Mainstreaming Nature-based solutions in

World Bank Flood Risk Reduction Investments

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Flood Risk: What is at stake?



Number of people affected by type of disaster (1994 -2013) Source: EM-DAT CRED 2015 Database

Floods - most frequent natural disaster

- Loss of lives, livelihoods, assets and infrastructure
- Disruption of socio-economic activities
- Short and long-term consequences for health, education opportunities

Exacerbating factors

- Urbanization increased concentration of people and assets; - and poor land use planning
- Climate Change growing frequency and severity; exposure of coastal cities

Integrated Flood Risk Management

- ✓ System approach holistic and multidisciplinary
- ✓ Forward-looking approach which aims to avoid the mistakes of the past
- *Risk-based,* recognizing residual risk and uncertainty need to part of decision making
- A strategy based on implementing "the right balance" of structural and non-structural measures, adapted to climate change





Urban Floods Community of Practice

Get the "right" balance between structural and non-structural measures

Structural Measures	Non Structural Measures			
Hard engineered	Increased preparedness			
Flood conveyanceFlood storage	 Awareness campaigns Urban management 			
 Urban drainage systems 	Flood avoidance			
 Ground water management Flood resilient building design Flood defenses 	Land use planningResettlement			
	Emergency planning & management			
Nature Based Solutions	 Early warning systems and evacuation Critical infrastructure 			
• Utilizing wetlands	Speeding up recovery			
Creating environmental buffersUrban greening efforts	Building back saferRisk insurance			

Where do we stand with our engagement in Nature Based Solutions?

We reviewed about 650 DRM/WRM projects and **96 projects** employing NBS solutions - with direct contributions or as a main objective – between 2012 and 2017.

Over these years, the Bank awarded a total of **US\$ 3.7 billion** in lending and technical assistance to nature-based solutions.

Around **15 percent of the** 650 screened **DRM/WRM projects** featured a nature-based component at appraisal stage.



Natural hazards addressed with NBS

Natural hazards addressed across the regions (2012-2018 data)

- Urban flooding (or pluvial/stormwater flooding)
- River flooding (or fluvial flooding)
- Coastal flooding
- Coastal erosion
- Landslides & inland erosion
- Drought



Nature-based portfolio in lending and advisory services for **DRM + WRM**

Most of the investment in NBS is concentrated in the Africa region (with 32 projects), followed by East Asia & the Pacific (28), South Asia projects (12 each) and LCR, MNA & ECA.





Nature-based solutions for DRM

Ecosystems are the central elements of nature-based solutions. The following ecosystems have been conserved, restored or created in an effort to reduce disaster risk, making up the nature-based solutions defined in this analysis:



NBS Program: promote a wider use of nature based solutions

https://www.naturebasedsolutions.org/





Project implementation guidance

			Ecosystem aspects	Outputs			
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
+Stakeholder needs +Maps of area of interest +Project objectives	+Budget estimate +Overview of resources	+Hazard and risk maps +Ecosystem and land-use maps +Flood zone maps	+List of measures +Strategy map	+Cost-benefit analysis +Impact assessment +Risk assessment with interventions	+Design of measures +Monitoring plan +Maintenance plan	 Intervention lifetime Regulatory frameworks Implemented measures 	+Monitoring reports +Actions if needed +Share lessons learned

Project implementation timeline

Feedback activities



Senegal: Stormwater Management and Climate Adaptation Project



Zones urbaines à Dakar en 2009

Senegal: Stormwater Management and Climate Adaptation Project





Sri Lanka Metro Colombo Urban Development Project



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Some of the challenges

- Challenging institutional & legal frameworks in countries & lacking political support
- Insufficient technical & illustrative information on the efficacy of green solutions to convince countries and design project
- Lack of trust in NBS/Ingrained perceptions, difficult to change perceptions in the absence of data
- Over reliance on gray infrastructure & traditional engineering solutions
- A struggle with the **Bank project cycle** (timeframes too short)
- A lack of capacity in the team (for design & implementation) and among clients agencies
- Missing funds for pilots and TA for the design phase (e.g. CBAs)

Good Practice and Lessons Learnt

- There is no dichotomy between green and gray infrastructure
- Think multipurpose and promote solutions that will both reduce flood risks also create livable spaces where people can work and recreate.
- Create urban spaces that attract developers and investments, and involve communities and all stakeholders in the process
- Consider funding modalities where both public and private funds with incentive mechanisms to encourage private sector investments
- Ensure proper maintenance of green spaces to fulfil their role



The way forward

- Strengthening knowledge and partnerships
- Creating new tools that will help our task teams to mainstreaming NBS in DRM/Flood risk reduction projects
- Establish mechanisms that would allow to identify NBS opportunities early in the project cycle
- Mobilizing additional resources for technical assistance

Natural Hazards – Nature-based Solutions

Thanks for listening!

For more information, please visit our new website

Natural Hazards Nature-based solutions @ https://naturebasedsolutions.org

.. We also released our Naturebased flood risk reduction guidance in Spanish and French!

You can find it on our website.

Natural Hazards Nature Based Projects for disaster risk reduction, and explore implementation and guiding principles to reak your next project a success Monte Market

Learn about nature-based projects

The project map provides a list of nature-based projects that are sortable by implementing organization, targeted hazard, type of nature-based solution, geographic location, cost, benefits, and more.

SEE ALL PROJECTS

