

# Development of Disaster Waste Management Plan

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# A series of Discussion for DWM Guideline Development

*Implementation*

## **11. 2<sup>nd</sup> Clean Pacific Roundtable in Aug. 2018, Suva**

10. Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR), Jul. 2018, Mongolia

9. 17<sup>th</sup> Expert Meeting on SWM in Asia and Pacific Islands in Jan. 2018, Tokyo (SWAPI)

8. 11<sup>th</sup> TEMM (Japan, China and Korea Policy Dialogue), Dec. 2017, Tokyo

7. DWM workshop in Dec. 2017, Bangkok (UN Env.)

6. Environment and Emergencies Forum in Sep. 2017, Nairobi (UNISDR/UN Env.)

5. 3rd Global Summit of Research Institutes for DRR in Mar. 2017, Kyoto (GADRI)

4. Symposium on mainstreaming of DWM in Feb. 2017, Osaka (UN Env.)

3. 16<sup>th</sup> Expert Meeting on SWM in Asia and Pacific Islands in Dec. 2016, Tokyo (SWAPI)

2. Regional partnerships to strengthen disaster risk management in the Pacific in Oct. 2016, Suva (UNISDR)

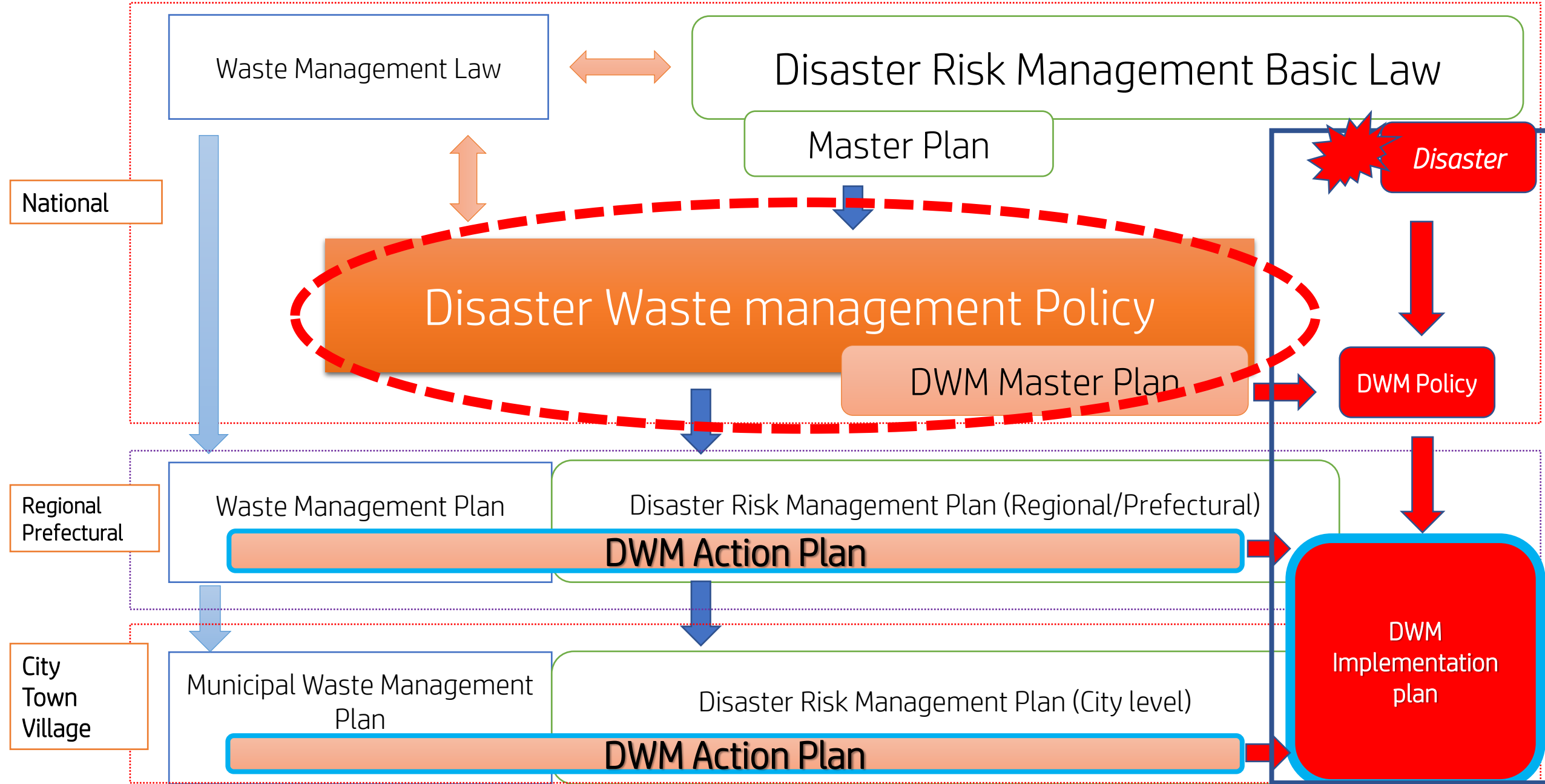
1. 1<sup>st</sup> Clean Pacific Roundtable in Jul. 2016, Suva (SPREP)

**Establish the editorial committee in Apr. 2016**

# Some Recommendations

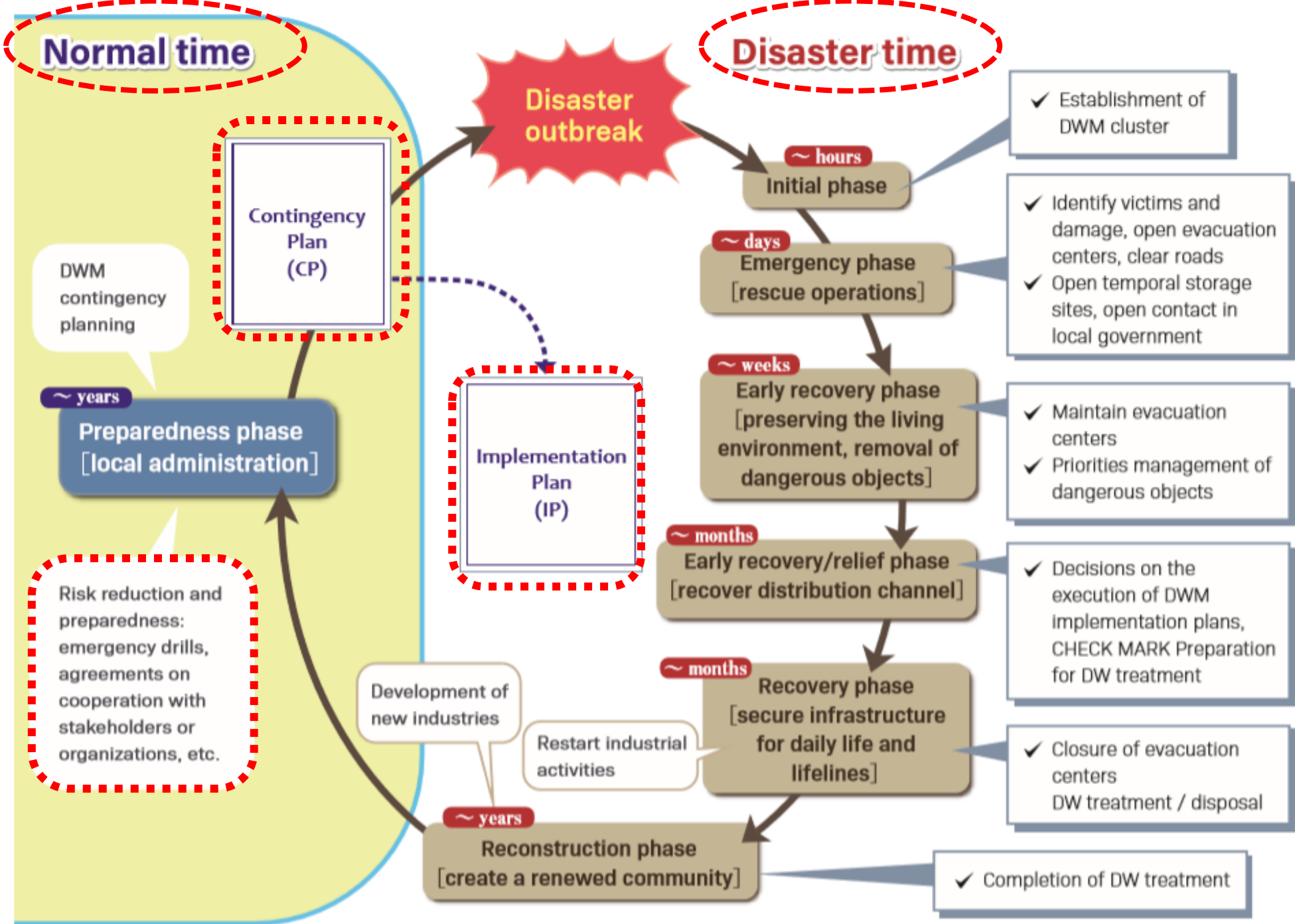
- Incorporate a DWM component in the national and municipal WM and DRM strategy and plan
- Need coordination to collaborate with other line Ministries and clusters
- Incorporate a DWM component in the PDNA cluster process
- Cooperation Agreement on DWM (City-City/Private contract)
- Capacity Development for government officer, community and local expert for DWM (Roster)

# Level of Plan (Case of Japan)

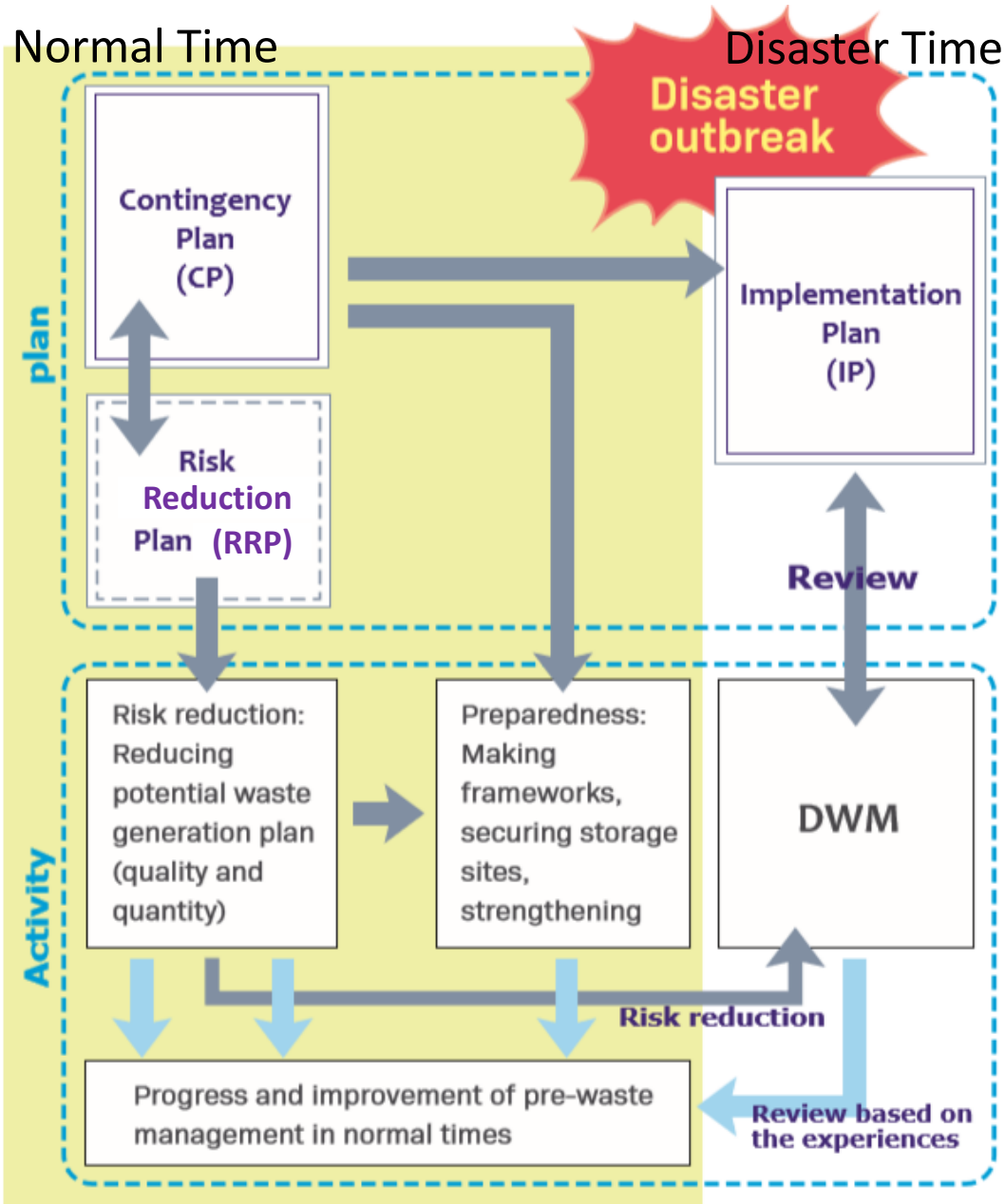


# What Plan Do We Need ?

1. Normal Time  
 "Preparedness"  
 - What Preparedness?  
 1) Risk Reduction Plan  
 2) Contingency Plan
2. Disaster Time  
 "Respond, Recovery, Reconstruction"  
 - Need Speed & Efficiency  
 3) Implementation Plan



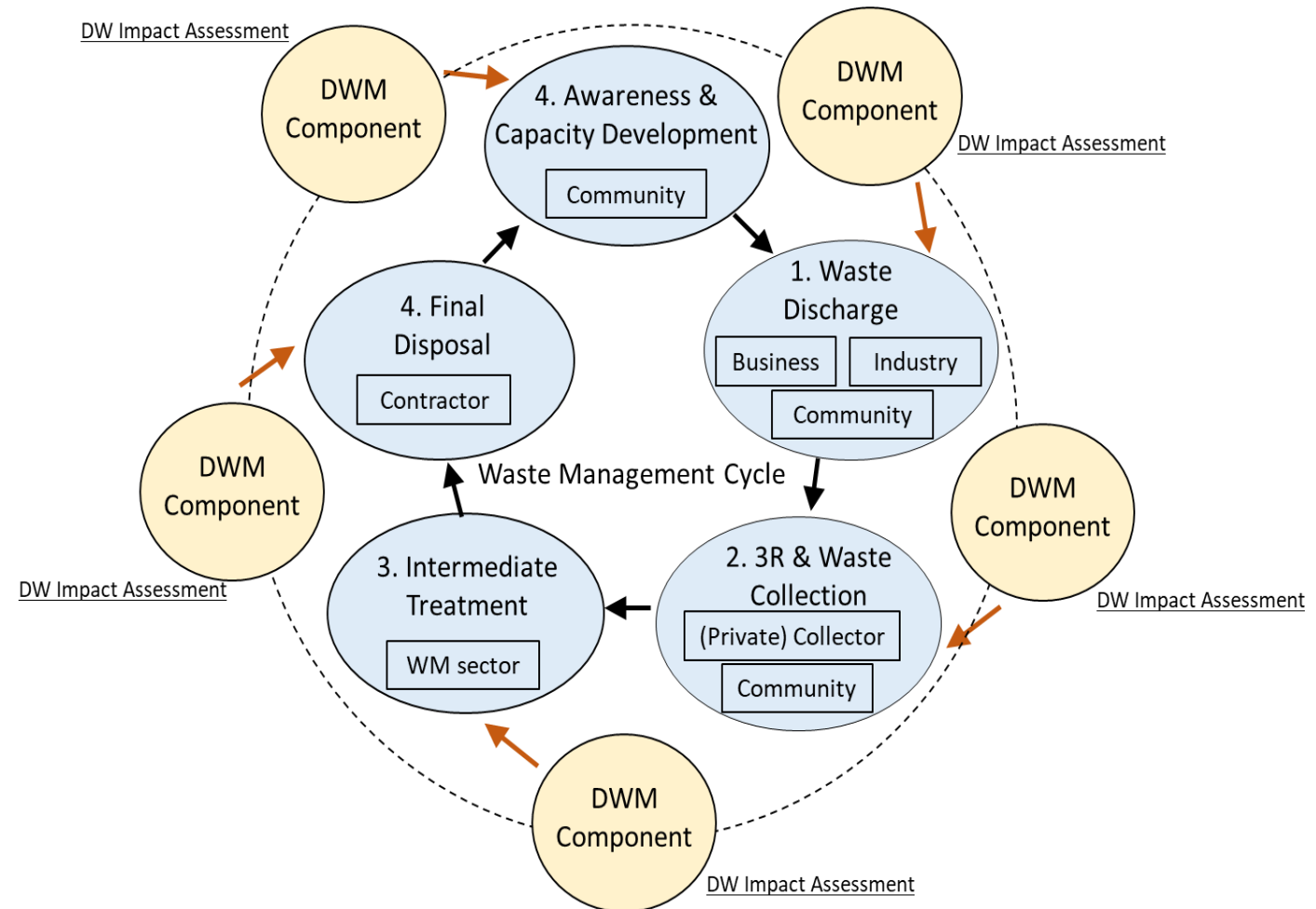
# Framework of the Plans



# Schematic Image of Risk Reduction Plan (Incorporation of DWM component into WM system)

## Concept

- Community Resilience
- **Improvement of WM system** incorporated DWM (in consideration of Climate Change Adaptation)



# Main contents of Contingency Plans for DWM

| Contents                          |                                                   | Risk Reduction Plan (RRP)                                                                                                                                                                                                                                                                                                              | Contingency Plan (CP)                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. Institutional Framework on DWM | 1. Officer/team/organization for DWM              |                                                                                                                                                                                                                                                                                                                                        | Designate the officer/team and organization as well as their roles and responsibilities in DWM (including excreta and wastes from evacuation center)                                                                                                                                                                                                                                                            |
|                                   | 2. Stakeholders                                   |                                                                                                                                                                                                                                                                                                                                        | Identify networking and cooperation with stakeholders, such as other clusters, line ministries and local governments (city-city), private sectors (Cooperation Agreement), and media groups                                                                                                                                                                                                                     |
|                                   | 3. Community                                      |                                                                                                                                                                                                                                                                                                                                        | Identify networking and cooperation with stakeholders, such as NGOs, and community groups, including churches, youth and women's groups                                                                                                                                                                                                                                                                         |
| B. Treatment Flow                 | 4. Disaster type                                  |                                                                                                                                                                                                                                                                                                                                        | Identify the features of DWM in accordance with disaster type                                                                                                                                                                                                                                                                                                                                                   |
|                                   | 5. DW Information                                 | <ul style="list-style-type: none"> <li>Collect and update all waste management information, such as waste audits, progress of 3R awareness and activities, incoming waste to landfills, and landfill conditions, etc.</li> <li>Analyze the WM system in place based on the risk and hazard maps (See DWM Impact Assessment)</li> </ul> | Identify an estimation technique for generated DW and a list of RaNA for DWM                                                                                                                                                                                                                                                                                                                                    |
|                                   | 6. WM inventory                                   | <ul style="list-style-type: none"> <li>Investigate capabilities of WM facilities for disasters and meet needs for reconstruction and improvement</li> <li>Prepare necessary WM facilities and procure necessary machinery and equipment (See DWM Impact Assessment)</li> <li>Reduction of hazardous materials</li> </ul>               | <ul style="list-style-type: none"> <li>Develop an inventory of capacities and techniques in WM as well as hazardous waste mapping</li> <li>Develop a feasible DWM treatment flow, including temporary sites, intermediate treatment, incineration (if available), hazardous waste management, final disposal, awareness, and coordination of volunteers and regional collaboration (see IP template)</li> </ul> |
|                                   | 7. Awareness & Outreach                           | <ul style="list-style-type: none"> <li>Provide DWM awareness and education to school students and communities (incorporate DWM component into the WM or DRR awareness in place)</li> <li>Provide mutual learning opportunities among cities and local governments (as well as among countries)</li> </ul>                              | Develop awareness and outreach activities in DWM including training programs (for consistent US spelling), and tool and material development both for communities along with evacuation centers                                                                                                                                                                                                                 |
| C. Law, Regulation & Budget       | 8. Law, Regulation, Plan, and Budget              | Relevant laws, regulation and plan development, or amendments<br>Budget allocations<br>Self-check list (current and necessary resources, waste inventory, budget, awareness, hazardous waste mapping, data collection capacity, etc.)                                                                                                  | <ul style="list-style-type: none"> <li>Subsidies</li> <li>Fundraising (plan)</li> </ul>                                                                                                                                                                                                                                                                                                                         |
| D. Capacity Development           | 9. Workshop, Training, Site Visit, Awareness, etc | CD program for (D)WM regulators and implementers<br>Awareness programs for private sectors, NGOs, and communities                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                 |



| Disaster Time                                  |                                          |                                                                        | Implementation Plan (IP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |
|------------------------------------------------|------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Establishment and coordination of DWM clusters |                                          |                                                                        | <ul style="list-style-type: none"> <li>DWM team cluster, rotation of staff</li> <li>Coordination of supporters, external/internal actors, other stakeholders</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |                                                      |
| Preparation and Coordination                   |                                          |                                                                        | Initiate all relevant data collection (in collaboration with stakeholders)<br>Estimate amount of DW and its treatment capacity<br>Confirm human, technical, and financial resources to treat DW<br>Develop the IP based on baseline information in accordance with CP<br>Discuss and introduce IP with stakeholders<br>Discuss closure of temporary sites based on CP<br>Contract (advanced agreement) for emergency DWM<br>Discuss designation of temporary toilets and their excreta, as well as DW generated from evacuation centers |                                                      |
| Treatment Flow                                 | Temporary storage site                   | 1st temporary storage site (☼)                                         | Selection of 1st temporary site<br>Transportation/temporary disposal<br>Separation<br>Closure of the site                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                      |
|                                                |                                          | 2nd temporary storage site (☼)                                         | Selection of 2nd temporary site<br>Introduction of treatment facility<br>Crush & separation<br>Closure of the treatment Facility<br>Closure of the site                                                                                                                                                                                                                                                                                                                                                                                 |                                                      |
|                                                | Demolition and transportation            |                                                                        | Demolition of collapsed houses and transportation of DW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                      |
|                                                | Intermediate treatment (Pre-treatment)   |                                                                        | Discussion on recyclable materials with recycling companies and on the reuse of organic wastes with farmers<br>Collection of recyclable materials<br>Organic waste management                                                                                                                                                                                                                                                                                                                                                           |                                                      |
|                                                | Incineration (if necessary) and Landfill |                                                                        | Municipality meetings<br>Test incineration (if required)<br>Incineration and landfill                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                      |
|                                                | C. Law, Regulation & Budget              | Hazardous waste management                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Confirm and allocate temporary stock (disposal) site |
|                                                |                                          | Monitoring                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Monitor the environment and DW to prevent pollution  |
| Final disposal                                 |                                          | Final disposal (including designated DW space)                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |
| Regional collaboration                         |                                          | Intermediate treatment, incineration, final disposal                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |
| Volunteers/Awareness                           | Community base                           | Contract with community groups for DWM, Prepare for PPE                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |
|                                                | Media                                    | Implement media awareness on DWM                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |
| Specific concerns                              |                                          | Manage wastes from evacuation centers & excreta from temporary toilets |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |
|                                                |                                          |                                                                        | <ul style="list-style-type: none"> <li>Special measures which abide the law</li> <li>Seek financial support, coordinate the budget</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           |                                                      |

# FEEDBACK REQUEST

“For Disaster Waste Management Plan Development”

Please give us your feedback on a website questionnaire at the following address.

[goo.gl/vubNjp](https://goo.gl/vubNjp)



Thank you for your cooperation