

Post-disaster housing reconstruction in a conflict affected district, Batticaloa, Sri Lanka: Reflecting on the Climate Smart Disaster Risk Management Approach

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Strengthening Climate Resilience Discussion Paper 6

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Post-disaster housing reconstruction in a conflict affected district, Batticaloa, Sri Lanka:

Reflecting on the Climate Smart Disaster Risk Management Approach

Abstract

Sri Lanka has been the scene of waves of resettlement due to the conflict and the 2004 South Asian Tsunami. Practical Action Sri Lanka, in partnership with DESMIO, a local NGO, sought to facilitate a housing project with people with disabilities and those most vulnerable in Manmunipattu Division of Batticaloa – a conflict affected and hazard prone division.

This case study highlights the extent to which Practical Action Sri Lanka's housing intervention reflects a climate smart disaster risk management (CSDRM) approach and whether this has led to an opening of inclusive spaces and citizen engagement on disaster risk management (DRM) in a post-conflict setting.

The investigation highlights that Practical Action Sri Lanka has taken up actions which reflect elements across the three pillars of the CSDRM approach. Their participatory process of including beneficiary knowledge of local hazards and knowledge of changing climate opened up a space for local communities to participate in housing design and construction.

The process allowed beneficiaries to learn about the planning, design process and benefits through masonry training. This learning was shared across the community and with other NGOs. In addition, supporting the livelihoods of beneficiaries was a core component of their housing reconstruction intervention as seen through masonry training of beneficiaries, paid unskilled labour for construction and support for a paper production plant. The integration of actions which reflect the three pillars of the CSDRM approach was possible as a result of building on their strengths of participatory development and promoting sustainable livelihoods as well as their dedication to organisational learning and innovation.

However, more action could be taken to integrate the CSDRM approach, for example by triangulating local knowledge with weather trends, building on the capacity of local level authority, and opening up a space for linking various stakeholders and governmental scales together for information sharing and priority setting for DRM.

Key challenges in adopting the CSDRM approach include:

- A lack of downscaled global climate scenarios for Sri Lanka meaning that Practical Action Sri Lanka were unable to share information with their beneficiaries and make informed decisions on housing designs.
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- Transferring learning from the small scale demonstration project to a large scale due to a lack of capacity, skills and time pressures from donors.
- Formalising the adoption at outset of Practical Action Sri Lanka's future projects and programmes from the planning and strategy stage as tools and lessons from practice are needed.

Several recommendations have been put forward through an appreciation of lessons:

- Practical Action Sri Lanka could advocate for a space where local authorities, disaster management committees and central government structures come together with representation of local communities to learn, assess, implement and evaluate and decide on DRM policies, resource allocation and interventions.
 - Donors must seek to be transparent and provide support for interventions which take up all three pillars of the approach through a programme of work or intervention. This requires realistic timeframes and financing.
 - Practical Action Sri Lanka should seek to develop simple tools on how to identify climate data and weather trends and integrate the same into their programme and project designs.
 - Up-scaling an integrated approach to housing requires Practical Action Sri Lanka to invest in capturing the process and lessons from the integrated approach to housing reconstruction as well as sharing the process and learning with other NGOs and donors.
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Abbreviations

CBO	Community Based Organisation
CCA	Climate Change Adaptation
CCAI	Climate Change Adaptation Initiative
CCS	Climate Change Secretariat
CSDRM	Climate Smart Disaster Risk Management
DESMiO	District Economic Social Mobilisation Organisation
DMC	Disaster Management Centre
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DFID	Department for International Development
DDMU	District Disaster Management Unit in Batticaloa
GN	Grama Niladari – village level
GTZ	German Technical Cooperation Agency (Gesellschaft für Technische Zusammenarbeit)
HFA	Hyogo Framework for Action
IDP	Internally Displaced Person
IDS	Institute of Development Studies
IPCC	Inter-governmental Panel on Climate Change
MDG	Millennium Development Goals
NGO	Non-Governmental Organisation
SCR	Strengthening Climate Resilience
SRES	Special Report on Emission Scenarios
LTTE	Liberation Tigers of Tamil Eelam
MENR	Ministry of Environment and Natural Resources
NACCC	National Advisory Committee on Climate Change
NCDM	National Council for Disaster Management
TAFLOL	Task Force to Logistics and Law and Order
TAFREN	Task Force to Rebuild the Nation
TARFRER	Task Force for Rescue and Relief
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction

Executive summary

Sri Lanka has been the scene of waves of resettlement due to the conflict and the 2004 South Asian Tsunami. Practical Action Sri Lanka, in partnership with DESMIO, a local NGO, sought to facilitate a housing project with people with disabilities and those most vulnerable in Manmuniyapattu Division of Batticaloa. Manmuniyapattu Division was chosen as a site as it faces numerous risks and hazards through violent conflict, increased temperatures and drought, increased rainfall and floods, and strong winds and cyclones.

The aim of the approach was to demonstrate how a housing intervention could promote beneficiary participation, disability access, cost effectiveness and sustainable housing design. Together this holistic approach sought to provide opportunities for people with disabilities to be recognised as a key part of society. A total of sixteen houses were built between 2006 and 2007 alongside livelihoods support activities and awareness raising for the rights of people with disabilities. This is amidst the context of a newly emerging DRM and climate change adaptation policy framework elaborated through the Disaster Management Centre (DMC) and Climate Change Secretariat (CCS).

This case study highlights the extent to which Practical Action Sri Lanka's housing intervention reflects a climate smart disaster risk management (CSDRM) approach and whether this has led to an opening of inclusive spaces and citizen engagement on disaster risk management (DRM) in a post-conflict setting.

The climate smart disaster risk management approach reflected

The post-disaster reconstruction housing project reflects an integrated approach through areas of action under the three pillars of the CSDRM approach (see page 44)

Key actions incorporated by Practical Action Sri Lanka in the housing project that reflects a climate smart disaster risk management approach.

- ✓ Use climate, weather and local information to tackle people's exposure to risks.
- ✓ Continually learn and reflect with partners and other stakeholders about the best approaches given changing hazards, vulnerability, exposure and capacities.
- ✓ Manage increasing uncertainty by working in partnership to build the capacity of people, communities and organisations to adapt to unexpected events in both the short and long-term.
- ✓ Build partnerships with the development community to ensure interventions to manage disaster risk also help to tackle the underlying drivers of vulnerability and poverty.
- ✓ Ensure that disaster risk management and development interventions are environmentally sustainable and do not unnecessarily emit greenhouse gases, something that will ultimately worsen people's vulnerability.

Pillar one: tackle changing disaster risks and uncertainties

The participatory nature of Practical Action Sri Lanka's housing project meant that beneficiaries were brought into assessing the hazards and identifying the design features needed as well as were brought into the construction process. The participatory housing design methodology sought beneficiary knowledge through: structured and semi-structured interviews; modified participatory and vulnerability mapping and participatory rural appraisal; field observations; focus group discussions and the inclusion of building regulations, donor technical specifications and beneficiary specifications as well as hazard mapping of the individual sites.

The most common hazards identified were annual flooding, droughts, gales, cyclones and increased temperatures. Several design features were incorporated to protect beneficiaries from identified hazards. The plinth levels were raised on sites prone to flooding and fired clay bricks were used to withstand floods. The 2004 flood was the worst that beneficiaries had experienced and became a baseline to which a further six inches was added to ensure

flood waters would not enter their homes. This six inch leeway was not derived from information on future rainfall patterns as there are no rainfall predictions available through the Meteorological Department. Despite the lack of climate science predicting rainfall, for the past five years since the construction of the houses, none of the beneficiaries faced any water intrusion, even during the December 2007 floods which resulted in large displacements of people in the same district. Clay tiled roofs with required pitch and anchoring have been able to withstand moderate gales during south west monsoon and the rat-trap bond technique has been used to keep houses cooler during hot drought months.

The intervention of Practical Action Sri Lanka was a key element in devising appropriate housing to withstand hazards as well as to include features such as shrine rooms, wheelchair ramps, lowered electricity sockets, and shop fronts in order to address beneficiaries needs to practice their faith, gain easy access to their houses, reach light and power switches and run small business from their homes (when located centrally). This participatory process of including beneficiary knowledge of local hazards and knowledge of changing climate opens up a space for local communities to participate in housing design and construction which affects their security and livelihoods.

A CSDRM approach calls for a regular triangulation of local experiences of changing disaster risks with evidence from the climatological and meteorological communities as climate change means that disaster risks can shift. Practical Action Sri Lanka created a space for beneficiaries to actively participate in the mapping of hazards and to choose appropriate design features, however, they could have also actively sought meteorological information regarding flood and temperature trends to ensure the sustainability of the housing design. They have now taken up this practice in their current Housing Assistance to Long Term Conflict Affected Internally Displaced Peoples (IDPs) in Vavuniya where they will support the construction of more than 3,000 owner driven houses.

Pillar two: enhance adaptive capacity

The participatory housing design process allowed beneficiaries to learn the planning, design process and benefits through masonry training and this learning has been shared across the community where certain design features have been incorporated into private housing. Practical Action Sri Lanka also trained French Red Cross masons to use these new technologies. However, cultural perceptions were not overcome and their attempt at scaling up was not fully successful as some masons plastered the walls upon beneficiaries' request instead of leaving fair-faced brick work, which allows the house to breathe better.

Certain design features, which were shared through this intervention came through Practical Action Sri Lanka's involvement in updating the Post-Tsunami Reconstruction Guidelines of the National Housing Development Authority. Integrating learning from the guidelines meant that they used tie beams and connectors for roof support in order to withstand strong seasonal winds and localised gales. Learning across projects has been possible through learning mechanisms inside of Practical Action Sri Lanka.

Project managers share lessons through evaluation exchanges and lunch hour seminars provide a space for learning across the organisation. There is also an exchange of knowledge across Practical Action country and regional offices and headquarters, demonstrated through Practical Action HQ collecting experience from country offices to build their latest 'Vulnerability to Resilience Framework', which seeks to integrate climate change into their vulnerability reduction work. Practical Action has been able to strengthen its ability as well as beneficiaries and other NGOs working in housing reconstruction to experiment and innovate new ways of creating sustainable housing based on beneficiary participation to tackle changing disaster risk and uncertainties.

Pillar three: address poverty and vulnerability and their structural causes

In addition to PA's strengths on organisational learning, the organisation has demonstrated a commitment to livelihoods promotion and vulnerability reduction. Supporting the livelihoods of beneficiaries was a core component to the participatory housing construction

adopted by Practical Action Sri Lanka and DESMIO. A paper production plant was funded for part-time employment opportunities as was the inclusion on beneficiaries into the housing construction through masonry training, unskilled labour opportunities and payment for meal preparation for labourers. Social assets were also increased along economic assets as the process of bringing together Sinhalese masons to train local Tamil beneficiaries, facilitated exposure across ethnic/religious divides. The intervention also protected beneficiaries from violence from politically influential armed groups.

Environmentally sustainable practices, such as the rat-trap bond technique requires less cement and provides cooler indoor temperatures leading to less energy consumption to keep houses cool. Considering the environmental impact of their housing reconstruction project was a conscious effort by Practical Action Sri Lanka though the positive outcome of lower carbon emissions through sourcing local materials is now being recognised and factored into current housing project in Vavuniya.

Challenges for developing CSDRM

Several challenges exist in developing the CSDRM approach at the local level for housing reconstruction in a post-conflict setting.

i. A key gap in adopting the CSDRM approach into Practical Action Sri Lanka's housing reconstruction is triangulating local knowledge of hazards with meteorological and climate science predictions. The lack of downscaled global climate scenarios for Sri Lanka means that non-governmental organisations (NGOs) like Practical Action are unable to share information with their beneficiaries and make informed decisions to housing designs (such as plinth levels).

ii. Promoting integration of the three pillars in a post-disaster reconstruction project at a large scale is a challenge. The Housing Assistance to Long Term Conflict Affected Internally Displaced People's project in Vavuniya is facing limitations in transferring learning from the demonstration project to a large scale because of a lack of capacity of the construction environment, a lack of skills of technical personnel and time pressures from donors. Time pressures mean that owners do not have time to learn new technologies available and the inability to train local masons to incorporate these technologies. The large scale housing project requires a technology which is familiar to local tradesmen who are in high demand. Post-disaster situations are not an ideal time to promote alternative technologies that require training and new knowledge. Also, a holistic approach to housing requires a combination of skills and commitment which comes through long-term engagement. The CSDRM approach is a process that may not be able to be implemented quickly and deliver immediate results but requires a shift in practice through cumulative actions. This requires that funders understand the shift from intervention thinking to supporting an approach.

iii. As integration of climate information alongside building adaptive capacity and supporting livelihoods is beginning at PA, formalising this in the outset of Practical Action Sri Lanka's future projects and programmes from the planning and strategy stage will help to develop a process tools to integrate the CSDRM approach into a post-disaster and post-conflict setting.

Key lessons for policymakers and practitioners

a) For the CSDRM approach to be effective, the third pillar on accountability, rights and equity require planned citizen engagement and linkages with local authorities from the outset of a DRM intervention. The CSDRM approach requires a system which brings local level realities into decision-making at all levels and which in practice requires a real commitment to the value of participation and equity. The divide between those who control decision-making for DRM policies and implementation and marginalised communities of Tamils and Muslims who face hazards and exposure has not been closed through PA's housing intervention as there was a failure to influence government DRM structures and policies at the time of the intervention. Currently a coordination mechanism has been set up through the DMC though Practical Action Sri Lanka's ability to influence DRM policy is questionable as the DMC, despite its strategy, remains a highly centralised structure. For example, resources are being spent on district mapping in relation to cyclones and tsunamis rather than floods and droughts which

are more frequent and destabilising. With better linkages between the DMC structures and other government structures, such as the Divisional Secretariat and the local authority, there could be increased representation of local needs in budget allocation for DRM interventions. Practical Action Sri Lanka could advocate for a space where local authorities, DMC and central government structures come together with representation of local communities to learn, assess, implement, and evaluate and decide on DRM policies, resource allocation and interventions.

b) A lack of donor transparency, together with centralised governmental powers and a lack of policy enforcement create little incentive to seek out or implement policies or interventions that promote the CSDRM approach. The CSDRM approach highlights the need for flexible governance structures, which plan for disturbances and are accountable. Donors must seek to be transparent and provide support for interventions, which take up all three pillars of the approach through a programme of work or intervention. This requires realistic timeframes and financing.

c) Practical Action Sri Lanka has built on its strength of promoting adaptive capacity by creating opportunities for learning and sharing, as well as developed strong livelihoods support and vulnerability reduction programmes. Building on these strengths means that Practical Action Sri Lanka should seek to develop simple tools on how to identify climate data and weather trends and integrate them into their programme and project designs. The 'Vulnerability to Resilience Framework' is a step in the right direction at the conceptual level, but tools for implementers – for the housing project manager for example – on how to triangulate local knowledge with climate and weather data would help to further tackle changing disaster risk and uncertainty.

d) Up-scaling an integrated approach to housing requires Practical Action Sri Lanka to invest in capturing the process and lessons from the integrated approach to housing reconstruction as well as sharing the process and learning with other NGOs and donors. In this way Practical Action Sri Lanka would have increased leverage to influence donor timeframes for post-disaster reconstruction projects with documented details of their approach and evidence of positive outcomes at hand.

1. Introduction

Climate change, conflict and disasters are leading to insecure livelihoods for many. This range of drivers of vulnerability and risk has led to manifold responses through climate change adaptation (CCA), disaster risk management (DRM) and development. As O'Brien et al state, there are 'separate frameworks within the same meta-narratives' (2008: 18). These separate responses and frameworks are now beginning to converge as there is recognition that for DRM to be effective there is a need to consider the changing risks posed by climate change and the long term drivers of vulnerability.

More attention has been paid to converging DRM and climate change adaptation agendas at the national and international levels. This has been formalised at the international level through the 2005 Hyogo Framework for Action (HFA) which includes adaptation as a component of the global response to disaster risk reduction (Mitchell et al 2010). Mitchell et al, trace the recent evidence of integration between DRM and adaptive practices through international agreements, the financial mechanisms, national policy, and knowledge domains and practice on the ground. Within this environment of convergence, there is an opportunity to build a climate smart disaster risk management (CSDRM) approach. However, mechanisms for responding to climate change and disaster risk tend to be biased toward supporting countries with effective and accountable national risk governance systems, which are able to clearly articulate their needs to international processes. A number of countries have shifting risk governance capacity and are either recovering from or experiencing violent conflict and are not in a position to request financial resources.

Presently, the linkages between disaster risk, climate change and conflict are poorly understood, particularly in terms of effective response measures to deal with climate change and elevated disaster risk in these environments. Through a case study of Practical Action Sri Lanka's work in post-disaster housing reconstruction in Batticaloa, the concept of CSDRM can be investigated in a post-conflict environment. The study examines to what extent integrating the three pillars of the CSDRM approach– tackle changing disaster risk and uncertainties, enhance adaptive capacity and address poverty and vulnerability and their structural causes– help to promote positive development outcomes in the context of Sri Lanka's conflict-inscribed disaster risk. Furthermore it seeks to explore whether adopting characteristics of CSDRM leads to an opening of inclusive spaces and citizen engagement on DRM policies in a post-conflict setting.

The paper begins with an analysis of the key concepts, which make up the CSDRM approach. A review of the concept of vulnerability and its four dominant approaches highlight that the predominate understanding of vulnerability by the DRM community is based on a mixed approach, which sees vulnerability as an interrelationship between economic, social, political and biological drivers of vulnerability. Following the concept of vulnerability is that of adaptive capacity. The need to understand how to operate in complex and increasingly uncertain realities, as well as recent climate change adaptation work, has led to a renewed focus on notions of resilience. A brief review of resilience literature highlights ten characteristics, which promote adaptive capacity. Along gaining insights from the resilience literature, which underscores systems thinking, is the idea that DRM should be understood as a political process. A discussion on conflict and space highlights that power is embedded in spaces and that creating a space to influence decision-making processes is crucial for influencing power structures, which affect peoples' lives.

Section three of the paper describes the three pillars of the climate smart approach: tackle changing disaster risk and uncertainties; enhance adaptive capacity; and address poverty and vulnerability and their structural causes. Section four explains the research methodology used and how the climate smart approach has acted as a framework to guide interview questions around each of the pillars.

Following the methodology is an overview of the local context of Sri Lanka and Batticaloa District. Investigating how Practical Action Sri Lanka has reflected characteristics of the climate smart approach in a conflict affected country, it is crucial to discuss current climate

hazards, the history of internal displacement and violence; as well as the current DRM policy architecture. This provides a background in which to situate Practical Action Sri Lanka's post-disaster housing reconstruction efforts in Batticaloa, a conflict- and tsunami-affected district of Sri Lanka.

Section six investigates how the Practical Action Sri Lanka housing project reflects characteristics of the climate smart approach by examining evidence against the three pillars. The evidence suggests that the Practical Action Sri Lanka housing intervention reflects many of the characteristics of the climate smart approach, yet has room to fully integrate the approach based on their strengths.

Section seven provides a discussion of the opportunities, which adopting a climate smart approach creates as well as highlights the enabling environment, which has supported these actions. Furthermore, a discussion of the challenges posed by adopting the approach is explored through: scalability; weak government institutions; lack of access to decision-making; and lack of linkages across scales. Together this provides evidence to answer the central research question as to whether promoting actions which reflect a climate smart approach can open up a space for citizen engagement in political processes such as DRM and reduce marginalisation faced by Tamil and Muslim communities in the east of Sri Lanka. The final section of the paper provides a summary of how Practical Action Sri Lanka's intervention reflects characteristics of the approach by highlighting the actions under each of the three pillars. Finally, the paper ends with key recommendations in applying a climate smart approach to a conflict affected context.

2. Key concepts: building the climate smart disaster risk management approach

This study's starting point was a review of key concepts applied in DRM and CCA as well as a review of the literature on climate change, conflict and natural disasters. The key concepts which emerged from the literature include: vulnerability; adaptive capacity; and spaces.

2.1 Vulnerability and risk

Risk is understood as the probability of damage and losses resulting from the interactions between natural or human induced hazards and vulnerable conditions (UNISDR 2004). Disasters produced as a result of an environmental hazard also reflect development challenges (Wijkman and Timberlake 1984). Vulnerability is a broad concept approached through numerous disciplinary entry points. Exploring biophysical, political and economic approaches, and the social production of vulnerability is useful to understand an integrated approach to vulnerability which disaster risk management is currently based upon.

These approaches to vulnerability are quantifiable and based on: the nature of the physical hazard; the likelihood or frequency of occurrence of the hazard; the extent of human exposure to the hazard and the sensitivity of system to the impacts of the hazard (Brooks 2003). From an environmental entry point, vulnerability is 'is a function of the degree to which humans violate ecological principles which maintain stability within the system' (Dow 1992). The result of this instability – vulnerability – has recently been determined through damages or 'end points of a sequence of analyses beginning with projections of future emission trends, moving on to the development of climate scenarios, thence to biophysical impact studies and the identification of adaptive options' (O'Brien et al 2004). These approaches to vulnerability highlight the physical and natural determinants which exist in a system. These approaches stand in contrast to the other approaches below as they do not look at underlying drivers from outside of the physical environment such as economic, political or social determinants.

In addition to biophysical and environmental determinants of vulnerability are political and economic determinants. Within the literature, these are based on access to assets (Alwang, Siegel and Jorgsen 2002) and entitlements (Adger 2006), political and economic power (McLaughlin and Dietz 2008) and institutions and institutional structures (Dow 1992). Overall these approaches highlight that the extent to which one is entitled to make use of and have access to resources, political and economic power determines one's ability to cope with and adapt to disasters.

Linked to these approaches of vulnerability are theories on social production of vulnerability. These highlight cultural, social and demographic determinants within the system: how society functions and how relationships are structured determines vulnerability. Through an analysis of famines in India during the 19th century, Brookfield argued that society interacted with natural systems and that hazards had differentiated impacts based on social groupings. Thus interacting with a hazard, it is 'social vulnerability that produces an outcome' (Brooks 2003).

Although there is no single or correct concept of vulnerability as seen above, the DRM literature is grounded on the progression of vulnerability model which integrates biophysical, political and economic, and social determinants of vulnerability (Wisner et al 2004). Wisner's work on the progression of vulnerability has been influential to DRM and adaptation literature as it asks one to consider the roots causes of vulnerability, the dynamic pressures and the unsafe conditions that interact with hazards. Root causes of vulnerability include an interaction of social, political, economic and most recently, climatic processes. Limited access to power, structures and resources hinder one's ability to manage risk. Dynamic pressures interact with these root causes of vulnerability through a lack of economic and social structures, such as local markets and mechanisms for learning. Trends such as urbanisation, economic crisis at the global level, adverse agrarian trends, natural resource degradation, conflict and climate change are processes which drive vulnerability and create impoverishment. In addition, with climate change posing risks and increasing uncertainty,

it is important to include high carbon growth as a driver to vulnerability which will have differentiated impacts.

Along with considering root causes and dynamic pressures, it is also important to address unsafe conditions (Wisner et al 2003). Unsafe conditions are the 'specific forms in which the vulnerability of a population is expressed in time and space in conjunction with a hazard' (p.55). Dimensions of unsafe conditions includes: the fragile physical environment (dangerous locations, buildings and infrastructure); the fragile local economy (livelihood strategies); social relations (marginalised groups at risk; lack of local institutions); public actions and institutions (lack of disaster preparedness; prevalence of endemic disease) and how climate change is impacting these dimensions through exposure to risk and uncertainty. The immediate impacts of climate change, through exposure to hazards, risk and uncertainty is interacting with the social causation of disasters. Climate change is having an impact on exposure dimensions and social systems are creating condition in which the hazards affect various groups in society differently (ibid p.92). People who have been displaced as a result of violence and live in marginalised districts are most vulnerable. It is clear that unsafe conditions are interlinked with the root causes and dynamic pressures of vulnerability.

Through a DRM entry point, addressing vulnerability has primarily been centred upon disaster response although it also includes disaster prevention, preparedness and recovery. Increasingly assessment tools are being applied to uncover key processes which drive local vulnerability and to identify local capability and resources to manage and counteract these processes. Concepts of adaptive capacity have become central to the climate change adaptation literature as a result of increased uncertainty, risk and vulnerability.

2.2 Adaptive capacity

Adaptive capacity can be understood as our ability to manage change in a sustainable manner. Promoting adaptive capacity for social systems means that institutions and networks learn and use knowledge and experience, create flexibility in problem solving and balance power among interest groups. Through a review of fifteen different papers on resilience (Aditya et al 2010), key characteristics which promote adaptive capacity perspective include:

1. High levels of diversity: ecological diversity; stakeholder diversity; livelihood diversity; diversity in planning, response and recovery activities (Folke 2006; Holling 1973; Resilience Alliance, Carpenter et al 2001).
2. Flexible, and effective institutions.
3. Accept non-equilibrium: institutions must be seen as legitimate, inclusive and effective in delivering goals. Furthermore they must be flexible and reflect the needs of the local community, provide opportunities for learning and experimentation (Folke 2006; Rockefeller 2009; Ostrom 2009; Dovers and Handmer 1992; Osbahr 2007). Similarly, institutions must accept non- equilibrium as disturbances may cause change in the relationship between components of the system (Folke 2006).
4. Cross scalar perspective: interconnectedness between various components of the system through networks which transcend scale (Nelson et al 2007).
5. Integrating uncertainty: through a memory of past disturbances (shocks and stresses) and the existence of protocols that determine action in the face of disturbance (Holling 1973).
6. Ensuring community involvement: participation in decision-making, ownership of resources and use of indigenous and local knowledge (Manyena 2006; Manyunga 2007; Ostrom 2009; Nelson et al 2007; Dover and Handmer 1992; Berkes 2007; Osbahr 2007).
7. Promoting learning: iterative processes and organisational learning that promote adaptive capacity. Consider a range of plausible hypotheses about future change in the system, weigh range of possible strategies and favour actions that are robust to uncertainty (Gunderson and Holling 2001).
8. Promoting equity: gauging, sharing and distributing risk from disturbances (shocks/ stresses) (Nelson et al 2007).
9. Social values and structures: moral and ethical standards regarding how to behave in groups, norms of reciprocity, sufficient trust lead to lower transaction costs in reaching agreements and lower costs of monitoring (Ostrom 2009).
10. Preparedness, planning and readiness: accepting that change and disturbances

will occur and preparing and planning for failure through system failure scenarios (Rockefeller Foundation 2009).

Of the ten characteristics two seem to offer new insights for DRM practice: integrating uncertainty and accepting non-equilibrium. Understanding that climate change is increasing uncertainty through climate variability and changes in hazards, means that one can prepare by incorporating this uncertainty into the way one works. Tools such as scenario planning, creating room for innovation and flexibility and reviewing strategy will help to deal with uncertainty. Accepting non-equilibrium means that one needs to accept a view of the world that is constantly shifting and dynamic and that one's ways of living and working in this changing system must be flexible. This requires a shift from creating stability towards a more fluid way of working.

2.3 Spaces: conflict and natural disasters

In addition to the concepts of vulnerability and adaptive capacity is the concept of space. Violence and 'natural' disasters are spatial phenomena, in their material and imaginative spatialities (Pelling 2003; Wisner et al 2004; Flint 2005; Gregory and Pred 2006). Geographers have studied various aspects of the relationships between environment and conflict, but 'natural' disasters and armed conflicts have received relatively limited attention (Pelling 2003; Wisner et al 2004; Flint 2005; Gregory and Pred 2006; Le Billon and Waizenegger 2007). Much less emphasis has been placed on investigating how conflict affects the space for effective disaster risk management interventions across different development sectors.

The literature on the relationship between the environment and conflict is centred upon scarce natural resources (Homer-Dixon 1999). The effectiveness of institutions to respond to the climate shocks and variability will determine the response to meeting the challenge of shifting resources and disaster events (Lind et al 2010). A response which exacerbates social inequities and root causes of vulnerability could promote violence, whereas institutions which manage the complex relationships between political, economic and social processes may promote positive adaptive practices. According to Salehyan (2008: 320): 'if climate change and resource scarcity lead to warfare, then the lack of ingenuity and proper planning – at the local, national and international levels – is to blame'. Thus, the emerging literature on the linkage between conflict and climate change is pointing to the need for analysis that is sensitive to the complex relationships between the political, economic and social processes which promote peoples adaptation to disasters, conflict and climate change challenges.

To contribute to filling the gap in the literature, this case study starts from the analytical position that adaptation and DRM are political processes and need to be investigated as such. Therefore the case study sets out to uncover whether promoting a climate smart approach to DRM the intervention can open up a space for citizens to inform political processes. The importance of 'space' is captured by Gaventa who states that spaces are 'opportunities, moments and channels where citizens can act to potentially affect policies, discourses and decisions and relationships that affect their lives and interests' (2006: 26). In addition, 'democratic spaces' exist where citizens have the opportunity to be part of decision-making, can claim citizenship and affect governance processes. The concept of space focuses on whether citizens have an opportunity to affect policies, such as DRM policies, which affect their security, livelihoods and power.

According to Hayward, power is related to space through 'a network of social boundaries that that delimit fields of possible action' (Hayward 1998: 2). Power can be visible, hidden or invisible. An example of visible power can be seen in terms of the control of DRM policies, through militarised involvement, and control of the site of development intervention. Hidden power is less obvious, it includes individuals and institutions controlling the agenda and who is involved in the process of decision-making. Invisible power can be the most threatening as it ensures that issues are not able to be discussed in the public realm or do not even surface into public consciousness. By controlling what people think about and how they think about it, this level of power shapes people's beliefs and values.

Thus, the concept of space highlight not only one's ability to participate in spaces where

important decision-making takes place, but also underlines whether one has the opportunity to define and shape the space in which decision-making takes place (Gaventa 2006). In a conflict-affected country such as Sri Lanka where democratic spaces have been restricted, it is useful to uncover when opportunities exist for DRM interventions to promote a space where citizens can be part of decision-making processes which affect their lives.

Recognising the need to bring the concepts of vulnerability, adaptive capacity and space together in a holistic manner, the climate smart DRM approach is comprised of three key pillars. This integrated approach is employed to analyse whether Practical Action Sri Lanka's housing project exhibits characteristics of the CSDRM approach (see page 44) and whether by doing so it can promote a space for citizens to inform political spaces, such as DRM interventions.

3. The climate smart disaster risk management approach

As highlighted above, the CSDRM seeks to provide a holistic yet practical approach for considering how to improve DRM interventions for better development outcomes. The CSDRM approach (see page 44) has been developed through extensive consultation with practitioners, policymakers and academics concerned regarding the impact of climate change on disasters with more than 500 people actively feeding into this process.

The approach has been developed through a review of other approaches on disaster risk management and seeks to avoid duplication. Rather it builds on the emerging concepts and approaches with a focus on the HFA and the Characteristics of a Disaster-Resilient Community: a guidance note (Twigg 2007). The five priority action points from the HFA are embedded throughout the approach with a new dimension of integrating uncertainty by considering climate and weather information as well as traditional knowledge. The Characteristics by Twigg have highlighted the need to consider components of resilience as well as thematic areas such as: governance; risk assessment, knowledge and education; risk management and vulnerability reduction, and disaster preparedness and response. It also provides detail on enabling environments for the themes. This is helpful in identifying practical action for change at the community level. The innovation of the CSDRM approach is that it: can be used from the local to regional scales, it firmly integrates climate change and uncertainty; it provides an integrated approach in a clear and straightforward manner for practical change to DRM practice.

A draft CSDRM approach was built through a review of key DRM, development and climate change adaptation frameworks and issues through literature reviews on: resilience (Aditya et al 2010); convergence of DRR and climate change adaptation (Mitchell et al 2010); and low carbon development and DRR (Urban and Mitchell 2010). The approach seeks to avoid duplication. An expert writing workshop in February 2010 in the UK began the consultation process which gathered researchers, policymakers and civil society partners to rework the first draft of a climate smart DRM approach. These consultations occurred during meetings in 11 programme countries aimed at sharing experiences of integrating climate change into DRM practice. These experiences were gathered and practitioners were asked to present their work through regional consultation meetings in South Asia, South East Asia and East Africa in light of the evolving CSDRM approach and to test its clarity and begin to discuss its use for programming and policy. Each regional consultation has seen a revised and updated version of the approach based on the feedback received through active workshop sessions. Alongside the more than 500 people consulted through national and regional consultations, the approach has been developed through in-depth interviews during fieldwork in Cambodia (Polack 2010), India (Hedger et al 2010) and Sri Lanka (Ibrahim 2010) which aimed to identify to what extent the CSDRM approach enhances development practice in a changing climate. The case studies have also sought to test the emerging approach at different spatial scales – regional, district level and local.

The CSDRM approach is a way of ensuring disaster risk management activities are sustainable in a changing climate. In practice, CSDRM provides a guide to strategic planning, programme development and policymaking and helps to assess the effectiveness of existing DRM policies, projects and programmes in the context of a changing climate. It consists of actions and guiding questions that directly respond to the affects of climate change on disaster risk – by understanding and acting on changing hazards, managing increasing uncertainty and addressing the drivers of vulnerability. To respond to the effects of climate change on disasters risk, the CSDRM approach (see Figure 1, inside overleaf) incorporates three pillars:

1. Tackle changing disaster risk and uncertainties.
2. Enhance adaptive capacity.
3. Address poverty, vulnerability and their structural causes.

3.1 Pillar one: tackle changing disaster risk and uncertainties

The first pillar highlights the learning from the HFA and builds in the fact that climate change awareness is imperative throughout the five action areas which are: make disaster risk reduction (DRR) a priority; know the risks and take action; build understanding and

awareness; reduce risk; be prepared and ready to act (HFA 2005). The key innovation in improving DRM practice is by creating a process whereby linkages to local experiences of changing disaster risks is brought together with the evidence of the climatological and meteorological community. This pillar asks the DRM community to consider whether their process of assessing risk, vulnerability and capacities creates linkages and synthesises knowledge from communities, climate scientists and meteorologists. This process, which seeks to promote linkages between the different stakeholders and triangulates and synthesises findings to identify trends of change, is a key element of beyond business-as-usual and a move towards a climate smart approach. Pillar One (see CSDRM, page 44), highlights the five areas of action from the HFA while incorporating climate awareness.

3.2 Pillar two: enhance adaptive capacity

Pillar Two has been fashioned out of the learning from the literature on resilience, outlined above. The ten characteristics are included throughout the climate smart approach to DRM. The characteristics of resilience which promote adaptive capacity also share three characteristics with dimensions of Pillar One. Promoting equity and social values, preparedness, planning and readiness is also embedded through considering how the physical environment, the local economy, social relations and institutions need to respond to exposure to hazards and prepare for uncertainty. Pillar Two, Enhance Adaptive Capacity, pulls out key characteristics which have not been touched upon through the other two pillars. These include: creating flexible and effective institutions; promoting learning, adopting a multilevel perspective; and considering greater uncertainty. Pillar Two thus highlights four characteristics of resilience which promote a departure from business-as-usual in DRM practice by promoting adaptive capacity in the face of increased uncertainty.

3.3 Pillar three: address poverty and vulnerability and their structural causes

Pillar Three seeks to incorporate elements from the progression of vulnerability model above, as well as the concept of space. It does this by imbedding equity and access to resources and structures, along with accountability and transparency within the components, indicators and guiding questions. Furthermore, this pillar has been informed by the millennium development goals (MDGs) and has synthesised the goals and incorporated a consideration of access to economic structures, health and education services. In addition, Pillar Three incorporates the far right and left elements from the continuum of adaptation: the need to address drivers of vulnerability and the need to confront climate change (McGray et al 2007: 18). (The middle elements of the continuum – building response and managing risk – are already included in Pillars One and Two). Finally, Pillar Three underlines the importance that DRM interventions and policies must promote carbon stewardship and sustainability by conducting environmental assessments and considering the carbon emissions of any intervention. As a means of testing the CSDRM approach, it has been applied to a Practical Action Sri Lanka's post-tsunami housing reconstruction in Batticaloa.

4. Methodology

The CSDRM calls for an integration of the three key pillars above in the design and analysis of disaster risk management interventions. National and sub-national disaster risk managers, whether policymakers or practitioners, can use the CSDRM approach to inform policy, programme and project design and to evaluate the effectiveness of existing initiatives. It is designed to be used across different scales and can be tailored to specific national, sub-national or local contexts. The approach can be used to guide planning and evaluation of existing DRM policies, projects or programmes. It is not a manual or a checklist against which to rate one's DRM intervention.

Policymakers, practitioners, and academics can use this integrated approach to inform future policy design, field work and concepts. The approach can help guide policymakers, practitioners and academics working in DRM through discussion with staff working through the action points and guiding questions. The CSDRM can be used at various points within policy formation and project cycles and can be most effective in policy review and project planning. This CSDRM can be linked to specialised guides on how to implement action points included in the approach such as the vulnerability and capacity assessments (CARE 2008) or climate change information for effective adaptation: a practitioner's manual (Potsdam Institute for Climate Impact Research and GTZ 2009).

The reconstruction project through Practical Action Sri Lanka in Batticaloa was chosen to test the approach for three key reasons: it is in a conflict affected area of Sri Lanka; it is exposed to hazards such as droughts, flooding (see Appendices One and Two), and was tsunami-affected and demonstrates at least two areas of action under the CSDRM approach. These criteria were used for site selection and partnership was built with Practical Action Sri Lanka to investigate their work in Batticaloa. The guiding questions from the CSDRM approach were tailored to inform interview questions used to gather evidence about Practical Action Sri Lanka's housing project in Batticaloa in relation to the CSDRM approach. More than twenty in-depth interviews were conducted with Practical Action Sri Lanka staff, meteorological services, government officials, and beneficiaries in Colombo and Batticaloa. This field research was supplemented by secondary literature to provide background context to the post-disaster housing reconstruction intervention.

5. Setting the scene: background context to the housing intervention

Before turning to the case study of Practical Action Sri Lanka's work in post-disaster housing reconstruction in Batticaloa, and uncovering the extent to which combining the three pillars of climate smart approach to DRM can help promote positive development outcomes and create a space for citizen participation, it is important to provide some context to the case by looking at climate hazards in Sri Lanka, internal displacement and the 30-year conflict, and the climate change and DRM policy architecture.

5.1 Climate change and hazards

The UN International Strategy for Disaster Reduction (UNISDR) risk model, which assesses a country's exposure to natural disasters in terms of mortality and economic losses, has placed Sri Lanka in a medium risk category. Currently, the seven most frequently reported disaster events in Sri Lanka are: animal attacks, fires, floods, extreme wind events, landslides, lightning and droughts (UNDP 2009). Global warming is expected to lead to a rise in sea level, higher temperatures, more frequent and prolonged drought, high intensity rainfalls and increased thunder activity and tornadoes (Meteorological Department Sri Lanka 2000). The Disaster Management Centre has collected data from 1974–2007 and described the trends for major hazards (see Appendix One for trends for flooding and drought).

The impact of sea level rise could lead to flooding for low lying coastal settlements and wetlands. The Meteorological Department of Sri Lanka have used the special report on emission scenarios (SRES) proposed by the Intergovernmental Panel on Climate Change to estimate what rainfall and temperatures would look like in future years. They predict that monsoon rainfall is projected to increase by the year 2025, and the mean temperature is projected to rise by between 2.5–2.9 degrees centigrade. These climate change impacts could affect agriculture, water resources, land use, health and energy sections. Adaptation measures like rain water harvesting and de-silting of minor tanks have been recommended by the Department of Meteorology (website, downloaded March 26 2010). This general climate information for Sri Lanka has not been translated into district level impacts of climate change, especially for the east of Sri Lanka where conflict has affected weather data gathering.

5.2 Internal displacement and violence

The housing project initiated through Practical Action Sri Lanka and their local partner must be understood within the context of ongoing displacement and violence. The following is a brief overview of the conflict as an in-depth review of the 30-year conflict is not possible here. Sri Lanka gained its independence from Britain in 1948, with parliamentary democracy style government system. Tensions between ethnic groups which were created through the British colonial rule became institutionalised with laws passed by nationalists from the Sinhala majority making Sinhalese the official language. Further, the 1972 Constitution gave Buddhism 'foremost place' in the state, marginalising Tamils and Muslims (Conciliation Resources 1998: 78). As a result, the 1980s witnessed the rise of militant politics with the Liberation Tigers of Tamil Eelam (LTTE) emerging in the late 1980s as a dominant separatist group. They employed a strategy of guerrilla warfare on the central government and claimed land in the north and east of Sri Lanka. Various peace efforts followed (1987, 1994) but failed and in 2000 violence escalated with the LTTE gaining more lands in the north and east (International Crisis Group 2010).

With the election in 2001 of the new Prime Minister Ranil Wickremasinghe, the new government negotiated a ceasefire in 2002. The LTTE withdrew from negotiations in April 2003 due to their exclusion from meetings with international donors and the lack of government cooperation (ibid). A proposal for an interim Self Government Authority was put forth by the LTTE in October 2003 to provide the basis for new negotiations. Several factors led to another collapse of the ceasefire, new elections in 2004, a split from the LTTE by the eastern Commander and violence between the factions.

With the 2004 tsunami came short-lived cooperation between the LTTE and the government

Box 1: Key dates for disaster risk management and climate change policy in Sri Lanka

2005 Sri Lanka Disaster Management Act No. 13

2006 Ministry of Disaster Management and Human Rights was created as a separate Ministry with the National Council for Disaster Management.

2002 Ministry of Environment and Natural Resources set up a climate change unit and secretariat.

2005 Towards a Safer Sri Lanka, Road Map for Disaster Risk Management, Volume 1. Towards a Safer Sri Lanka, Road Map for Disaster Risk Management Volume 2- Project proposals.

2010 Revisions to take place to the Road Map to formally integrate climate change.

2010 Elections: re-organising of Ministries, now Ministry of Environment and the DMC

(Muggah 2009). Increased violence by the LTTE on police and army in the north and east was met by counter insurgency measures by the government. In February 2006, peace talks were not able to renew the ceasefire agreement and the government launched a military assault which has resulted in large number of deaths – 20,000 to 30,000 people were killed between 2006 and early 2009 with an estimated 5,000 civilians killed in crossfire and targeted attacks (International Crisis Group 2010).

In 2010, Mahinada Rajapaksa was re-elected as president of Sri Lanka 'after a campaign marked by violence and conducted in an environment where the rule of law has largely collapsed' (ibid). The post-war policies of the government have continued to exacerbate the grievances which prompted militancy by the LTTE. Currently, the Sinhalese-dominated political parties are showing no sign of change towards a more inclusive and representative system and resource sharing. According to the International Crisis Group, 'no real space has been given to Tamil and Muslim political or community leaders in the north and very little in the east' (International Crisis Group 2010).

In addition to the isolation of Tamils and Muslims from the political sphere, is their physical isolation from their land as a result of the conflict. Sri Lanka ranks among the highest in the world in terms of real and proportional displacement. In addition to the deaths of 70,000 civilians from 1983 to the present as a result of violence, millions of Sri Lankans – men, women and children – have experienced some sort of internal displacement since the 1970s (Muggah 2009: 183). Approximately 200,000 people have been displaced since January 2006 and 2008 and the total number of internally displaced people numbers are in excess of half a million (Duryog Nivaran Secretariat and Practical Action 2008). According to Muggah, the displacement and resettlement of conflict-affected populations 'constitutes in many cases a purposive and ongoing strategy to secure land, enforce legibility in 'border areas' – particularly those that remained 'uncleared' – and a means of reshaping ethnic ratios in potentially contested districts and divisions' (2009: 185).

Both the government and the LTTE pursued their own objectives which included the containing, restricting and controlling population movement (ibid). Thus within the motivation to implement a centralised and top-down approach to resettlement to provide shelter for affected groups, was a desire to 'control and (re)order communities' (Muggah 2009: 224). The costs and risks faced by those who are displaced include privation, loss of livelihoods, loss of assets, and poverty arising out of disconnect from social networks (Muggah 2009: 225). Furthermore, the return of people who have been displaced have not met the international human rights standards and currently, 80,000 internally displaced people remain in camps in the north and a further 10,000 suspected LTTE have been detained (International Crisis Group 2010).

Marginalised and displaced communities are facing increasing insecurities and hazards and the gap in the distribution of wealth and human development is widening with the concentration of economic growth in the western region (UNDP 2009). It is within this context that Practical Action Sri Lanka has been working for the benefit of marginalised groups.

5.3 Climate change and disaster risk management policy architecture

Sri Lanka is beginning to formalise climate change and disaster risk management into policy. The Ministry of Environment and Natural Resources (MENR) is the lead government ministry responsible for climate change adaptation and mitigation.

The Ministry's recent action plan for a Green Sri Lanka – Haritha Lanka – includes meeting the challenges of climate change. MENR created a Climate Change Secretariat (CCS) in 2002 to: coordinate research and actions related to the United Nations Framework Convention on Climate Change (UNFCCC); develop policies; provide guidance; and raise awareness of climate change among other ministries and the public (CCS 2010). The CCS set up the National Advisory Committee on Climate Change (NACCC) to facilitate these objectives and ensure that they are consistent with national development priorities.

Despite the country's extensive experience with internal displacement and resettlement due to cyclones, landslides, floods, droughts and the 2004 tsunami, a national disaster policy

framework had not been in place. The tsunami highlighted the need to coordinate efforts of various government agencies for both natural and man-made disasters. The agencies responsible for disaster response were dispersed and uncoordinated immediately after the tsunami. They included: the National Disaster Management Centre (Ministry of Women and Empowerment and Social Welfare), the National Disaster Management Council (Presidential Secretariat) and with the erstwhile Task Force for Rescue and Relief (TARFRER), the Task Force to Rebuild the Nation (TAFREN) and the Task Force to Logistics and Law and Order (TAFLOL) (Muggah 2009: 191). Furthermore, the LTTE was involved in recovery and reconstruction. The Post-Tsunami Operational Management Structure was set up under a joint administration between the LTTE and the government though it quickly collapsed.

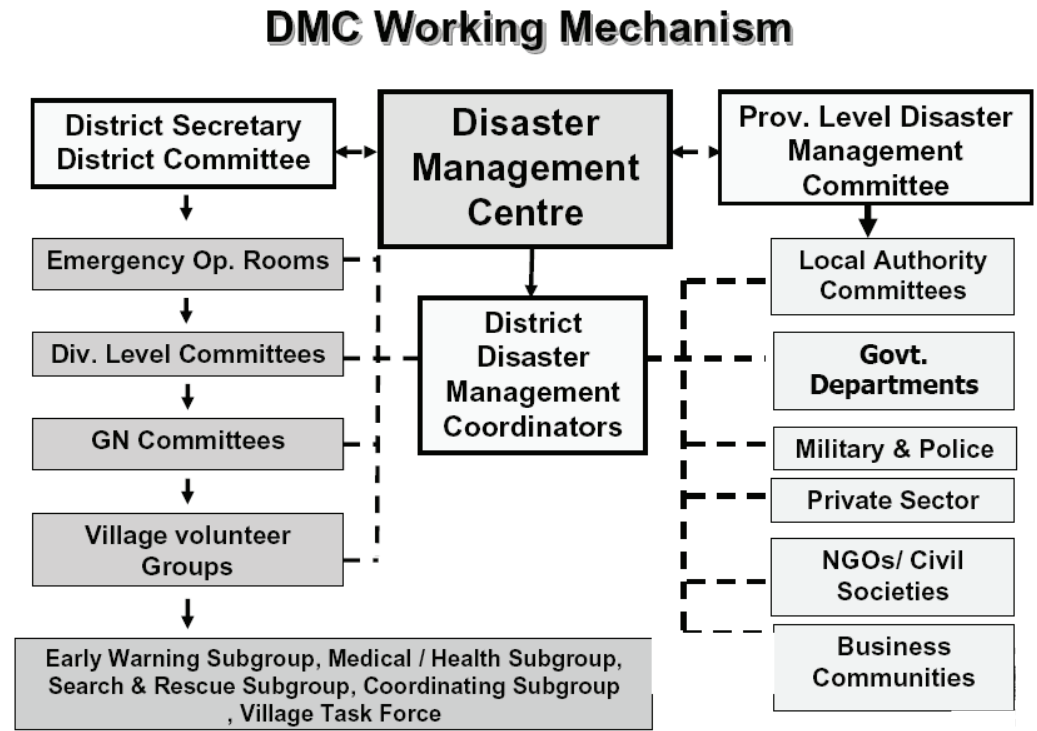
Since 2005, several steps have been taken to address the need to strengthen legislative and institutional arrangements for disaster risk reduction. The Sri Lanka Disaster Management Act No. 13 of 2005 was enacted which provides a legal basis for instituting a Disaster Risk Management system. This act established the National Council for Disaster Management (NCDM) and the DMC. In 2006, the Ministry of Disaster Management and Human Rights was created as a separate Ministry with the NCDM, DMC and the Department of Meteorology under its oversight (DMC 2006: xxxi).

However, the main responsible agency for climate change is the Ministry of Environment and Natural Resources which has set up a climate change unit and secretariat. This secretariat comprises of experts and organisations – both government and non-governmental and is not under the oversight of the Ministry of DRM and HR. Under the DMC, a DRM framework for Sri Lanka has been created to ‘unify the efforts of all agencies working in various sectors across all regions and levels of development activity’ (DMC 2006: xxi). They have prepared a ‘Road Map’ towards building a safer Sri Lanka to coordinate multi stakeholder efforts in the next ten years. Consultations with the provincial and district administrations of Hambantantota, Ampara and Kandy have been undertaken to devise this ‘Road Map’. It is interesting to note that neither climate change nor the Ministry of Environment are mentioned anywhere in either volume one or volume two of the Road Map despite the strategy entailing the following elements:

- policy, institutional mandates and institutional development
- hazard, vulnerability and risk assessment
- tsunami and multi-hazard early warning systems
- disaster preparedness planning and response
- disaster mitigation and integration into development planning
- integration of disaster risk reduction into development planning
- community-based disaster management
- public awareness, education and training (DMC 2006: ix).

The institutional arrangements have been set in order to implement the Road Map which attempts to create macro to micro linkages. The DMC structure (see Figure 2 below) is composed of: an Advisory Committee to the DMC; the National Emergency Response Committee; Technical Committees; Provincial Steering Committees; District DM Committee; Divisional DM Committee; Local Authority level DM Committees and Grama Niladari (GN)/ Village level Committees – see Figure 2 below. These committees at the national, divisional and district level are by appointment from the line ministries and government administration. The GN disaster management committee level oversees the crosscutting preparedness planning and early warning by coordinating implementation by NGOs and CBOs. The village volunteer groups are created through a general village meeting and have no legal status.

Figure 2: Disaster Management Centre working mechanism. Source: (Action Aid, 2007, p.9)



In practice, the mechanisms of the DMC are in place down to the Divisional level. However, at the GN level through to the village level there is a challenge in setting up the proposed structures due to funding and human resource constraints. According to the Coordinator of the District Disaster Management Unit in Batticaloa (DDMU), 89 out of the 348 GN divisions in the district which have been identified as being most vulnerable due to tsunamis and cyclones, have set up GN committees and village level volunteers groups. These divisions are being prioritised and currently almost all but of them 15 have functioning GN level DMC committees and sectoral volunteer groups in place. The DMC has conducted vulnerability mapping exercises in many of them (K. Wimalarajah, Coordinator, DDMU Batticaloa). At the ground level in Batticaloa, the sectoral volunteer groups consists of early warning dissemination committee, first aid committee, water and sanitation committee, camp management committee, mobile service and health service committee.

The Coordinator of the DDMU in Batticaloa works through NGOs and other international agencies through a monthly meeting to analyse the progress and challenges. The delay in setting up institutional arrangements at the GN and village levels is a real challenge to the effectiveness of the DMC and the implementation of the Road Map. Alongside this national DRM architecture being developed, the government of Sri Lanka created a Tsunami Housing Policy in 2006. The policy looks at entitlement, types of housing construction and the eligibility criteria. The revision of the buffer zone (now differs according to location), lack of coordination between NGO sector agencies, by passing of local authorities, lack of coordination and planning of infrastructures services in resettlement sites are key factors affecting post-tsunami reconstruction in Sri Lanka (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). With the armed conflict over, the process of rebuilding has begun and may not be linked to the existing 'Road Map for DRM'.

6. Practical Action Sri Lanka's post-disaster reconstruction housing project

Sri Lanka has been the scene of waves of resettlement due to the conflict and the 2005 tsunami. With a number of agencies constructing permanent houses, Practical Action Sri Lanka and DESMIO, a local NGO, sought to provide housing to people with disabilities and those most vulnerable in Manmunipattu Division of Batticaloa. The project implemented an integrated development approach where the benefits of the project were also to be felt by the wider community. The mission was to demonstrate how to design and implement a project which provided opportunities for people with disabilities to be more independent and to be recognised as a key part of society through their contributions to the local economy and their community. The strategy was to empower people with disabilities through demonstration, networking, and access to information.

The specific aim of the housing element of the integrated project was to build houses to demonstrate beneficiary participation, disability access, cost effectiveness and the use of sustainable housing technologies. Practical Action Sri Lanka built 16 houses for tsunami survivors. Nine families had at least one person with a disability, while six of the beneficiaries were women headed households. DESMIO was funded by Practical Action Sri Lanka to coordinate linkages with other sectors for vulnerability reduction of beneficiaries.

Box 2: Practical Action's framework for reducing vulnerability

1. Strengthen people's coping and livelihood protection strategies.
2. Reduce the impact of the hazard –disaster preparedness.
3. Rebuilding destroyed livelihoods
4. Conflict resolution and consensus building.
5. Promote sustainable use of natural resources.
6. Build up an understanding of impacts of long term trends and ways to mitigate these at the local level to inform policies at local, national and international levels.
7. Build up the capacity of CBOs and other local institutions to represent vulnerable people and to manage technologies for their benefit.
8. Build alliances and networks with multiple levels of stakeholders to increase the effectiveness in addressing risk management issues by promoting integration and consensus-building.
9. Facilitate policy interventions where these would contribute to reducing vulnerability, particularly social protection policies.
10. Immediate disaster relief.

An Integrated approach to housing through Practical Action Sri Lanka brings together these various elements. It builds on their approach of participatory community development, sustainable livelihoods thinking and appropriate technologies. Often beneficiaries of housing projects are left out of the process resulting in inappropriate construction. Instead, Practical Action Sri Lanka has brought together a number of the elements into their housing project in Batticaloa:

- awareness and education about the rights of persons with disabilities and other marginalised groups through linking with the disabled network;
- sustainable housing design incorporating local knowledge of hazards;
- livelihoods support linking beneficiaries to employment, social services and support networks.

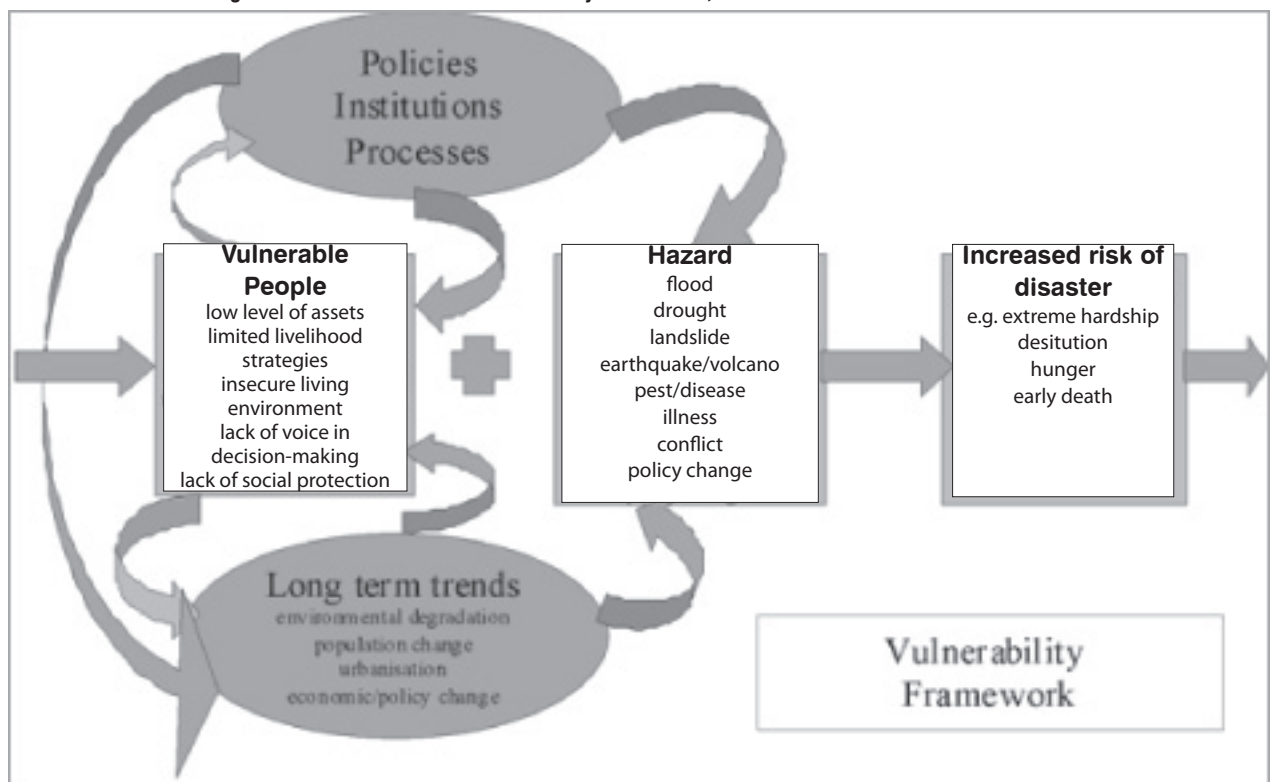
The integrated project activities included:

- Providing awareness of the rights of people with disabilities to the community (local government, NGOs, care givers and people with disabilities).
- Improving participation of the disabled in social networks, by providing appropriate built environment, community based rehabilitation and assistive devices.
- Creating employment opportunities through training and skills development reinforcing that persons with disabilities can contribute to the local economy.
- Enhancing accessibility to local service providers such as the Divisional Secretariat, the

- Department of Social Services, the Local Government Authority.
- Reducing the vulnerability of people with disabilities to natural disasters which affect them. Demonstrating participatory housing and sustainable building practices in post-disaster reconstruction.
- Demonstrating disability access in housing design and improved mobility (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka).

This integrated approach was built on Practical Action's vulnerability framework (see Figure 3, below). Practical Action has been actively involved in demonstrating how to support vulnerability reduction to threats such as natural disasters, environmental degradation and civil conflict and has advocated for the use of the sustainable livelihoods approach across their work. The premise of their vulnerability framework is to ensure that livelihoods assets (physical, social, natural, economic, political) are disaster risk sensitive and have considered hazards, long term trends, and policies, institutions and processes.

Figure 3: Practical Action's Vulnerability Framework, Source: Practical Action website



6.1 Evidence of characteristics of a climate smart approach to DRM

This project provides insights on how to bring together climate change adaptation, disaster risk management and vulnerability reduction into a post-disaster reconstruction housing project in a conflict affected area. As such it offers a case study of a DRM project, which has many characteristics of a climate smart DRM approach. Below is evidence gathered from a post-disaster housing reconstruction project in Manmunaipattu/Arayampathi Division, Batticaloa, as to how it reflects the characteristics of the CSDRM approach based on the three main pillars: tackle changing disaster risks and uncertainties; enhance adaptive capacity; address poverty and vulnerability and their structural causes.

6.1.1 Tackle changing disaster risk and uncertainties

The participatory nature of Practical Action Sri Lanka's housing project meant that the beneficiaries were consulted regarding hazards, design features needed and engaged in the construction process. From the planning stage, the housing project incorporated disaster risk reduction features into the housing intervention by consulting the beneficiaries about the natural hazards they faced. This was done through a participatory housing design

methodology, which included: the use of structured and semi-structured interviews; modified participatory vulnerability mapping; field observation; focus groups; inclusion of building regulations; donor technical specifications; implementers' specifications; and hazard mapping of individual sites. The most common hazards identified were annual flooding, droughts, gales, cyclones and increased temperatures. Several design features have been incorporated to protect beneficiaries from the identified hazards.

Firstly, the plinth levels were raised on sites prone to flooding. The 2004 floods were the worst the beneficiaries had experienced which became the baseline to which a further six inches was added to ensure that flood water would not enter the homes (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). The six inch leeway does not correspond directly with the Meteorological Department's predictions for rainfall in the next 100 years as this information was not yet available. Despite a lack of climate science predicting the amount of rainfall, in the past five years since the houses were built, none of the beneficiaries had any water intrusion as a result of the floods. For example, heavy rains 16–24 December 2007 resulted in large numbers of affected and displaced people. The map in Appendix Two shows flooding in the Manmuniyapattu Division, which affected many people, but did not result in water intrusion to the houses built by Practical Action Sri Lanka, in the same division.

Secondly, clay tiled roofs were designed to withstand moderate gales in terms of roof pitch and anchoring of the roof structure and tiles (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). According to Aziza Usoof, 'in the past five years we haven't seen any of the roofs blown off due to strong winds, which occur almost every year at the tail end of the south west monsoon (called Katchan). These winds have often blown away a lot of tin roofs in the past'.

Thirdly, the masonry technology used for the walls – the Rat-Trap Bond technique which keeps houses cooler during hot drought months – requires less energy to maintain the temperature close to comfortable levels and is able to withstand floods¹. Furthermore, according to the Housing Consultant from Practical Action Sri Lanka, Vasant Pulleynayagam, the rat-trap bond will be able to withstand floods because they use fired clay bricks as cement blocks may not be able to withstand a flood that lasts for a week or more (Vasant Pulleynayagam, Housing Consultant, Practical Action, Sri Lanka). Practical Action Sri Lanka invited beneficiaries to participate in assessing hazards and informing technical officers of their preferred housing design.

This was a key element in devising appropriate houses, which have withstood floods, gales, and increased temperatures over the past five years and met the beneficiaries' specific needs. Without a baseline identified through beneficiary participation in identifying recent hazards, flood waters could have entered their homes in the 2007 flood which affected many throughout the district. Furthermore, features such as shrine rooms, wheelchair ramps, lowered electricity sockets have been included which addressed beneficiaries' requests to practice their faith, gain easy access to their house, reach light and power switches for those in wheelchairs which all contribute to their well being as well as allow their carers to undertake paid employment. This participatory process, which includes beneficiaries' knowledge of the changing climate and the immediate hazards they face, opens up a space for local communities to participate in housing design and construction, that affects their safety and wellbeing.

CSDRM approach calls for a regular triangulation of local experiences of changing disaster risks with evidence from the climatological and meteorological community, recognising that a changing climate means disaster risks can constantly shift. However, in the case of missing climatological data, meteorological and local information can be used. Practical Action Sri Lanka has created a space for beneficiaries to actively participate in mapping hazards and choosing design features for their new houses. However, they could have also actively sought meteorological information regarding flood and temperature trends to ensure the sustainability of the housing design.

'We design houses with the people, where beneficiaries would sketch the houses they lived in. We would explain their entitlements and our rules and regulations to the beneficiaries.'

Vasant Pulleynayagam,
Housing Consultant,
Practical Action, Sri
Lanka

¹The rat-trap bond technique is a cost effective housing technique which uses less cement and keeps structures cool. For more information on the technique see: http://practicalaction.org/south-asia/docs/region_south_asia/cost-effective%20housing%20for%20rehabilitation.pdf

6.2 Enhance adaptive capacity

Innovation, community knowledge and participatory decision-making have been central to Practical Action Sri Lanka's work. Their integrated housing approach offers several examples of enhancing adaptive capacity, mainly in the area of learning and cross linkages.

6.2.1 Learning

The participatory housing design process allows beneficiaries to learn the design process and benefits of rat-trap bond technology and other sustainable design features. This learning has been shared across the community and now certain design elements have been replicated throughout the region where Practical Action Sri Lanka trained masons who are now using their training for private buildings (S. Kamalaraj, Technical Officer, Practical Action). Examples of design elements incorporated into consecutive housing construction include the plinth support beam and raised platform.

In addition to sharing learning of housing designs and technologies with other masons and organisations, certain design features which were implemented in the housing project were a result of Practical Action Sri Lanka being involved in updating the Post-Tsunami Reconstruction Guidelines of the National Housing Development Authority. While most other housing construction in Sri Lanka does not follow these guidelines which are not enforced by the government, Practical Action Sri Lanka ensured that they were implemented.

As a result they used tie beams and connectors for roof support in order to withstand strong seasonal winds and localised gales as their aim is for their housing constructions to be in good quality for a minimum of 25 years. The learning from previous projects being shared and integrated into future projects is possible through organisational learning mechanisms, which Practical Action Sri Lanka practices. They share lessons between project managers through project evaluation exchanges, as well as lunchtime seminars. In addition to non-thematic learning mechanisms, they have a climate change working group and key staff members are aware of climate change and are involved in the policy debates as part of the national delegation for the United Nations Framework on Convention on Climate Change (UNFCCC).

Furthermore, Practical Action's headquarters in UK is feeding in learning from other regions and is currently updating their vulnerability framework to include climate information in their latest vulnerability to resilience framework (see Appendix Three). Practical Action UK has collected feedback from country offices including Practical Action Sri Lanka and are continually updating their approach as an organisation to this latest framework on integrating climate change into their vulnerability reduction work.

6.2.2 Cross linkages

In addition to Practical Action Sri Lanka incorporating learning from their work on the Post-Tsunami Guidelines into the housing project for persons with disabilities, they have linked to other organisations to work at larger scales. There have been many requests to Practical Action Sri Lanka for the rat-trap bond technology. Practical Action Sri Lanka trained the French Red Cross' masons to use these new technologies. However their attempt at scaling up was not wholly successful as the French Red Cross plastered the walls of some houses on beneficiaries' request, whereas Practical Action Sri Lanka used fairfaced brickwork to cut costs and to enable the walls to breathe better. The French Red Cross were not able to find methods to overcoming cultural perceptions of unplastered walls (Vasant Pulleynayagem, Housing Consultant, Practical Action Sri Lanka).

In addition to sharing learning of post-tsunami housing guidelines and training masons to use sustainable techniques, the integrated housing project sought to link beneficiaries to a network for people with disabilities. This network links people with disabilities to a range of services as well as advocating for their rights. Despite the involvement of the local authority in providing the list of beneficiaries and approving construction, this intervention did little in way of linking different government structures, which work on disaster risk reduction. Until now, few examples exist of joined up government structures across scales in Batticaloa.

6.3 Address poverty and vulnerability and their structural causes: creating a space for livelihood options

Supporting the livelihoods of beneficiaries is a core component of the participatory housing construction and the integrated approach adopted by Practical Action Sri Lanka and DESMIO. For example, the project funded a paper production plant which provides disabled and vulnerable people with part-time employment. Also, by incorporating design elements in houses, which meets the special needs of people with disabilities, carers are able to seek employment outside of the home. A further example of economic assets being supported is the design of a store front shop for one of the beneficiaries, Mr. Chandrasekaram, who was re-located from a flood-prone site. He now rents out the house to support his relatives and resides in a church shelter (S. Kamalaraj, Technical Officer, Practical Action).

'My son, who is speech impaired, was trained as a mason. He is now very sought after in the area.'

T. Kala, beneficiary

Furthermore, the housing construction implemented by Practical Action Sri Lanka offered masonry training for beneficiaries and paid for unskilled labour such as transporting supplies and cooking meals for the workers. Some beneficiaries have gone on to work as masons. However, with the training of masons by a number of NGOs, there is now a surplus of masons competing for a dwindling demand with the slowing of the reconstruction in the area, although there is large demand in outside Batticaloa and in the Middle East.

In addition to supporting economic assets, the process of bringing in trained Sinhalese masons to train local Tamil beneficiaries in the construction process facilitated a process whereby these often separate groups worked together. Meals were shared throughout as well as celebrations from respective communities. It was felt that this process led to a better understanding of each other's communities.

On one occasion, a Sinhalese mason had married the niece of one of the beneficiaries', this demonstrates a breakdown of boundaries between the ethnic and religious groups and provides an example of social cohesion (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). Another example of social cohesion, is the opportunity for villagers to report to the GN when beneficiaries for housing do not represent the most vulnerable members of the community. The community holding the grant makers to account for their beneficiary selection promotes positive community relations and demonstrates an equitable intervention (S. Kamalaraj, Technical Officer, Practical Action).

A further example of sustainable livelihoods support is the promotion of carbon stewardship through use of the rat-trap bond technology requiring less cement and providing cooler indoor temperatures leading to less energy consumption for electric fans. In addition, the sourcing of local materials also reduces carbon emissions in the transportation process. Considering the environmental impact of their housing reconstruction project was a conscious effort by Practical Action Sri Lanka, although positive outcome of lower carbon emissions is now being recognised, it was not consciously built into the project design in 2005.

In addition to providing economic and social assets, as well as considering environmental impacts, the intervention protected beneficiaries from violence from politically influential armed groups. Together, the integrated disability and housing intervention promoted elements of a climate smart approach to DRM for beneficiaries.

In summary, Box 3 below highlights the actions of the post-disaster housing project in Batticaloa run by Practical Action Sri Lanka which reflect characteristics of the CSDRM approach.

Box 3: Actions incorporated by Practical Action Sri Lanka in the housing project that reflects a climate smart disaster risk management approach

- ✓ Use climate, weather and local information to tackle people's exposure to risks.
- ✓ Continually learn and reflect with partners and other stakeholders about the best approaches given changing hazards, vulnerability, exposure and capacities.
- ✓ Manage increasing uncertainty by working in partnership to build the capacity of people, communities and organisations to adapt to unexpected events in both the short and long-term.
- ✓ Build partnerships with the development community to ensure interventions to manage disaster risk also help to tackle the underlying drivers of vulnerability and poverty.
- ✓ Ensure that disaster risk management and development interventions are environmentally sustainable and do not unnecessarily emit greenhouse gases, something that will ultimately worsen people's vulnerability.

6.4 Iterative learning: incorporating climate smart DRM characteristics

A clear indicator that Practical Action Sri Lanka is learning from its experience in DRM and is incorporating characteristics of a climate smart approach to DRM can be seen through their recent housing project. The Housing Assistance to Long Term Conflict Affected IDPs in Vavuniya is a European Commission funded project and implemented by the Arbeiter Samariter Bund with technical assistance from Practical Action Sri Lanka. The aim of the project is to construct 3,231 owner-driven houses for internally displaced people from tea estates in the central hills and Jaffna district into lands allocated to them by the government in Vavuniya district. Practical Action Sri Lanka will be implementing a capacity building component taking into consideration the lessons learnt from the post-tsunami housing reconstruction in conflict affected areas.

They will bring their past experience into this project by:

- Incorporating information on local hazards at community and individual plot levels to design houses in the absence of downscaled climate forecasts.
- Advocating for an integrated livelihoods approach which considers the local hazards, livelihoods, access to education and health services, governance systems, infrastructure and safety nets.
- Bringing learning from work on the National Housing Development Authority Post Tsunami Housing Reconstruction Guidelines which led to a better set of building codes to work from for different hazards in the area.
- Empowering beneficiaries to manage the construction process of their house, providing building skills, community hazard mapping, and social mobilisation skills for technical officers.
- Bringing quality assurance into the project by providing training on quality in construction to design houses which take into consideration local hazards including floods, droughts and winds.
- Reducing the carbon footprint of housing construction and the lifecycle carbon footprint of the houses.

Vasant Pulleynayagem, Practical Action Sri Lanka's Housing Consultant, reflects on his experience in housing construction and flags that:

Policy and pressure from the government to build faster and get beneficiaries back in their houses as soon as possible has made the use of technologies, such as rat-trap bond, challenging. The idea of a core house, which includes basic living spaces and the foundations, has been advocated by Practical Action Sri Lanka. We feel that instead of the government trying to put beneficiaries in transitional shelters and then in permanent housing, a core house solves both the needs, if the risk mapping is done properly. The core house can be expanded later on, which is the way most Sri Lankan families build. All of this requires risk mapping, planning and also capacity building to expand the houses. The agencies have not looked at these alternatives due to the system that has been in place in the past.

7. Opportunities and challenges in implementing a climate smart approach to DRM and spaces for citizen engagement

Following the evidence of how Practical Action Sri Lanka's post-disaster housing project in Sri Lanka demonstrates characteristics of a climate smart approach to DRM, this study reflects on the opportunities and enabling environment. Opportunities include funding to develop capacity of local authorities and access to conflict affect areas. The enabling environment includes a participatory approach, staff dedication and organisational learning mechanisms. This section also explores the challenges faced in taking up characteristics of this approach in a post-conflict setting. Important challenges include: weak governance systems and lack of transparency; lack of access to decision-making; and a lack of linkages across scales. Furthermore, the following discussion will uncover whether, as a result of incorporating characteristics from a climate smart approach to DRM, spaces have been opened up for citizen participation in DRM policy and resource allocation across ethnic and religious divides.

7.1 Opportunities

7.1.1 Access to development funding and capacity building

With the end of the conflict, development opportunities have begun for most local authorities except for Mulativu and Kilinochchi where people are still being resettled (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). During the past thirty years of conflict, there has not been a streamlined system for tax collection nor were local authorities able to tap into assistance provided by the other funding sources such as those available post-tsunami. Recently, the local authority in Manmunaipattu has collected funds through assessment taxes and approval fees. There are also opportunities to apply for United Nations and bilateral funds (Mr. Kalathevan, Pradeshiya Sabha, Technical Officer). For example, funding from the UNDP has gone into training of local government staff on climate change. The Pradeshiya Sabha Technical Officer for Manmunaipattu/Arayampathi (local authority) was fluent in the impacts of climate change highlighting that 'climate change is happening because of global warming. We need to stop deforestation, illegal sandmining, building on and filling up low lying areas or flood plains and building on paddy fields and other agricultural lands. Providing approval for factories and housing should be streamlined. Limestone mining should be stopped'.

This capacity of integrating climate change knowledge and impacts at the local authority level can promote resilience and is a key characteristic of a climate smart approach to DRM. However, for this to occur, recognition by the central government that local authorities are a key part of the DRM process is vital. The existing centralised DMC structures should link to these local authorities as a way to strengthen their capacities to make decisions regarding resource allocations and effectively plan for changing risks and vulnerabilities.

7.1.2 Access to conflict-affected areas

The participatory nature of the post-disaster housing project provided an opportunity to implement a project in a conflict affected area. The conflict had a direct impact on the housing intervention. As there was open conflict on the way to Batticaloa between the army and the LTTE, the Colombo staff from Practical Action Sri Lanka were unable to travel to their field sites. They had to rely on their partner and field staff to do the work in the field. Without access to the project site came challenges in monitoring DESMIOS's progress and expenses. Despite the field site being 'cleared' and under government control, partner staff were confronted by 'security shut downs' (harthal) when violence between Muslims and Tamils would occur (S. Kamalaraj, Technical Officer, Practical Action). Furthermore, government curfews also affected the project implementation through lack of access, difficulty in transporting resources. Delays also occurred as a result of government check points (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). There were also financial demands by the LTTE on the project as they wanted commissions on the money that was spent on projects. Through a local interlocutor, Practical Action Sri Lanka explained to the LTTE that the project was benefitting Tamils and that they wouldn't be paying any commissions (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka).

Practical Action Sri Lanka was able to continue its project implementation because it had worked through a local partner, recruited local staff and employed a participatory approach to their consultation, design and construction. Working through local partners provides an entry point in conflict affected areas which other programmes may not have access to. Taking up the characteristic of participation from the climate smart approach to DRM and working through local partners provided an opportunity to access and implement a DRM project in a conflict affected area.

7.2 Enabling environment

7.2.1 Participatory Approach and Commitment of Staff

Practical Actions value of working in participation with beneficiaries and local partners has resulted in gathering local information of climate hazards into project design, and has allowed for implementation of the project in a context of violence and high degrees of risk. Turning to beneficiaries and the local partner organisation was the crucial element in being able to tackle exposure to changing hazards and disaster impacts as well as gaining the trust of the village to operate in such a high risk context. According to the local authority (Pradeshiya Saba), 'the beneficiaries on whom the intervention will have an impact should be made deeply aware of what is happening and how it is happening' (Mr. Kalathevan, Pradeshiya Sabha, Technical Officer).

As seen above, Practical Action Sri Lanka goes a step beyond information sharing and brings beneficiaries into decision-making processes of the development intervention. Working through local staff led to the dedication of staff to support the project; technical officers are clearly committed to their common objective. An example of this was the technical officer waiting at 4 am by the roadside to have the first pick of the bricks for the housing construction from lorries on their way to a central market.

7.2.2 Organisational learning mechanisms

Another feature which has supported the implementation of characteristics from the climate smart approach, such as learning and reflection, is the fact that Practical Action Sri Lanka promotes organisational learning through several mechanisms. Routinely they gather project managers to share lessons across projects. Currently they have a climate change working group. Furthermore, Practical Action UK is actively designing an updated framework on how to incorporate climate change into their vulnerability framework (see Figure 3, page 24 above). Their draft vulnerability to resilience framework is an organisational step towards integrated climate change into their participatory, locally grounded and disaster sensitive development interventions (see Appendix Three).

7.3 Challenges

7.3.1. Scaling up

In the recent Housing Assistance to Long Term Conflict Affected IDPs project in Vavuniya, applying appropriate technology, such as the rat-trap bond technique as a key element of the sustainable housing design is difficult at such a large scale and tight timeline. The scale of building more than 3,000 houses necessitates a methodology which is quick, efficient and able to reach a large number of beneficiaries simultaneously. This is typical of post disaster situations. According to Aziza Usoof, Practical Action Sri Lanka's Housing Project Manager, the limitations of pursuing an integrated approach for such a large scale project are real. She states:

Part of the limitation of transferring the learning, is the difficulty to implement them in new projects where appropriate due to time, capacity, skills, and pressures from the donor. This is an owner driven project where the owner has the responsibility for constructing their own houses and gets the choice of, which masons and technologies they want to use. It won't be able to inform all owners about these technologies, and train their masons in the given time frame. It is also not possible to ask the donor for a much longer time frame. (Aziza Usoof, Practical Action Sri Lanka)

Pressure from donors and the drive to have permanent houses available for displaced people in a short time frame, makes implementing a climate smart approach to the housing intervention a challenge. Such a large number of houses to be constructed requires a

technology which is familiar to local tradesmen who are in high demand. As a result, post-disasters are not an ideal time to promote alternative technologies that require training and new knowledge. Furthermore, this holistic approach requires attention, nurturing, and very dedicated project staff. This combination of skills and commitment is not widely available and requires training over the long-term. Hence, this climate smart approach is something that may not be able to be implemented quickly and deliver immediate results but will require a shift in practice through cumulative actions.

7.3.2 Weak government structures and lack of transparency

As a result of the violent conflict, the local government structures where the housing project was implemented were weak. During the implementation of the project there was no elected local government in place. Only central government representatives and officials of the local government service were in place such as the Local Government Secretary, a Public Health Inspector and a Technical Officer for the Pradeshiya Sabha (local authority). This left the housing system 'in disarray with building codes left unenforced and no official housing guidelines or codes in place' (S. Kamalraj, Technical Officer, Practical Action Sri Lanka). The lack of transparency and enforcement of existing policies and procedures has been highlighted as a key constraint to dealing with the impacts of climate change.

'For good governance the people enforcing the law should be transparent. Due to the conflict, in the past few years you couldn't even enforce police law in the area. In the future, if these regulations are enforced, we can cope with the change in climate. It is our responsibility to be more transparent. If we are more transparent, the communities will trust us more and they will uphold the regulations.' (K. Wimalarajah, Coordinator, DDMU Batticaloa)

7.3.3 Lack of access to decision-making

An opportunity to build the weak local government authority and capacity was lost during the tsunami reconstruction process as the local level government was completely bypassed in a rush to reconstruct and rebuild the area (S. Kamalraj, Technical Officer, Practical Action Sri Lanka). The circumventing of local authorities is an example of hidden power by the central government. They decided the level at which decisions regarding reconstruction should be taking place was the central government and closed off any opportunity for the local authorities to influence the process. With the end of the conflict, local government structures are in place and should have access to decision-making for vulnerability reduction of their local authority, which includes access to the DMC structures and operations. For example, the opinion of the DMC Coordinator of Batticaloa is that government 'needs to be more concerned about floods and droughts, which happen every year.

Funding for projects has been centred on the tsunami and cyclones when floods and droughts are the main concerns at the local level. The failure to seize on the funding and attention caused by the tsunami to build the weak local government authority and capacity was lost during the tsunami reconstruction process as the local level government was completely bypassed in a rush to reconstruct and rebuild the area (S. Kamalraj, Technical Officer, Practical Action Sri Lanka). It is difficult to see how local government can promote a climate smart approach when their capacity has not been built and has been undermined.

Practical Action Sri Lanka has limited influence on the government and bilaterals to ensure they are more in tune with the needs of local communities: the government and bilaterals turn to organisations with large amounts of funding to provide housing at large scales, as in the case of the North East housing reconstruction. In this way, Practical Action Sri Lanka has little leverage to influence housing and resettlement at the government and bilateral decision-making level.

Without a space for local involvement in decision-making there is a disconnect between the needs of local communities and the post tsunami reconstruction projects in place and little chance to influence processes, policies or strategies which are meant to promote a safer Sri Lanka. The divide between those who control the decision-making for DRM policies and implementation and marginalised communities of Tamils and Muslims who face changing

hazards and exposure has not been closed through Practical Action Sri Lanka's housing project as it failed to influence government DRM structures and policies.

A CSDRM approach requires a system which brings local level realities into decision-making at all levels, in practice this requires a real commitment to the values of representation and equity. Considering the real and lived experience of violence and marginalisation which many Sri Lankans have faced, a shift towards these values will require a real commitment on the part of the government and its citizens.

7.3.4 Lack of linkages across scales

Furthermore, the DMC is to have structures (see Figure 2 above), which reach the village level. These are not currently in place for all villages in Batticaloa and as a result many villagers are left out of any opportunity to influence or inform DMC structures and procedures. The current Technical Officer for Practical Action Sri Lanka was not aware of any DMC village group in his village, but was aware of the fact that the DMC committee was being headed by the GN.

Despite the absence of a village DMC group they have created their own space to deal with risks for his village. The group is made up of professionals (doctors, nurses, technical officers, teachers) who meet regularly to deal with local concerns and have taken action against dengue, have provided security against politically influential armed groups and provided funds for special needs of marginalised groups within the village. In addition to the absence of DMC structures at the village level, there is little evidence of linkages or information sharing between the Divisional Secretariat in Manmunaipattu and the DMC Unit of Batticaloa. For example, the Divisional Secretary was under the impression that only 1 out of the 27 divisions has DMC village groups in place and was not aware that any hazard mapping had taken place in his Division. However, according to the DMC Division for Batticaloa, they have formed main and sub-committees in 89 out of 348 divisions and have conducted hazard mapping at GN, divisional, district and village level through the coordination with UN agencies and NGOs.

The fact that CSDRM calls for linking across scales and sectors requires more of a system approach, which is only possible through effective partnerships. If Practical Action Sri Lanka is not leading on a project, such as the housing project in Vavuniya, they have less control over project design and oversight which causes challenges to including other interventions which may promote adaptive capacity and address poverty and vulnerability.

A coordination mechanism has been set up by the District Secretary to coordinate development activities being carried out in the region by different agencies involved in housing, livelihoods and infrastructure in Vavuniya (Aziza Usoof, Housing Project Manager, Practical Action Sri Lanka). This is a positive step towards integration. However, whether the District Secretary provides a space for NGOs and the local authority to be able to influence and inform decision-making which promotes a climate smart approach is questionable. This has much to do with the actual decision-making powers and resources of the District Secretary.

Despite the elaborate DMC mechanisms which should reach to the village level, four years later it appears to be a centralised system where decisions regarding the system's approach, priorities and resources are not coming from the bottom up but rather through donor and central government influence. This can be seen in the prioritising certain districts in hazard mapping in relation to cyclones and tsunamis rather than more frequent and destabilising floods and droughts which many people face. With better linkages between the DMC structures and other government structures, such as the Divisional Secretariat, the GN and the Pradeshiya Sabha, there could be increased representation of local needs in budget allocations. This lack of linkages between government apparatus hinders effective implementation of the CSDRM approach and better development outcomes. Space is needed where local authorities, DMC structures and central government can come together along with local communities to learn, assess, implement, evaluate and make decisions regarding DRM policies, resource allocations and interventions.

Centralised government power structures, the lack of policy enforcement and donor transparency create a space where there is little incentive to seek or implement current policies or procedures needed in promoting the CSDRM approach. These obstacles are true for development interventions overall. However, for a holistic approach to be effective on the ground, attention must be paid to issues of governance. No single DRM intervention can solve governance challenges on its own, but it can seek to open up a space for linkages, access to decision-making and accountability where there is no other space being made available. The CSDRM approach highlights the need for governance structures which are flexible, plan for disturbances and are accountable. This ideal is difficult to build in practice, and even more so in a conflict affected state.

8. Conclusion

The CSDRM approach recognises the need to bring together the concepts of vulnerability, adaptive capacity and space together in a holistic approach that aims to support better development outcomes through improved DRM practice. The approach has been used to analyse whether Practical Action Sri Lanka's housing project exhibits characteristics of the CSDRM approach and whether by doing so it has been able to promote a space for citizens to inform DRM policies and interventions which affect their lives.

8.1 Reflecting a CSDRM approach

Practical Action Sri Lanka's housing project reflects many of the characteristics of the climate smart approach. The following are highlights based on the approach elaborated in Figure 1 (see page 44).

8.1.1 Pillar One: Tackle changing disaster risk and uncertainties

1B PERIODICALLY ASSESS THE EFFECTS OF CLIMATE CHANGE ON CURRENT AND FUTURE DISASTER RISKS AND UNCERTAINTIES.

Practical Action Sri Lanka's housing project used participatory rural appraisal, participatory vulnerability and capacity assessments, and structured interviews to map out potential hazards and incorporated this knowledge into the design of each house. More could be done by Practical Action Sri Lanka to incorporate meteorological trends on rainfall and temperature.

1C INTEGRATE KNOWLEDGE OF CHANGING RISKS AND UNCERTAINTIES INTO PLANNING, POLICY AND PROGRAMME DESIGN TO REDUCE THE VULNERABILITY AND EXPOSURE OF PEOPLE'S LIVES AND LIVELIHOODS.

Although no climate information was available to incorporate, the houses were designed using rat-trap bond technology and baselines adopted based on local knowledge of floods. As a result, the floods of 2007, which affected the district did not have an impact on the beneficiaries.

8.1.2 Pillar Two: Enhance adaptive capacity

2A STRENGTHEN THE ABILITY OF PEOPLE, ORGANISATIONS AND NETWORKS TO EXPERIMENT AND INNOVATE.

Practical Action Sri Lanka trained masons in rat-trap bond technique. It also shared this innovation with the French Red Cross which adopted it in their large scale housing reconstruction project. However, the implementation by the French Red Cross of the rat-trap bond did not achieve local buy-in and resulted in the plastering of some houses which resulted in increased room temperatures. This highlights the importance of understanding the local context and working in partnership to create buy-in and introduce change.

2B PROMOTE REGULAR LEARNING AND REFLECTION TO IMPROVE THE IMPLEMENTATION OF POLICIES AND PRACTICES.

Practical Action Sri Lanka's organisational learning methods, such as routine sharing between project managers, lunchtime sessions and a working group on climate change has meant that Practical Action Sri Lanka have continued their practice of developing technologies through local participation for development impacts. The use of the rat-trap bond technique and training local masons in the housing method is an example of innovating and sharing the learning.

8.1.3 Pillar Three: Address poverty and vulnerability and their structural causes

3B FORGE PARTNERSHIPS TO ENSURE THE RIGHTS AND ENTITLEMENTS OF PEOPLE TO ACCESS BASIC SERVICES, PRODUCTIVE ASSETS AND COMMON PROPERTY RESOURCES.

Practical Action Sri Lanka, through partnership with DESMIO, a local NGO, raised awareness of the rights of people with disabilities and integrated livelihoods opportunities through: awareness raising campaigns with local authorities; training of local masons; and supporting a local paper making business. These elements were integrated into the housing project by working through partnership.

3D PROMOTE ENVIRONMENTALLY SENSITIVE AND CLIMATE SMART DEVELOPMENT

Practical Action Sri Lanka's housing project sourced local materials and recognised the need to keep carbon emissions down in their construction. The rat-trap bond technique uses fewer raw materials than the English bond technique and Practical Action Sri Lanka have promoted this technology as a means of keeping the use of resources and emissions down.

8.2 Opportunities

These highlights demonstrate the actions which Practical Action Sri Lanka implemented which reflect a climate smart approach. These actions have opened up opportunities, such as access to development funding and capacity building and access to conflict affected areas. Through an increased understanding of hazards and a changing climate, Practical Action Sri Lanka are well-placed to secure funding earmarked for climate change adaptation.

However, through their implementation of the housing project there was little evidence that they linked to local authorities to build their climate change awareness in the process at the time of implementation. Practical Action Sri Lanka's initiatives should incorporate elements of linking with the existing centralised DMC structures and local authorities to create a space for cross-scalar linkages and build capacity of local authorities to make decisions regarding resource allocations and effectively plan for changing risks and vulnerabilities. This could provide a space where centralised DMC structures could learn about the needs of local authorities to prepare for and mitigate against local hazards such as floods and droughts and spend less resources on tsunami and cyclone preparedness. In addition the of empowering communities to influence decision-making processes and working through local NGOs, Practical Action Sri Lanka was able to have access to conflict affected areas, with minimal interference by militarised groups.. Being seen as working with beneficiaries and meeting their needs facilitated access to LTTE controlled sites and communities experiencing violence as a result of ethnic tensions.

This holistic approach provides opportunities that go beyond DRM business-as-usual by opening up a space for trust between ethnically divided communities by demonstrating a process whereby working together they can achieve positive outcomes. Practical Action Sri Lanka did not from the outset of this project use a climate smart DRM approach; it is now writing up their approach and guidelines in order to do so for future post-disaster housing reconstruction projects across Sri Lanka, India and Pakistan.

8.3 Providing a space for citizen engagement in the political process?

Have these actions promoted a space for marginalised Sri Lankans facing disasters to take part in decision-making processes on DRM? Overall, the evidence suggests that beneficiaries were included through employment opportunities and awareness-raising of the rights of people with disabilities. The integrated housing process demonstrated how to involve beneficiaries as part of the decision-making process and implementation. This has been successful in providing safer living conditions and shows how different ethnic groups can work effectively together.

However, Practical Action Sri Lanka missed an opportunity to build into the process methods for linking local authorities and centralised DMC structures by creating a space where local needs can be heard and can influence policies which affect the safety and livelihoods of locals. Taking up actions which demonstrate elements of CSDRM approach does not necessarily result in an opening of a political process that empowers citizens to take part in decision-making processes and hold governments and implementing agencies to account. This requires explicit action of creating spaces which bring different stakeholders together under the goal of DRM.

8.4 Challenges in developing CSDRM

Several challenges exist in developing the CSDRM approach at the local level for housing reconstruction in a post-conflict setting.

- A key gap in adopting the CSDRM approach in Practical Action Sri Lanka's housing reconstruction is triangulating local knowledge of hazards with meteorological and climate science predictions. The lack of downscaled global climate scenarios for Sri

Lanka means that NGOs like Practical Action are unable to share information with their beneficiaries and make informed decisions concerning housing designs, such as plinth levels.

- Promoting integration of the three pillars in a post-disaster reconstruction project at a large scale is a challenge. The current Housing Assistance to Long Term Conflict Affected Internally Displaced People's project in Vavuniya is facing limitations in transferring learning from the demonstration project to a large scale because of a lack of capacity in the construction environment, skills of technical staff and tradesmen and time pressures from donors. Time pressures mean that owners cannot be made aware of the new technologies available and the inability to train large numbers of local masons to incorporate these technologies. The large scale housing project requires a technology which is familiar to local tradesmen who are in high demand. Post-disasters are not an ideal time to promote alternative technologies that require training and new knowledge. Also, a holistic approach to housing requires a combination of skills and commitment which comes through long-term engagement. The CSDRM approach is a process that may not be able to be implemented quickly and deliver immediate results but requires a shift in practice through cumulative actions. This requires that funders understand the shift from intervention thinking to supporting the CSDRM approach.
- As integration of climate information is beginning alongside the longstanding adaptive capacity building and livelihoods support at Practical Action, formalising this in the outset of future projects and programmes from the planning and strategy stage will help to develop a process tools to integrate the CSDRM approach into a post-disaster and post-conflict setting.

8.5 Key lessons for policy and practice

For the CSDRM approach to be effective, the third pillar which highlight issues of accountability, rights and equity requires planned citizen engagement and linkages with local authorities from the outset of a DRM intervention. The CSDRM approach requires a system which bring local level realities into decision making at all levels which in practice requires a real commitment to the value of participation and equity.

The divide between those who control decision-making on DRM policies and implementation and the marginalised communities of Tamils and Muslims who face hazards and exposure has not been closed through Practical Action's housing intervention because of a failure to influence government DRM structures and policies. A coordination mechanism has been set up through the DMC, though Practical Action Sri Lanka's ability to influence DRM policy is questionable as the DMC, despite its strategy, remains a highly centralised structure. For example, resources are being spent on district mapping in relation to cyclones and tsunamis rather than floods and droughts which are more frequent and destabilising. With better linkages between the DMC structures and other government structures, such as the Divisional Secretariat and the local authority, there could be increased representation of local needs in budget allocation for DRM interventions. *Practical Action Sri Lanka could advocate for a space where local authorities, DMC and central government structures come together with representation of local communities to learn, assess, implement and evaluate and decide on DRM policies, resource allocation and interventions.*

A lack of donor transparency, together with centralised governmental powers and a lack of policy enforcement create little incentive to seek out or implement policies or interventions that promote the CSDRM approach. The CSDRM approach highlights the need for flexible governance structures which plan for disturbances and are accountable. *Donors must seek to be transparent and provide support for interventions which take up all three pillars of the approach through a programme of work or intervention. This requires realistic timeframes and financing.*

Practical Action Sri Lanka has built on its strength of promoting adaptive capacity by creating opportunities for learning and sharing, as well as developed strong livelihoods support and vulnerability reduction programmes. Building on these strengths means that *Practical Action Sri Lanka should seek to develop simple tools on how to indentify climate data and weather trends into their programme and project designs.* The Vulnerability to Resilience Framework

is a step in the right direction at the conceptual level, but tools and models for implementers, like the housing project manager, on how to triangulate local knowledge with climate and weather data would help to further tackle changing disaster risk and uncertainty.

Up-scaling an integrated approach to housing requires Practical Action Sri Lanka to invest in capturing the process and lessons from the integrated approach to housing reconstruction as well as sharing the process and learning with other NGOs and donors. In this way Practical Action Sri Lanka would have increased leverage to influence donor timeframes for post-disaster reconstruction projects with documented details of their approach and evidence of positive outcomes at hand.

These recommendations build on existing lessons from effective development practice more generally. The climate smart approach reinforces some of these recommendations as it becomes increasingly apparent that in a context of changing risk and increasing uncertainty, we cannot afford to continue to operate as business-as-usual, but make real efforts in adopting lessons from good development practice. The climate smart approach reinforces the notion that DRM practitioners and policymakers need to recognise that they are facilitating a process and work through a systems approach and be holistic in their efforts.

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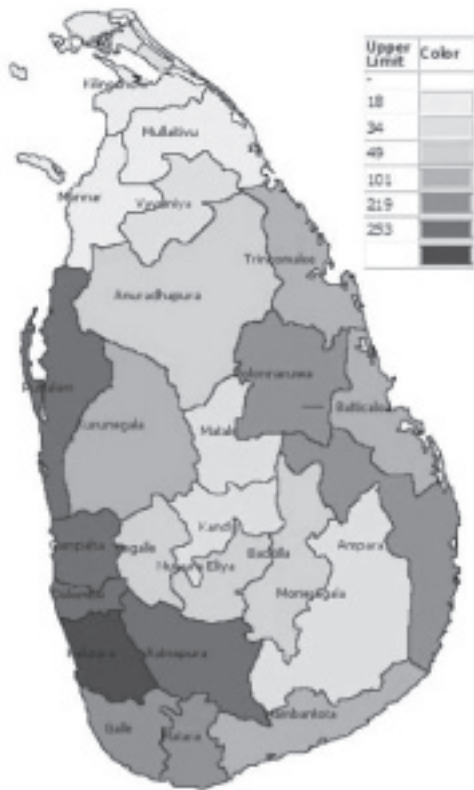
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9. Appendix 1: Flood and drought trends from the disaster management centre based on historical information

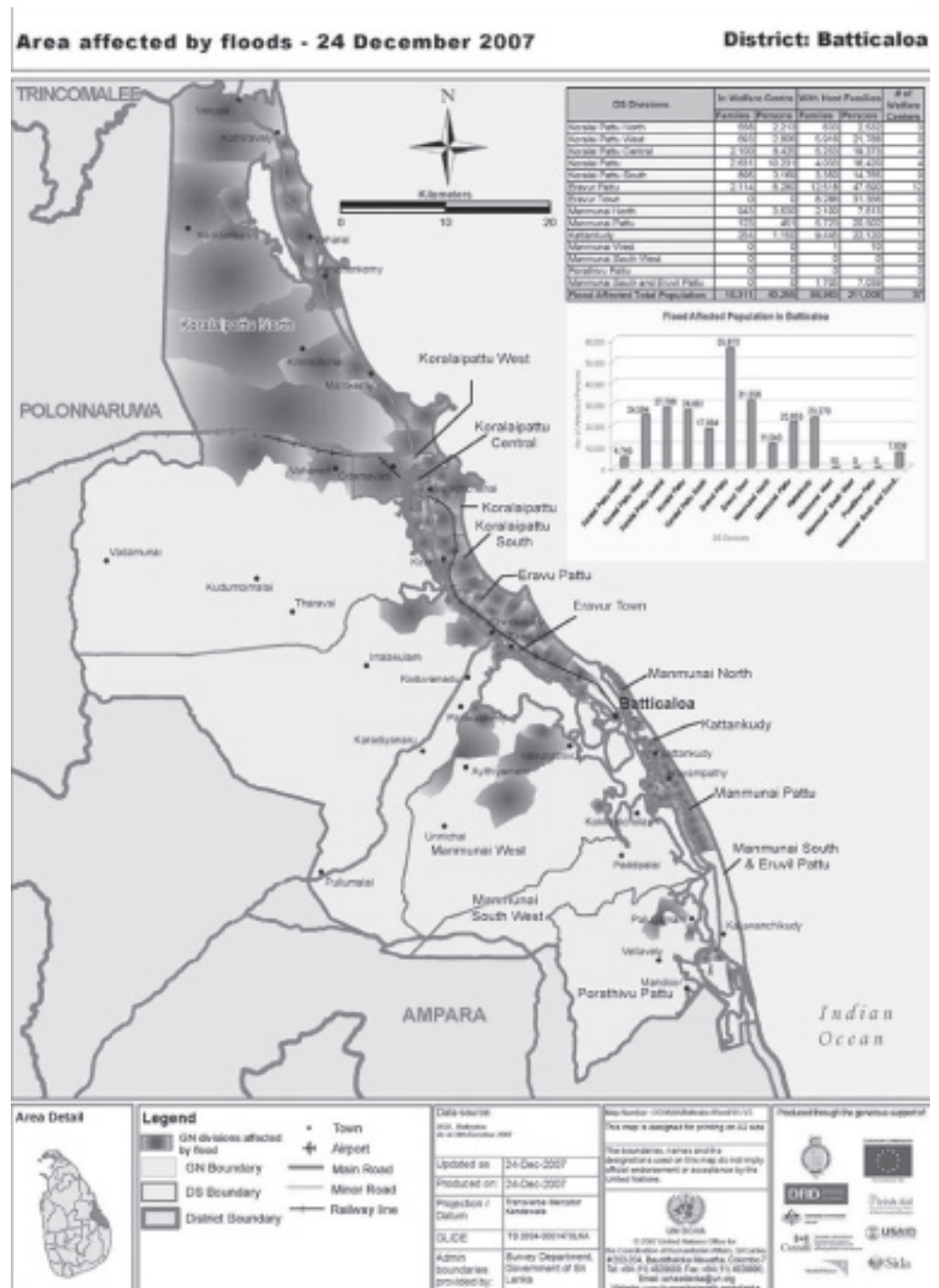


Floods Trend 1974–2007



Drought 1974–2007

10. Appendix 2: Batticaloa Flood Map, December 2007



Source: United Nations Office for the Coordination of Humanitarian Affairs (OCHA), 2007

11. Appendix 3: From Vulnerability to Resilience Framework



Source: Practice Briefing: Integrating Approaches: Sustainable Livelihoods, Disaster Risk Reduction and Climate Change Adaptation, Practical Action, 2010

The Climate Smart Disaster Risk Management Approach

Strengthening Climate Resilience

The questions in the approach are suggestions only and there may well be others



1. Tackle changing disaster risks and uncertainties

1a

Strengthen collaboration and integration between diverse stakeholders working on disasters, climate and development

To what extent are climate change adaptation, disaster risk management and development integrated across sectors and scales? How are organisations working on disasters, climate change and development collaborating?

1b

Periodically assess the effects of climate change on current and future disaster risks and uncertainties

How is knowledge from meteorology, climatology, social science, and communities about hazards, vulnerabilities and uncertainties being collected, integrated and used at different scales?

1c

Integrate knowledge of changing risks and uncertainties into planning, policy and programme design to reduce the vulnerability and exposure of people's lives and livelihoods

How is knowledge about changing disaster risks being incorporated into and acted upon within interventions? How are measures to tackle uncertainty being considered in these processes? How are these processes strengthening partnerships between communities, governments and other stakeholders?

1d

Increase access of all stakeholders to information and support services concerning changing disaster risks, uncertainties and broader climate impacts

How are varied educational approaches, early warning systems, media and community-led public awareness programmes supporting increased access to information and related support services?

2. Enhance adaptive capacity

2a

Strengthen the ability of people, organisations and networks to experiment and innovate

How are the institutions, organisations and communities involved in tackling changing disaster risks and uncertainties creating and strengthening opportunities to innovate and experiment?

2b

Promote regular learning and reflection to improve the implementation of policies and practices

Have disaster risk management policies and practices been changed as a result of reflection and learning-by-doing? Is there a process in place for information and learning to flow from communities to organisations and vice versa?

2c

Ensure policies and practices to tackle changing disaster risk are flexible, integrated across sectors and scale and have regular feedback loops

What are the links between people and organisations working to reduce changing disaster risks and uncertainties at community, sub-national, national and international levels? How flexible, accountable and transparent are these people and organisations?

2d

Use tools and methods to plan for uncertainty and unexpected events

What processes are in place to support governments, communities and other stakeholders to effectively manage the uncertainties related to climate change? How are findings from scenario planning exercises and climate-sensitive vulnerability assessments being integrated into existing strategies?

3. Address poverty & vulnerability and their structural causes

3a

Promote more socially just and equitable economic systems

How are interventions challenging injustice and exclusion and providing equitable access to sustainable livelihood opportunities? Have climate change impacts been considered and integrated into these interventions?

3b

Forge partnerships to ensure the rights and entitlements of people to access basic services, productive assets and common property resources

What networks and alliance are in place to advocate for the rights and entitlements of people to access basic services, productive assets and common property resources?

3c

Empower communities and local authorities to influence the decisions of national governments, NGOs, international and private sector organisations and to promote accountability and transparency

To what extent are decision-making structures de-centralised, participatory and inclusive? How do communities, including women, children and other marginalised groups, influence decisions? How do they hold government and other organisations to account?

3d

Promote environmentally sensitive and climate smart development

How are environmental impact assessments including climate change? How are development interventions, including ecosystem-based approaches, protecting and restoring the environment and addressing poverty and vulnerability? To what extent are the mitigation of greenhouse gases and low emissions strategies being integrated within development plans?

This publication is part of the Strengthening Climate Resilience Discussion Series, which aims to elaborate concepts and application of the Climate Smart Disaster Risk Management approach. All papers are available free to download through the Strengthening Climate Resilience (SCR) website: www.csdrm.org

The Resilience Renaissance? Unpacking of Resilience for Tackling Climate Change and Disasters. Bahadur, A.; Ibrahim, M. and Tanner, T. (2010) Strengthening Climate Resilience Discussion Paper 1, Brighton: IDS

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Other publications from SCR on the Climate Smart Disaster Risk Management Approach:

Climate Smart Disaster Risk Management in Brief. Mitchell, T. and Ibrahim, M. (2010) Strengthening Climate Resilience, Brighton: IDS

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