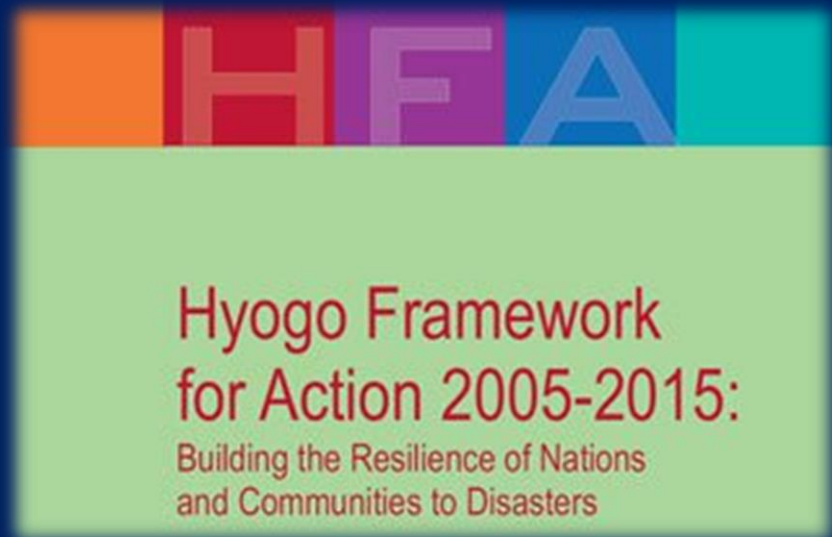# BUILDING A SUSTAINABLE
and
THE RESILIENT COMMUNITY UNDER
THE RISK OF WATER-RELATED DISASTER

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National Research Council of Thailand

- In recent years, important steps towards a more integral and comprehensive approach to disaster risk reduction (DRR) have been taken
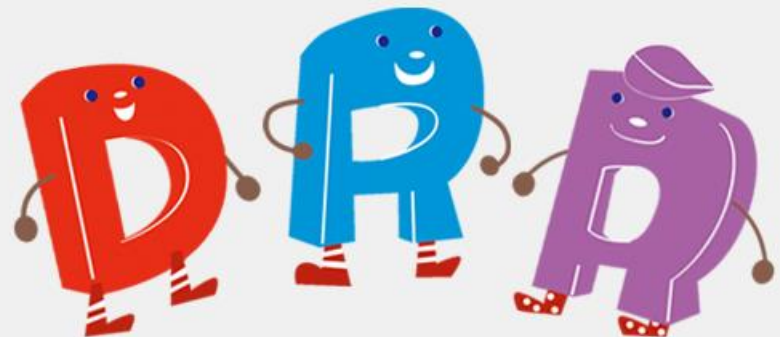- Hyogo Framework for Action (HFA) or Global Action Plan for DRR.

- Too much focus however remains on the reduction or compensation of existing disaster losses and damage as opposed to transforming the underlying drivers that generate risk.

- DRR needs to become an integral part of development, and not an add-on separated from its plan.
- The focus on international DRR community level is increasingly expanding from DRR towards "building resilience" which is used as an antithesis to risk.

- Resilience is defined as characterizing to the ability to anticipate, recognize, adapt to and learn from variations, changes, disturbances disruptions and disasters that are potentially harmful.
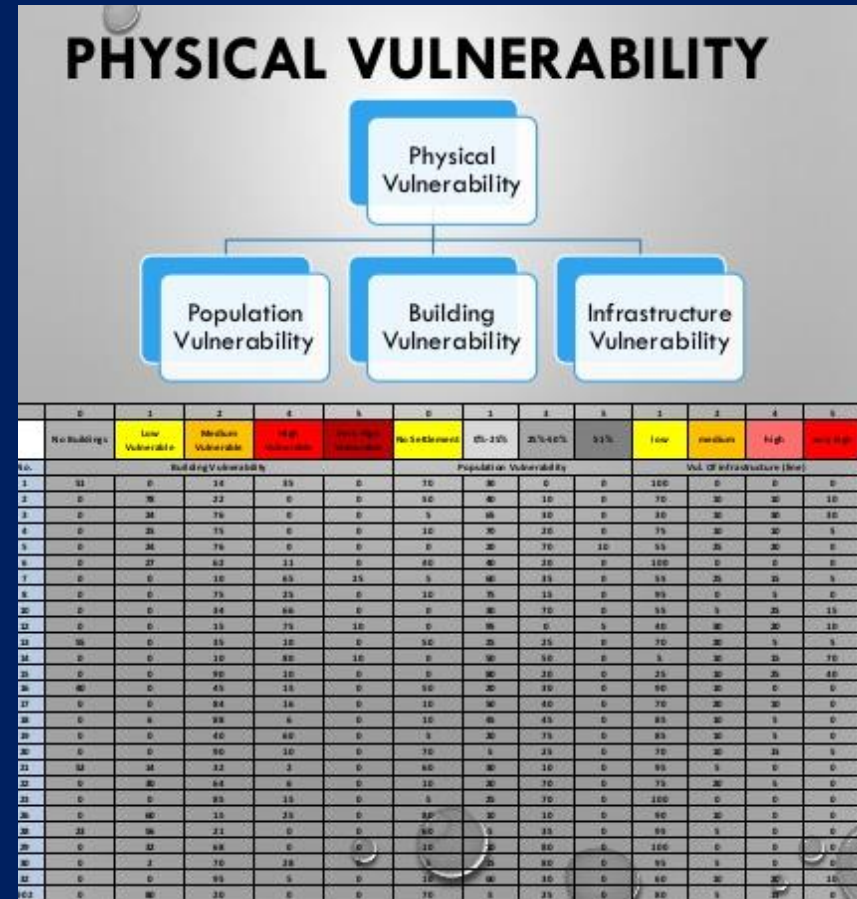
- It is therefore an approach appropriate for a constantly changing, sometimes risky environment, and also for sustaining development under uncertainty
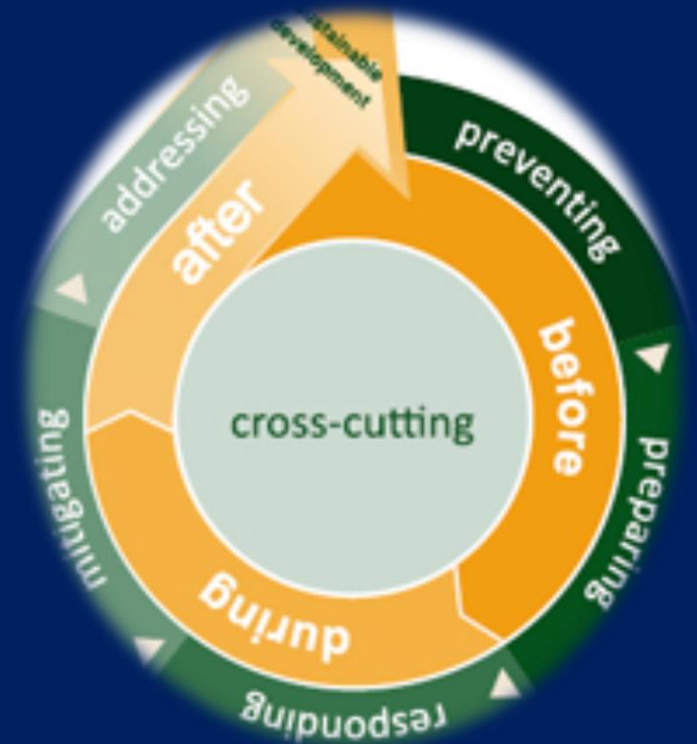
- Although these ideas are developing at global and national level, in general, narrow response-oriented emergency management still characterize DRR actions on the ground, combined with little organizational capability to integrate DRR across society.

- DRR work aims at reducing hazard exposure or the physical/structural vulnerability of buildings and infrastructure instead of addressing weak governance capacity
  - Institutional capacity
  - Resources and enforcement

- The alignment of DRR and resilience to sustainable development in national and international policy will be important in order to develop long-term solutions which do not contribute to the creation of new risk
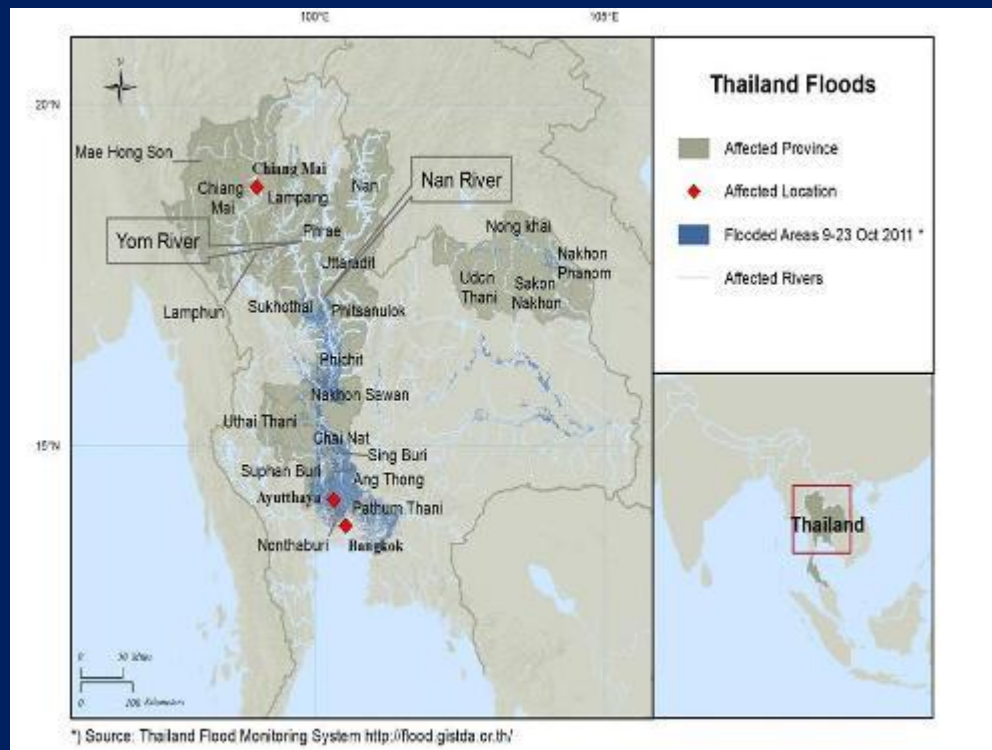
- Having SD, as the centre point provides bodies and involved stakeholders, often involving compromises between different policy goals.

- Thailand approach to flood risk management focus on the role of social and institutional capacity development for DRR and resilience needs to be further emphasized to balance the current trend.

*) Source: Thailand Flood Monitoring System http://flood.gistda.or.th/

- In Thailand, there has been a paradigm shift in disaster management at the community level.

- The disaster management at the community level only began after the disaster has occurred without appropriate preparation for disaster risks and impacts.

- Disaster risk management has become more emphasized to prevent and mitigate disaster impact on the society and economic situation in the community
- Capacity development of the community, from preparation to post disaster stages, has become a key issue.

- Thailand set up the plan to improve the community disaster risk management through the development of a participatory disaster risk management plan at each target community.

- Community Flood Disaster Risk Management Plan : 4 Steps

STEP I : Collection and analysis of community information

- To gather the necessary information in the community with participating methods such as
  - Location and geographic information
  - Land use of the community

STEP I : Collection and analysis of community information

- History and type of flood including water flow, cause period of inundation damage and community's countermeasures.

- Population, religion, type of residents

- Infrastructure and facilities

STEP I : Collection and analysis of community information

- Socio-economic information such as health status and community groups/volunteers

- Vulnerable groups such as women, elderly and disabled

- Occupation and income

STEP I : Collection and analysis of community information

- Seasonal calendar for flood risk and crop pattern

- Number, location, and type of livestock

- Other necessary information.

STEP II: Risk analysis and a community hazard/evacuation map

- A Community hazard/evacuation map is developed with the basic community information collected in STEP 1.

STEP II: Risk analysis and a community hazard/evacuation map

- The community hazard/evacuation map should include
  - Geographic information and land use
  - Administrative boundaries in the community
  - Water resource and related facilities and water flow during past inundation

STEP II: Risk analysis and a community hazard/evacuation map

- Infrastructure, facilities and households, including facilities to be used as evacuation centers

- Evacuation places and router for human, livestock and other assets (such as car and machinery)

STEP II: Risk analysis and a community hazard/evacuation map

- A community hazard/evacuation map is suitably developed from a scientifically drawn base map, such as a topographical or GIS-based map

STEP II: Risk analysis and a community hazard/evacuation map

- Development of the map with relevant information is effective for providing flood warning and evacuation announcements swiftly and eventually for preventing and mitigating the flood disaster impact on the community.

STEP III: Set-up of a flood disaster risk management committee and working groups.

- Set up a community flood disaster risk management committee and working groups.

STEP III: Working Groups and Responsibilities

- Plan/review/revise the plan for flood disaster risk management

- Organize meetings and coordination with working groups

- Examine/approve tasks/actions proposed/requested by working groups

- Give directions to tasks/actions concerning flood risk management

STEP III: Working Groups and Responsibilities

- Search possible financial and other supports from various organizations

- Function as a command center at the time of the disaster

- Supervise operations of working groups

- Collaborate with internal and external organizations

- Report flood disaster situation/impacts to DDPM and other organizations

STEP III: Public Relations

- Search knowledge/information for prevention/mitigation of flood impacts

- Receive information from internal and external organizations

- Accumulate, cross-check, and analyze the collected information

- Disseminate necessary information to the public, including water level and necessity of evacuation, through various methods

STEP III: Warning and Prevention

- Gather and update geographic, demographic and other community information

- Maintain necessary equipment, such as boats and floating toilets, to be used at the time of the disaster

- Collect information on water level and situation and give ample warning to the committee and community

- Inform preparation process to the community for possible inundation and evacuation in collaboration with Public Relation Working Group

- Coordinate with community people and volunteers to set up flood protection systems, such as water protection by deploying sandbags

STEP III : Evacuation

- Identify evacuation centers and evacuation routes for human, livestock, and assets
- Prepare places and equipment for each evacuation center
- Inform necessity of evacuation and assembly points to the community people in collaboration with Public Relation Working Group
- Arrange staff/vehicles/evacuation route for fast/safe/orderly evacuation
- Provide special assistance to the people with difficulties
- Register evacuated people at the evacuation center

STEP III : Supply and Support

- Make plans for transportation and distribution system of emergency materials during inundation

- Procure/maintain appropriate types and amounts of necessary materials for emergency cases

- Receive and distribute donation materials systematically and effectively

- Provide moral support to the people as well as materials

- Support and monitor the transportation during inundation

STEP III : First aid and Medical * Health Center and Village Health Volunteers join this group

- Make a plan for providing medical/health care at the time of disaster
- Procure/maintain appropriate types and amount of medicines/materials
- Provide first aid service at the evacuation center
- Provide mobile medical and health care service to the persons in the evacuation center as well as in-house visits during the inundation
- Provide mental care to evacuees and people who stay in their houses
- Coordinate with hospitals in the area for necessary support
- Inform community about potential diseases and dangers caused by the flood

STEP III : Recovery

- Record the situation and survey flood damage
- Report the situation and impact to concerned organizations through the Management Committee
- Coordinate to restore facilities/utilities/houses and equipment to condition prior to being damaged
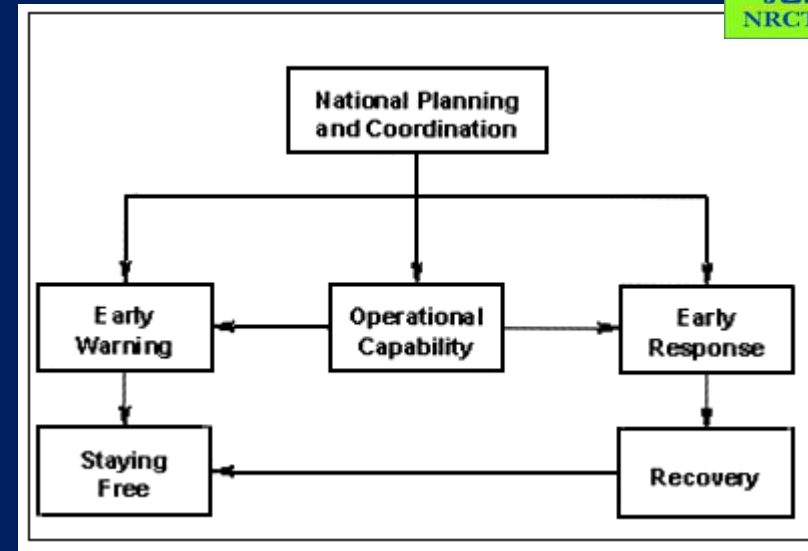- Coordinate the support from government and non-government agencies

STEP IV : Development of a community flood disaster risk management plan

Problems and constraints for the flood disaster risk management in the community are comprehensively identified by the community people based on past disaster experience and particular characteristics of that community

STEP IV : The tasks and necessary actions are considered for four stages/periods :

– Preparation
– Pre-inundation
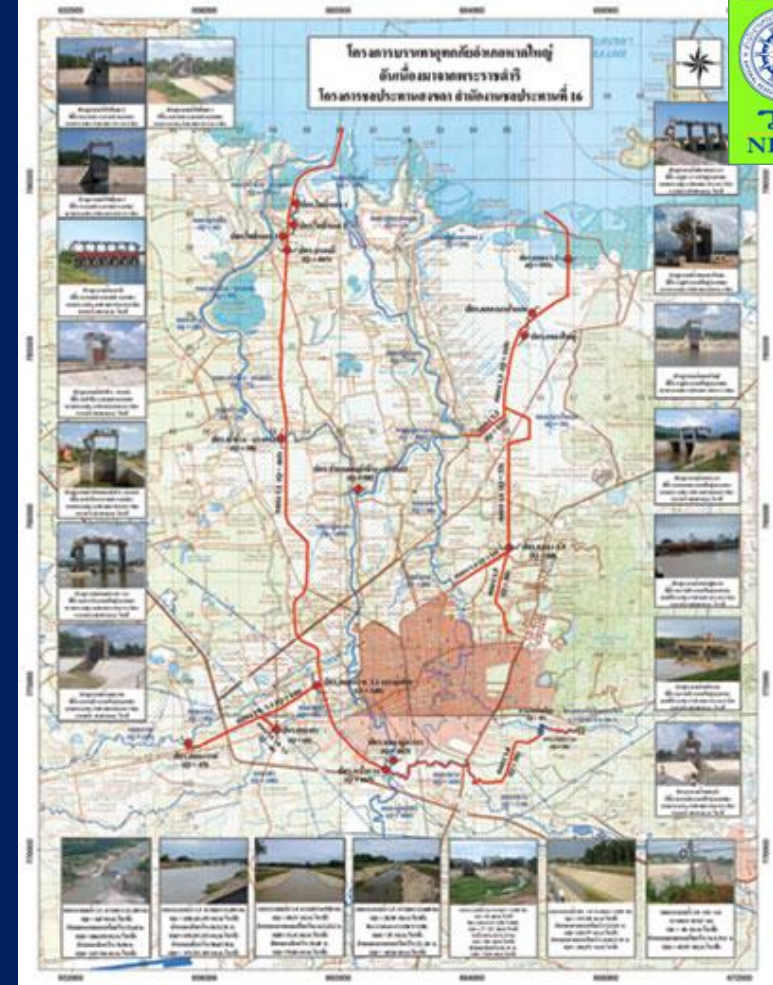– During-inundation
– Post-inundation periods

STEP IV :

"Preparation" period

– The normal period without inundation risks

"Pre-inundation" period

– The time when the community faces the risk of damage from possible inundation

STEP IV : Development of a community flood disaster risk management plan

The plan can be incorporated into an overall community disaster management plan, which covers countermeasures for other disaster risks as well as flood risks, particularly in a community with low flood disaster risks.

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Necessary Action				Committee / Working Group in charge
		Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	
1. Information on flood risk and water level	1-1. Obtain/share information on flood risk and water level	☐ Have geographic, demographic and other community information ☐ Establish communication network with RID and others, including list of organizations to contact ☐ Develop a flood risk/ evaluation map and share with the community ☐ Establish water measurement spots and standards in the tambon	☐ Obtain / analyze information and share with the Management Committee ☐ Measure water level at the measurement spots ☐ Assess the necessity of evacuation	☐ Obtain / analyze information and share with the Management Committee ☐ Measure water level at the measurement spots ☐ Assess the necessity of evacuation	☐ Record and share flood situation with RID	Warning and Prevention Public Relations
	1-2. Publicize warning	☐ Set-up warning system, including warning rules, equipment to be used, and person in charge.	☐ Inform warning rules and preparation process to community ☐ Put up signs that indicate risk/ safe areas	☐ Publicize the warning ☐ Put up signs that indicate risk/ safe areas	-	Public Relations Warning / Prevention
	1-3. Raise public awareness and skill on flood	☐ Raise the awareness on the flood risk of the community through publicity, meeting, campaign, etc. ☐ Conduct activities at schools o enhance children's life skills	☐ Collect information from the community on flood situation and risk	☐ Collect information from the community on flood situation and risk	-	Public Relations

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Necessary Action				Committee / Working Group in charge
		Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	
2. Transportation during inundation	2.1 Procure and maintain vehicles / boats to be used during inundation	☐ Study the suitable transportation methods during inundation ☐ Identify necessary / available number of vehicles/ boats and procure necessary resources ☐ Procure necessary resources with internal/ external financial sources ☐ Register and maintain all machinery to be ready for use ☐ Examine and prepare stocks for necessary materials, such as fuel and spare parts	☐ Coordinate to procure necessary amounts vehicles/boats, including rental ☐ Examine the condition of machinery and keep ready to use ☐ Examine the stocks of fuel and spare parts	☐ Provide the transportation service ☐ Procure necessary amount of machinery ☐ Maintain the condition of machinery ☐ Procure fuel and necessary materials	☐ Repair/ clean the machinery for future use ☐ Prepare stock for future use	Supply and Support Warning and Prevention
	2-2 Provide transportation effectively during inundation	☐ Set-up rules for transportation during inundation, such as rules for driving boats, public boat service, and rental boats	☐ Inform the community about the rules	☐ Provide and monitor the operation	-	Supply and Support

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Necessary Action				Committee / Working Group in charge
		Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	
3. Evacuation	3-1. Evacuate the people, livestock, and assets smoothly	☐ Identify evacuation centers for people, livestock and other assets, and evacuation routes in the flood risk/ evacuation map ☐ Identify necessary facility, equipment, and emergency materials, such as medical station, tent, blanket, mosquito net, water and food, etc	☐ Identify evacuation centers/ routes and prepare signs to indicate the routes ☐ Prepare for possible evacuation, including facilities, equipment, and materials	☐ Announce evacuation with assembly points and routs ☐ Support the evacuation ☐ Set-up evacuation centers ☐ Register the evacuees ☐ Support evacuees with difficulties	☐ Maintain the equipment for future disasters	Evacuation Support as supports Warning and Prevention
	3-2 Support the evacuation of vulnerable groups	☐ Survey to identify people with difficulty, such as elderly and disabled, and plan for evacuation support	☐ Examine the situation of people with difficulties and prepare for possible evacuation	☐ Support the evacuation ☐ Provide care at the evacuation center	-	Evacuation Supply and support First aid and medical
	3-3vEnhance the knowledge and awareness for evacuation	☐ Plan/ practice evacuation drills regularly ☐ Inform community on evacuation preparation, including carrying important documents, such as ID	-	-	-	Evacuation

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Necessary Action				Committee / Working Group in charge
		Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	
4. Supply of essential commodities/ services during the inundation	4-1. Provide emergency materials for people at evacuation centers	☐ Identify kinds and amounts of emergency materials necessary for possible evacuees ☐ Procure and store adequate amount of materials for emergency care ☐ Prepare contact list for possible support	☐ Prepare for the distribution of emergency materials ☐ Procure emergency materials to distribute ☐ Organize volunteers to cook for evacuees	☐ Supply emergency materials both for people in evacuation centers and households ☐ Procure emergency materials to distribute	☐ Summarize the use of emergency materials and numbers for future disasters	Supply and Support Evacuation Public relation
	4-2. Provide emergency materials to the people in households	☐ Survey the number of households and distribution points of emergency materials ☐ Develop the distribution system of emergency materials, including donated items ☐ Encourage people to prepare emergency items in their house		☐ Arrange distribution of donated items ☐ Keep records of distribution materials		

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	Committee / Working Group in charge
	4-3 Provide medical/ health care	☐ Survey the type and number of people who need medical support and share the information with health stations ☐ Develop medical/ health care plan for evacuation centers and households, including setting-up mobile service units ☐ Prepare/stock necessary material/ medicines for medical and health care services	☐ Prepare for service, including medicine and equipment for the service ☐ Organize health volunteers and instructions for mobile medical/ health services	☐ Set-up medical stations at evacuation centers ☐ Dispatch mobile units to provide service at households ☐ Share information with health stations for appropriate action ☐ Provide information on disease and hygiene ☐ Provided mental care	☐ Report to the health authorities on the medical/ health situation during the inundation	First aid and medical Supply and Support
	4-4. Provide other supports	☐ Study the types and volume of support needed during an inundation not only for humans but also for livestock and others	☐ Coordinate and prepare support, such as feed for livestock	☐ Coordinate and provide necessary support based on the needs	-	Supply and Support

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Necessary Action				Committee / Working Group in charge
		Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	
5. Rescue and Security	5.1 Rescue the disaster victims promptly	☐ Organize rescue and security team to work systematically ☐ Identify and procure necessary equipment and materials for the rescue work	☐ Examine the situation and prepare for possible actions ☐ Patrol the risk area	☐ Conduct the rescue work based on the information from the community	☐ Report the cases to the authority	Rescue and Security Public relations
	5.2 Maintain the facility and utility in the community	☐ Identify facilities and utilities to be maintained during inundation, such as roads and electricity ☐ Procure necessary equipment and materials to maintain the facilities, such as sand bags	☐ Monitor the situation and prepare for possible actions ☐ Conduct preventive works, such as making walls with sandbags	☐ Monitor and maintain the use of facilities and utilities ☐ Elevate electric transformers above water level	-	Rescue and Security Warning and Prevention

Examples of tasks and necessary action for Community Flood Disaster Risk Management

Issue	Task	Preparation in normal time (necessary consideration arrangement)	Pre-Inundation (when community face the inundation risk)	During inundation	Post-Inundation	Committee / Working Group in charge
	5.3 Maintain the security during inundation	☐ Identify the high risk areas during inundation ☐ Develop security plans including patrol route and units	☐ Patrol the risky areas ☐ Review the plan and prepare for action	☐ Patrol the community as well as evacuation centers ☐ Be on 24 Hour Stand-by for action	-	Rescue and Security
6. Recovery	6-1. Support the recovery from impact/ damage caused by the disaster	-	-	☐ Record situations and damage caused by the disaster, including photos, and actions taken	☐ Report the situation/ impacts ☐ Coordinate for support	Recover

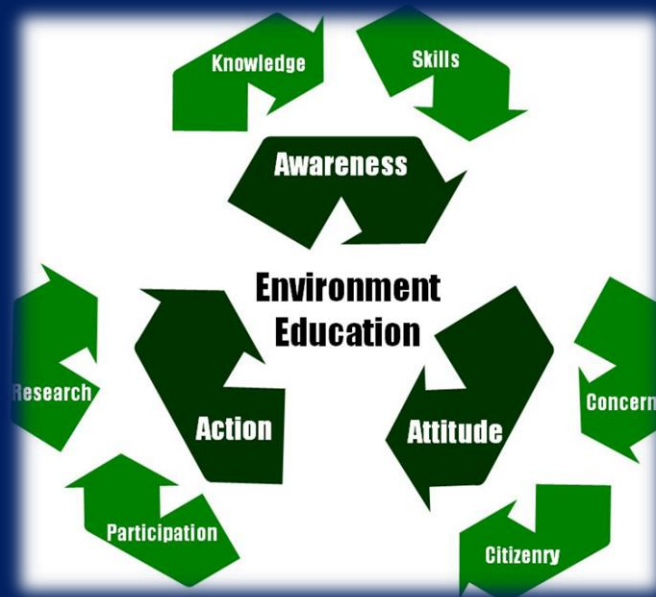# STEP IV : Flood evacuation drill based on the developed flood disaster risk management plan

- Raise the awareness of community people of disaster risk management
- Strengthen the network among concerned organizations in the community

STEP IV : Development of a community flood disaster risk management plan

- Identify and practice the tasks of the management committee and working group during simulation

- This is considered as an effective education method to enhance the awareness of students, teachers and parents of disaster risk management

Under this Act :

National Disaster Prevention and Mitigation Committee (NDPMC) appointed by the cabinet consist of

- ➤ Prime Minister or designated Deputy Prime Minister as a Chairperson.
- ➤ Permanent Secretary for
  - Defense
  - Social Development and Human Security

- Agriculture and Cooperatives
- Transportation and Communications
- Natural Resources and Environment
- Information and Communication Technology
- Public Health
- Bureau of Budget
- Royal Thai Police
- Royal Thai Army
- Royal Thai Navy
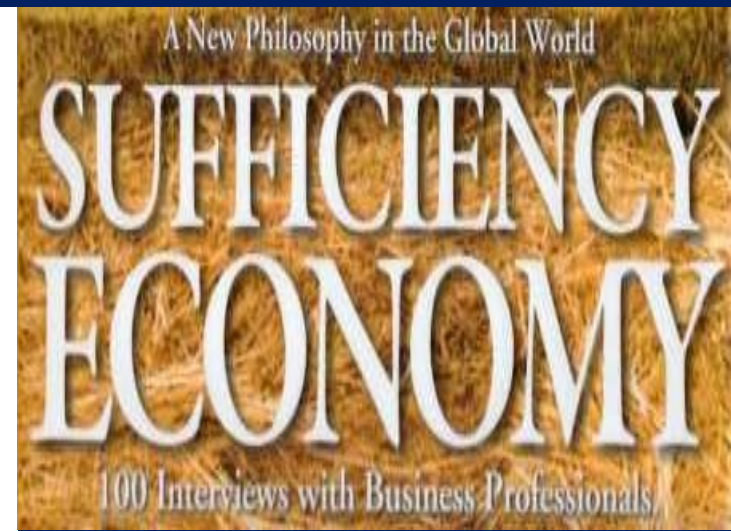- Royal Thai Air Force
- National Security Council

Duties of the National Committee

◈ **Propose the policy to formulate the National Disaster Prevention and Mitigation Plan.**

◈ **To integrate the development on disaster prevention and mitigation mechanism among Government Agencies, local administrations and other private sectors effectively.**

◈ **To recommend support and promote on any disaster prevention and mitigation activities.**

◈ **To propose regulations or remuneration, recompenses and other expenses related to disaster prevention and mitigation operations, and their regulations shall be in accordance to rules and regulations of Ministry of Finance.**

Department of Disaster Prevention and Mitigation

- **Formulate the National Disaster Prevention and Mitigation Plan.**

- **Organize and conduct researches on procedures and measures to prevent and mitigate all impacts of disaster effectively.**

◈ **Operate and cooperate, support and assist other government services, local administrators and provide aids to disaster effected people.**

◈ **Follow up and assess and evaluate all activities related to disaster prevention and mitigation at all levels.**

Flood Prevention Measures by Rojana
Rojana Industrial Park Public Co., Ltd
30 January 2012

Disaster Prevention and Mitigation Plan

◈ **Measures and adequate budget to support disaster prevention and mitigation operations systemically and continuously**

◈ **Guidelines and methods for providing aids and mitigate the impacts of disasters in both short and long term together with evacuation procedures of effected people, government services and other local administrations, support effected people on public health, utilities and communication system.**

◈ **Preparedness perspectives on support personnel, equipments and other materials.**

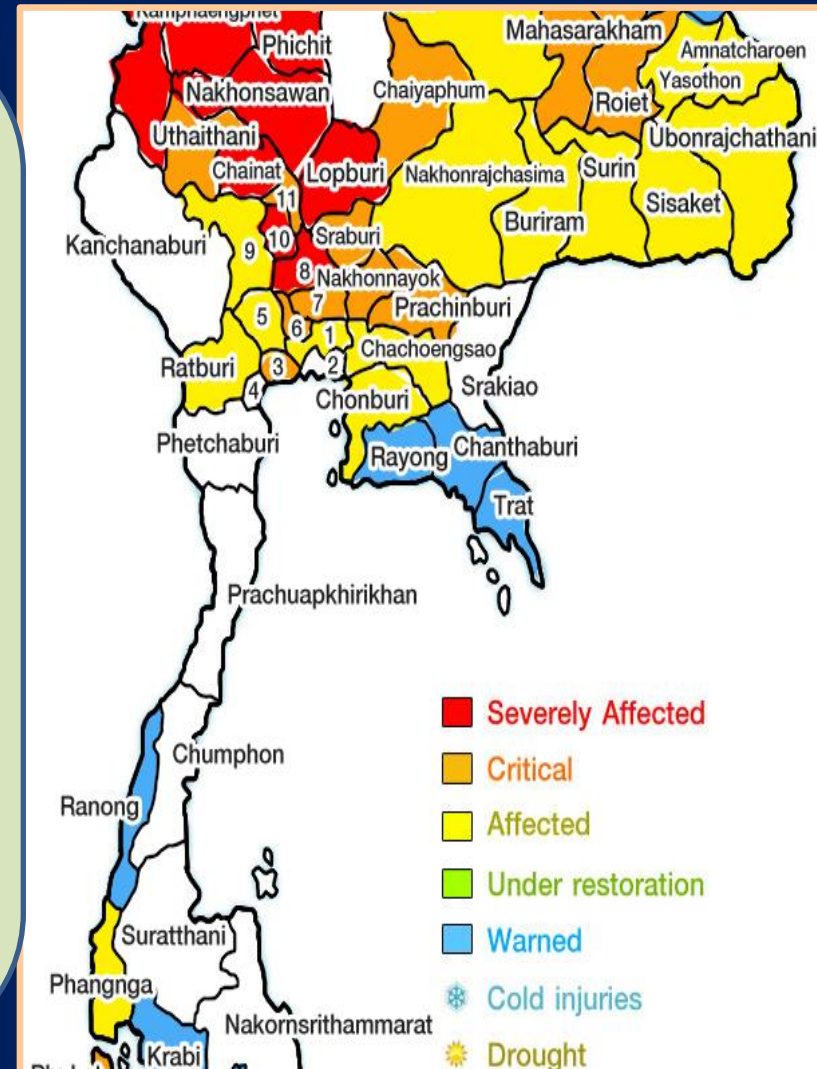◈ **Guideline on fixing, recovery and restoration to community right after disaster.**

Disaster Risk Reduction (DRR) Approach

- Thailand recognize the disaster risk reduction approach (DRR) as one of the strategy for dealing with loss and damage.

- Humanitarian aspects of relief such as providing medical care, food, water search and rescue, only small amount humanitarian funding is spent on disaster risk reduction approach.

Disaster Risk Reduction (DRR) Approach

◈ **Systematic integration of DRR into development planning and activities remains a challenge for Thailand.**

◈ **Strengthening policies and institutions.**

◈ **Identifying, assessing and monitoring risk and enhancing early warning.**

Map legend:
- Severely Affected
- Critical
- Affected
- Under restoration
- Warned
- ❄ Cold injuries
- ☀ Drought

Disaster Risk Reduction (DRR) Approach

- **Using knowledge, innovation and education to bring culture of safety.**

- **Reducing underlying risk factors such as environmental degradation.**

- **Strengthening preparedness for effective response.**

Thai Professionals Conference 2012
Disaster Risk Management:
Lessons Learned from USA, Japan and Europe
July 4 - 5, 2012
Miracle Grand Convention

GSIC International Workshop on
Information Technology Applied to Disaster Prevention in Grounds and Farmlands

POLICY AND INSTITUTIONS

◈ **Commitment to disaster risk reduction by decision makers.**

◈ **Participation and understanding of individuals at the local level where the disasters are felt.**

POLICY AND INSTITUTIONS

- **Build up country's overall policies, legislative process and the institutional framework for implementing measures.**

- **Tools for developing policy and institutions aimed at mainstreaming disaster risk reduction into development planning from national to community level.**

- **Culture of safety and resilience.**

Synergy between the line Ministries on Disaster Management

- ➢ Ministry of Interior
- ➢ Ministry of Defense
- ➢ Ministry of Health

Focal point of climate change
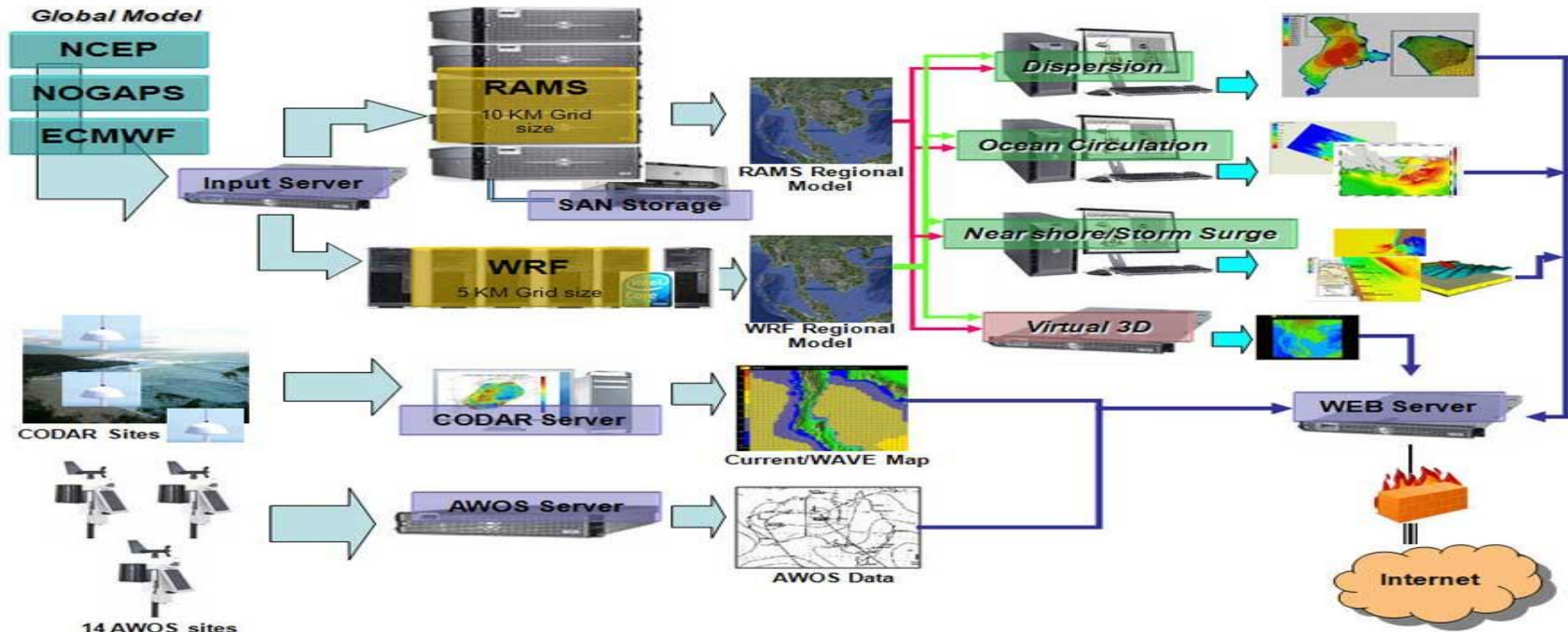
- ➢ Ministry of Natural Resources and Environment

RISK IDENTIFICATION AND EARLY WARNING

⇨ **Science and Technology**
- To understand the physical processes behind hazards
- Interaction with community infrastructure and activities

⇨ **Information to communities**

⇨ **Handbook on "Community – Based Disaster Risk Management" and Framework on DRR**

KNOWLEDGE MANAGEMENT AND EDUCATION

⇨ **Support the local community's involvement for implementing strategies that will lead to culture of safety.**

⇨ **Building capacity on the implementation of risk reduction measures.**

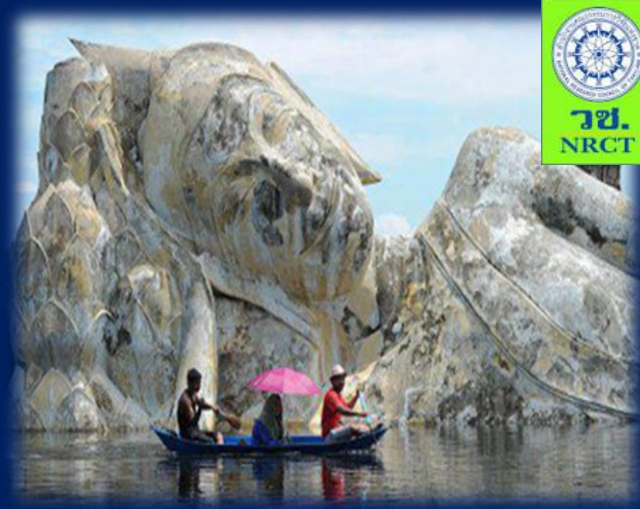⇨ **Conveying the concepts and risks associated with climate change to local levels.**

◈ PREPARED AND RESPONSE

⇨ **Guideline for Needs Assessments and recovery planning, standards for humanitarian relief, and checklists for preparedness.**

⇨ **Guideline for Emergency Assessment to feed to reconstruction plan.**

THANK YOU