



Case study ecosystem-based DRR

Integrated Watershed Management in disaster-prone contexts, Tajikistan



Context – natural conditions

Climate conditions in
Muminabad district,
topography, soil
characteristics...



Context – the human factor

...combined with governance issues, widespread poverty, population pressure and lack of knowledge

lead to unsustainable land management practices



Context – disaster risk

The conjunction of these factors result in **land degradation**, **landslides**, as well as **river bank erosion** and **flooding** at peak water flows that threaten the livelihoods and lives of the local population

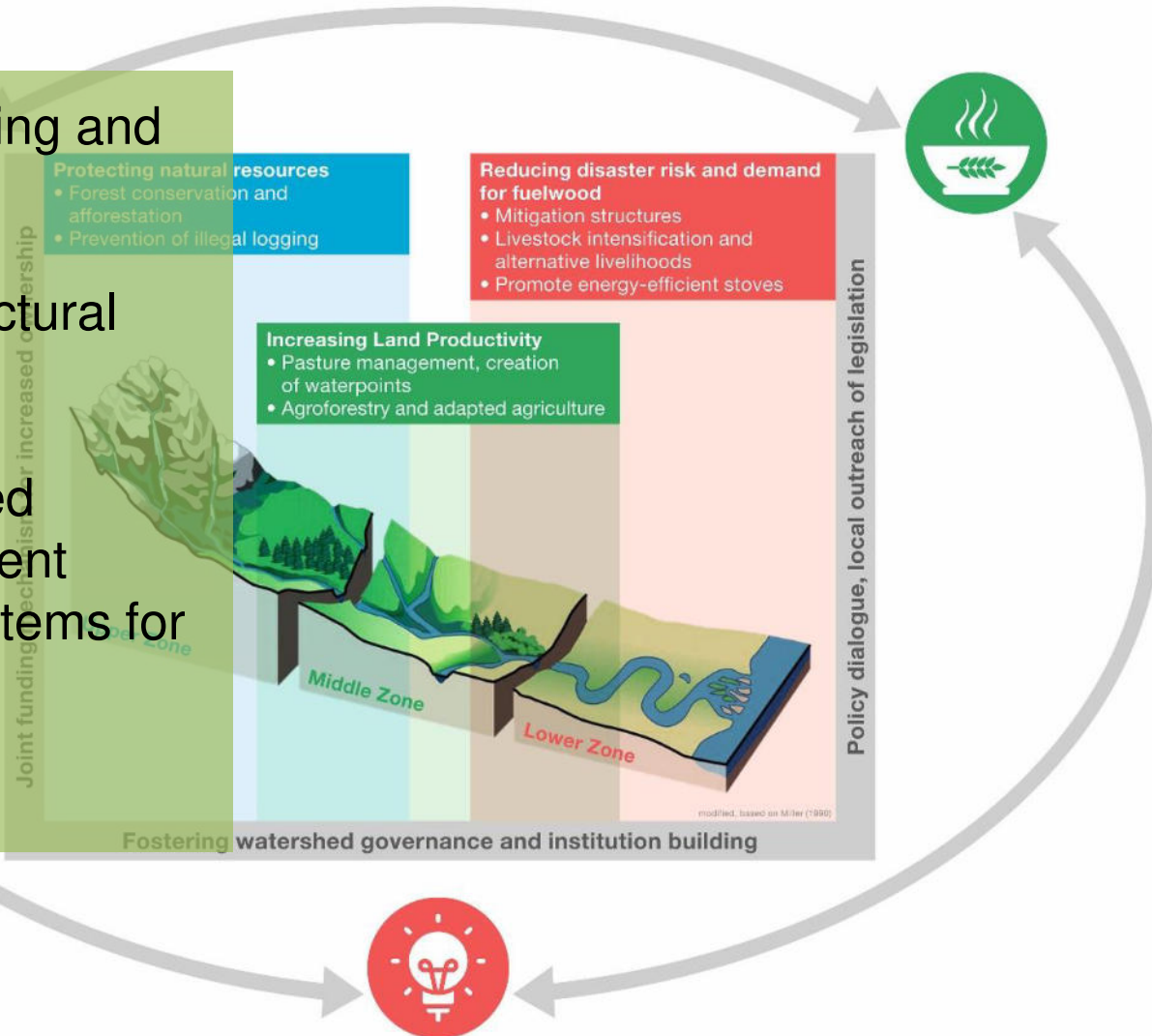


Evolution of approaches and measures

➤ **Preparedness:** Training and institutions

➤ **Risk mitigation:** structural measures

➤ **Prevention:** Integrated Watershed Management making use of ecosystems for DRR



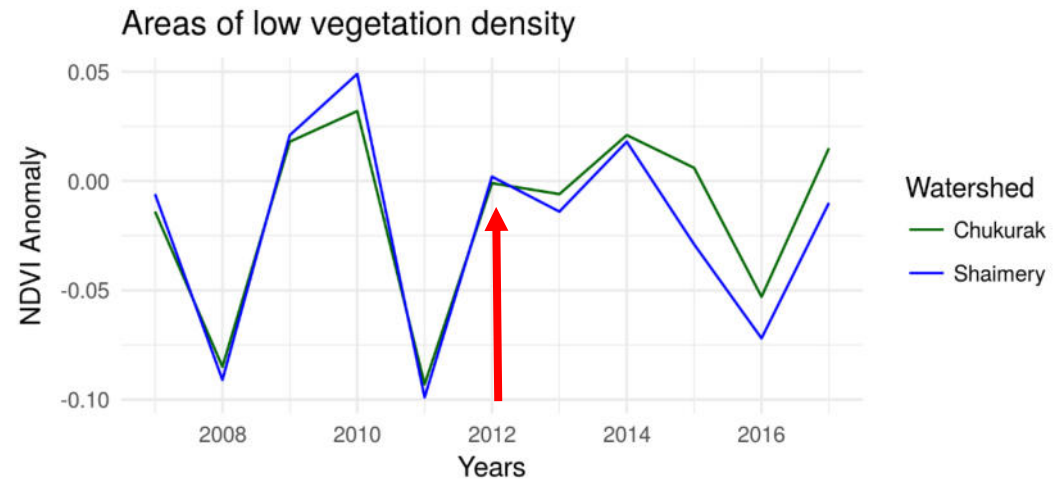
Why the shift?



Achievements

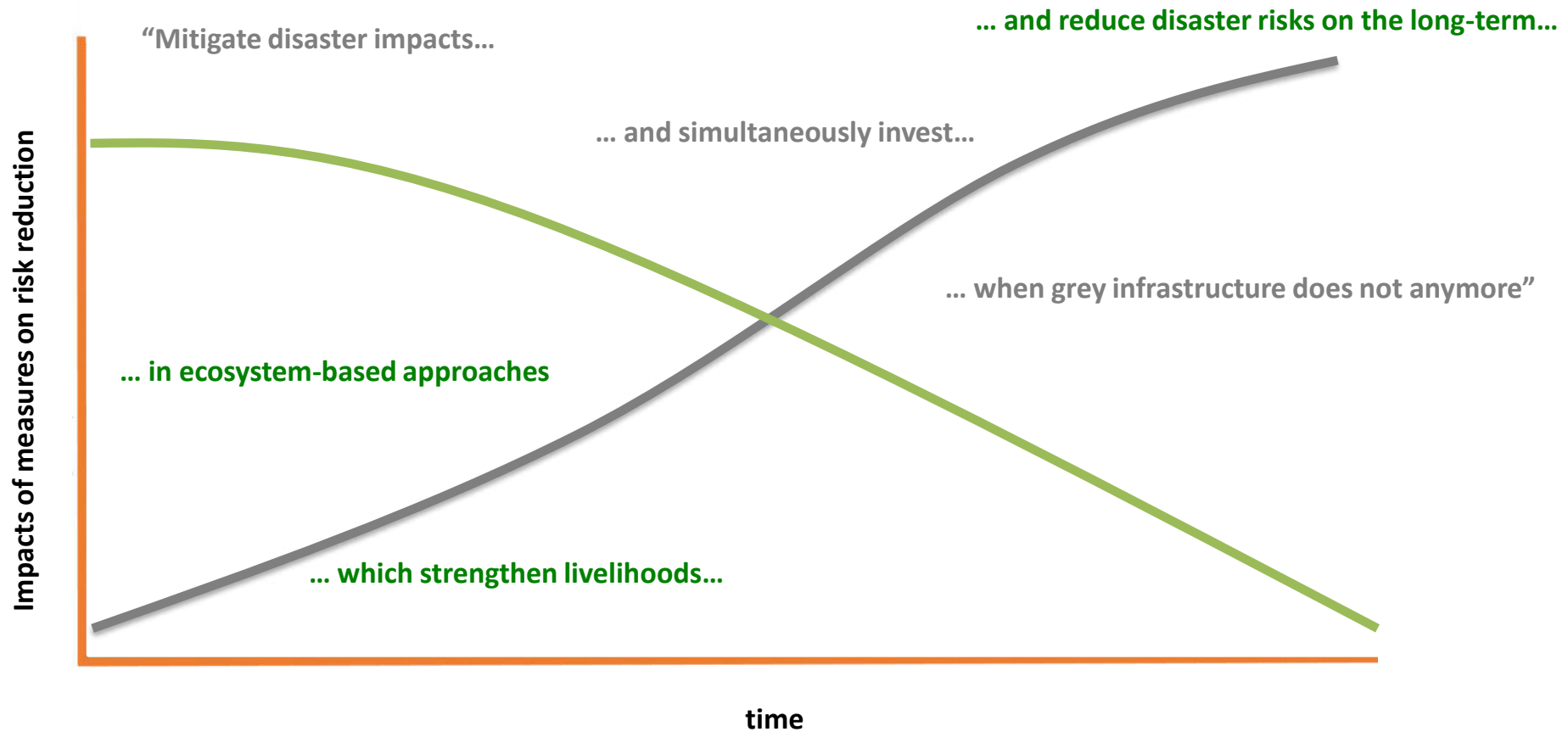
Land degradation reduced

Behaviour change

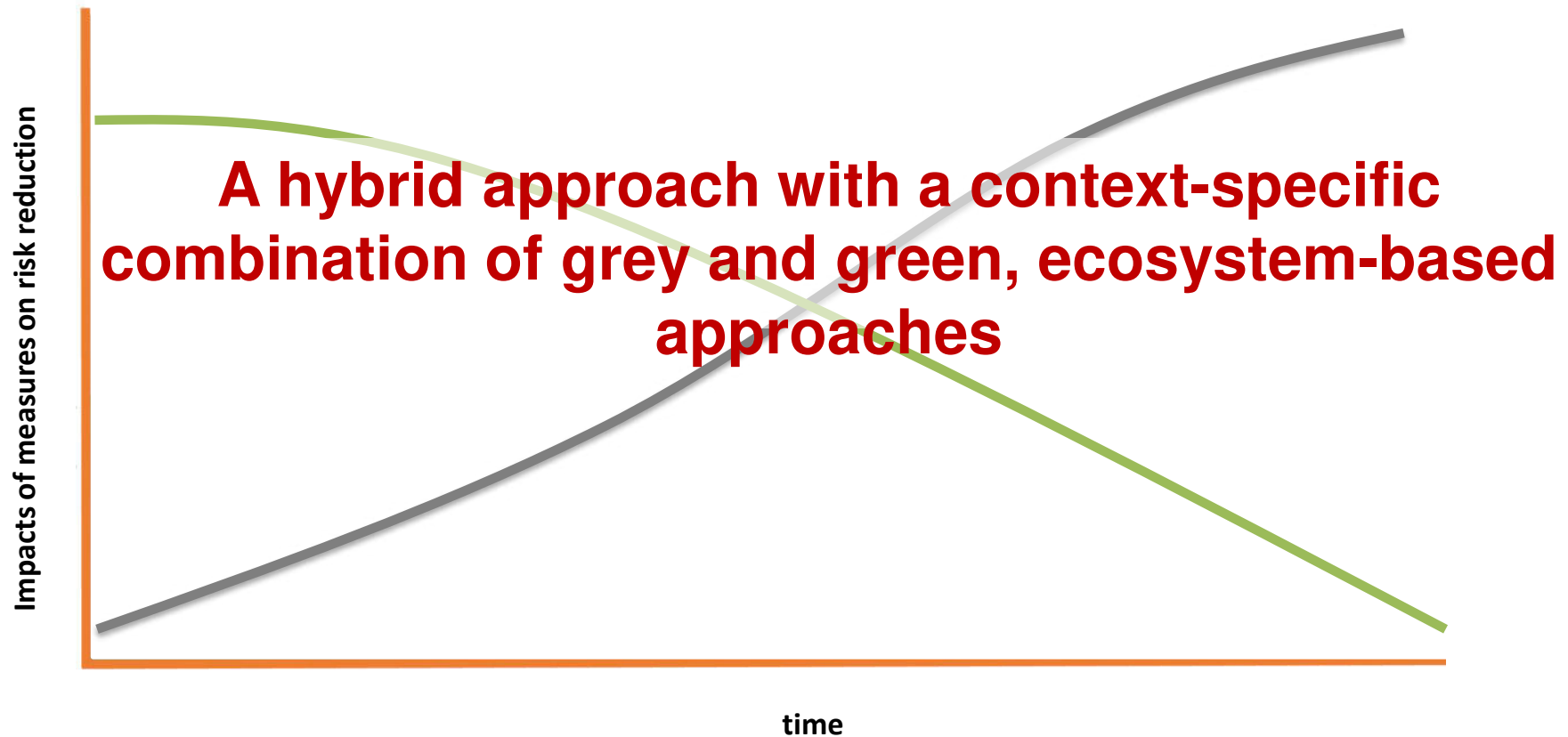


Doing the right thing

Strategy and outlook



Strategy and outlook



Doing the right thing

Jana Junghardt, International Cooperation, Senior Advisor Disaster Risk Reduction

Adligenswilerstrasse 15 Phone: 041 419 2392 E-mail: jjunghardt@caritas.ch
P.O.Box, 6002 Lucerne Fax: 041 419 24 24 Internet: www.caritas.ch

Ecosystem-based DRR

Webinar 08 March 2018

Nina Saalismaa



www.drrplatform.org



www.zoinet.org



www.caritas.ch

Outline

1. Concept
2. Practice
3. Tools & Resources

Focus:
Practitioners

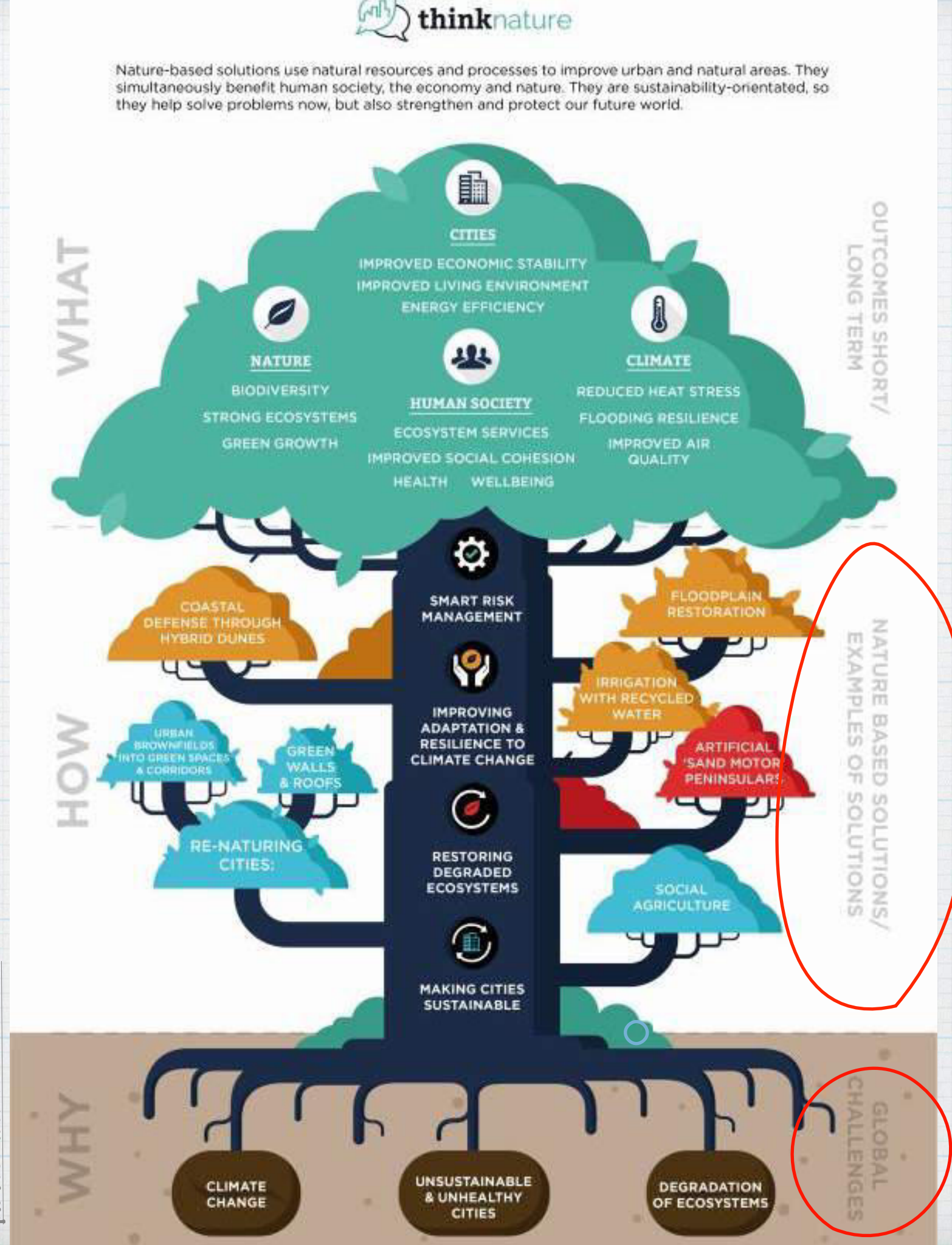
CONCEPT

A word cloud featuring various terms related to ecosystem-based disaster risk reduction and green solutions. The words are arranged in a dense, overlapping cluster. The largest and most prominent words are 'ecosystem-based', 'nature-based', and 'solutions'. Other significant words include 'natural', 'ecosystem', 'green', 'adaptation', 'eco-DRR', 'restoration', 'infrastructure', 'environment', and 'approach'. The colors of the words range from dark green to brown, with some words in a lighter yellow-green. The background is white, and the entire word cloud is set against a light blue grid pattern.

adaptation
eco-DRR ecosystem
restoration ecosystem-based
natural DRR EbA
infrastructure nature-based
green solutions
environment
approach

Increasing attention to nature-based measures

platform.think-nature.eu





**Making use of
natural processes
and ecosystem
services**

**Interdependent
socio-ecological
systems**

Ecosystems can

- increase risk (environmental degradation)

OR

- reduce risk (natural buffers, livelihoods)

Which one do we choose?



Wetlands & floodplains

natural reservoirs for excess water



Forests & vegetation

slope stability (landslides, avalanches, erosion)

store water (floods and droughts)



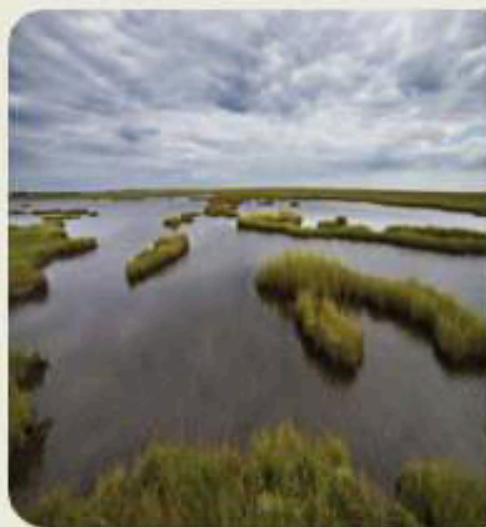
Dryland ecosystems & vegetation

desertification & erosion control



Coastal ecosystems

buffer for storms and flooding,
saltwater, sea-level rise



Dunes and Beaches

Vegetated Features (e.g., Marshes)

Oyster and Coral Reefs

Barrier Islands

Maritime Forests/Shrub Communities

Benefits/Processes

Breaking of offshore
waves

Attenuation of
wave energy
Slow inland
water transfer

Benefits/Processes

Breaking of offshore
waves

Attenuation of
wave energy
Slow inland
water transfer
Increased infiltration

Benefits/Processes

Breaking of offshore
waves

Attenuation of
wave energy
Slow inland
water transfer

Benefits/Processes

Wave attenuation
and/or dissipation
Sediment stabilization

Benefits/Processes

Wave attenuation and/or
dissipation
Shoreline erosion
stabilization
Soil retention

Performance Factors

Berm height
and width
Beach slope
Sediment grain size
and supply
Dune height,
crest, and width
Presence of
vegetation

Performance Factors

Marsh, wetland,
or SAV elevation
and continuity
Vegetation type
and density
Spatial extent

Performance Factors

Reef width, elevation,
and roughness

Performance Factors

Island elevation,
length, and width
Land cover
Breach susceptibility
Proximity to
mainland shore

Performance Factors

Vegetation height
and density
Forest dimension
Sediment composition
Platform elevation

General coastal risk reduction performance factors include: Storm surge and wave height/period, and water levels

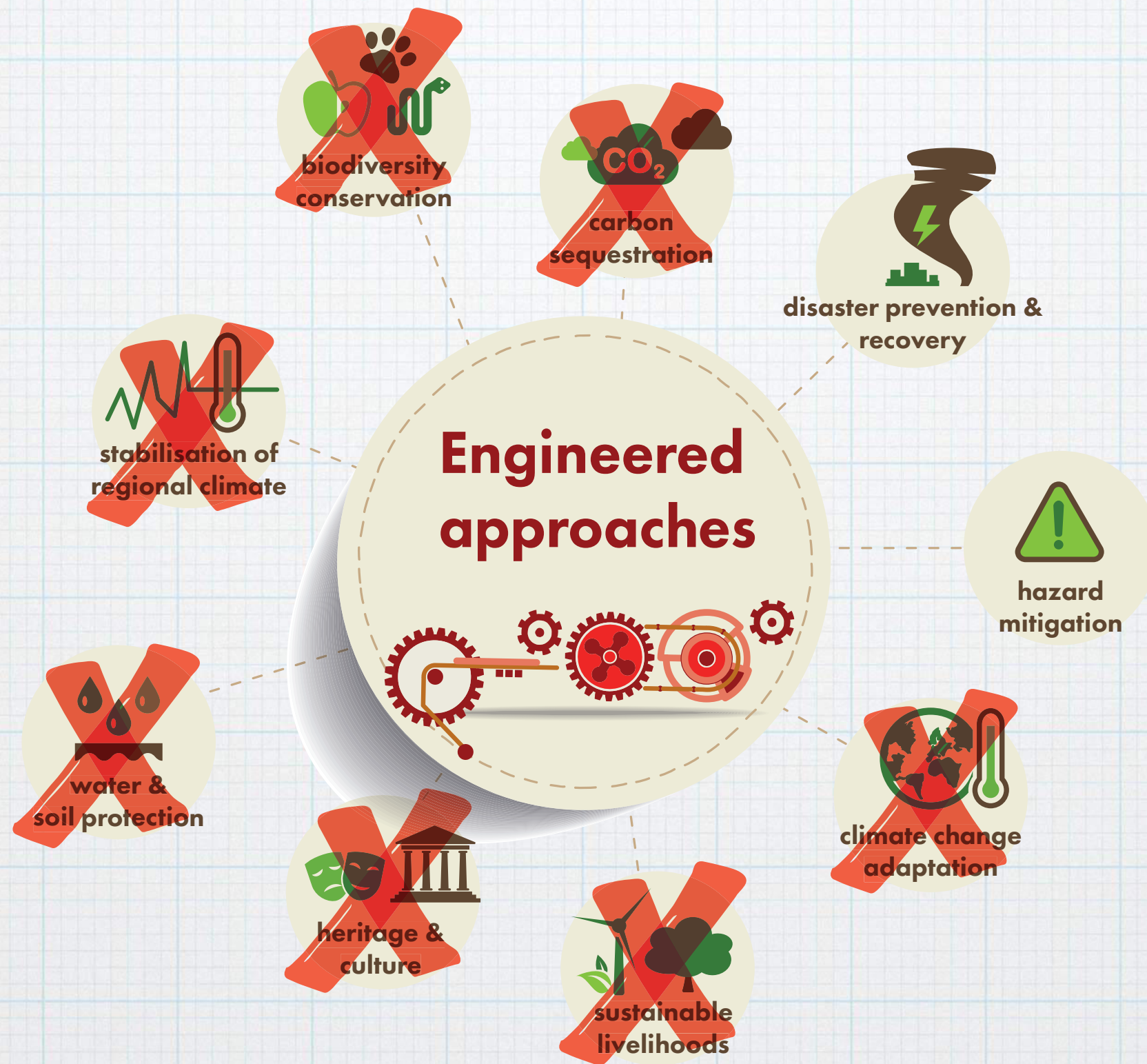


Urban green spaces

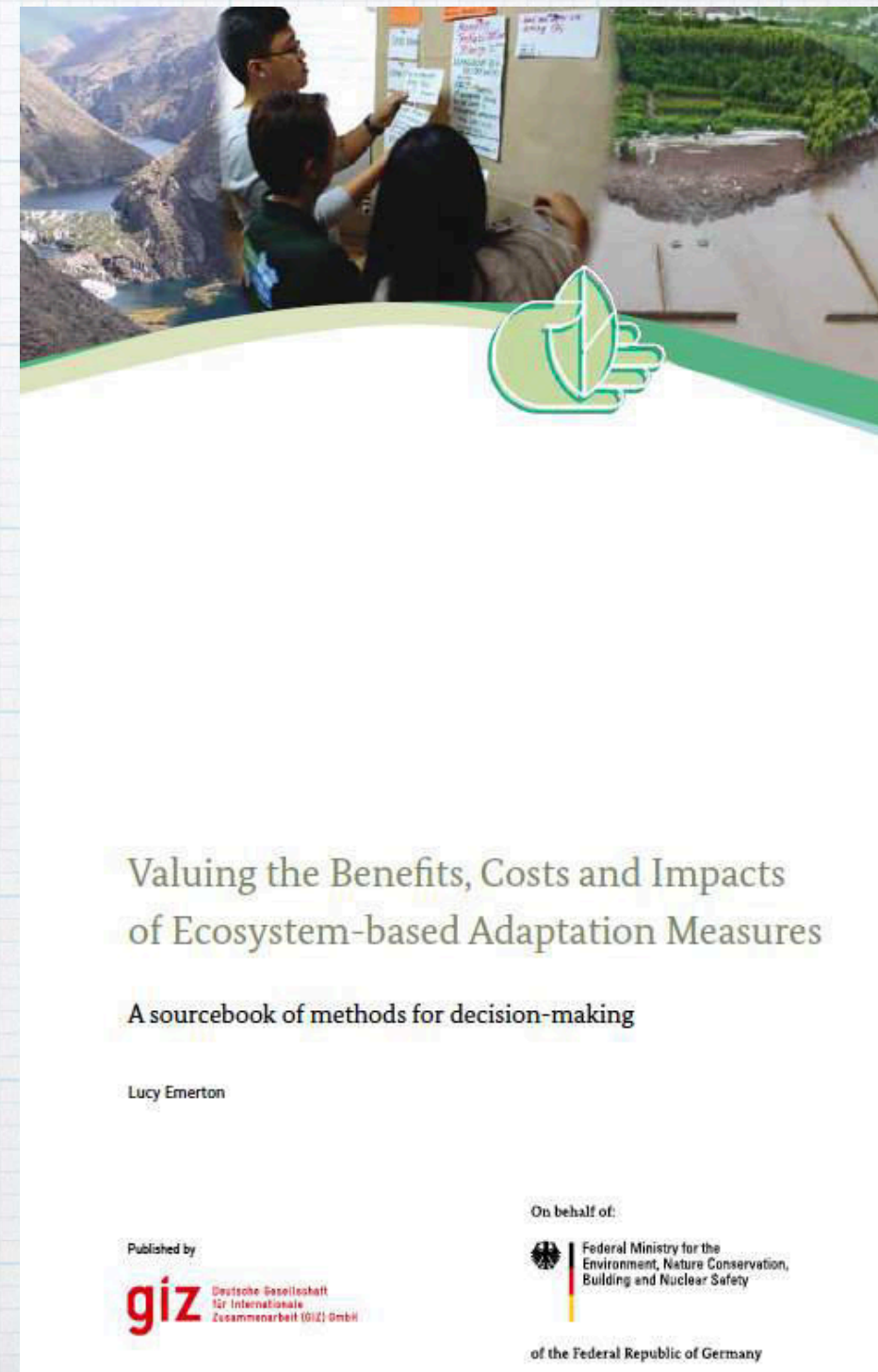
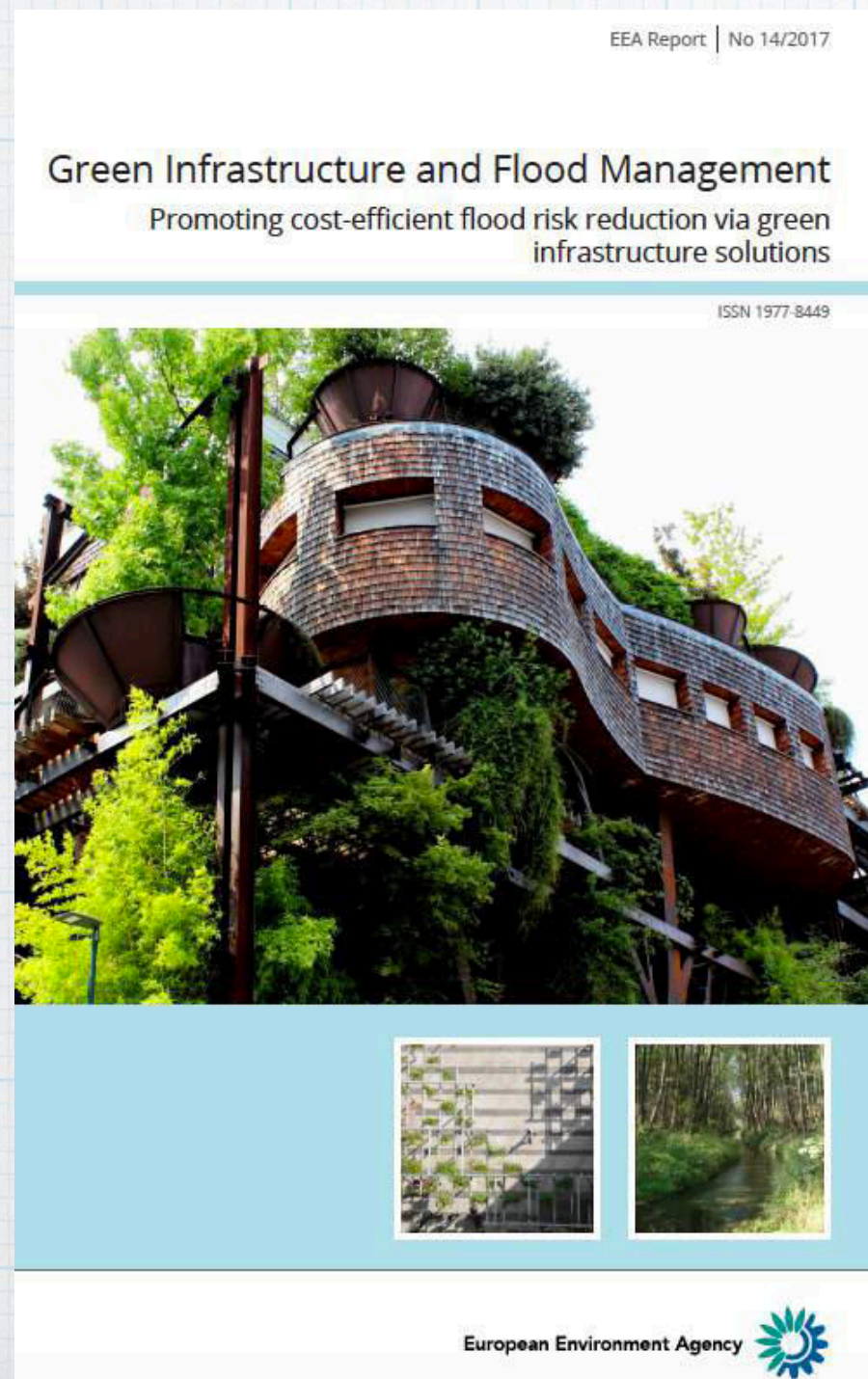
floods, heatwave, air & water quality

Benefits for both people and nature



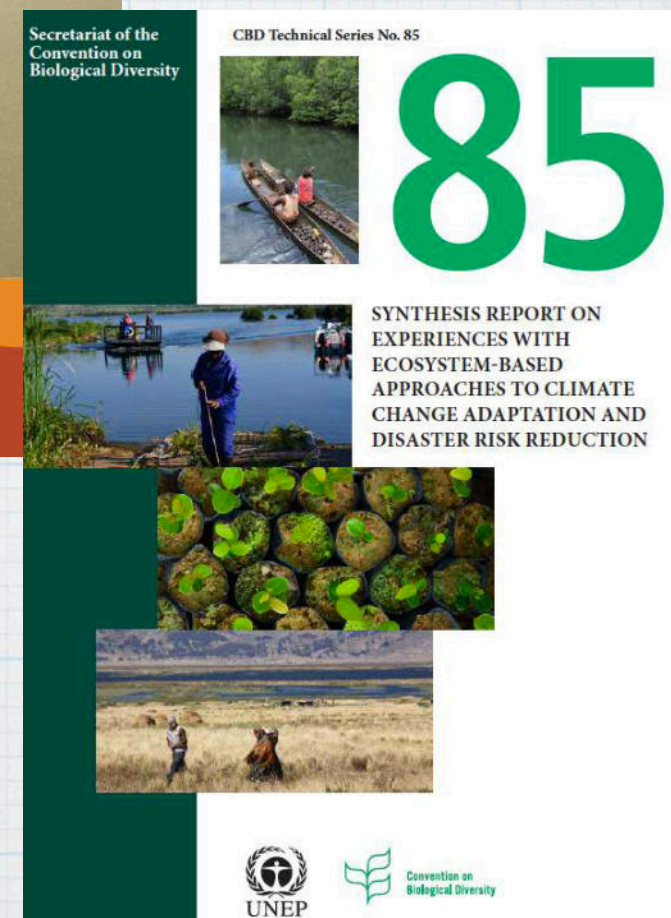
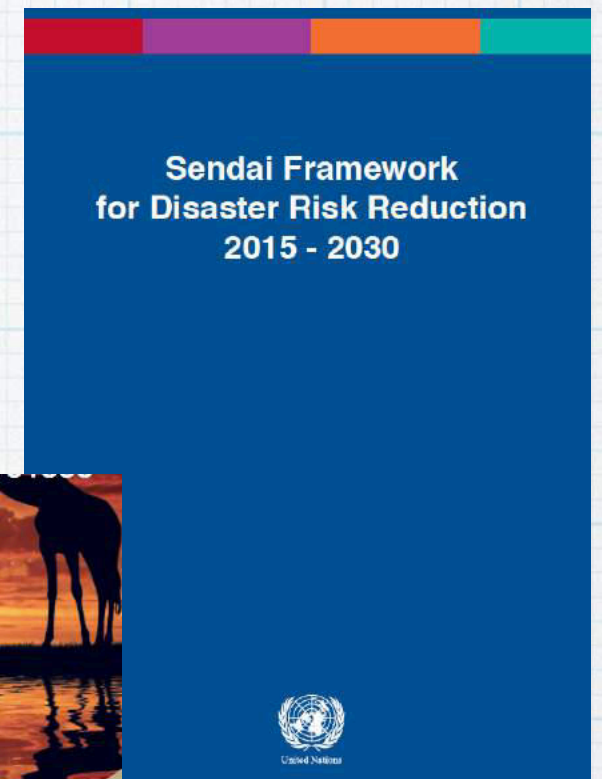
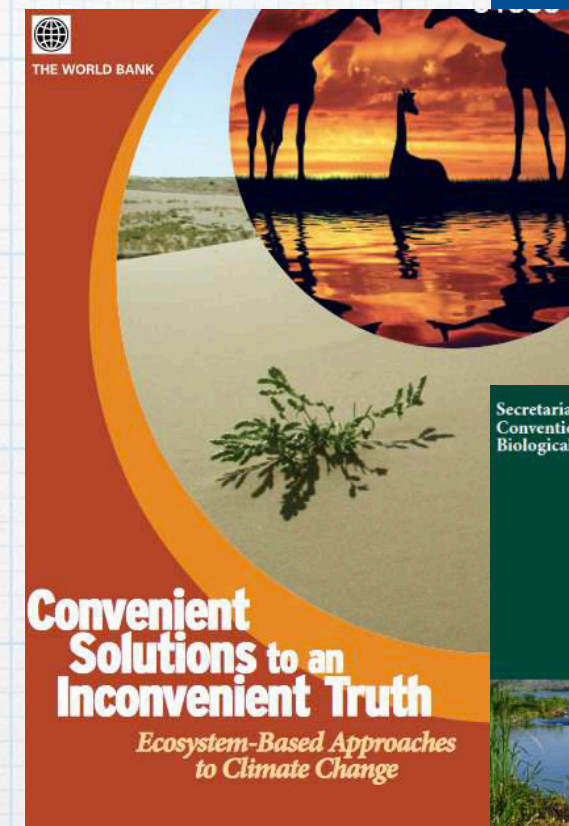


Ecosystem approaches are often cost-efficient compared to grey infrastructure



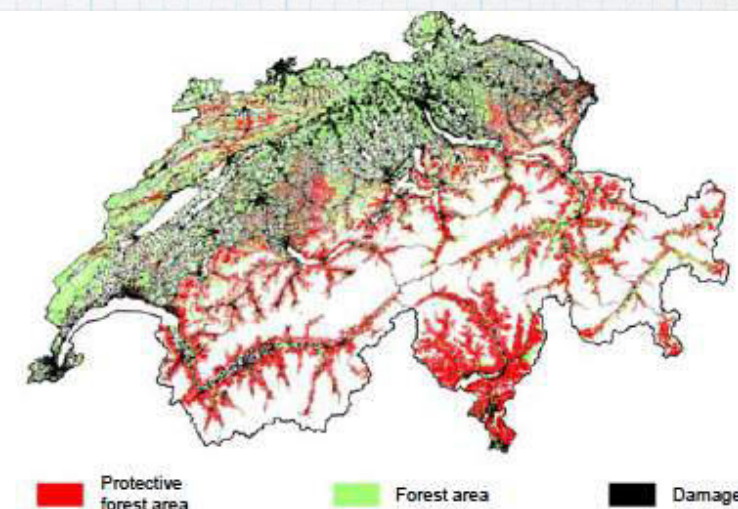
Global references

- * Sendai Framework: 'Sustainable ecosystem management is a key measure for resilience'
- * World Bank: 'Ecosystem-based approaches are cost-efficient'
- * CBD, UNFCCC: Ecosystem approach, Ecosystem-based adaptation

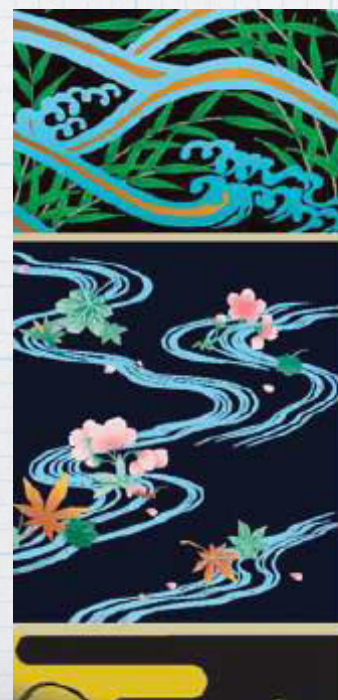


Policy uptake examples

- * EU: Green Infrastructure strategy (2013), Floods Directive > natural flood management
- * UK, Netherlands, Switzerland, USA, Japan, etc...



About half of forested areas in Switzerland have a protective function



Ecosystem-based

Disaster Risk Reduction

in Japan

A handbook for practitioners

Questions?

PRACTICE

Key principles

1. Scale: System-wide perspective
2. Risk and benefit assessments > ecosystems
3. Quantifiable standards of performance
4. Integration with ecosystem conservation and restoration
5. Adaptive management

Implementation

STEP 1 Define Problem, Project Scope, and Objectives	STEP 2 Develop Financing Strategy	STEP 3 Conduct Ecosystem, Hazard, and Risk Assessments	STEP 4 Develop Nature- based Risk Management Strategy	STEP 5 Estimate the Costs, Benefits, and Effectiveness	STEP 6 Select and Design the Intervention	STEP 7 Implement and Construct	STEP 8 Monitor and Inform Future Practices
Scale of natural system suitable for problem solving	Local investment in interventions, green financing	Ecosystem presence, health, and functioning	Ecosystem potential, option identification	Effectiveness of ecosystem measure	Green and hybrid option design	Conservation, restoration, and/or establishment of ecosystem elements	Monitoring ecosystem performance, resilience, and stability
<ul style="list-style-type: none"> Stakeholder needs Maps of area of interest Project objectives 	<ul style="list-style-type: none"> Budget estimate Overview of resources 	<ul style="list-style-type: none"> Hazard and risk maps Ecosystem and land-use maps Flood zone maps 	<ul style="list-style-type: none"> List of measures Strategy map 	<ul style="list-style-type: none"> Cost-benefit analysis Impact assessment Risk assessment with interventions 	<ul style="list-style-type: none"> Design of measures Monitoring plan Maintenance plan 	<ul style="list-style-type: none"> Intervention lifetime Regulatory frameworks Implemented measures 	<ul style="list-style-type: none"> Monitoring reports Actions if needed Share lessons learned

Ecosystem
aspects

Outputs

Source: WB (2017) Implementing nature-based flood protection

**Always consider
ecosystem services
in DRR**

What are the Challenges?

- * Emerging approach > less lessons learned
- * Availability of standards and protocols, compared to engineered approaches
- * Multi-stakeholder & cross-sectoral processes are complex
- * Awareness

Financing for projects?

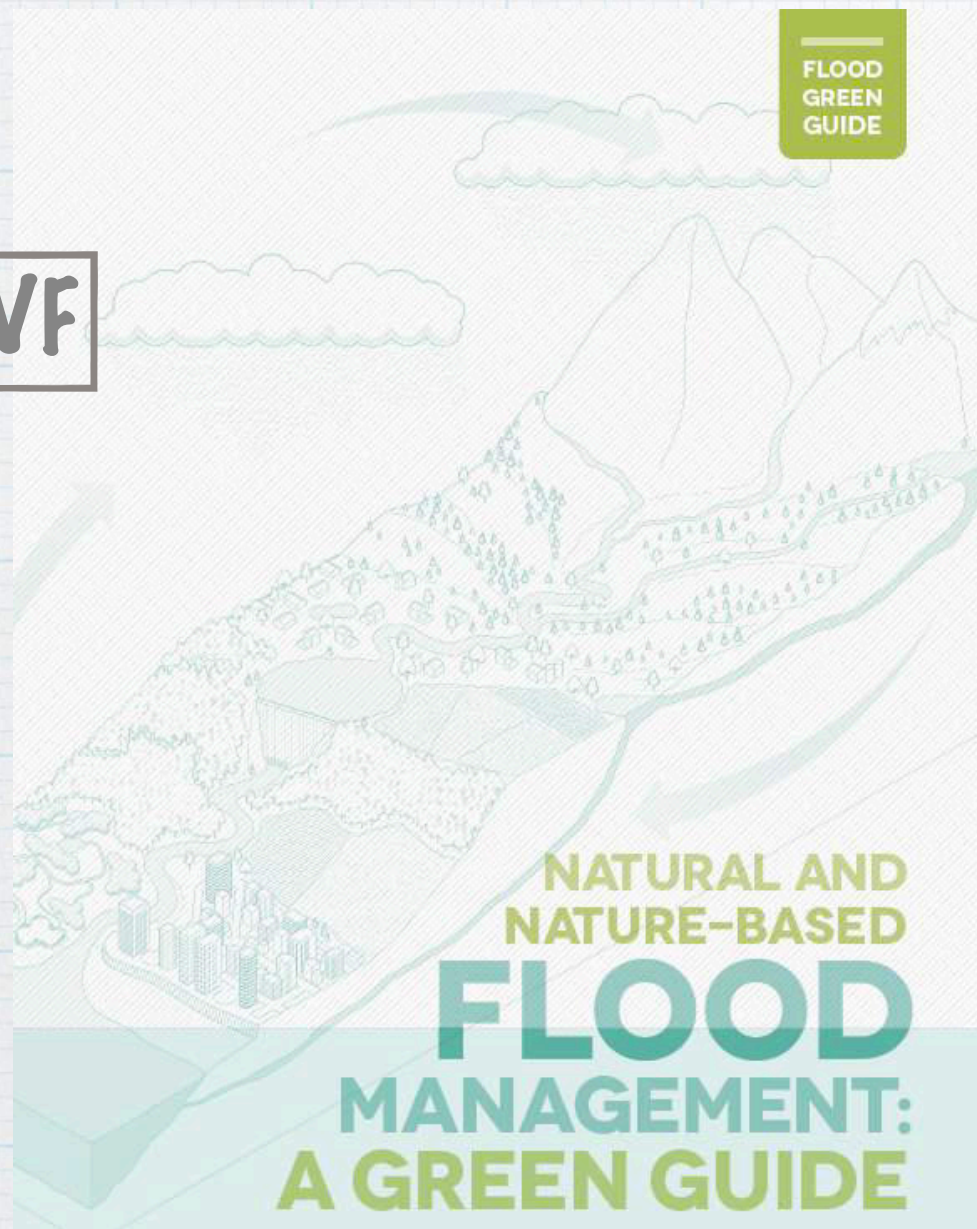
- * European Commission
- * World Bank
- * Bilateral donors such as Germany, Netherlands, Switzerland...
- * Green Climate Fund
- * Global Environment Facility
- * private sector, insurance sector
- * co-financing by local stakeholders
- * European Investment Bank: Natural Capital Financing Facility (inside EU)

case study: Tajikistan

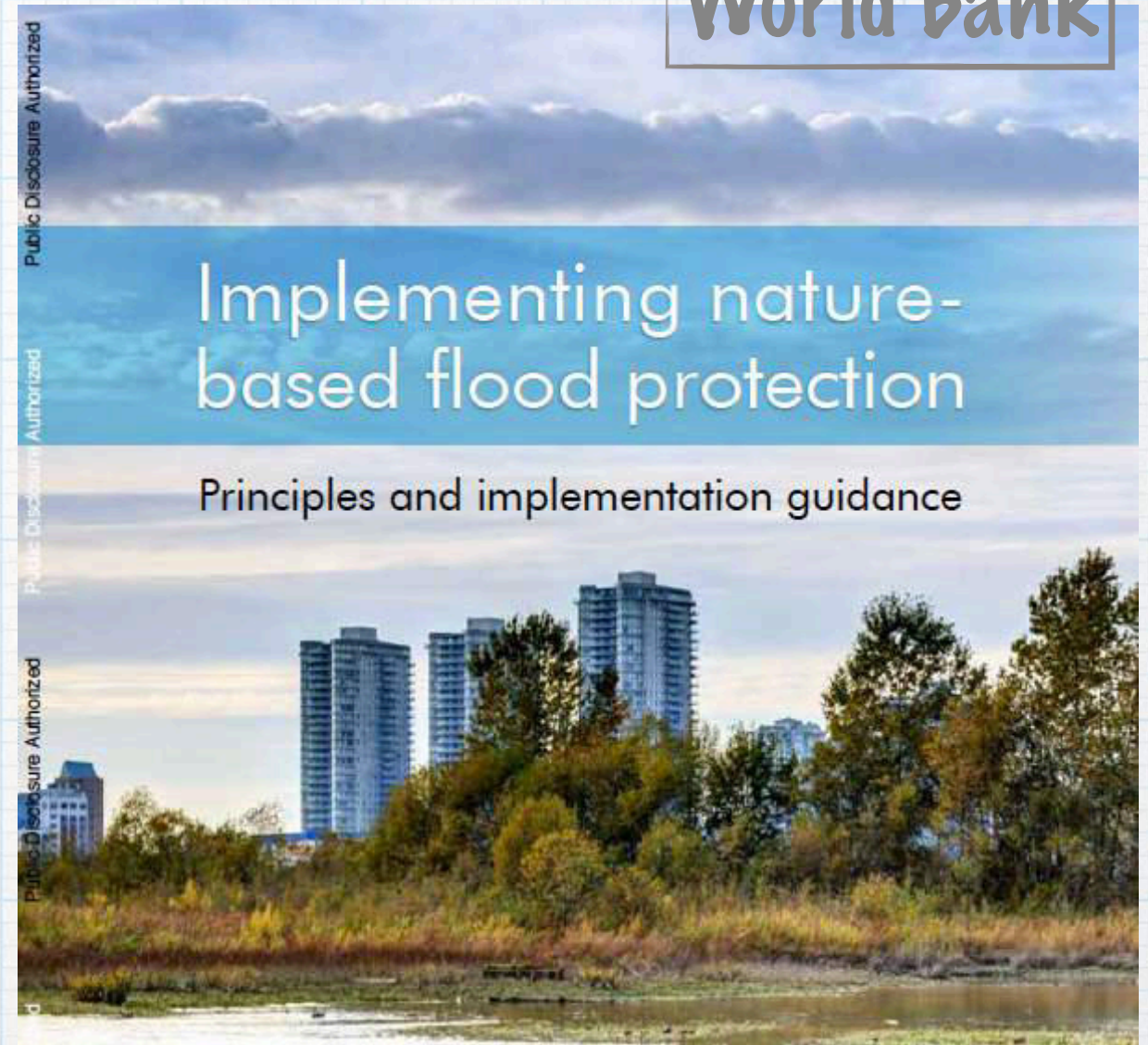
TOOLS & RESOURCES

Floods

WWF



World Bank



Using Nature to Address
Flooding - website
(US focus):

<http://nrcsolutions.org>



European
Commission

A guide to support
the selection, design
and implementation of

Natural Water Retention Measures in Europe

Capturing the multiple benefits
of nature-based solutions



Natural Water Retention Measures

www.nwrm.eu



Environment

<http://nwrm.eu>



A Guide to Assessing Green Infrastructure Costs and Benefits for Flood Reduction

National Oceanic and Atmospheric Administration (NOAA)
Office for Coastal Management



European
Commission

NWRM

Natural Water Retention Measures

www.nwrm.eu

Service contract n°07.0330/2013/659147/SER/ENV.C1

53 NWRM illustrated



ch Group, Inc.

ECONOMICS OF GREEN INFRASTRUCTURE

Coastal

ERDC SR-15-1



US Army Corps
of Engineers®
Engineer Research and
Development Center

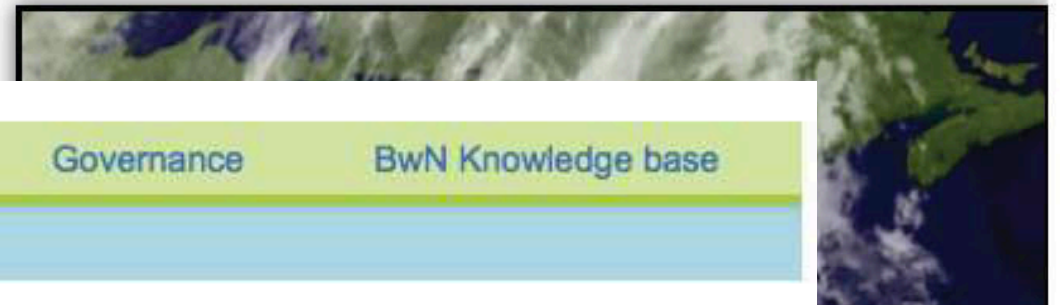
ERDC
INNOVATIVE SOLUTIONS
for a safer, better world

Use of Natural and Nature-Based Features (NNBF) for Coastal Resilience

Final Report

Todd S. Bridges, Paul W. Wagner, Kelly A. Burks-Copes,
Matthew E. Bates, Zachary A. Collier, Craig J. Fischenich,
Joe Z. Gailani, Lauren D. Leuck, Candice D. Piercy,
Julie D. Rosati, Edmond J. Russo, Deborah J. Shafer,
Burton C. Suedel, Emily A. Vuxton, and Ty V. Wamsley

January 2015



Building with Nature

BwN Guideline

Environments

Project phases

Governance

BwN Knowledge base

Search this space

Building with Nature

Site map

BwN Workplace

Welcome to the Building with Nature Design Guideline

Building with Nature (BwN) shows how to utilize natural processes and provide opportunities for nature while realising hydraulic infrastructure. [Design guidelines](#) on how to make this happen in practice are available for everyone to use. These guidelines are based on the projects carried out in the Building with Nature innovation programme. The work in the programme is carried out by the [EcoShape consortium](#), that consists of private parties, government organisations and research institutes.

All general information on the BwN programme can be found on the Ecoshape website: www.ecoshape.nl

<https://publicwiki.deltares.nl/display/BWN1/Building+with+Nature>

Building
Ecological Solutions
to
Coastal Community
Hazards

A Guide for New Jersey
Coastal Communities

*An Assessment of Coastal Risks
and the Role of Environmental Solutions*



COASTS
at RISK



Wealth Accounting and the
Valuation of Ecosystem Services
www.wavespartnership.org



WORLD BANK GROUP

103340

Managing Coasts with Natural Solutions

Guidelines for Measuring and Valuing the Coastal
Protection Services of Mangroves and Coral Reefs

WAVES TECHNICAL REPORT

January 2016



where people and their land are safer

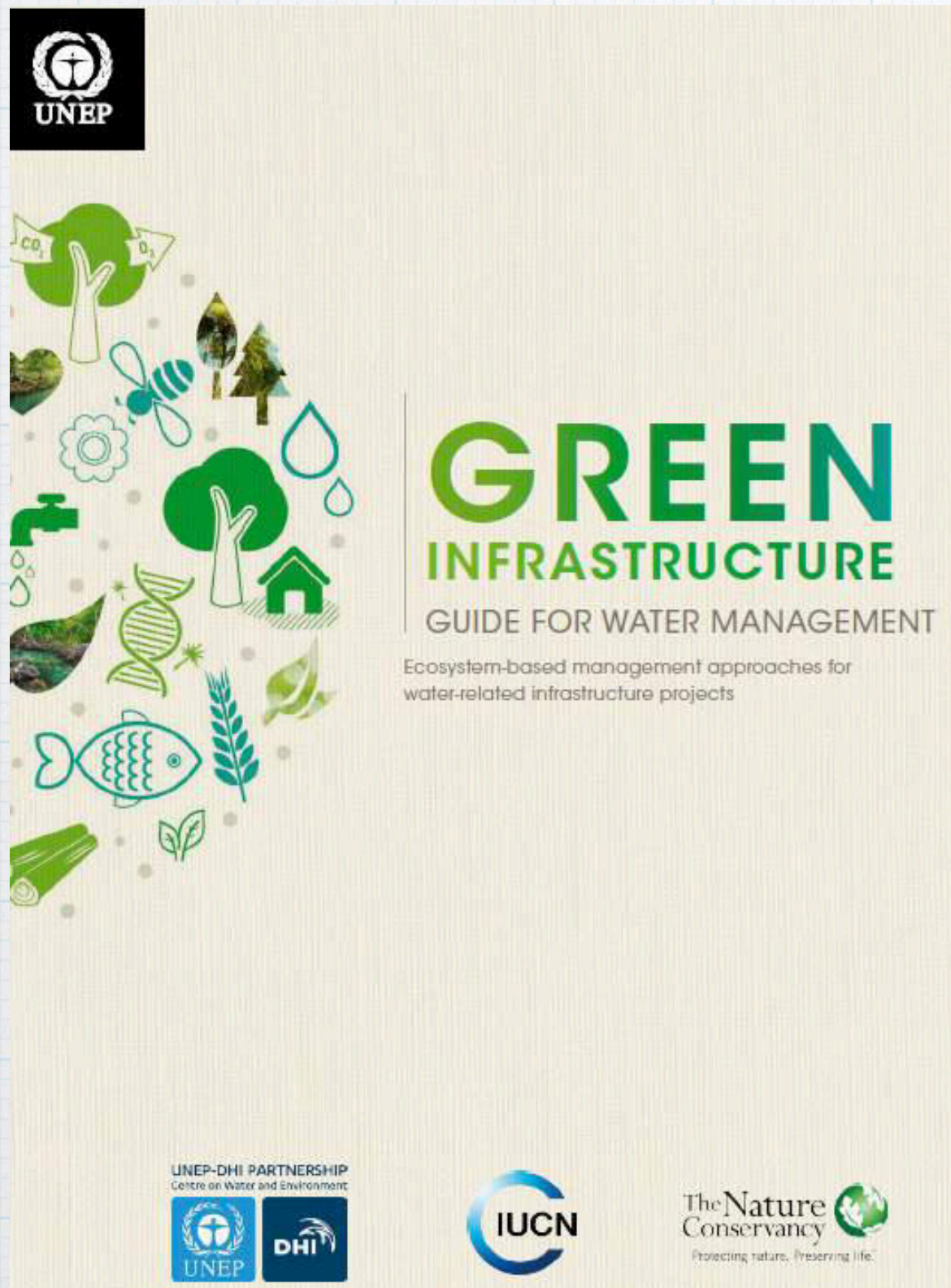
A Compendium of Good Practices in Disaster Risk Reduction



Sustainable land management

WOCAT database:
www.wocat.net

Multi-sectoral



**PROTECTED
AREAS AS
TOOLS FOR**

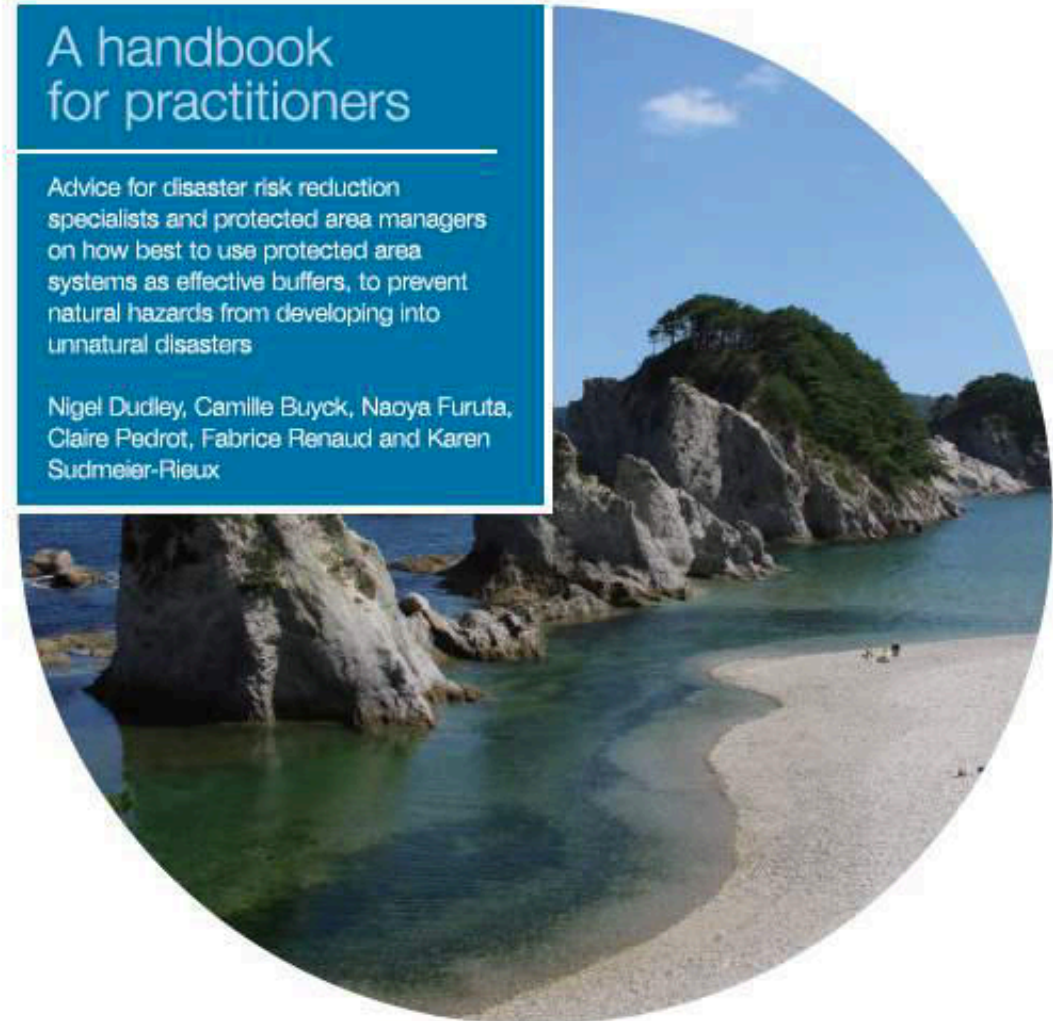


DISASTER RISK REDUCTION

A handbook
for practitioners

Advice for disaster risk reduction specialists and protected area managers on how best to use protected area systems as effective buffers, to prevent natural hazards from developing into unnatural disasters

Nigel Dudley, Camille Buyck, Naoya Furuta, Claire Pedrot, Fabrice Renaud and Karen Sudmeier-Rieux



RESILIENCE AND
ADAPTATION PLANNING
FOR COMMUNITIES IN
PROTECTED AREAS

STEP-BY-STEP GUIDE



UNEP-WCMC technical report

Guidance on Integrating
Ecosystem Considerations
into Climate Change
Vulnerability and Impact
Assessment to Inform
Ecosystem-based
Adaptation



Training

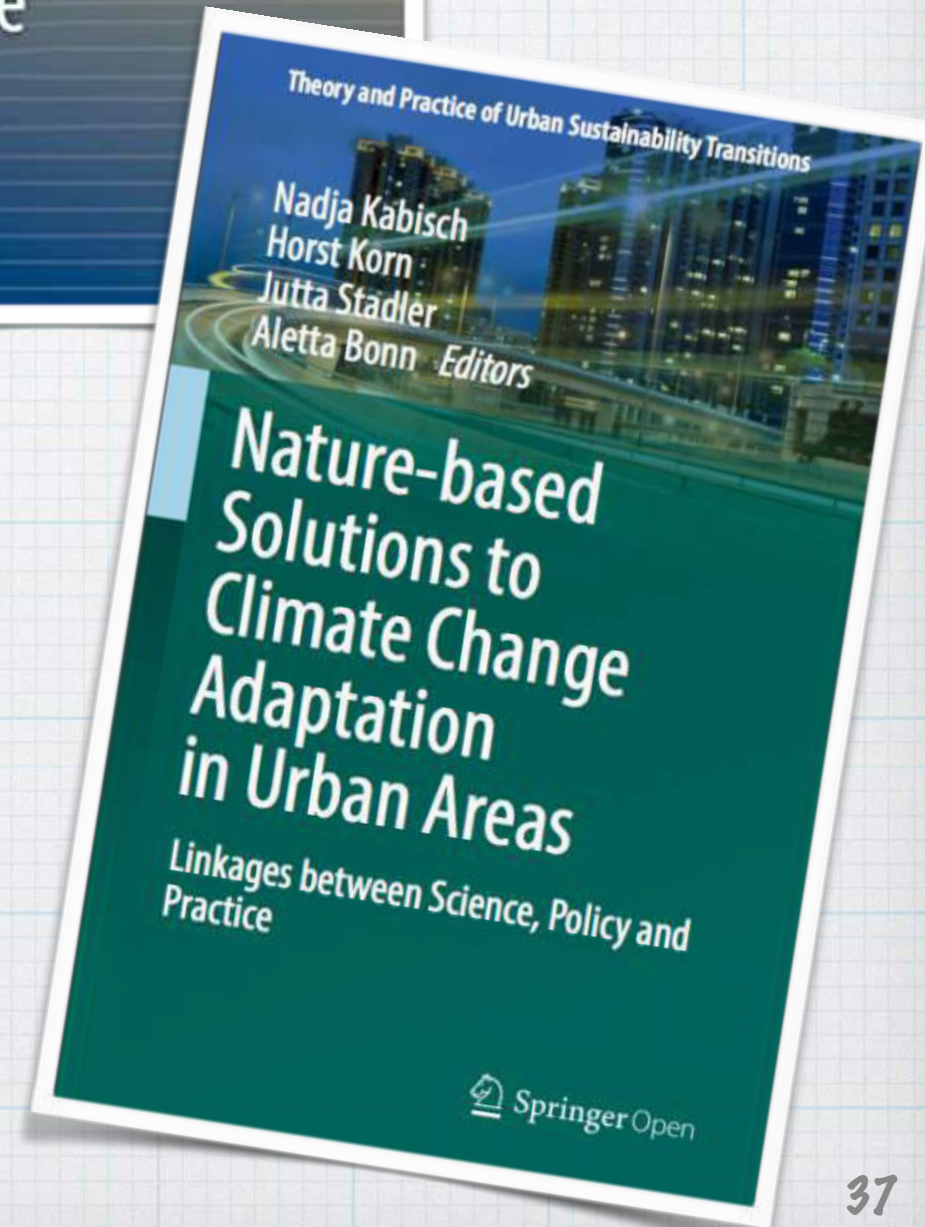
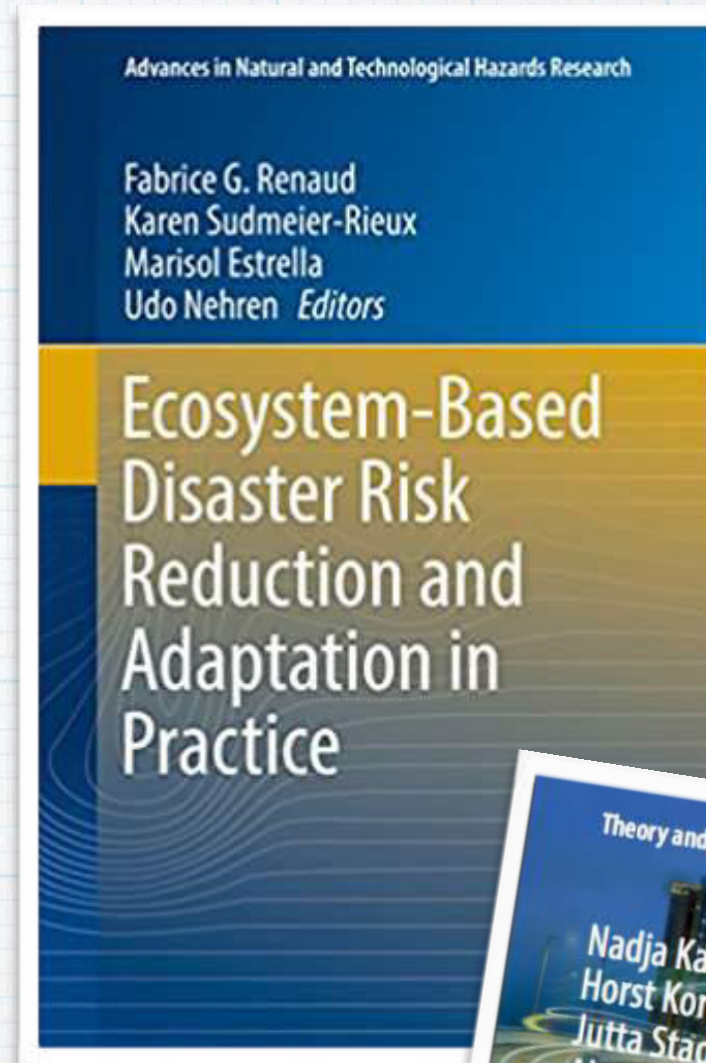
- * **M00C - Disasters and Ecosystems: Resilience in a Changing Climate**
<https://courses.adpc.net>
- * **Masters course - Disasters, Environment and Risk Reduction**
<http://pedrr.org/activities/graduate-course/>
- * **Swiss NGO DRR Platform learning events**
- * **Green Recovery and Reconstruction: Training Toolkit for Humanitarian Aid**
<http://envirodm.org/green-recovery>

Networks & organisations

- * Partnership for Environment and Disaster Risk Reduction > newsletter, virtual library...
<http://pedrr.org>
- * Environmental organisations: IUCN, Wetlands International, UN Environment, WWF, TNC
- * European Federation of Soil Bioengineering EFIB
- * Engineering with Nature (USACE)
<https://ewn.el.erdc.dren.mil/index.html>
- * WBCSD <http://www.naturalinfrastructureforbusiness.org>

Further reading

- * www.preventionweb.net > Knowledge Base > Theme > Environment & Ecosystems
- * 'Inventory of Tools and Methodologies relevant for Ecosystem-Based Adaptation (EbA) Practitioners'
https://www.iied.org/sites/default/files/EbAToolDatabase_and_Application.xls





Participatory risk assessment for a DRR-Action plan with a community based organization in Bangladesh
© HELVETAS Swiss Intercooperation

WELCOME TO THE SWISS NGO DRR PLATFORM

www.drrplatform.org

Nina Saalismaa
nina.saalismaa@zoinet.org

Jana Junghardt
jjunghardt@caritas.ch



The webinar will start soon...

WEBINAR

Ecosystem-based Disaster Risk Reduction
8 March 2018, 14:00 – 15:15 MET





WEBINAR

Ecosystem-based Disaster Risk Reduction
8 March 2018, 14:00 – 15:15 MET





Housekeeping

- ❖ Please keep yourself on mute during the webinar.
- ❖ The webinar will last 75 minutes and we will take turns between presentations and opportunities to ask questions.
- ❖ During the presentations, questions can be asked using the chat function. We will address these questions once the speakers have completed their presentations.
- ❖ If you experience difficulties, please address these in the chat and we will help you.
- ❖ The webinar slides will be made available via www.drrplatform.org/learning.

The Swiss NGO DRR Platform



- Network of 17 Swiss-based NGOs
- Dedicated to increase resilience through an integrated approach to Disaster Risk Reduction and Climate Change Adaptation

3 pillars

Capacity
Building

Swiss approach

Advocacy and
Networking

- Visit us online www.drrplatform.org



Presenters



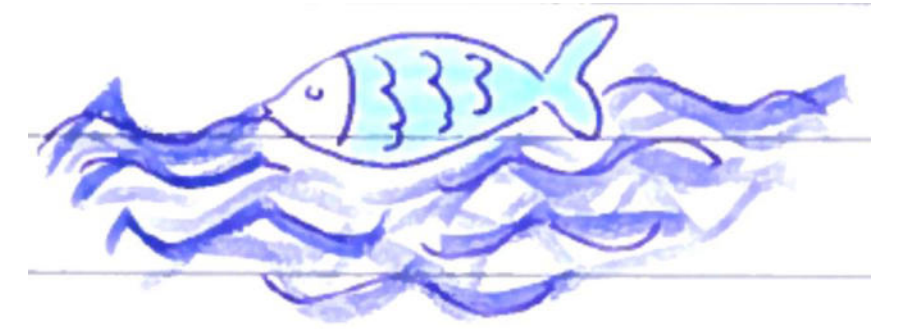
❖ **Nina Saalismaa**
zoï environment network

❖ **Jana Junghardt**
Caritas Switzerland

Regarding Ecosystem-based DRR, I feel like...



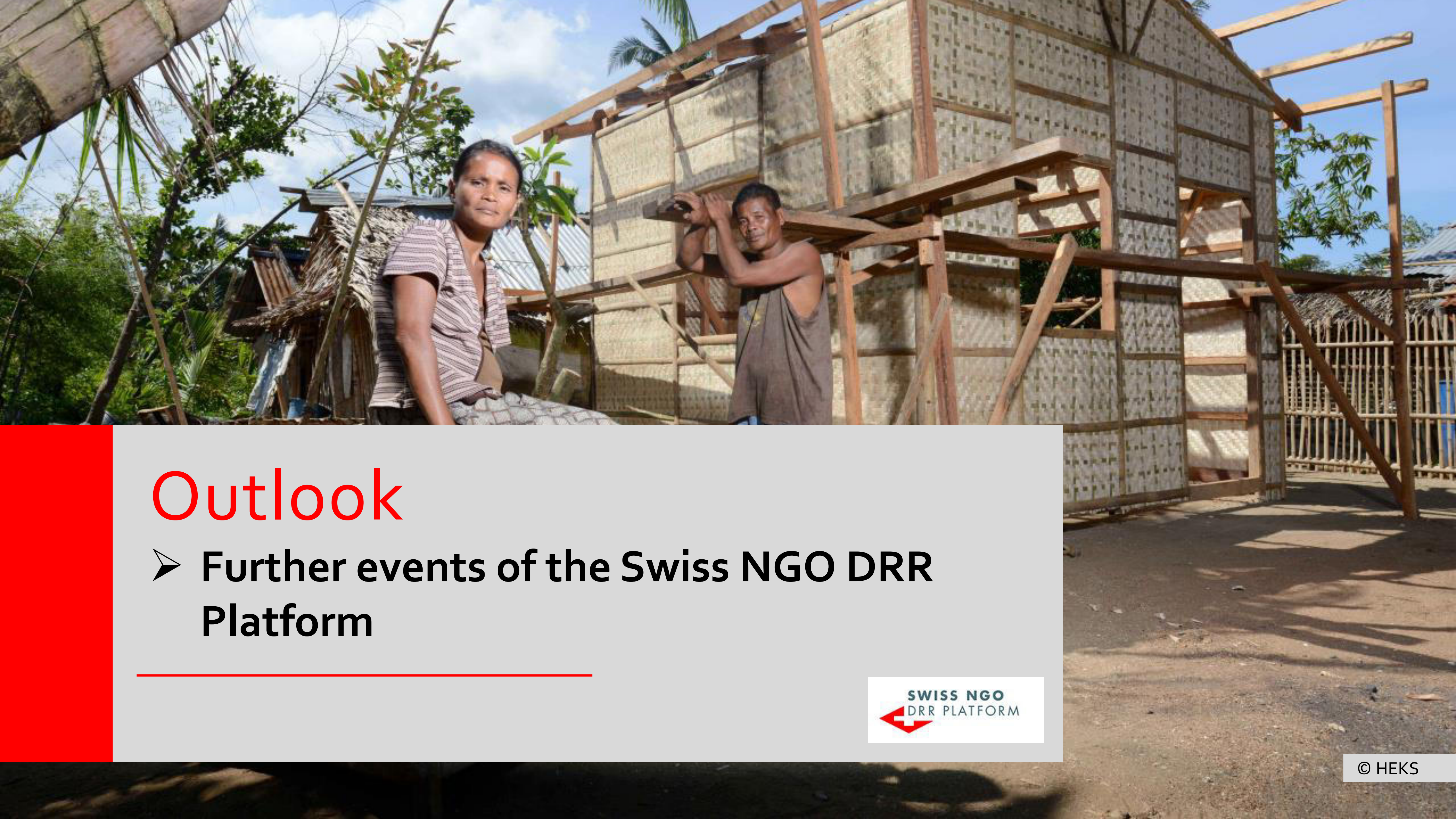
... a fish on a
tree



... a fish in
the water

Very lost

Very confident



Outlook

- Further events of the Swiss NGO DRR Platform



Upcoming in 2018



1-day learning events in CH

- DRR & Education, 16 May
- DRR/CCA Basics, 20 June
- DRR & Water, October

Webinars

- DRR/CCA Basics, 27 March
- Risk Assessments, 4 September

<http://drrplatform.org/events>

The screenshot shows the 'EVENTS' page of the DRR Platform website. At the top is a navigation bar with links: HOME, ABOUT US, MEMBERS, EVENTS (highlighted), PUBLICATIONS, LEARNING, and CONTACT. Below the navigation bar is a large banner image of a dry, rocky riverbed in a mountainous area. The page is divided into two columns: 'UPCOMING EVENTS' and 'PAST EVENTS'. The 'UPCOMING EVENTS' column lists several events with their dates and locations, including 'DRR and CCA basics for Mainstreaming' (15th of November 2017, Zurich) and 'Webinar DRR and CCA basics for Mainstreaming' (30th of November 2017). The 'PAST EVENTS' column lists events like 'Urban DRR' (9th of October 2017, Berne) and 'Inclusive DRR' (10th of October 2017, Zurich). Each event listing includes a title, date, location, and links to 'Program', 'Documentation', or 'Report'.

UPCOMING EVENTS	PAST EVENTS
Register here	Urban DRR 9th of October 2017, Berne Program
DRR and CCA basics for Mainstreaming 15 th of November 2017, Zurich Program	Inclusive DRR 10 th of October 2017, Zurich Program
Webinar DRR and CCA basics for Mainstreaming 30th of November 2017, 11:00-12:00 (CET)	Making climate change tangible for strategic adaptation p Climate Corridor Approach June 2017, Berne Program Documentation
F2F-workshop: Grey, green or hybrid? The potential of nature-based solutions for DRR 6 th - 8 th of December, Spiez & Berne Registration and further information	F2F 2016: Urban DRR December 2016, Thun and Berne Program Documentation
Eco-DRR February 2018	DRR and Education October 2016, Zurich Documentation Report
DRR & Education April 2018	DRR and Technology September 2016, Berne Program Report Documentation 1 2
DRR and CCA basics for Mainstreaming June 2018	



NEW E-LEARNING COURSE

Disaster Risk Reduction and Climate Change Adaptation

Visit online: <http://www.drrplatform.org/learning>



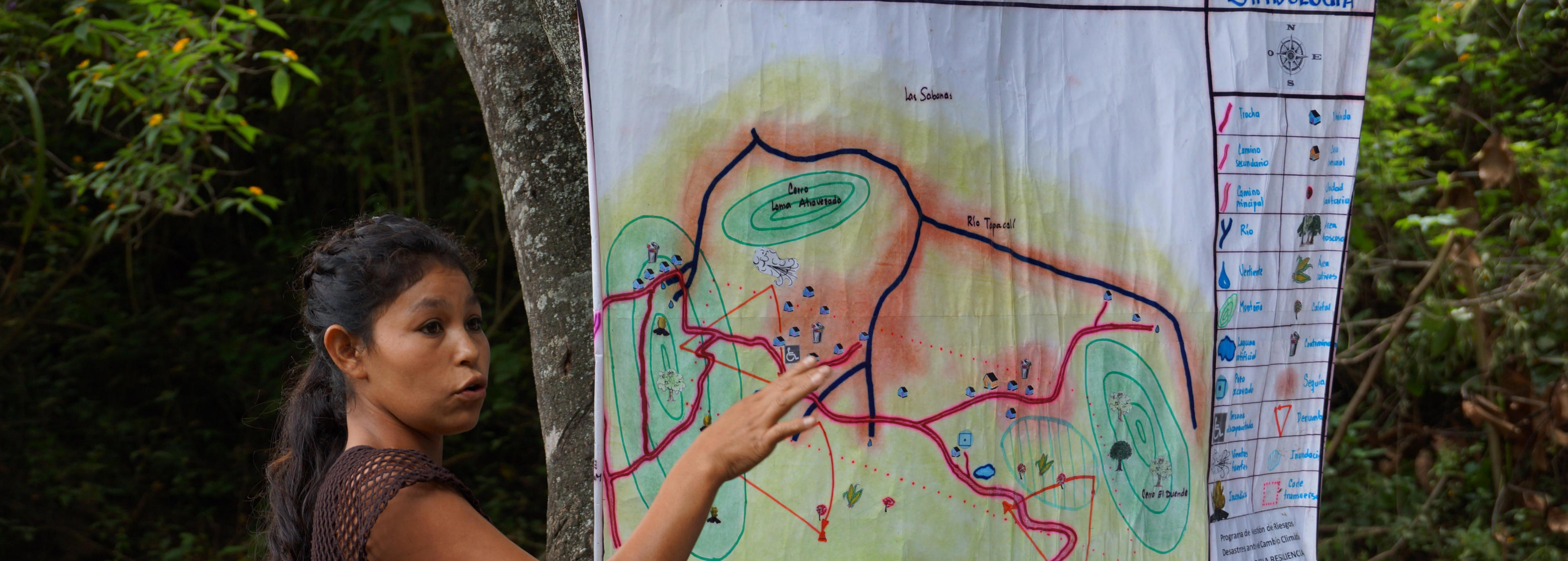
We value your feedback

- Thank you for filling out our feedback form, which we will share with you after the webinar

Direct link


https://docs.google.com/forms/d/e/1FAIpQLSdlzis9G_ct09MWe3OCYKdBJLa8j0-v-zWUzbq-sp4HUXLlzA/viewform?usp=sf_link





This webinar has been developed for the **Swiss NGO DRR Platform** by:
zoï environment network and Caritas Switzerland. Visit us online:
<http://www.drrplatform.org>



 Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC