

Disaster Waste Management for “Build Back Better”

2016.2.22

Satoru Mimura

Global Environment Department

Japan International Cooperation Agency

Disaster Waste

- * A great hindrance to Response, Recovery and Reconstruction
- * Collection and treatment of disaster wastes impose a burden to administration
- * The materials can be useful for restoration especially for rural area of LDCs
- * Appropriate treatment of disaster waste is essential for the Build Buck Better

Sendai Framework for Disaster Risk Reduction 2015-2030

Expected outcome over the next 15 years

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

Goal

7 global targets

The prevention of new risk and the reduction of existing risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthens resilience.

13 Guiding principles

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**

Role of Stakeholders

**Civil society, volunteers,
organized voluntary work
organizations and community-
based organizations**

**Academia,
scientific and
research entities
and networks**

**Business, professional associations
and private sector financial
institutions, including financial
regulators and accounting bodies, as
well as philanthropic foundations**

Media

International cooperation and global partnership

Reading the Sendai Framework

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

JICA's Development Strategic Goals for Disaster Risk Reduction

Goal for Supporting DRM

Departure from repeated poverty cycle caused by disaster
Achievement of sustainable development by disaster risk reduction

Strategic Target 3:
Implementation of risk reduction measures for sustainable development

Strategic Target 4:
Speedy and effective preparation and response (emergency measures)

Strategic Target 5:
Seamless recovery and reconstruction for disaster-resilient society

Strategic Target 2:
Correct understanding disaster risk and promotion of common understanding

Strategic Target 1: Establishment and strengthening of disaster management system

Prevention
Mitigation

Preparedness
Response

Recovery
Reconstruction

Disaster Solid Waste Management in the Pacific

- * 2009 Samoa Tsunami
- * 2012 Fiji Flood
- * 2012 Samoa Cyclone
- * 2013 Fiji Cyclone
- * 2014 Solomon Islands Flood
- * 2015 Vanuatu Cyclone Pam



2009 Samoa Tsunami



Restoration project in Samoa, Sept. 2009



Collaboration with community, waste recycler and waste-pickers for recovering re-usable/recyclable materials



2012 Fiji Flood



Western Division (Ba, Lautoka, Nadi)

Condition after flooding



Large amount of sediment



Removing waste



Mixed waste removal



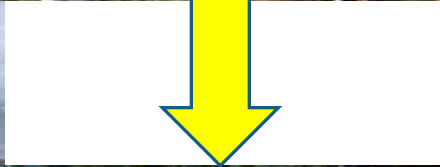
Removal/re-use of sediment soil

Collection/re-use of green waste

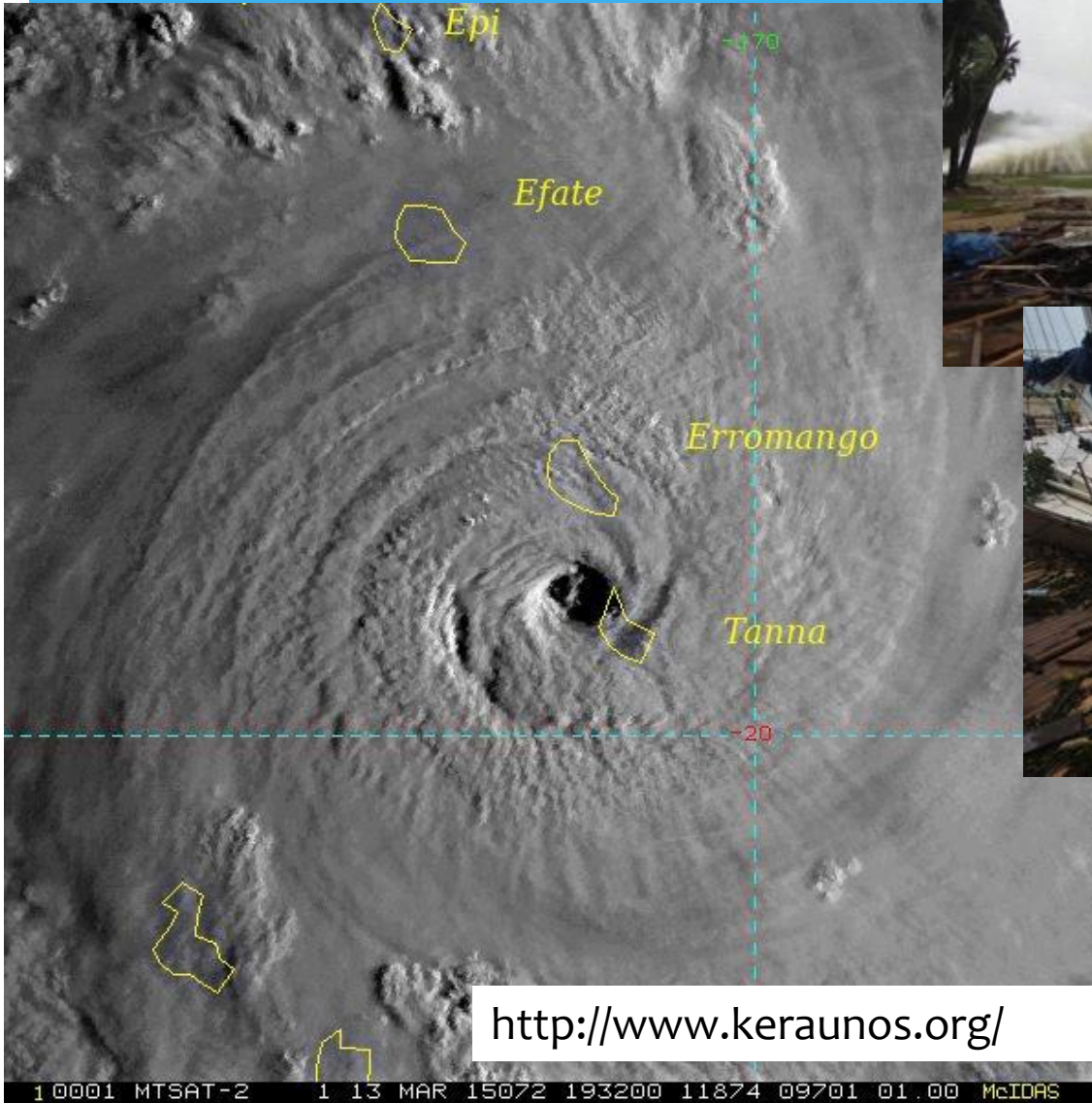
2014 Solomon Islands Flood



Treatment of Flood wood & Fallen trees



2015 Vanuatu Cyclone "Pam"



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

Road blockage with fallen trees and broken houses



Blockage of roads

Removal of Green Waste



Chopped up for firewood

Pickup truck for collection



Disaster Waste Management in the Pacific

- * No incinerators, limited dumping site
- * The most of the debris are green waste and galvanized plates
- * Shortage of materials for reconstruction

Segregation and reuse of disaster waste are priority

Disaster Waste in the Small Islands

Tsunami (Earthquake)

Mixed waste (destroyed housing/building
Bulky waste, furniture, white ware, car bodies, green waste)



Relatively clean and re-usable if segregated on site (easier to recover materials)

Flood (Heavy Rain)

Contaminated mixed waste with muddy water (destroyed housing, furniture, white ware, car bodies, trees, commercial goods at stores)



Contaminated and not re-usable and unsanitary (difficult to recover materials)

Cyclone (Strong Wind)

Mixed waste (fallen trees, green waste, destroyed housing)



Relatively clean and re-usable if segregated on site (easier to recover materials)

Disaster Waste in 2015 Nepal Gorka Earthquake





Most of the collapsed houses were made by stone and mud mortar



Reconstruction of houses is priority

- * People segregate and collect stones and bricks for reuse
- * But if they rebuild their houses same as before, it will invite another tragedy
- * Though they reuse the materials, houses must be built stronger
- * Nepali Government adopt “Build Back Better “ as their basic concept for reconstruction



Promotion of Stronger House



Build Back Better - Resilient House

Model SMC-1.2: STONE MASONRY IN CEMENT MORTAR

ONE-STOREY



LEVEL	MAN POWER		MATERIALS						
	Skilled	Unskilled	Stone	CEMENT	SAND	AGGREGATE	WOOD	CGI SHEET	Reinforcing bar
	Md	Md	cu.m.	Bags	Cu.m.	Cu.m.	Cu.m.	Bundel	Kg
Up to Plinth Level	40	144	15	47	9	3	0	0	87
SUPERSTRUCTURE	49	97	10	45	6	2	0.46	0	165
ROOFING	8	11	0	0	0	0	1.48	3.69	0
TOTAL	97	252	25	92	14	6	1.94	3.69	252



Nepal Housing
Reconstruction Programme

TYPE OF HOUSE: MODEL SMC-1.2

DRAWING TITLE: PERSPECTIVE AND ESTIMATION

SCALE: None

DESIGNED BY: JICA

DATE:

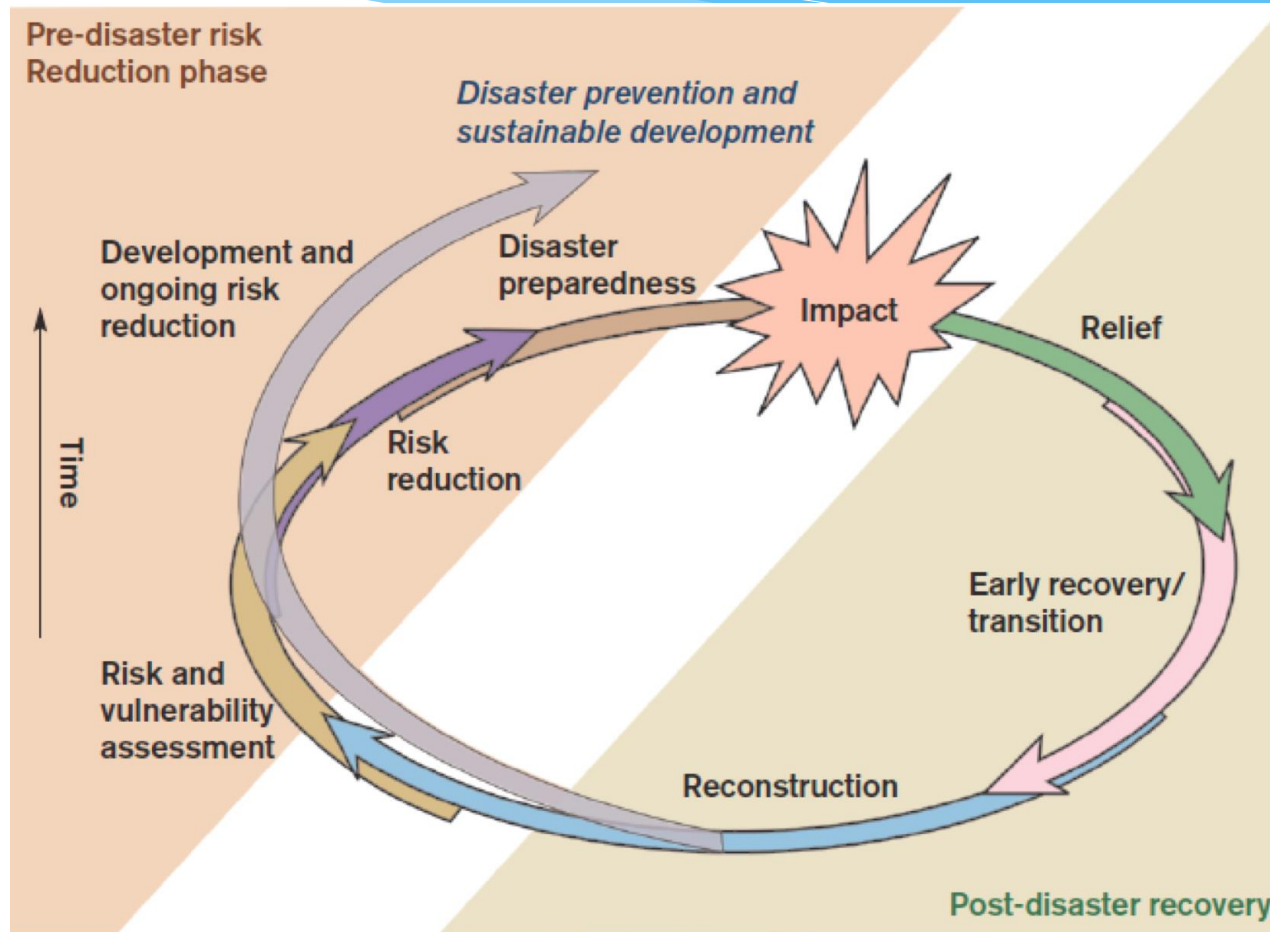
SMC-1.2

1/4

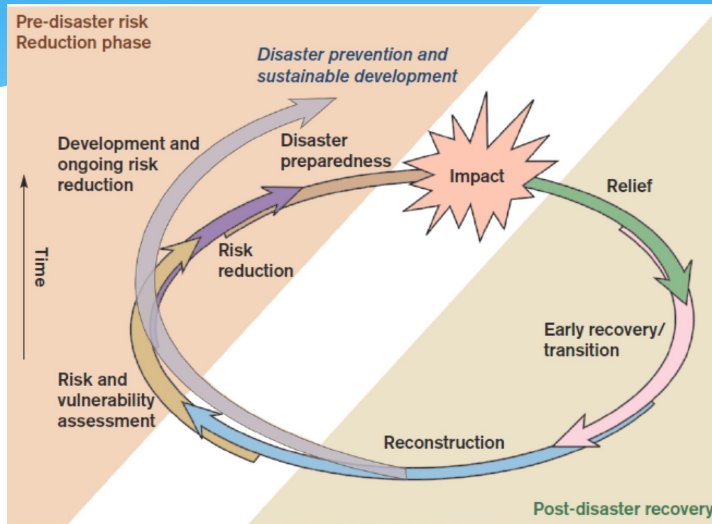
17

Stone masonry with cement mortar

Disaster Management Cycle

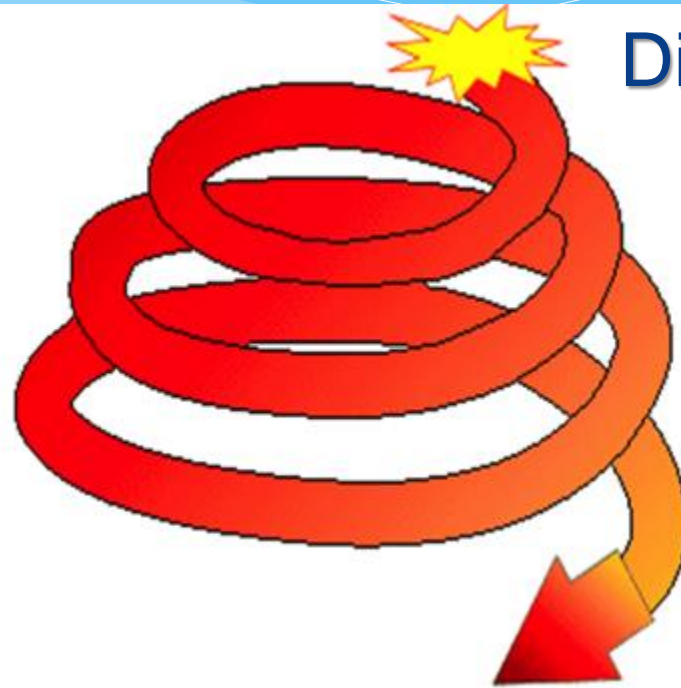


Negative Spiral of Poverty and Disaster



Poverty worsened by

Disaster



-more severe living condition

-being more vulnerable

Disaster Waste

- * A great hindrance to Response, Recovery and Reconstruction
- * Collection and treatment of disaster wastes impose a burden to administration
- * The materials can be useful for restoration especially for rural area of LDCs
- * Appropriate treatment of disaster waste is essential for the Build Buck Better



Thank you very much for your attention.