

International Symposium on
Sustainable Reconstruction from Super Disasters

Explanatory Introduction
趣旨説明：近年の世界の巨大震災と復興の状況

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Dr. Tatsuo Narafu
Senior Advisor,
Japan International Cooperation Agency (JICA)

Devastating damages by the Great East Japan
Earthquake (東日本大震災による甚大な被害)



写真：国際協力機構

Disaster risk (災害危険性)

- Disaster risk is defined by Hazard, Vulnerability and Management capacity (災害危険性は、自然災害、脆弱性、対応力によって変化する)
- Vulnerability which led to devastating damage by the Great East Japan EQ are not only the huge hazard but also;
 - large population living the tsunami prone area
 - properties and industries accumulated
(東日本大震災による甚大な被害の要因の一つ：津波危険地域への人、物、業務の蓄積)
- Vulnerability and management capacity differs from country to country

Reduction of future disaster risk

将来の災害危険性の低減の取り組み

- We can reduce future risk by
 - increasing management capacity
 - reducing vulnerability
(将来の災害危険性は、脆弱性の減少と防災能力の向上により実現する)
- Reconstruction phase provides critical opportunity to build up more resilient society (build back better) with lessons learned from latest experiences (災害復興は、将来の災害危険性低減の極めて貴重な機会)
- Vulnerability, management capacity and possibility of reduction of future disaster risk is different from country to country reflecting its social and economical conditions (脆弱性、防災能力、将来の災害危険性低減は、各国の経済社会条件により異なる)
- Comparison of super-disasters in different socio-economical conditions allows us to understand better (近年の巨大災害を比較することにより、災害、将来の防災についての深い理解が期待できる)

Comparison of recent super-disasters

本シンポジウムの趣旨：近年の巨大災害とその復興状況についての比較

- Reports on recent super-disasters and reconstruction (近年の世界の巨大災害についての報告)
 - 2011 Great East Japan Earthquake
 - 2010 Haiti Earthquake
 - 2008 Wenchuan
 - 2004 Indian Ocean EQ and tsunami
 - 1995 Great Hanshin-Awaji EQ
- Presentation on viewpoints/issues for comparison (比較を行う場合の視点/側面についての提起)
 - reality of reconstruction from viewpoint of people and community (コミュニティの視点から見た実態)
 - Gender and social inclusion (ジェンダー、社会包摂)
 - building and urban development (建物、まちづくり)
 - international viewpoint (国際的な視点)
- Discussion based on comparison will clarify factors which influence vulnerability and management capacity, and constraints for reconstruction (比較に基づく議論による検討の深化を期待)

Difficulties of reconstruction

Dilemma on safety and convenience of daily life

(復興の難しさ：安全性と利便性のジレンマなど)

- Many people work in fishery and harbor (多くが漁業、港湾業務に従事)
- High construction cost for new area of elevated level (高台移転のコスト)
- Increasing risk of high tide caused by destruction of dykes and subsidence (地盤沈下、堤防の崩壊による危険性)

2012. 2 Onagawa, Miyagi (宮城県女川2012年2月)



Difficulties of reconstruction “Build back Better” is not an easy job (“より安全なまちづくり” は、簡単ではない)

- Urgent needs of affected people (被災者の緊急のニーズ)
- Local housing supply sectors usually damaged by disasters (住宅供給セクターの被災)
- Serious risks other than future earthquakes like loss of income, hunger, epidemic diseases etc. (被災者を悩ます他の深刻なリスク)



Collapsed reconstruction project houses

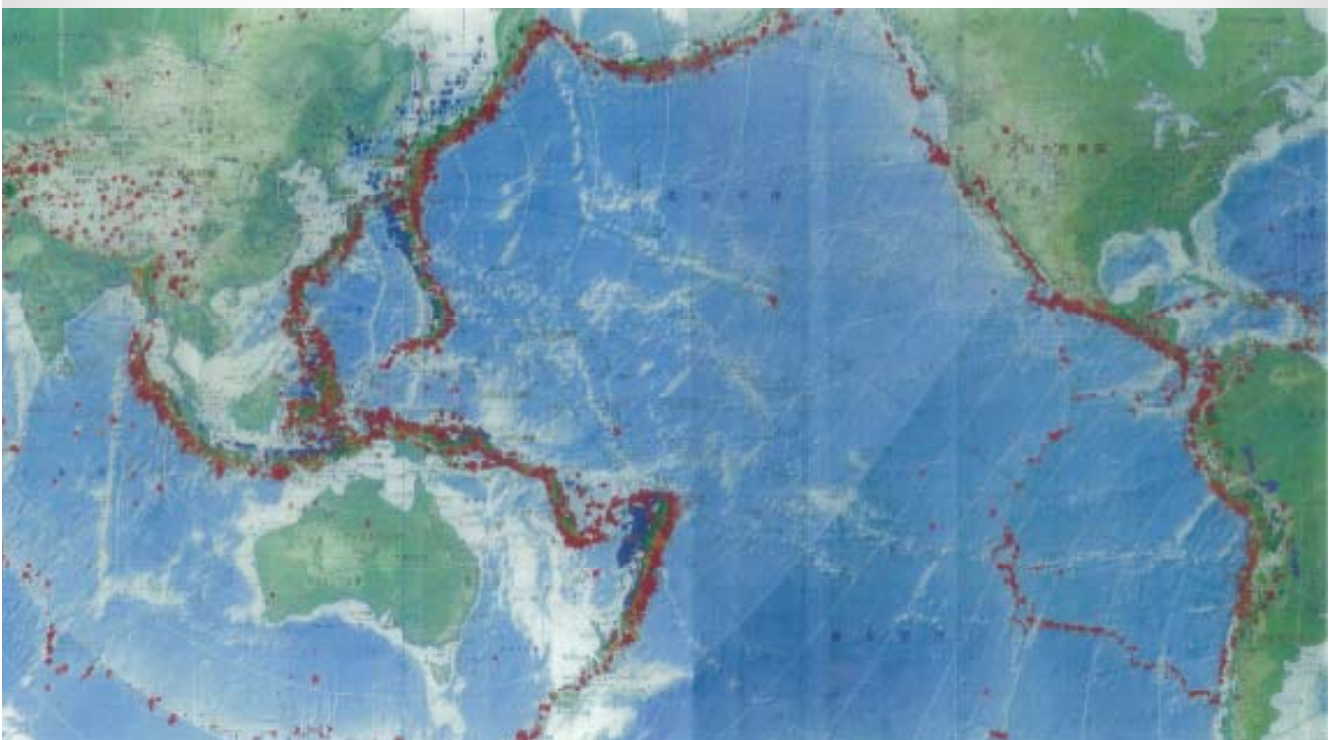
Handout to audience (本日の配布資料)

- Table of brief information of four countries (Haiti, China, Indonesia, and Japan) (各国基礎情報)
- Table of brief information on each of super disasters (2010 Haiti, 2008 Wenchuan, 2004 Indian Ocean EQ and tsunami, 2011 Great East Japan EQ and 1995 Hanshin-Awaji EQ) compiled from reports by invited speakers (巨大災害の一覧表)
- Maps of super-disasters on same scale (巨大災害の地図：同一スケール) (distribution of shaking motion intensity and tsunami attack)
- Presentation materials of each of presentations (プレゼンテーションのスライド)

A bit from the handout (配布資料 (各国基礎情報) より)

- **Population:** (人口)
Haiti 10 million – China 1.3 billion (130 times)
- **GNI per capita:** (一人当たりのGNI)
Haiti 1.2 thousand US\$ - Japan 35 thousand US\$ (30 times)
- **Poverty factor** (income less than \$1.25) : (貧困指標)
Haiti 55% - China 16% - Japan NA
- **Major disasters:** (各国の主要な自然災害)
 - China, Indonesia and Japan:
various disasters like earthquakes, tsunami, flood, typhoon, volcanoes, land slides
 - Haiti:
hurricanes, floods. Earthquakes occur far less frequent

Earthquakes for recent 30 years (1977-2007)



災害比較 図面

- 地図により災害のスケールを比較

A bit from the handout (配布資料 (各国基礎情報) より)

Super-disasters	2010 Haiti	2008 China	2004 Indonesia	2011 East Japan	1995 Hanshin
Magnitude	7.0	7.9	9.1	9.0	6.9
Intensity of shaking motion	Extremely strong (10)	Extremely strong (10)	Severe (Soloview: 4)	Extremely strong (JMA:7)	Extremely strong (JMA:7)
Major cause of damage	Ground shaking	Ground shaking	Tsunami	Tsunami	Ground shaking
Dead/missing Injured (thousand)	230 100	88 375	221 -	19 6	6 44
Buildings(thousand) Complete Partial	105 208	Total 4,140	237	128 705	112 535
Economical loss					

Remarkable respects/aspects of each super-disasters

各巨大災害の特徴的な事項

- 2010 Haiti
 - Extreme vulnerability of construction – poor materials and workmanship, very long return period of earthquakes etc. (ハイチ：構造物の際立った脆弱性)
- 2008 China
 - Vulnerability of structures attains to poor enforcement of building codes especially for rural buildings and low level of expected scale of earthquake
 - The framework of “one province to one county” works well
(中国：基準の執行と低めの想定災害による構造物の脆弱性、“非被災の省が、被災県を支援”が有効に機能)
- 2004 Indonesia
 - Far reaching damage by the tsunami to Thailand, Sri Lanka, India and even far to eastern Africa
 - No early warning system of tsunami in Indian Ocean caused serious
 - Friction with anti-central government group eased
(インドネシア：広大な地域への津波被害、津波警報システムンの未整備、反政府勢力との融和)

Remarkable respects/aspects of each super-disasters各

巨大災害の特徴的な事項

- 1995 Hanshin-Awaji earthquake (阪神淡路大震災)
 - Preparedness for super-disasters was not enough (巨大災害への対策が不十分)
 - Revision of seismic design code for infrastructures was require (土木構造物の耐震基準の見直し)
 - Retrofitting-reinforcing of old sub-standard buildings/houses was recognized urgent (旧基準の古い建物の補強の必要性)
 - Special attention and care is recognized necessary to vulnerable people such as disabled, sick persons, elderly, foreigners etc. (災害弱者への配慮)
 - Keeping ties/human relations of communities is important in reconstruction (コミュニティの維持)
 - Psychological care/trauma is found important (こころのケア)
- 2011 East Japan Earthquake (東日本大震災)
 - Gap between pre-disaster assumption and the actual hazard emerged (想定された以上の災害の発生)
 - The way/system of tsunami warning should be improved (津波警報の発令方法の改善)
 - Disaster management for super-disasters needs to be reviewed fundamentally (巨大災害への対策の抜本的な見直し)

Different Aspects of Reconstruction

復興に関する側面（今回の企画、準備を通じて認識したこと）

- Aspects which could be reconstructed in short period
- buildings, infrastructures, etc.
(比較的確実に実行できるハード施設の復興)
- Aspects which need longer period
in case of the Hanshin-Awaji Earthquake
(長期間を要する復興：阪神淡路大震災の事例から)
 - people who lost their families become old and have difficulties to live without support
(家族を失った被災者の高齢化、要介護化)
 - contract of rental houses for reconstruction project will terminate in several years, which will result affected people live there will have to leave for new houses
(借り上げ復興住宅の期限の終了)
 - local manufacturers still suffer from large debts which they borrow to reconstruct their factories after the disaster
(被災時の借入金による企業経営の圧迫)
 - Kobe harbor lost its customers during reconstruction period and could not recover until now, which result less job opportunities of harbor workers
(神戸港のシェア低迷による経済、雇用への影響)

International cooperation 国際協力

- International cooperation in emergency response and recovery becomes usual
(緊急援助、応急対応についての国際協力は一般化)
- International cooperation in prevention/reduction of future risks is expected
(今後、災害予防についての国際協力が期待される)

“Prevention is better than cure”(予防は治療にまさる)