Japan & JICA's experiences, Risk Governance and/for Resilience and Risk Reduction

=The 2nd Arab Conference on DRR=

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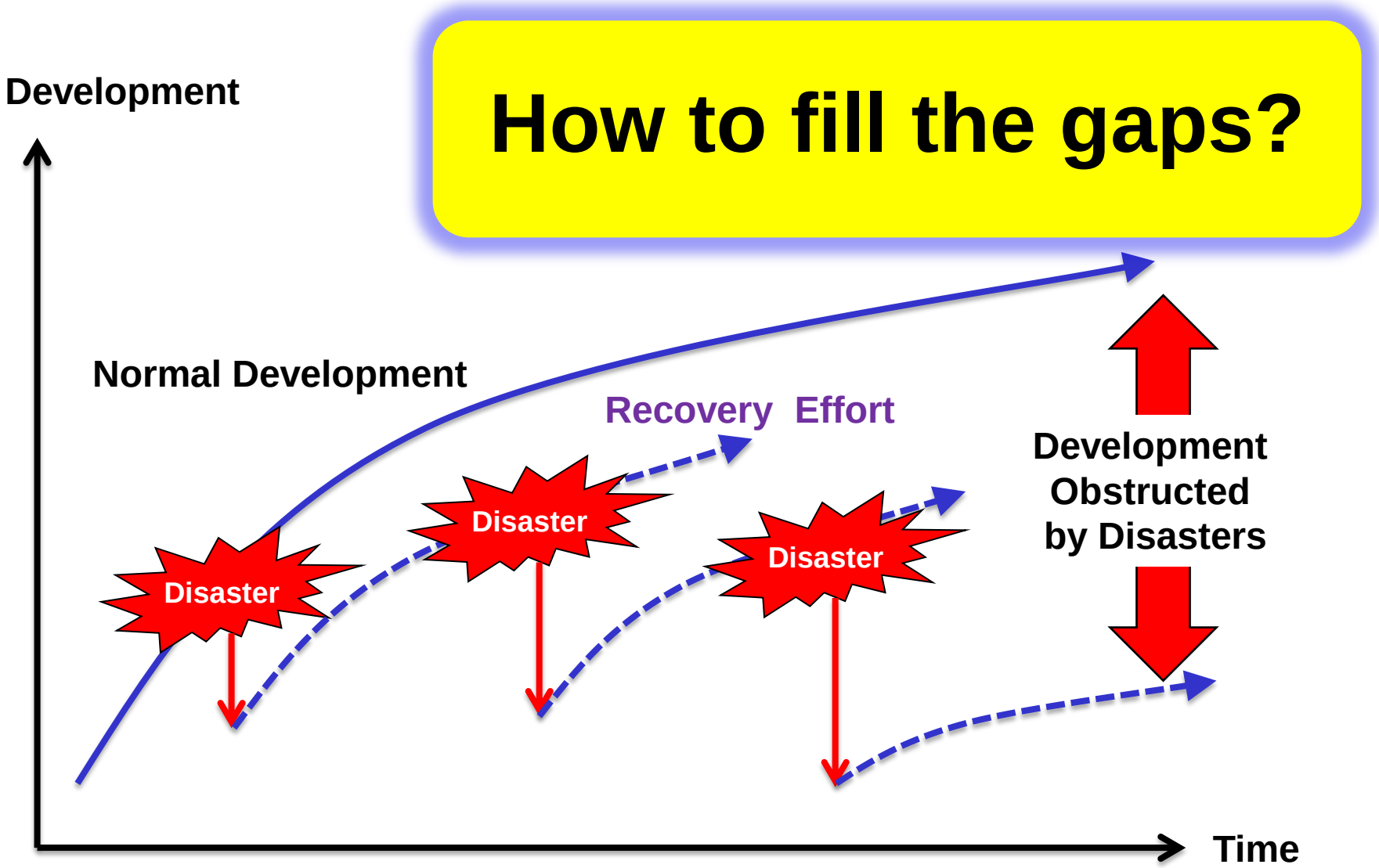
Japanese Experiences

Why Japan can dedicate on Disaster Risk Reduction

- **Japan is one of the most natural hazardous country in the world.**
- **More than 50% of population, living in the flood plain**
- **More than 75% of whole asset located in the flood plain**
- **How to prepare typhoon, flood, earthquake and tsunami**
- **This is our countries key survival issue**
- **In the same time, one of the most technology oriented developed country.**

Development Obstructed by Disasters



History of flood control investment for Tone River (400years ago)

Up to 15th Century, Tone River crossed the Kanto Plain from north to south and flew into Tokyo Bay

From 1594 to 1654, Tone River was connected to Pacific Ocean by eastward channel

- **After the flood in 1910, flood control measures in upper and middle reaches has changed from "flood control allowing inundation" to "sequential levees confinement"**
- **After this change, the maximum discharge in the Tone River Channel has increased, which became the main challenge of flood control in Tone River Basin**

Source: Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism, Japan

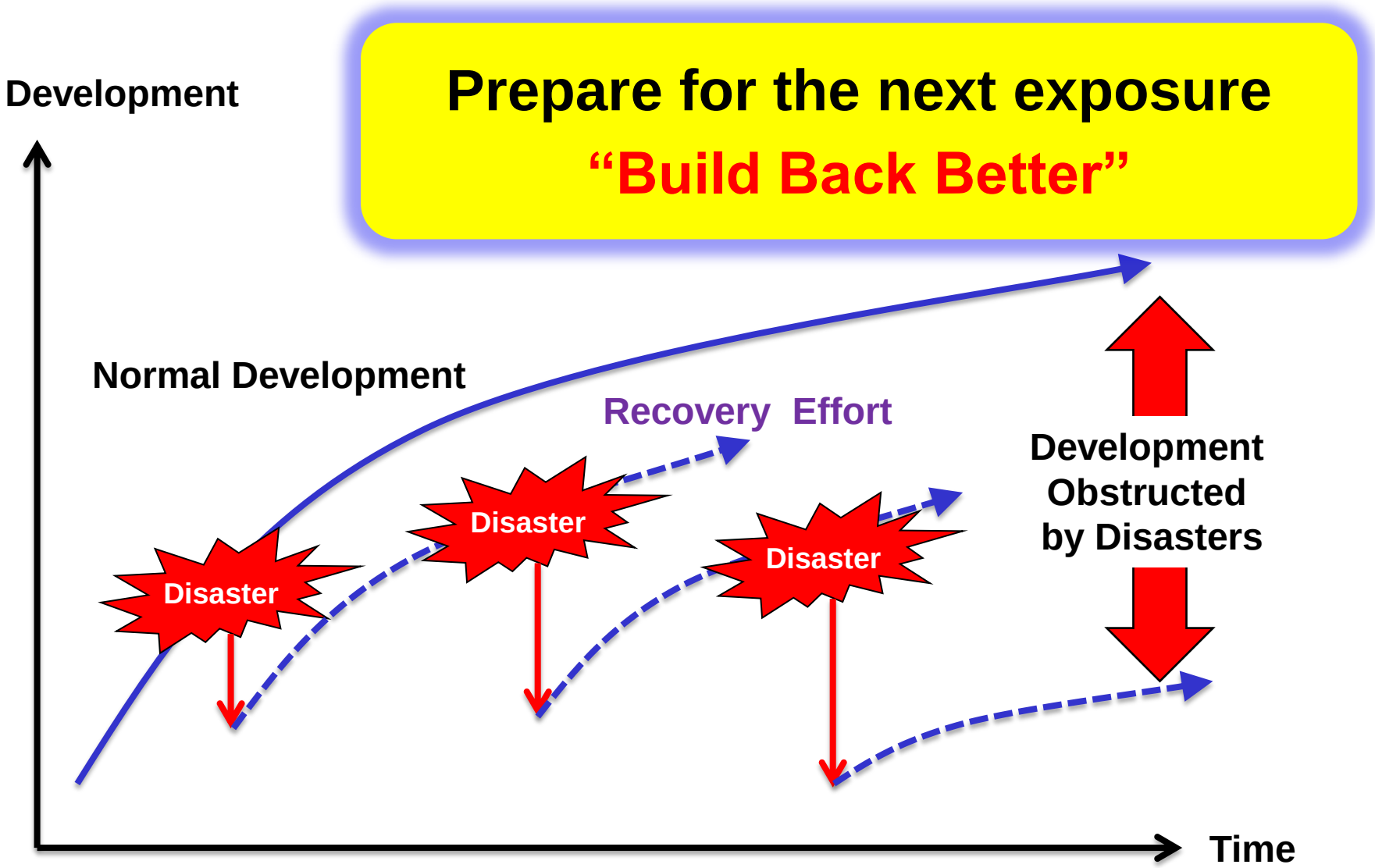
Ise Gulf Typhoon, 21 Sep. 1959 Japan

- Max pressure 895 hPa
- Max Wind Speed 75m/s,
- Casualties 5,238

- Almost same magnitude of Philippines Typhoon Yolanda 2013

Ise Gulf Typhoon, 21 Sep. 1959 Japan

Development Obstructed by Disasters

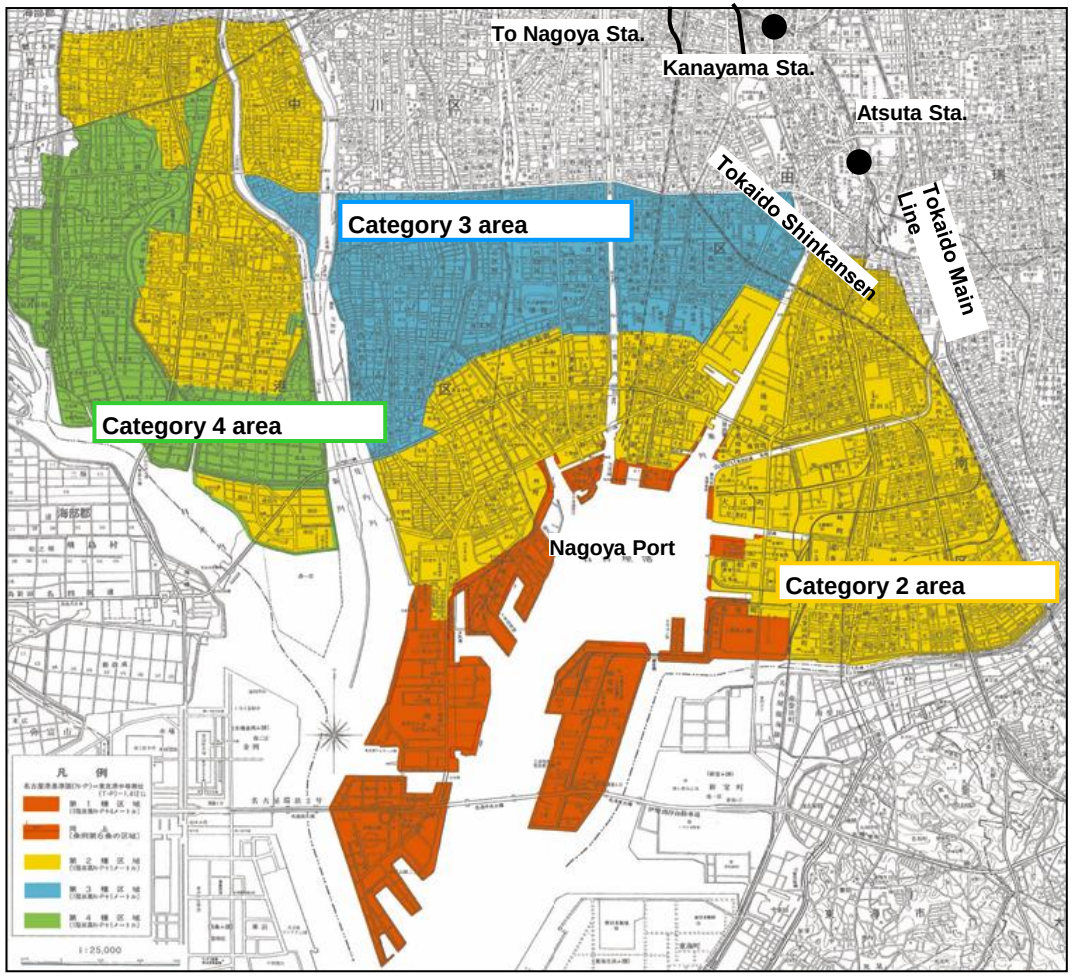


Nagoya Area, after Typhoon 1959, New Land Use Regulationsc

Article 39 of the Building Standards Act, “Disaster Hazard Areas”

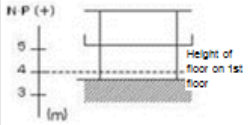
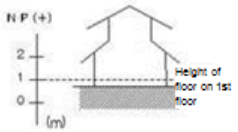
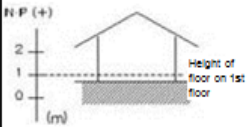
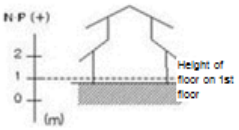
Costal disaster-prevention areas in Nagoya

* Where schools, hospitals, meeting grounds, public offices, welfare facilities for children, and other public architectures located in areas of Categories 2 – 4 are concerned, one or more residential spaces will be placed on the architecture with the floor height of the first floor of N・P(+) 2 m or higher, and with the height of N・P (+) 3.5 m or higher.



Source: Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism, Japan

New Building Code applied to the Land Use Regulations

	Description of area	Height of floor on 1st floor	Restrictions on structure	Graphics
Category 1 area	Areas on the sea side from tide barriers. Chiefly coastal reclaimed industrial area.	**N/P (+) 4 m** or higher	Any wooden structures will be prohibited. In the areas which are within 50 m from the coastal line or river bank and specified by the mayor, construction of any structural buildings with residential rooms, hospitals, welfare facilities for children, etc. will be prohibited. (Structural buildings other than wooden ones, where the floor height of residential spaces, etc. is N/P (+) 5.5m or higher may be constructed.)	
Category 2 area	Areas already urbanized before Isewan Typhoon, and those urbanized after the typhoon are included. The land as a whole is being used for similar purposes.	N/P (+) 1 m or higher	Any residential spaces will be placed on the second or higher floor. The restriction may be relaxed if any of the following three conditions is satisfied: 1: The floor height of one or more residential spaces on the 1st floor will be N/P (+) 3.5m or higher. 2: A structural building with 2 or more stories will be built on the same premises. 3: An evacuation room and facilities will be installed, if the total floor area is 100 m² or less.	
Category 3 area	Areas already urbanized at the time of Isewan Typhoon, and located inland. Thus they do not require strict regulations	N/P (+) 1 m or higher	—	
Category 4 area	Urbanization-restricted areas	N/P (+) 1 m or higher	Any residential spaces will be placed on the second or higher floor. The restriction may be relaxed if any of the following two conditions is satisfied: 1: The floor height of one or more residential spaces on the 1st floor will be N/P (+) 3.5 m or higher. 2: A structural building with 2 or more stories will be built on the same premises.	

Source: Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism, Japan

Nagoya Area, after Typhoon 1959, New Land Use Regulationsc

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Costal disaster-prevention areas in Nagoya

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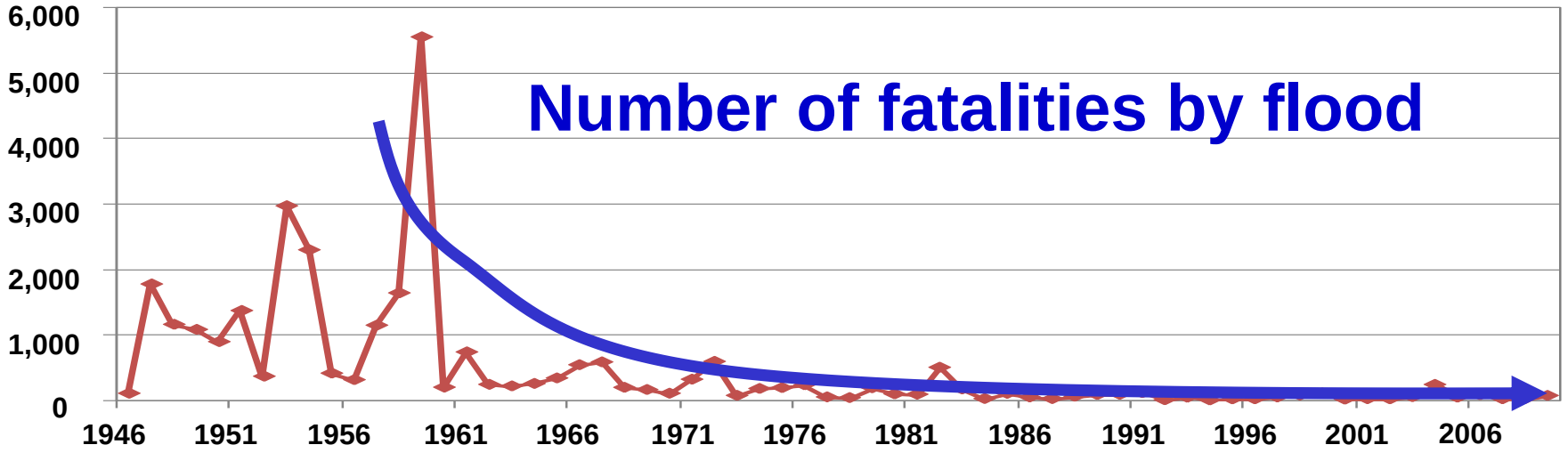
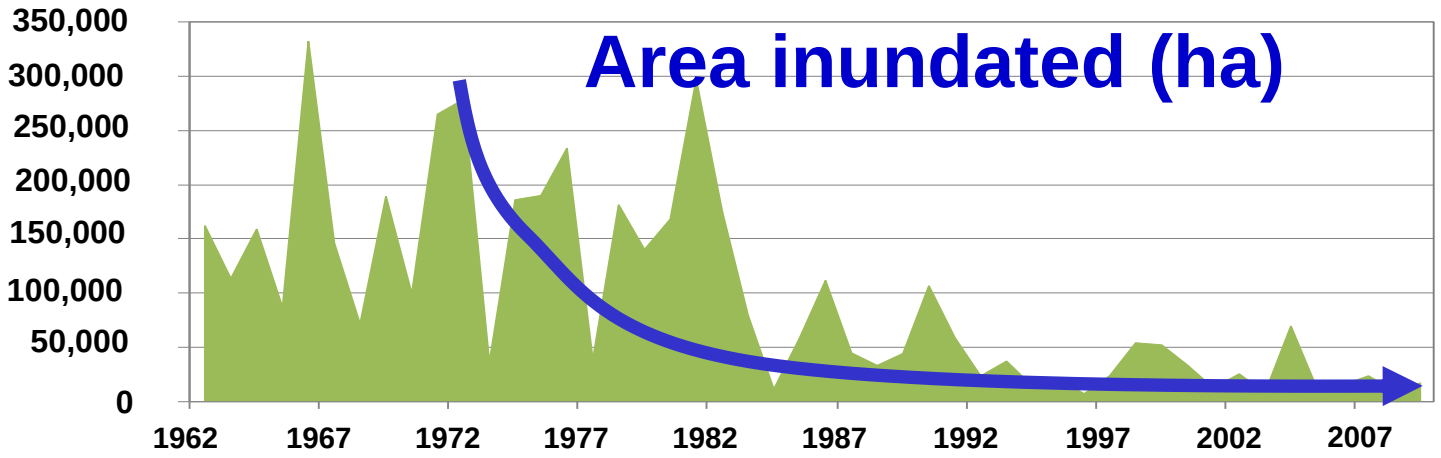
P (+) 3.5 m or higher.

Prevent to create new risk which will be induced future by the economic growth

Source: Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism, Japan

Reduction of flood damages in Japan by continuous investment

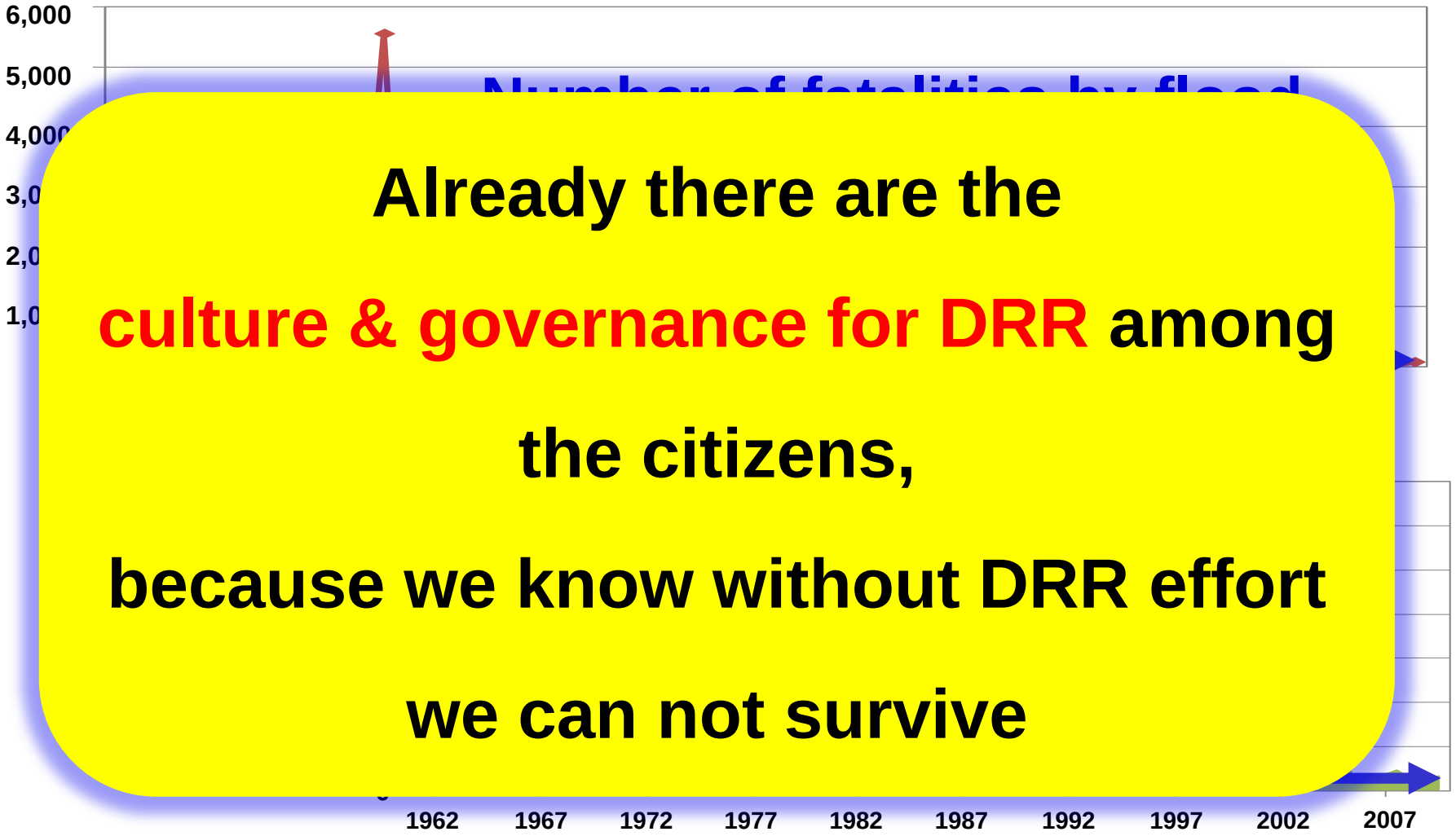




Number of fatalities and inundation area have dramatically been reduced in Japan due to continuous investment in and efforts for flood mitigation.

Source: Water Disaster Statistics, Ministry of Land, Infrastructure Transport and Tourism

Reduction of flood damages in Japan by continuous investment



Already there are the

culture & governance for DRR among the citizens,

because we know without DRR effort we can not survive

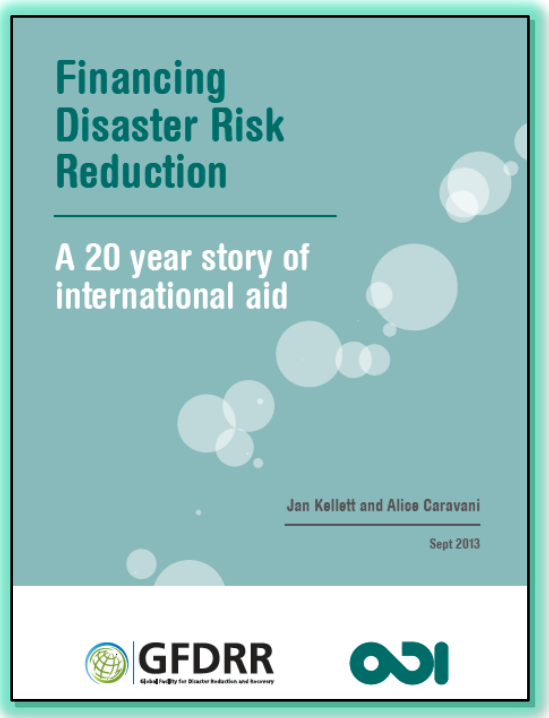
Number of fatalities and inundation area have dramatically been reduced in Japan due to continuous investment in and efforts for flood mitigation.

Source: Water Disaster Statistics, Ministry of Land, Infrastructure Transport and Tourism

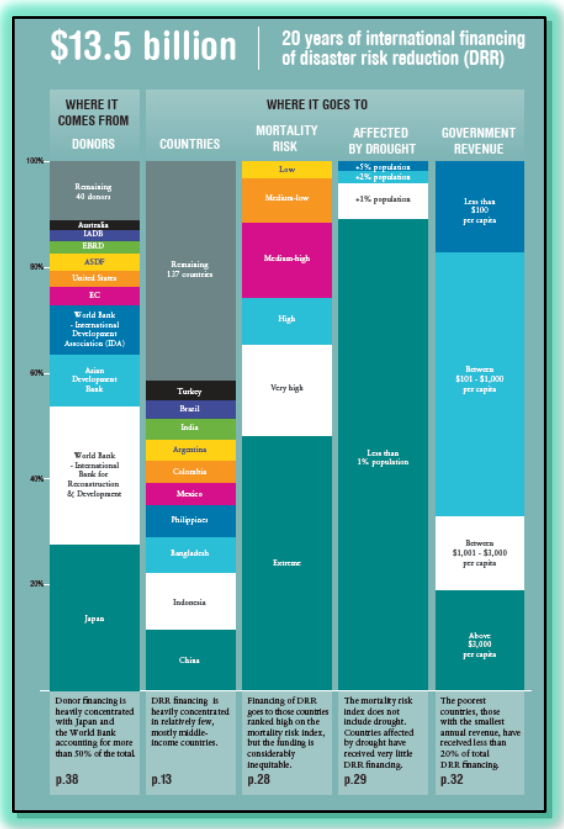
JICA's Overseas ODA, Official Development Support Experiences

Japan as a world top donor for DRR

- **GFDRR & ODI reports, 20 years of international financing of disaster risk reduction (DRR)**
- **Donor financing is heavily concentrated with Japan and the World Bank accounting for more than 50% of the total.**



1991-2010



Total $13.5 billion

20 years of international financing of disaster risk reduction (DRR)

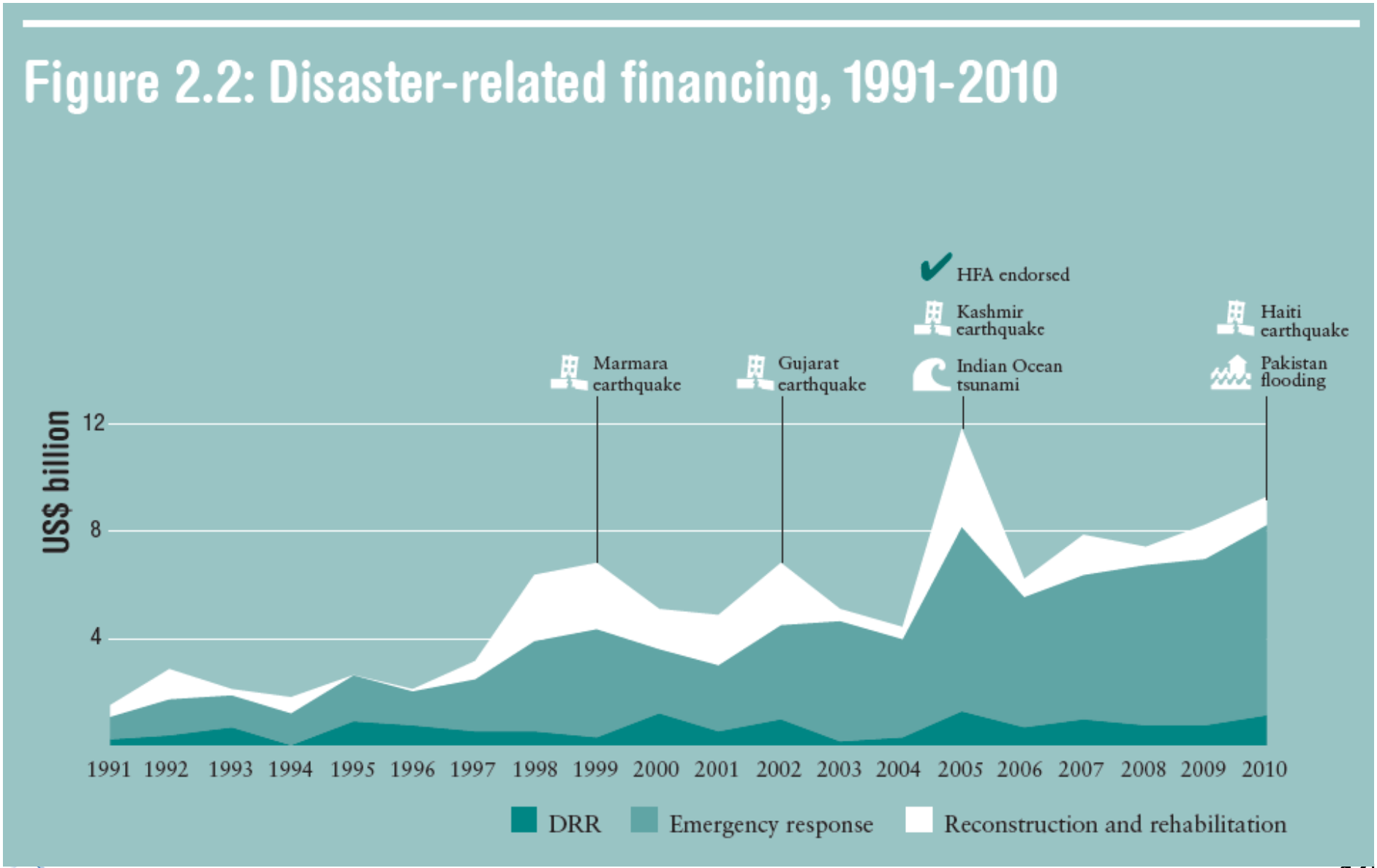
World Bank

$ 3.57 billion = 25.7%

Japan

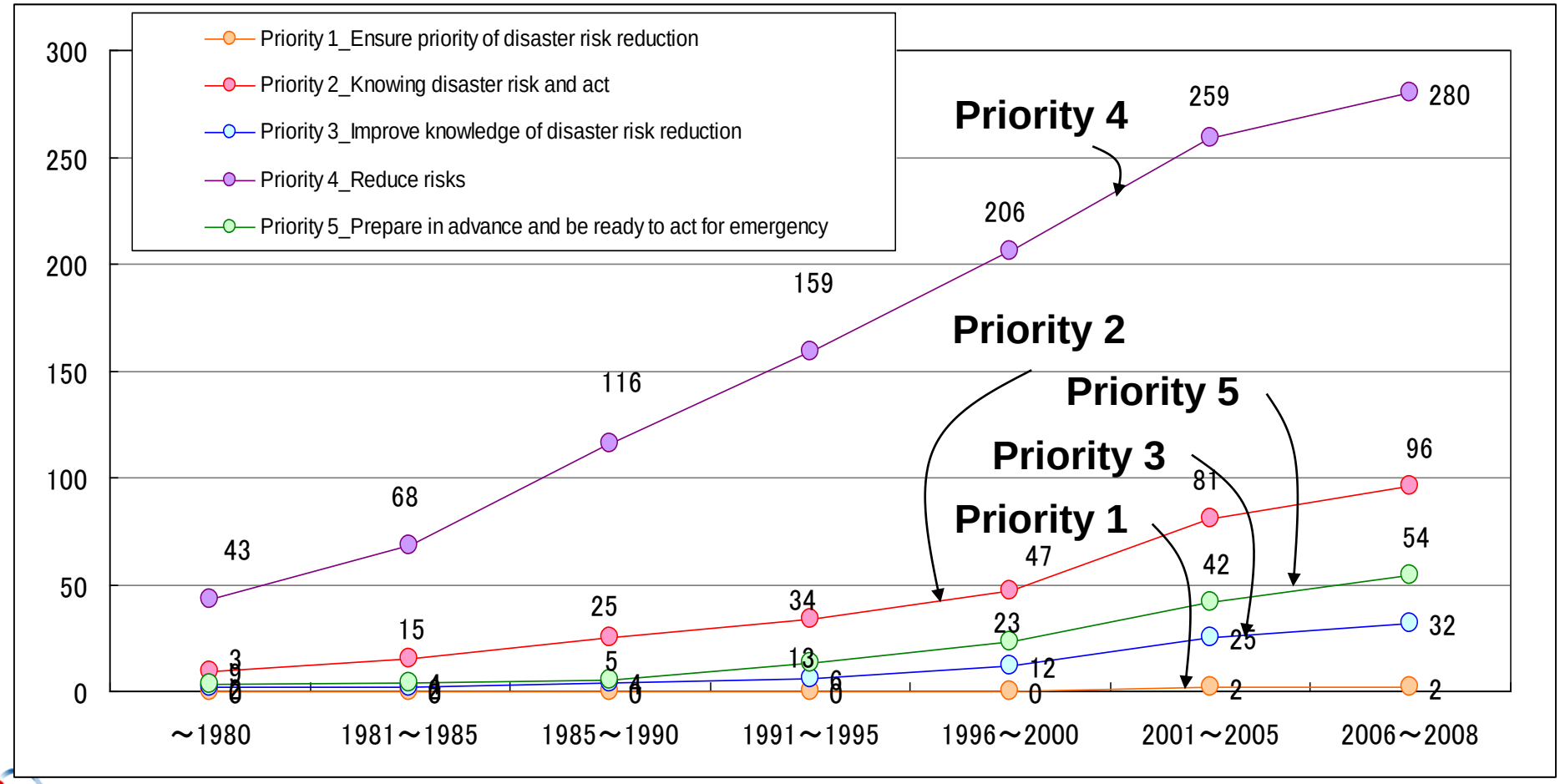
$ 3.75 billion = 27.6%

Pre-investment is much Cheaper than recovery cost, but ・・・・・・



JICA's Support meet to the Priority Action

- **The projects related to priority action 4 are increasing rapidly compared to others.**
- **It entails the best mix of structural and non-structural measures.**

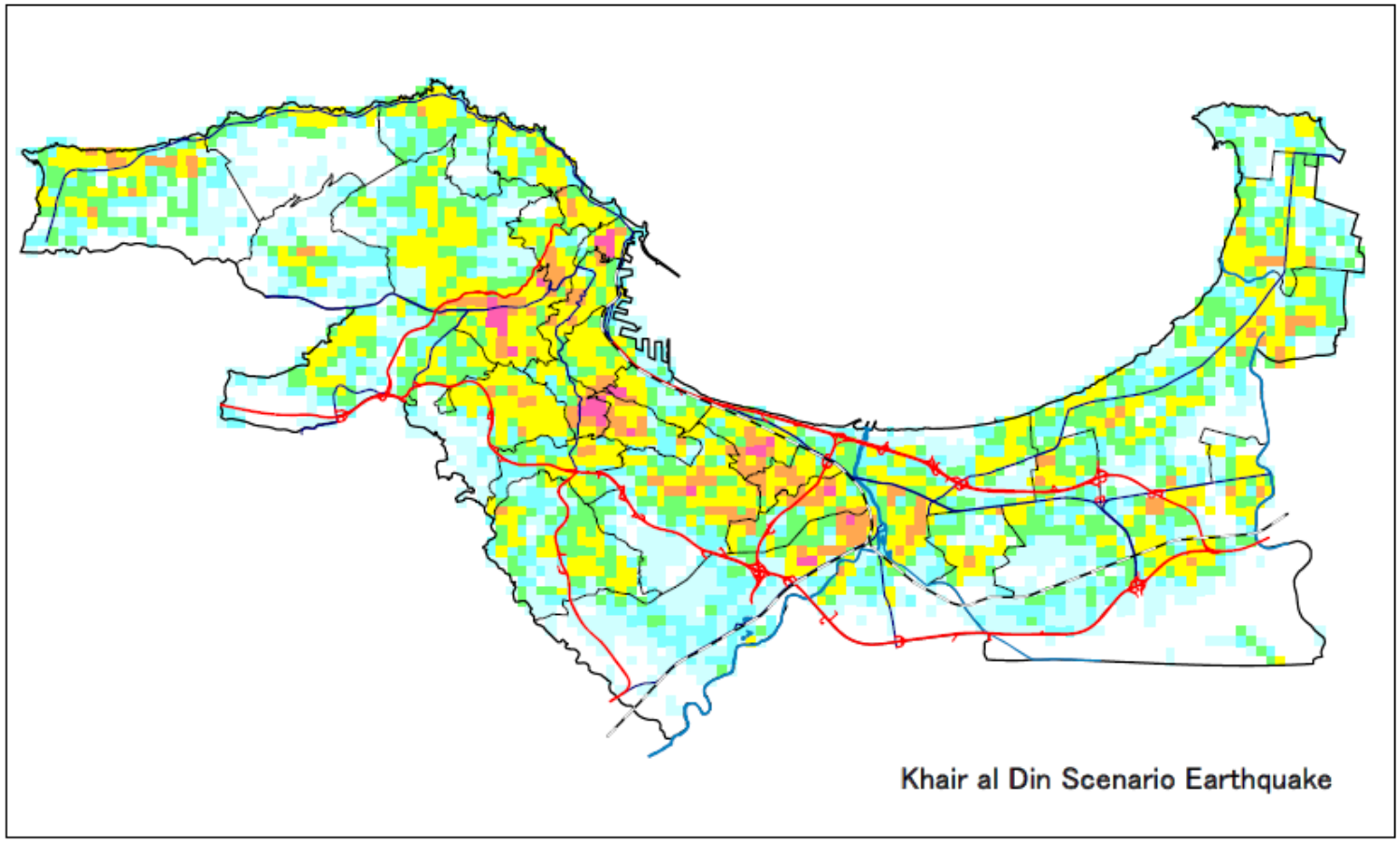


Example of
Practical Knowledge

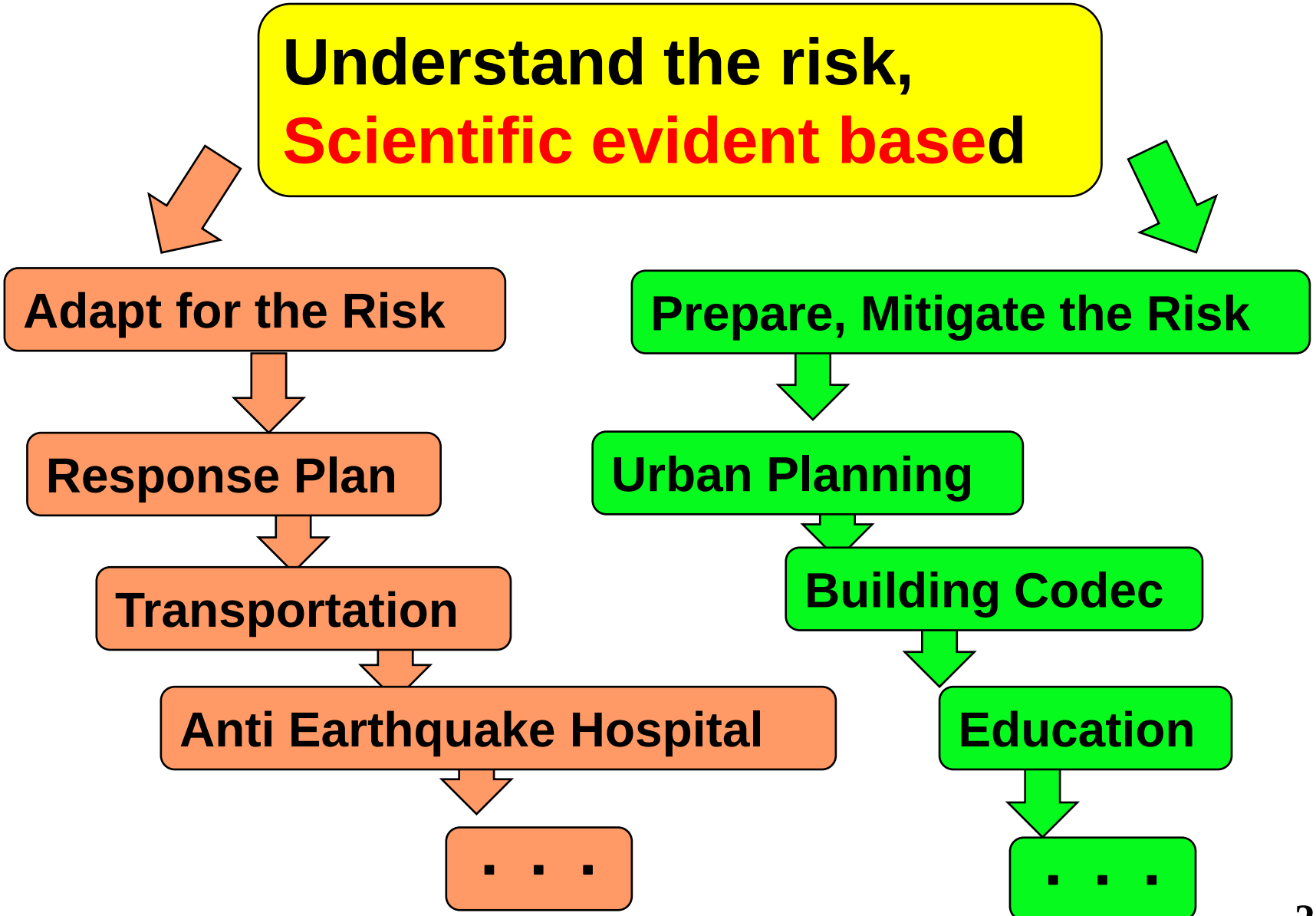
Example of Practical DRR Support

Understand the risk,
Scientific evident based

Algeria Seismic Micro Zoning Survey
damages of building



Example of Practical DRR Support



Tokyo is still preparing for the coming Mega earthquake with urban planning

- **Change fire hazard wooden houses to anti-burn city block**

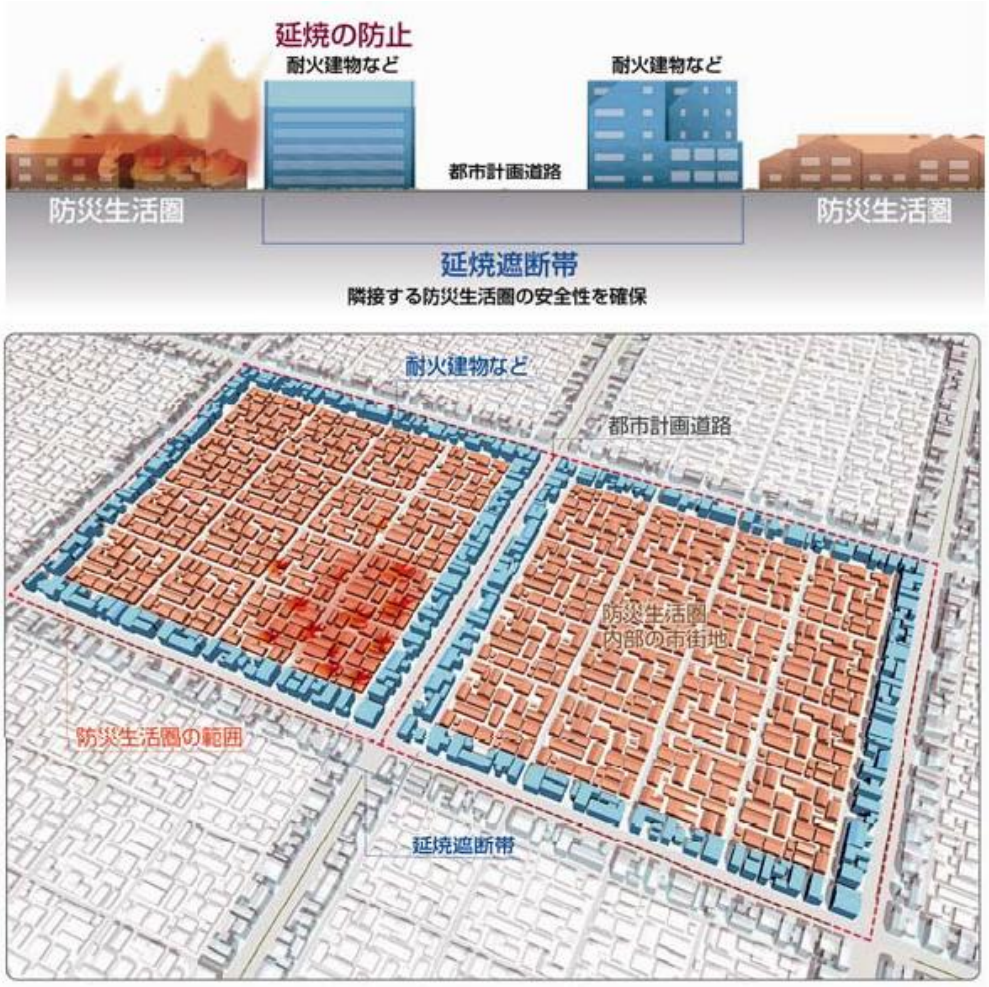
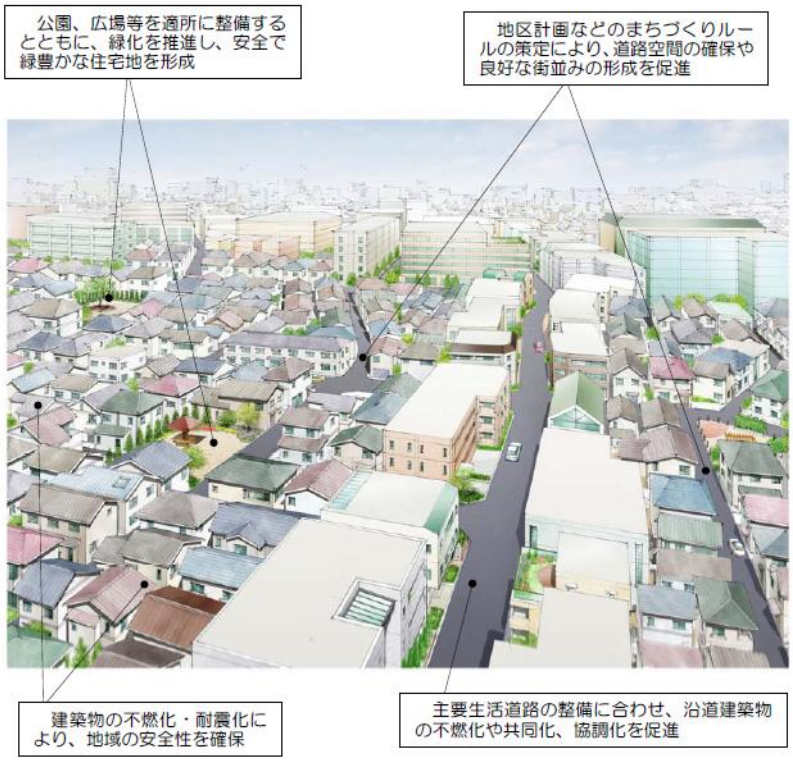
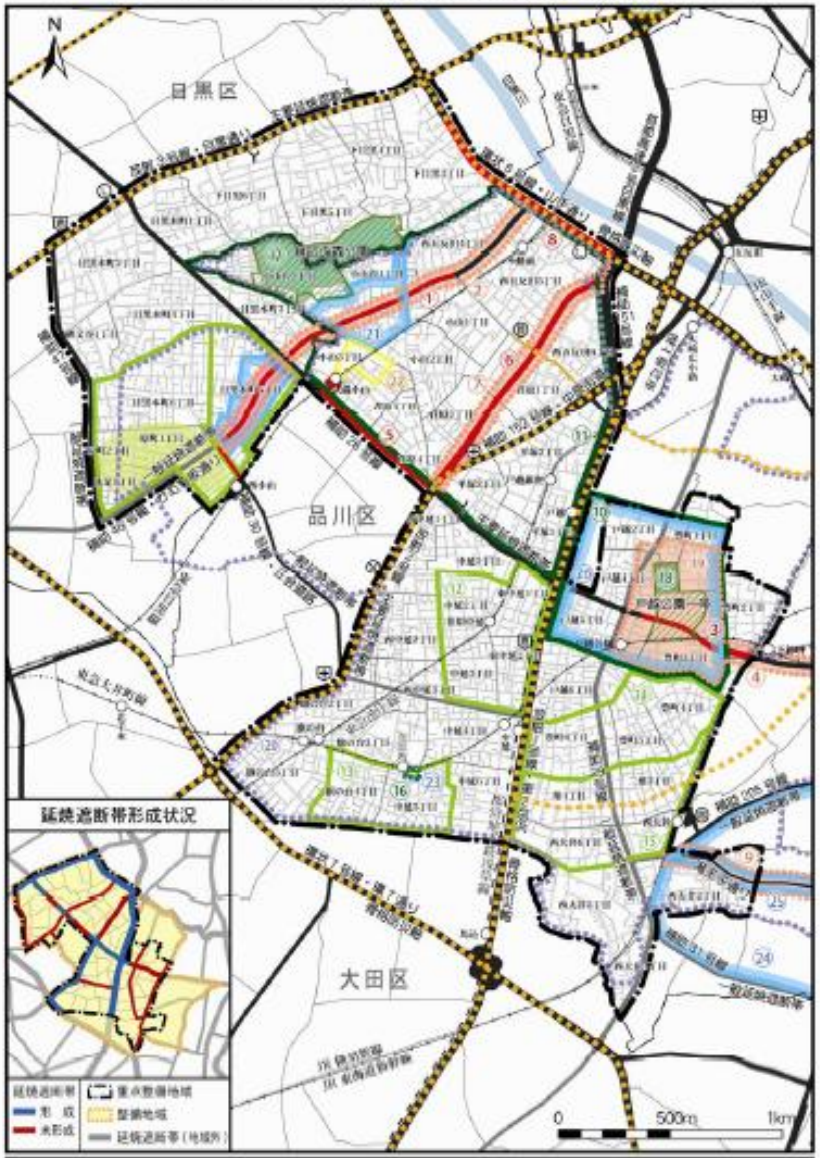


図２　防災生活圏と延焼遮断帯のイメージ



2. 林試の森周辺・荏原地区整備計画図（品川区）



町名	品川区	荏原1～4丁目、小山1～3丁目、小山台1～2丁目、戸越2、4～6丁目、中延1～6丁目、西大井2、4～6丁目、 西五反田4～6丁目、西中延1～3丁目、旗の台2～5丁目、東中延1～2丁目、平塚1～3丁目、二葉3～6丁目、豊町1～6丁目

2. 林試の森周辺・荏原地区（品川区） 取組例

戸越公園周辺の整備

・防火地域指定による不燃化の促進
・都市防災不燃化促進事業による不燃化の促進
・防災生活圏促進事業による防災広場の整備
・国文学資料館跡地の整備促進
・地区計画の導入を検討

▼

避難場所としての機能強化
避難場所までの避難経路の整備

補助 26 号線と沿道の整備

・街路事業による道路の整備
・都市防災不燃化促進事業による沿道の不燃化

▼

延焼遮断帯の早期形成

荏原町駅前周辺の整備

・特定防災街区整備地区の指定及び防災街区整備事業の実施による建築物の共同化・不燃化
・木密事業による主要生活道路や公園の整備と建築物の不燃化・共同化の促進

▼

駅周辺の防災性向上

街区内部の整備

・木密事業による主要生活道路や公園の整備と建築物の不燃化・共同化の促進

▼

街区内部の防災性向上

新たな防火規制の実施

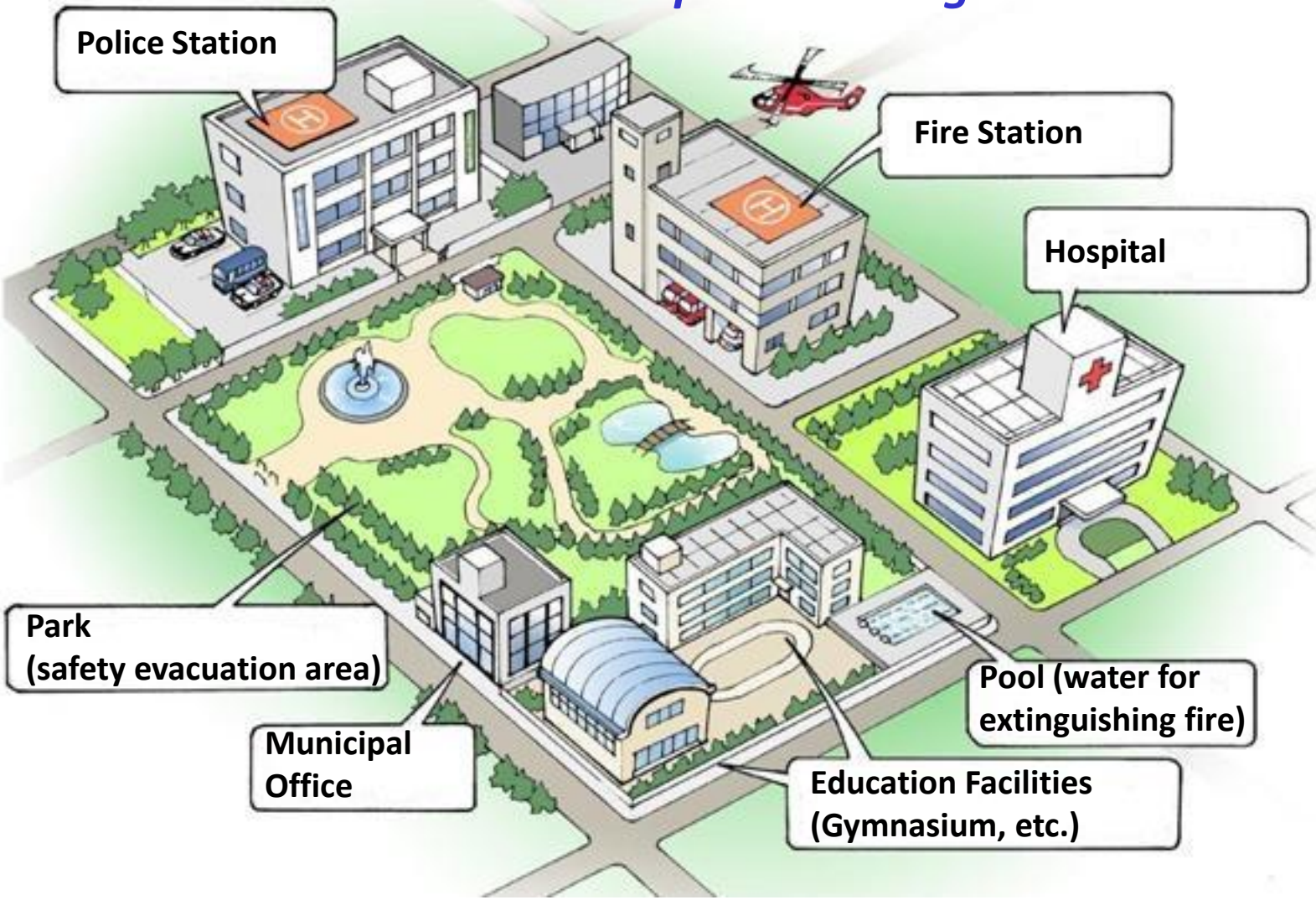
・建替えに合わせ、建築物の不燃化を促進

▼

市街地の防災性向上

Plan for Resilient Public Utilities Complex

Maintaining a chain of command and public services and offering evacuation area are the most important things



Example of Japan's Knowledge : Lifeline

＜Water＞

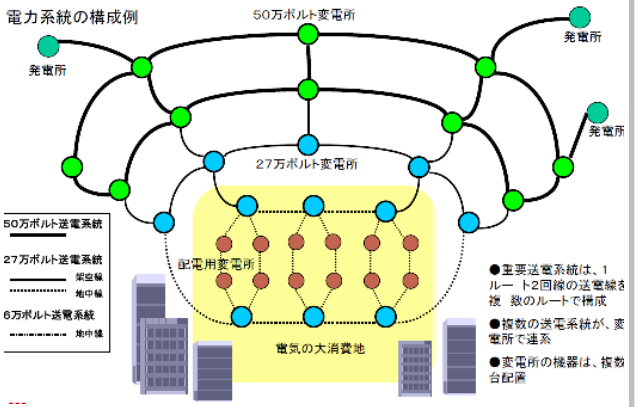
・Quake-resistant Ductile Cast Iron Pipe

Ishinomaki City, Miyagi Prefecture

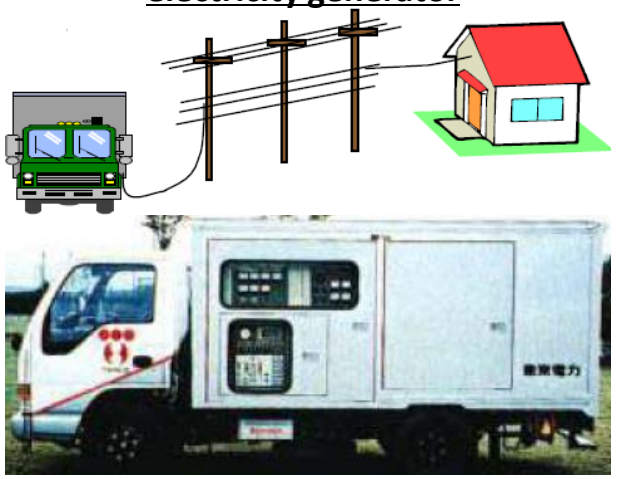
・Emergency power generator

＜Electricity＞

・Backup System of Electric System



・Vehicle-mounted Mobil electricity generator

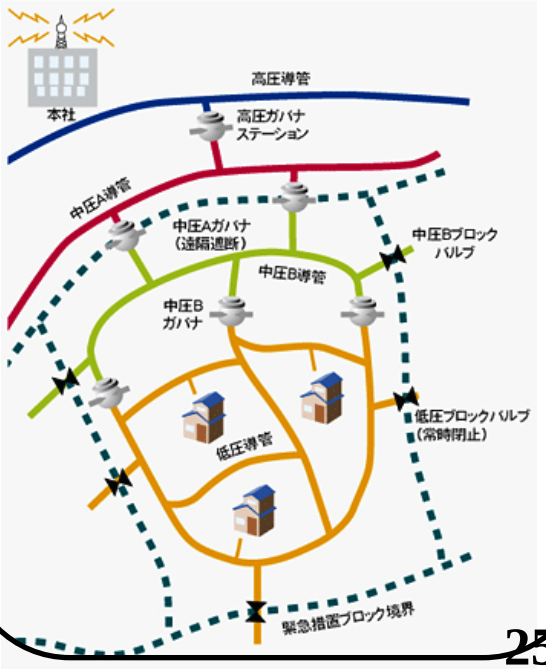


＜Gas＞

・Household Gas-meter

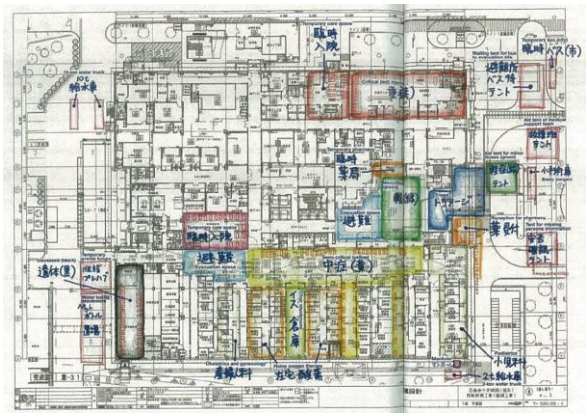
Gas supply is automatically cut at an outbreak of earthquake registering 5

・Valve remote emergency shut-off system



Example： Ishinomaki Red Cross Hospital

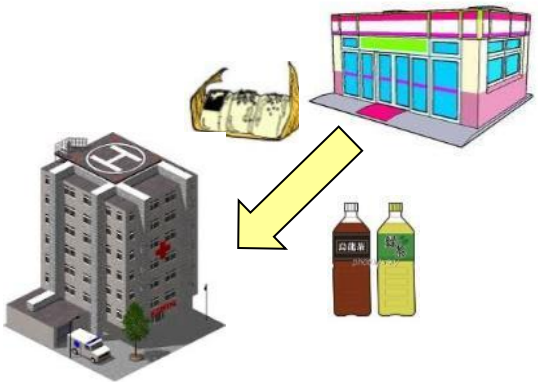
Plan → Design → Training



▪preparation of manual on emergency medical treatment

▪access road to highway in emergency time

▪disaster medical training



▪contract of food supply with food store in emergency time

▪base-isolated structure

▪disaster medical training by use of helicopters

Enhance research & preparation
level up the civil minimum after disaster

- C:\DATA\DATA\日本の知見\耐震実験\www.bosai.go.jp\hyogo\movie.html

How about the magnitude of big earthquake?
E/Q happens with long return period
Lesson learned of E/Q transferred to next generation?
If no, you can learn from examples

- .bosai.go.jp\hyogo\movie.html

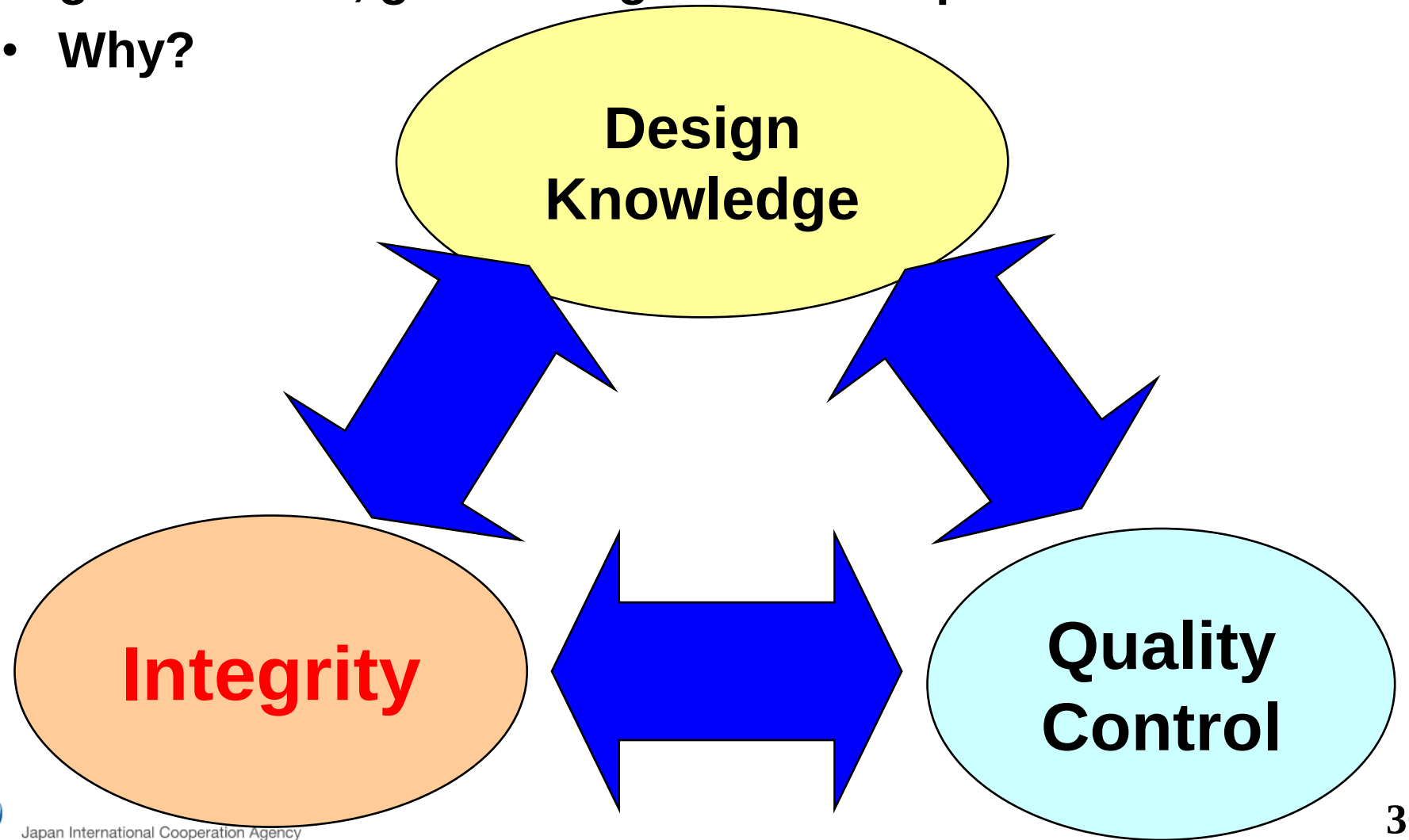
Every Natural Disaster has forerunning phenomenon then we can predict disaster & let people evacuate

実写
奈良県

Even debris flow
We can predict

Three factors to be level up

- There are a big gap between deskwork and groundwork, good design but worst product
- Why?



JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood

Pass

JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood 1

JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood 1

JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood 1

- **Was there anything out of our mind?**

The ability to recognize risk and take action properly

Risk Literacy

JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood 1

JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood 2

- **Was there anything out of our mind?**

Continuous Adaptation to Change

continuous improvement to deal with changing risk

JICA's Lesson Learned from Mega Disaster from 2011 March 11, Tsunami & Thailand Flood 3

- **Was there anything out of our mind?**

"multi-sector" and/or "multilayer of defense

Redundancy

Mainstream DRR as a cross spectral issue into the every planning fields

Another Viewpoint of Mainstreaming Disaster Risk Reduction: Cross-sectional Function

Rural Development + DRR consideration

Myanmar: The Project for Preservation of Farming Area for Urgent Rehabilitation of Agricultural Production and Rural Life in Areas Affected by Cyclone Nargis (2009-2011)

In response to the Cyclone Nargis, which caused severe damage to Myanmar, JICA together with Myanmar Ministry of Agriculture and Irrigation implemented a project focusing on recovery of agricultural production as well as farmland preservation. Within the scope of this project, JICA not only implemented demonstration projects to formulate master plan for restoration of agriculture production and rural development, but also restored the embankments to protect the agriculture production areas from saline water intrusion, in order to resist future cyclone and flooding disaster.

Repaired floodgate of a ring dike

Repaired wind break mangrove forest

Highway Construction + DRR consideration

Cambodia: The Project for the Improvement of the National Road No.1 (2002-2012)

National Road No.1 connects the Cambodian Capital Phnom Penh and Ho Chi Minh City, the economic center of Vietnam. Historically, the road had been continuously affected by floods. In 2000, the National Road No. 1 was inundated for more than 1,000km by a major flood, which caused severe disruption in the economic activity as well as negatively affected the everyday life of people. JICA extended its supported to raise elevation of the road surface, which provides safe traffic flow as well as an evacuation space for the people during flood.

Before improvement

After improvement

Industrial Development Regional Cooperation + DRR consideration

ASEAN: "Natural Disaster Risk Assessment and Area Business Continuity Plan (BCP) Formulation for Industrial Agglomerated Areas in the ASEAN Region" (2013-)

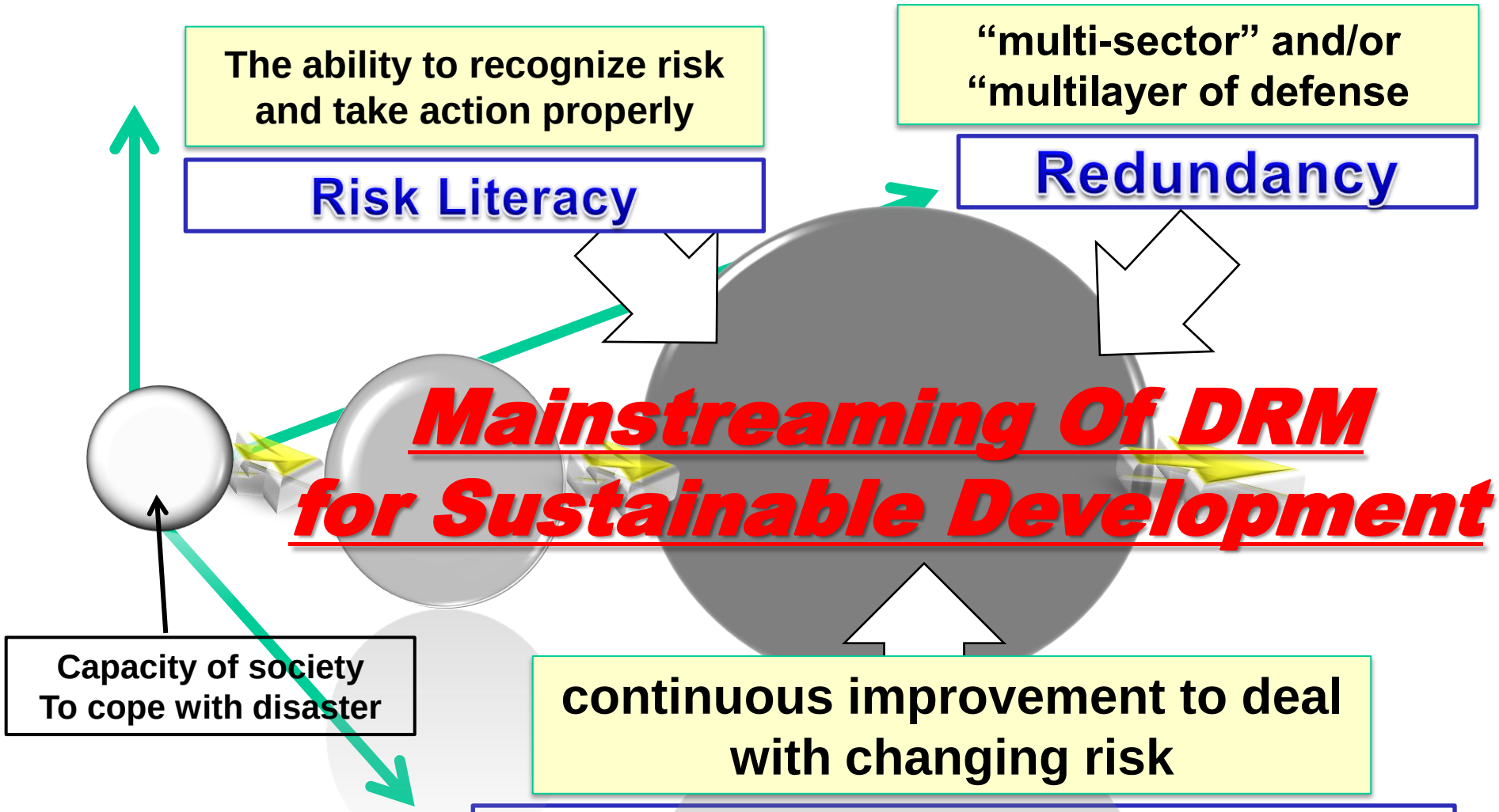
In 2011, record-breaking rainfall caused large scale flood in Chao Phraya basin, including Bangkok and Ayuttaya, an industrial agglomerated area, which is the economic engine of Thailand. The flood caused devastating damage not only to the economic activity of Thailand but to the whole region since supply chain of various products is interlinked. JICA responded to this disaster in a comprehensive way by immediately sending-in relief supplies as well as by dispatching a needs assessment team and a drainage team to support Thai Government respond to the emergency situation. Followed by this immediate emergency action, JICA extended its support to develop a comprehensive multi-sector master plan to cope with flood risks in the future with viewpoints of agriculture sector and industrial (private) sector.

JICA Drainage Team in action

JICA Flood Management Master Plan Team

JICA's Lesson Learnt from MEGA Disaster
=2011 March 11, Tsunami & Thailand Flood=

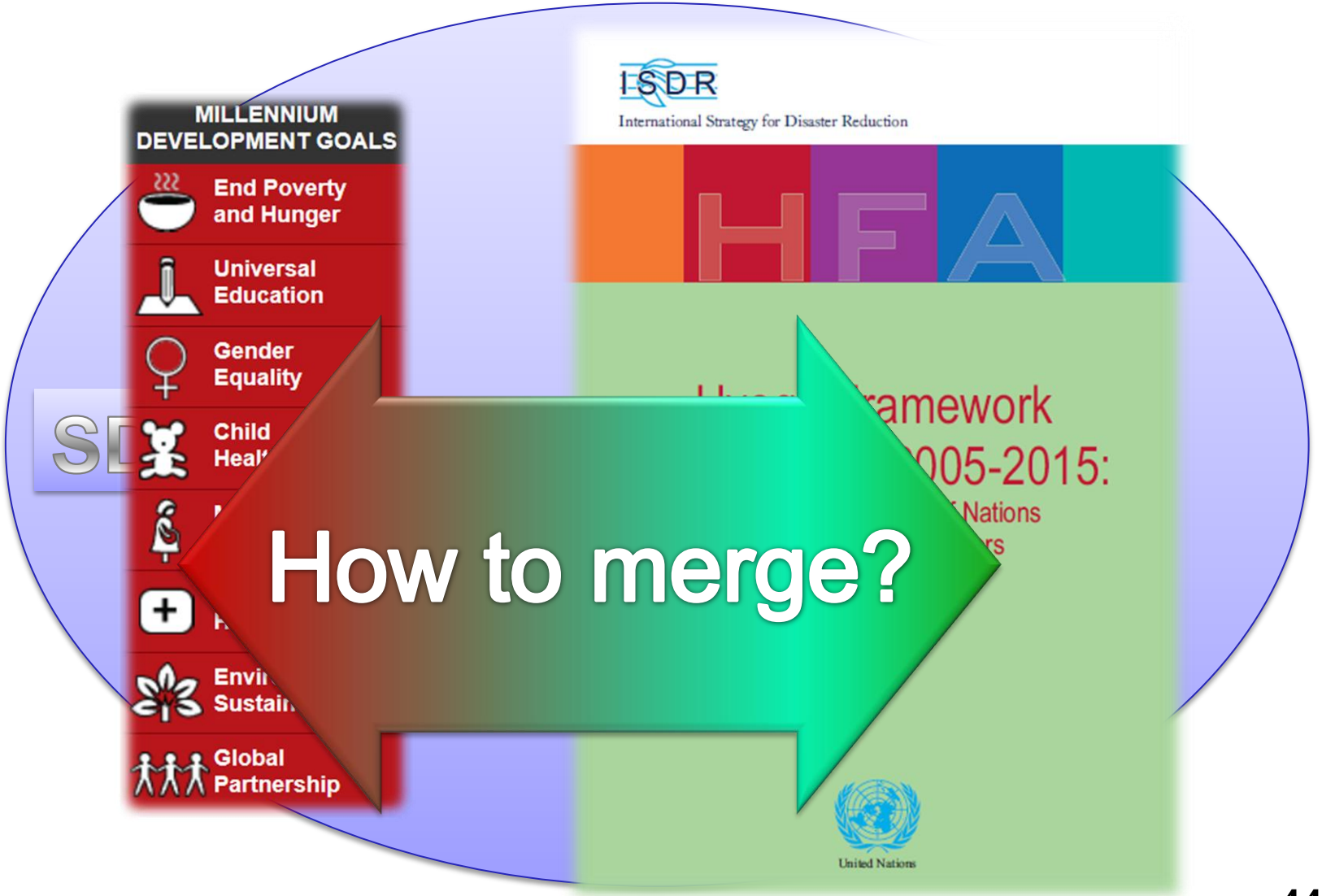
- **Was there anything out of our mind?**



Back?

Conclusion

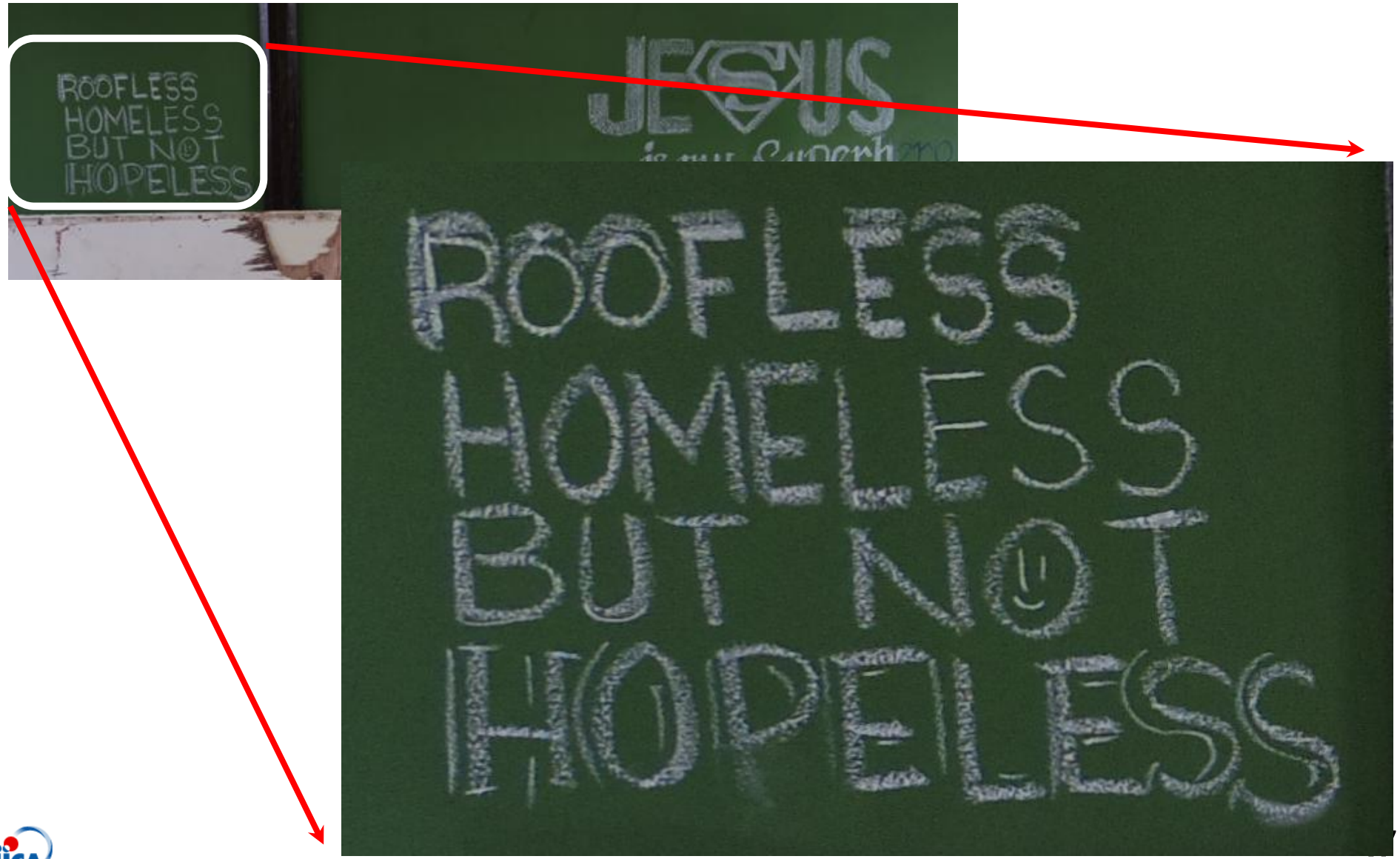
Do not think DRR as cost, but asset for the Development



Sri Lanka : High level discipline
24 hours observation by the residents, continuous best effort, who called gage keeper

Spirits shown on the board of refuge shelter Philippines Leyte after Typhoon Yolanda

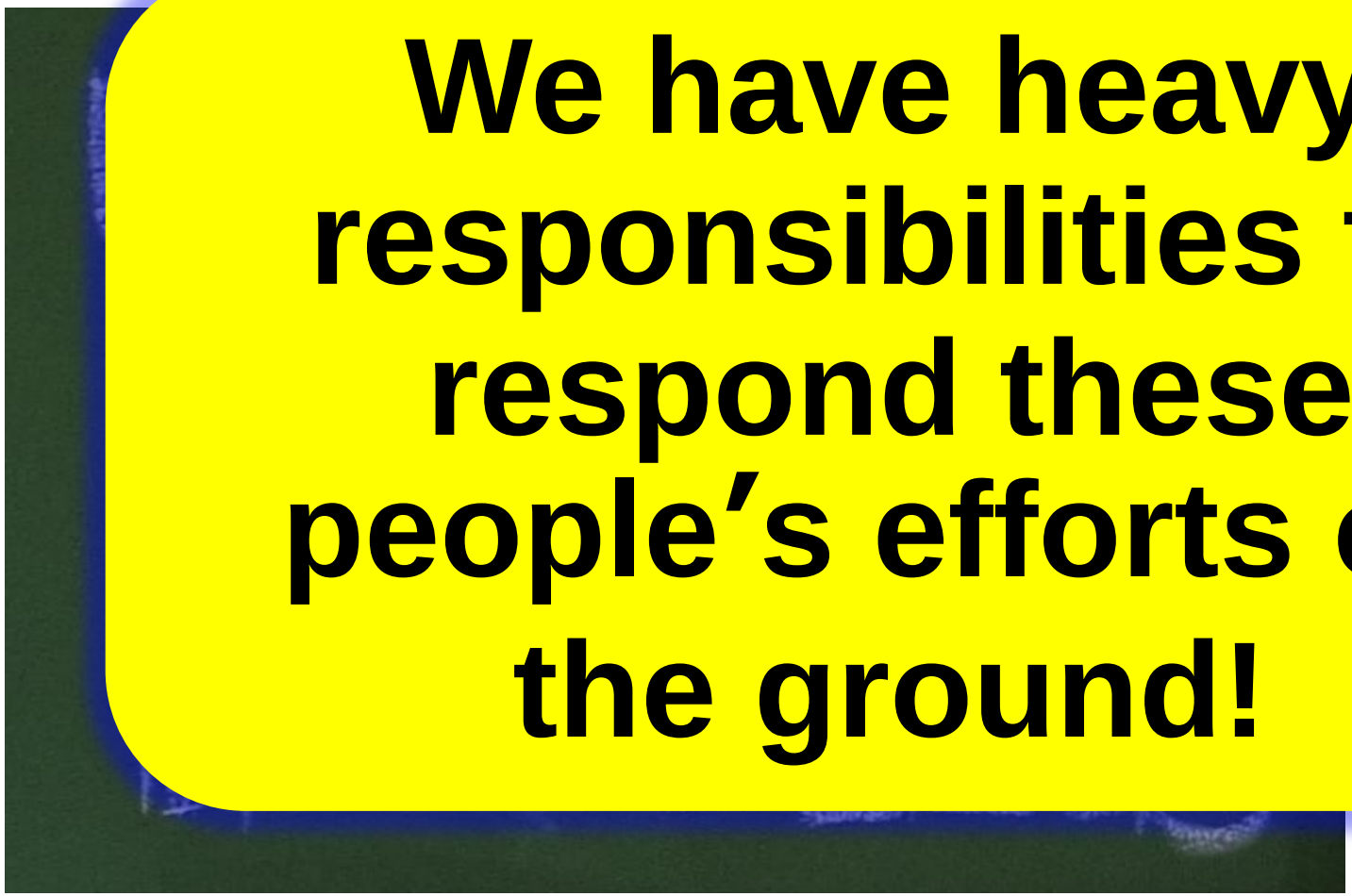
Spirits shown on the board of shelter Philippines Leyte after Typhoon Yolanda



Reply to the people's request, Philippine Government Reconstruction Plan

Most important thing is the "Leadership" to Mainstream DRR into the Top Priority

Spirits shown on the board of shelter Philippines Leyte after Typhoon Yolanda



We have heavy responsibilities to respond these people's efforts on the ground!

JICA's Main Propose to HFA2

- **Importance of pre-disaster prevention & mitigation investment**
- **Importance of central government role to lead the mainstreaming DRR into the government top priority**
- **As a second best selection, use the disaster as a trigger to "Build Back Better"**


Thank you for your attention