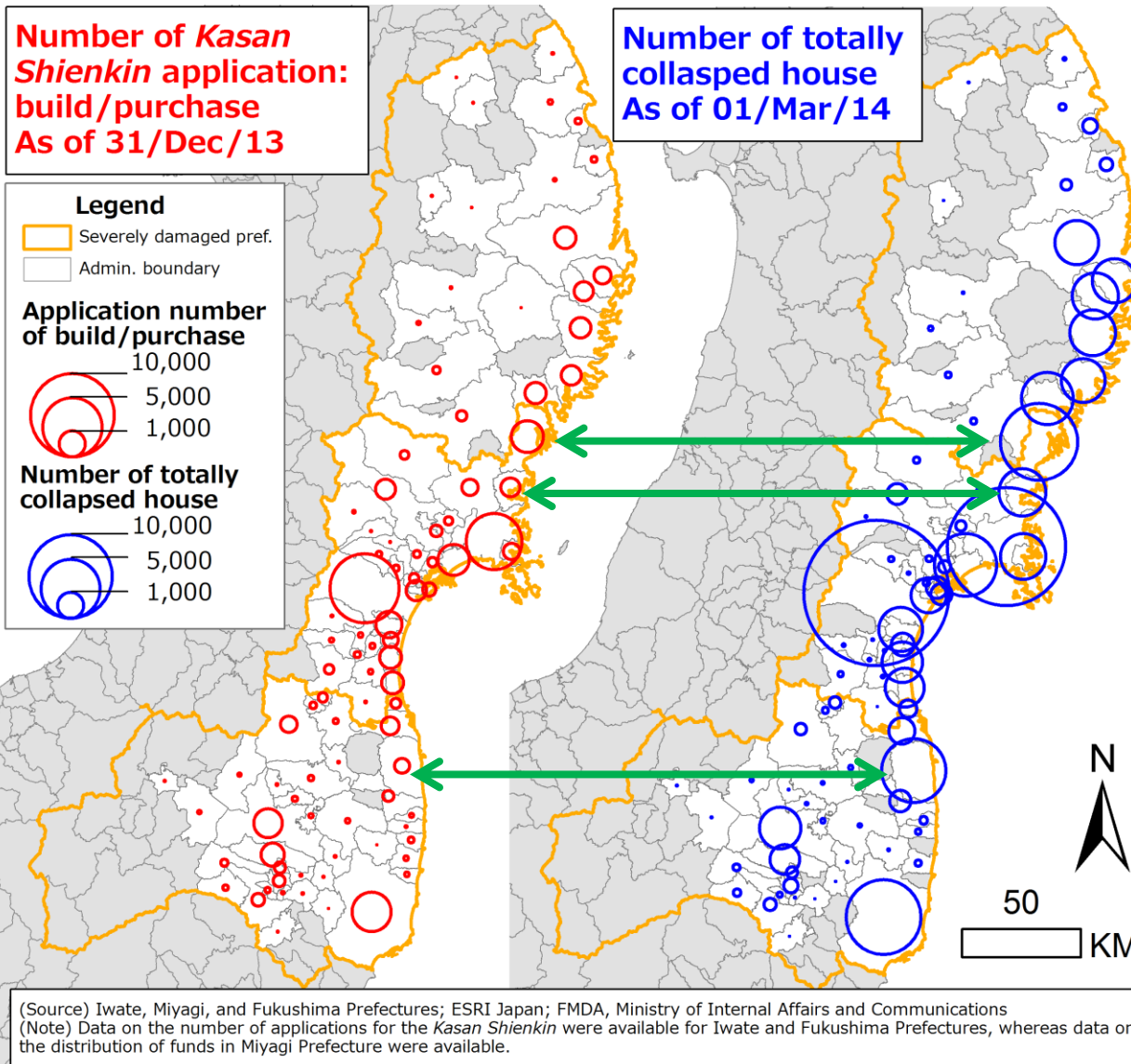
(d) Location of the severely damaged prefectures



Source: (a-c) Iwate, Miyagi, and Fukushima Prefectures; (d) ESRI Japan

Note: Data on the number of applications for the *Kasan Shienkin* were available for Iwate and Fukushima Prefectures, whereas data on the distribution of funds in Miyagi Prefecture were available.

Number of *Kasan Shienkin* vs. totally collapsed house



- Still in process of reconstruction
- Some area: relatively slow pace of reconstruction

Table 1. planned + supplied public housing projects and residential lots

Year		2012	2013				2014	
At the end of		Dec.	Mar.	Jul.	Sep.	Dec.	Mar.	
Iwate	Private residential lots	<u>10,087</u>	9,722	8,743	8,837	8,405	<u>8,291</u>	decreased
	Public housing (no. of rooms)	5,639	5,972	6,097	6,079	6,038	5,969	608 Completed As of 28/Apr/14
Miyagi	Private residential lots	<u>15,432</u>	13,068	13,027	12,057	11,808	<u>11,575</u>	decreased
	Public housing (no. of rooms)	15,485	15,381	15,442	15,342	15,543	15,465	1,361 Completed As of 28/Apr/14
Fukushima	Private residential lots	2,541	2,525	2,501	2,469	2,075	2,205	Collecting intention
	Public housing (no. of rooms)	3,132	3,098	3,138	3,606	4,139	7,609	
	for earthquake and tsunami evacuees						2,719	
	for nuclear power plant evacuees						4,890	

Source: Reconstruction Agency

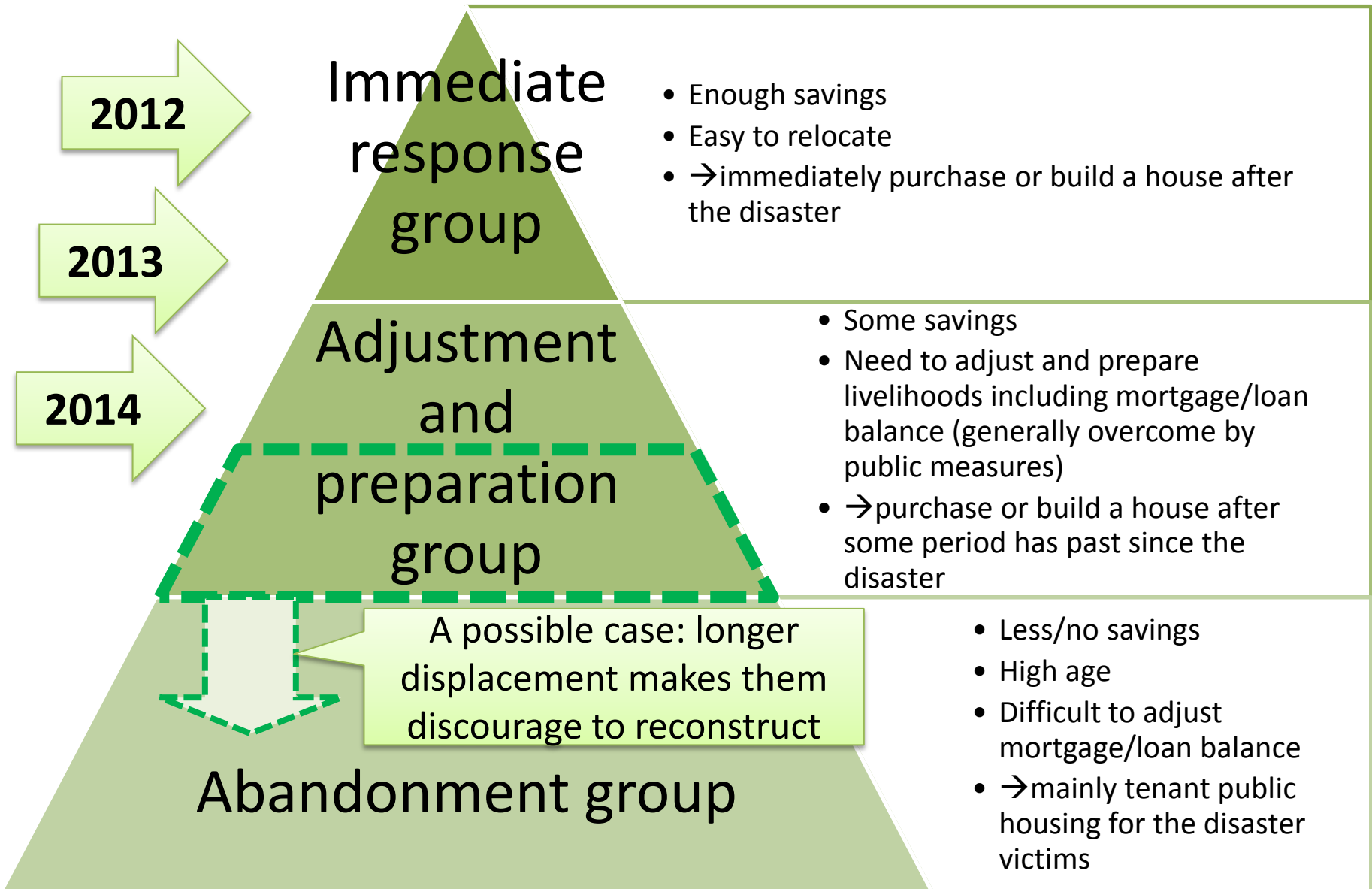
2014/07/08



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Pyramid of housing reconstruction with relocation



Limits of macro-scale data analysis

- **Net and gross movement**
 - Interviews with prefectural officials indicated that:
 - some victims of the disaster have become new tenants of temporary housing only recently
 - some temporary housing residents face eviction due to landowners' demands to return their land
 - displaced people have pursued extremely diverse paths to recovery
 - The interviews indicated that:
 - a complete understanding of the gross movement of displaced people cannot be obtained based solely on an analysis of macro-scale data
 - the micro-scale perspective must be kept in mind
- Thus, caution is warranted when drawing conclusions from macro-scale data.



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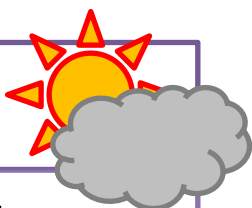
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The obstacle of reconstruction



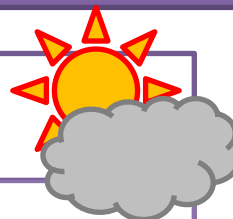
Land



- Tenure, inheritance
- Buried cultural properties



Cost



- Labor
- Construction material
- **→ Failures of bidding (open tendering)**

Agreement

- Relocation or resettlement
- Land use plan
- Zoning



Table 2. Reasons for bidders to fail in open tenders for public housing construction projects

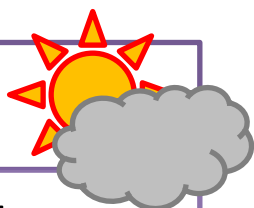
Prefecture	Failure/Bids	Reasons (multiple reasons may apply)			
		Low bid price	Lack of contractor	Duration of the project is excessively short	Project is excessively small
Iwate	10/59	8	4	2	0
Miyagi	16/83	9	6	3	2
Fukushima	4/49	4	0	2	0
Total	30/191	21	10	7	2

Source: the author, MILT (as of March 2013)

The obstacle of reconstruction



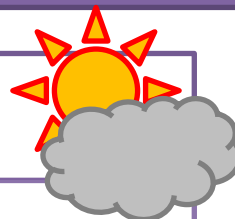
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Total	30/191	21	10	7	2

Multiple measures have applied

Source: the author, MILT (as of March 2013)

A scene of strong resistance to relocation by displaced people

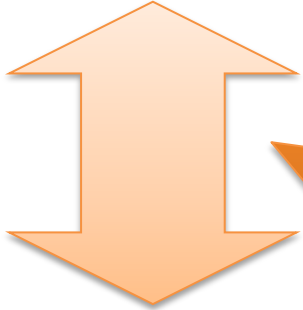


Photograph by the author in Dec. 2012 in Arahama Area, Sendai City

Conclusion

- The study finds that;
 1. from the perspective of macro-scale analysis, continuous, voluntary housing reconstruction has been recognized as a net migration of displaced people from 2012 to the present.
 2. However, from the perspective of micro-scale analysis, some disaster victims have only recently become tenants of temporary housing, and their relationship with housing reconstruction must be grasped.
 3. Furthermore, communal agreement on relocation and land use is fundamental to reconstruct housing, but is the most time required process.

Implications/further suggestions

- Agreement on relocation and land use needs more time than expected
 - Consideration: difficulties in determining further risk of resettlement
- 
- There is no “right” decision making.
One of philosophical issues the earthquake represents us. Therefore, it is hard for the authorities to enforce their relocation.**
- “willingness of settlement as they used to” is hard to change even after that historical earthquake was occurred
 - How we adjust regional planning between risk awareness and the freedom of settlement (unless violating the public welfare)
 - Article 22: “Every person shall have freedom to choose and change his residence and to choose his occupation to the extent that it does not interfere with the public welfare. ” [The Constitution of Japan]
 - Other countries may face the similar issue; this case will be a good lesson



Thank you for your kind attention!

A view of Sendai City Center from Miyagi Prefectural
Office, Sendai City

Photograph by
the author in May 2014

[Explanation]

Conference Name: The 9th Korea-China-Japan Joint Conference on Geography

Venue: Busan Youth Hostel ARPINA, Busan, Korea

Date: July 6th to July 9th, 2014

Program:

https://geog.pusan.ac.kr/images/sub/Conference_Schedules.pdf

Conference Web:

<http://geog.pusan.ac.kr/>

Norinchukin Research Institute Co., Ltd.

Co-op Bldg. 1- 1-12, Uchikanda, Chiyoda-ku,
Tokyo 101-0047
Japan

E-mail: manager@nochuri.co.jp

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