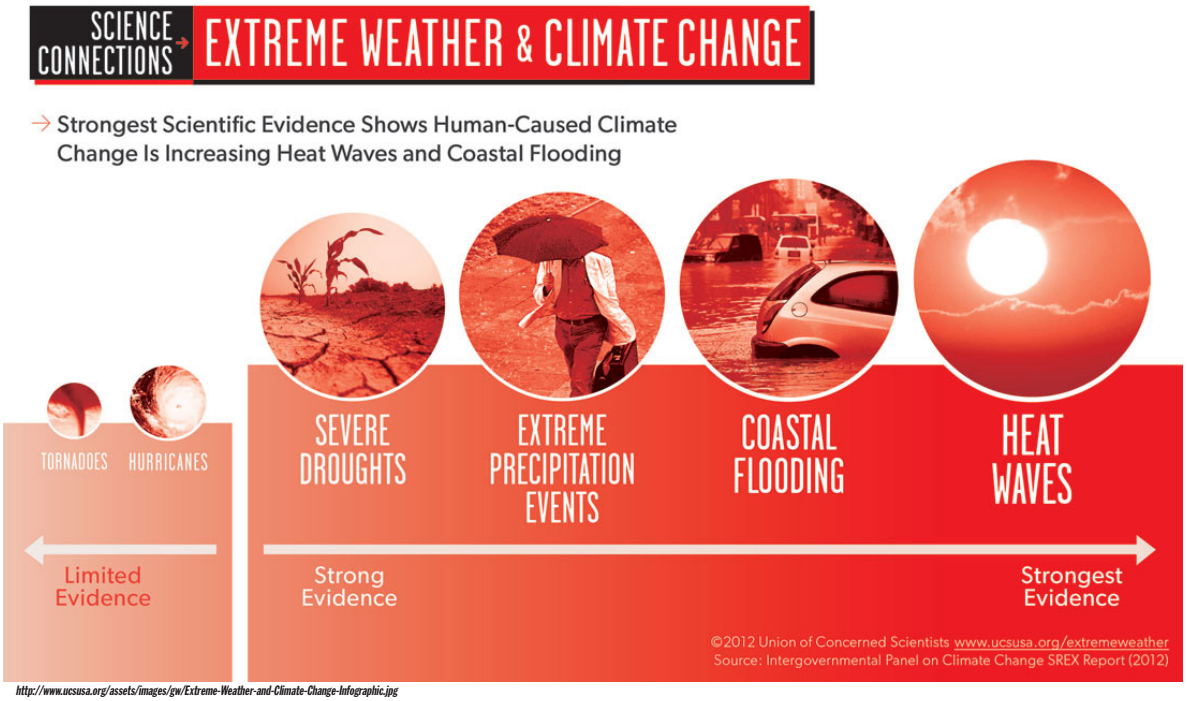


http://www.ucsusa.org/assets/images/gw/Extreme-Weather-and-Climate-Change-Infographic.jpg

# Working with A Changing Climate, Not against It

## Executive Summary
## January 9, 2014

## Hydro-Meteorological Disaster Risk Reduction: A Survey of Lessons Learned for Resilient Adaptation to a Changing Climate

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**This study and publication were made possible through the support provided by the Office of U.S. Foreign Disaster Assistance, Bureau for Democracy, Conflict and Humanitarian Assistance, U.S. Agency for International Development, under the terms Award No. AID-OFDA-T-11-00002.**

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**The authors wish to acknowledge with much appreciation members of those organizations who provided their time, energy and ideas that made this survey of lessons learned about disaster risk reduction activities possible. The list of organizations include but are not limited to the following: the IGAD Climate Prediction and Applications Centre (ICPAC in Nairobi), the Mekong River Commission (MRC in Phnom Penh), International Centre for Integrated Mountain Development (ICIMOD in Kathmandu), Asia Disaster Preparedness Center (ADPC in Bangkok), NOAA's National Weather Service, the University of Nairobi, Tribhuvan University Department of Meteorology, the University of Colorado, Small Earth Nepal (SEN in Kathmandu), the Cambodian Red Cross (CRC), MeteoGalicia (Spain), Cambodia's Meteorological Services Department, The Department of Hydrology and Meteorology of Nepal, the Instituto Meteorologico Nacional de Costa Rica (IMN), the Kenya Meteorological Department (KMD) in addition to regional USAID offices in San Jose, Costa Rica and Bangkok, Thailand.**

# CONTENTS

## Hydro-meteorological Disaster Risk Reduction (DRR): Lessons Learned for "Resilient Adaptation" to a Changing Climate

# PREFACE

The explicit focus of this survey is DRR in terms of hydro-meteorological hazards and disasters. Societies and individuals have been "jousting" with variable, extreme and changing local and regional climates for millennia, with varying degrees of success. Throughout that time, human interactions with climate processes have been mainly based on trial and error as well as on the expectations that natural processes in specific locations will most likely fall within a known range of seasonal extremes. Through trial and error and a culture-based learning curve, societies have tried to devise best practices for their specific locations that seem to work at given periods of time enabling them to cope with their hydro-meteorological hazards and to recover from extreme hazardous events that were deemed disasters.

In many ways, societies today are not much different than those in the past, except that we now have cutting-edge technologies and innovative possibilities for coping with the impacts of rapidly changing climate processes. Recognizing and accepting the trial and error aspects of DRR efforts today constitutes a major positive step forward in identifying risk-reducing coping mechanisms, because doing so reminds most societies to remain vigilant in the face of uncertain global climate now and in the future.

New technologies designed to protect society from the vagaries of atmospheric and environmental processes, can be thought of as attempts toward climate-proofing. Yet there is no cure-all technology or managerial model that can assure a society that it has been climate-proofed. While site-specific climate-proofing can take place in a controlled greenhouse environment, no society to date can claim to be immune from climate-, water- or weather-related variability, extremes and disasters. Climate-proofing constitutes the"what ought to be," the societal goal that is often sought in theories, reports and campaign promises but that is, in the end, likely unattainable. Nevertheless, steps *towards* climate-proofing can be effective and must certainly be pursued. Herein lies the societal challenge of effective DRR.

A major concern for DRR, however, continues to be the increasing pressure to identify ways to bridge if not seamlessly "blend" the consequences of shorter-term disaster-related emergency response and humanitarian DRR preparedness with the needs and goals of longer-term CCA (i.e. climate change adaptation-related) such as sustainable development adaptation planning involving reducing food insecurity and poverty reduction, i.e. underlying adverse socio-economic conditions that constrain DRR efforts.

Effective bridging (or blending) of DRR-related preparedness planning and response mechanisms with climate change adaptation (CCA) can help to mitigate, if not altogether avoid, many of the complications that tend to arise along development pathways when disasters derail progress on community development programs or force alterations, usually setbacks, in development agendas.

Given that DRR and CCA communities share their goal of creating resilient societies in the face of changing climate and environmental conditions, bridging (better yet blending) can help to improve efficiency, effectiveness and sutainability of their projects' and programs' outcomes. These benefits can be attained through sharing of methodologies and lessons identified and by working to integrate, where beneficial, their activities at the different times scales at which they operate. *One opportunity is to set up a special unique targeted fund to foster the developing of truly blended activities of a DRR-CCA partnership.*


# INTRODUCTION

This survey of hydro-meteorological disaster risk reduction (DRR) projects was carried out to identify "lessons learned" from USAID/OFDA selected projects for use in planning future activities. It is being undertaken in the midst of changes. The climate is warming. Atmospheric processes are changing. The frequency, intensity, magnitude and even the location of hydro-meteorological extremes are changing. Societies are changing. Demographics are changing as are approaches to development.

The survey was undertaken with the assumption that all development and humanitarian aid activities yield direct and indirect benefits to varying degrees to donor and aid recipients alike. The objective has been to identify what worked well but more importantly to address those aspects of the reviewed projects that could be improved.

Today, at the onset of the second decade of the 21st century, a shift toward "building resilience" to the consequences of climate change decades from now is evident in development thinking. In December USAID (2012) released "Building Resilience to Recurrent Crisis," calling for the necessity to "bridge" programs such as DRR, which cope with (anticipate, prepare for or avert) the potential consequences of hydro-meteorological extreme events, with longer term development planning for climate change adaptation (CCA).

USAID is not alone in this recent shift toward "building resilience." Oxfam (2013) referred to the increasing use of "resilience" in development as the new 'buzzword' for this decade. Clearly, there is an opportunity to enhance "resilient adaptation" to the impacts of a changing global climate by bridging DRR and CCA.

Many agencies from industrialized countries provide assistance to developing countries that may not have the means—technological, financial or social—to cope with hydro-meteorological extremes such as droughts, floods and flash floods. USAID is one such agency, through the US Office of Foreign Disaster Assistance (OFDA) and other bureaus in addition to the field missions.

While completing this survey of a set of OFDA-supported projects in Asia, Africa, Central America and the Caribbean, several sustained outcomes from past DRR activities were highlighted. Yet it was more important to focus on the problems encountered during the projects. For examples, gaps were identified between the expectations of what ought to have been the outcomes and what the actual outcomes turned out to be.

***"The paradox is only a conflict between reality and your feeling of what reality ought to be."***

***(Richard Feynman)***

Identifying intervening risk-producing obstacles or constraints can provide insights into lessons that could be drawn from previous DRR activities and considered

in the future planning of DRR-related projects to make them more effective and more efficient in the use of relatively limited resources for disaster risk reduction. In addition to identifying lessons learned from this particular set of projects, we sought to identify ways in which hydrometeorological disaster risk reduction (DRR) strategies, tactics and activities may be bridged or blended with climate change adaptation (CCA) planning activities in the face of an uncertain climate future.

# LESSONS LEARNED

Just about every hazard or disaster-related assessment, retrospective (hindcasting) exercise ends with a section in its final report devoted to lessons learned. Lessons usually take the form of recommendations about what to do for the better in the future, if faced with a similar situation as occurred in the past. Such an exercise is a way for development aid organizations to "ask those coming back in order to glimpse the road ahead." Doing so makes perfect sense, yet identifying meaningful project lessons is not always so straightforward.

The distinction between a "lesson learned" and a "lesson identified" is critical for DRR and for longer-term development prospects (CCA). As one extreme hydro-meteorological event can set back economic development gains for many years, it pays for humanitarian aid agencies to be aware of this important distinction—an identified lesson does not automatically mean that a learned has been learned, e.g., considered, taken into account, evaluated and used.

At the heart of the matter is whether lessons are framed as "teachable moments" that are useful for fostering future sustainable and resilient communities or are for inclusion in "grey" reports relegated to collecting dust in file cabinets. The issue of lessons from the past is a concern to humanitarian assistance agencies. Although many lessons may be gleaned each year from every new hydro-meteorological hazard or disaster, there is an implicit expectation that lessons identified would translate directly into benefits when used in decisionmaking processes about the future.

An important question is whether so-called "lessons learned" are actually re-viewed (i.e. looked at again) for possible use in future decision making processes. For a variety of reasons, lessons are often deemed to have little "re-use value," even to the same decision makers, to the same organizations or for a project analogous to that for which the lessons had originally been identified.

***"Lessons are too often isolated and perishable, rather than generalized and institutionalized."***
***(Donahue and Tuohy 2006)***

www.itbusinessedge.com

Milton (2009) provided a corporate perspective, suggesting that "a lesson identified for reasons other than for sharing or re-use in future decision making is of interest to historians but not necessarily to knowledge building for future use or value, regardless of whether the lesson is about positive or negative outcomes." He proposed "5 steps a lesson has to go through before it can be considered learned": (1) Reflect on experience; (2) Identify learning points; (3) Analyze; (4) Generalize (at this stage we have a lesson Identified) and; (5) Take Action (a lesson needs to be accompanied by an action if it is to be considered truly learned).

Yet, some organizations suggest that the actual lessons identified or learned are not the most important outcomes of a lessons learned activity. Instead, what is important is the discussion and debate that surrounds the first-time proposal of lessons or the framing of lessons from other socio-economic, institutional or historical contexts for re-use in new and current contexts (Spilbury et al. 2007).

A considerable and growing literature now exists about lessons learned which has sparked an interest in "lessons learned about lessons learned" for DRR and for CCA.

Lessons are more easily identified than learned, a truism that would be difficult for anyone to challenge. In identifying lessons from disaster risk reduction programs, the observation made by the narrator in the

"Rime of the Ancient Mariner" comes to mind: "Water," water everywhere, nor any drop to drink." It seems this could be similar for lessons in development: "Lessons, lessons everywhere, nor any one applied," the point being that over years and decades many lessons have been identified from projects and programs related to DRR and CCA, yet many, for a host of reasons, seem to remain unapplied, of benefit to no one except possibly those who wrote the reports in which those lessons were initially identified.

"The Suggestion Box is Full" ©Leo Posillico 2005

***"Difference between school and life? School teaches you lessons first and then gives you a test. Life gives you a test and you learn the lessons." (Anon.)***

## FROM PLANNING TO OUTCOMES: "WHAT OUGHT TO BE," "WHAT IS," "WHAT COULD BE"

British historian E.H. Carr (1939) highlighted the differences between what was desired from the international politics in the period between WWI and WWII (1919-39), that is, the "what ought" to have been, and what the actual politics turned out to be. The "what is" vs. the "what ought to be" analytical model that he used for his analysis can be usefully applied to hydro-meteorological hazards and disasters. For example, an organization's published plans for programs for its disaster risk reduction (DRR) or for its longer-term development (CCA) projects can be assumed to represent its highest expectations for success. In other words, such glossy publications represent that organization's understanding of "what ought to be" accomplished.

It is fair to assume that every humanitarian assistance project will produce at least some benefits to recipients and to donors, even if the project's overarching goals are not achieved. To be sure, most often circumstances arise that cause projects to fall short of their most desired outcomes. Unforeseen circumstances such as constraints, obstacles, intervening variables, etc. tend to arise and combine with the best intentions of the project stakeholders to produce the reality of the often limited outcomes in the actual world—the "what is."

<u>What "ought to be" from a DRR perspective:</u> Fewer people are affected by natural hazards each year because such hazards have fewer costs in terms of lives and livelihoods lost, cause less damage to infrastructure and result in significantly less socio-economic disruption.

<u>What "is":</u> Disaster impacts are increasing each year, collectively causing higher losses of life, disruptions to livelihoods, damage to property and derailment of economic development progress.

<u>What "ought to be" in regard to DRR programs:</u> Each component of an EWS (early warning system) is given adequate attention and funding, not only to improve forecasting techniques and accuracy but also to foster resilience in the face of risk within societies and to foster timely, user-friendly hazard warning communications. This would enhance a feeling of ownership of projects and programs among key national institutions and at-risk communities in disasterprone countries. Of course, how things "ought to be" is subjective because it depends on one's worldview perspective.

<u>What "is" in regard to DRR programs</u>: The focus remains primarily on improving climate prediction technologies, which remain uncertain and probabilistic in real-world situations despite ongoing improvements. People and key institutions involved in DRR are often rooted in the physical sciences. This can inadvertently overshadow other important aspects of holistic EWSs that also need attention, such as risk communication, awareness raising and creating a culture of risk preparedness.

In sum, closing the development gap between "what ought to be" and "what is" for DRR and for CCA under a global climate change scenario should encourage individuals and societies to think less about

"what is" and "what ought to be" and more about the possibilities of "what could be."

## BRIDGING & BLENDING OF DRR & CCA IS A NECESSITY

One of the primary challenges facing humanitarian and development organizations has to do with redefining the existing relationship between Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA). More generally, calls for "mainstreaming" DRR and CCA into the development policy process are repeatedly being made by development researchers. These researchers argue that such integration would reveal opportunities for each field to learn from the strengths and weaknesses of the other, thereby contributing to a more efficient use of resources (Shaw et al. 2010; Tearfund 2008).

There are several common interests between the DRR and CCA fields: a shared concern to improve hazard and disaster preparedness and response, to reduce vulnerabilities of at-risk populations and to increase societal resilience. Both communities have increasingly focused on climate-, water- and weather-related disasters. The DRR community has done so because the short to mid-term aligns with its core mandate. The CCA community has done so because planning for future disasters is becoming a primary concern for policymakers, even though, according to climate scientists, no single hydro-meteorological event has as yet been directly scientifically linked to climate change.

**"DRR and CCA each have an aspect involving the other."** **CCB**

Other commonalities between CCA and DRR include the following:

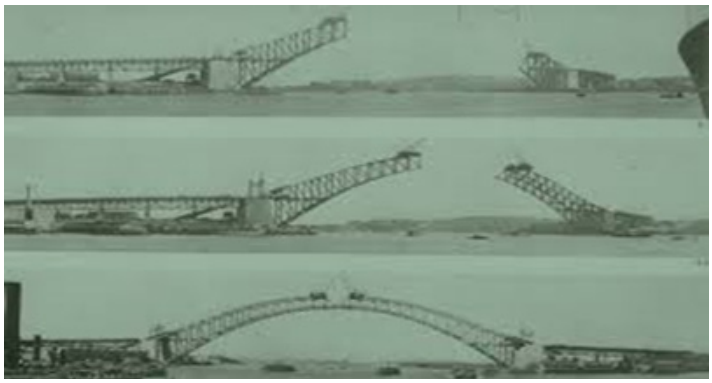
- Focus on hydro-meteorological hazards
- Fall under Disaster Risk Management (DRM) but at different time scales
- Seek to reduce if not avoid hazard risks
- Seek to foster adaptive capacity
- Seek to foster societal resilience
- Face an uncertain climate future
- Have (or share) overlapping time frames (short to midterm; midterm to longer term)
- Would benefit from knowledge sharing
- Reduce vulnerability of at-risk populations
- Are focused on rural, urban, costal development

Yet, significant differences in terms of the tools and approaches used by the DRR and CCA communities must also be recognized and addressed. For example, DRR has a history of hazard and disaster-related interventions and specific tools. Such tools have yet to be well developed in CCA (Mitchell & van Aalst 2008; O'Brien et al. 2008). DRR also has a tradition of including local actors and an awareness of local knowledge, whereas CCA has largely been dictated by global policy processes and privileged scientific expertise (Shaw et al. 2010). Furthermore, DRR is generally more inclusive of societal factors that contribute to risk, whereas CCA has generally been focused mainly on climate drivers (Tearfund 2008).

For its part, CCA has been concerned primarily with identifying ways for societies to adapt sustainably from the mid-term to the longer-term to increasingly warmer climates but over decadal timescales out to 2025 or 2050, and beyond. Coping with disasters, however, is but one of the climate change community's many concerns. It must also focus on reducing carbon emissions (by fostering the greening of economies, mitigation), adapting to changing environmental conditions including "creeping" ones (adverse incremental changes such as sea level rise, deforestation and desertification), developing new, non-polluting renewable energy sources, protecting tropical forests, modeling and monitoring atmospheric changes, and so forth. CCA's direct involvement in disaster preparedness focused on the near to mid-term needs clarification with regard to how best to bridge or blend CCA's mission with the mission of DRR.

Some of the principle challenges to integration of DRR and CCA include but are not limited to fragmentation of funding and implementation of resources, entrenched interests at different spatial and temporal scales, differing systems of norms, and different kinds and sources of knowledge as well as of funding (Birkmann & Teichman 2010). In particular, blending the top-down CCA agenda about the future, which is driven in large measure by multilateral organizations, with DRR's bottom-up regional to local approach about the "here and now" will require special attention. Bridging DRR and CCA will require meaningful changes in the way these groups deal with each other as seemingly autonomous fields of operation within the same government or agency.

Successful bridging is a challenge to aid agencies because the two communities have different mandates, missions and modus operandi; are focused on different aspects of development; have different timeframes of concern; rely on different approaches to fulfill their missions; require different resource streams and amounts; have different ways to access funds; and have different timeframes for evaluating projects.



Sydney harbour bridge. Source: www.schlicks.com

Despite their common interest in addressing disasters, bridging these two communities effectively and quickly is likely to be easier said than done.

| THE Bridge: CCA+DRR together | Suggested outcomes of bridging |
|---|---|
| Bring global & long-time-frame perspective climate scenarios to local-level drr-related activity | Longer-term community resilience is built to face an uncertain climate future |
| Use a "Forecast by analogy" approach to identify similar hazards and disasters in time and space to use as analogues to prepare for similar events in the future to reduce climate risks | Past experiences with hazards, disasters and warning systems are used to better plan for upcoming foreseeable risks in short to longer-term time frames |
| Each adaptation to adverse impacts and to climate change will generate its own set of impacts. Jointly decide how to identify and prepare for the downstream impacts of CCA and DRR activities in the face of a changing, uncertain climate | Resilient adaptation provides for a more flexible approach to cope with uncertain challenges in if future DRR and CCA projects |
| Focus on "Resilience' as a common DRR-CCA bridging theme | A common long-term goal is shared among DRR and CCA: fostering a resilient adaptation |
| DRR and CCA identify, share and discuss teachable moments, and lessons from these moments, drawn from contemporary disasters | DRR and CCA share experiences and learn from each other in a cooperative environment |
| Together, identify approaches to activities that benefit from a blended of perspectives | Common approaches to blending and bridging activities are identified and agreed upon between DRR and CCA |
| Reduce bureaucratic issues that may arise when CCA and DRR activities may overlap | Time is saved by increasing efficiency and resources as well |
| Acting jointly to identify DRR activities for which pilot and other time-limited projects can be supported by CCA once the DRR activity "sunsets" | Activities initiated jointly may have a higher chance of being sustained in the long term and lead to project ownership by the host state/institution |
| Jointly focus on improving a recipient country's absorptive capacity | Likelihood of a recipient's ownership of a project increases if CCA picks up a project once initial grant ends |

**Glantz & Baudoin, 2013**

# RESILIENCE AND "RESILIENT ADAPTATION"

The concept of resilience means different things to different communities (Ahmed 2006; Alexander 2013). In the field of ecology, for instance, it was used in the early 1970s to describe the ability of an ecosystem to persist in the face of shocks (Holling 1973). Since that time, resilient systems have often been described in terms of their ability to absorb shocks as well as to anticipate and avoid harm in order to bounce back or to recoup after a disaster. These qualities remain fundamental to the meaning of resilience within the societal context of international development.

**What is Resilience?**

Resilience is the capacity of a community to organize itself to reduce the impact of disasters by protecting lives, livelihoods, homes, assets, basic services, and infrastructure. Resilience includes the capacities of communities to advance development processes, social networks and institutional partnerships that strengthen the ability of the community to cope with and recover from disasters.

We believe that vulnerability, resistance and resilience are all shaped by access to rights, resources and assets.

In the pre-disaster context resilience includes measures to pro-actively, reduce vulnerabilities and risks.

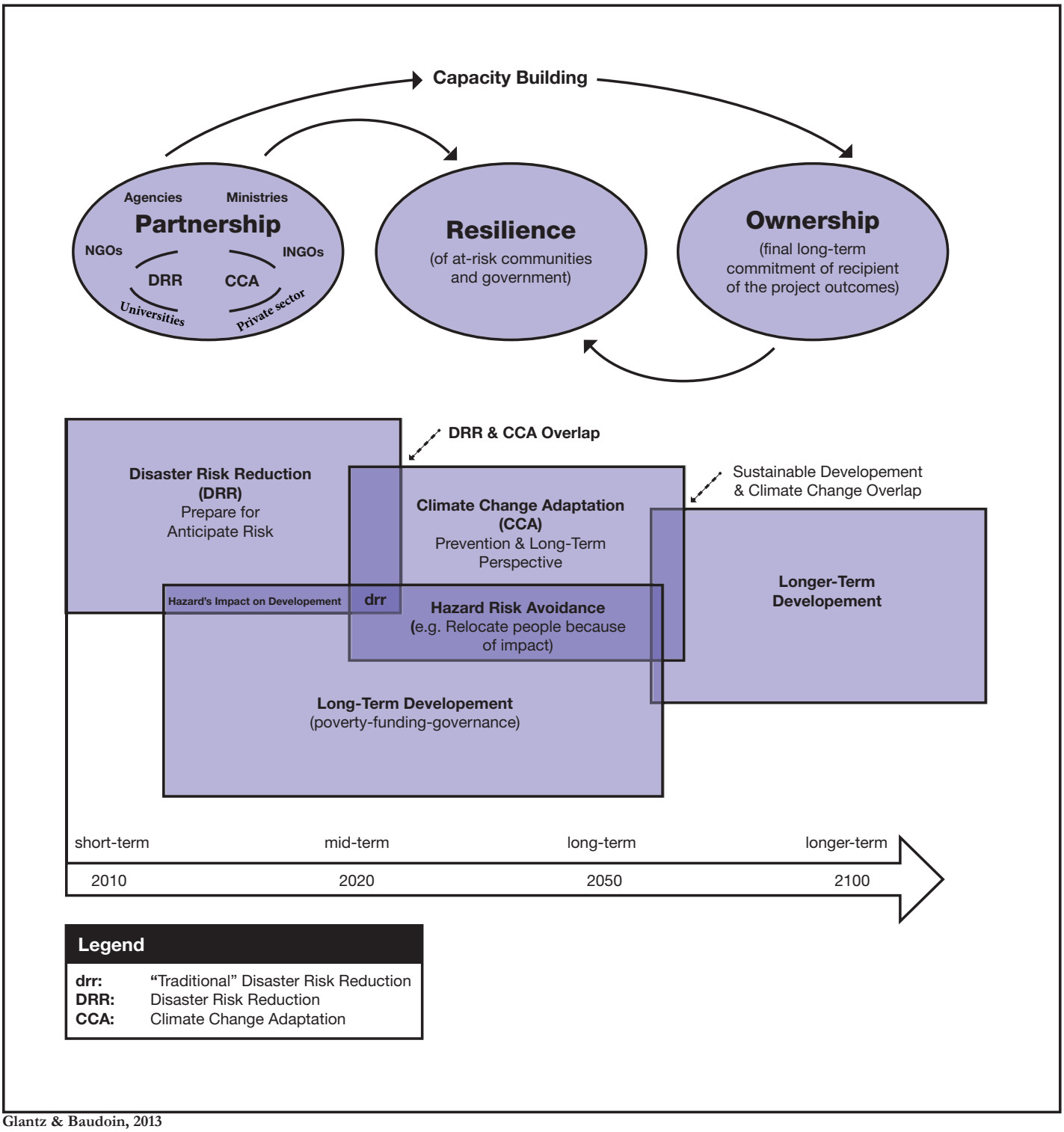
In post-disaster contexts resilience includes the ability to organize effective relief and recovery processes.

**http://huairou.org/resilience**

In academic and practical literature there has been a recent conceptual shift from "adaptation" to "resilience" as the concept on which eco-development is to be focused. This shift can be seen as akin to how "adaptation" in the early 21st century came to

overshadow "vulnerability" and even "sustainable development," which were the dominant risk-related concepts of the late 20th century. Though each of these concepts remains in play, each with its share of supporters, resilience appears to be emerging as the dominant concept for the next several years.

Complementing the increased focus on resilience is the understandable pressure to bridge, blend, or integrate present and future climate, water, and weather concerns. The following Graphic is an attempt to put some order to the DRR-CCA "playing field." Humanitarian aid agencies recognize the need to improve the global community's responses to recurrent crises in the developing world. They also recognize the need to enhance the effectiveness of disaster assistance funding, especially in light of the current fiscal crises worldwide. In response to this dual need,




Glantz & Baudoin, 2013

resilience serves as a positive approach and an overarching objective in addressing a wide range of societal concerns related to a changing climate, including but not limited to poverty reduction, ecosystem well being, protection of biodiversity, enhancing societal ability to respond to climate, water and weather shocks; resilience draws attention to short- and long-term societal preparedness and sustainability. Resilience has the potential to bridge the CCA and DRR communities that work on seemingly separate issues within humanitarian aid agencies as well as to blend their overlapping concerns.

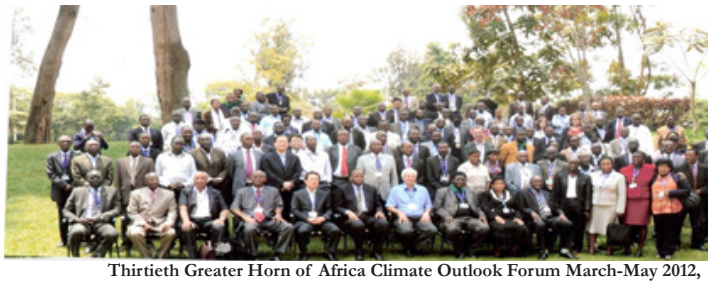
**"Resilient adaptation"** is a concept in the field of social psychology (Lothar 2003). It can be used to generate ideas about how societies might realistically (e.g. flexibly) adjust to an uncertain, longer-term, incrementally changing climate. It provides a useful way to identify societal options to cope not only with hydro-meteorlogical hazards and disasters but with climate change impacts and adaptations as well.

Resilient adaptation can be defined as "a process that is a flexible, incremental approach to adjusting to and coping with the foreseeable adverse (or beneficial) impacts of an uncertain changing climate" (Glantz 2008). It may prove useful in operationalizing a vision of creating resilient communities, providing a framework through which the separate concepts of "resilience" and "adaptation" can be merged. The blending of resilience and adaptation at the overlapping margins of their separate missions directly supports the planning approach that calls for what USAID refers to as "layering, integrating, and sequencing" humanitarian recovery efforts with longer-term development actions. It entails incrementally coping with both short- and long-term consequences of climate variability and change in ways that are mutually reinforcing. Each community---DRR and CCA---can benefit from closer collaboration and knowledge sharing.

USAID defines resilience as "the ability of people, households, communities, countries and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth." (USAID 2012:9)


"Blending" Resilience and Adaptation can aid in bridging in a meaingful way DRR and CCA.

The following section succintly summarizes selected OFDA-supported cases that were reviewed for insights into potential lessons drawn. The OFDA supported cases (projects) were taken from Southeast and South Asia, the Greater Horn of Africa and and Central America & the Caribbean and also included RANET as a case study.



Thirtieth Greater Horn of Africa Climate Outlook Forum March-May 2012, Kigali-Rwanda

# CASE STUDIES: THE GREATER HORN OF AFRICA (GHA)

The Greater Horn of Africa (GHA) is highly exposed to hydro-meteorological hazards: each year, thousands of people are affected by extreme events such as droughts and floods, resulting in increased food insecurity, migration or loss of life. To mitigate the impacts of such disasters, aid agencies have developed and applied Disaster Risk Reduction (DRR) programs and projects. Although most activities conducted by the DRR community are "post-disaster," providing necessary urgent support and relief to the victims of a disaster (drr), the last decade has seen a gradual emphasis on risk reduction (DRR). This shift of focus was acknowledged by OFDA, which funded a program "Regional Climate Prediction and Risk Reduction in the GHA" between 2002 and 2005. This program, implemented in partnership with IGAD Climate Prediction and Applications Center (ICPAC) tackled disaster risks and achieved multiple successes:

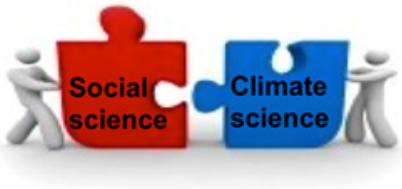
(1) OFDA was a key catalyst to ICPAC, which is today a central platform in the GHA to monitor seasonal forecasts, to train hydro-meteorologists, and to collaborate at the regional level in order to better forecast;

(2) The GHA Climate Outlook Forums (COFs) were reinforced as regional cooperation and data exchange opportunities; moreover, they promote a better understanding of climate products among the "non-climate-scientist" community, e.g. representatives of climate-sensitive sectors such as agriculture and health;

(3) OFDA launched several pilot activities in GHA to foster the use of climate products, such seasonal forecasts, at the local level in decision-making. For instance, it launched the first Food Security Outlook (FSO) to promote use of climate forecast by the food security community in order to predict food crisis in the GHA.

The prediction of hydro-meteorological risks has clearly improved in the GHA today, partly due to support from OFDA and other aid agencies. However, further investments are critically needed in the "communication links" between climate experts and users of the climate products. Communication problems are especially prevalent with the local communities, whose access to climate information is still reduced because of a lack of communication infrastructure, the use of complex terminology in the disseminated climate information, and a very limited understanding of meteorology.

There is a need for timely increase in focus, resources and research for improvement of the dissemination of relevant climate products to those who need them most, the potential victims at-risk to hydro-meteorological hazards and disasters who are, in fact, the first responders whenever a disaster occurs: they fend for themselves before any significant support appears on the disaster scene. In addition, feedback from the stakeholders should be better sought and incorporated into climate-related information.



# THE LOWER MEKONG BASIN (LMB)

The Mekong is the tenth largest river in the world by volume and the twelfth longest. One writer referred to it as the "Nile of Southeast Asia." Governments consider the Mekong to be underutilized when compared to other major river systems in the world. The Mekong waters flow through large areas in several countries that are dominated by agricultural production, and a region that is collectively responsible for major rice production. The region's inland fisheries are highly productive and a source of nutrition for people in the region.

Yet, the Lower Mekong remains the poorest region in Southeast Asia, sandwiched between booming parts of SEA and China (Than 2006). The region has immense potential. This potential will soon change, however, as governments make plans to tap the river as a regional resource for their future prosperity.

The Lower Mekong Basin is vulnerable to climate variability, extremes and change and is in need of pro-active hydro-meteorological disaster risk reduction. Flooding and the impacts of a rapidly changing climate are the primary hydro-meteorological issues facing the region. Varying degrees of flooding are anticipated annually in the LMB, but in some years this flooding reaches disastrous levels in terms of loss of life and property, damage to agricultural lands and rural and urban infrastructure, and disruption of social and economic activities.

OFDA support has been instrumental over more than a decade in strengthening the Mekong River Commission (MRC). The MRC serves as a focal point for NMHSs as a regional monitoring and forecasting hub.

The search for lessons in this region has been enlightening, because the MRC tends to include the identification of lessons in most of its donor-supported activities at the end of its projects. Troublesome, however, is that lessons identified and highlighted by various organizations engaged in hydro-meteorological DRR in the LMB are similar to those identified in this review (e.g., ECHO; MRC). Chronic problems continue. For example, it appears that a higher level of coordination and cooperation among the donor agencies for the projects they support would improve the sustainability of successful but time-limited pilot projects. Also valuable would be an agreed upon, pre-planned, sunset strategy with an eye toward recipient ownership and staff retention at DRR-related organizations. This is an acknowledged problem, as it creates a sense of job insecurity especially to newly-DRR trained staff once a project's end date is in sight.

It was mentioned several times that a sense of job security would likely strengthen commitment by recipient governments and individuals to the development matrix of which specific projects can be seen as components of a broader more comprehensive longer-term development CCA-related plan and not a one-off, stand-alone activity.

Infrastructural changes in the LMB as well as demographic shifts to meet national developmental goals would likely alter the existing patterns of at-risk populations in the lower reaches of the Mekong. Thus, DRR hydrometeorological education and training of trainers and, in turn of communities, will have to be periodically revised to take such changes into account.

**MRC, 2006**

# THE HINDU-KUSH HIMALAYAN REGION (HKH)

The HKH region is the source of 10 major Asian river systems, and serves as direct livelihood basis for more than 210 million people. The region is prone to riverine and flash floods. The latter constitutes one of the most frequent, sudden and disastrous hydro-meteorological hazards in the region. Because of human and natural factors (e.g. landslides; at-risk settlements), such disasters have increased in the recent decades; anthropogenic global warming is expected to make worse the already sizeable impacts of riverine and flash flooding in the HKH.

Riverine floods, and especially flash floods are difficult to predict due to scientific, technological and forecasting

limitations. In addition, rugged terrain and geopolitical tensions across the HKH region make it difficult to collect needed data for accurate modeling.

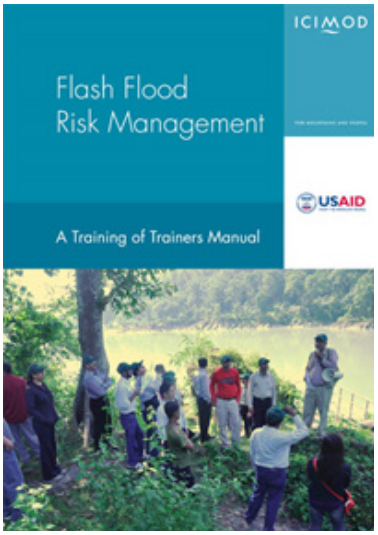
Uttarkhand flood.
Source: www.deccanchronicle.com

Attempts to enhance forecasting capacities have nonetheless been observed, especially since the early 2000s. For instance, OFDA funded an umbrella program for flood risk reduction, known as the Asia Flood Network (AFN). It was applied in partnership with ICIMOD, NOAA and the USGS, with the goal of strengthening the scientific component in the HKH for hydro-meteorological risk forecasting. Applied through different projects, the AFN primarily focused on enhancing regional cooperation in the HKH region to promote and facilitate data and information sharing for flood forecasting. The AFN also identified and attempted to address gaps in flood forecasting capacities among the countries by strengthening hydro-meteorological institutions (especially ICIMOD in Nepal). As a third component, the program was to foster forecasts and early warnings' dissemination among vulnerable populations.

Activities under the AFN were launched in 2001 with support from OFDA. Its latest project ended in 2013, which demonstrates the program's potential sustainability. Many projects under the AFN have been funded by other donor institutions that are following up on OFDA initiatives. Another important outcome for the region revolves around the training, testing and validating of the Satellite Rainfall Estimates (SRE) model, which contributed to enhancing regional climate science and the skills of hydro-meteorologists across the region. Training sessions proved to be very important for capacity building among regional institutions and should be sustained to ensure real institutional capacity building in the HKH. In addition, the AFN has fostered collaboration and information sharing among hydro-meteorologists. As sharing data is critical to improve risk prediction and therefore DRR, such cooperative activities must be maintained.

Another important outcome of the project is the publication of disaster management manuals, developed by ICIMOD in partnership with some communities and NGOs. Although these manuals are important because they demonstrate involvement of local communities in disaster management programs, their impacts appear to remain limited. Specifically, it appears that the feedback loop in the warning system is not systematically applied in most DRR activities. In general, attention given to "ordinary knowledge" to predict and manage risks remains limited in the HKH. Hence, it would be important to identify and address communication gaps, to give more emphasis to risk communication, and to integrate local knowledge into risk management plans. In the context of climate change, no matter how much the science improves, real-world observations of disasters have proven that technologies alone will not effectively reduced disaster's impacts on society.

**Definition:**
**"Ordinary knowledge" owes it origin, testing, degree of verification, truth status, or currency to ... to common sense, casual empiricism, or thoughtful speculation and analysis... For social problem solving, we suggest, people will always depend heavily on ordinary knowledge."** (Lindblom and Cohen 1979:12)




# CENTRAL AMERICA AND THE CARIBBEAN (LAC)

The LAC region is one of the most disaster-prone areas. It is especially sensitive to hydro-meteorological extremes such as hurricanes, floods, flash floods and droughts. Disasters have increased over the past three decades, resulting in significant economic losses for the region. Moreover, the number of injuries and fatalities from disasters such as floods is on the rise. Each year hydrometeorological hazards slow down the progress of

economic and social development in LAC.

To foster disaster risk reduction in LAC, a better access to risk prediction technologies is critical. Such access implies increased financial resources among the countries in the region, as well as capacity building among the National Hydro-Meteorological Services (NHMSs). To address some of those gaps and to improve early warning systems in the region, OFDA funded the Central America Flash Flood Guidance (CAFFG). Launched in 2004, this technology-centered program aims at identifying, assessing and monitoring disasters risks and at enhancing EWS for flash floods.

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One of the main successes of the CAFFG is an enhanced collaboration among NHMSs in the region. Moreover, the program allowed technology transfers to the region's low-income countries, which increased institutional capacities among the NHMSs in terms of flash flood risk prediction. A present sustainable outcome of the program can be observed today, as the CAFFG is operational in the NHMSs of most LAC countries. The program is especially useful to analyze disaster risks linked to floods that can develop in six hours or less as a result of heavy rainfall.

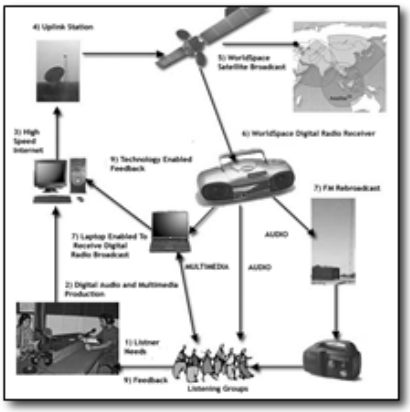
In spite of these successful outcomes, shortcomings have been pointed out in the program and suggest opportunities for future interventions. For instance, all countries in the region do not have equal capacities to operate the CAFFG at full potential, because of different levels of technical development among the NHMSs and because of a lack of skilled staff. Moreover, the program itself still needs constant reviews and validation to improve its accuracy. Finally, as in many technology-centered programs, the CAFFG, so far, has apparently provided little support to raise risk awareness among stakeholders and policymakers and to inform them about the EWS.

In sum, to enhance the CAFFG, additional training is required for the staff in the NHMSs in order to significantly build capacities among hydro-meteorological institutions. Training should also include stakeholders to improve better interpretation of the EWS and to ensure strong institutional support from governmental institutions for the program. This would be one way to ensure ownership of the program by the host countries. Partnerships should also be built among decision-makers, climate scientists and society in order to foster feedback in the EWS model. The end-to-end system would be complete with collaboration of the communities in at-risk areas, that will actually use the warnings. Such communication and risk education has not yet been implemented in the CAFFG. Known gaps in education are potential opportunities for the future.

## RANET

**(Radio and Internet for the Communication of Hydro-Meteorological and Climate Related Information)**

RANET is an initiative developed in the 1990s to improve rural and remote community access to basic NMHS forecasts, observations, and warnings. Initial and continued funding is from USAID's OFDA via an interagency agreement with the U.S. NOAA National Weather Service (NWS) International Activities Office (IAO). Participant and donor countries continue to provide funding and significant in-kind resources.




The RANET program grew out of the Regional Climate Outlook Forum (RCOF) of Africa, where participants noted that the full potential of seasonal forecasts could not be realized unless there was an effort, parallel to the RCOF, attempting to improve information access of the rural poor. The communication challenge is largely infrastructure-based, focusing on how best to move information from urban centers of production to remote areas with typically limited information access due to remoteness, a lack of resources, or both. Since its initial work in Africa, the program has undertaken projects in various parts of the Americas, Asia, and Pacific to provide training, establish pilot

demonstrations, or build out various systems from HF radio to mobile phone and community radio as well as web based systems, satellite broadcasts, and even satellite telephony.

At the core of regional and national meteorological, hydrological, and climate services are communications and computing technologies. Capacity development of these entities necessitates development of ICT capacity in support of operations and dissemination as well as public outreach. A challenge to researchers are significant regional differences in how the public can and does interact in the 'information age.' While the interaction may not directly affect operational services, it can affect how the public receives, accesses and interprets the information produced by national services.

Capacity development of NMHS, and specifically the services provided to the public, often assumes that improvements in the products, such as forecasts, will benefit users. However, to get those benefits users must be engaged to determine if information provided is understandable and actionable.

**www.btplc.com/BetterFuture/ConnectedSociety**

Often national services suppose that forecasts are the most valuable information they can provide. While the initial mission of RANET was to address rural and remote communities' access to information, it also works on improving communication capacities that benefit the NMHSs service operations. Often this is done out of necessity, because an NMHS cannot support rural and remote communities without access to the data it needs to generate a product for the public.

While the meteorological community emphasizes visually intensive products, the world is moving towards short message platforms, e.g. mobile phones, maybe as a result from developed norms on social media platforms as Facebook or Twitter. The world of social media and mobile devices is challenging the NMHSs in new ways. Any move to short-form material will require increased public outreach and education on meaning of messages, jargon, and how to access additional details. In addition to an infrastructural challenge of getting information to a remote community or to mobile individuals, there is the necessity of engaging users to really understand their information needs to provide them with valuable climate observations. Lay users of meteorological information are innovative and often use information informally in their decisions.

***"Moving information from point A to point B is not enough."*** *RANET*

In sum, satellite-based broadcast communications are still critically important, as governments seek to provide hydro-meteorological services, especially early warnings, to their geographically marginalized communities. Therefore, relying on remote training material is necessary. A desired outcome of DRR and CCA development projects is that they lead to ownership even in the absence of continued donor support.

## INSIGHTS FROM DISASTER RISK REDUCTION AND HUMANITARIAN EVALUATION

This section identifies common aspects of the following six evaluation reports produced by international disaster risk reduction (DRR) and humanitarian organizations:

- Catholic Organisation for Relief and Development Aid (2010). Programme Evaluation of Disaster Risk Reduction.
- UK Department for International Development (2011). Multilateral Aid Review.
- Federal Ministry for Economic Cooperation and Development (2011). German Humanitarian Assistance Abroad.
- Swiss Agency for Development and Cooperation (2011). Disaster Risk Reduction in International Cooperation: Switzerland's Contribution to the Protection of Lives and Livelihoods.
- Swedish International Development Cooperation Agency (2008). Are Sida Evaluations Good Enough?
- Global Facility for Disaster Reduction and Recovery (2010). Evaluation of the World Bank

Global Facility for Disaster Reduction and Recovery.

Some of the lessons drawn from these evaluations are briefly summarized here:

**Goals:** Most organizations conduct reviews to gain insights into program effectiveness in an effort to become more efficient and effective in the future. Their common interest in program improvement is logical given limited funding and widespread anticipation of greater need for disaster and humanitarian aid in the future.

**Methods:** Consistent, systematic, and transparent methods reinforce the credibility of published findings. Most organizations faced limitations in the availability of data and absence of consistent reporting. Studies addressing limitations openly appear more credible because they acknowledge difficulties rather than emphasizing positive outcomes.

**Evaluation criteria:** Despite different reasons for their evaluations, five evaluation criteria were common and applicable to a variety of programs, though operationalized in different ways: effectiveness, efficiency, sustainability, relevance, and impact. Greater specificity of evaluation criteria before funding can set expectations, facilitate monitoring, simplify evaluation, and foster accountability and effectiveness. (See the full report for a summary of their evaluation criteria).

The following four common themes emerged from the review of these studies.

**1) Tendency to Focus on Positive Lessons**

Evaluations studies, particularly those made public, tend to emphasize positive outcomes. While focusing on successes is understandable, it can lead to conclusions and continued support for programs that seem unwarranted or unreliable.

**2) Challenges of Measuring DRR Impacts**

Impacts (direct and indirect) are difficult to measure. In the case of DRR, it is difficult to connect specific programs to outcomes and difficult to measure reduction in damages until an event has occurred. A drought in the same place at different points in time may have different consequences, as societies, like climate, are dynamic and change in unexpected ways. Assessing what might have occurred in the absence of an intervention is difficult and resource intensive. Transparency and recognition of limitations is essential to maintaining credibility.

**3) Importance of Regular Monitoring and Evaluation**

Having clear goals and measurement criteria before program implementation is necessary for consistent monitoring. Collecting baseline data, whether from a previous or recent disaster or estimates based upon initial development and capacity patterns, is essential to monitoring progress. Consideration of "unintended consequences" is another important step to learning from the past. Time should be allowed to pass before assessing how and whether a project was continued once the implementing phase had ended. However, not too much time should pass, because institutional and participant memories of programs will likely fade and lessons will be lost.

**4) Integration of Humanitarian, Development and Other forms of Aid**

Development actors around the world are struggling with the challenge of synchronizing various kinds of aid and ensuring that humanitarian, development, and climate variability and change adaptation programs are synergistic rather than redundant or counteractive. Agencies and NGOs around the globe must share experiences and learn from successes and challenges in a more formal and structured way.

# USABLE CONCEPTS

Concepts can be viewed as "social inventions." They are not only attempts to describe and inform but are also often designed to influence individual, group and/or societal behavior. A key understanding about social inventions is that they often have as great an impact on individual, group and societal behavior as does the development of new technologies. Concepts, however, have to compete for the attention of the public and policymakers alike in a way similar to how corporations invest in developing popular slogans for their products to capture attention and encourage brand loyalty.

During this survey and in the search for lessons from climate-, water- and weather-related hazards and disasters, usable concepts were identified for

use in decision making processes for coping with—and planning for—adverse impacts on societies and ecosystems. The following section provides examples of thought-provoking ideas that could be viewed as "social inventions." These ideas, among others, could inform the civil societies and their policymakers about pathways to disaster risk reduction.

Six brief examples of the usable concepts are provided below. A description of each of the 32 concepts noted in the following graphic can be found in the 150-page project report and in the 400 page base report.

1.The 'Rs' of DRR 2.Satisfice 3.Foreseeability 4.Re-functioning 5."Social Inventions" 6.Improvisation (by Zero Order Responders, ZORs) 7.Lessons Identified. Lessons Learned 8.Creeping Environmental Problems (CEPs) 9. Drought follows the plow (DFP) 10.Re-educate 11.Resilient Adaptation 12.Grain Storage Improvements 13.Climate Change Risk Disclosure (CCRD) 14.CCR (+B)D development 15.Late Warning Systems 16."Sunsetting" DRR Assistance Programs 17.Reversed Triage: Help the bottom group first 18.Hotspots; Flashpoints (hotspots pyramid) 19."The 3 'O's" (outreach, outputs, outcomes) 20.Disaster Risk Reduction (DRR) Bank 21.Forecasting by Analogy (FBA) and the search for "lessons" 22.Mitigating the impacts of CCA (Climate Change Adaptation) 23.Assigning a "Project Scribe" 24."End2End+ feedback" Forecast System 25.DRR RANN (Research Applied to National Needs) 26."Ordinary Knowledge" as a usable concept 27.Working with a changing climate, not against it 28."Partnership vs. Ownership" (to bridge DRR and CCA) 29.Climate Proofing 30.Risk Taking, risk aversion... and "risk making" 31.Decision Making Under Uncertainty 32.Decision Making Under Foreseeability

**Satisfice:** To satisfice is a combination of concepts, 'satisfy' and 'suffice' or 'sacrifice' that has ethical as well as economic implications. "Satisficers," are satisfied to meet at least minimal requirements to achieve their goals through their actions. Perhaps 'satisfice' has a useful role to play in disaster preparedness, especially in designing bridging and blending activities for Disaster Risk Reduction (DRR) and for Climate Change Adaptation (CCA). The adage "Do not let the perfect become the enemy of the good" could serve as a guide to agencies that 'satisficing' may be an option for development activities.

**Decision Making Under Foreseeability (DMUF):** Decision makers always have some information in hand and are usually forced to make decisions with less than perfect information. Scientists tend to focus on reducing uncertainty.

People can relate to a foreseeable recurrence of an extreme event such as a flood, flash flood or drought that had occurred in previous times. Such information is actionable, even without statistical probabilities of that event's recurrence at a specific place or point in time.

**"Partnership in" vs. "Ownership of" Projects (that seek to bridge DRR and CCA):** Having ownership of an activity is different from being a partner in it. The difference relates to possession and responsibility. Once a partnership in a specific activity ends, neither party is obligated to continue to work with the other party on a follow-up to that activity. This applies to projects related to disaster risk reduction (DRR) and to climate change adaptation (CCA). Whether or not a goal has been achieved to the satisfaction of the partners, the project can end. Thus, a partnership can be time-limited without any commitment by either partner to its continuance. The problem with a partnership is that once a project ends, the motivation of the recipient to continue pursuing its longer-term goals might be lost.

Ownership differs from partnership, because taking ownership to address a longer-term issue requires a commitment to the project by donor and recipient that does not necessarily hold for mere partnerships. Ownership suggests that each actor is committed to contribute its own resources to continue the activity. It also demonstrates that the recipient did place a high priority on the activity.

**Late Warning Systems:** A percentage of any population tend toward being "risk takers" more so than those who are risk averse. Risk takers delay taking action even when a reliable and credible early warning of a possible disaster is in hand. The idea to establish a late warning system (LWS) separate from an early warning system (EWS) is based on observations as well as a belief that most people do not respond to early warnings but are more likely to respond as the seriousness of subsequent warnings increases. A need exists for late warnings of a different nature: risk-takers (as opposed to those who are risk averse) wait to be sure they must respond to an imminent disaster. They require different information in different formats than provided in traditional warnings (watches and alerts) that are typically provided in a succession of early warnings. By delaying, risk-takers are putting "first responders" at high risk to harm.

**The 3 "O's":** **Outreach** encompasses participation in discussions, lectures, social networks, mentoring sessions, trainings and educational experiences, and the like. **Outputs** are activities that can be counted: the number of training workshops held, the number of participants or countries represented in those workshops, the number of papers published, and the

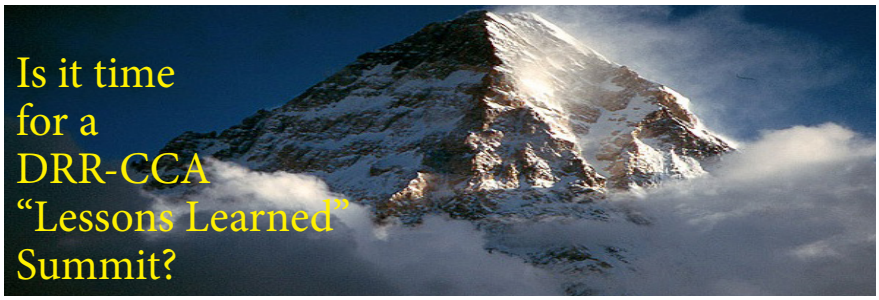
like. Outcomes are truly sustainable impacts of a project. They are what remain in operation once "outsiders"—in this case, humanitarian aid planners and development experts—leave at the end of a DRR project. **OUTPUTS are not the same as OUTCOMES!** The problem is that organizations tend to favor short-term outreach and outputs over longer-term ones, and outcomes are usually not be visible in the short-term when policy makers are eager to show positive impacts on development. Outcomes can also be more difficult to attribute to any specific project, unlike outputs.

**Asigning a "Project Scribe":** A major problem with identifying lessons from any time-limited project or activity relates to how, when and where those lessons are to be identified. Some argue that lessons are best identified after some time has lapsed once the project had ended. For a host of reasons the reality is that memories and interest of those who participated in a given project tend to fade with time, even in the short term. One way to counter this problem is to assign a "scribe" or "record keeper" who is tasked with regularly recording lessons from participants throughout the duration of the project.

**"Social Inventions":** Ideas expressed in the form of notions or concepts or even as succinct slogans on placards carried in a street demonstration can be used effectively to generate changes in attitudes as well as behavior of indiviuals, groups, corporations and government agencies. Societies with few exceptions rely on technologies to get information to the people (stakeholders or users of information). Yet technology may not be enough to change behavior of an intended target audience. As technological inventions in the past have changed behavior, so too can ideas which can be viewed as "social inventions." Arguably, the concept of the "Space Age" changed the way people viewed Planet Earth and its place in the Universe. It also showed us at least in theory that the Earth is essentially our "nest," and that we have an obligation to living and future generations to protect not foul it. More specifically, well stated social inventions can generate awareness at all levels of society about DRR and CCA and the need to foster preparedness by individuals, groups, corporations and by govenments for coping with a changing and still uncertain climate, water and weather future.

Social inventions can be used as well to motivate individuals, communities and national governments to act more effectively on their increased awareness and understanding of hydro-meteorological hazards and disasters.

**The Blue Marble: Planet Earth from Space (NASA)**




## A "Lessons Learned about Lessons Learned" Summit

**Why:**
Philosopher Santana was noted as having said, "Those who do not learn from history are doomed to repeat it." People around the globe have, through trial and error, been forever learning tactical and strategic coping responses to local hydro-meteorological hazards and disasters. Much of what they have learned in their local environments could, if shared be of value to others facing similar hazards far away.

**Who:**
Corporations, educators, government agencies, the military and other security organizations, among others, have engaged in searching for and collecting of lessons resulting from their activities. There is a sub-field of researchers focused on the theory and practice related to learning lessons. An Internet search exposes widespread writings on lessons, positive and negative, in science, culture, politics and the application of science to societal concerns.

**When:**
Some organizations wait till a project has ended in order to seek lessons or guidance with regard to future responses to hazards and disasters. Others undertake mid-course reviews of their activities to change those activities that seem in need of correction. Still others favor using a "scribe" from the outset of an activity to record possible lessons throughout the project for later evaluation. Using a scribe circumvents the problems associated with a loss of memory about lessons that might have been identified but not recorded by participants.

**Where:**
In just about every local community country, corporation or government ministry around the globe lessons are sought in one form or another. Foreign assistance agencies, specifically, often review their projects to identify and evaluate the impact of their work, matching progress again the project's mission statement.

**How:**
Searching for lessons has been carried out in formal, structured and routine ways or can be undertaken in an informal, ad hoc way Some organizations collect lessons, organizing and guarding them for re-use at a future time. A "lessons learned" process could identify and store lessons for internal use, not wanting and not for sharing with outsiders.

*In Sum, A Lessons Learned gathering could identify and share insights on how best to use previous lessons that had often been learned at great expense to life, livelihood, and property.*

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