

EcoSystem Disaster Risk Reduction

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Objectives

- Review the role of ecosystems in disaster risk reduction
- Prepare for field assessment exercise

Outcomes

At the end of the session you will be aware of:

- How environmental issues are important to disaster management
- Use of ecosystems approach to DRR

What is the ecological issue here?



What is the ecological issue here?



What is the ecological issue here?



What is the “eco” issue here?



What is the ecological issue here?



What is the ecological issue here?



Quick Review of Definitions

- Risk = Hazard x Vulnerability
- What is a hazard?
- What is vulnerability?
- How does the environment relate to hazards and vulnerability?

What is an “Ecosystem”?

Dynamic complexes of plants, animals and other living communities and the non-living environment interacting as functional units. Humans are an integral part of ecosystems.

Source: Millennium Ecosystem Assessment. *Ecosystems and Human Well-Being: Synthesis*.

How would you restate this in “conversational Russian”?

Can you think of any links between ecosystems and disasters?

What are ecosystem services?

The benefits that people and communities obtain from ecosystems. Integrated management of land, water and living resources that promotes conservation and sustainable use provides the basis for maintaining ecosystem services, including those that contribute to reduced disaster risks.

- *Source: the Millennium Ecosystem Assessment.*

Examples of Ecosystem Services

Wetlands and peatlands buffer flood waters



<http://www.flmnh.ufl.edu/fish/southflorida/everglades/Marshes/images/marsh1.jpg>

Forests

“Protection forests”
reduce damage from
avalanches, landslides
and rock falls

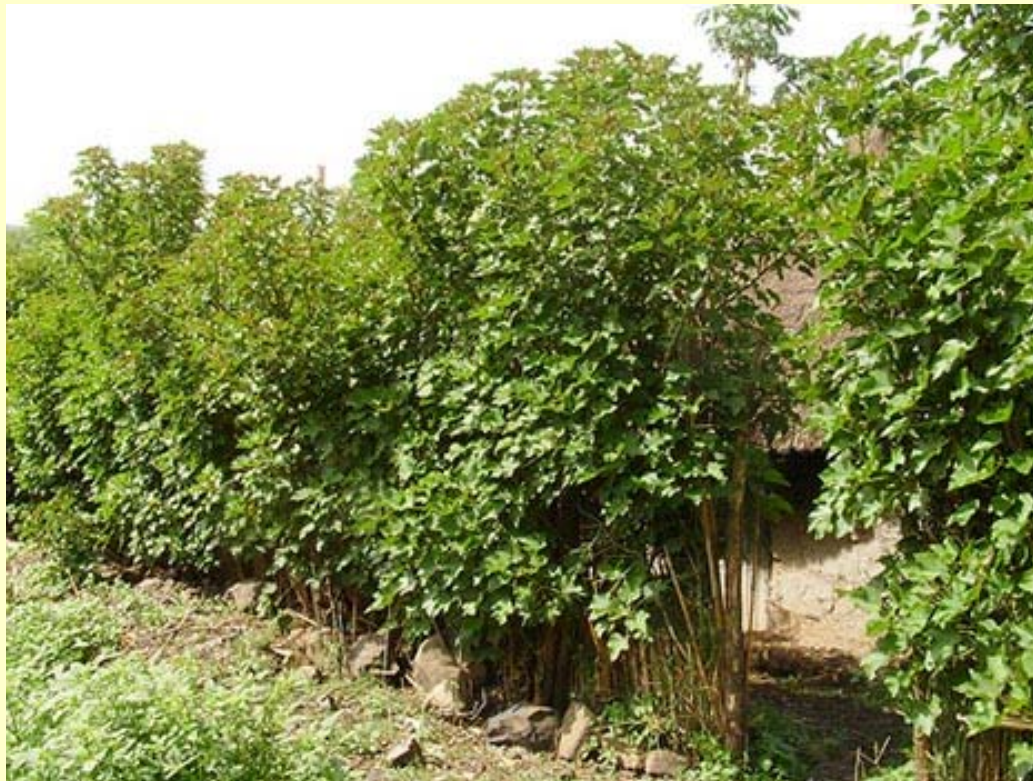


Arhus DRR

<http://static.panoramio.com/photos/original/5824362.jpg>

Shelter Belts, Greenbelts, Hedges, “Living Fences”

...can help regulate drought, sand storm and fire



<http://www.treehugger.com/20090720-jatropha-fence.jpg>

Ecosystem Services

Ecosystems provide us with many services, including:

- Provisioning services: such as food and water
- Regulating services: such as regulation of floods, drought, land degradation and disease
- Supporting services: such as soil formation and nutrient cycling
- Cultural services: such as recreational, spiritual, religious and other non-material benefits

Ecosystem-Disaster Links

- Hazards occur in ecosystems and may affect them in the short- or long-term
- Human actions which damage ecosystems can increase the impact of disasters
- Restoring ecosystems (e.g., restoring wetlands which can absorb flood waters) can reduce disaster impact in some cases

Any other links?

How is vulnerability linked to the environment?

Where people live – it may be a location threatened by one or more hazards.



<http://static.panoramio.com/photos/original/19611601.jpg>

Here is one example (Brazil). Identify some other examples

How is vulnerability linked to the environment?

Access to natural resources:

- For economic use
- To meet basic needs, for instance, water, fuel and shelter
- **What are examples?**

Ecosystems and Vulnerability Reduction

Mitigating vulnerability through an ecosystem approach often involves:

- Improving access to natural resources
- Improving the quality of the natural resources available

How would you use ecosystems to reduce vulnerability related to:

- Poor quality water
- Poor shelter
- Lack of access to food (sustainable, healthy ecosystems are part of the answer)

What is environmental sustainability?

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

From: ***Our Common Future***, World Commission on Environment and Development, Oxford University Press, 1987

What is the relationship between disaster risk reduction and environmental sustainability?

To be sustainable...

DRR actions

- Should be able to continue in the future, that is, they are not short term, and
- Will not compromise capacity to meet needs in the future, that is, we should not try to solve problems only to have them re-occur in the future

Identifying Ecosystem Services and links to DRR

Look at each of the following pictures:

1. Identify the ecosystem service involved
2. Identify the link between ecosystems and disaster
3. Identify what can be done to reduce the disaster risk using the ecosystem.
4. Write results on a flip chart.



Photo credit: Charles Kelly





Arhus DRR

Photo credit: Charles Kelly



Arhus DRR

<http://www.omaharapidresponse.org/images/PakistanDestruction-4P10.jpg>

The Logic of Using Ecosystems-based Activities for DRR

- Healthy ecosystems are important for healthy human environments, livelihoods and well being.
- Ecosystems provide essential services.
- Ecosystem-based disaster risk reduction activities protects these ecosystem services and helps them be sustainable.

Participant Experience

What have you done which involves ecosystem DRR?



Arhus DRR

Integrate Environmental Issues into Typical DRR Assessments

DRR assessments determine the nature and extent of the risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.

DRR assessments consist of...

1. **A hazard assessment** to determine the characteristics of hazards facing a community

Such as??

2. **A vulnerability assessment** to determine who and what is vulnerable, level of vulnerability and underlying reasons for vulnerability **An example??**
3. **A capacity assessment** to determine a community's existing capacities to cope with a hazard and the gaps in capacity **An example??**
4. **An action plan** **To do what??**

Recall Ecosystem Services

They include

- Provisioning services
- Regulating services
- Supporting services
- Cultural services



Some little field work....



The Field Exercise

Each team will

1. Go to a location where there is at least one hazard
2. Complete the EcoDRR Assessment Form following the instructions.
3. Take pictures so we can see what you saw

When you are back....

1. Review DRR options for each hazard identified
2. Add these options to the form.
3. Note options for each hazard on a flip chart
4. Be prepared to quickly present your results in 5 minutes.
5. Use pictures – we can upload for use with the LCD Projector

Assessment Results

A Few Key Points

1. Ecosystem DRR involves a number of interventions
2. Some ecosystem DRR interventions take time to have an impact
3. Ecosystem DRR interventions often have additional environmental benefits
4. Ecosystem DRR interventions often cost less over the long term
5. Ecosystem DRR interventions often involve social change, which can take time
6. Demonstration projects are often useful to start the process of change: seeing is believing

Questions and Comments?

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