



People Centered Housing Recovery... and Relocation?

Housing Recovery



<http://www.bbc.co.uk/news/world-asia-24878801>

Housing recovery in the Disaster Cycle

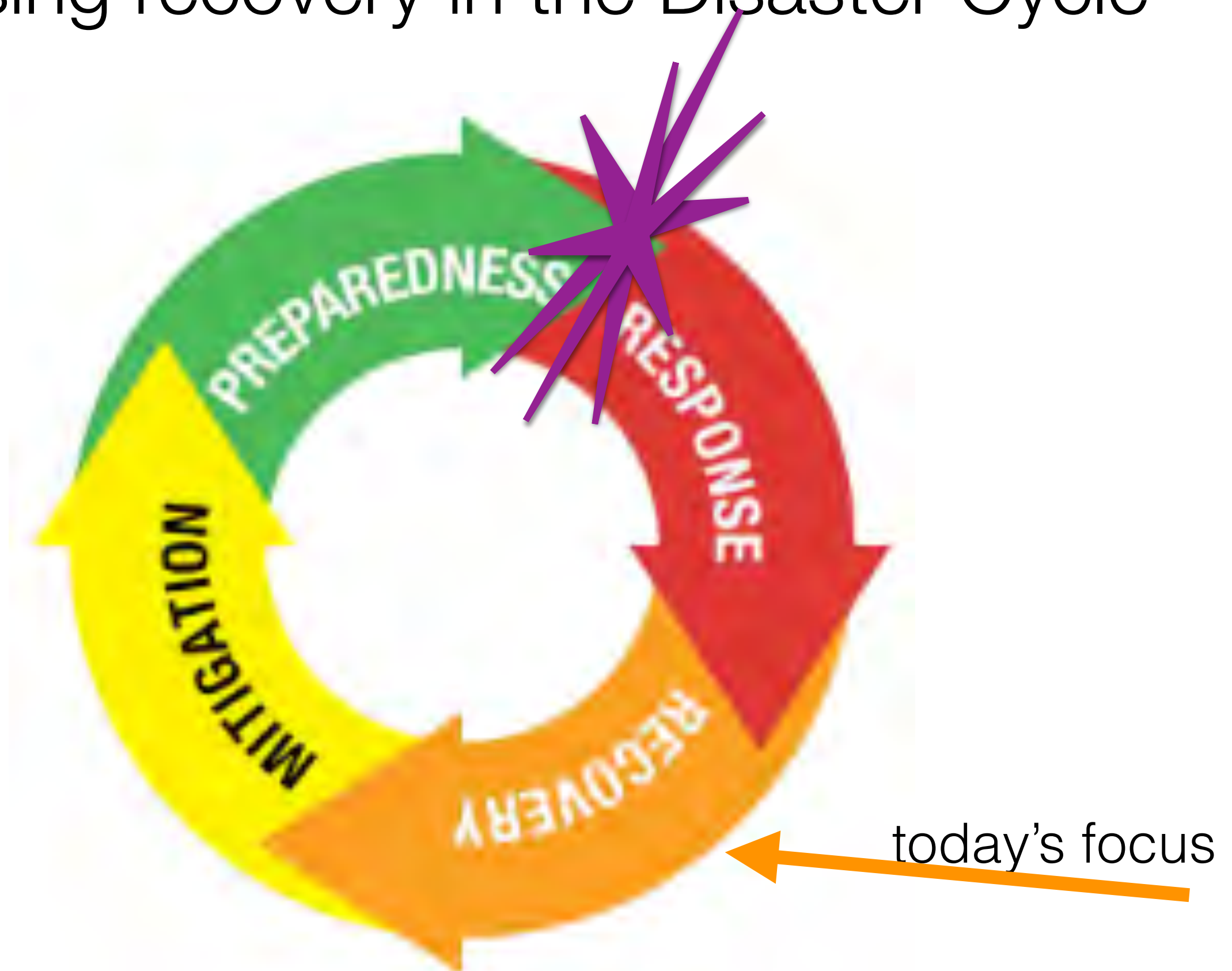
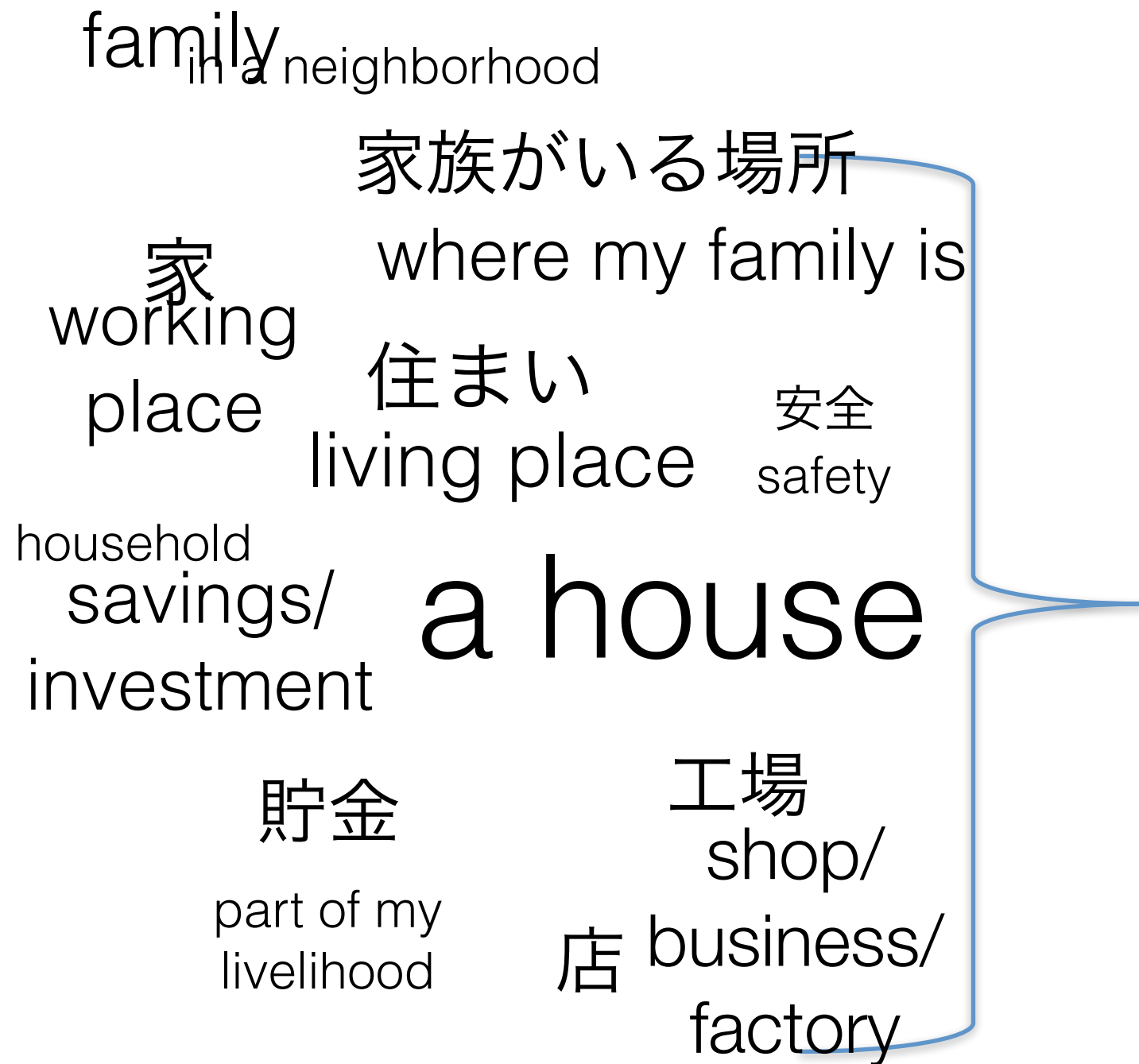


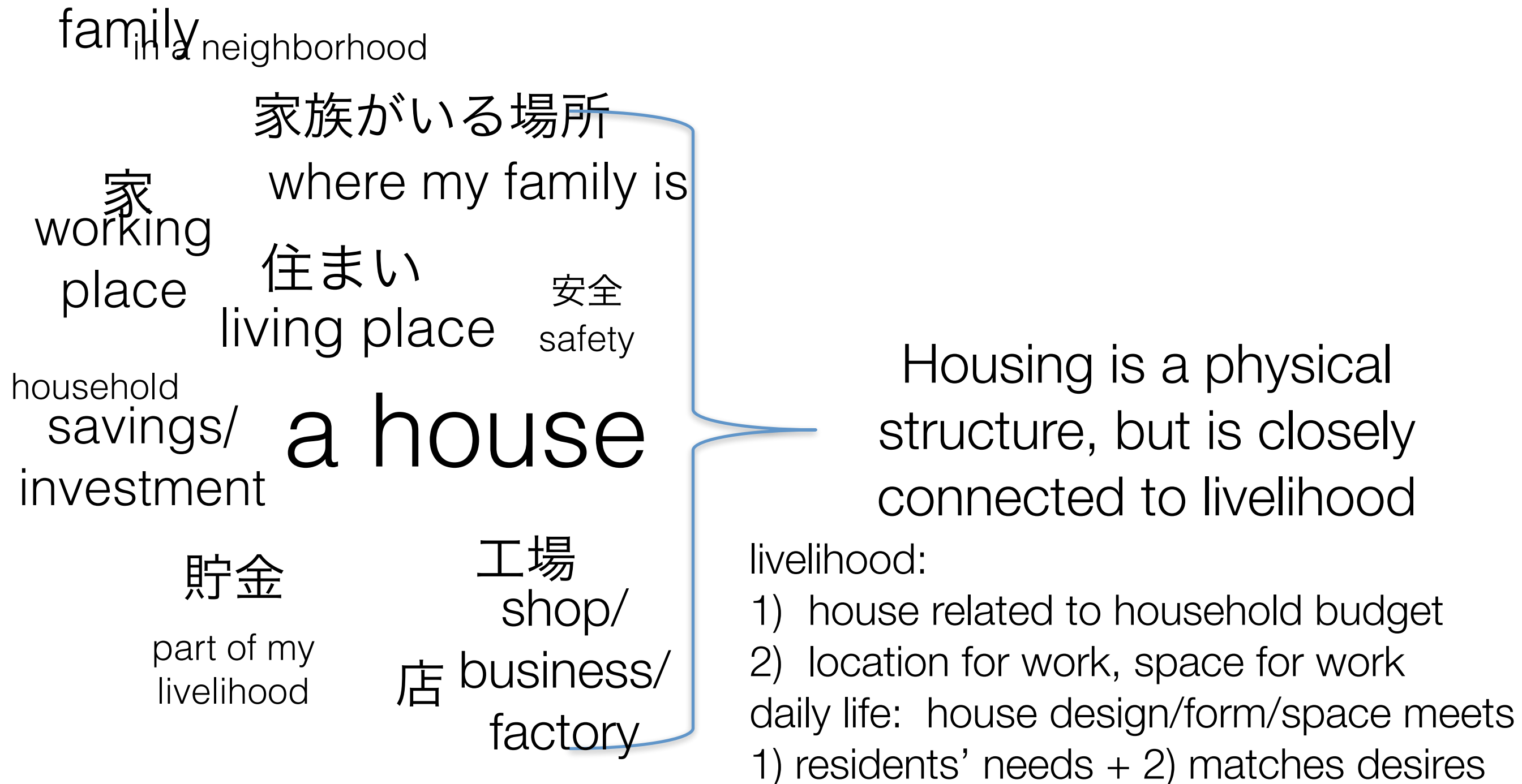
image from: <http://www.wssu.edu/administration/campus-police/emergency-management/images/em-preparedness-icon.jpg>

What is housing recovery?

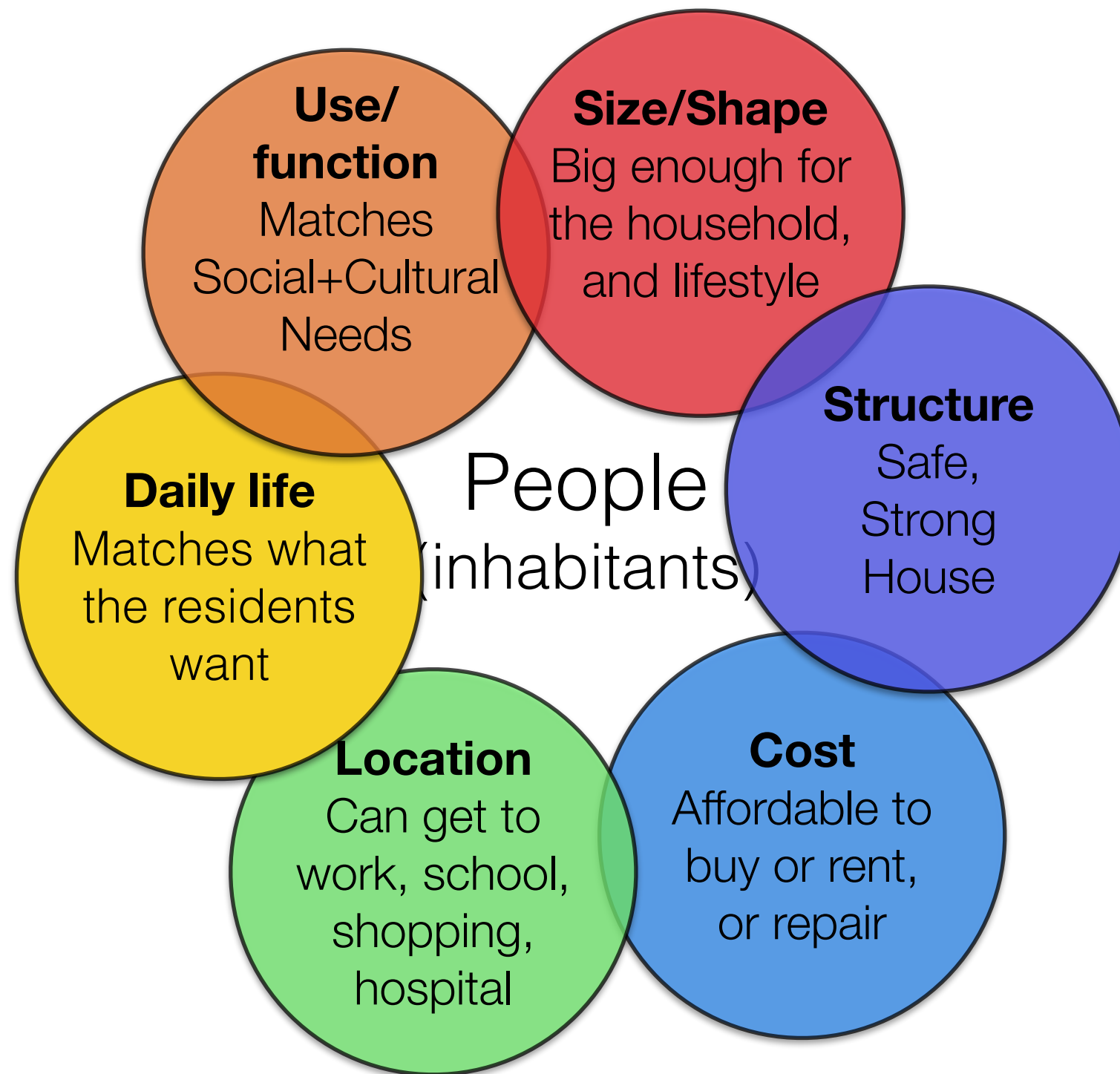
what is a house?



what is a house?



People-Centered Housing



goal: housing recovery that supports life recovery

Housing Recovery Process

- Housing recovery phases usually described as:
 1. emergency shelter
 2. temporary housing
 3. permanent housing reconstruction
- however, these phases can and do overlap
- no fixed time frame: recovery is long term
 - temporary housing phase can usually be considered from 2 months to several years after the disaster
 - recovery starts on day 1₇

Overlapping phases in the recovery process



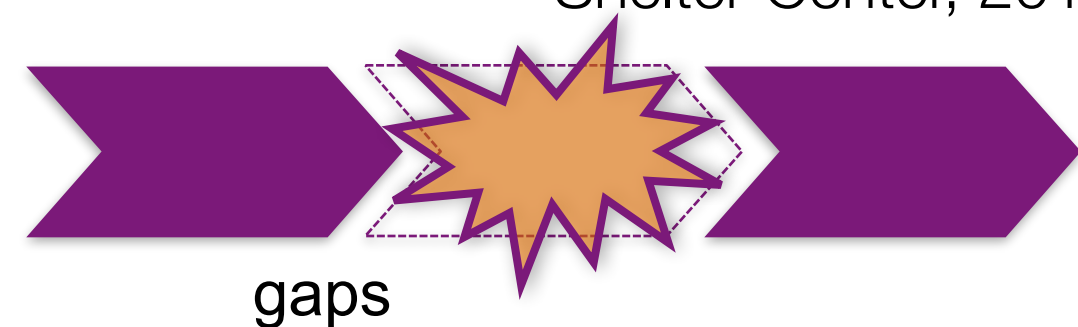
image modified based on: <http://www.lpdr.org/2012/11/16/the-anatomy-of-a-disaster/>

Housing Recovery: usually 1 or 2 step

1 step housing recovery:
no temporary housing



Image: Transitional Shelter Guidelines,
Shelter Center, 2011



gaps

- 1 step housing recovery
 - in theory, fast
 - But can cause gaps

2 step housing recovery:
uses temporary housing

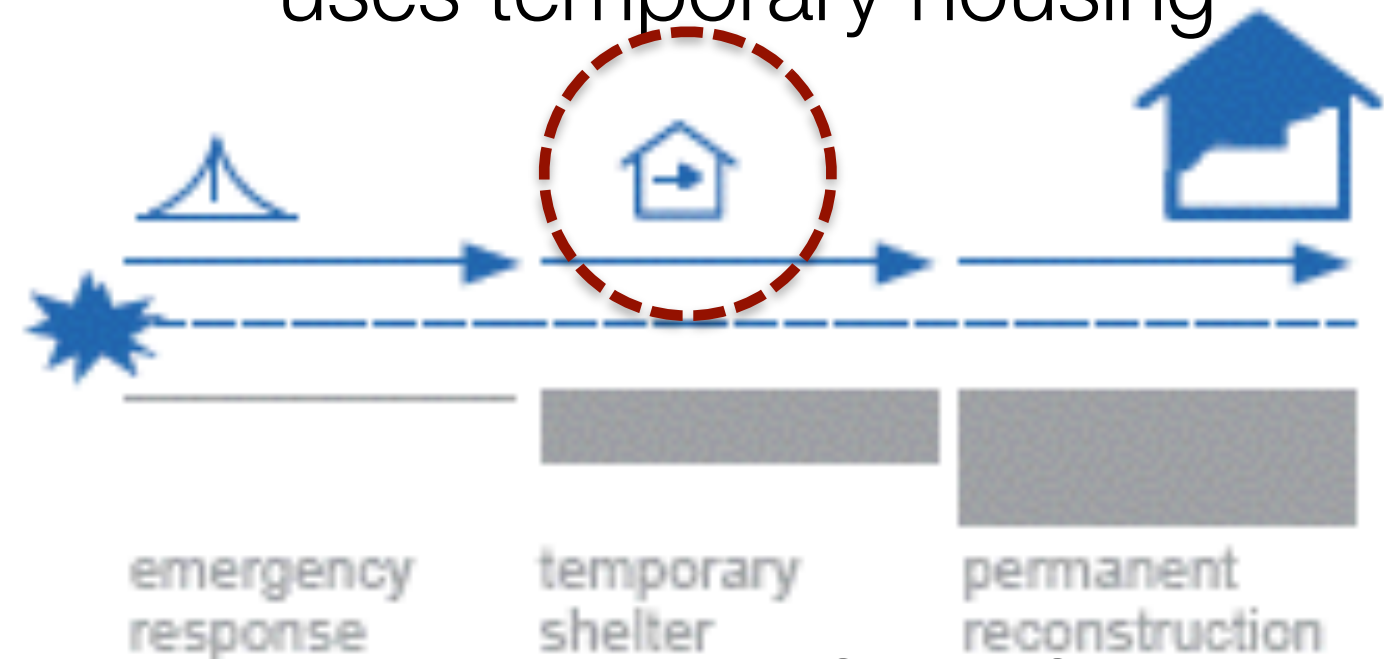


Image: Transitional Shelter Guidelines,
Shelter Center, 2011



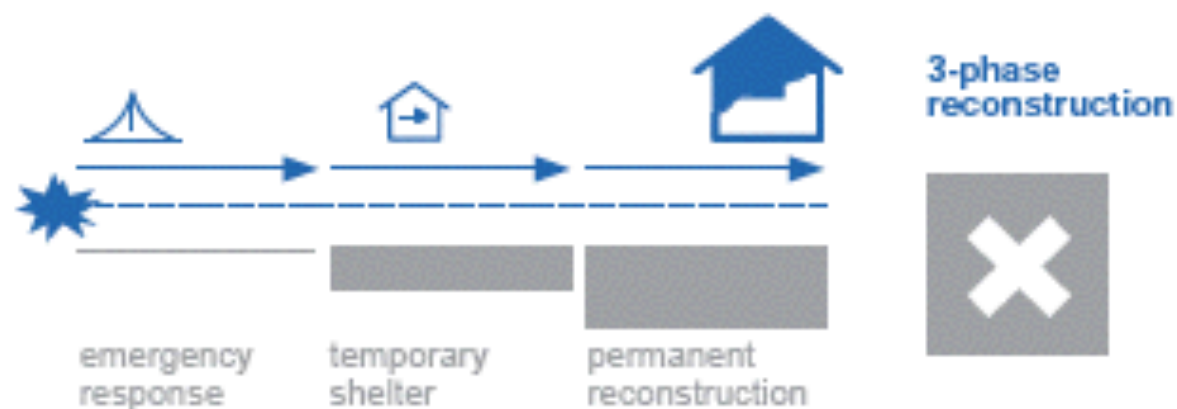
- 2 step housing recovery
 - Multiple relocations
 - Critical moment is transition from temporary to permanent housing

Temporary/Transitional Housing

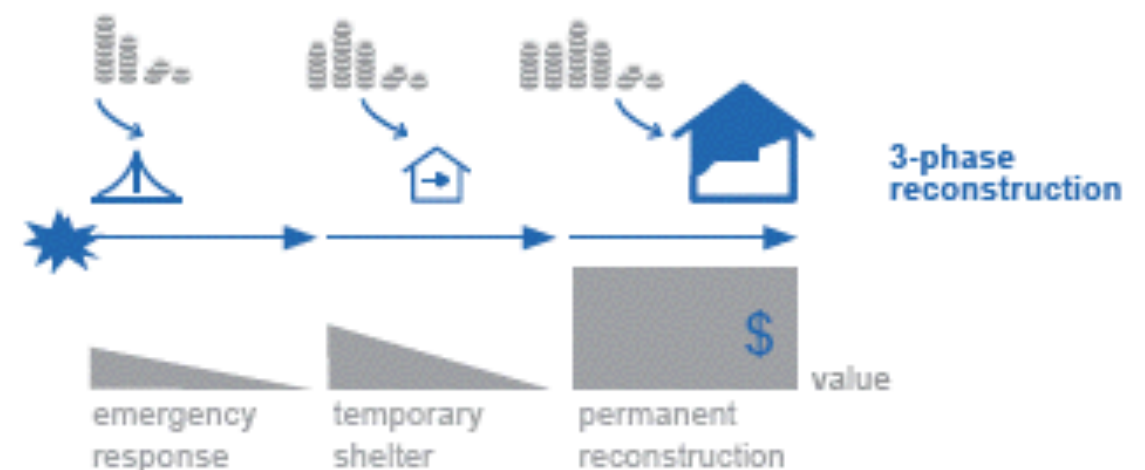
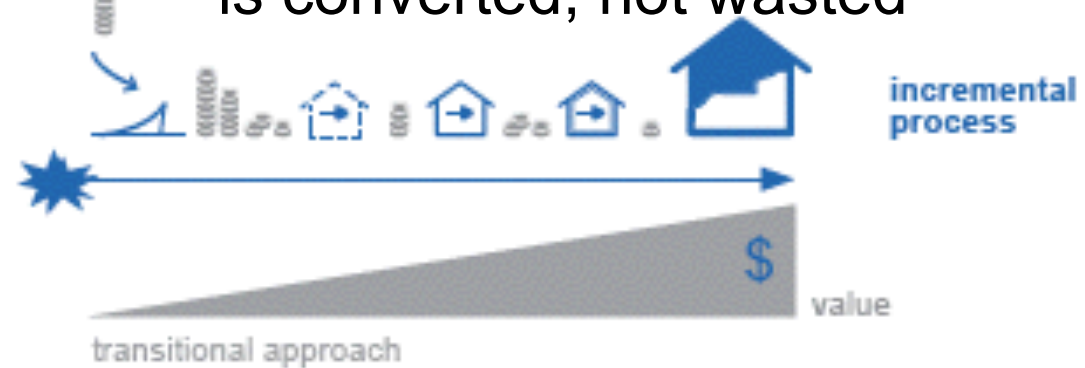


Recently (in the last 10 years), many organizations and experts suggest transitional housing approaches as a way to use resources efficiently and support a smooth transition for residents

Transitional housing is in an incremental process.



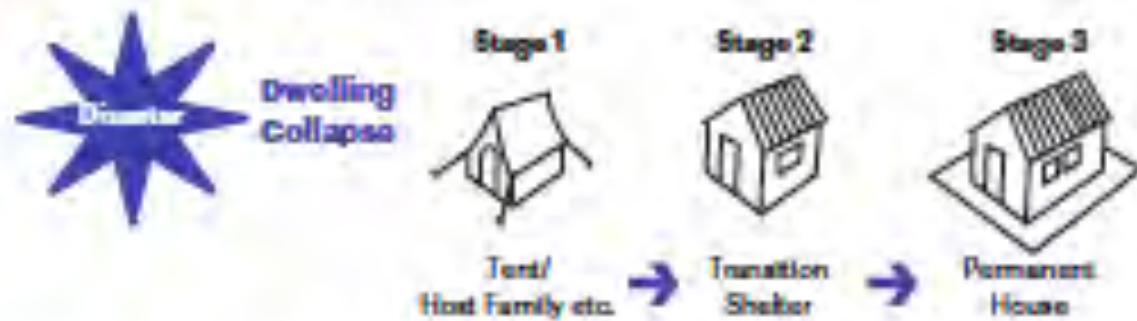
The value put into transitional housing is converted, not wasted



Recent (2015) thinking on this topic

Diagram 2
Scenarios for the shelter and housing continuum

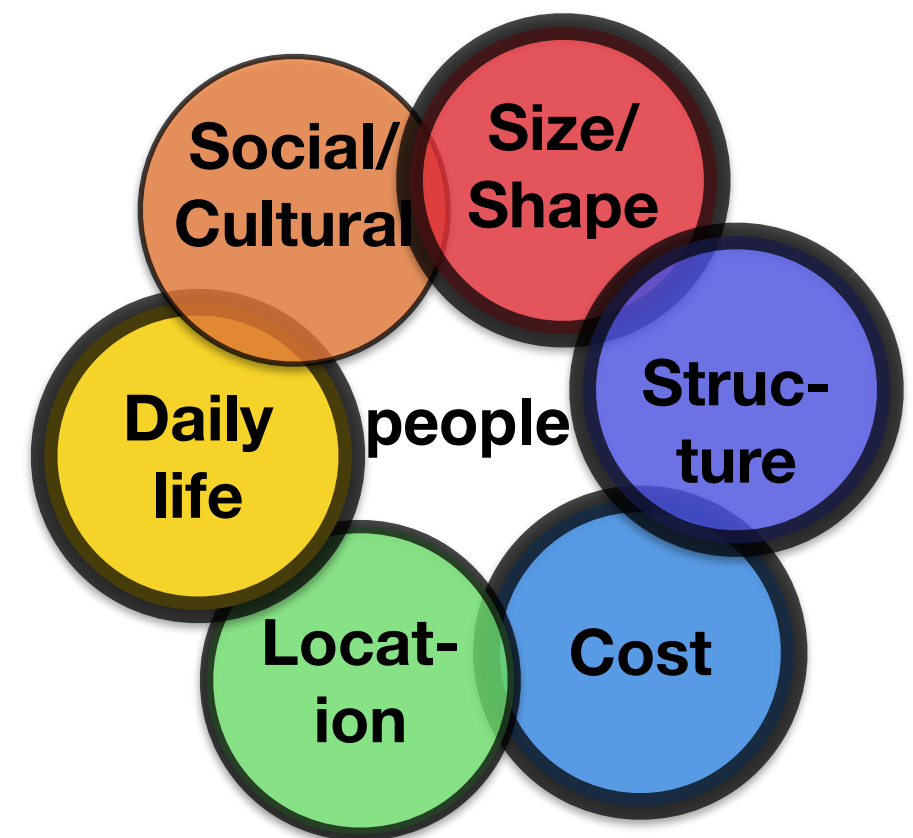
Scenario 1: Three stage recovery



Scenario 2: Two stage recovery



40. Shelter Centre. *Transitional Shelter Guidelines*. Shelter Centre, Geneva, 2012. Available at: <http://www.sheltercentre.org/node/25121>
41. Davis, I. 'What have we learned from 40 years' experience of Disaster Shelter?' *Environmental Hazards* 10, pp. 193-212, 2011.



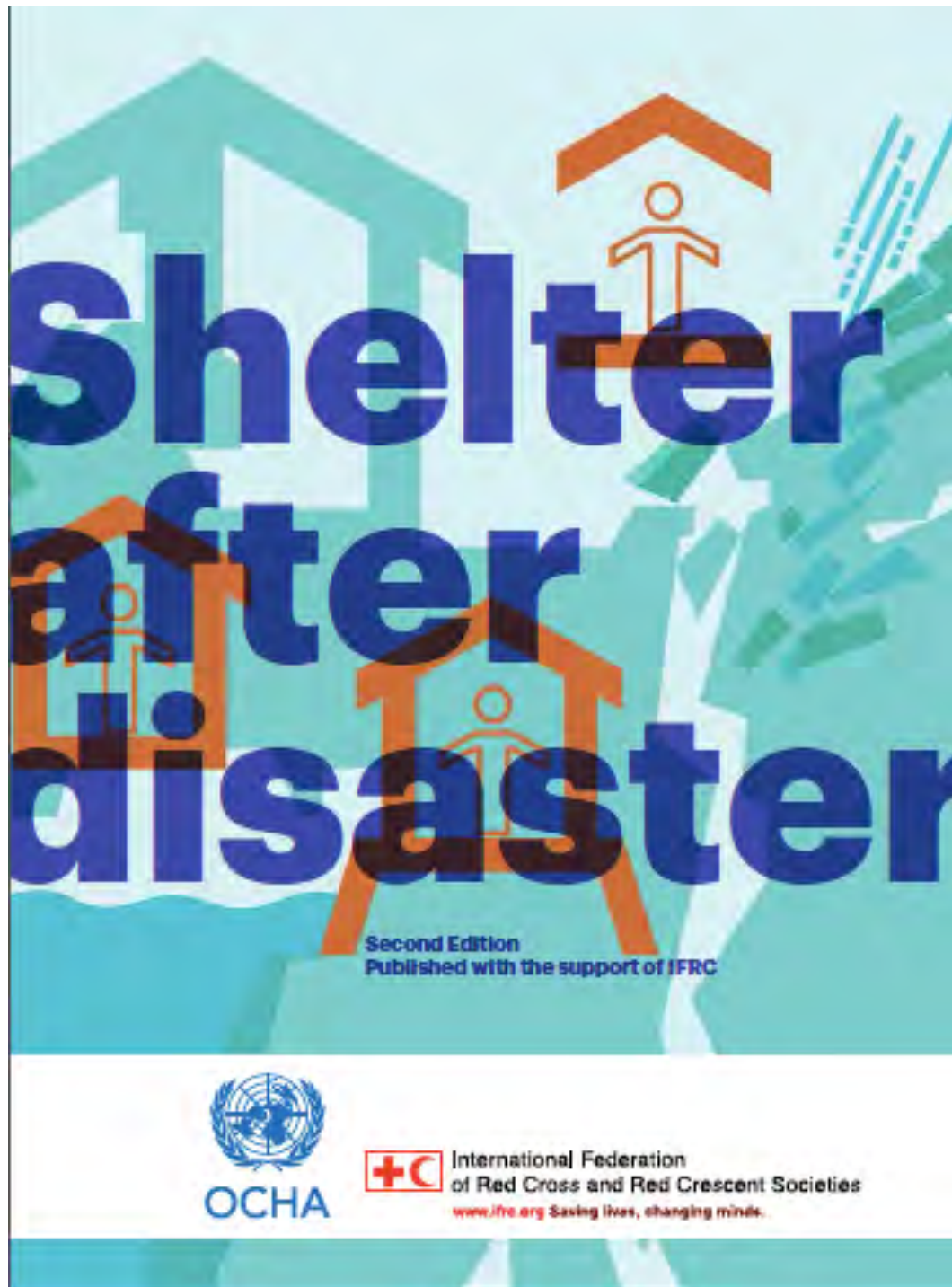
The process of housing recovery should:

- support smooth transitions, and
- re-establishing stable housing quickly

smooth (quick) housing recovery is one way to support survivors, and part of people centered housing recovery

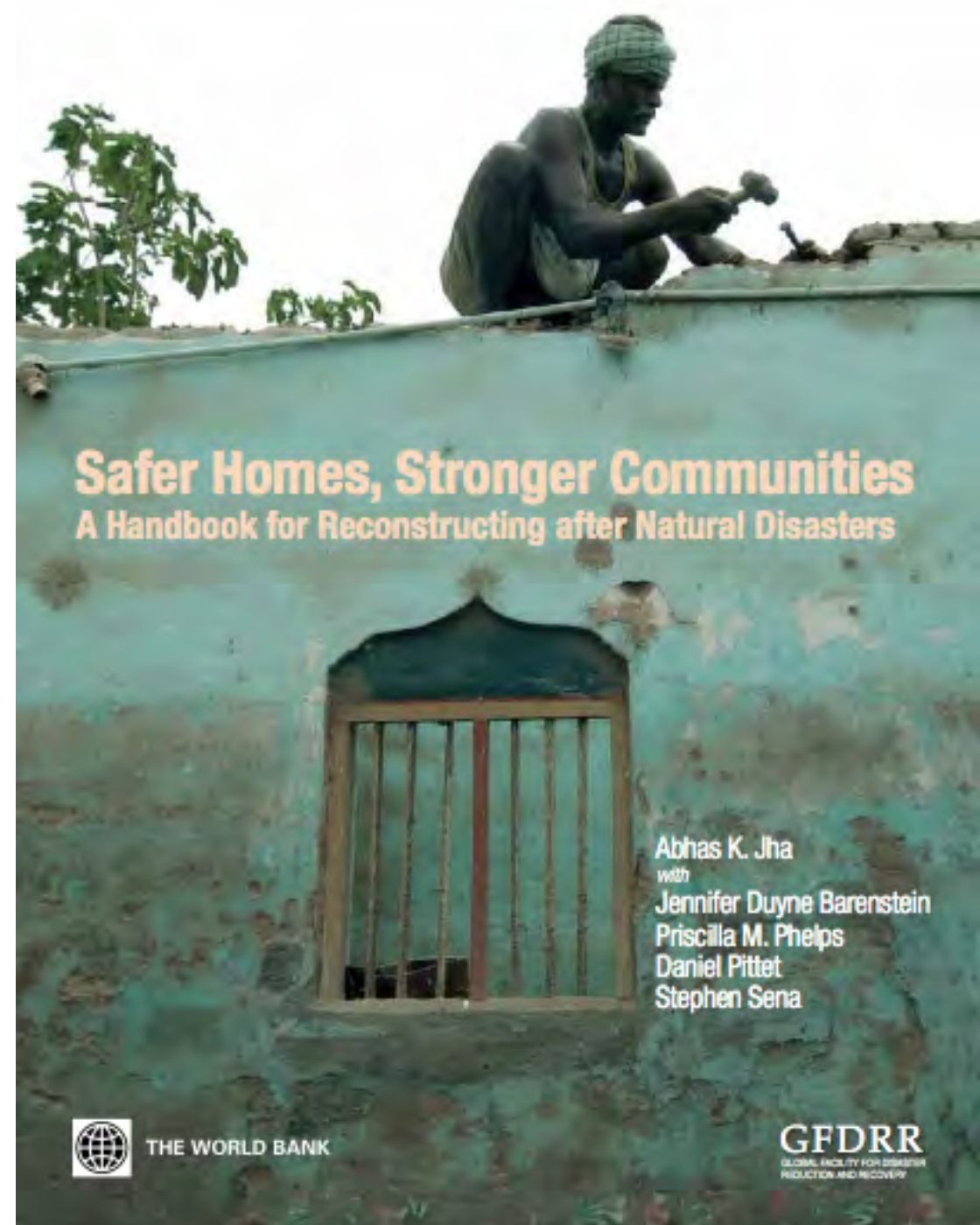
Resources about housing reconstruction

Shelter after Disaster



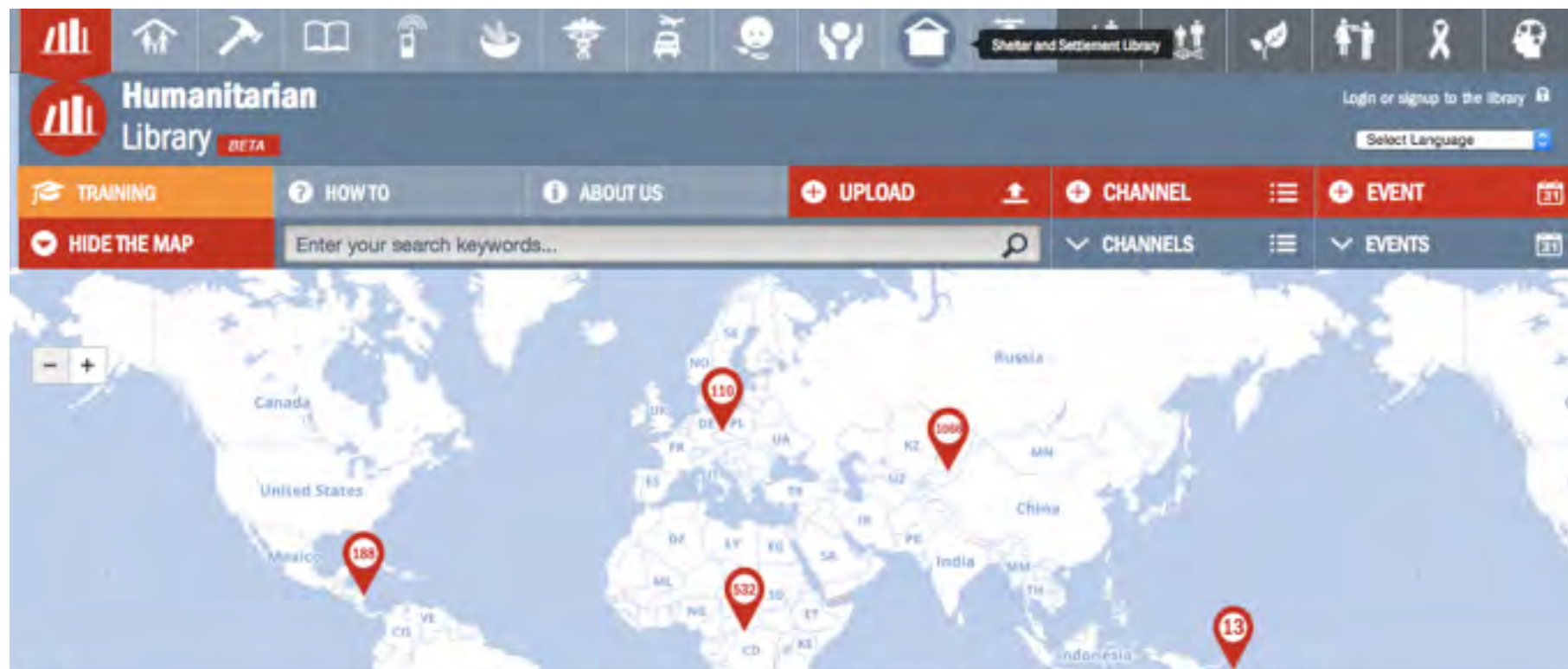
http://www.ifrc.org/Global/Documents/Secretariat/201506/Shelter_After_Disaster_2nd_Edition.pdf

Safer Homes, Stronger Communities



<https://www.gfdrr.org/sites/gfdrr/files/publication/SaferHomesStrongerCommunitites.pdf>

More Housing (and other) Resources



Humanitarian Library

www.humanitarianlibrary.org



International Recovery Platform

<http://www.recoveryplatform.org/>

Post-Disaster Housing Reconstruction in Japan



Temporary Housing

- National Government: provides funding
- Prefectural Government is responsible for provision:
 - Hires and pays construction company
- Municipal (City or Town) Governments: support site selection (location); selection of residents who move in; maintenance of temporary houses.

- Based on the Law (Disaster Relief Act)

Permanent Housing

- National Government: provides funding
- Public housing built by City, or sometimes Prefecture

Housing Recovery Process in Kobe after the Great Hanshin-Awaji Earthquake in 1995

evacuation center

- schools, gymnasiums, community centers, other municipal buildings



evacuation centers

temporary housing

- pre-fabricated temporary structures provided by the government
- 2 years (by law, can be extended, in Kobe up to 5 years)



temporary housing

permanent housing

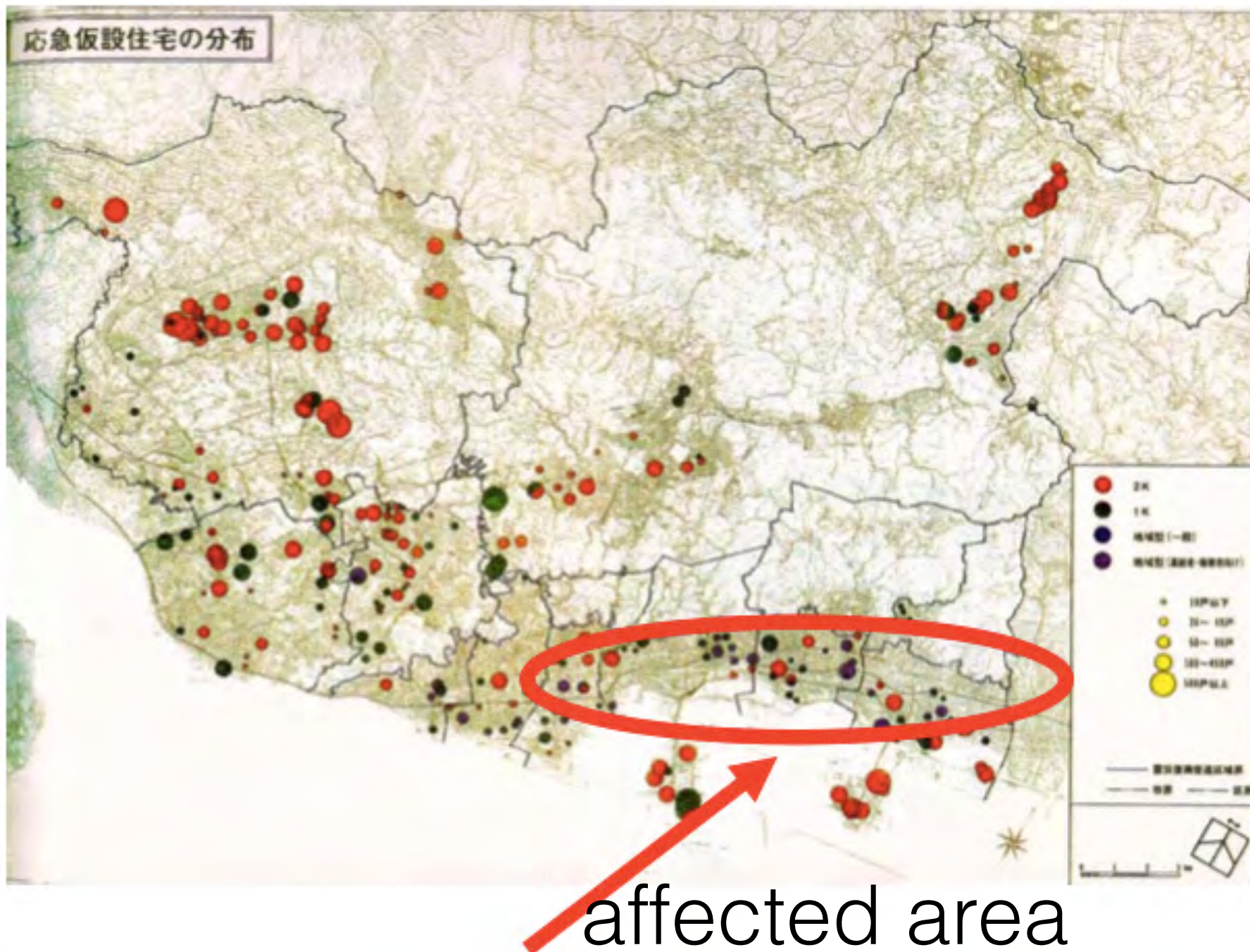
- residents rebuild on their own
- public subsidized rental housing provided by the government



disaster recovery
public housing

Temporary Housing in Kobe

- Location of temporary houses: most were far from the affected area and from residents' communities



Total number of temporary housing ;
48,300 units

Temporary Housing in Kobe, 1995

Problems

- Inconvenient location
- Massive numbers of housing units
- Residents entered by lottery (destroy community)
- Only people with no other choice moved into temporary housing—many elderly, vulnerable
- Solitary death
- Some lived there for 5 years.



<http://www.city.kobe.lg.jp/foreign/english/disaster/5year/phase1/sub1-5-2.html>



<http://www.city.kobe.lg.jp/foreign/english/disaster/5year/phase1/sub1-5-2.html>

Kobe, after temporary housing?

In Kobe, 2 main options for permanent housing rebuilding:

- rebuild on your own, with no help
 - At that time (1995), government support was not provided for private property (law changed in 1998)
- or enter Disaster Recovery Public Housing

There was a loss of affordable rental housing , as often happens in disaster.

The most vulnerable residents suffer most, also related to housing vulnerability

Main Housing Reconstruction: Disaster Recovery Public Housing

Public Housing

- High rise apartments=loss of interaction/community
- Like temporary housing, also many in located outside city center
- Like temporary housing, residents entered by another lottery (losing community 2 times)
- “Solitary death” continued



What happened after the March 11, 2011 Great East Japan Earthquake?

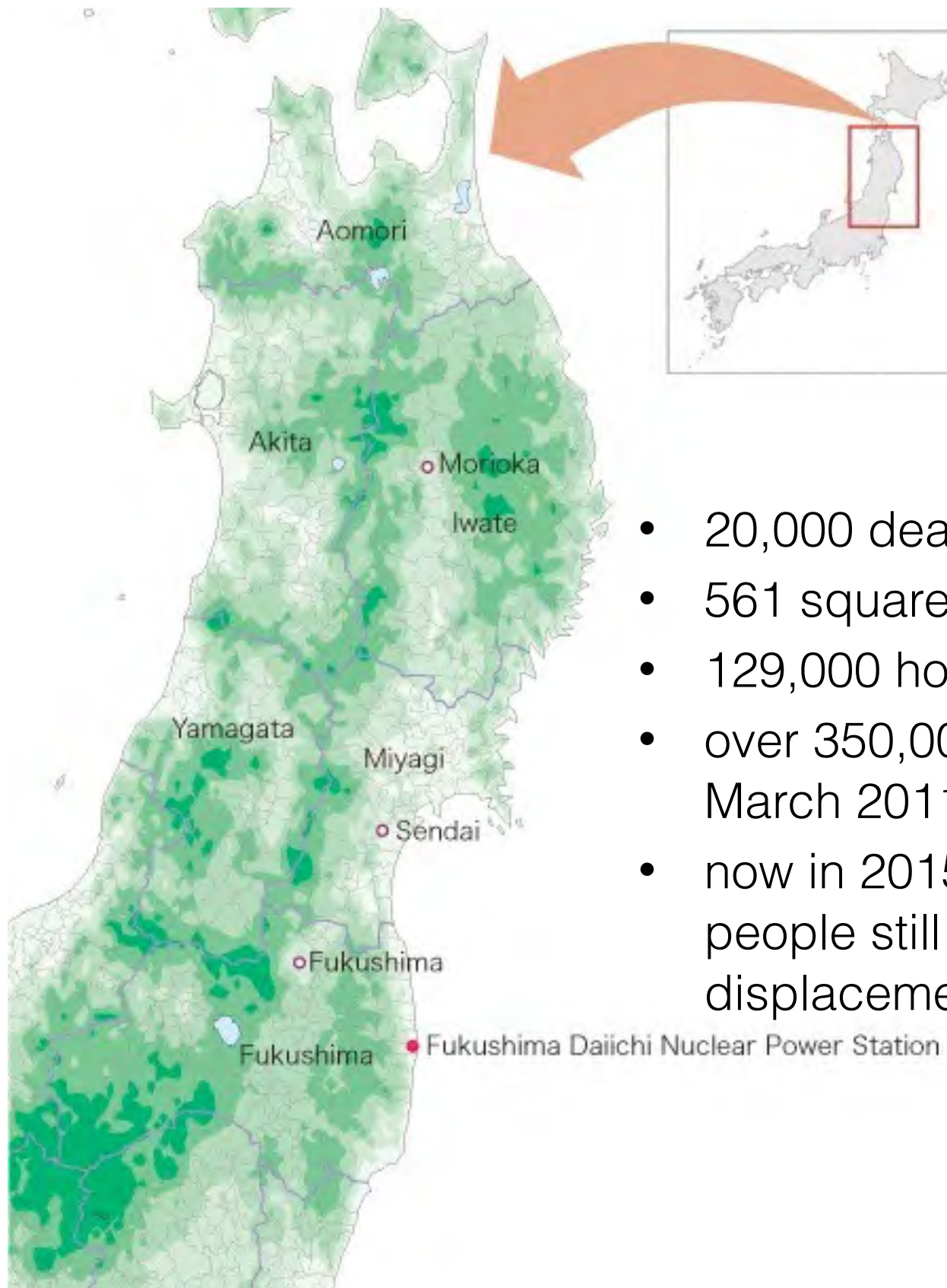
- What was different from Kobe in 1995?
- What is the progress of recovery in the disaster affected areas?
 - housing reconstruction
 - the role of relocation

2:46 pm, March 11, 2011

- 9.0 magnitude earthquake
- tsunami-40 meters run up
- fires
- nuclear accident



March 11, 2011 Great East Japan Earthquake, Tsunami, Nuclear Accident Triple Disaster



- 20,000 deaths
- 561 square kilometers inundated
- 129,000 houses totally damaged
- over 350,000 evacuees (in March 2011)
- now in 2015, more than 211,000 people still living in evacuation/displacement



did you see this yesterday?

In Tuskihama,
in Higashi Matsushima City



Temporary Housing: **various, many prefabricated, also wooden, use of private apartments**

- Some keep residents together, but many inconvenient-far from school, hospital, shopping, work
- Small (less than 29m²), hot in summer, cold in winter, noisy, poor construction, uncomfortable, quality varies, not good for 5 years. Basic limit: 2 years 3 months, extended +1 year + 1 year...
- Loss of community, (residents determined by lottery)





did you
see this?

Disaster Recovery Public Housing— multi-family and single family



Multifamily public housing in Ogagawa City, Miyagi



Multifamily public housing in Koriyama City, Fukushima



single family detached public housing (Left) and private reconstruction (right)



single family detached public housing in Onagawa, Miyagi



single family detached public housing in Minami Soma City, Fukushima

Only 4,543, (15 %) of 29,517 planned units of public housing are complete as of March 2015

big differences in Tohoku recovery

- huge devastated area, massive and varied damage
- with many different municipalities, and multiple prefectures=different and complicated situations
- aging population, young people moving away
- declining economic condition in the region
- many fishing towns, but also varied kinds of livelihood

in Fukushima: even more complicated recovery

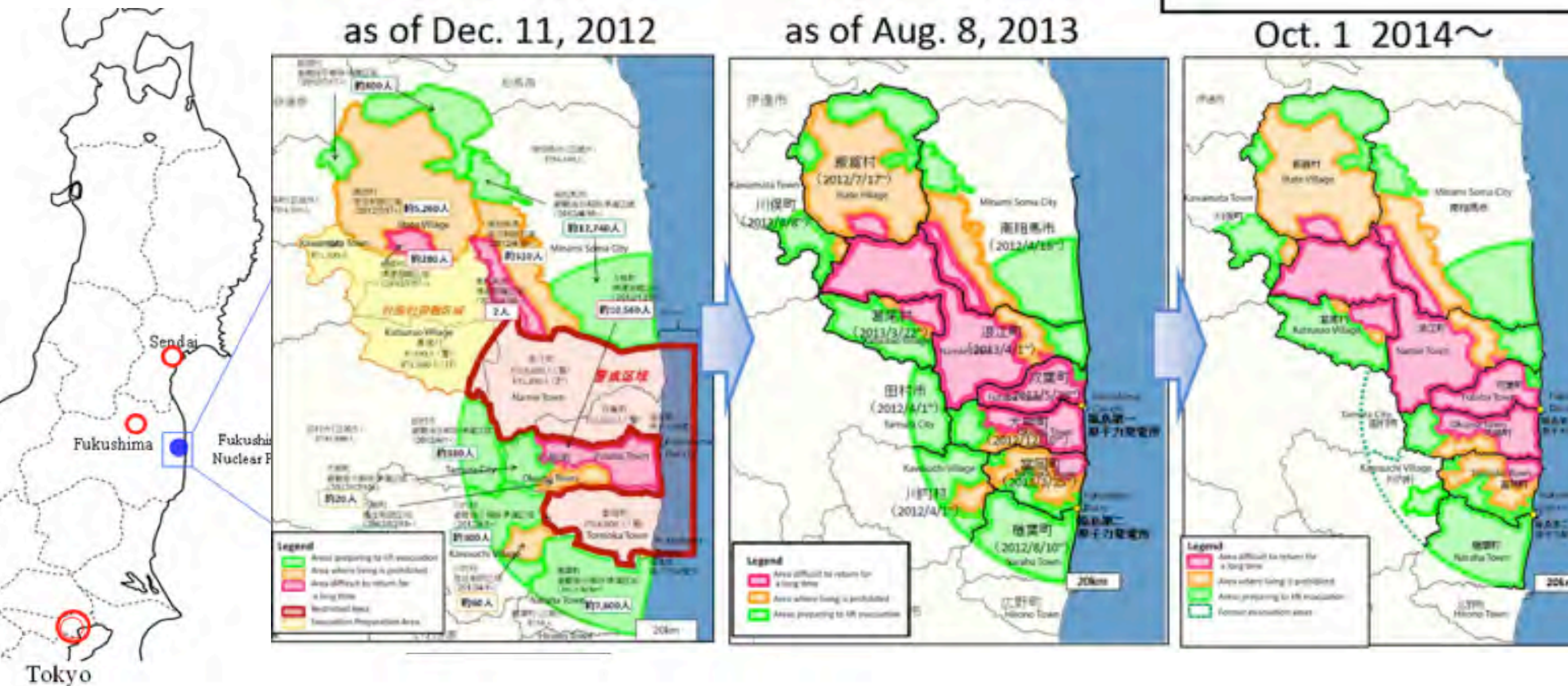
Table 1: Damages from the Great East Japan Earthquake

	Casualties (as of 6/10/2015)			Evacuees (as of 5/29,2015)		Damaged Houses (as of 2/27/2013)		Inundated area
	Direct	Missing	Indirect (<i>kanrenshi</i>)	Within pref	Outside pref.	Totally damaged	Partially damaged	
Iwate	4673	1129	450	27,391	1,554	18,370	19,580	58 km ²
Miyagi	9539	1249	910	63,962	6,985	85,414	379,707	327km ²
Fukushima	1612	202	1,884	67,004	45,745	21,116	237,684	112 km ²
Total	15,891	2,584	3194	211,976		128,931	1,005,368	561 km ²

Data sources: Japan Reconstruction Agency, Miyagi Prefecture, Iwate Prefecture, Fukushima Prefecture, Kahoku Shinpo, Police Agency, Japan Cabinet Office, Fire and Disaster Management Agency

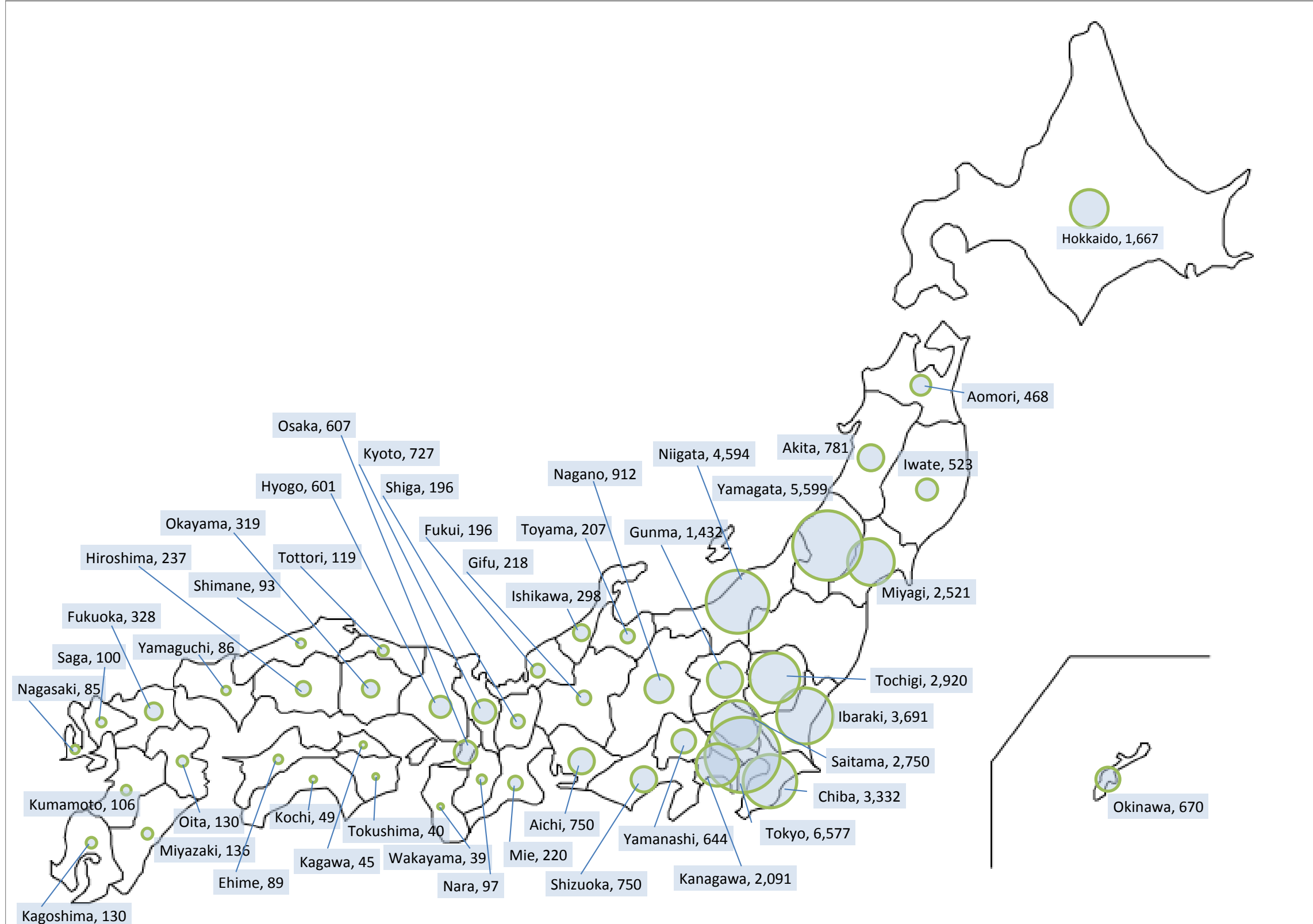
as of May 2015 there are more than 112,000 evacuees from Fukushima, over 45,000 living outside Fukushima Prefecture.

Fukushima: Designated evacuation areas and the nuclear radiation contamination



Fukushima and Displacement

The Number of Evacuees from Fukushima Prefecture to Other Prefectures as of Feb.13,2014



※Map modified from data provided by Fukushima Prefectural Government, extracted the number of evacuees from Fukushima from the original research data “The number of evacuees caused by earthquake disaster based on the area for refuge” by The Reconstruction Agency

<http://fukushimaonthe globe.com/the-earthquake-and-the-nuclear-accident/situation-of-the-evacuees>

“Innovative” solution in Tohoku

Fukushima Prefecture built more than 6700 wooden temporary houses

(Temporary housing) + (wooden) + (local builders)



Temporary housing in Aizu Wakamatsu, Fukushima



Temporary housing in Iwaki City, Fukushima



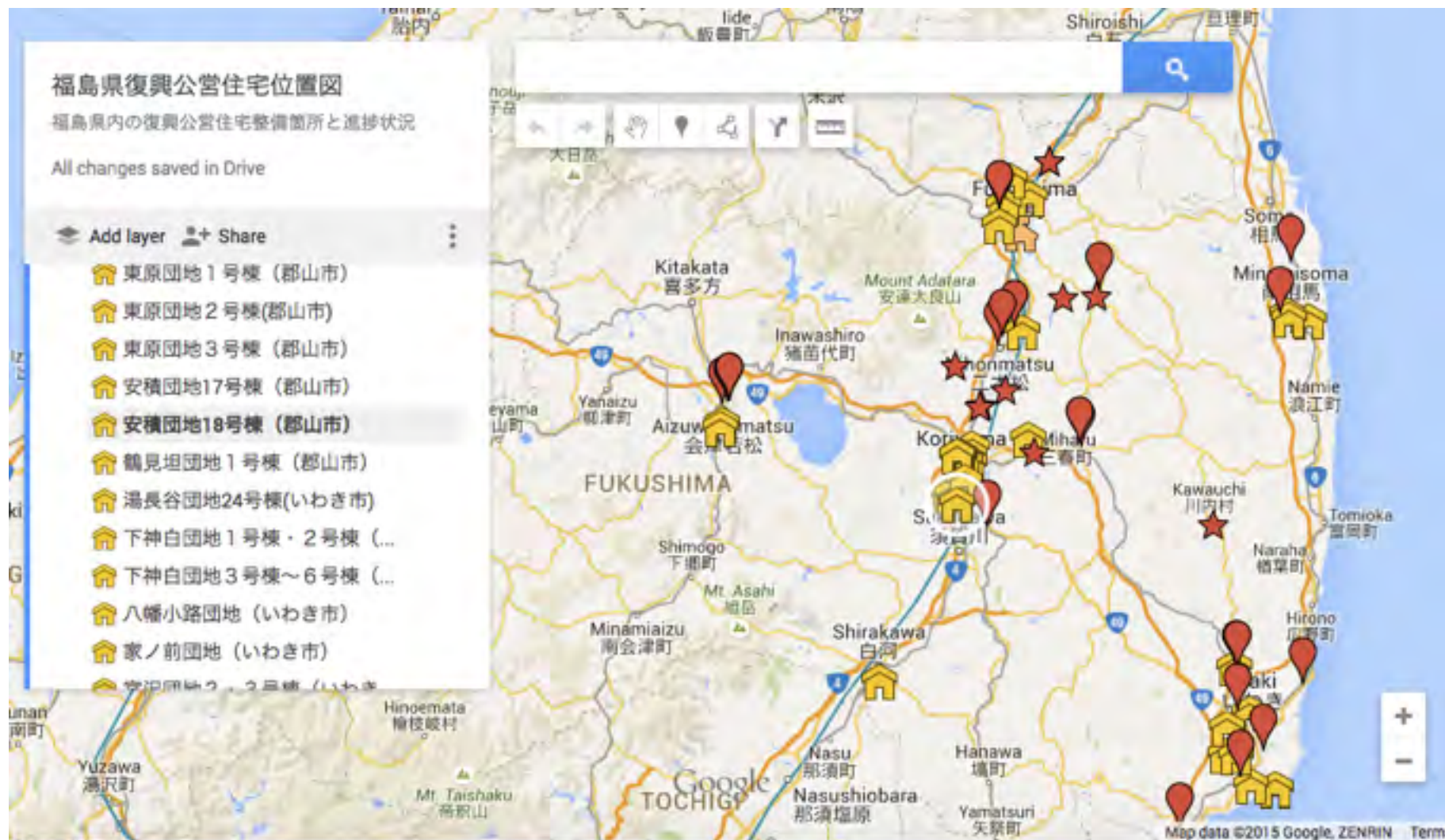
Temporary housing in Miharu Town, Fukushima

public housing in Fukushima

Fukushima Prefecture plans to build:

- 2,700 units for earthquake/ tsunami evacuees
- (44% done as of 2.2015)
- 4,900 units for nuclear evacuees
- (5% done as of 2.2015)

source: <http://newsonjapan.com/html/newsdesk/article/111718.php>



Main Points regarding Fukushima

- Japan's disaster recovery policies are designed for recovery after **natural** disaster; need revised policy to address nuclear evacuees' situation
 - Discrepancy between support available for natural disaster evacuees and nuclear evacuees
 - The term “voluntary” evacuee is misleading, discrepancy in available support for “voluntary” vs. “official” nuclear evacuees
 - Disaster Recovery projects rely on rebuilding former hometowns (*furusato*)—need to shift to better ways to support rebuilding lives in new locations.
 - Recovery policies in Fukushima still focus on decontamination, as if it will eventually solve all issues—this is not the case.
- Recovery for nuclear contaminated communities and areas will take many years, and needs long term support and attention.
- And, some towns in Fukushima also have tsunami damage too.

More information about Fukushima



<http://fukushimaontheglobe.com/>

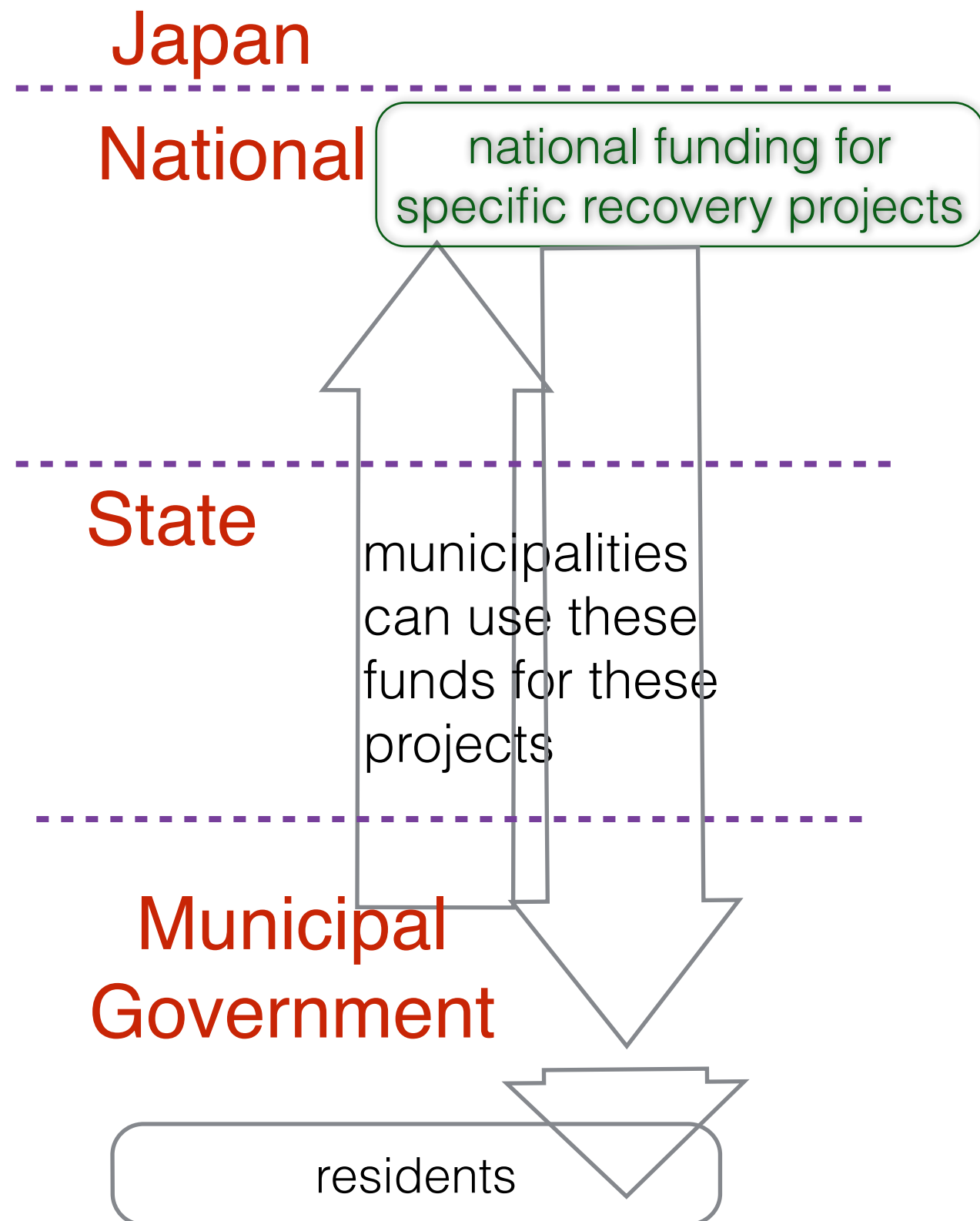


ふくしま
から世界へ
Fukushima Lessons

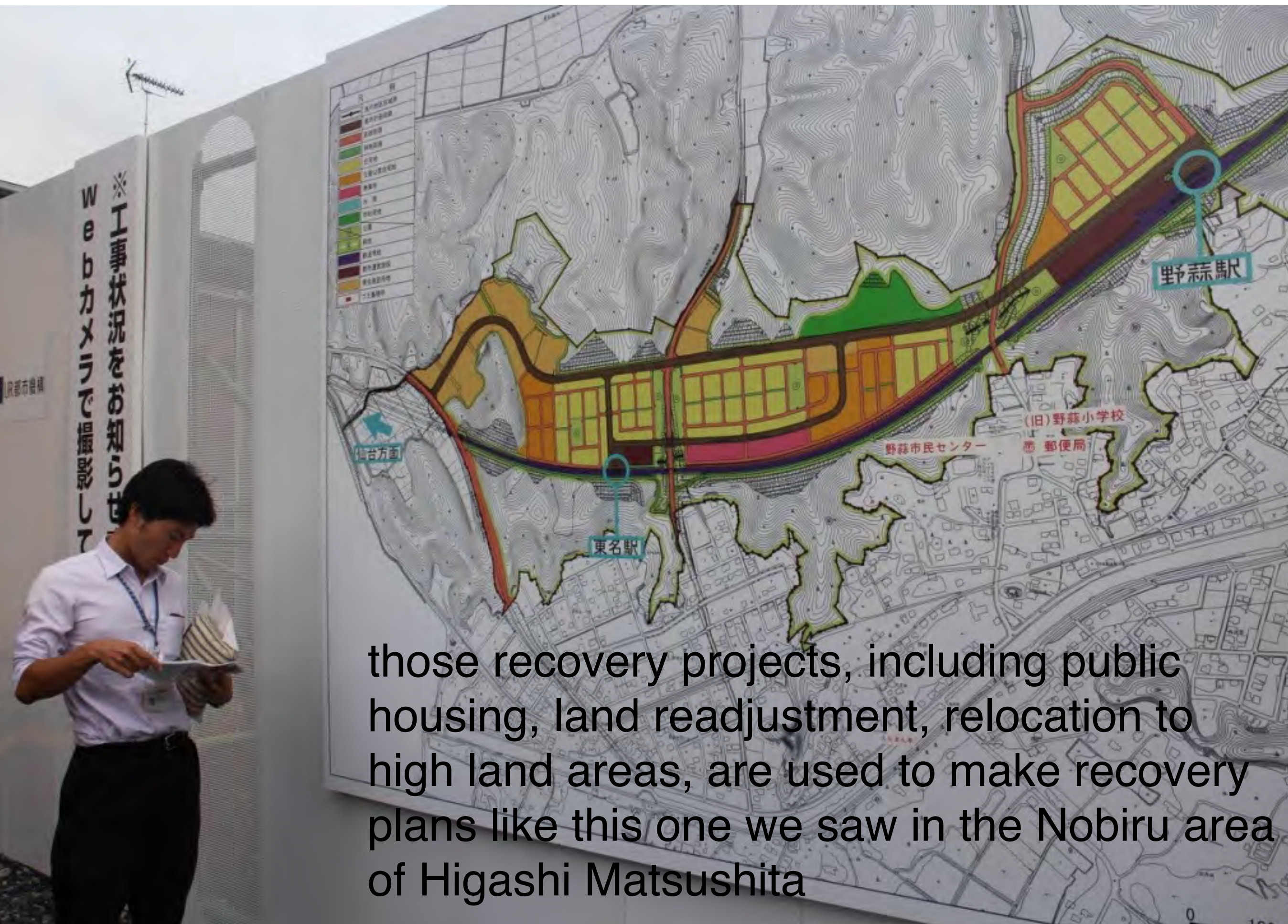
<http://fukushimalessons.jp/en-booklet.html>

[http://pub.iges.or.jp/modules/envirolib/upload/4718/attach/
web_FAIRDO_2nd_Discussion_Paper_E_130906.pdf](http://pub.iges.or.jp/modules/envirolib/upload/4718/attach/web_FAIRDO_2nd_Discussion_Paper_E_130906.pdf)

organization of recovery funding after 3.11



- National government provided a “menu” of 40 recovery projects.
 - for example: public housing, land readjustment, residential relocation to high land
- Local (municipal) governments have control over (response and) recovery planning
- Local gov’t chooses from these projects—feel pressure to quickly decide



those recovery projects, including public housing, land readjustment, relocation to high land areas, are used to make recovery plans like this one we saw in the Nobiru area of Higashi Matsushita

Ongoing Town and Housing Recovery

- Municipalities in disaster area are implementing recovery projects.
- Most rely on physical infrastructure:
 - Construction of Levees/Sea Walls
 - Rezoning of areas near the sea



Ongoing Town and Housing Recovery

- Municipalities in disaster area are implementing recovery projects.
- Most rely on physical infrastructure:
- Relocation of residential areas to higher land
 - Created by cutting mountains, or building up land
 - including **lots for private rebuilding or public housing**

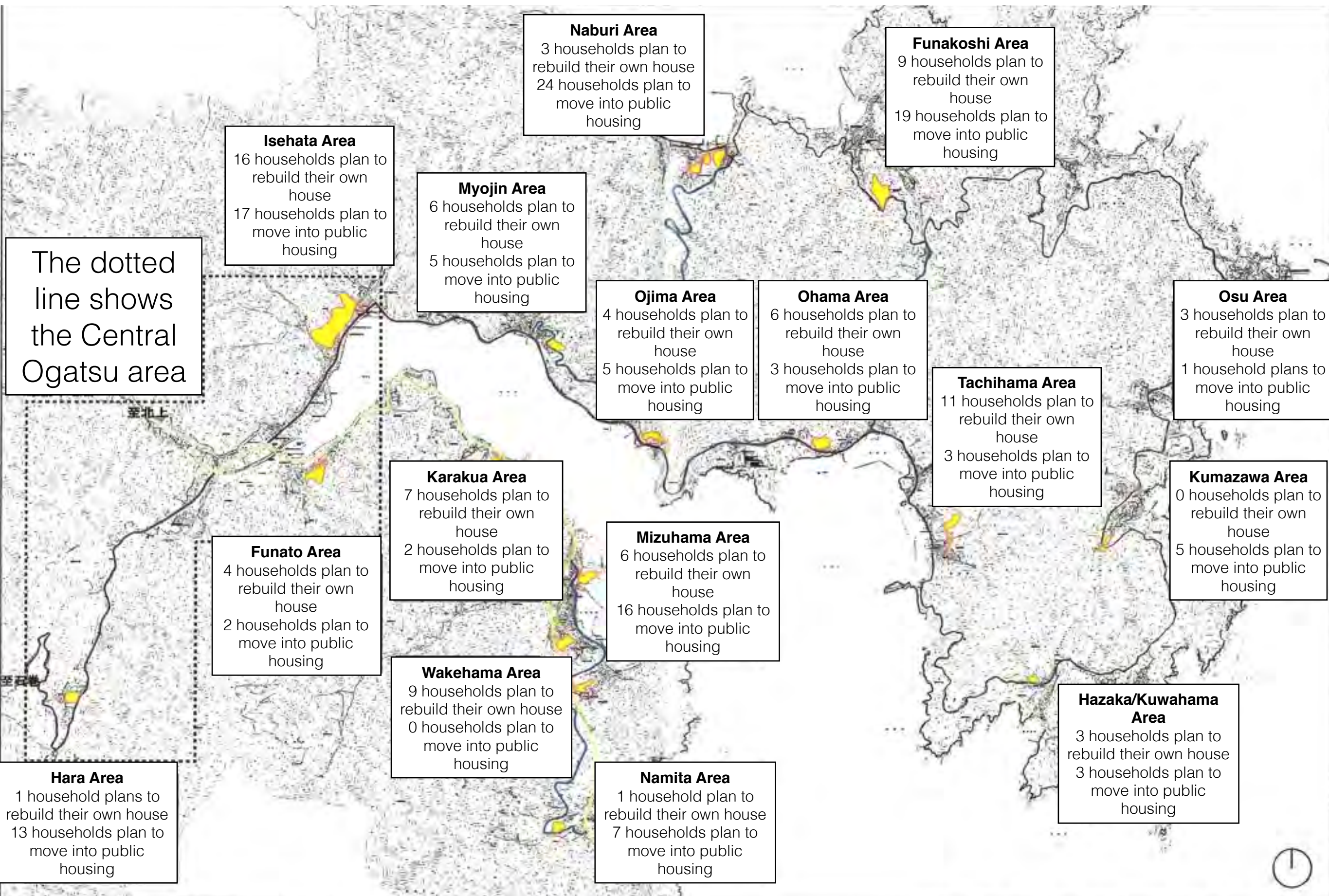


Onagawa Reconstruction





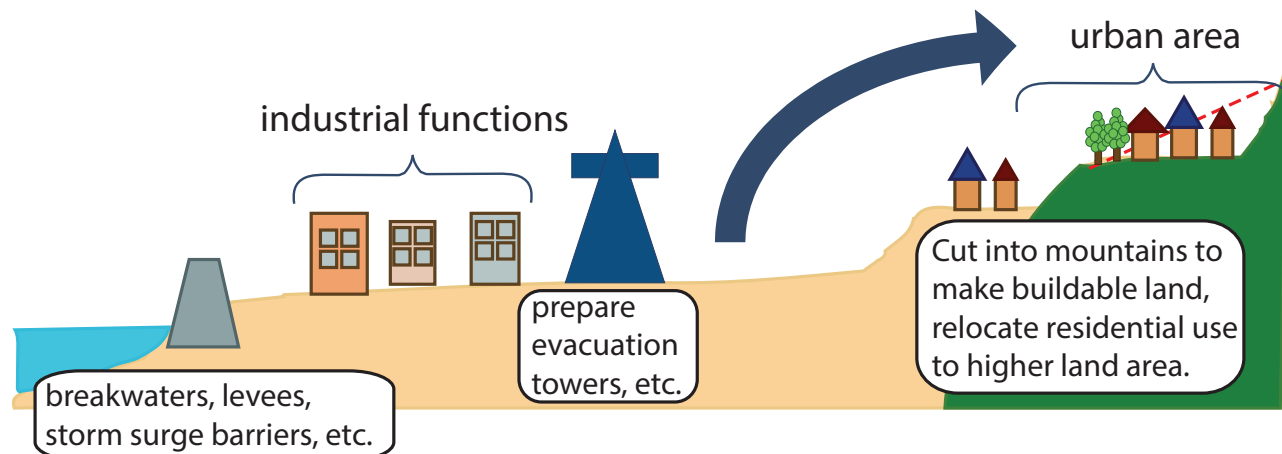
Relocation plans for villages in Ogatsu



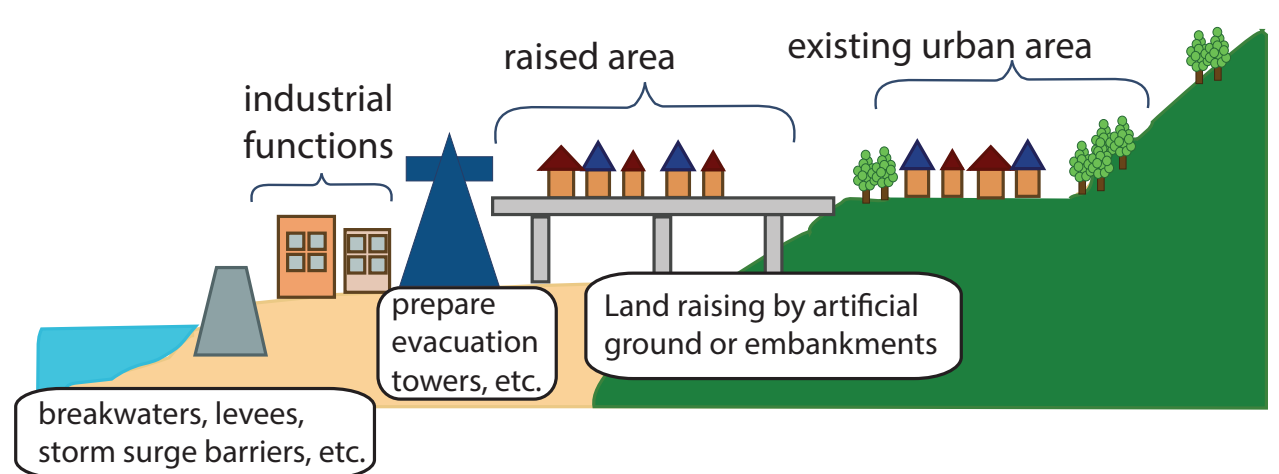


4. Relocation: Early recommendation patterns for Tohoku from the national government's Council

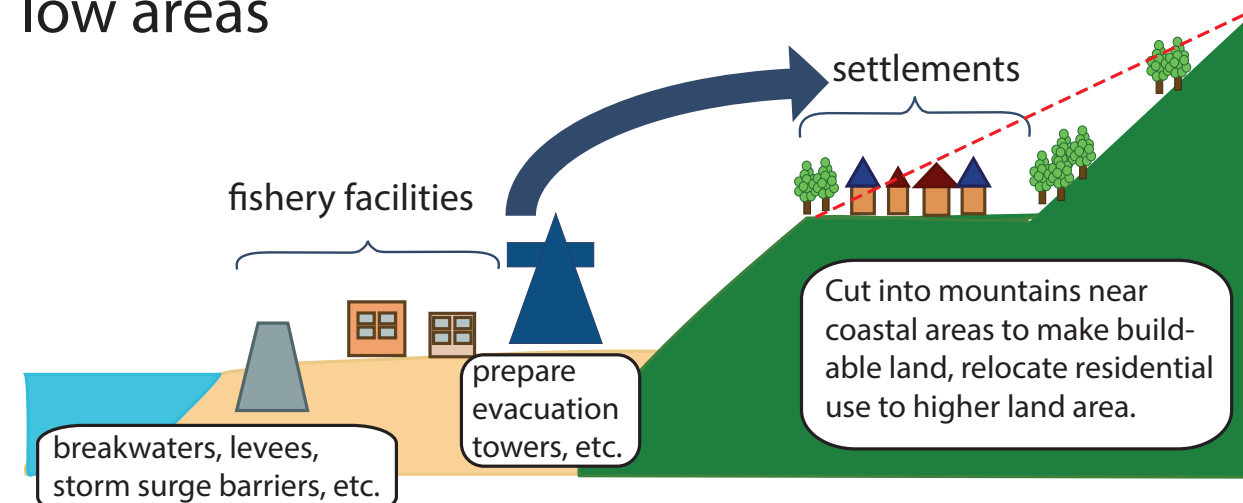
Type 1: urban functions in low-lying areas completely damaged



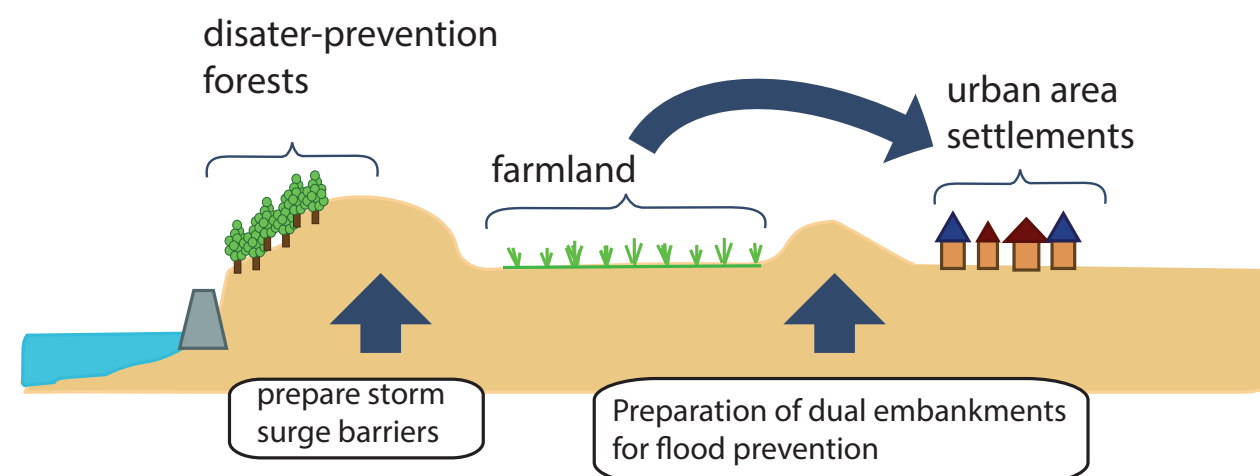
Type 2: low-lying areas damaged, high land areas escaped damage



Type 3: build on hills, fewer functions in low areas



Type 4: coastal plains

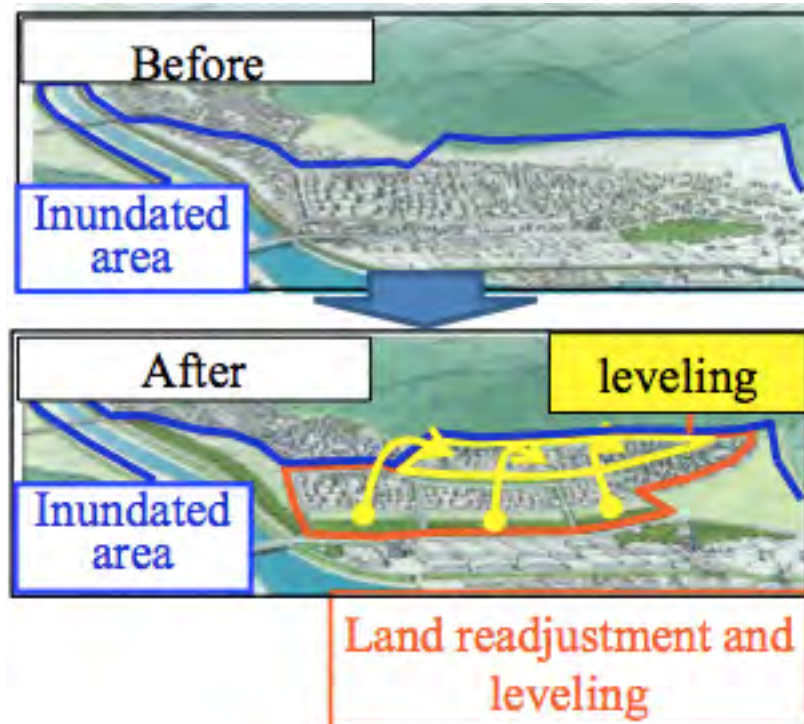
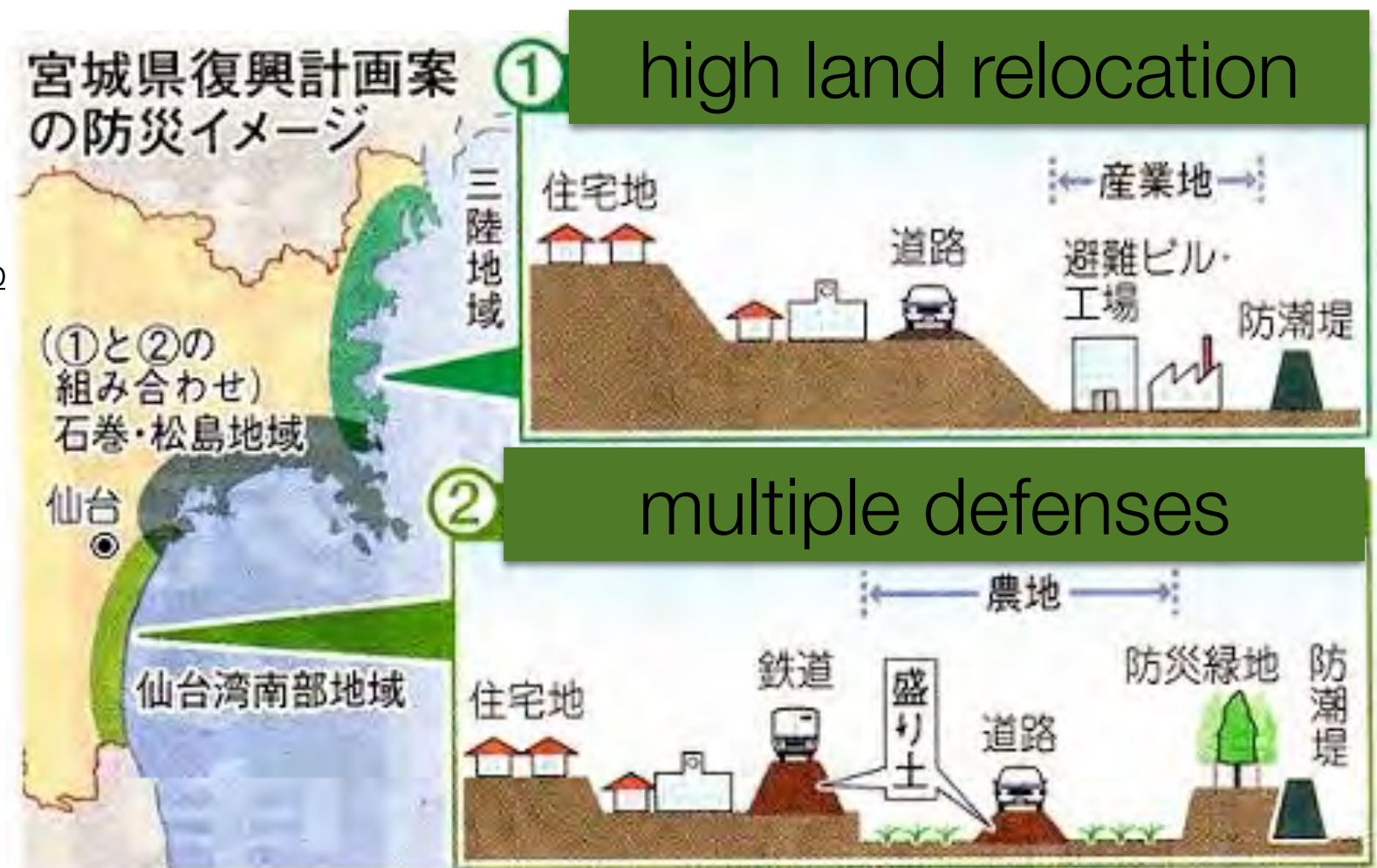


Current relocation concept in Tohoku



concept image of different relocation strategies in Miyagi Prefecture:

① high land relocation, ② multiple defenses, and combination (grey area in between)



[illegible]

岩手県

collective relocation

partial relocation

田野郷村
小友村
重茂村
山田町
雄賀村
船越村
大槌町
鶴住居村
釜石町
唐丹村
越喜来村
大船渡町
小友村
広田村
大谷村
小泉村
歌津町
志津川町

過去に
東日本

map of
past high
ground
relocation
areas,
and their
situation
after the
GEJE in
2011

地域の

2011 GEJE

● no damage
● damage

Multiple relocations, repeated disaster loss



Tohoku-historic
examples of relocation
(successful and
unsuccessful from
future disaster
prevention standpoint)



4. Principles to Guide Relocation

relocation: a process whereby a community's housing, assets, and public infrastructure are rebuilt in another location.

- Safer Homes, Stronger Communities, The World Bank

Guidelines for Relocation from *Safer Homes, Stronger Communities*:

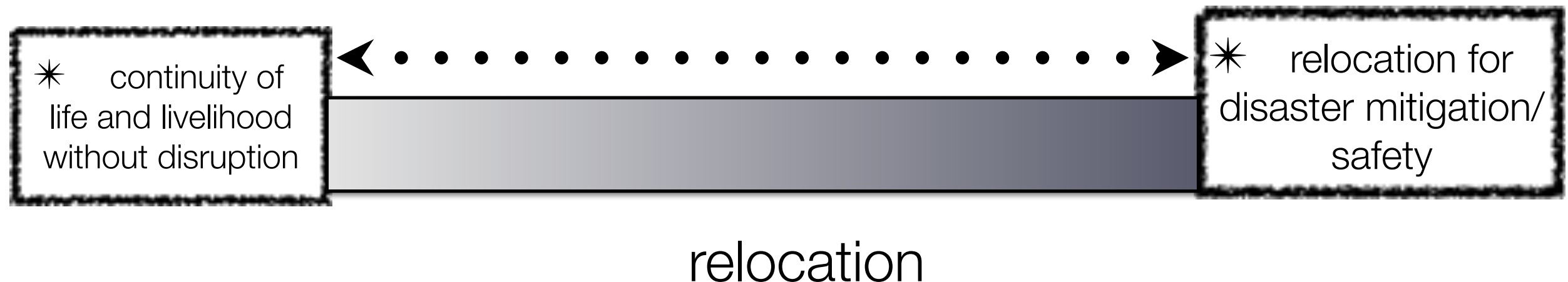
- **Avoid relocation if at all possible.**
- If relocation is unavoidable, include the community in the decision-making processes. (people)
- Use the relocation plan to define how people will restore the livelihood activities. (location)
- Design, budget for, and implement measures to prevent the return of the relocated communities or others to the site from which relocation took place. (land use)

Relocation for DRR

Post-disaster Housing Relocation towards Disaster Mitigation
can also be seen as

Disaster Risk Reduction as the Basis for Recovery Planning

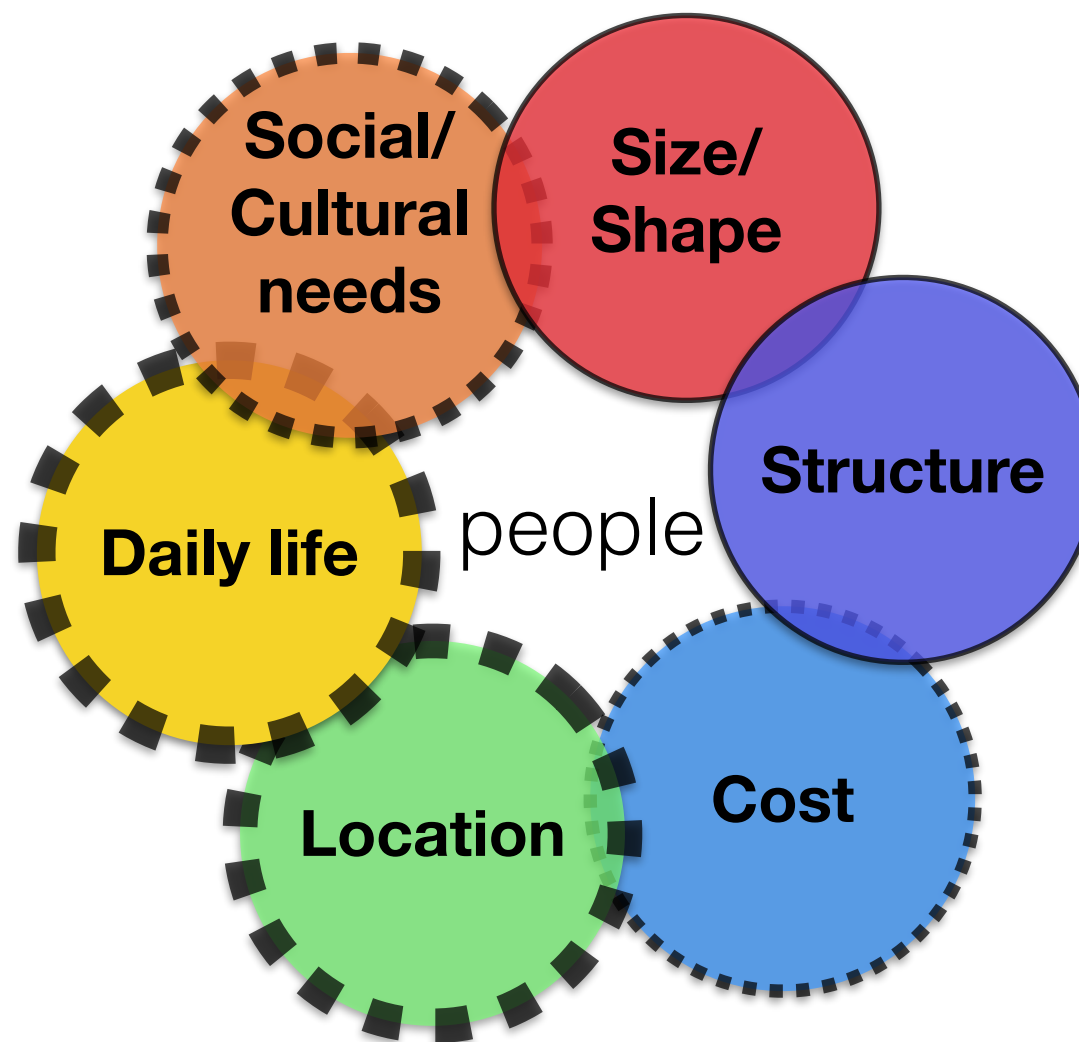
Relocation is a balance between:



Note: Residential relocation tends to focus on homeowners, leaving out renters.

People-Centered Housing Relocation?

people centered housing recovery in relocation:
especially related to **location**, and related to other **daily life** needs



3 International Cases of Post-disaster Relocation:



1. 2010 Eruption of Mt. Merapi, Indonesia
2. 2012 Hurricane Sandy Storm Surge, New York
3. 2013 Typhoon Haiyan (local name: Typhoon Yolanda) in the Philippines

2010 Volcanic Eruption Mt. Merapi, Indonesia



2010 Mt. Merapi Eruption Damage

Eruptions between Oct.-Nov. 2010, including massive Oct. 26 eruption

- Ash: 7.5 kilometers in the air
- Pyroclastic flow traveled 25 km down Merapi
- Evacuation zone: 15 km → 20 km (after Nov. 5)
- Killed **277** people in Yogyakarta Special District and **109** people in Central Java Province
- Heavily damaged **2,682** houses in Yogyakarta Special District and **165** houses in Klaten Regency, Central Java Province.

Source: UNDP. 2014. *Institutionalizing Post-Disaster Recovery: Learning from Mentawai Tsunami and Merapi Eruption: Recovery Framework Case Study*

In the following weeks and months, heavy rains carried massive amounts of volcanic material downstream, causing cold lava/flooding disasters that destroyed a further:

- **341** houses in Sleman Regency in Yogyakarta Special District; **746** houses in Magelang Regency, Central Java

Source: Ministry of Public Works/ Rekompak, 2013. *"Building Livable and Sustainable Settlement: Rehabilitation and Reconstruction Post Merapi Eruption 2010. Oct. 2013.*

Temporary Housing

- *huntara* (from *huntian sementara*, temporary housing) collective “temporary housing settlements” created at various scales with various sources of support
- with support for livelihood recovery
- attempt to keep communities together through temporary and permanent housing recovery phases



Reconstruction by REKOMPAK

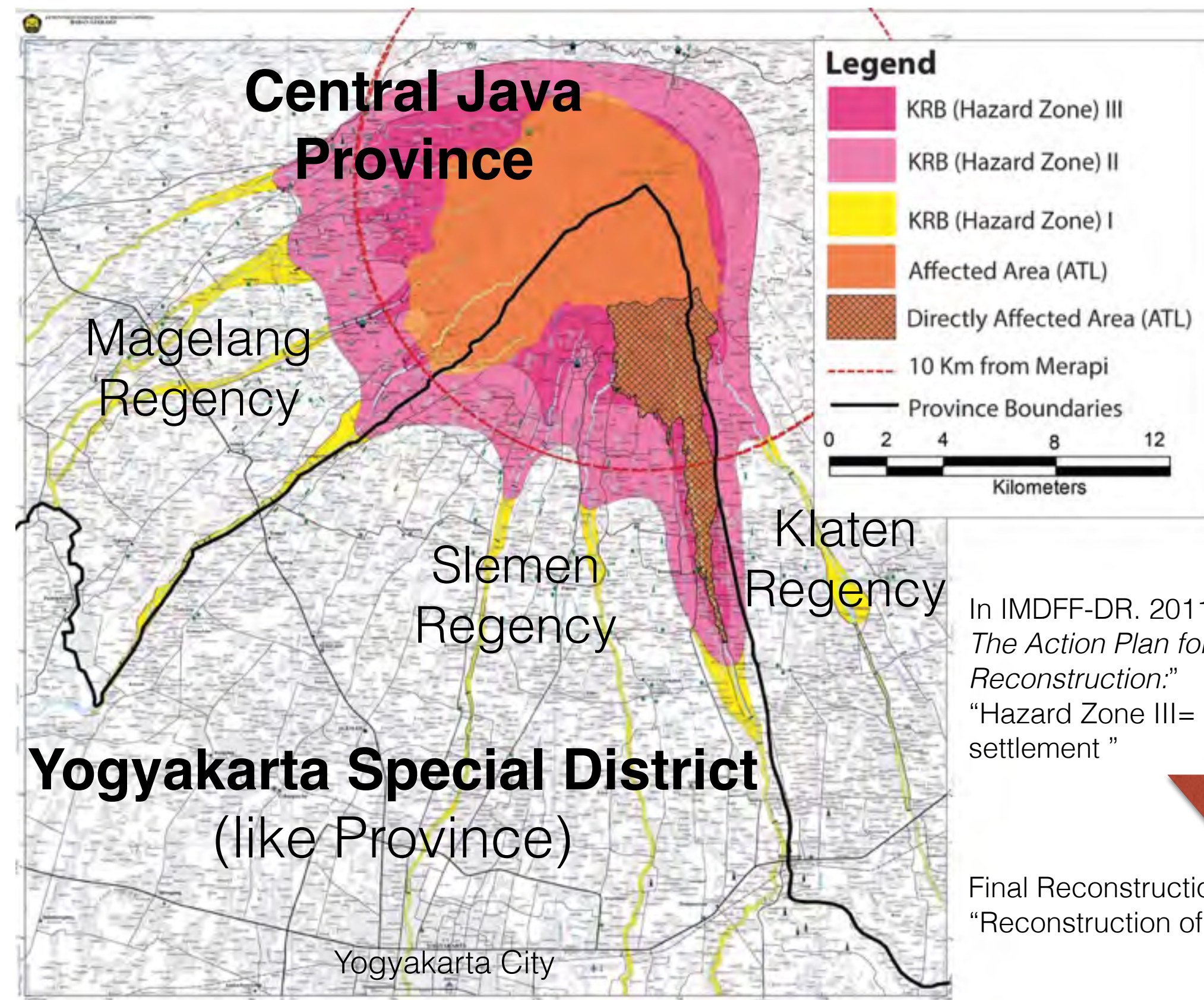
Government's housing reconstruction program:

REKOMPAK (*Proyek Rehabilitasi dan Rekonstruksi Masyarakat dan Permukiman Berbasis Komunitas*, Community-Based Settlement Rehabilitation and Reconstruction Project (CSRRP))

- Based on previous experience of community-based housing recovery after the 2006 Central Java Earthquake
- REKOMPAK had also been used in Aceh post-tsunami, in Jojga post-earthquake, and was similar to previous community-based development programs
- Administered by the Ministry of Public Works, with technical and community facilitators.
- In total, **2608** houses built through REKOMPAK
- Largest number of REKOMPAK beneficiaries in Slemen Regency:
 - **2132** houses built, (**444** on individual lots; **1688** in collective resettlement sites called *huntaps*)
- Within Slemen Regency, the largest number in Cangkringan District:
 - **1596** houses built in in 5 villages within Cangkringan

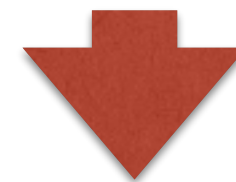
Source: Ministry of Public Works. 2013. "Rekompak Program," <http://merapi.rekompakciptakarya.org>, accessed 2/8/2015

Recovery Incorporating Hazard Risk



In IMDFF-DR. 2011. *"Merapi, Build Back Safer: The Action Plan for Rehabilitation and Reconstruction:"*

"Hazard Zone III= Not recommended for human settlement "



Final Reconstruction Policy became:
"Reconstruction of houses not supported in ATL"

Housing Reconstruction with REKOMPAAK: standard support/ multiple options



Land: outside hazardous area

- **House build on individual lots**

- former lot is in safe area
- lot newly acquired by household in safe area

early goal:
most would
be this type

- **House in collective resettlement site (*huntap*)**

- Built on collectively owned village land (TKD)
- Using private land acquired collectively
- And/or combined with other sources of private funding

reality:
most
became
this type

Collective sites: include site development
Planning and construction by community group.



Standard support:

Core house- 30,000,000 Rupiah (around \$2400 at 2015 exchange rates) to construct a x 6 meter 36m² reinforced core house for each household.

Can choose from 5 floor plan options

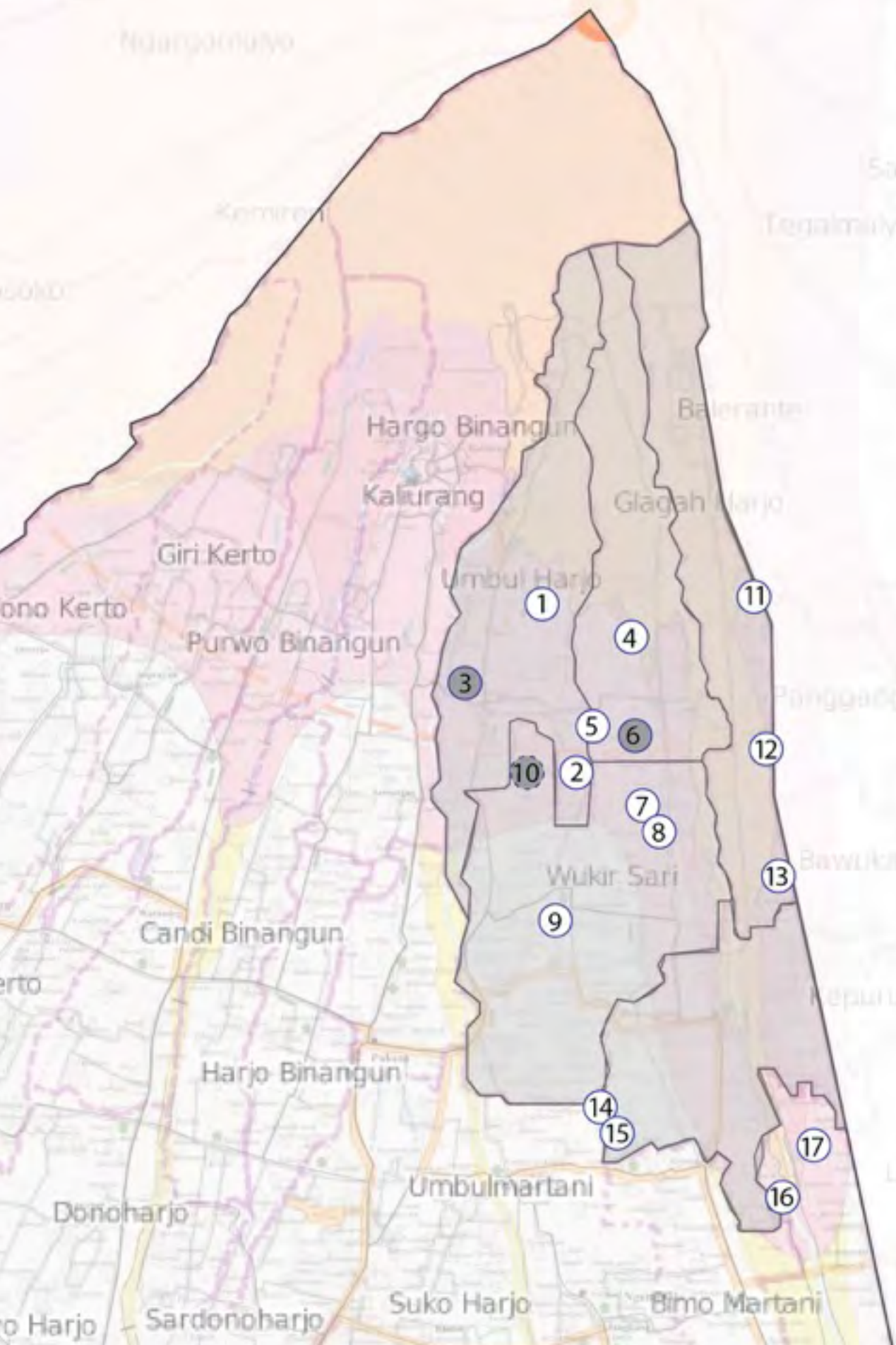
Land-

In collective site: receive 100m² lot w/house
On individual site: receive compensation for 100m² lot. (7,000,000 Rupiah-around \$520)

House Variety

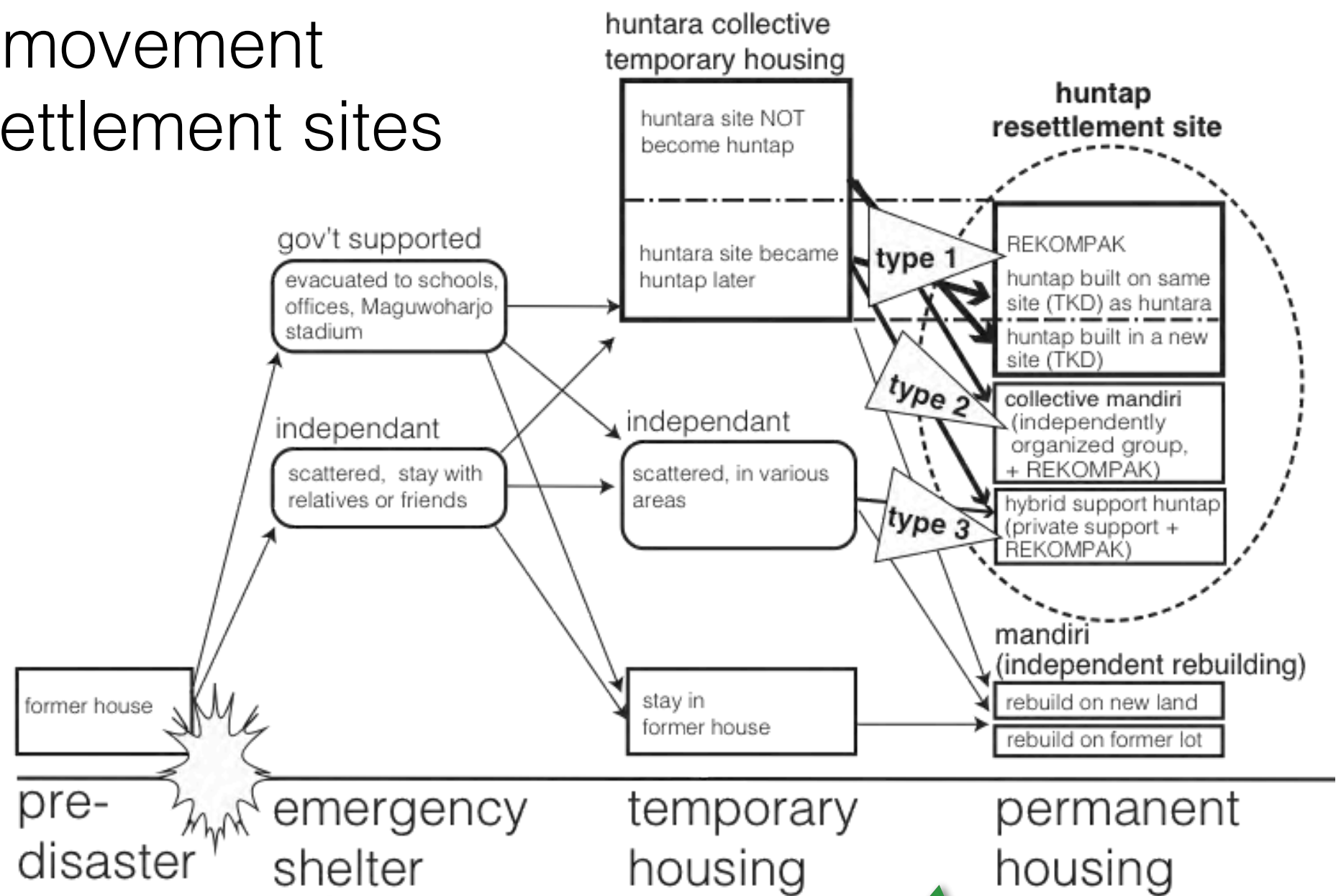


Resettlement Sites in Cangkringan District, Sleman Regency



Collective Resettlment (<i>huntap</i> -basic type)	Independent Collective Resettlement Site (<i>huntap</i> -mandiri)	Combined Support Collective Resettlement Type (<i>huntap</i> subtype)	Number of Houses
1. Kerang Kendal- combined multiple types of land, including TKD, private			81
2. Plosokerup			84
	3. Ganbretan		10
		3b Ganbretan	
4. Batur			204
5. Pajurjurang			301
	6. Bulaksusukan		20
7. Gondong 2			84
8. Gondong 3			36
9. Dongelsari			147
		10. Cancangan (Q-Tel)	58
11. Gading			62
12. Jetis Sumur			81
13. Banjarsari			178
14. Kuwang			138
15. Randusari			122
Total houses in resettlement sites in Cangkringan (from REKOMPAK program data)			1596

Typologies of movement to *huntap* resettlement sites



type 1



type 2



type 3





2012 Superstorm Sandy Storm Surge, New York, USA

- Struck on October 29, caused storm surge and flooding.
- Killed at least 159 people in the United States: 72 directly, 87 indirectly
- more than 650,000 homes damaged; in NY State 305,000 housing units were damaged or destroyed.



PHYSICAL VULNERABILITY

- SANDY STORM SURGE (NJ & NY ONLY)
- FEMA FIRM ZONES A-X



Paterson

New Rochelle

Glen Cove O

Clifton

(503)

CR 506

Cliffside Park

Great Neck

R 609

East Orange

Newark

New York

Mineola

Garden City

Hempstead

mit

Union

Elizabeth

Bayonne

NY 27

Valley Stream

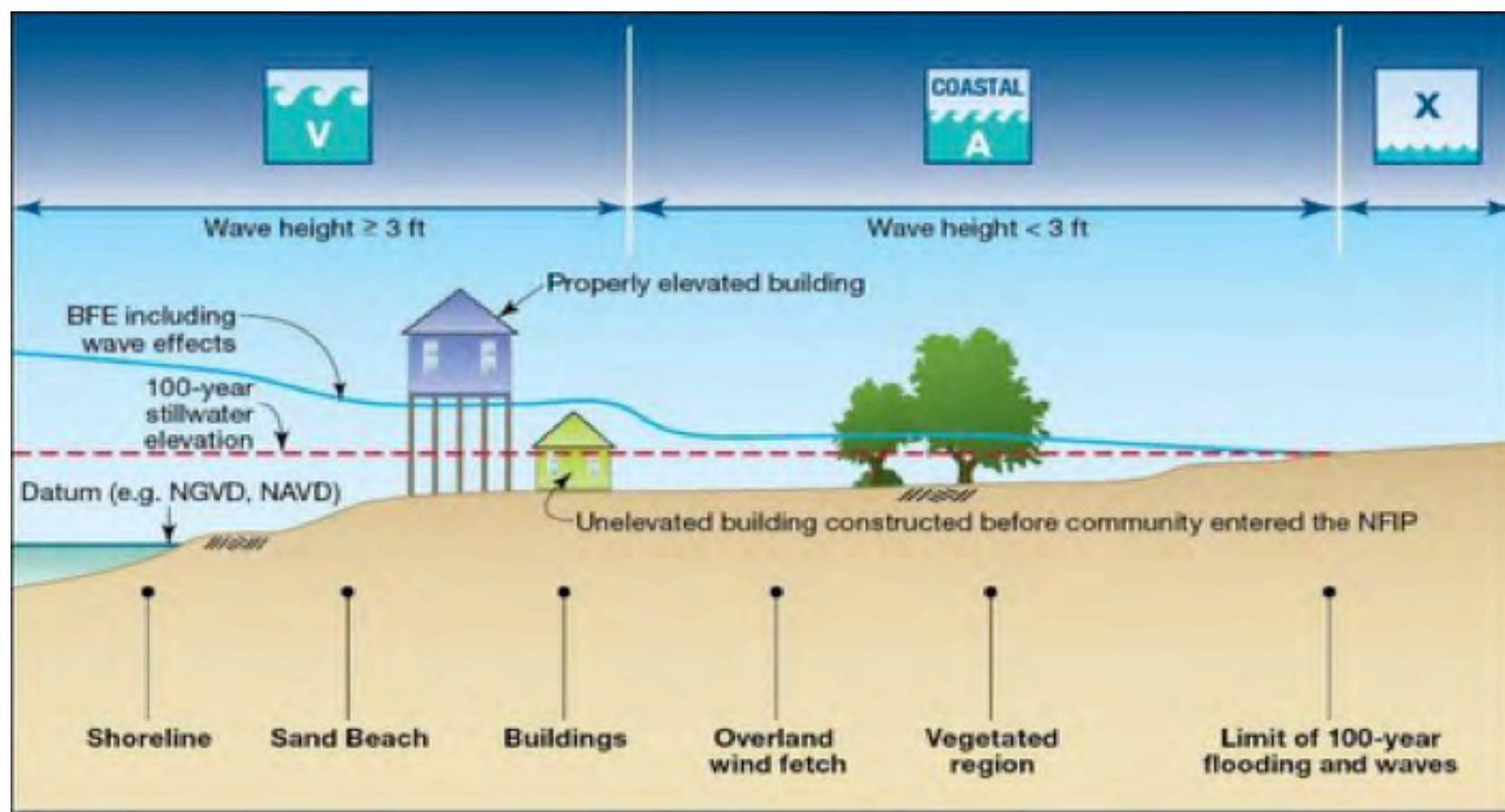
Freeport

Long Beach

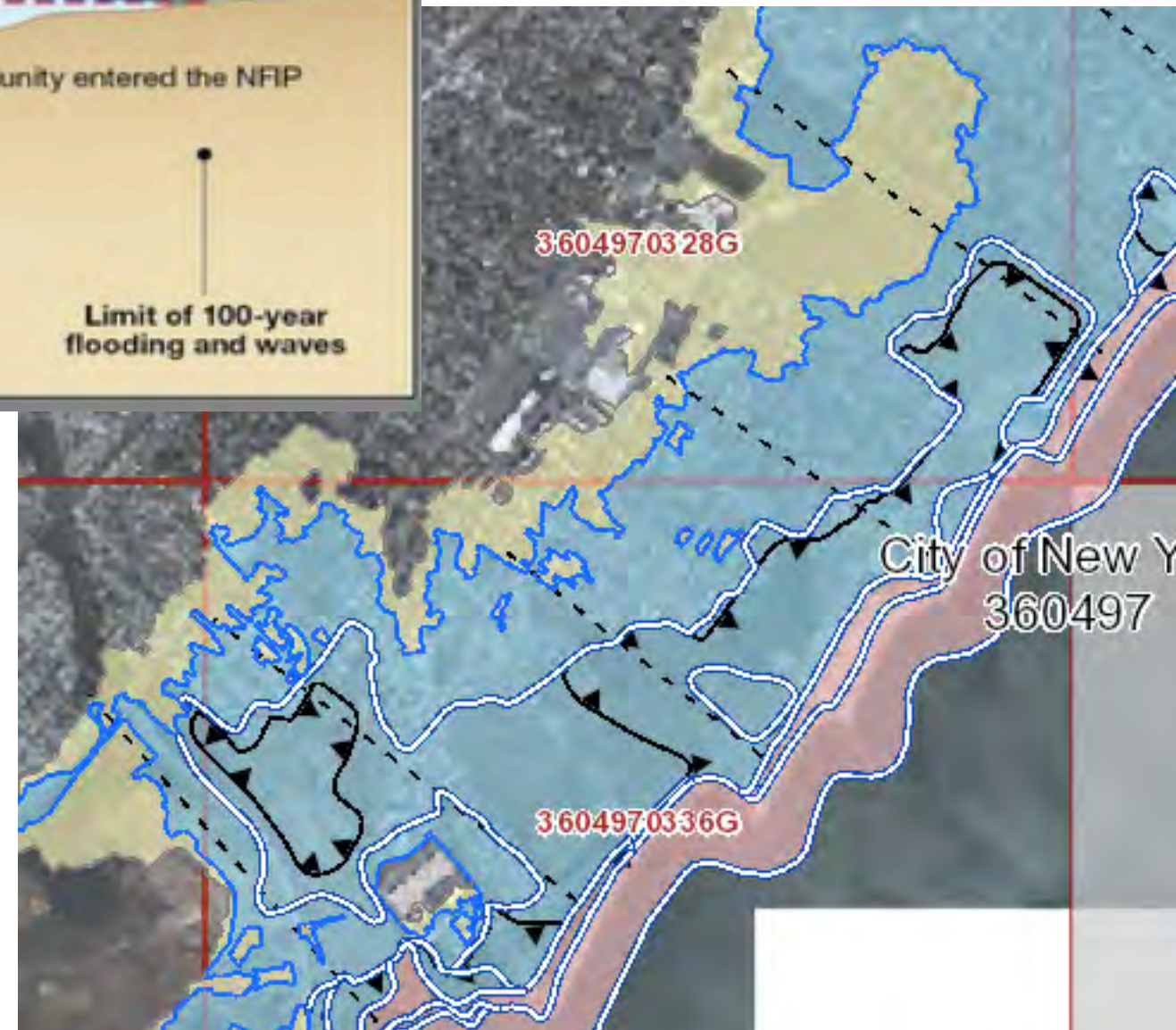
Woodbridge

Perth Amboy

Land Use Planning and Flood Maps in New York after Hurricane Sandy, 2012



Building (elevation) requirements in flood zones, according to flood maps;
**No areas prohibited;
no relocation required**



Residential Buyouts after Sandy

- there are several different buyouts and acquisitions happening now in areas affected by Sandy
- one example: “enhanced buyouts” in Staten Island
 - pays homeowners pre-storm value, plus 10% bonus in target areas
 - land will be kept as buffer zone (future rebuilding forbidden)

*all buyouts are voluntary in the U.S.

Enhanced Buyout Areas: Staten Island



Enhanced Buyout Areas: Staten Island in Feb. 2013





Enhanced Buyout Areas: Staten Island in Dec. 2013



Photo: Tamiyo Kondo

Enhanced Buyout Areas: Staten Island in Dec. 2014





June 2015

Typhoon Yolanda, Philippines, 2013



2013 Typhoon Yolanda (Typhoon Haiyan) in the Philippines

- Haiyan caused over 7,000 casualties, displaced over 4 million people, and damaged or destroyed over 1 million houses due to remarkably high wind speed, storm surge and large waves.
- in Tacloban City:
 - 54, 231 houses were reported damaged
 - 30, 513 structures reported totally damaged and
 - 23, 718 partially damaged
 - 14,433 hardest hit families in coastal zone, need relocation (in City's recovery plan)

Housing recovery after Yolanda

- No national housing recovery project, but some non-disaster programs for housing reconstruction, resettlement, are also used after Yolanda (especially by the National Housing Authority)
- Many temporary, transitional housing, and building materials provided directly by various NGOs.
- Current situation: many people living in temporary housing (bunkhouses, or transitional shelter) or staying in their former communities in temporary, light-weight structures.
- The focus of housing reconstruction is the construction of new housing units in resettlement areas. (in cities using resettlement projects, for example: Tacloban City).
- The first permanent houses are being built in relocation areas.

Tacloban City

- “No build zone” created by the City
- Many informal settlements in coastal area
- Planned relocation to resettlement areas



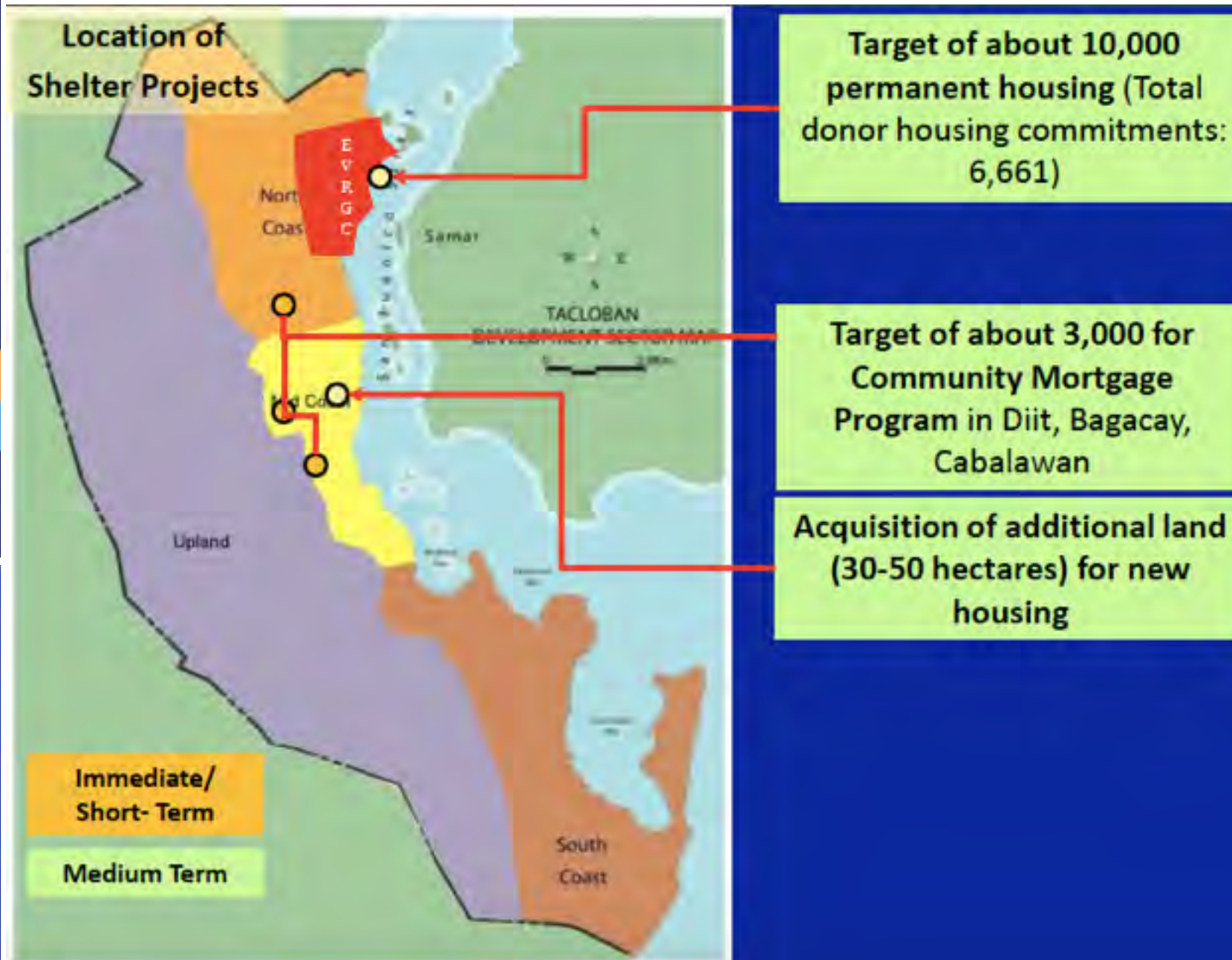
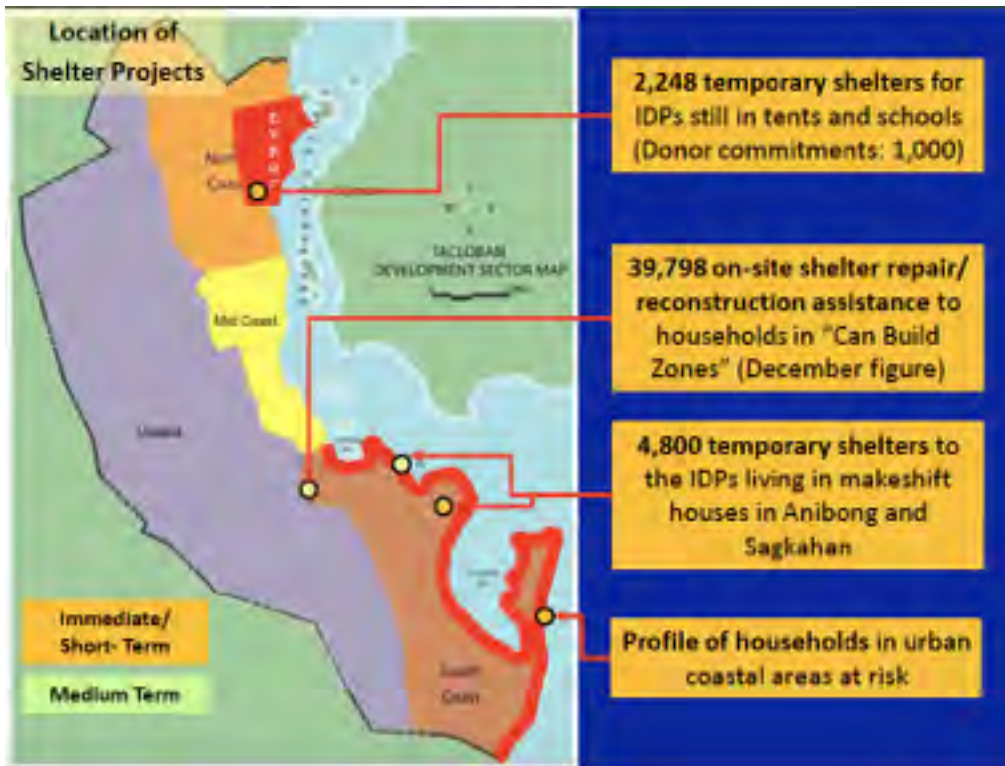
Proposed Tacloban Recovery and Rehabilitation Plan

March 2014



Tacloban Recovery and Sustainable Development Group

IN PARTNERSHIP WITH **UN HABITAT**





Area: 4.6 hectares

Area: 2 hectares



Partners: Habitat for Humanity, Tacloban LGU
Status: For construction

(Tad)

informal settlements





Tent/
Host Family etc.



Transition
Shelter



Permanent
House



stage 2a:
bunkhouse



stage 3: permanent
housing in
resettlement site



stage 1: tent



stage 2b: transitional housing

Relocation? (Is it a good idea?)

- Experts Say: “avoid relocation if possible”
- Balancing Risk and Livelihood (how?)
- There is a reason people are living in informal settlements
- Relocation is part of regular housing provision/urban upgrading programs in the Philippines.

Relocation? (Will it work for the residents?)



Role of relocation within overall housing recovery support policies

Merapi:

- Residents receive support for rebuilding on site (if not is a hazardous zone), or rebuilding a new house in relocation area.
- **Most relocation areas are created using village land** (close by); relocation areas are a primary portion of recovery.

New York:

- Residents receive support for repair or rebuilding on site (may require elevation depending on flood map). Or may select buyout (options vary based on location).
- **After buyout, no resettlement support.** Residents find new housing on their own.

Tacloban

- Official support for housing reconstruction is **ONLY provided in relocation sites**

are relocation projects reducing risk?

- Merapi: Yes, for MOST people
 - Using village land means that relocation distance is small. However, for multiple reasons, some people (especially elderly) chose to stay in hazardous area. Some residents also received support from NGO to rebuild in hazardous areas.
 - The program (called REKOMPAK) tried to encourage livelihood activities in relocation villages—to encourage people to stay there.
 - Younger families benefit more (more likely to stay in their relocation housing)
- New York: Yes, for SOME people, only in SOME areas
 - Only a small number of the overall disaster survivors households, concentrated in a small area benefits from the buyout program.
 - The small scale of the buyouts, and acquisitions, mean that the regional risk reduction effect is also minimal.
- Tacloban: Maybe they will, for some people?
 - Unclear...will people really relocate? will they be able to live in resettlement areas? will other people move into the no-build zones left behind?

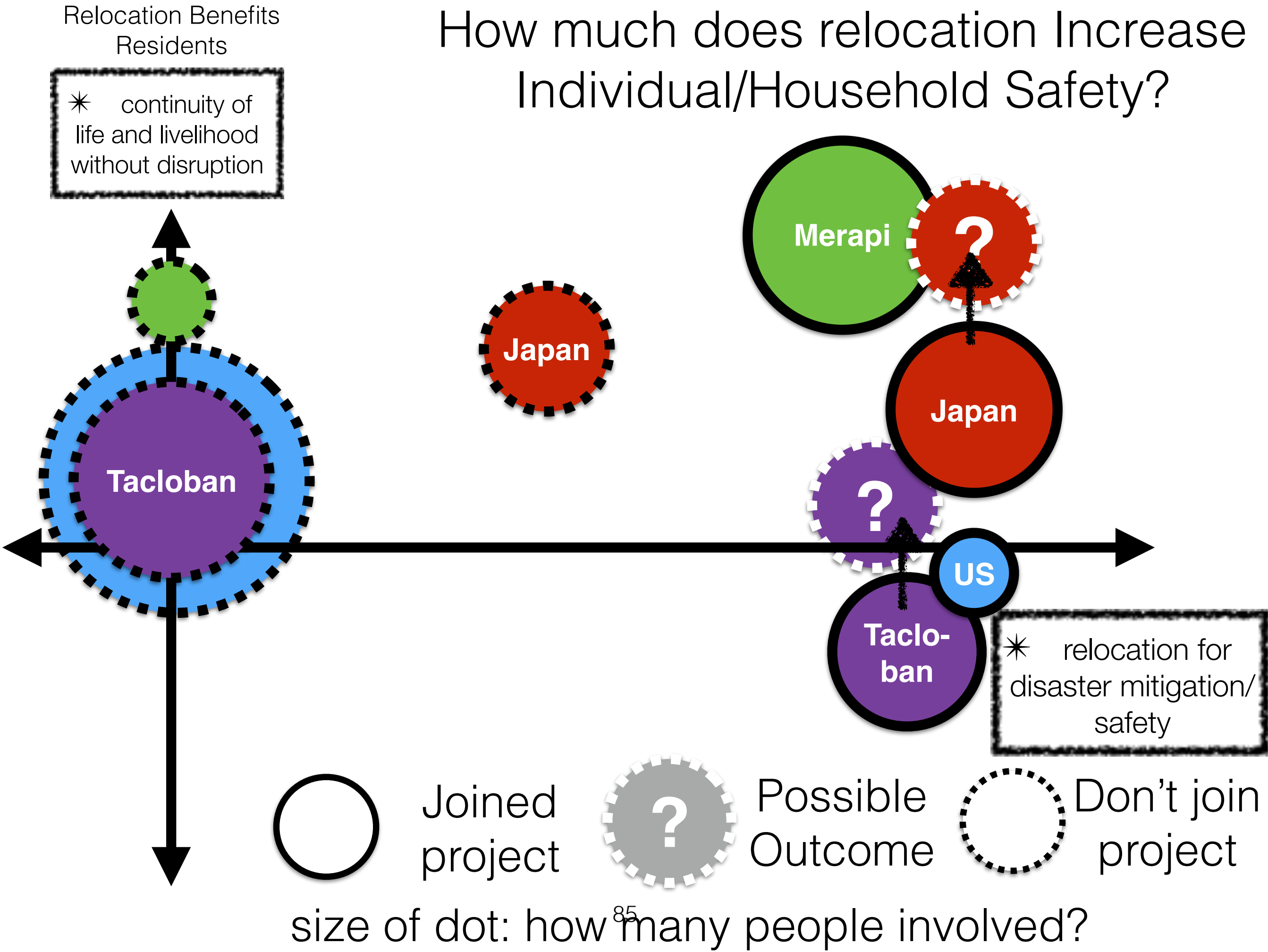
Characteristics and Challenges for the Tohoku Area-different from other international examples

- Disaster area is not uniform, made up of
 - large cities and small towns,
 - areas that have merged with other municipalities: creating political power imbalance; center/periphery recovery gaps
- Aging population in an area where population was already declining (disaster is speeding up the process)
- In the disaster area, most households lived in large single family detached homes especially for elderly, difficult to rebuild similar on their own. (similar to Indonesia)
- Livelihood is connected to the sea—(Similar to Indonesia, Philippines)
 - relocation is difficult
 - relocation must involve not just housing, but also shops, etc.
- Relocation also involves the provision of new land in the target relocation area, not just zoning/buybacks (Unlike US, similar to other countries)
- Infrastructure investment in relocation (mountaintop cutting, land preparation) disproportionate to future residential population (infrastructure is EXTREME in Japan)
- Nuclear contamination means long-term relocation (unprecedented—unique case in the world, we have no good plan for this)

Relocation related to overall recovery

	Merapi	New York	Philippines	Tohoku
Use designation of hazardous area (land use approach)	Yes	No	Yes, “no-build” or “danger zone”	Yes
Do residents have the choice to stay or move?	Officially no, in actuality, yes.	Yes. All relocation buyouts voluntary	Not clear yet.	No. Can not stay in an area designated as hazardous
Housing or land provided in a resettlement area	Yes (house and land provided for free)	No	Yes, Land and house provided. Most residents will have to pay small amount in	Yes (land prepared for sale or rent), public housing in relocation area
Build public housing or new houses?	Yes, new housing provided	No	Yes, some new housing provided in relocation	Yes, public housing
Reducing future risk: for participating households?	Yes, for some.	Yes, for those who participate	Yes, for those who participate	Yes
Reducing future risk: for region?	Yes, depending on long term outcome.	No, very small impact area.	Yes, in a small area	Yes

How much does relocation Increase Individual/Household Safety?



How much does Relocation Increase Regional Resilience?

