

Fundamentals of Disaster Risk Reduction and Management and Climate Change



Fundamentals of Disaster Risk Reduction and Management and Climate Change

Module 05 – Youth Ecological Camp

Module Outline

Chapter 1: Disasters and Ecosystems

- A. History and Background
 - Geographical Context
 - Social Context
- B. Disaster Statistics
 - Global statistics
 - Philippine statistics

Chapter 2: Introduction to disasters, risk reduction, and climate change

- A. Concepts and Definitions
 - Ecosystem, Livelihoods, Disaster, Disaster Risk, Hazard, Vulnerability, Capacity / Resilience, Risk

Chapter 3: Linking disasters, climate change, and ecosystems

- A. Ecosystem services and Human well-being
- B. Provisioning, regulating, and cultural ecosystem services

Chapter 4: Disaster management, resilience, and ecosystems

- A. Ecosystem-based Disaster Risk Reduction and Adaptation Framework
- B. Disaster Risk Reduction Management Framework

Chapter 5: Disaster Town Watching

- A. Introduction to Disaster Town Watching
- B. Fieldwork exposure trip

Review on Chapters 1 and 2

Disasters and Ecosystem | Introduction to disasters, risk reduction, and climate change

GAME 01:

By Group, write your answers on a metacard and give it to the facilitator.

1. Give two reasons why the Philippines is geographically prone to disasters.
2. Give two social context why the Philippines is prone to disasters.
3. What volcano is the most active in the Philippines?
4. What Philippine volcano was the most destructive of its time when it erupted?

Review on Chapters 1 and 2

Disasters and Ecosystem | Introduction to disasters, risk reduction, and climate change

GAME 02:

By Group, match your answer to the question using the following answer keys:

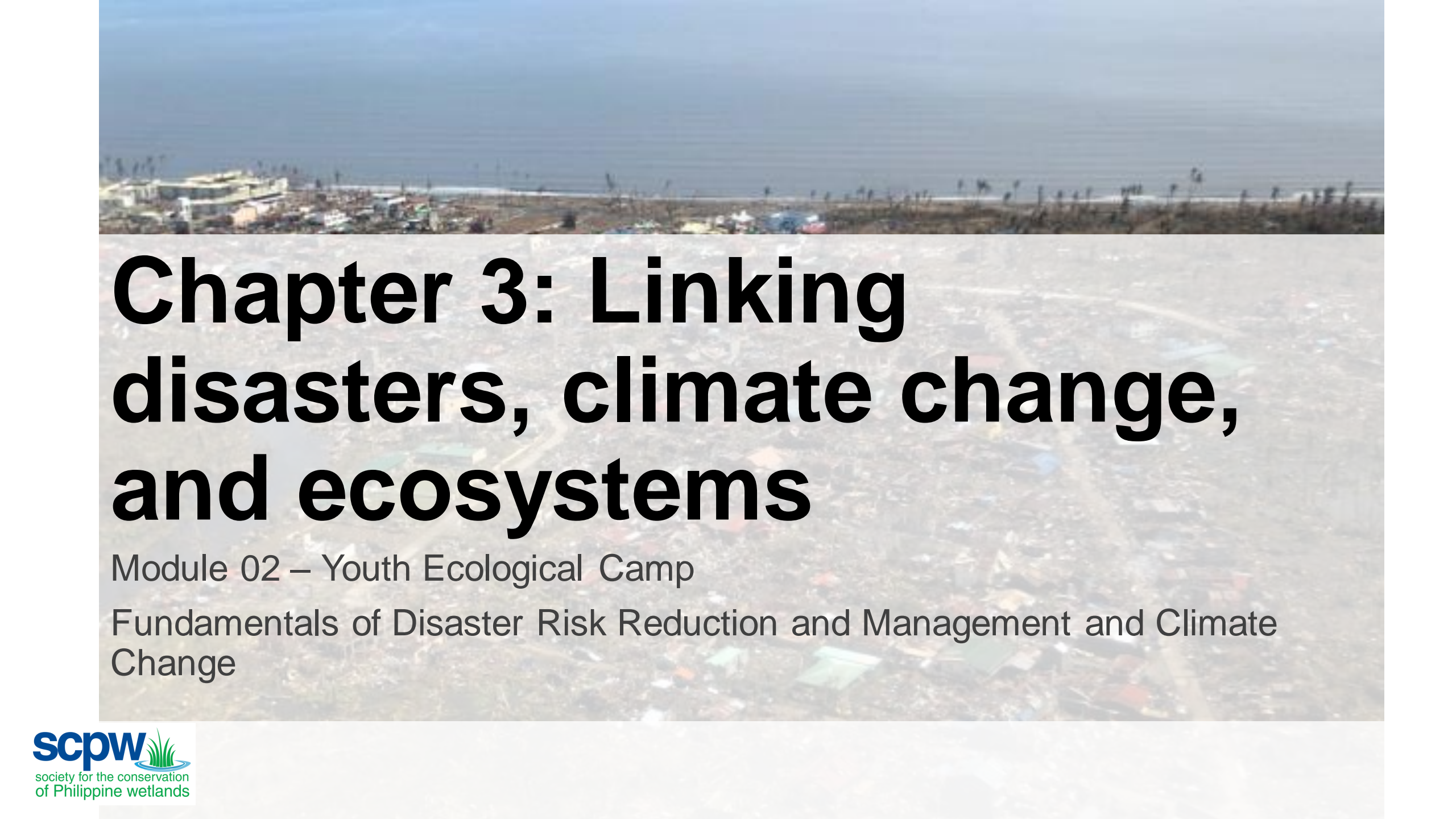
Hazard: Raise Both hands while seated

Vulnerability: Squat

Capacity: Raise both hands while standing

Risk: Raise one leg while standing

**No Urban Settlement
Planning**



Chapter 3: Linking disasters, climate change, and ecosystems

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Fundamentals of Disaster Risk Reduction and Management and Climate Change

Chapter 2: Linking disasters, climate change, and ecosystems

Ecosystem services and Human well-being

Why does taking care of the ecosystem help human well-being?



Chapter 2: Linking disasters, climate change, and ecosystems

Ecosystem services and Human well-being

Why does taking care of the ecosystem help human well-being?

- Life cannot be sustained without ecosystem services
- The quality of man's life is directly linked to the quality of the ecosystem



Chapter 2: Linking disasters, climate change, and ecosystems

Provisioning, regulating, and cultural ecosystem services

What are the services provided by ecosystems?

- Provisioning:
 - Sustainable livelihoods, food production (fish, shellfish, animals, plants, etc), fiber production (rope, thatch, wood, etc.), medicines, freshwater, genetic resources, and others.
- Regulating and Supporting:
 - Erosion control, soil fertility, water purification, stabilizing regional climate, carbon storage and sequestration, biodiversity conservation, pest regulation, pollination, and others.
- Culture:
 - Heritage and local identities, tourism, folklore, religion, dances, songs, poems, spiritual, scientific, artistic, knowledge, aesthetic, sense of place, social relations, and others.

Chapter 2: Linking disasters, climate change, and ecosystems

Provisioning, regulating, and cultural ecosystem services

Natural Resources Management

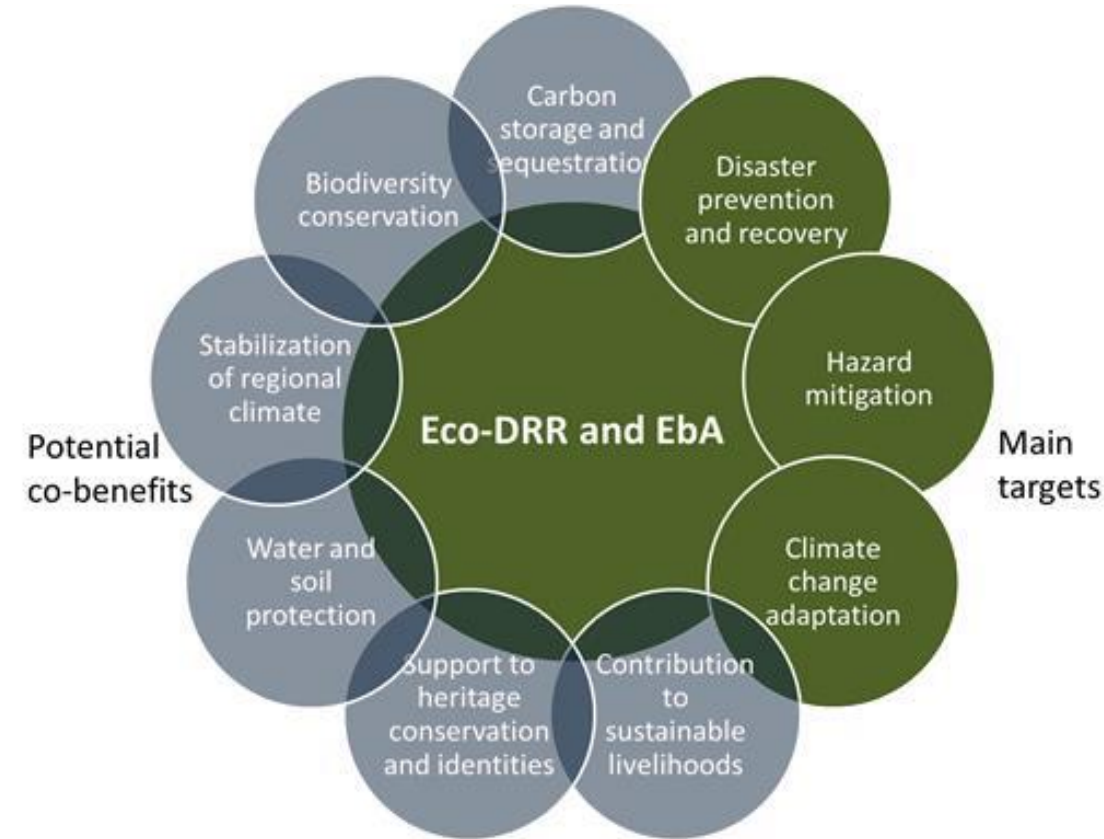
- Managing the resource provisions of ecosystems
 - Ensuring that you harvest sustainably
 - Looking after the amount you consume (eliminating waste)
 - Respecting the processes and order of nature
- Maintaining the regulating and supporting services of the ecosystem
 - Ensuring that you do no pollute (reduce, reuse, and recycle)
 - Avoiding destruction of natural habitat
 - Respecting the natural cycles of nature
- Ensuring the cultural capital of ecosystems
 - Making yourselves stewards of God's creation
 - Respecting nature and all its forms
 - Spreading awareness about how taking care of ecosystems such as wetlands help our communities

Chapter 2: Linking disasters, climate change, and ecosystems

Provisioning, regulating, and cultural ecosystem services

Natural Resources Management Approaches


- Managing natural resources by conserving and protecting ecosystems provides several **co-benefits** aside from disaster prevention and recovery, hazard mitigation, and climate change adaptation.
- The approach is therefore to benefit from both the DRR benefits and the **poverty reduction** support that conserving and protecting ecosystems can provide.



Chapter 2: Linking disasters, climate change, and ecosystems

Any Questions So Far?

- Ecosystem services and Human well-being
- Provisioning, regulating, and cultural ecosystem services



Chapter 4: Disaster management, resilience, and ecosystems

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Fundamentals of Disaster Risk Reduction and Management and Climate Change

Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

What is Ecosystem Based Disaster Risk Reduction (ECO-DRR)?

- Combining natural resources management approaches with disaster risk reduction methods such as early warning systems and emergency planning in order to have more effective disaster prevention, reduce the impact of disasters on people and communities, and support disaster recovery.

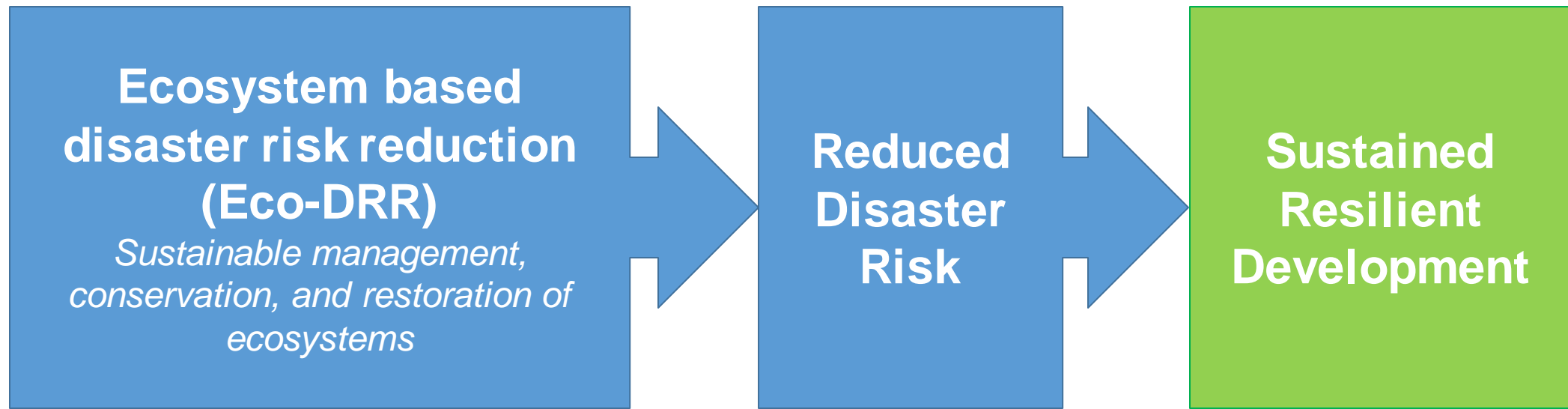


Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

What is Ecosystem Based Disaster Risk Reduction (ECO-DRR)?

- "Ecosystem-based disaster risk reduction (Eco-DRR) is the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim to achieve sustainable and resilient development" (Estrella and Saalismaa, 2013)



Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

What is Ecosystem Based Disaster Risk Reduction (ECO-DRR)?

- Well-managed ecosystems, such as wetlands, forests and coastal systems, act as **natural infrastructure**, reducing **physical exposure** to many hazards and **increasing socio-economic resilience** of people and communities by sustaining local livelihoods and providing essential natural resources such as food, water and building materials (Sudmeier-Rieux and Ash, 2009, Nehren et al. 2014a).



Grey infrastructure
Cost: 6.8 Billion USD

sewer system

Green infrastructure
Cost: 5.3 Billion USD

green roof tops
green sidewalks
upstream and urban wetlands
ponds

Benefits over time

Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

What is Ecosystem Based Disaster Risk Reduction (ECO-DRR)?

Ecosystem Management allows:

- Strengthening of natural infrastructure and human resilience
- Generates many different social, economic, and environmental benefits for many different groups of people.

Ecosystems can prevent or mitigate **hazards**

Ecosystems can reduce **exposure** by functioning as natural buffers

Ecosystems can reduce **vulnerability** by supporting livelihoods – before, during and after disasters

But all solutions have limits..

Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

What is Ecosystem Based Disaster Risk Reduction (ECO-DRR)?

Mountain Forests used as natural 'infrastructure' to protect against landslides

- Can be used as a resource for wood
 - Forests are sources of wood – logs for commercial sale, and also used locally for furniture, housing, tools, energy and others.
- Can be used as recreation
 - Forests used as a barrier for falling rocks can be used as hiking and climbing areas; and because they are less threatening looking than huge concrete barriers – they are good for tourism.
- Protection forests depend on people's willingness to maintain ecosystems instead of man-made infrastructure.
 - Because protection forests are 5-10% more cheaper they are preferred over structurally engineered solutions and because of the additional benefits derived by the community from a forest compared to a concrete barrier but this does not do away with minimum man-made barriers.

Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

PLACE VIDEO OF SWISS PROTECTION FORESTS HERE

Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

What is Ecosystem Based Disaster Risk Reduction (ECO-DRR)?

Mangroves used as natural 'infrastructure' to protect against tidal surges

- Can be used as a resource for food
 - Mangroves are breeding grounds for small fish, where they grow and mature, providing a steady and reliable source of mature fish for consumption – both domestic and for livelihood use.
- Can be used as recreation
 - Mangroves are the habitat of a tremendous variety of plants and animals which becomes a natural scenic spot for education, relaxation, and tourism.
- Mangroves depend on people's willingness to maintain these ecosystems instead of man-made infrastructure.
 - Because protection forests are easier to maintain, last longer, and are beautiful to look at they are preferred over structurally engineered solutions to reduce physical risk (Das and Vincent 2009; Renaud et al., 2013). In some cases they are complemented with structurally engineered solutions.

Chapter 4: Disaster management, resilience, and ecosystems

Ecosystem-based Disaster Risk Reduction and Adaptation Framework

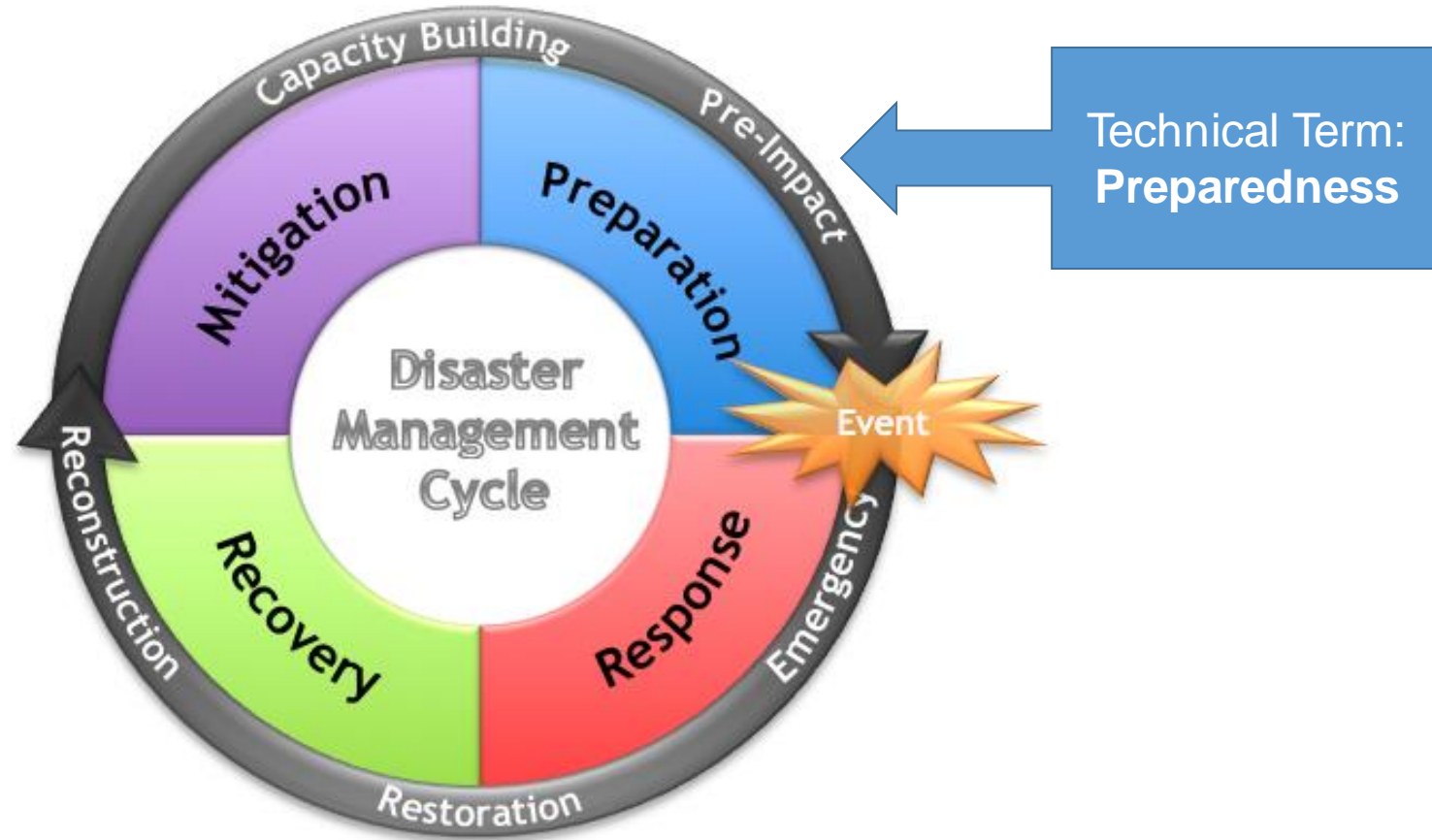
What is Ecosystem Based Adaptation (EbA)?

- The use of *sustainable management and conservation and restoration of ecosystems*, **focusing on ecosystem services and biodiversity**, as a means to help people adapt to the adverse effects of climate change.
- EbA focuses on the environment as a means for adaptation that leads to people's resilience
- Eco-DRR focuses directly on people's inherent capacity as a means to increase resilience
- Both approaches are both means to increase resilience of people to disasters

Chapter 4: Disaster management, resilience, and ecosystems

Disaster Risk Reduction Management Framework

Approach to Disaster Management – The DRR/DRM Cycle



Chapter 4: Disaster management, resilience, and ecosystems

Disaster Risk Reduction Management Framework

Comparison of DRR and DRM

Disaster risk reduction

Concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Ways of doing and actual action of reducing risks through systematic efforts

Theories, methods, practice

Disaster risk management

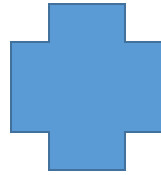
Administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Human and social capital, organizational capacity, and policies and strategies

Ordinances, laws, organisations, capacities

Chapter 4: Disaster management, resilience, and ecosystems

Risk Assessment and Analysis



- Determines the nature and extent of risk
- Analyses potential hazards and evaluating existing conditions of vulnerability

Chapter 4: Disaster management, resilience, and ecosystems

Any Questions So Far?

- Ecosystem-based Disaster Risk Reduction (Eco-DRR)
- Ecosystem-based Adaptation (EbA)
- Disaster Risk Reduction Management Framework (DRRM)



Chapter 5: Chapter 5: Disaster Town Watching

Module 02 – Youth Ecological Camp

Fundamentals of Disaster Risk Reduction and Management and Climate Change

Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

What is Disaster Town Watching?

- Community or neighbourhood planning
- Participatory
- Residents recognize problems
- Residents put forward solutions together
- Guided by at least one expert or professional trained in one or more aspects of planning.



<http://media.philstar.com/images/the-philippine-star/other-sections/the-good-news/20150126/JAICA-volunteers-Bicol-youth.jpg>

Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

History of Disaster Town Watching

- Developed by Japanese urban planners from the 1970s, has become popular as a participatory tool in machizukuri (Setagaya Machizukuri Center 1993).

“Machi” means town, district, community

“Zukuri” means making or building.

- The use of town watching has been extended to dealing with disaster and safety related physical issues such as safe or unsafe places and evacuation routes; we shall call this disaster town watching.

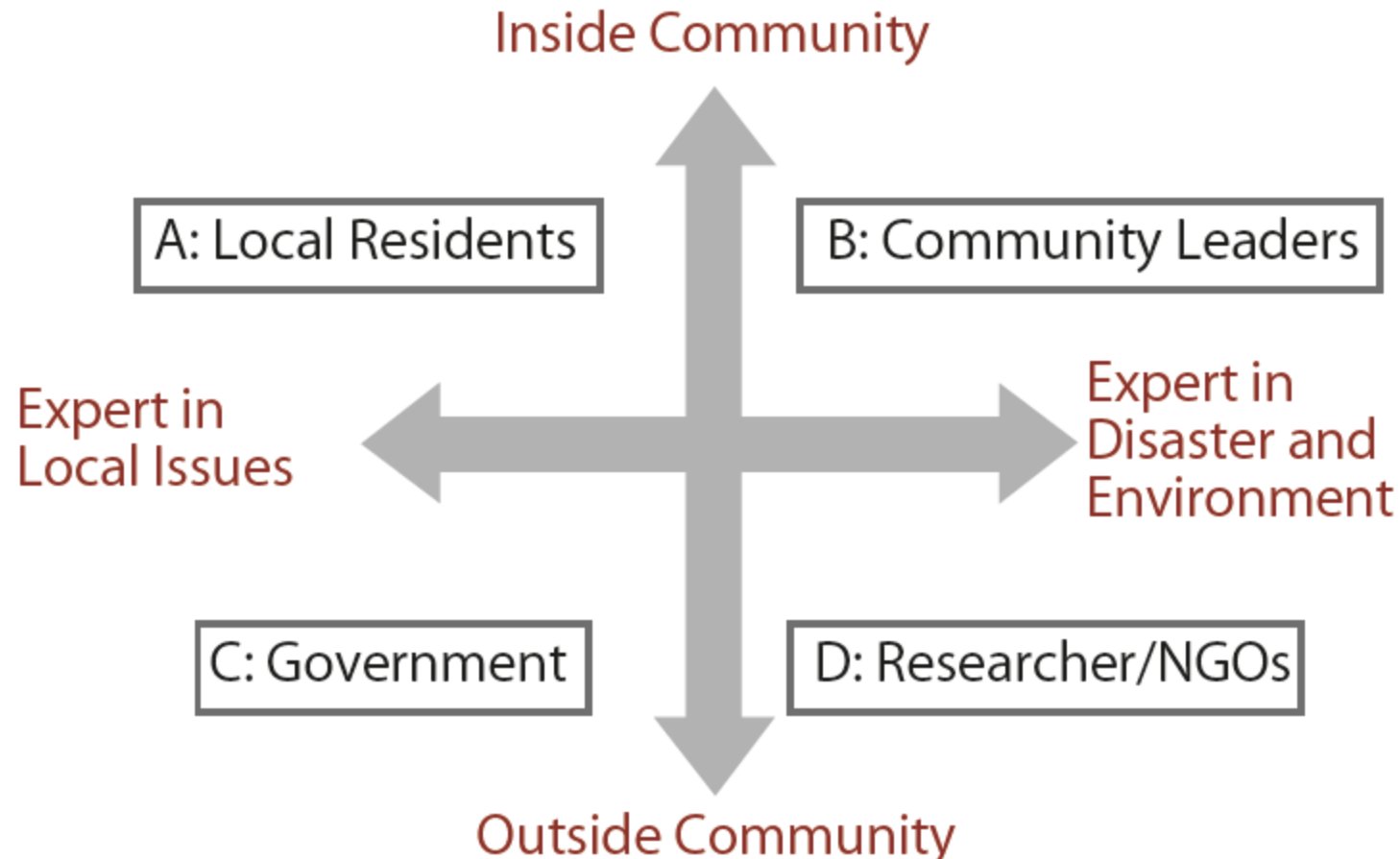


<http://image.slidesharecdn.com/100528idrcsunagav30ppt2259/95/evolving-disaster-risk-governance-in-local-communities-demonstration-experiments-in-aichi-prefecture-in-japan-10-728.jpg?cb=1277200041>

Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

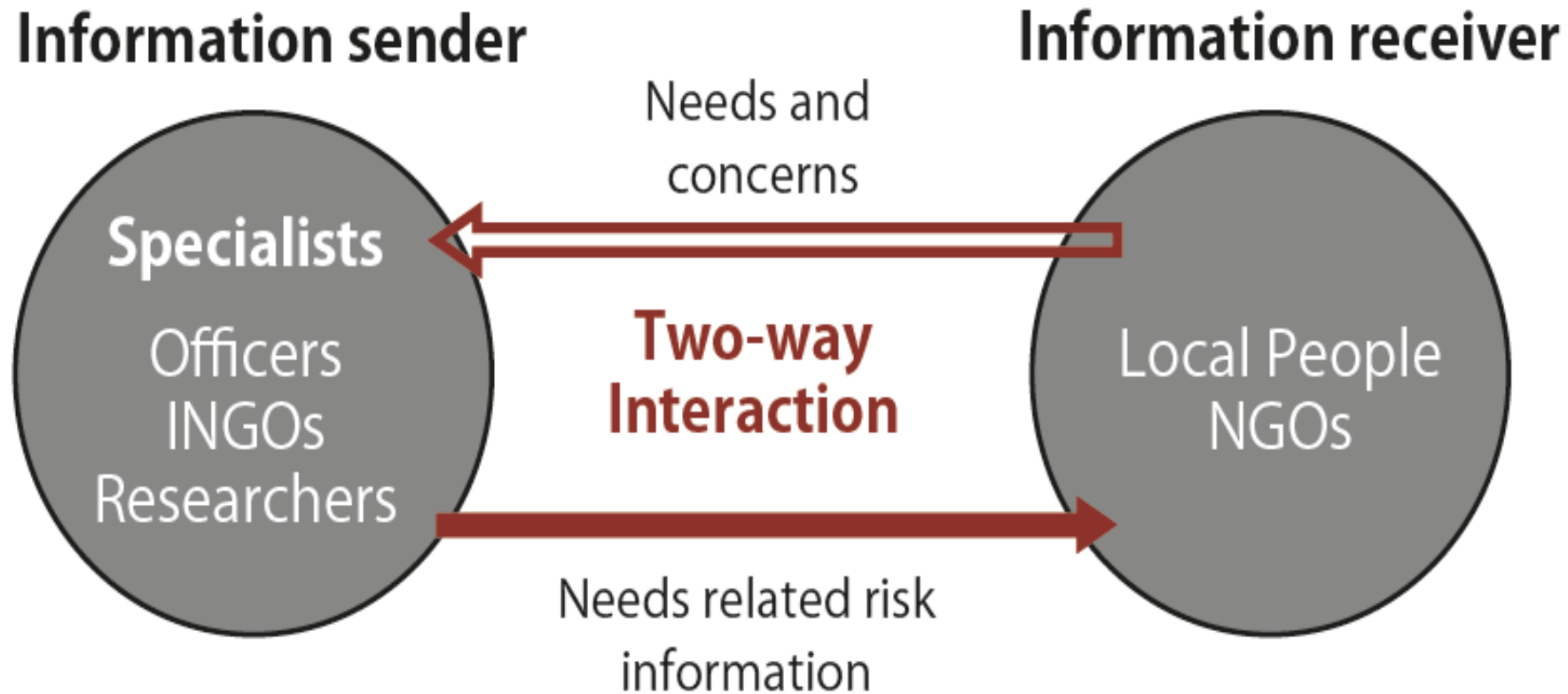
Disaster Town Watching is like a joining a procession in a fiesta!



Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

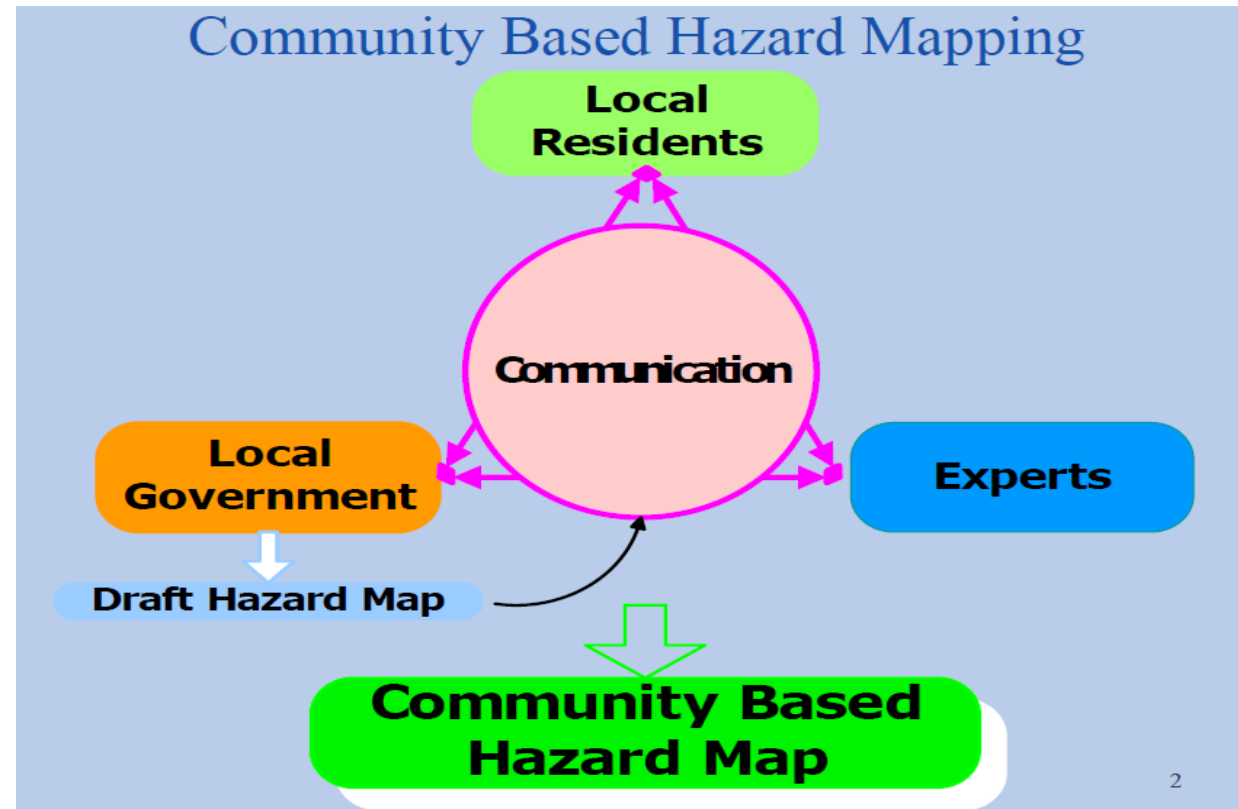
Communicating Risks and Resources through community interaction



Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

Communicating Risks and Resources through maps!



Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

Advantages

- Develop a concrete image of DRR
- Community members autonomously identify problems in their own communities
- Share opinions and reach a reasonable social consensus through face-to-face discussions

Disadvantages

- Takes a lot of time
- Uses many resources
- Needs out of the box thinkers from the communities

Chapter 5: Disaster Town Watching

Introduction to Disaster Town Watching

Any Questions So Far?

- What is Disaster Town Watching?
- History of Disaster Town Watching
- Communicating Risks and Resources through community interaction and maps
- Advantages and Disadvantages of Disaster Town Watching

Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Preparations for Disaster Town Watching

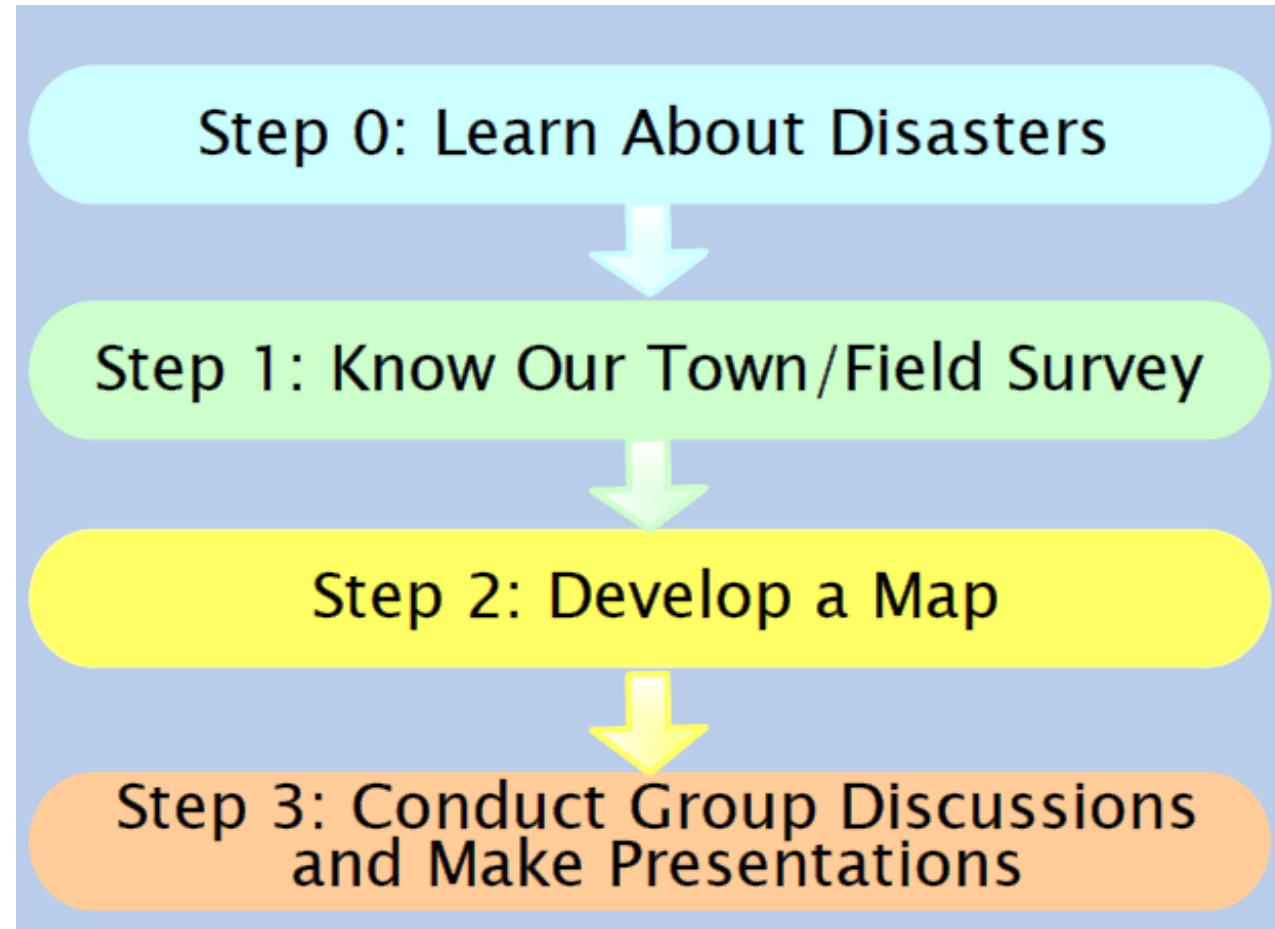
- Schedule
- Participants and Their Roles
- Organizing Information
- Informing Local Residents
- Materials and Handouts



Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Disaster Town Watching Process



Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Step 0 - Learn About Disasters

- Lectures on disasters in the local community

$$R = H \times V / C$$

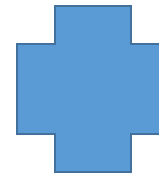
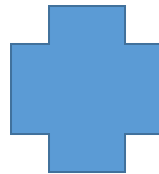
- Introduction to the Town-Watching concept
 - Objectives
 - Schedules of activities
 - Expected results

Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Step 1: Field Survey / Know our Town

- Each group walks around the streets in the local community, looking to identify both **positive** and **negative features** relating to disaster risk management activities.
- Camera, map, pencil, white board marker, etc



Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Step 2: Develop a Map

- Group members create a community based hazard map, manually integrating their observations and findings on a large-scale base map.



Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Step 3: Conduct Group Discussion and make Presentations

- Group discusses about:
 - "What are the potential problems?"
 - "What are the possible countermeasures?"
 - "Who should be responsible for implementing the countermeasures?"
- Presentations to share the results of the group discussions



Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Outputs

Tangible

- Risk Map
- Solutions/ Countermeasures
- Suggested Policies

Intangible

- Knowledge
- Participation
- Cooperation

Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Any Questions So Far?

- Ecosystem,
- Ecosystem Services,
- Livelihoods,
- Disaster,
- Risk,
- Disaster Risk,
- Hazard,
- Vulnerability,
- Exposure,
- Capacity / Resilience

Chapter 5: Disaster Town Watching

Fieldwork exposure trip

Field Work

1. Divide yourself into groups
2. Do a disaster town watching (barangay or group of streets)
3. Map the “positives and negatives” (H, V, C) in terms of “disaster risk reduction
4. Be mindful of the time allotted to complete the activity. Think of the time to complete your fieldwork and time you need to process your data and make your report.

End of Chapters 3 and 4

On to Disaster Town Watching Field

Exposure

**Fundamentals of Disaster Risk Reduction and
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