Ecosystem Disaster Risk Reduction and the Impact of Floods

C. KELLY
DISASTER MANAGEMENT CONSULTANT
Natural and Nature-Based Flood Management Methods – A Green Guide

Project Overview

Writing Team

Advisory Committee

All statements my own and not those of WWFD/US or USAID.
Ecosystems and Disasters

• Growth in interest and use of “ecosystem DRR”
  • Eco DRR is using the environment services (provisioning, regulating, cultural and supporting) to reduce the likelihood or impact of a disaster

• Links to
  • Sustainable development
  • “Semi-sustainable” DRR - DRR interventions which last longer than one disaster cycle
  • Mitigation and impact costs and benefits

• Based on more extensive context analysis than single-option approaches
The occurrence of floods is the most frequent among all natural disasters globally. In 2010 alone, 178 million people were affected by floods. The total losses in exceptional years such as 1998 and 2010 exceeded $40 billion.

Water-related hazards caused 60% of total economic losses in last decade.

Direct monetary impacts resulting from flood events. Source: based on EM-DAT/CREA
Challenges

- Often slow to have an impact
- Is not often “sexy”, not conforming to ideas of “development”
- Can be as much a social process as an engineering one
- Can be confusing (lots of options) and complex – no one quick fix
- Often packaged together with “gray”/concrete options
- Can be hard to sell
A View on the Complexity of Flood Eco DRR

Integrated Flood Risk Management Methods

A Structural

Hard

1 Dams and Reservoirs
2 Barrages and Diversions
3 Constructed wetlands and Polders
4 Levees and Embankments
5 Canal widening and deepening
6 Floodways
7 Pumping
8 Engineered drainage systems
9 Groynes and Revetments
10 Multipurpose infrastructure

Soft

1 Upper watershed restoration measures
2 Soil conservation measures
3 Lower reach wetlands restoration
4 Swales and Infiltration devices
5 Rainwater harvesting and Rain gardens
6 Detention basins and Retention ponds
7 Natural drainage path restoration
8 Riparian vegetation restoration
9 Removal of barriers

B Non-structural

1 Soil and watershed protection legislation
2 Land-use planning (regional/community)
3 Building regulations (flood proofing)
4 Regular maintenance of headworks
5 Flood monitoring and warning framework
6 National disaster management framework
7 Flood insurance
8 Crop change and Alternative land-use
9 Community flood committees
10 Community flood awareness programs
11 Community flood preparedness

Assessment of risk should lead decisions on Eco DRR options

Assessing risk focuses on defining (future) impact – combining a hazard (flood), magnitude, impact, counter-capacities and frequency.

But, – a lot of risk/impact assessment tools and procedures available – from very simple to very complex

And – it proved impractical to set a single risk (impact) assessment process which works everywhere, all the time, serving all needs
Understanding the Conditions of Impact

Instead of focusing on the process of assessing impacts, focused on information which should be available from an assessment:

- Watershed-level data
- Spatial and temporal extent of flooding
- Factors contributing to flooding
- Damage incurred or expected
- Vulnerable groups
- Capacities – human and institutions
- Sources of information

- Emphasis on spatial understanding (maps) and interconnectedness
Summary

- Ecosystem DRR is increasingly chosen DRR option – for reasons of cost and effectiveness
- More complex level of analysis is needed than single-option DRR
- The Natural and Nature-Based Flood Management Methods: A Green Guide opted for an information-driven impact assessment process
- Unclear if this less structured approach will result in more effective results – flood management may be more important than understanding impact
Ecosystem Disaster Risk Reduction and the Impact of Floods

C. KELLY
DISASTER MANAGEMENT CONSULTANT
HAVE DISASTER CALL KELLY @ GMAIL.COM

Further information