Promoting ecosystems for disaster risk reduction and climate change adaptation:

OPPORTUNITIES FOR INTEGRATION




DISCUSSION PAPER

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Executive Summary

This paper seeks to highlight the differences and commonalities between ecosystem-based approaches to adaptation (EBA) and ecosystem-based approaches to disaster risk reduction (Eco-DRR) and suggests key integration points at the project level through examining a number of Eco-DRR, EBA and hybrid (Eco-DRR/CCA) projects. A total of 38 (Eco-DRR, EBA and hybrid Eco-DRR/CCA) projects were examined in terms of their aims, assessments, implementation, monitoring and evaluation (M&E) and policy and institutional contexts to understand how in practice these approaches differ and overlap and to find key integration points.

Based on the review of Eco-DRR and EBA projects, Eco-DRR and EBA in practice (i.e. at project level), have much more in common than they are different, primarily because of the sustainable ecosystem management approach that is applied in Eco-DRR and EBA. Hence, ecosystem-based approaches can help bridge the divide between DRR and CCA fields of practice.

Nonetheless, EBA and Eco-DRR operate under different policy fora, have slightly different foci and are often undertaken by different institutions, mirroring differences seen generally under climate change adaptation (CCA) and disaster risk reduction (DRR). Indeed, DRR covers multiple hazards, while CCA concentrates on climatic hazards. However, CCA also covers long-term mean changes in climate and the impacts these have upon ecosystems and therefore on people. DRR, on the other hand, also has an emphasis on response, recovery and reconstruction that CCA does not. Whilst the broad aims for CCA and DRR are similar, current conceptual frameworks, terminology and semantics are different, hampering communication between the two communities of practice. Assessments under DRR and CCA can be quite different because each adopts different terminologies and approaches. CCA often examines impact of long-term climate change. However, lack of good data means that CCA often falls back on DRR-like assessments. As the focus of DRR and CCA may be different, so too are differences then reflected in project design and implementation.

When projects do not take both long-term climatic change and multiple hazards into account, the result may be mal-adaptation or increased risk. Integration of CCA and DRR practice is thus imperative. Integration is most likely to succeed at the project level rather than the policy level given the significant differences in policy tracts. At the project (operational) level, it is often difficult to distinguish between CCA and DRR.

Ecosystems and their services are important to both CCA and DRR. Each community has developed its own approach: Ecosystem-based Adaptation (EBA) for CCA and Ecosystem-based Disaster Risk Reduction (Eco-DRR) for DRR. Currently, EBA is more formally "recognised" on the international arena due to specific references in UNFCCC processes. Nonetheless, current negotiations on the post-2015 global framework on DRR (the successor to the Hyogo Framework for Action) have made explicit references to ecosystem-based approaches.

EBA and Eco-DRR share the differences mentioned above (for CCA and DRR) but have more similarities given their focus on ecosystem management, restoration and conservation to increase resilience of people (or reduce risk or reduce vulnerability). However, many EBA projects focus more on the conservation of biodiversity and ecosystem services and impacts of long-term climate change than do most Eco-DRR practice because of EBA's roots from conservation organisations. On the other hand, Eco-DRR includes components such as early warning, preparedness and contingency planning, response, recovery and reconstruction, which EBA usually does not focus.

This paper identifies five areas for Eco-DRR and EBA integration in project design and implementation, namely:

1. Defining aims of the project;
2. Conducting risk and vulnerability assessments;
3. Project implementation: methods, approaches, tools;
4. Monitoring and Evaluation; and
5. Policy and institutional engagements.

In formulating project aims, understanding future change and project needs by creating future scenarios that takes into account climate, environment, development and multiple hazards would help indicate who would be best involved in the project and ensure future sustainability.

Because both Eco-DRR and EBA are emerging fields in their own right, each are developing assessment methods and tools, in which data availability plays a large role. There is sometimes cross-over in assessment needs either result-

ing in duplication or missed opportunities due to lack of knowledge of the other field. Both fields could inform each other, strengthening knowledge and practice.

Implementation approaches and activities are broadly similar between Eco-DRR and EBA. There is more of an emphasis in some EBA projects on conservation and enabling ecosystems to adapt, and using species suitable to future climatic conditions. Adaptive management, that is strongly promoted in the EBA community, is an approach that recognizes uncertain future conditions and therefore embeds learning-oriented, flexible decision-making processes. Eco-DRR could benefit from EBA knowledge to climate-proof its interventions, while EBA could learn from Eco-DRR's integrated disaster management approach.

Monitoring and Evaluation (M&E) in EBA and Eco-DRR is embryonic and, as such, working together (including with other initiatives such as REDD+) will help to avoid duplication and create synergies. Ensuring learning as part of M&E is essential.

Eco-DRR and EBA projects work mostly with environmental ministries to influence policy. However, adaptation and disaster risk reduction are broader than the reach of environmental policies. Furthermore, the environment needs to be taken into account by other sectors. Eco-DRR and EBA could work together to increase multi-disciplinary approaches within project implementation and at a policy level.

While there exists key differences in overall approach and implementation, especially at the conceptual level, practice shows that often it is a question of differences in discourse (and use of terminologies) than a real difference at the local level. Fostering collaboration at the project level would provide good lessons for future practice and facilitate integration of EBA and Eco-DRR. This would then facilitate the development of much needed integrated tools. Gaps in knowledge in both communities should be filled through inter-disciplinary research and practice, appropriate M&E frameworks that support learning and knowledge exchange platforms.

1. INTRODUCTION

Climatic hazards are the most frequent hazards impacting our communities, and any change in the climatic system exacerbates disaster risk. In the last century, we have experienced virtually certain changes in climate, especially the warming of the climate system, according to the latest Intergovernmental Panel on Climate Change (IPCC) assessment report (AR5; IPCC 2014). These changes are projected to continue with global increases in temperature, changes to precipitation patterns, intensification of extreme events and increasing sea level (IPCC 2013). These alterations in the climate system are likely to increase disaster risk in many areas by changing hazard patterns and exacerbating drivers of vulnerability.

Because of the close linkages between climate change and disaster risks, the international community is increasingly calling for integration of climate change adaptation (CCA) and disaster risk reduction (DRR). At regional level, countries are also working towards closer integration between DRR and CCA, for instance in the case of the Joint National Action Plans on Disaster Risk Management and Climate Change of the Pacific Region (UNISDR 2013).

Despite the call for integration and a number of studies on why integration would be beneficial (Thomalla et al. 2006; Shipper and Pelling 2006; Tearfund 2008; Birkman and von Teichman 2010), there exists no clear analysis on how integration is to be practically achieved (Tearfund 2008; Mercer 2010). Currently, climate change and disaster risk management processes remain governed by different policy tracks, which often mean different institutions and stakeholders separately implementing measures on CCA and DRR.

In the field of CCA and DRR, ecosystem-based approaches are emerging as important measures to be undertaken within overall CCA and DRR strategies. Examining CCA and DRR projects that are based on an ecosystem-based approach as a common denominator can point to key entry points for integrating DRR and CCA. Both fields are currently elaborating their own ecosystem-based approach.

Under CCA, ecosystem-based approaches to adaptation (EBA) are fast gaining interest and have made their way formally into the climate change policy arena. Under DRR, on the other hand, ecosystem-based approaches to disaster risk reduction (Eco-DRR) is only starting to emerge in DRR policy agendas (although elements of Eco-DRR have been used in the past as part of disaster management, for instance the long history of coastal forests in Japan and mountain forests for avalanche and landslide protection in Switzerland and other Alpine countries). In terms of implementation at the project level, both EBA and Eco-DRR are emerging areas of practice, with multiple interpretations and applications. It is therefore a good opportunity to examine both EBA and Eco-DRR with a view to finding points for integrating CCA and DRR through sustainable ecosystems ma.nagement.

The main focus of the paper is to examine potential areas of integration and synergy, highlighting how sustainable ecosystems management approaches help facilitate integration of CCA and DRR. This paper will first lay out the differences and similarities between CCA and DRR and summarise the discussion on need for integration. This background is necessary to understand the context as well as norms and practices used in Eco-DRR and EBA. Second, it will discuss the role of ecosystems within CCA and DRR and outline each emerging approach, revisiting the need for integration. Third, it will examine three types of projects: (i) recent/current projects "self-labelled" as EBA, (ii) projects self-labelled as Eco-DRR, (iii) combined or hybrid Eco-DRR/CCA projects. It will discuss the differences and commonalities between EBA and Eco-DRR projects, and potential integration points, based on a structured analysis that follows the conventional project cycle: aims, assessments, implementation (ground-level) and monitoring and evaluation. It will also reflect on the policy and institutional contexts of implementing Eco-DRR and EBA projects, and their implications for integration.

2. UNDERSTANDING SIMILARITIES AND DIFFERENCES BETWEEN DRR AND CCA

Whilst efforts to mitigate climate change are still ongoing, current and now unavoidable future changes in climate have raised the need for countries to adapt to climate change. Within the United Nations Framework Convention on Climate Change (UNFCCC), the Cancun Adaptation Framework was adopted in 2010 to enhance action on adaptation, the result of which is the preparation by many countries of National Adaptation Plans (NAPs). Climate change adaptation (CCA) refers to "adjustments in natural and human systems in response to actual or expected climate change impacts, which moderate harm or exploit beneficial opportunities" (Parry et al. 2007, p.869)[1]. Thus, CCA strategies aim to reduce vulnerability to climate change impacts.

Disaster risk reduction (DRR) is a field that emerged following the International Decade of Disaster Reduction in the 1990s and the adoption of the Hyogo Framework for Action (HFA 2005-2015), the current global framework on disaster risk reduction. DRR practice has its roots in the field of disaster management, involving traditionally humanitarian organizations and agencies, civil protection and emergency responders. Disaster risk reduction is defined as "the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events" (UNISDR 2009, p. 10-11). DRR focuses its strategies on reducing risk from multiple hazards, both natural and man-made. This highlights the substantive difference between DRR and CCA, in which the latter focuses solely on climate-related hazards and their impacts. Table 1 shows the main differences and convergence between DRR and CCA.

In DRR, disasters linked to natural hazards are often viewed as part of recurring or cyclical events, for instance in the case of monsoon rains and floods, hurricanes/tropi-

1 This definition has changed with the AR5: "The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate harm or exploit beneficial opportunities. In natural systems, human intervention may facilitate adjustment to expected climate and its effects."

Table 1. Main differences and convergence between DRR and CCA

DIFFERENCES		SIGNS OF CONVERGENCE
DRR	**Adaptation**	
Relevant to all hazard types: geological, hydro-meteorological, climatic, biological, as well as technological / industrial hazards	Addresses climate related hazards , but also looks at additional gradual effects of climate change (e.g. sea level rise, air temperature increase, snowmelt, biodiversity loss)	Both focus on increased climate-related hazards, and climate extremes (e.g. floods, storms, landslides, droughts), although DRR also increasingly addressing gradual climate change impacts e.g. sea level rise
Timeframe- immediate to medium-term Most concerned with the present- i.e. existing risks	Timeframe – long-term Most concerned with the future- i.e. addressing uncertainty/ new risks	DRR increasingly forward-looking. Existing climate variability is an entry point for climate change adaptation
Origin and culture in humanitarian assistance following a disaster event	Origin and culture in scientific theory	
Actors – traditionally coming from humanitarian sectors and civil protection	Actors – traditionally from the scientific and environmental community	Both DRR and CCA are increasingly multi-disciplinary and reliant on multiple stakeholders across sectors (e.g. engineering, water, agriculture, health, environment, etc)
Activities generally more wide-ranging, from disaster preparedness (early warning, contingency planning, etc), prevention, disaster response, recovery, rehabilitation and reconstruction	Activities generally more restricted to prevention, mitigation, preparedness and building adaptive capacities, typically excluding post-disaster activities	DRR and CCA typically overlap in the area of disaster preparedness and prevention/mitigation, although there is growing attention towards mainstreaming climate change considerations in post-disaster recovery and reconstruction.
Full range of established and developed tools	Limited range of tools under development	Increasing recognition that more adaptation tools are needed and must learn from DRR
Often low to moderate political interest	Emerging agenda, high political interest	Climate-related disasters events are now more likely to be analyzed and debated with reference to climate change

Source: Modified from Tearfund/IDS (2008), Linking Climate Change Adaptation and Disaster Risk Reduction, UK: Tearfund. p. 10.

cal cyclones, earthquakes and volcanic eruptions. In contrast, climate change is often seen as a long-term process with high levels of uncertainty linked to climate change impacts. Hence, timeframes for implementation can also vary between DRR and CCA. This view forgets that DRR are measures intended to be long-term orientated, even if in practice that is not always feasible (Birkman and von Teichman 2010). Whilst it is true that long-term projected changes in climate are taken into account in many CCA projects, current climatic hazards are also addressed, given that climate change impacts are already being felt today, as stated clearly in the AR5. Furthermore, lack of down-scaled climate projections for many regions, along with the uncertainty in the model outputs, sometimes preclude the use of future climate projections within projects. Both CCA and DRR therefore rely on past hazard trends, and both address underlying factors of vulnerability to reduce impacts and risk.

Integration between CCA and DRR presents an opportunity to have a more holistic understanding of risks over the immediate and long-term and an integrated ap-

Table 2: Different communities of climate change adaptation and disaster risk reduction

	CLIMATE CHANGE ADAPTATION	DISASTER RISK REDUCTION
Organisations and institutions	• United Nations Framework Convention on Climate change (UNFCC) • Intergovernmental Panel on climate change (IPCC) • Convention on Biological Diversity [2] • Academic research institutions • National environment and energy authorities • Non-governmental organisations (NGOs) from the environmental conservation community	• UN Office for Disaster Risk Reduction (UNISDR) • International Federation of Red Cross and Red Crescent Societies (IFRC) • International, national and local civil society organisations • National civil defence authorities • National Disaster Management Agency/ • National Disaster Risk Reduction or Disaster Management Council
International conferences	Conference of the Parties (CoP)	World Conference on Disaster Risk Reduction / Global Platforms on DRR
Strategies	• National communications to the UNFCCC • National Adaptation Plans for Action for Least Developed Countries (NAPAs) • National Adaptation Plans (NAPs)	• UN International Strategy for Disaster Risk Reduction (ISDR) • Hyogo Framework for Action 2005-15 • National Disaster Management Plans and Strategies
Funding	• Special Climate Fund • Least Developed Countries Fund • Adaptation Fund • Green Climate Fund • Multi-lateral and bi-lateral funding	• National civil defence/emergency response • International humanitarian funding • Global Facility for Disaster Reduction and Recovery (GFDRR / The World Bank) • UN Trust Fund for Disaster Risk Reduction • Multi-lateral and Bi-lateral funding

Source: Modified from Thomalla et al. 2006