

IUCN

Environmental Guidance Note for Disaster Risk Reduction

Healthy Ecosystems for Human Security and
Climate Change Adaptation

Karen Sudmeier-Rieux, Neville Ash and Radhika Murti

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2013 edition

1. The first step is to identify the key stakeholders and their interests. This involves understanding the different groups of people who are affected by the project and what they want to achieve. Stakeholders can include government agencies, local communities, private businesses, and non-governmental organizations.

2. The second step is to assess the risks and opportunities associated with the project. This involves identifying the potential negative impacts of the project and the ways in which it could benefit the community.

3. The third step is to develop a communication plan. This involves identifying the key messages that need to be communicated and the best ways to reach the stakeholders.

4. The fourth step is to engage the stakeholders in the decision-making process. This involves holding meetings and consultations with the stakeholders to discuss the project and their views.

5. The fifth step is to monitor and evaluate the project. This involves tracking the progress of the project and assessing its impact on the community. Regular monitoring and evaluation can help to identify any problems and make adjustments to the project as needed.

6. The sixth step is to report on the project. This involves providing a regular update on the project's progress and impact to the stakeholders and the public.

7. The seventh step is to build on the success of the project. This involves identifying the lessons learned from the project and using them to inform future projects. It also involves continuing to engage the stakeholders and monitor the project's impact.

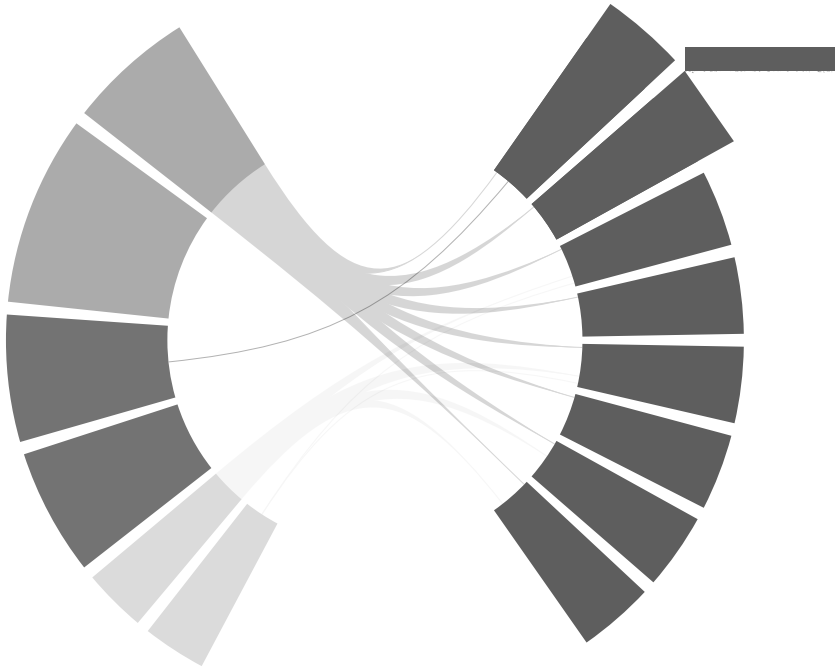
Introduction: Human well-being, healthy ecosystems and disasters

What are healthy ecosystems...

...are those that are able to maintain their structure and function over time, despite disturbances. They are resilient and able to recover from perturbations. Healthy ecosystems are characterized by high biodiversity, complex interactions, and the ability to adapt to change. They provide essential services such as clean air, water, and food. The health of an ecosystem is determined by the balance of various factors, including energy flow, nutrient cycling, and the presence of keystone species. Disturbances like fires, floods, and human activities can impact ecosystem health, but resilient systems can often recover or adapt to new conditions.

community - a group of interacting organisms living together in a specific area. This includes various species of plants, animals, and microorganisms that have evolved together and depend on each other for survival. The community structure is shaped by both biotic and abiotic factors.

The health of an ecosystem is determined by the balance of various factors, including energy flow, nutrient cycling, and the presence of keystone species. Disturbances like fires, floods, and human activities can impact ecosystem health, but resilient systems can often recover or adapt to new conditions. Ecosystems are dynamic and constantly changing, with different species and interactions emerging over time. Understanding ecosystem health is crucial for managing natural resources and addressing environmental challenges. Healthy ecosystems are essential for the well-being of all life on Earth, providing the foundation for our food, water, and air. They also play a vital role in regulating the climate and maintaining the planet's overall stability.



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BOX 1

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...and why do they matter to disaster risk management?

• Ecosystems matter to disaster risk reduction:

• mangrove forests are a natural barrier against coastal flooding and storm surges. They also provide habitat for fish and other marine life, which can be a source of food and income for coastal communities.

• coral reefs, mangroves, and other coastal ecosystems provide natural protection against coastal erosion and flooding.

• ecosystems also provide other benefits, such as carbon sequestration, water purification, and soil conservation. These benefits can help reduce the vulnerability of communities to climate change and other environmental risks.

• protecting ecosystems is a key component of disaster risk management, and can help reduce the impact of disasters on communities and the environment.

BOX 2

• The Convention on Biological Diversity (CBD) is a global agreement that aims to conserve biodiversity and ensure the sustainable use of its components. It was adopted in 1992 and has been ratified by 113 countries.

• The CBD has three main objectives: to conserve biodiversity, to ensure the sustainable use of its components, and to ensure the equitable sharing of benefits arising from the use of biodiversity.

• In 2002, the CBD adopted the 2010 Biodiversity Target, which aims to reduce the rate of loss of biodiversity by 10% by 2010. This target was subsequently endorsed at the World Summit on Sustainable Development in 2002.

• The 2010 Biodiversity Target is a key component of the Millennium Development Goals (MDGs), which are a set of eight international development goals adopted by the United Nations in 2000.

¹ The Convention on Biological Diversity (CBD) has three objectives: the conservation of biodiversity, the sustainable use of its components and the equitable sharing of benefits from the use of biodiversity. In 2002, the CBD adopted the 2010 Biodiversity Target, to reduce the rate of loss of biodiversity by 10%. The 2010 target was subsequently endorsed at the World Summit on Sustainable Development, and has been incorporated into the Millennium Development Goals, as a target under MDG7 on environmental sustainability.

How can ecosystems contribute to reducing disasters?

ecosystems provide a natural barrier against disasters such as floods, storms, and landslides. mangroves, for example, can absorb and store carbon, reducing the impact of climate change. wetlands can filter pollutants and improve water quality. forests can prevent soil erosion and landslides. ecosystems also provide a natural habitat for many species, including those that are important for human health and well-being. by protecting and restoring ecosystems, we can reduce the risk of disasters and improve the resilience of our communities.

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A summary of the financial performance of the company for the year ended 31 March 2013. The company has achieved a profit after tax of \$1.2 million, an increase of 15% on the previous year. This was due to a combination of factors, including a 10% increase in sales volume and a 5% increase in operating margins. The company has also successfully managed its costs, with a 3% reduction in operating expenses. The financial results are detailed in the following table:

A total of 141 contracts were awarded in 2012, compared to 135 in 2011. The total value of these contracts was \$1.2 million, an increase of 15% on the previous year. The majority of these contracts were awarded to existing clients, with a total value of \$850,000. New clients accounted for the remaining \$350,000. The company has a strong track record of delivering high-quality services and maintaining long-term relationships with its clients.

BOX 6

The following table shows the breakdown of the company's revenue by product line and region for the year ended 31 March 2013.

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The company's revenue is primarily derived from the sale of its products and services. The following table shows the breakdown of the company's revenue by product line and region for the year ended 31 March 2013. The company's revenue is primarily derived from the sale of its products and services. The following table shows the breakdown of the company's revenue by product line and region for the year ended 31 March 2013.

What is ecosystem-based disaster risk reduction?

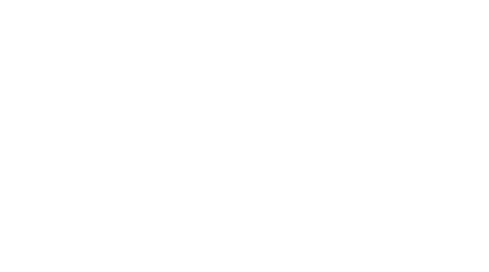
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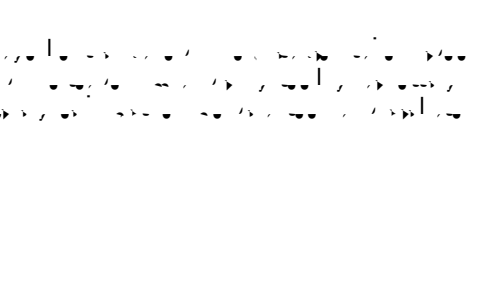
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Mangroves, providing spawning grounds for numerous fish species, Sri Lanka



Sprats, Sri Lanka



² See "Ecosystem-based DRR" (www.iirr.org)

How can we integrate ecosystem management and disaster risk management?

Figure 2 illustrates the integration of ecosystem management and disaster risk management. The diagram shows a central box labeled 'Ecosystem-based disaster risk reduction' which is connected to two main components: 'Disaster Risk Management' and 'Ecosystem Management'. The 'Disaster Risk Management' component is further divided into 'Hazard', 'Exposure', and 'Vulnerability'. The 'Ecosystem Management' component is divided into 'Ecosystem Services', 'Ecosystem Health', and 'Ecosystem Resilience'. The diagram also shows a feedback loop between 'Ecosystem Management' and 'Disaster Risk Management', indicating that ecosystem management can reduce disaster risk, and disaster risk management can inform ecosystem management. The diagram is credited to 'Source: PEDRR, 2010'.

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Fig. 2 Ecosystem-based disaster risk reduction, a more sustainable approach to DRR and climate change adaptation (source PEDRR, 2010)

iri 9. Principiile de bază ale combatării

La începutul anului 2000, în România au fost înregistrate peste 100 de cazuri de HIV/AIDS. În prezent, numărul de persoane infectate cu HIV este în creștere constantă, iar numărul de persoane care au murit din cauza acestei boli este în creștere constantă. În prezent, în România sunt înregistrate peste 100 de cazuri de HIV/AIDS. În prezent, numărul de persoane infectate cu HIV este în creștere constantă, iar numărul de persoane care au murit din cauza acestei boli este în creștere constantă.

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Bururi Province, Burundi

⁴ For more information see: (www.sheltercentre.org)

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Case study: Protection forests in Switzerland

• **Leitlinien: Gebirgs-, alpine, subalpine, ockfer**

Die Leitlinien sind die Basis für die Planung und Umsetzung von Schutzmaßnahmen in den Schutzgebieten. Sie definieren die Ziele und die Art der Maßnahmen, die in den Schutzgebieten ergriffen werden müssen. Die Leitlinien sind in drei Kategorien unterteilt: Gebirgs-, alpine, subalpine und ockfer. Die Gebirgsleitlinien betreffen die Schutzgebiete in den Gebirgsregionen, die alpinen Leitlinien betreffen die Schutzgebiete in den alpinen Regionen, die subalpinen Leitlinien betreffen die Schutzgebiete in den subalpinen Regionen und die ockferleitlinien betreffen die Schutzgebiete in den ockferregionen. Die Leitlinien sind in drei Kategorien unterteilt: Gebirgs-, alpine, subalpine und ockfer. Die Gebirgsleitlinien betreffen die Schutzgebiete in den Gebirgsregionen, die alpinen Leitlinien betreffen die Schutzgebiete in den alpinen Regionen, die subalpinen Leitlinien betreffen die Schutzgebiete in den subalpinen Regionen und die ockferleitlinien betreffen die Schutzgebiete in den ockferregionen.

• **Gründe:**

- 1. Die Schutzgebiete sind in den Gebirgsregionen, alpinen Regionen, subalpinen Regionen und ockferregionen zu finden. Die Schutzgebiete sind in den Gebirgsregionen, alpinen Regionen, subalpinen Regionen und ockferregionen zu finden.
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● $\frac{1}{1-x}$ 的级数： $\frac{1}{1-x} = 1 + x + x^2 + x^3 + \dots$

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How can we measure the implementation of ecosystem management for disaster risk reduction and climate change adaptation?

Measurement of implementation

Measurement of implementation is a key challenge in the assessment of ecosystem management for disaster risk reduction and climate change adaptation. The challenge is to develop a set of indicators that can be used to measure the implementation of ecosystem management for disaster risk reduction and climate change adaptation. The indicators should be able to measure the implementation of ecosystem management for disaster risk reduction and climate change adaptation in a way that is consistent with the objectives of the assessment. The indicators should be able to measure the implementation of ecosystem management for disaster risk reduction and climate change adaptation in a way that is consistent with the objectives of the assessment.

Flood in Shagarab, Eastern Sudan

The image shows a flooded area in Shagarab, Eastern Sudan. The water is murky and brown, and the surrounding land is mostly flat and appears to be agricultural or semi-arid. The sky is overcast, and the overall scene is one of a significant natural disaster.

Measurement of impact

Measurement of impact is a key challenge in the assessment of ecosystem management for disaster risk reduction and climate change adaptation. The challenge is to develop a set of indicators that can be used to measure the impact of ecosystem management for disaster risk reduction and climate change adaptation. The indicators should be able to measure the impact of ecosystem management for disaster risk reduction and climate change adaptation in a way that is consistent with the objectives of the assessment.

Measurement of cost

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Measurement of benefits

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Measurement of the effectiveness of ecosystem management for disaster risk reduction and climate change adaptation

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6.1 Die Determinante einer Matrix

Die Determinante einer Matrix $A \in \mathbb{R}^{n \times n}$ ist eine reelle Zahl $\det A$, die durch die folgenden Eigenschaften charakterisiert ist:

- 1. $\det I_n = 1$ (Determinante der Einheitsmatrix)
- 2. $\det A^T = \det A$ (Determinante der Transponierten)
- 3. $\det A = 0$ (Determinante einer Matrix mit zwei identischen Zeilen)
- 4. $\det A = 0$ (Determinante einer Matrix mit zwei identischen Spalten)
- 5. $\det A = 0$ (Determinante einer Matrix mit einer Nullzeile)
- 6. $\det A = 0$ (Determinante einer Matrix mit einer Nullspalte)

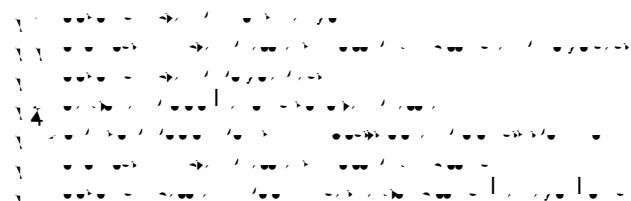
6.1.1 Die Determinante einer 2x2-Matrix

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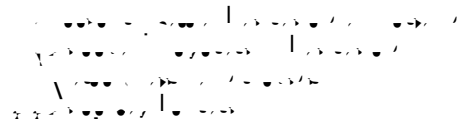


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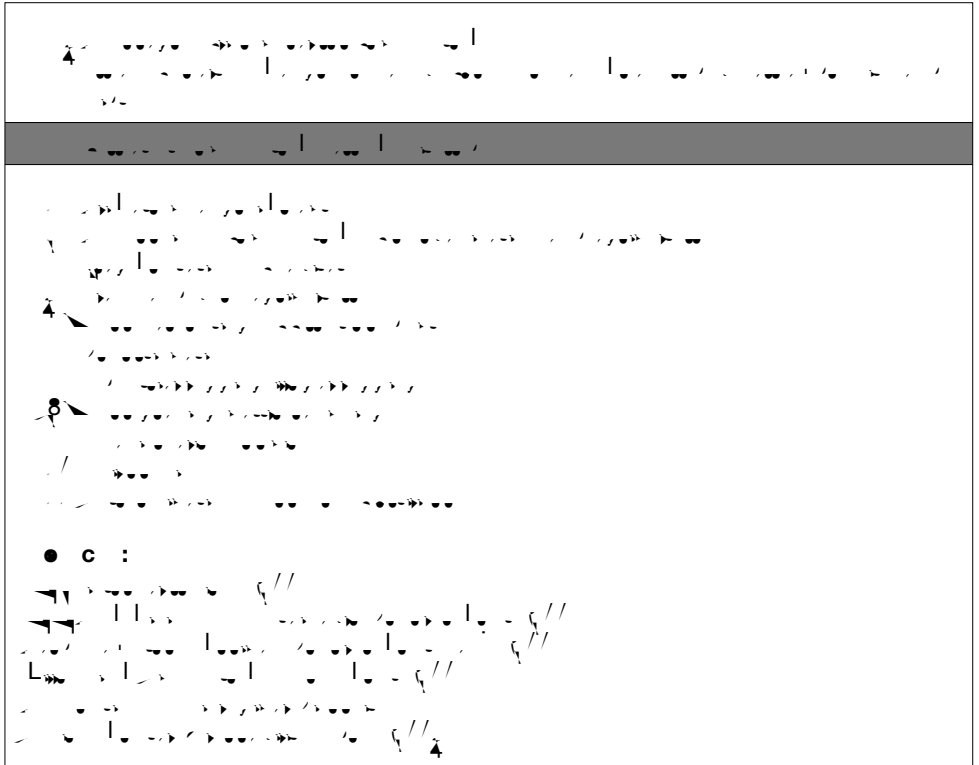
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El Cangrejal river, Honduras



10. // Making Disaster Risk Reduction Gender Sensitive, Policy and Practical Guidelines.
11. // *Global evidence that deforestation amplifies food risk and severity in the developing world.*
12. // Indicators of disaster risk and risk management.
13. // Linking Disaster Risk Reduction, Environmental Management and Development Practices and Practitioners in Asia Pacific Region: A Review of Opportunities for Integration.
14. // Value: Counting Ecosystems and Water Infrastructure.

The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981-2002.

OECD Key environmental indicators.

Environmental Management, Multiple disaster risk reduction and climate change adaptation benefits for vulnerable communities.

Ecosystems and disaster risk reduction in the context of the Great East Japan Earthquake and Tsunami – a scoping study.

The Ecosystem Approach: Learning from Experience.

Natural Security, Protected Areas and Hazard Mitigation.

Ecosystems, Livelihoods and Disasters: An integrated approach to disaster risk management.

Characteristics of a Disaster-Resilient Community, A Guidance Note, Version 1 for field testing.

In the Front Line: Shoreline Protection and Other Ecosystems Services from Mangroves

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