

Do community based disaster risk management (CBDRM) initiatives reduce the social and economic cost of disasters?

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Do CBDRM initiatives impact on the social and economic costs of disasters?

List of abbreviations

ADPC	Asian Disaster Preparedness Centre
ALNAP	Active Learning Network for Accountability and Performance
AusAID	Australian Agency for International Development
CCA	Climate Change Adaptation
CBDRM	Community-Based Disaster Risk Management
CBRMA	Community-Based Risk Management Arrangements
CBDRR	Community-Based Disaster Risk Reduction
DFID	Department for International Development (UK)
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
HFA	Hyogo Framework for Action
IFRC	International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
UNFCCC	United Nations Framework Convention on Climate Change

1. Background

1.1 Aims and rationale for review

The United Nations International Strategy for Disaster Reduction (ISDR) defines disaster risk management (DRM) as the “systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster” (UNISDR, 2009b)(p.4). DRM aims to mitigate the effects of hazards through disaster prevention and preparedness activities. DRM is often used as an all-encompassing umbrella term that includes several related concepts such as disaster response, disaster relief, disaster preparedness and mitigation. In this review we use this umbrella term and the concepts that underpin it, while also maintaining a particular focus on those activities, strategies and programs which are explicitly focused on disaster risk reduction (DRR).

The term Community-Based Disaster Risk Management generally encompasses a similar definition to DRM but is particularly relevant to, or has a focus on, the community level. Community participation at many (or indeed all) stages and levels of such interventions has been seen as a central component of CBDRM initiatives.

There are numerous definitions of CBDRM that will be explored further during the Review; for clarity this review *initially* draws on the definition of the Asian Disaster Preparedness Centre (ADPC) which itself is based on other accepted definitions of the concept. This holds that

“Community-based Disaster Risk Management (CBDRM) is a process in which at-risk communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities. This means that people are at the centre of decision making and implementation” (ADPC 2003; Abarquez 2004).

Some CBDRM programs are entirely driven by the community while others are led by other agencies (government and non-government, public and private, local or central), working in partnership with the community. CBDRM incorporates both communal and local dimensions. Lavell (2009) set out to differentiate the terms Local Disaster Risk Management and Community Disaster Risk Management as the following, “L-DRM is partially constructed on the basis of community level processes, interventions and actors whilst C-DRM requires support and input from the more comprehensive local (and regional and national) levels” (Lavell 2009). It is difficult to clearly define the term ‘local’ for the purposes of CBDRM, however it has been noted that “local always refers to something that is more extensive than a community and smaller than a region or zone” (Lavell 2009). In this study we are interested in both communal and local aspects i.e. both those structured around ‘communities’ and those structured around localities. The study will contribute to understanding these different foci separately and/or together, how they are proposed to (or do indeed) work, and in what contexts they are more likely to succeed (or fail).

The objective of Community Based Disaster Risk Management (CBDRM) interventions is typically to “reduce vulnerabilities and to increase the capacities of vulnerable groups to prevent or minimize loss and damage to life, property, livelihoods and the environment, and to minimize human suffering and hasten

recovery” (Abarquez 2004). CBDRM may incorporate the concepts disaster risk management (DRM) and Disaster Risk Reduction (DRR), as well as, more recently, aspects of climate change adaptation (CCA). Climate change is defined by the United Nations Framework Convention on Climate Change (UNFCCC) as, “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UNFCCC, 2007: 32). The most recent Intergovernmental Panel on Climate Change (IPCC) report argues that climate change leads to changes in extreme weather and climate events, which interacts with human and natural systems which in turn can lead to disasters (IPCC, 2012). These changes in climate and their impact on the frequency, scope, duration and timing of extreme weather events result in affected social system developing an adaptive response, that is, “the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities” (IPCC, 2012: 5).

As a result, CCA may incorporate similar strategies to DRM, especially in some areas such as small island states where natural disasters are closely related to climate change and in-the-field links between risk management and CCA are apparent. Although the broadest aspects of climate change, trends and impact are not in scope for this study, we do consider the response to climate change at more local levels and their links to disaster risk management activities. We note, also, that in some situations activities and initiatives previously defined under the rubric of “CBDRM” may now be framed as ‘climate change adaptation’, drawing on related approaches.

The general term DRM will be used in this review and will at times cover relevant programs that are labelled using different terminology (CBDRM, CBDRR, DRR and CCA). Where relevant we will explore these definitional issues and their analytic value. In this review, *we aim to examine peer-reviewed and other published reports and studies to answer the question: Do CBDRM initiatives impact on the social and economic costs of disasters? If so, how, why, when and in what way(s)?*

‘Disasters’ occur when a community¹ is faced with a situation that exceeds its capacity to cope (UNISDR 2009b). There are numerous definitions of disasters, however, one of the most used in the field is that of the United Nations International Strategy for Disaster Reduction, which defines disasters as: “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources” (UNISDR, 2009b: 9).

Such situations affect the community in both economic and social terms, with the scale of damage determined by the form and magnitude of the disaster event, as well as the vulnerability and resilience of the community and the agencies with which it relates. Resource-poor, low and middle-income countries are often at great risk and have increased vulnerability, reduced resilience and reduced capacity to respond. Within a community, disasters typically magnify inequalities, exacerbating prior social problems. Minority groups, the poor and socially marginalised, and within all communities, women, children, elderly, people who are unwell and those with disabilities, are often at higher risk of negative social and economic impacts during, and following, disaster events.

¹ We are concerned here with community level; the same concept applies also at other levels.

Loss of crops, livestock, and damaged physical infrastructure can lead to loss of income, contributing to direct economic costs. Indirect economic costs may result from the higher cost of essential commodities such as food and water and amenities such as electricity and fuel (Dore 2000). In addition, disasters have impacts on social structures and organisation, including at times anxiety and fear, social disruption, breakdown of communication, migration (Cuny 1983 cited in (Otero and Marti 1995)) and psycho-social distress and suffering (ECLAC 2003). Natural Hazards, UnNatural Disasters (World Bank 2010) describes the disruption to education, nutrition and food security, water and sanitation, infrastructure, roads, and health services. Disaster impact assessments traditionally focus on variables that can be quantified such as death, injury and structural damage to structures and infrastructure; indirect costs and long-term impacts are rarely assessed (McKenzie, Prasad et al. 2005).

Tools have been developed by a wide range of agencies, including the World Bank, ProVention Consortium, the UN International Strategy for Disaster Reduction (ISDR), Asian Development Bank and others to guide economic appraisals of DRR activities. The ProVention Consortium website (<http://www.adaptationlearning.net/partner/provention-consortium>) provides links to relevant reports which include cost benefit analysis that have been conducted in relation to natural disasters (see, for example (Cabot Venton and Venton 2004); (Asian Development Bank 1996); and (GTZ 2005)). Most of these analyses have examined very costly interventions with substantial international donor and/or development bank support. Other work has examined DRM in relation to poverty reduction, conceptualising DRM as part of broader community development activity (e.g. Torrente, Zhang et al. 2008).

Attempts to measure the impact of DRR activities have focused on measuring progress towards implementation of the Hyogo Framework for Action (HFA) rather than more broadly assessing the benefits and harms of such investments. A DFID-funded study through the Disaster Risk Reduction Interagency Co-ordination Group explored the “characteristics of a disaster resilient community” (Twigg 2007). The framework identified key thematic areas of DRR including: governance, risk assessment, knowledge and education, risk management, vulnerability reduction and disaster preparedness and response. Efforts continue to refine and revise definitions, concepts and approaches to operationalise the integration of disaster risk reduction into development and humanitarian interventions. The IPCC, for example, acknowledges the diversity of perspectives on disasters and development but also stresses “the need for greater alignment and integration of climate change responses (including disaster risk management) and sustainable development strategies” (IPCC 2012) (p. 441). Pelling (2010) goes further arguing that if humanity does not adapt and change in response to the risks presented by natural disasters and climate related hazards, then sustainable, socio-economic development will not be possible.

While much effort has been placed on delivering and measuring the impact of DRM initiatives at community and other levels, interventions focused on reducing vulnerability and/or enhancing resilience are difficult to undertake. This contrasts with more traditional interventions which focus on “hard solutions” such as constructing or maintaining infrastructure such as sea walls to reduce risk of flooding, and/or “soft solutions” such as changing behaviour through attitudes and raising awareness (Gero, Meheux et al. 2010).

Preliminary scoping of the literature suggests that the evidence base for the assessment of medium and longer-term impact of DRM initiatives on social and economic outcomes is extremely limited.² This is not surprising given the complex nature of many interventions, the changing forms of DRR activities, including their more recent efforts to incorporate and integrate them into broader development activities, the contextual diversity in which such programs have operated and the lack of will and funding to ensure that outcomes are carefully assessed and measured.

The constraints to available evidence means that there is limited information to guide policy makers and aid organisations when planning and delivering CBDRM interventions to reduce the long term social and economic impact, and some uncertainty about the extent to which they reduce vulnerability and enhance preparedness.

A key aspect of this review will be to examine, analyse and synthesise existing evidence on what CBDRM initiatives work, in what contexts, and whether and how CBDRM interventions contribute to reducing the social and economic impact of disasters on communities.

Due to the complexity of interventions that operate with complex social and cultural contexts, a direct causal relationship between CBDRM interventions and reduced social and economic costs is difficult to establish. A realist review will be utilised to understand how, why and when CBDRM interventions work, and through what range of mechanisms, these operate to reduce the social and economic impact of disasters, in low and middle-income countries. The realist approach enables the drawing in of other forms of evidence and literature to help understand how interventions operate in different contexts, and is not dependent only on conventionally defined robust evidence, but can draw on theory and relevant insights from a range of literatures and studies.

1.2 Definitional and conceptual issues

There are numerous definitions for every one of the terms listed below. We offer one or more definitions that fit with our understanding and use of the terms.

CAPACITY: The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals (UNISDR, 2009b) (pp. 5-6). According to UNDP (2009), an improved understanding of the institutional arrangements, organisational leadership issues, knowledge resources and accountability mechanisms can lead to institutional change and ultimately improved development outcomes. Furthermore, programs that develop capacity enable agents at all levels to be more effective: individuals through improved understanding, skills and access to information; communities and organizations development in the form of enhanced management structures, processes and procedures; and institutional and legal frameworks and regulatory changes that provide enabling environments for organisations, institutions and agencies at all levels (UNDP 2009) (p.13).

Comment: Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective

² For the purposes of this Review, long term impact is defined as more than five years subsequent to implementation of the intervention.

attributes such as social relationships, leadership and management. Capacity also may be described as capability. Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action (UNISDR 2009b) (pp. 5-6).

CLIMATE CHANGE ADAPTATION: “In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate” (IPCCC 2012) (p. 5).

Comment: Pelling (2009) argues that social systems have constantly been adapting to changes in their external environment and that this is a dynamic, ongoing process. Further, he contends that CCA has been “an intimate element of human history - both an outcome and driver of development decisions for individuals, organisations and governments” (Pelling, 2009) (p. 6).

COMMUNITY BASED DISASTER RISK MANAGEMENT: Community-based Disaster Risk Management (CBDRM) is a process in which communities engage with the identification, analysis, mitigation, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities (ADPC, 2003) (p.17).

The term community based adaptation is also often used and is relevant to CBDRM.

COMMUNITY: A group of people “who engage in a particular purpose, task or function together, or who have some form of identity in common, though not necessarily associated with the same locality” (Black 2001) (p.9)

COMMUNITY DEVELOPMENT: “Community development focuses on the development project as it relates to local, usually rural or small urban communities, in particular addressing issues that are of immediate concern to communities that have the capacity to produce continuing localized results” (Kingsbury et al, 2008) (p. 222).

DISASTER: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Comment: Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation (UNISDR, 2009b) (p. 9).

DISASTER RISK: UNISDR defines disaster risk as the “potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period” (UNISDR 2009b)(p. 4).

DISASTER RISK REDUCTION: 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.

Comment: A comprehensive approach to reduce disaster risks is set out in the United Nations-endorsed Hyogo Framework for Action, adopted in 2005, whose expected outcome is the “substantial reduction of disaster losses, in lives and the social, economic and environmental assets of communities and countries.” The International Strategy for Disaster Reduction (ISDR) system provides a vehicle for cooperation among Governments, organisations and civil society actors to assist in the implementation of the Framework. Note that while the term “disaster reduction” is sometimes used, the term “disaster risk reduction” provides a better recognition of the ongoing nature of disaster risks and the potential to reduce these risks (UNISDR 2009b) (pp. 10-11).

DISASTER RISK MANAGEMENT: The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Comment: This term is an extension of the more general term ‘risk management’ to address the specific issue of disaster risks. Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness (UNISDR 2009b) (p. 10).

EMPOWERMENT: A type of capacity development in which [community] members decide on the goals and strategies for disaster risk management, contribute some (if not all) of the resources needed, and monitor their performance (ADPC 2008) (p. 1). An alternate definition is that an empowerment approach, “places the emphasis on autonomy in the decision making of territorially organized communities, local self-reliance, direct and inclusive (participatory) democracy, and experiential social learning” (Kingsbury et al, 2008) (p. 222).

EXPOSURE: People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses. Measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest (UNISDR 2009b) (p.15).

HAZARD: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR 2009b) (p. 17).

MAINSTREAMING: Mainstreaming disaster risk reduction involves the integration of its key principles into broader development planning, policymaking and implementation (ADPC 2012) (La Trobe and Davis 2005). Although certain sectors are the primary focus of mainstreaming due to their relative importance in terms of DRR (such as agriculture, infrastructure, and urban planning), the term implies that the key elements of disaster risk management are to be integrated into all relevant governmental and non-governmental approaches to development and policymaking (UNISDR 2005).

MECHANISMS: To evaluate an intervention one needs to understand underlying mechanisms that are triggered by the context to achieve a range of outcomes (Pawson, Greenhalgh et al. 2005) (Pawson, Greenhalgh et al. 2005). It has been recognised that “(t)he causal power of an initiative lies in its underlying mechanism (M), namely its basic theory about how programme resources will influence the subject’s actions” (Pawson, R. (2001) “Evidence Based Policy: II. The Promise of ‘Realist Synthesis’”, ESRC UK Centre for Evidence Based Policy and Practice: Working Paper 4). Using Pawson’s definition, “Mechanisms refer to the choices and capacities which lead to regular patterns of social behaviour” (Pawson & Tilley 1997).

MITIGATION: Mitigation activities involve, “reducing or eliminating the likelihood or consequences of a hazard, or both” (Coppola, 2007) (p. 8) and can also be called ‘prevention’ or ‘risk reduction’ (Coppola, 2007) (p. 175). These activities involve more long-term strategies developed to deal with both structural mitigations which are intended to make changes to the physical or built environment as well non-structural policy interventions including mandated changes to social processes or structures that might increase vulnerability to disaster (Coppola, 2007) (p. 175-190); (Alexander, 2002) (p. 5).

PREPAREDNESS: The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Comment: Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response through to sustained recovery (UNISDR 2009b) (p.21).

PREVENTION: The outright avoidance of adverse impacts of hazards and related disasters. Prevention expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance. Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake. Very often the complete avoidance of losses is not feasible and the task transforms to that of mitigation (UNISDR 2009b) (p. 22).

RESILIENCE: ‘The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions’ (UNISDR 2009)(p. 10).

RESPONSE: The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Comment: Disaster response is predominantly focused on immediate and short-term needs and is sometimes called “disaster relief”. The division between this response stage and the subsequent recovery stage is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage (UNISDR, 2009b p. 24).

RISK ASSESSMENT: Risk assessment is an essential stage in implementing a DRR program. Risk assessment is defined as ‘A methodology to determine the nature

and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend' (UNISDR 2009b) (p. 11).

SUSTAINABLE DEVELOPMENT: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Comment: This definition coined by the 1987 Brundtland Commission is succinct but leaves unanswered many questions regarding the meaning of the word development and the social, economic and environmental processes involved. Disaster risk is associated with unsustainable elements of development such as environmental degradation, while conversely disaster risk reduction can contribute to the achievement of sustainable development, through reduced losses and improved development practices (UNISDR 2009b) (p. 29). The concept of sustainability is also commonly applied to the ways in which developmental and disaster risk management programs, institutions and processes are able to be self-sufficient over time without being overly dependent on injections of external funding and resources.

VULNERABILITY: Vulnerability disaster depends on the level and nature of individual and societal resources, capacity and coping mechanisms, including the robustness and quality of individual, community, organisational and governmental response mechanisms and processes (Darcy & Hofmann 2003; Oliver-Smith 2007; Alexander 1997; Wisner et al 2007). Vulnerability arises out of the characteristics and the nature of social relationships between human populations based on socially constructed differentiations between one group and another such as age, gender, ethnicity and mobility (Bankoff, Frerks et al. 2007) (pp. 4-6); (Wisner et al 2007) (pp. 5-8). Depending on the community or population affected and the nature of the trigger event, these social differentiations play more or less an important role in the unfolding disaster: "Far from being occasions in which social inequities are erased, disasters expose and often magnify those inequities...pre-disaster inequities express themselves when disasters occur, and patterns of mortality, morbidity, loss, displacement, and recovery are inextricably linked to the social contexts in which disasters occur" (Tierney 2007) (p. 515).

1.3 Policy and practice background

Recent efforts have been undertaken to mobilise government support for the integration of CBDRM into policy, planning and programming. An important development in this regard was the 2005 Hyogo Framework for Action (UNISDR 2005) which emphasised the importance of community involvement in the DRM process to reduce the negative social, economic and environmental effects of natural disasters. In 2010, the 26th meeting of the *Active Learning Network for Accountability and Performance* in Humanitarian Action (ALNAP) in Kuala Lumpur highlighted the role of governments in responding to disasters and complex emergencies (www.alnap.org). To this end NGOs, UN agencies, and other international and locally based organisations have utilised various approaches to promote CBDRM. These have included national and local advocacy, capacity building and integrating the response to risk factors in development planning (ADPC 2006). Local and international NGOs, plus other civil society organisations, have been instrumental in refining and promoting DRM activities, including at the community level.

A wide range of guidelines has been developed by different organisations to guide this field. While not attempting to be comprehensive, these include the Community-Based Disaster Risk Management field practitioners' handbook for ADPC (Abarquez 2004); the Community-based DRM approach (2003) based on work done in South America for GTZ (Bollin 2003); Guidelines on Community-Based Disaster Risk Management for Local Authorities (ADPC. 2006); ADB (2008) 'Disaster Management: A Disaster Manager's Handbook' which acts as a practical reference and was designed to cover the broad disaster management concepts; UNISDR (2006) 'A Guide to Community-based Disaster Risk Reduction in Central Asia' is an example of a regional guide to enhance awareness of the key concepts in CBDRM; GFDRR (2011) 'Populations at Risk of Disaster: A Resettlement Guide' which aims to use a participatory approach to resettling high risk communities to mitigate extreme risks to natural disasters; and GFDRR (2010) 'Safer Homes, Stronger Communities: A Handbook for Reconstructing after Natural Disasters' aims to set guidelines in the reconstruction of housing and communities in disaster affected areas.

There has been an increased focus on integrating CBDRM and CCA interventions to reduce vulnerabilities and build community resilience against the effects of climate related natural hazards that affect many communities worldwide (Gero et al, 2010). Realising the importance of taking proactive measures, governments in developing countries have started to incorporate country wide policies to target DRR/DRM and CCA. In 2009 the Maldives initiated the Strategic National Action Plan (SNAP) 2010-2020, integrating DRR and CCA. The plan aims to enhance collaboration between stakeholders to develop a comprehensive risk management approach to enhance DRR and limit the adverse affects of climate change. The Philippines Government enacted new legislation in 2009 called the Climate Change Act, which highlighted the vulnerability of the island nation to climatic events. The aim was to integrate DRR measures with CCA plans, development and poverty reduction programmes. Samoa, an island nation that regularly experiences natural disasters, in 2011 adopted the Samoa National Action Plan For Disaster Risk Management 2011-2016. The Plan aims to bring about sustainable development by facilitating the inclusion of risk reduction and risk awareness with a specific focus at the community level. In 2007 the Vietnam Government adopted the National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 and in line with the growing importance of CCA, in 2008 implemented the National Target Program to Climate Change Response (UNISDR 2009a). These are just a few of the developments that National Governments are progressing and highlight the shifting focus from a reactive to a proactive disaster management approach.

1.4 Research background

Nature of the Problem

Background history and development of the field

The costs associated with disasters set back gains in development (UNISDR 2005). The UN Global Assessment Report (GAR 2011) identifies certain key trends in the pattern of disaster impacts and consequences worldwide. The report highlights the fact that mortality associated with natural hazards is decreasing globally despite increases in populations at risk of disasters. However, the report also shows that mortality risk is becoming more concentrated in low to middle income countries with weak governance and even increasing in those countries with weak governance capacity. In addition, improvements in human development and reductions in poverty mean that there has been an equally rapid increase in

exposure to loss of wealth, livelihoods and income. The report concludes that there is an imminent need to improve disaster risk management capacity worldwide in order to address the increasing exposure of populations, resources and livelihoods to the negative consequences of natural disasters (GAR 2011) (pp. 4-6).

A connection has been made between the felt impact, in terms of human and economic loss, and vulnerability of a population (Yodmani 2001). Variables such as location, socio-economic status, environmental degradation, unplanned urbanization, caste and gender compound the effects of disasters (UNISDR 2005). This was noted by Fredrick Cuny (1983) in his book *Disasters and Development* in which he compared the human loss from earthquakes in San Fernando, California 1971 and Managua, Nicaragua 1973. Both cities experienced similar size earthquakes (6.4 and 6.2 respectively) yet, in San Fernando, only 58 deaths were reported compared to 6,000 in Managua (Cuny 1983 in (Yodmani 2001)). This analysis highlighted vulnerability as a key determining factor of impact, leading to a 'vulnerability analysis' being incorporated in disaster management (Yodmani 2001).

Similar patterns of vulnerability and enhanced disaster loss continue to persist as was seen in the impact of the earthquakes in Haiti and Chile in 2010. Over 200,000 people died in Haiti versus 507 in Chile, despite the latter experiencing a significantly more serious earthquake as measured on the Richter scale (7.0 and 8.8 respectively) (Vanholder, Borniche et al. 2011). Clearly contextual factors are important and include not only patterns of habitation but also differences in preparedness (Chile has experienced more seismic activity in the past) and difference in the country's economic and administrative capacities. Chile is one of the most developed countries in South America, whereas Haiti is the least developed country in the Western hemisphere, emphasising again the relationship between vulnerability and socio-economic loss due to disasters.

UNITED NATIONS RESOLUTIONS RELATED TO DRR, DRM and CBDRM

The United Nations has taken a lead role in disaster risk management and in developing community based approaches to disaster risk reduction. Numerous UN Resolutions outlining the actions, policies and practices to be undertaken and implemented in order for UN agencies, civil society and governments to effectively respond to natural disasters have been promulgated since the 1980s.

An important early resolution related to DRR was the UN General Assembly Resolution 44/236 of 1989, which declared the 1990s the International Decade for Natural Disaster Reduction (IDNDR) (resolution 44/236) and established a special secretariat in Geneva for the IDNDR (UNISDR 2007).

One of the main outcomes of the IDNDR was the 1994 Yokohama Conference. At this conference the 'Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action' (referred to as Yokohama Strategy) was adopted (UNISDR 2007). The guidelines stressed the importance of risk assessment, disaster prevention and preparedness, the capacity to prevent, reduce and mitigate disasters, and early warning. They also mentioned the importance of community participation (INDRDR 1994). A community based approach to managing disaster risk emerged in the 1980s - 1990s due to a recognition of the role played by communities in mitigation and response and the limitations of a top down approach (ADPC 2006). In addition to the efforts put forth by the UN in 2000, the World Bank established the Global Facility for Disaster

Reduction and Recovery and the ProVention Consortium aimed at reducing the human and economic costs of natural disasters (Dore 2000).

Maintaining the momentum it had gained during the 1990s regarding disaster risk reduction, in 2004 the United Nations decided to convene the World Conference on Disaster Reduction. This conference was held in Kobe, Japan in 2005, almost 10 years to the day after the Great Hanshin earthquake in Kobe and less than a month after the 2004 Indian Ocean earthquake and resulting tsunami. Key outcomes of this conference included pledges to:

- Establish global tsunami warning systems
- Reduce disaster damage
- Improve healthcare after disaster
- Set up more early warning systems
- Develop safe building standards
- Agree upon cost-effective preventative countermeasures and
- Create a global database on relief and reconstruction and a centre on water hazards (UNISDR 2005)

In 2005, the UN General Assembly called for a review of the Yokohama Strategy (UN 2005). The review recognized that there was an increasing, if not universal, understanding among countries that disaster risk reduction is essential for sustainable development (UN 2005). It also stressed the need for systematic action to address disaster risks through sustainable development and the important role of national and local actors in building resilience through risk management (UN 2005). Gaps and challenges were identified in five main areas, which formed the five key areas for the development of the Hyogo Framework for Action.

One of the most important outcomes arising from the World Conference on Disaster Reduction held in Kobe in 2005 was a decision by the international community to sign up to a 10 year DRR strategy entitled the Hyogo Framework for Action (HFA) (UNISDR 2005). The HFA 2005-2015 set out three strategic goals and outlined five priorities for action.

The three strategic goals were:

- 1) Integration of disaster risk reduction into sustainable development policies and planning
- 2) Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards
- 3) Systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes

The five priorities for action identified were:

- 1) Ensuring that disaster risk reduction (DRR) is a national and local priority with a strong institutional basis for implementation
- 2) Identifying, assessing and monitoring disaster risks and enhancing early warning
- 3) Using knowledge, innovation and education to build a culture of safety and resilience at all levels
- 4) Reducing the underlying risk factors
- 5) Strengthening disaster preparedness for effective response at all levels (UNISDR 2005)

Cross-cutting themes in the HFA included a multi-hazard approach, recognition of the importance of gender and cultural diversity, community participation and capacity building and technology transfer (UNISDR 2005). The expected outcome of the HFA was framed as “*The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries*” (UNISDR 2005) (p.3).

The HFA highlights the importance of community involvement in disasters (UNISDR 2005), both in terms of harnessing indigenous knowledge of coping mechanisms in response to natural disasters and as an essential component of community development. CBDRM aims not only to facilitate the establishment of ‘disaster-resilient communities’ (Twigg 2007), but also to ensure that communities can and are actively involved in assessing risks and are working towards developing preparedness, response, recovery, prevention and mitigation strategies.

More recently, the United Nations General Assembly called for an increased focus on strengthening local coping capacities and community-based approaches to disaster risk management in Resolution 65/157: International Strategy for Disaster Reduction 2011. Article 17 of the resolution stresses the need, “to build and strengthen coping capacities through, inter alia, the transfer and exchange of experiences and technical knowledge, educational and training programmes for disaster risk reduction, access to relevant data and information, the strengthening of institutional arrangements and the promotion of community participation and ownership through community-based disaster risk management approaches” (UN 2011) (p. 5). The Intergovernmental Panel on Climate Change has also recognised the importance of utilising local knowledge and experience in order to more efficiently adapt to and manage risks related to climate change processes and disasters. Indeed, according to the IPCC, “Community participation in planning, the determined use of local and community knowledge and capacities, and the decentralization of decision-making, supported by and in synergy with national and international policies and actions, are critical for disaster risk reduction” (IPCC 2012) (p. 28).

Monitoring and Evaluation

Indicators and tools have been developed by various agencies, most notably the United Nations International Strategy for Disaster Reduction (UNISDR), the Asian Disaster Preparedness Centre (ADPC), the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and Oxfam, to guide practitioners in monitoring and evaluating CBDRM projects.

Some attempts have been made to measure the impact of DRR activities, especially to measure progress towards implementation of the HFA such as the HFA Monitor and other review processes (UNISDR 2010-2011; UNISDR 2012). In 2005, AusAID commissioned a study to examine the economic impact of natural disasters on development in the Pacific; this found that costs continue to be underestimated as there is very little accurate data on the impact (McKenzie, Prasad et al. 2005). Due to the lack of data, much of the impact assessment was based on estimation and communities perceptions of how the CBDRM programmes had improved their ability to mitigate and cope with disasters (McKenzie, Prasad et al. 2005). The DFID Disaster Risk Reduction Interagency Co-ordination Group also commissioned a study to explore the “characteristics of a disaster resilient community” (Twigg 2007).

One of the most important of these attempts to measure progress was the UNISDR Mid-term Review of the Hyogo Framework for Action (UNISDR 2010-2011). This review highlighted the significant progress made over the past five years in disaster risk reduction and the ways in which HFA had played a significant role in promoting progress worldwide. This is reflected in various countries' legislation and policymaking frameworks that have put into place early warning systems and strengthened disaster preparedness, response, recovery and mitigation strategies. However, the review also noted that progress implementing the HFA was uneven globally and that this reflected the socio-economic and institutional disparities between different regions and countries.

Attempts have also been made to develop methods to estimate the social and economic costs of disasters. The World Bank (2005) categorises disaster losses as:

- Direct costs: physical damage to capital assets, including social infrastructure;
- Indirect costs: knock-on disruption to the flow of goods and services (e.g. reduced output, loss of earnings, job losses and livelihoods).
- Secondary effects: short and long-term impacts of a disaster on the overall economy and socio-economic conditions (e.g. macroeconomic effects such as fiscal and monetary performance, levels of indebtedness, the distribution of income and scale and incidence of poverty). Other negative social affects from natural disasters can lead to a decrease in health and human capital in a community which results from: decline in schooling, increased levels of malnourishment and stunting, diminished cognitive abilities and increased incidences of mental health problems (World Bank, 2010). All these costs affect a community's ability to live productively and reduce subsequent earning in future years, highlighting the lasting impact that natural disasters can have on communities unless interventions are successful in mitigating these risks.

Our preliminary research revealed very few reports published on the long-term outcomes or impact of CBDRM programmes. Monitoring and evaluation tools and guidelines have been produced by some NGOs (Oxfam, International Federation of Red Cross, ADPC) but it is difficult to find evidence of the extent to which organizations and programmes are using the guidelines. Reports are fairly general providing stakeholder's activities and recommendations for future sustainability but none report on impact (Bollin 2003; ADPC 2008). There is consensus that data on disaster impacts are lacking, and there is a need for more accurate, systematic and clear information (McKenzie, Prasad et al. 2005).

Although the CBDRM programmes have a strong focus on community involvement and management, involvement of government, in particular local government, may be required to ensure sustainability. UNISDR (2010) states that local government play an important role in complementing community involvement in implementing disaster risk reduction in four ways:

- 1) Coordinating and sustaining a multi-level, multi stakeholder platform to promote disaster risk reduction in the region or for a specific hazard;
- 2) Engaging communities and citizens with disaster risk reduction activities and link their concerns with government priorities;
- 3) Strengthening their own institutional capacities and implementing practical disaster risk reduction actions by themselves;
- 4) Devising and implementing innovative tools and techniques for disaster risk reduction, which can be replicated elsewhere or scaled up nationwide.

Some agencies have recommended that CBDRM become institutionalized within the government, through the development of policy and legislation, resource allocation, and mainstreaming DRM into government planning (ADPC 2008), but this remains debated.

Research Evidence on Effectiveness of CBDRM Initiatives and Impact

Research on disasters has been promoted since the 1990s. This is apparent through journals dedicated to the topic including, *Disasters*, *Journal of Natural Disasters*, *Hazards & Crisis in Public Policy* and consortiums such as Sphere, ALNAP, ProVention, Humanitarian Partnership Project, ADPC and many others. Nevertheless, preliminary search reveals limited studies about the effectiveness of CBDRM in relation to longer term outcomes, in particular, economic and social costs. Whilst there are journals available on this topic and UN agencies such as the World Bank, UNICEF, Food and Agriculture Organisation and the United Nations Development Program all have guidelines and documentation in this area, gaps exist in the literature and field knowledge. Furthermore, much of the empirical research on CBDRM is limited to descriptive accounts or case-studies; in part this reflects the challenge of demonstrating the impact of preventive and preparedness activities on reducing morbidity, mortality, or social and economic costs.

In addition, papers reporting the results of CBDRM program evaluations often report on evaluations that take place after the program has ended, and use process indicators as the main means of assessment. A preliminary search suggests a lack of rigorous assessment of the long-term impact associated with these process indicators and limited assessment of the sustainability of interventions and their outcomes and impact.

Two earlier reviews of the literature found limited research on the effectiveness of CBDRM in developing countries. The first, by Bharramishra and Barrett (2010) reviewed community-based risk management arrangements (CBRMA) across the developing world. The authors included both 'home grown' and 'externally-induced' interventions coordinated formally or informally for risk pooling. Interventions included informal mutual insurance, health insurance associations, savings and credit arrangements, grain and cereal banks, microfinance, social assistance facilities and community-based provision of public goods and services (Bhattamishra and Barrett 2010). The authors concluded that while CBRMA programs potentially enhance social protection, improve the two-way informational flow between communities and stakeholders and limit enforcement costs of these agreements, there were no careful evaluations that examine the effectiveness or the potential returns from these arrangements (Bhattamishra and Barrett 2010) (p.930). A second recent but somewhat broad review by Roy and colleagues (2011) found that <1% of the cited literature on disasters in the PubMed database dealt with disasters in developing countries. The majority of articles were case-series studies or case reports, which according to Roy et al "add little to the evidence base" (Roy, Thakkar et al. 2011) (p.114). The authors recommended sustained long-term disaster research with increased contributions from the developing world (Roy, Thakkar et al. 2011).

While the lack of research examining the effectiveness of CBDRM initiatives on reducing the social and economic impact on vulnerable populations in low and middle-income countries is a major constraint, the published literature will nevertheless offer valuable insights into how CBDRM initiatives are structured and implemented and the contexts in which they operate. Case studies and qualitative analyses may also contain insights into whether activities delivered as part of

CBDRM initiatives contribute to assisting vulnerable populations to change behaviour. This in turn may contribute to reducing the impact of disasters. Rigorous analysis of the published literature, drawing on realist approaches, will help to focus attention on what is known about mechanisms which cause outcomes across a range of countries. It will also help synthesize understanding of the underlying mechanisms and contexts, as well as helping to locate research and policy and practice gaps.

1.5 Purpose and rationale for review

This review is being undertaken to inform DRR policy and practice in low and middle-income countries. While many programs and initiatives have been executed, very little documentation and analysis of the broader social and economic impacts of such interventions are available. This study seeks to extract and test theories that explain how, why and when CBDRM interventions reduce the social and economic impact of disasters in low and middle-income countries. This study will provide insights into the contextual factors that are associated with key outcomes of CBDRM activities, and will help generate theory regarding the mechanisms which cause these to occur. It will research gaps and areas requiring more evidence and analysis. Identifying what works, how and why, is important; so too are the complementary calls for greater effectiveness and accountability for context-appropriate interventions.

1.6 Authors, funders, and other users of the review

The review is being undertaken by an academic team from the University of New South Wales - Professor Anthony Zwi (AZ); Dr Kim Spurway (KS); Ryan Marincowitz (RM); Dr Geetha Ranmuthugala (GR); Lisa Thompson (LT) and Karen Hobday (KH). The team have experience of research on humanitarian and disaster-related issues (AZ, KS), global health initiatives in low and middle income settings (AZ, LT, KH), equity and the social determinants of health (AZ), and on the research to policy and practice interface (AZ, GR, KS). Team members have undertaken a number of other systematic reviews (AZ, GR, KS, LT, KH).

The review is supported by an Australian Development Research Award (ADRA) commissioned by the Australian Agency for International Development (AusAID). The review seeks to contribute insights and synthesized evidence to inform programming particularly in the Pacific and sub-Saharan African regions.

The review is registered with EPPI-Centre which supports the conduct of systematic reviews, including those focused on low and middle-income countries. Specific realist review advice is available through Gill Westhorp, contracted to AusAID to provide additional assistance and guidance. The Team will draw on advice from these sources, along with policy and practice insights from the Reference Group.

The Reference Group includes:

Moira Reddick, Coordinator, Nepal Risk Reduction Consortium Secretariat and UNDP Nepal

Raymond Apthorpe, Professorial Research Associate, School of Oriental and African Studies, University of London; Advisory Research Associate, Institute of Social Studies, The Hague, Erasmus University, Rotterdam; London Anthropology Forum

Paul Smart, Humanitarian Coordinator, Act for Peace

Dominic Bowen, International Assignments Manager, RedR Australia

Anna Gero, Research Consultant, Institute for Sustainable Futures

Amara Bains, Independent Consultant (formerly IFRC, Indonesia)

1.7 Review questions and approach

The initial review research question is: Do community based disaster risk management (CBDRM) initiatives reduce the social and economic cost of disasters? A realist approach will be utilised to examine published literature to answer the question - how, why and when do CBDRM initiatives reduce the social and economic impact of disasters in low and middle income countries?

A wide range of literatures from diverse disciplinary perspectives and databases will be sought. It is intended that this diversity will help elucidate context, mechanism and outcome interactions, a key element within realist approaches and of particular interest to the Review team. The Review team will also draw on the grey literature from key agencies and their websites.

1.8 Conceptual Framework

The CBDRM approach is grounded in a community development framework, and incorporates risk reduction and the promotion of resilience as key components. We incorporate these elements into our conceptual framework, as applied to low and middle-income countries.

The realist review approach has been selected as this allows examination of evidence drawn from diverse literatures, not all of which meet the more conventional criteria for examining effectiveness. It also allows an appropriate emphasis to be placed on the importance of context, an issue highlighted above and discussed in more detail in the next section. A realist review allows for the identification and elaboration of the mechanisms through which outcomes and ultimately impact are postulated to occur.

A realist synthesis provides insight into the various outcomes achieved by trying to understand the underlying mechanisms between interventions and these outcomes while simultaneously considering the implications of context. The team have identified candidate theory based on initial review of the literature, brainstorming and refinement of ideas within the Review team, and discussions with Reference Group members. These candidate theories and hypotheses will be examined as they manifest within the literature; particular effort will be devoted to consideration of how these apply in different contexts. Some of the already emerging insights are reflected in the text below.

Programs operating at community level will be influenced by enabling or constraining (and at times 'disabling') environments (Twigg 2007). One environmental and contextual factor that may well undermine potential interventions is the presence of widespread conflict with the resultant negative impacts on social cohesion and trust.

For CBDRM initiatives, the contextual factors may influence the associated mechanisms and the outcomes they generate:

- Recovery from prior disasters alongside capacity and desire to ensure better preparation for any future problems (enabling)
- Collective strengths and high level of interest in community safety (enabling)
- Transparent power dynamics are open and leaders are viewed as representing the population (enabling)

- Good history of working in partnership with local and international NGOs (enabling).
- Positive relationships with government (enabling)
- Positive outlook with leaders and majority of the population wanting to see improvements and shared work (enabling)
- Community has a fatalistic approach towards experiencing disasters (disabling)
- Poor history of working with NGOs or government (disabling)
- Community is divided (disabling)

For CBDRM activities to have support from the government the following enabling factors may help:

- Political consensus on importance of DRR
- DRR recognised as a policy priority at all levels of government
- National DRR policy, strategy and implementation plan
- Local government DRR policies, strategy and implementation plan
- Official policy and strategy to support CBDRM
- Local-level official understanding of and support for community vision (Twigg 2007) (p. 12).

Our emerging insights are reflected in the diagrammatic representation of activities, potential mechanisms and how they generate particular outcomes in a range of contexts (see Appendix 2.4). Additional insights are presented around factors which might enable or pose barriers to these interventions.

In line with the realist approach we constructed a model to reflect a set of proposed mechanisms and theories regarding how effective interventions are hypothesized to produce the outcomes of interest. A number of mechanisms are likely to interact in CBDRM projects and to have an impact on outcome in the low and middle-income countries.

To begin the review process, we identified important outcomes and then explored what mechanisms might help generate such outcomes. We propose three mechanisms (integrated knowledge, actioned agency, expressed empowerment) that are specific to these contexts and are likely to contribute to achieving the desired outcomes: reduced risk, reduced vulnerability and increased resilience. In addition we identified increased capacity as a mechanism operating alongside the other three.

The realist approach is iterative in nature: the initially identified outcomes and mechanisms will be refined or changed in light of more careful analysis of the identified literature. The mechanisms described in our candidate theory (see diagrams in Appendix 2.4) will suggest the reasoning, and actions or activities undertaken by actors or stakeholders that generate an outcome of interest. In some cases, an intermediate outcome will be more discernible than the longer-term outcomes envisaged. To date, the Review team identified candidate mechanisms including:

- Community participation which incorporates indigenous knowledge as well as external and technical insights;
- Empowerment leading to outcomes such as the mobilization of additional resources or changes in DRR legislation; and

Do CBDRM initiatives impact on the social and economic costs of disasters?

- Actioned agency, implying the ability to take forward and negotiate with relevant organisations and transform pre-existing relationships of power and influence.

These will likely be affected by, and reflect the influence of, differing contexts. We propose that CBDRM programs have the potential to generate outputs and ultimately outcomes that impact on risk, vulnerability, resilience and capacity outcomes for affected groups and which mitigate the long-term economic and social impact of disasters.

The conceptual model describes in more detail some of the many important relationships which are likely to influence the links between context, mechanisms and outcomes. Further refinement will be undertaken as the Review progresses.

2. Methods to be used in the review

2.1 Review approach and components

A realist-based approach will be applied to reviewing the literature with the objective of understanding, as opposed to establishing causality, between CBDRM interventions and social and economic costs of natural disasters in low and middle-income countries. As recommended by Pawson et al. (2005) and applied by others (Anderson, 2011; Robert 2012) a multi-stage stage approach will be adopted, recognising that the process will be iterative.

1) Articulating key theories to be explored

The purpose of this stage is to further refine the list of theories that underpin the implementation of CBDRM programs in LMIC settings. This list will be compiled through discussions with members of the Reference Group (representing key stakeholders); examining a purposively selected sample of reports, research papers and other documents selected for their relevance to the topic; and the review team brain storming sessions. Collectively, these methods enable the team to provide an initial list of candidate theories on how, why and when CBDRM programs work (or don't work). Reasoning of individuals or groups targeted by the intervention triggered by the CBDRM programs to deliver outcomes will represent mechanisms, as will resources provided by the program. Circumstances or situations that enable or prevent the triggering of potential mechanisms will constitute contexts. Based on exploratory work undertaken to date, a set of CMO configurations are proposed as a starting point for this review, recognising that this list will be reviewed and refined as the search progresses.

2) Literature search

A systematic approach will be adopted to search for and identify relevant literature. By nature, the realist approach to searching literature is iterative; however attempts are made to describe the process that will be followed.

Data sources:

The following resources will be used to identify research reports and documents that describe the implementation or evaluation of CBDRM programs in LMIC settings.

- Electronic bibliographic databases (see Appendix 2.3)
- Hand search of the following key journals: Disasters, Public Health in Disasters and Natural Disasters
- Citation searches of key authors/papers including Cuny, Twigg, and ADPC articles
- Google and Google Scholar to search the World Wide Web
- Targeted search of websites of international agencies such as UNISDR, UNDP, UNFCCC, United Nations Environment Programme, International Organization for Migration, Global Facility for Disaster Reduction and Recovery, WHO, ALNAP World Bank, African Development Bank and Asian Development Bank, and International NGOs such as Action Aid, IFRC, Concern Worldwide, Oxfam, Plan and World Vision. As the majority of disaster related documents (NGOs, Donors and International Organisations) are listed on Prevention Web, a thorough

search of key reports was done under the theme community based DRR. Three other journals were identified during the “grey” literature stage and searched for relevant articles (Community Development Journal; World Bank Economic Review; Journal of Disaster Risk Studies (South Africa).

- Reference lists obtained from experts in the field and the Reference Group
- Snowballing from documents relating to Social Protection was used to supplement literature found from the database and grey literature search (first paper: Siegel, Gatsinzi and Kettlewell, 2011). This was done as it was felt that Social Protection was under represented in the search results and could be an important tool for CBDRM.

Search terms:

The initial set of search terms that will be used to identify potentially relevant literature has been developed around the three main components of the topic - LMIC, natural disasters, and CBDRM concept. A comprehensive list of terms is presented in Appendix 2.4. In keeping with the realist approach, the terms will be reviewed and refined once the search has commenced and understanding of the literature evolves.

The LMIC search terms are based on the list of LMICs in the World Bank’s World Development Indicators 2011 (Bank, 2011). The list has been reviewed in detail and updated by the review team, incorporating all possible terminology used to describe the LMIC setting. This process was undertaken in consultation with the Reference Group, EPPI-Centre and AusAID program staff.

Natural disaster and CBDRM search terms were developed through consultation with the Advisory Group and insight gained through initial exploratory review of the literature. This consultative process with the Reference Group and AusAID led to the decision to include any additional studies captured during the search processes that address slow onset disasters. Originally, these types of study were to be excluded as the preliminary focus of this Review was on rapid onset disasters. However, these studies will be included in the Mapping and In-depth analysis stages of the Review. In addition, discussions highlighted the significance and value of programmatic, institutional and environmental sustainability in relation to disaster risk reduction programs and will be further investigated during the course of the Review.

For practical and budgetary reasons the search will be limited to literature published in English with a publication date of 1995 or later. While it is recognised that relevant literature may be published in other languages, the decision to exclude documents not published in English is based on the possibility that information required to test and identify new theories may be lost in the process of translation. The in-depth exploration of translated documents required for a realist-based review is not feasible within the available time period.

3) Assessing relevance and quality of studies

The abstracts or summaries of all potentially relevant literature identified through the search in stage 3 will be screened to identify literature that is relevant in terms of understanding the ways in which CBDRM programs contribute to reducing the social and economic costs of natural disasters. Exclusion and inclusion criteria have been developed to help with this process. These criteria will be applied to each record to identify potentially relevant literature. Also retained for the next

stage will be records that need review of the full report to determine relevance and rigour.

Depending on the final number of records that the search yields, the records will be divided up between two reviewers to screen and exclude literature that is not relevant. A validation exercise will be conducted and the criteria reviewed and refined to ensure consistency in the application of criteria. A 5% sample will be screened by both reviewers and level of agreement will be computed using a Kappa score.

The literature will also be examined for rigour, assessed not in terms of the hierarchy of evidence used in the traditional model of systematic reviews. Rather, rigour will be assessed as recommended by Pawson et al (2005), on “whether a particular inference drawn by the original research has sufficient weight to make a methodologically credible contribution to the test of a particular intervention theory” (Pawson et al., 2005). It is recognised that this assessment may not be possible based on review of abstract or summary, and that a more detailed review of the full document may be necessary. In which case, the record will be retained for the next stage of the review.

Every aspect of the study process, including literature searching, databases used, and the data analysed will be clearly documented.

4) Mapping

The purpose of this stage is to describe and classify available research, examine patterns in concepts, and to narrow the focus of the detailed review. Literature identified from the electronic databases will be used to inform the mapping. The following information will be collected for the mapping stage:

- type of document;
- type of study;
- research design;
- level of analysis;
- location of program;
- type of disaster addressed;
- principle program or sector investigated;
- population investigated;
- study focus group;
- program elements;
- program scale;
- and any issues, comments, insights or emerging themes from the studies. (see Appendix 2.6 for tool employed).

The information collected will be presented to examine trends by region and by program element. It is anticipated that such an analysis will help identify a subset of studies for detailed review, subject to resource availability.

5) Detailed review (subject to resource availability)

The detailed review will be limited to a subset of studies included in the mapping stage. The subset will be identified in discussion with stakeholders and AusAID officials, and likely to be selected based on mechanism, program element, or other features of interest identified in the mapping stage. Literature identified for

detailed review will be analysed in depth to test candidate theory identified earlier and to identify new theory in keeping with the conceptual frameworks (context - mechanisms - outcomes). Ideally (and time willing), this process will continue until no new information is identified from the volume of literature identified as being relevant.

Despite the strengths of this review methodology in addressing heterogeneity of interventions and study designs, this method too has limitations. The Reference Group highlighted the importance of understanding the broader context and how dependant this is on visiting and/or working in the field. The Reference Group's practice-based perspective will assist in the analysis and interpretation of our results. In addition, our review will develop tentative theories, which can then be further tested and refined through field practice as opportunities arise. Although this represents a limitation of a literature-based review, it also acknowledges the potential value of applying emerging research to field practice where opportunities arise.

2.2 User involvement

2.2.1 Approach and rationale

To ensure this review is useful for stakeholders in the Disaster Risk Reduction field the Review team will engage with a range of practitioners and policy makers with in-depth knowledge of DRR. The Review team will seek input at several key stages of the review - broad scope of the review, approach to searching the literature, mapping the literature, narrowing the focus for more detailed in-depth review.

The Reference Group includes a number of representatives from NGO members of the Australian Council for International Development (ACFID), the coordinator of the Nepal Risk Reduction Consortium and a recognised international expert in humanitarian and disaster risk reduction issues. As the Review progresses and decisions get made regarding more detailed analysis, additional members with specific expertise or links may be invited to join the Reference group to assist with that next component.

2.2.2 User Involvement in designing the review

The Reference Group will be consulted on the framing of research questions, the search strategy and relevant databases, the protocol as it is developed and the mapping data as they become available. The Reference group will, in particular, assist with 'unpacking the black box' so as to better identify the mechanisms, contexts and outcomes in relations to CBDRM initiatives in low and middle income countries. AusAID will contribute insights to help ensure policy relevance.

2.2.3 User involvement in process of conducting the review

The research team are actively involved in contributing to CBDRM programs. Our Reference Group will be consulted throughout the process of conducting the review to ensure that the review is meeting its objectives. Reference group members will also have access to information generated by this review upon agreement by the funder, AusAID. This will enable the results to be disseminated and used by practitioners to develop plans based on the lessons learned from the literature in this review.

2.2.4 User involvement in interpreting the review results

The Reference Group will be consulted prior to finalising the review to ensure relevance to a variety of contexts and settings with which they are familiar and to

ensure that the writing and insights are accessible to practitioners, policy and practise.

Consultation will be undertaken with a number of groups in interpreting the results. The Review Reference Group will provide insights from a variety of perspectives that will help relate the results to the different settings with which Reference Group members are familiar. Results will also be discussed members of the ACFID Humanitarian Emergency Reference Group, while recognising that this group is often focused more on humanitarian response than disaster risk reduction, AusAID will be requested to help facilitate consultation with the ISDR donor support group and the GFDRR Consultative Group as these are global donor groups and CSOs with an interest in DRR/DRM issues. If deemed relevant, consultation with member associations of relevant networks and agencies such as the ADPC from the South East Asia and Oceania region will also be consulted.

2.2.5 User involvement in communication and dissemination of review results

The Reference Group will communicate the results to their staff and networks. We will present the results of the findings at relevant network meetings, such as the Humanitarian Reference Group organized by the Australian Council for International Development (ACFID) and/or conferences. The results will also be published in one or more peer-reviewed journals that are read by policy makers and practitioners working to improve the social and economic outcomes of low-resource nations, as well as those that publish research in this field. Journals that will be explored include *Disasters*, *Disaster Prevention and Management or Risk*, *Hazards & Crisis in Public Policy*. Finally, we will seek to promote the study and findings through the ADPC and ProVention websites, and through avenues recommended by the Reference Group. Insights from the study will feed into teaching where possible.

2.3 Identifying and describing studies

2.3.1 Defining relevant studies

Eligibility criteria will include literature relevant to the initial “rough theory” (as per realist-approach) as well as any that describe the implementation or impact assessment or evaluation of CBDRM with an emphasis on being community-based. The search will be limited to literature published in English with a publication date of 1995 or later. Peer reviewed and grey literature will be searched to identify empirical studies that meet the inclusion criteria; also included will be evaluation reports, relevant papers presented at conferences, and peer-reviewed literature reviews. The focus will be on natural disasters and exclude manmade disasters and the broader effects of long-term climate change. However, in recognition that the current trend is to integrate the term DRM with Climate Change Adaptation (CCA), the term CCA is considered to be in scope for this review and has been included in the search strategy. Commentaries will be excluded but will be used to identify references to other literature.

2.2.2 Literature search strategy

Literature will be identified using the following search strategy:

- Electronic Bibliographic databases (please see appendix 2 for detailed description of search terms and databases)
- Hand search of the following key journals: *Disasters*, *Public Health in Disasters and Natural Disasters*

- Citation searches of key authors/papers including Cuny, Twigg, Pelling, Wisner, Alexander, Davis, Aguirre, Gero, Dominey-Howes, Meheux, Mercer, Sharma, Kelman and other relevant articles
- Internet searches will be carried out using Google and Google Scholar search engines.
- Targeted search of websites of international aid agencies such as WHO, UN, ADB, ALNAP, UNISDR, and International NGOs such as International Red Cross, OXFAM, Plan, World Vision and Action Aid.
- Reference lists from experts in the field have been accessed and more are anticipated to come from the Reference Group.
- Grey literature will be searched through relevant websites, key informants/experts in the field suggested by members of the Reference Group and contacting key authors for their advice.

The search will be managed as follows. EndNote (version 4) software will be used to create a library of all search results. Duplicate records will be deleted. The records in the Endnote library will be imported into EPPI-Reviewer, which will be used to manage the screening and review process.

2.3.3 Screening studies: applying inclusion and exclusion criteria

The titles and abstracts will be reviewed by two of the review team members using the inclusion and exclusion criteria. In keeping with a realist approach, the inclusion-exclusion criteria will include any studies relevant to the initial “rough theory” (or “candidate theory”), as well as any that describe the implementation, impact assessment or evaluation of CBDRM. Peer reviewed and grey literature will be searched to identify studies that met the inclusion criteria, including journal articles, evaluation reports, conference papers, technical reports and books. Literature published after 1995 examining a disaster related event occurring after 1985 will also be included. The focus will be on natural disasters and exclude human-induced disasters and the broader effects of long-term climate change. However, in recognition that the current trend is to integrate CBDRM with CCA, the term CCA is considered to be within scope for this review and will be included in the search strategy. See Appendix 2.5 for a full list of the inclusion-exclusion criteria.

The complete paper will be extracted and reviewed by one reviewer using the criteria. The Research Team will work together to review articles that are contentious with the team leader making a decision where unresolved. Those articles not meeting the criteria will be excluded.

2.3.4 Characterising of included studies

Studies that meet the criteria will be tagged by country or region in which the study was undertaken, disaster type and key activities implemented. In addition, data will be recorded on study design, presence of outcome data (for in-depth analysis where available) and clarity of contextual description. Other characteristics of the studies included will be recorded so as to allow efficient organisation of subsequent in-depth analysis by context, mechanisms, or both in combination with relevant outcomes.

2.3.5 Description of studies and quality assessment

As the review takes a realist approach, the traditional hierarchy of evidence will not be applied here to exclude material. Instead, we will include in our review all literature that meets the inclusion criteria. Quality judgement with respect to each source will be made in terms of rigour and relevance. The validity of insights

derived from different aspects of the study will be considered in relation to detailed description of data collection and analysis methods.

For quality assurance purposes within the Review, a sample of studies will be reviewed in terms of whether or not to include them in the mapping stage and differences of opinion discussed to clarify decision rules within the team. Quality will be assessed on relevance in terms of testing or informing new theory and rigour assessed by “whether a particular inference drawn by the original researcher has sufficient weight to make a methodological credible contribution to the test of a particular intervention theory” (Pawson et al. 2005: 22)

2.4 In-depth review

2.4.1 *Moving from broad characterisation (mapping) to in-depth review*

The methods and approach described above are largely focused on the mapping and scoping phase of the study. Given the number and diversity of the sources the team have identified, the mapping phase will be an important end-point in its own right. However, should funds and time permit, the more detailed and deeper analytic review will continue and will produce a realist analysis of a subset of the studies identified through the scoping and mapping exercises.

The details below offer insights in relation to how this analysis will be undertaken in this in-depth realist analytic component of the Review.

2.4.2 *Detailed description of studies in the in-depth review*

In our preliminary search, outcome indicators have included process indicators, and interim outcomes. Examples include early warning systems in place, physical improvement to infrastructure, or a risk management plan developed. We aim to go beyond these indicators and investigate how CBDRM may impact on reducing risk and vulnerability and improving resilience; which may in turn affect the social and economic impacts. Examples of impact indicators could include: changes to governance that result in a shift in thinking about disaster response to disaster prevention; laws which institutionalize CBDRM; mobilized resources for CBDRM; improved capacity of communities to respond to disasters; and active CBDRM committees which are sustained after completion of the project. These indicators will be refined in relation to the literature examined in consultation with the Reference Group.

Each document retrieved for full review will be read in detail looking for evidence to support, refute or refine candidate theory or to identify new theories explaining how, why and when CBDRM initiatives contribute to (outcomes of interest). As and when new theories emerge, papers reviewed previously will be revisited to test and refine these theories.

2.4.3 *Assessing quality of studies and weight of evidence for the review question*

Quality appraisal of relevant sections of included studies will be undertaken to determine rigor and relevance (Pawson, Greenhalgh et al. 2005). This will be undertaken jointly by two team members with a third resolving disagreement. Studies will not be excluded solely on the basis of quality, but weaker design will be acknowledged in the synthesis (Mays, Pope et al. 2005).

All empirical (descriptive and analytical, quantitative and qualitative) research studies and grey literature will be eligible for inclusion. Studies identified as meeting the inclusion criteria, will be analysed in depth, using data-extraction software, EPPI-Reviewer, to assist with data categorisation and management. Studies that offer insights to how context, mechanisms and outcomes relate, or

offering other insights of relevance to theory generation and/or theory testing (at later stage in our review) may be drawn into the analysis in keeping with the realist approach.

2.4.4 Synthesis of evidence

2.4.4.1 Overall approach to and process of synthesis

The literature will be synthesised using a realist approach to develop a model of how, why and when CBDRM interventions do (or do not) impact on the social and economic costs of disasters.

Our realist synthesis involves identifying potential effects of CBDRM interventions on social and economic outcomes - these include reducing risk, reducing vulnerability, enhancing resilience to disasters and building local capacity to perform and reinforce these efforts. The Review will initially map and describe the characteristics of the published research in relation to CBDRM and how the field has emerged, as well as to explore the underpinning theory advocated by those authors. In relation to a subset of the literature (to be determined in consultation with AusAID and the Reference Group), our Review will seek to explain whether, how, when and why these programmes (or aspects of these) are effective. Central to this analysis will be a reassessment of our earlier candidate theory and conceptual model using the realist approach, applied to a subset of studies. The team will devote particular attention to assessing how context, mechanisms and outcomes relate to one another in this subset. One element of this analysis will be to refine our understanding of mechanisms that determine outcomes in given contexts, while also seeking to refine earlier proposed mechanisms and identifying others.

The Review team will examine how interventions documented relate to, differ from, or develop further, understanding of the relationships between context, mechanisms and (interim and longer term) outcomes. It is anticipated that these will be of particular interest to those working on policy and programming in such environments.

Synthesis will explore the interaction between context, mechanism, and outcome, for each study and then across the studies to detect patterns. Key contextual factors will be identified and considered in relation to the body of literature being examined. The research team will devote particular attention to identifying those studies that state explicit outcomes in order that these be further examined to assess the related context and mechanisms. Two processes will be used: a theory-driven approach that will search for those mechanisms already identified by the Team (see earlier, page 20) as well as a more exploratory approach that allows new mechanisms to emerge from the literature. The Review team will also seek feedback from the Reference Group regarding preliminary analyses.

2.4.4.2 Selection of studies for synthesis (given that not all studies will be included in in-depth review)

The mapping exercise will determine the diversity and extent of the literature across all CBDRM programme types, regions and in relation to the different types of natural disasters identified in section 1.4. In order to derive greatest value from the review we anticipate focussing the in-depth analytic stage on one subset of studies which are of particular interest to policy and the field, as assessed by AusAID and the Reference group. This might focus on a group of studies exhibiting particular characteristics (for example, a focus on CBDRM and livelihood-related

issues), one or more sets of mechanisms and how they operate in different contexts, or one or more types of disasters.

Consultation with AusAID, the Review advisers (EPPI-Review and Dr Gill Westhorp), plus the Reference Group will help determine whether this deeper analysis will be able to be resourced and undertaken, and to determine how best to focus it so as to be useful to AusAID and other end-users.

2.4.4.3 Selection of relevant literature and data for synthesis

Priority will be focused on those studies which present social and economic outcomes as it is these which will then be able to reveal underlying mechanisms which trigger them. Realistically, however, relatively few such studies may be identified. Therefore, priority will be given to evaluative outcome data which theorize the implications CBDRM programmes have on reducing social and economic impact of disasters.

2.4.4.4 Process used to combine and synthesise data

The realist synthesis will involve analysis of studies in relation to the proposed context, mechanism and outcome configurations. These will be refined beyond the initial framework presented in the Appendix, following the detailed mapping phase, and in any subsequent realist analysis.

Refined CMO configurations based on the findings in the selected studies will be built as an analytic tool and comparisons made across studies, to detect patterns and further test emergent theories. The process will be iterative and informed by key background literature. Input from users and the Reference Group will inform the analysis.

2.4.4.5 Criteria for identifying important review results

As stated above in 2.4.4.3 particular attention will be given to studies that have carefully evaluated and assessed outcomes of CBDRM-type activities, particularly where these extend beyond the short-term. Insights from interventions that have been assessed prior to, as well as after a disaster event in a developing country context, will be of particular interest, although the Review team anticipate finding few studies of this type.

In addition, we will identify studies that focus on assessing risk, vulnerability, resilience and capacity, in relation to CBDRM-related programs. Among the identified characteristics of a disaster-resilient community are economic and social strategies which increase resilience such as micro-finance, cash aid and credit, as well as increased access to social services and establishment of social safety nets accessible to vulnerable groups (Twigg, 2007). Studies that incorporate evidence of increased community resilience in respect of CBDRM programmes will be analysed along with a description of their conceptualisation of the nature of such 'resilience'.

2.5 Deriving conclusions and implications

In determining the key conclusions and implications of the review the Team will refer to the role played by the identified mechanisms in generating outcomes. At an earlier stage the Team identified a range of candidate mechanisms and theory regarding how context-mechanisms and outcomes might be related. As mentioned, these will be further refined as part of the synthesis and analysis. Candidate mechanisms identified included the synthesis of indigenous with external knowledge and experience around risk identification and response; 'expressed empowerment' and how this enhances the community's ability to advocate,

Do CBDRM initiatives impact on the social and economic costs of disasters?

mobilise resources and transform relationships with government; and ‘actioned agency’ which the Team conceptualised as agency which demonstrated choices taken by communities to achieve particular outcomes.

The Review team anticipate engaging with the Reference group and the commissioning agency, AusAID, to refine exploration of impact and outcome assessment, as well as to determine whether proximal outcomes will help predict impact. Amongst these ‘proximal outcomes’ are reduced risk, reduced vulnerability, increased resilience, and increased capacity. The Review team will consider the evidence regarding whether interventions in given contexts work through particular mechanisms to trigger outcomes which have an impact on the social and economic impact of disasters.

The Review team anticipate working with AusAID and other user-groups to share the insights from this study and to identify policy and practice implications. The Review team will seek to produce policy-relevant materials reflecting the insights to be derived from this study and to make these available to relevant agencies. The Review Team are also enthusiastic about exploring how insights derived might be applied in particular country or disaster type settings, and how these can inform research, policy and practice. The Review team hope to explore avenues to empirically test insights to be derived from the study and to apply these in one or more settings in which CBDRM and related activities take place. Advice from AusAID and the Reference Group will help maximise the value of the work undertaken to informing policy and practice, programming, investment, and further research.

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Appendices

Appendix 1.1: Authorship of this report

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Conflicts of interest

None

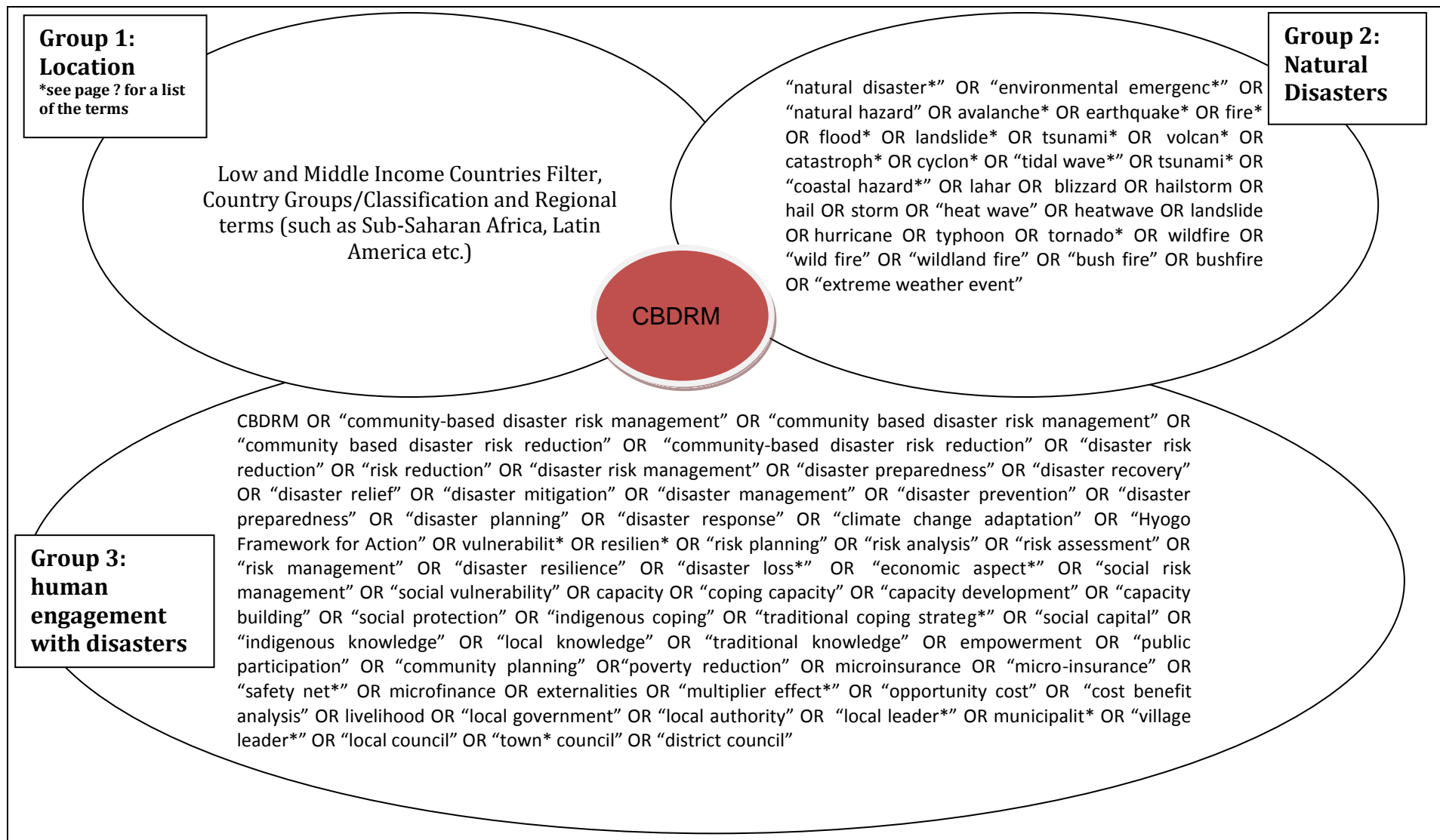
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Appendix 2.2: Search strategy

In order to ensure we are capturing as much of the relevant literature as possible we will run an expanded and detailed search strategy which will include both peer review articles and grey literature:

A) Search strategy for electronic database search



Appendix 2.3: Search sources

Electronic Databases

Health

- Global Health
- Medline
- PsychINFO

Political/Sociological

- PAIS
- Scopus
- ASSIA
- Sociological Abstracts
- ASSIA
- BHI
- PAIS
- Informit Humanities and Social Sciences and Health Collection

Environment

- GEOBASE
- Web of Science
- CAB Abstracts

Economics

- Econlit
- World Bank Economic Review

Disaster/ Development

- IBSS: International Bibliography of the Social Sciences
- IPSA (International Political Science Abstract)
- Community Development Journal
- Journal of Disaster Risk Studies (South Africa)

Systematic Review Data Bases

- EBM Reviews: Cochrane Database Of Systematic Reviews
- Johanna Briggs systematic reviews
- EPPI-Centre systematic reviews database
- Campbell Collaboration database

Other

- Proquest Dissertations & Abstracts (CA)
- 3ie database of impact evaluations (CA)
- ProQuest Platform:
- Ovid Platform:
- African Journals Online: <http://www.ajol.info/>
- Asia Journals Online: <http://www.asiajol.info/>
- Latin American Journals Online:
<http://www.lamjol.info/index.php/index/index>

International Organisation databases

Do CBDRM initiatives impact on the social and economic costs of disasters?

Prevention Web (lists documents from a wide range of DRR/DRM organisations)

British Library for Development Studies

DFID Datasets - R4D (Research for Development)

Eldis

FAO databases

HRH Global Resource Center

Secretariat of the Pacific Community

UN databases (incl. UNISDR, UNDP, UNFCCC, UNEP, IOM)

World Bank (incl. GFDRR)

African Development Bank

Asian Development Bank

Websites

Asian Disaster Preparedness Center (ADPC)

Global Facility for Disaster Reduction and Recovery

UNISDR International Strategy for Disaster Reduction

Pacific Disaster Net

SOPAC

International Development Research Centre

(<http://publicwebsite.idrc.ca/EN/Pages/default.aspx>)

Public Policy Pointers (<http://www.policypointers.org/>)

British Library Development Studies catalogue

International Committee of the Red Cross

Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP)

Overseas Development Institute

ProVention Consortium

Relief Web

IRIN

EU

OECD

Bilateral Aid Agencies

AusAID

DFID

USAID

JICA

SIDA

DANIDA

NORAD

CIDA

GIZ (previously GTZ)

United Nations

WHO

UNEP

UNCRD

UNDP

UNFPA

UNISDR

UNICEF

UNESCAP

UNHABITAT

UNU
FAOCHA
IOM
IFAD
WMO

NGOs

OXFAM
Plan
World Vision
Action Aid
Save the Children
Care
Caritas
IFRC
Concern Worldwide
Practical Action
HelpAge International
Cordaid
MercyCorps
Islamic Relief
Tearfund
International Alert

Other organisations

ACCRA - African Climate Change Resilience Alliance
CENESTA - Centre for Sustainable Development, Iran
CECI - Centre for International Studies and Cooperation
ICIMOD - The International Centre for Integrated Mountain Development
ICHARM - The International Centre for Water Hazard and Risk Management
IIED - The International Institute for Environment and Development
ISET - Institute for Social and Environmental Transition
IUCN - International Union for Conservation of Nature

Appendix 2.4: Mechanisms, context and outcomes

CBDRM Intervention

Activity 1 Community based organization to manage risk reduction program/plans

Activity 2 Risk Assessment Map

Activity 3 CBO training system (drills, training, early warning system)

Activity 4 Extra resources are mobilized from the government

Enabling context
 Community is recovering from last disaster. Wants to ensure better preparation for any future problems
 Community is collectively strong and has a high level of interest in their safety. Community power dynamics are open and transparent. Leaders are viewed as representing the population.
 Community has good history of working in partnership with NGOs.
 Community has good relationships with the government
 Community make up is positive-leaders and majority of the population want to see improvements and work together
 Community has the capacity to be engaged and/or to act

Mechanism 1: Integrated local knowledge and experience with external expertise to produce enhanced/shared understanding of risks, vulnerabilities and actionable responses

Disabling context
 Community has a fatalistic approach towards disasters-nothing you can do will prevent them from happening
 Community power dynamics are unequal and not transparent. There is large disparity and a lack of trust in the leaders
 Community has a poor history of working with NGOs. There is limited trust or desire to engage in another program.
 Community has a poor history working with the government (corruption/ violence/ oppression
 The community is divided, or has some strong characters that create challenges in the program, or want to benefit at the cost of others
 Low capacity

Output 1 Community based organization that manages and leads the program with external input

Output 2 Risk map produced and used to make structural changes where needed -community aware of risks

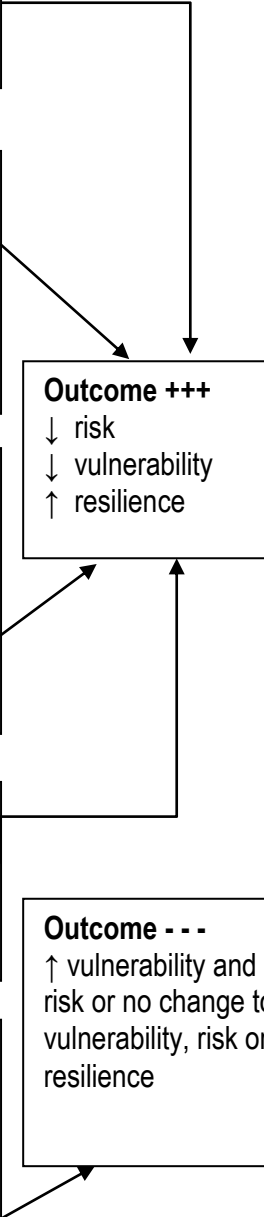
Output 3 early warning system in place and trainings conducted. Community is prepared to act in the event of an emergency

Output 4 Resources mobilized and controlled by the CBO for use in DRR programmes

Output 5 Process is disabled by constraining contextual factors

Outcome +++
 ↓ risk
 ↓ vulnerability
 ↑ resilience

Outcome - - -
 ↑ vulnerability and risk or no change to vulnerability, risk or resilience



CBDRM Intervention

Activity 1 Formation of a union/strong collaboration of CBDRM organizations

Activity 2 Extra resources are mobilized from the government

Activity 3 Advocacy for DRR legislation

Activity 4 Risk Assessment Map

Enabling context
Community is recovering from last disaster. Wants to ensure better preparation for any future problems
Community is collectively strong and has a high level of interest in their safety. Community power dynamics are open and transparent. Leaders are viewed as representing the population.
Community has good history of working in partnership with NGOs.
Community has good relationships with the government
Community make up is positive-leaders and majority of the population want to see improvements and work together

Mechanism 2: Expressed Empowerment (community able to advocate, transform relationships with government, mobilise and control extra resources and shape new ideas)

Disabling context
Community has a fatalistic approach towards disasters-nothing you can do will prevent them from happening
Community power dynamics are unequal and not transparent. There is large disparity and a lack of trust in the leaders
Community has a poor history of working with NGOs. There is limited trust or desire to engage in another program.
Community has a poor history working with the government (corruption/ violence/ oppression)
The community is divided, or has some strong characters that create challenges in the program, or want to benefit at the cost of others

Output 1 CBDRM union/network formed
-knowledge exchange
-advocacy unit

Output 2 Resources mobilized and controlled by the CBO for use in DRR programmes

Output 3 DRR legislation passed in government and DRR programmes are institutionalized-shift in focus to prevention

Output 4 Risk map produced and used to make structural changes where needed
-community aware of risks

Output 5 Process is disabled by constraining contextual factors
-activities do not take place

non-exclusion criteria

Outcome +++
↓ risk
↓ vulnerability
↑ resilience

Outcome - - -
↑ vulnerability and risk or no change to vulnerability, risk or resilience

CBDRM Intervention

Activity 1 Risk Assessment Map

Activity 2 community and school training- drills, swimming lessons, first aid

Activity 3 Disaster risk reduction fund (community based)

Activity 4 Microfinance groups formed

Enabling context

Community is recovering from last disaster. Wants to ensure better preparation for any future problems

Community is collectively strong and has a high level of interest in their safety. Community power dynamics are open and transparent. Leaders are viewed as representing the population.

Community has good history of working in partnership with NGOs.

Community has good relationships with the government

Community make up is positive-leaders and majority of the population want to see improvements and work together

Mechanism 3: Actioned Agency

Disabling context

Community has a fatalistic approach towards disasters-nothing you can do will prevent them from happening

Community power dynamics are unequal and not transparent. There is large disparity and a lack of trust in the leaders

Community has a poor history of working with NGOs. There is limited trust or desire to engage in another program.

Community has a poor history working with the government (corruption/ violence/ oppression)

The community is divided, or has some strong characters that create challenges in the program, or want to benefit at the cost of others

Output 1 Risk map produced and used to make structural changes where needed
-community aware of risks

Output 2 community participates in training
-knowledge of risks and how to act in an emergency
-knowledge applied and passed on

Output 3 Funds are pooled and managed by community in the event of a disaster

Output 4 Community microfinance groups are formed creating an insurance scheme to be used to recover after a disaster

Output 5 Process is disabled by constraining contextual factors
-activities do not take place

Outcome +++
↓ risk
↓ vulnerability
↑ resilience

Outcome - - -
↑ vulnerability and risk or no change to vulnerability, risk or resilience

Appendix 2.4: Specific keyword search terms

Country list Description:

The below country list was derived from the World Bank list of LMICs as recorded in the 2011 World Development Indicators report [Accessed 14 December 2011: www.data.worldbank.org/data-catalog]. The list comprises of countries that were classified as: low income, lower middle income and upper middle income.

1. First level of search terms: Country classification, region and LMIC country name
 - a. (su(Developing Countr* OR “less developed countr*” OR “under developed countr*” OR “underdeveloped countr*” OR “under-developed countr*” OR “transitional countr*” OR “third world” OR “fragile state*” LMIC* OR LAMI*) OR
 - b. all(Africa OR Sahara OR Sahel OR Maghreb OR Asia OR Caribbean OR “West Indies” OR “South America” OR “Latin America” OR “Central America” OR “Middle East” OR Pacific) OR
 - c. all(Afghanistan OR Albania OR Algeria OR Angola OR Antigua OR Barbuda OR Argentina OR Armenia OR Azerbaijan OR Bangladesh OR Benin OR Belarus OR Belize OR Bhutan OR Bolivia OR Bosnia OR Herzegovina OR Botswana OR Brazil OR Bulgaria OR "Burkina Faso" OR Burundi OR Cambodia OR Cameroon OR "Cape Verde" OR “Central African Republic” OR Chad OR Chile OR China OR Colombia OR Comoros OR Mayotte OR Congo OR Zaire OR "Costa Rica" OR "Cote d'Ivoire" OR "Ivory Coast" OR Cuba OR Djibouti OR Somaliland OR Dominica OR “Dominican Republic” OR “East Timor” OR "Timor Leste" OR Ecuador OR Egypt OR "El Salvador" OR Eritrea OR Ethiopia OR Fiji OR Gabon OR “Gabonese Republic” OR Gambia OR Gaza OR Georgia OR “Georgian Republic” OR Ghana OR Grenada OR Guatemala OR Guinea OR Guiana OR Guyana OR Haiti OR Honduras OR India OR Maldives OR Indonesia OR Iran OR Iraq OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR “Democratic Republic of Korea” OR “North Korea” OR Kosovo OR Kyrgyzstan OR “Kyrgyz Republic” OR “Lao PDR” OR Laos OR Latvia OR Lebanon OR Lesotho OR Liberia OR Libya OR Lithuania OR Macedonia OR Madagascar OR Malaysia OR Malawi OR Mali OR “Marshall Islands” OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Burma OR Namibia OR Nepal OR “Netherlands Antilles” OR Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR Palestine OR Panama OR Paraguay OR Peru OR Philippines OR Romania OR Russia OR Russian OR Rwanda OR "Saint Kitts" OR "St Kitts" OR Nevis OR "Saint Lucia" OR "St Lucia" OR "Saint Vincent" OR "St Vincent" OR Grenadines OR Samoa OR “Samoa Islands” OR "Sao Tome" OR “São Tomé and Príncipe” OR Senegal OR Serbia OR Montenegro OR Seychelles OR "Sierra Leone" OR "Sri Lanka" OR “Solomon Islands” OR Somalia OR Sudan OR “South Sudan” OR Suriname OR Swaziland OR Syria OR Tajikistan OR Tanzania OR Thailand OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uruguay OR USSR OR "Soviet Union" OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR Viet Nam OR “West Bank” OR Yemen OR Yugoslavia OR Zambia OR Zimbabwe)
2. Second level of search terms: disaster classification and disaster type
 - a. “natural disaster*” OR “environmental emergenc*” OR “natural hazard” OR avalanche* OR earthquake* OR fire* OR flood* OR landslide* OR tsunami* OR volcan* OR catastroph* OR cyclon*OR “tidal wave*” OR tsunami* OR “coastal hazard*” OR lahar OR blizzard OR hailstorm OR hail OR storm OR “heat wave” OR heatwave OR landslide OR hurricane OR typhoon OR tornado* OR wildfire OR “wild fire” OR “wildland fire” OR “bush fire” OR bushfire OR “extreme weather event”

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3. Third level of search terms: Key “CBDRM/ DRR/ DRM related terms
 - a. CBDRM OR “community-based disaster risk management” OR “community based disaster risk management” OR “community based disaster risk reduction” OR “community-based disaster risk reduction” OR “disaster risk reduction” OR “risk reduction” OR “disaster risk management” OR “disaster preparedness” OR “disaster recovery” OR “disaster relief” OR “disaster mitigation” OR “disaster management” OR “disaster prevention” OR “disaster preparedness” OR “disaster planning” OR “disaster response” OR “climate change adaptation” OR “Hyogo Framework for Action” OR vulnerabilit* OR resilien* OR “risk planning” OR “risk analysis” OR “risk assessment” OR “risk management” OR “disaster resilience” OR “disaster loss*” OR “economic aspect*” OR “social risk management” OR “social vulnerability” OR capacity OR “coping capacity” OR “capacity development” OR “capacity building” OR “social protection” OR “indigenous coping” OR “traditional coping strateg*” OR “social capital” OR “indigenous knowledge” OR “local knowledge” OR “traditional knowledge” OR empowerment OR “public participation” OR “community planning” OR
 - b. “poverty reduction” OR microinsurance OR “micro-insurance” OR “safety net*” OR microfinance OR externalities OR “multiplier effect*” OR “opportunity cost” OR “cost benefit analysis” OR livelihood OR
 - c. “local government” OR “local authority” OR “local leader*” OR municipalit* OR “village leader*” OR “local council” OR “town* council” OR “district council”

Appendix 2.5: Inclusion-exclusion criteria

STAGE ONE: SCREENING ON TITLE & ABSTRACT			
		EXCLUDE IF....	EXPLANATION/COMMENTS
EXCLUDE ON LANGUAGE, TITLE & ABSTRACT	1	Title & abstract are not in English.	Exclude if study titles and abstracts are not in English. Exclude if no abstract is provided for the study, unless the title and key words indicate that the study could be relevant.
EXCLUDE ON COUNTRY (CONTEXT 1)	2	Not LMIC.	Exclude if not on World Bank List of low and middle-income countries. Use revised LMIC filters dated 10 January 2012 for LMIC country list.
EXCLUDE ON PUBLICATION TYPE	3	News article, editorial, comment, periodical, update, speech, book review, fiction, film, write up of workshops, symposia, artwork.	Exclude if study is news article, editorial, comment, periodical, update, speech, book review, fiction, film, write-up of workshops, symposia or artwork.
EXCLUDE ON PUBLICATION DATE	4	Publication before 1 January 1995.	Exclude all studies published prior to 1 January 1995. Include those studies published in 1995 but which address historical events that took place between 1985 and 1995.
EXCLUDE ON DISASTER TYPE (CONTEXT 2)	5	Not natural disaster.	Exclude if context of the intervention is not related to a natural disaster as identified by the author/s in title & abstract. Natural disasters include natural hazards, environmental emergencies, avalanche, earthquake, fire, flood, landslide, tsunami, tidal wave, volcano, catastrophe, cyclone, hurricane, typhoon, coastal hazard, lahar, blizzard, hailstorm, storm, tropical storm, heat wave, tornado, wildfire or bushfire. In relationship to climate change, include if study addresses planning and response to rapid-onset extreme events related to climate change but exclude studies related to long-term, slow-onset climate change events. Also exclude slow onset disasters (famine, drought), climate change, pandemics, disease outbreak, epidemics or other medical crises,

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			terrorism or civil disorder.
			<p>NB. After completing the initial in-depth mapping, it was agreed with AusAID (16 May 2012) to include those studies examining slow onset disasters. Therefore at this stage an inclusion criteria was adopted:</p> <p>Include all studies that refer to slow onset disasters</p>
EXCLUDE ON TOPIC	6	Not related to CBDRM program, intervention or activity	<p>Exclude if not related to CBDRM program, intervention or activity. Exclude if intervention focus primarily on trans-national, regional, nationwide or international programmes, activities or interventions that do not address community or local level activities in any significant way.</p> <p>Include if the study addresses disasters, disaster risk reduction, development programmes addressing disaster risk reduction, disaster risk management, participatory development activities, community or local empowerment, local, traditional or indigenous knowledge and practices. Include if the study describes the implementation, outcome or evaluation of community, local, village or micro levels of governance, organisation or institutional arrangements. Include if addresses local leadership and involvement of the local population in the design, creation, implementation and evaluation of the programme. Include if have CBDRM activities such as disaster risk assessment, mapping, early warning systems, training or participatory activities. Also include studies that address disaster risk reduction through poverty reduction strategies, microfinance, livelihood</p>

			<p>development, reducing disaster vulnerability, increasing resilience to disasters, capacity building, capacity development, improving local coping capacities or strengthening social capital.</p> <p>CBDRM definition: “Community-based Disaster Risk Management (CBDRM) is a process in which at-risk communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities. This means that people are at the centre of decision making and implementation.” (ADPC 2003; Abarquez, 2004).</p> <p>Definition of community: group of people “who engage in a particular purpose, task or function together, or who have some form of identity in common, though not necessarily associated with the same locality” (Black 2001: 9)</p>
INCLUDE BASED ON TITLE & ABSTRACT	7	If coder is uncertain, study is always kept for further review.	<i>Include</i> for further review if study title and abstract indicate potentially relevant but uncertainty exists. Only exclude if study clearly does not meet key criteria (language, LMIC, etc.)

Appendix 2.6: Mapping categories tool

Category	Notes to reviewer
Type of document [select one]	<ul style="list-style-type: none"> - Journal article - NGO report - World Bank report - Donor report - Independent research report - Master or doctoral thesis - Other
Type of study [select one]	<ol style="list-style-type: none"> 1. Theoretical/conceptual overviews (no outcomes) 2. Systematic reviews and general secondary data analysis 3. Descriptive studies (description of DRM/DRR/CBDRM implementation/intervention but no explicit outcomes) 4 Theory-practice studies (e.g. a case study used to illustrate DRR/DRM/CBDRM concepts) 5. Primary data collection which may include interviews, surveys, case studies, content analyses, that examine participants' behaviour, beliefs, perceptions, cognitive or affective processes concerning the program/intervention/practices studied) 6. Outcome evaluations (or Effectiveness Study or Intervention Study) (explicit outcomes) 7. Other/None of the above [describe briefly]
Type of research design used	<ul style="list-style-type: none"> - Qualitative - Quantitative - Mixed - Other - n/a
Level of analysis in the article relating to the research method and information relevant to CBDRM	<ul style="list-style-type: none"> - Thick analysis³ - Thin analysis - n/a
Location of DRR/DRM/CBDRM intervention being investigated urban/rural	<ul style="list-style-type: none"> - Africa; East Asia & Pacific; Europe & Central Asia; Latin America & Caribbean; Middle East & North Africa; South Asia - Specify country name - - Urban or Rural
Period of the DRR/DRM/CBDRM program being investigated [select one or more]	<ul style="list-style-type: none"> - 1985-1989 - 1990-1994 - 1995-1999 - 2000-2004 - 2005-2009 - After 2010
Type(s) of 'disaster' addressed [select one or more]	Avalanche, earthquake, fire, flood, landslide, tsunami, volcanic eruption, typhoon, cyclone, tidal wave, tsunami, coastal hazard, lahar, blizzard, hailstorm, storm, heat wave, hurricane, tornado, wildfire/bushfire, mudflow, extreme weather event, natural disaster, environmental emergency, natural hazard, catastrophe, climate related hazard, various/multiple or other.

³ A rich, detailed description of specifics (as opposed to summary, standardization, generalization, or variables)... It captures the sense of what occurred and the drama of events, thereby permitting multiple interpretations." (Neuman, L. 3rd Edition 1997 *Social research methods: Qualitative and quantitative approaches*, Allyn and Bacon: Boston, p. 347).

Principal program or sector(s) being investigated [select one or more]	<ul style="list-style-type: none"> - CBDRM classic program/ intervention - Community development program - Poverty reduction program - Economic support - Climate change adaptation - Community vulnerability assessment - Social capital - Community perceptions of adaptation - Other
Type of population(s) being investigated [select one or more]	<ul style="list-style-type: none"> - Community members - Local authorities - Service providers/services - National authorities - Civil Society Organisations - Faith based Organisations (FBO) - Other
Study focus group(s) [select one or more]	<ul style="list-style-type: none"> - Gender (male or female) - Age (<18 y - children; adults; older persons) - Disability - Ethnicity - Religion - Other grouping (homeless, low income, OVCs etc) - None of the above
Element(s) of DRM/DRR/CBDRM program highlighted [select one or more]	<ul style="list-style-type: none"> - Community capacity building - eg provide evacuation training; what to do in emergency; best place to evacuate etc. - Community early warning systems and networks - eg radio stations; local alarm systems; warning sirens; etc. - Risk communication, community awareness and disaster education programs - Pre disaster preparedness or preparation programs: includes those activities undertaken by disaster management programmes that make sure that there are sufficient resources and services available to meet the demands of the emergency situation (EMA, 1998: 88). These activities include measures to protect the physical well-being of communities such as evacuation of populations at risk, the strengthening of flood levies, the sandbagging of vulnerable businesses and houses, creation of fire breaks, etc. - Disaster response programs: address the immediate effects of the disaster, involving activities such as search and rescue, the protection of human lives as well as addressing immediate disaster survivor needs, etc. - Disaster recovery programs: repairing damage, restoring services and reconstructing facilities after disaster has struck; survivor care & assessment, psychosocial interventions; community mobilisation to reconstruct, etc. - Long-term disaster mitigation programs: more long-term strategies developed to deal with both structural mitigations which are intended to make changes to the physical or built environment as well non-structural policy interventions including mandated changes to social processes or structures that might increase vulnerability to disaster such as upgrading community buildings; building defensive infrastructure, such as planting trees, creating fire breaks, areas to put canoes, etc.

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	<ul style="list-style-type: none"> - Socio-economic support/resilience: risk sharing/pooling; community based funds; microfinance groups; microinsurance; social protection; livelihoods; (traditional) safety nets; etc. - All of the above - Other
Scale of DRM/DRR/CBDRM program [select one]	<ul style="list-style-type: none"> - Small (localised project in one community) - Medium (localised project in multiple communities) - Large (large scale project at national level) - Unclear - Other
Issues to follow up / examine more closely;	<ul style="list-style-type: none"> - n/a - open text
Other comments, insights and emerging themes.	<ul style="list-style-type: none"> - n/a - open text

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