Disaster Impact on the Environment and Disaster Management

Yasuhiro TANAKA

May 12, 2022

JICA expert, Advisor for Disaster Risk Management, Vietnam Disaster Management Authority, Ministry of Agriculture and Rural Development

Introduction

Academic Background

M.S. in Environmental Engineering at Kyoto Univ. in 2004 Master of Pacific International Affairs at UCSD in 2013

Employment Record

Apr.2004-present:

Ministry of Land, Infrastructure, Transport and Tourism, Japan (MLIT)

- River Planning
- River Environment
- Regional Planning (Hokkaido Development Planning)
- International Cooperation and Overseas Projects

Jul.2019-present:

JICA expert for Disaster Risk Management

in Vietnam Disaster Management Authority (VNDMA),

Ministry of Agriculture and Rural Development (MARD)



Today's main topics

- Overview of natural hazards
- Natural hazards in Japan and Vietnam
- Disasters and Environment
- Roles and responsibilities of government for DRR
- JICA's cooperation for DRR in Vietnam
- SDGs and DRR

What is the impact of natural disasters?

What are the characteristics of each region? 5/49



- In Asia, the rate of death from Storm or Flood is higher than in other regions.
 - In Latin America, the death toll from earthquakes and tsunamis is the highest, followed by wind and flood damage such as storms and floods.
- In Africa, more than 90% of the deaths are due to drought.

Source: mundi October 2017

Water-related disasters occur around the world ^{6/4}



Future risks and adaptation IPCC Assessment Report 5 (2014)



7/49

Future risks and adaptation

IPCC Assessment Report 5 (2014)



Similar Proverbs between Japan and Vietnam

Japan "地震・雷・火事・親父" (<mark>Earthquake, Lightning</mark>, Fire, Father(<mark>Storm</mark>))

- Four most horrifying things for people

Vietnam

"Thủy,Hỏa,Đạo,Tặc/水・火・盗・賊"

(Water(Flood), Fire, Thief, Bandit)

- Four great disasters in life, which are strongly destructive, worrisome and difficult to avoid.

Natural Hazards in Japan

Typhoon Hagibis (2019)





Kanto-Tohoku torrential rain (2015)



Great Kanto Earthquake (Yokohama City, Kanagawa Prefecture)



Source: Tohoku Construction Association

Natural Hazards in Vietnam

Flood / Inundation

HANDICAPTAL

Coastal and Riverbank erosion

Cua Dai Beach

Typhoon tracking chart (1988-2017)

出典:「ベトナム国 防災セクター戦略策定のための 情報収集・確認調査 ファイナルレポート」(2018) Riverbank Erosion at Cai Rang, Can Tho in May 2015

Sedimental Disasters (Flashflood and Landslide)



Flood and Storm

- About 80% of the death toll and missing were caused by floods and storms.
- By region, damage in the central region, especially in coastal areas are remarkable



Storms, Floods and landslides in Sep-Oct. 2020

- From 6th October, 2020, the Central region observed prolonged heavy rains which caused serious inundation, floods and landslides.
- Over 3,000mm of rainfall were observed in several rain stations in the central region



Damages and Losses as of 17 November, 2020

deaths and missing

houses damaged

houses flooded

illion VND of economic loss billion USD) In 2020, in total 291 deaths and 66 missing. 40 billion VND of economic loss

13/49

What is disaster impact on Environment?



30 million m3 of earth and sand slid off in one day



Typhoon Hagibis (2019.10)

http://kouikishori.env.go.jp/archive/r01_typhoon19/progress/

Hokkaido-Iburi East earthquake(2018.9.6)

https://www.hkd.mlit.go.jp/ky/ki/kouhou/70th/history/03-22.html

15/49

20 million tons of disaster waste and 110 million tons of tsunami deposits were generated in 239 municipalities in 13 prefectures along the Pacific coast of eastern Japan (MoE 2014.4.25)



https://www.jiji.com/jc/v4?id=saigai-haikibutsu0001

http://kouikishori.env.go.jp/photo_channel/h23_shinsai/kariokiba/

Nature and Environment



Inland water channel environment in Hanoi





Topographical Change of Hanoi Structure of the business quarter and the Citadel under the Lê Trinh Dynasty (16th-18th century)



a Metropolis in the Making The Breakdown in Urban Integration of Villages

Tourist map at 1/23,000 Hanoi Carenga publisher, Image Google Earth 2012, map of the city of Hanoi, 1986 Vietnam Mapping Services 1/35,000

Ponds and lakes encroachment since 1986 in the central urban districts

River Environment improvement in Japan

Sumida River Tokyo, Japan

Shin-gashi river in 1970s?

Design Map for construction in 1923

Present Sumida river

.9

River Environment and Disaster Management

Concerns about the adverse effects of global pollution by plastic waste in the ocean on ecosystems, living environments, fisheries, tourism, etc.

Some waste are run off through rivers into the ocean

It might be effective to collect or prevent waste before running out

But....

Disaster Impact on Environment

Direct Impact

Natural Hazard

→Damage to the environment Change environmental condition Eg; volcanic eruption

 \rightarrow ecosystem change

Disaster Prevention, Mitigation

"Disaster prevention policy is to minimize the direct impact on social economic activities" Crisis/Risk management in each field "Natural Hazards are one of the risks to be taken into account for their management"

Change environmental condition

Indirect Impact

 \rightarrow Human activities

 \rightarrow Damage to the environment

Eg; Storm→tanker stranding

 \rightarrow oil leak

Natural Hazard

22/4

What are the roles and responsibilities of the government, private sector, and society for Disaster Risk Reduction?

Sendai Framework for Disaster Risk Reduction ⁴⁴ 2015-2030

- Adopted at the 3rd UN World Conference on Disaster Risk Reduction held in Sendai, March 2015, with the participation of 187 member countries;
- Guides the DRR efforts in the world from 2015 to 2030 as the successor of the Hyogo Framework for Action (2005-2015).

Sendai Framework for Disaster Risk Reduction 2015-2030 25/49

Sendai Framework for Disaster Risk Reduction 2015 - 2030

https://www.preventionweb.net/files/43291_sen daiframeworkfordrren.pdf

Contents

Preamble	9
Expected outcome and goal	12
Guiding principles	13
Priorities for action	14
Priority 1: Understanding disaster risk	14
Priority 2: Strengthening disaster risk governance to manage disaster risk	17
Priority 3: Investing in disaster risk reduction for resilience	18
Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction	21
Role of stakeholders	23
International cooperation and global partnership	24

Sendai Framework for Disaster Risk Reduction 2015-2030 26/49

Important policy focuses, such as mainstreaming DRR, prior investment, "Build Back Better", multi-stakeholders' involvement, people-centered approach, and women's leadership

Responsibility of States

DRR contributes for public welfare

Responsibility of States

From small to extra-Large

GFDRR: KNOWLEDGE NOTE 6-5 CLUSTER 6: The economics of disaster risk, risk management, and risk financing

Less

frequent

Damage

Basic concept for Disaster Risk Management

b) Disaster damage can be mitigated by nonstructural measures: cases in cyclone DRM in Bangladesh and flood management before the early modern period in Japan.

c) Structural measures can protect against frequent disasters: cases in flood management in the very early modern period in Japan.

d) Structural measures protect against disasters that occur every few decades: cases of tsunami management at the GEJE and current flood management in Japan. e) Tsunami damage will be mitigated by reconstructing resilient dikes and strengthening nonstructural measures.

30/49

Sendai Framework for Disaster Risk Reduction 2015-2030

Priorities for action

Priority 1: Understanding disaster risk

Priority 2: Strengthening disaster risk governance to manage disaster risk

Priority 3: Investing in disaster risk reduction for resilience

Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

Before: Enhance disaster preparedness for effective response After: "Build Back Better" in recovery, rehabilitation and reconstruction

Disaster Risk Reduction Cycle

Routine maintenance takes place within local capacity (ex: every year). Occasional rehabilitation launches from monitoring (ex: twice in a decade). Emergency reconstruction start just after getting damage (ex: once in a decade).

"Maintenance" is RICE, "rehabilitation" is MEDICINE, and "reconstruction" is SURGERY.

JICA's cooperation projects in Vietnam

Priority Programs for Disaster Risk Reduction in Vietnam^{35/49}

~ To sustain socio-economic development ~

Ministry of Agriculture and Rural Development (Vietnam Disaster Management Authority), in cooperation with Japan International Cooperation Agency (JICA)

Overall Goal

Establishment of a disaster resilient society aiming at socioeconomic development

Strengthen Investment in DRR

Priorities for Action in the Sendai Framework

P1. Understanding disaster risk	P2. Strengthening disaster risk governance to manage disaster risk	P3. Investing in disaster risk reduction for resilience	P4. Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery,
			rehabilitation and reconstruction

Priority Programs in Vietnam

Priority Program 1: Enhance capacity of the central government, provinces and communities
Priority Program 2: Establish practical disaster information management
Priority Program 3: Develop DRR plans at all levels and prioritize investment based on the plans
Priority Program 4: Implement comprehensive DRR relating storm, flood and drought
Priority Program 5: Implement measures against landslides and flashfloods
Priority Program 6: Transform production and livelihood for sustainable Mekong Delta development to adapt climate change

Implementation of Integrated Flood Management Plan³

- Basin-based Integrated Flood Management Plan (IFMP) formulation/implementation will be promoted involving relevant sectors. Issues of drought and salinity intrusion will be addressed as parts of riverbasin management.
- Flood control capacity and safety of existing reservoirs and dykes will be reviewed for further improvement and rehabilitations. In particular, the review of flood control system in deltas (including Red River system) is important, since huge disaster risks exist in the region.
- <u>Real-time operation of reservoirs</u> in emergency situation will be improved by introducing disaster information system. The project will be extended to all basins having the same problem.
- <u>Hydro-met observation</u> will be improved, including river survey and discharge measurement.
- Sustainable exploitation of resources such as forest and river sand will be promoted from the viewpoint of riverbasin management.

Project for Strengthening Capacity in Weather Forecasting and Flood early warning system (2018~)

- More accurate and timely meteorological information is disseminated to the public and the disaster related

organizations

A S-band radar installed in Vinh

The Project for Emergency Reservoir Operation and Effective Flood Management Using Water related Disaster Management Information System (2017-)

- Establish information systems with rain gauges, X-band radar rain gauges and level meters on the Huong River basin.
- Enhance appropriate operation of dam reservoirs, disaster management, and evacuation activities.

Huong River Basin

Ta Trach Dam

Ta Trach River

Huu Trach River

Bo River

Information Sharing on disaster management

Investigation by CSCNDPC on the Status of Typhoon No.19 Hagibis Disaster and Recovery Status

- Surveying the disaster situation and restoration status of the embankments.
- Discussion with JICA and MLIT, and sharing information in the situation of disasters.
- Continuing Support for the strengthening of flood control policies through the sharing of Knowledge and Experience sharing of Japan

Information Sharing on disaster management

Mutual Dialogues for DRR

- Based on the MoC between MARD and MLIT, regularly dialogues have been held for enhancement of cooperation in the filed of water related disasters.
- Through the workshops, site surveys, and sharing information from both sides, we exchange opinions on water-related disasters and water management issues.

The workshop (2019.10)

SDGs and Disaster Risk Management

DRR & CCA within SDGs in 2015

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

6 CLEAN WATER AND SANITATION

Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

13 CLIMATE ACTION

Target 13.1: Strengthen resilience and adaptive capacity to climaterelated hazards and natural disasters in all countries

Still a lot of challenges for DRR

- Trade-off between civil liberties and restriction
- Risk communication and Stakeholder engagement
- Transformation from response to prevention
- Investment in long term perspective (10ys, 30ys, 50ys, 100ys, 1000ys...)
- Adaptation to socioeconomic change and climate change

44/49

45/49