Resilience Strategy Framework and Theory of Change for NARRI Consortium

2015 - 2020

NARRI Consortium Members

Resilience Strategy Framework and Theory of Change for NARRI Consortium

2015 – 2020

Authored by:
Shrabana Datta, Senior Researcher
Cassia Mahjabeen, Lead Consultant

Table of Contents

ACKNOWLEDGEMENTS

ABBREVIATIONS

ARCAB	Action Research for Community Adaptation in Bangladesh
BCCRF	Bangladesh Climate Change Resilience Fund
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCCTF	Bangladesh Climate Change Trust Fund
BRAC	Bangladesh Rural Advancement Committee(formerly)
CDMP	Comprehensive Disaster Management Program
COP21	Conference of the Parties 21
DMA	Disaster Management Act
DRM	Disaster Risk Management
GoB	Government of Bangladesh
HFA	Hyogo Framework for Action
ICCCAD	International Centre for Climate Change and Development
IPCC	Intergovernmental Panel on Climate Change
IRB	Islamic Relief Bangladesh
MDG	Millennium Development Goals
MoDMR	Ministry of Disaster Management and Relief
MoEF	Ministry of Environment and Forest
NARRI	National Alliance for Risk Reduction and Response Initiatives
NDMP	National Disaster Management Plan
RRAP	Risk Reduction Action Plan
SDG	Sustainable Development Goals
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction

EXECUTIVE SUMMARY

Globally *vulnerability* among communities affects the process of human development. Recurring natural hazards are empirically traced with incidents that include death, asset loss, food and water insecurity, lack of access to health services, disruption in access to market services and above all disrupted livelihoods. In Bangladesh, people living in vulnerability are exposed to similar threats. Therefore, building *resilience* for the affected has become crucial for eventual growth and development.

National Alliance for Risk Reduction and Response Initiatives (NARRI) with its ten member organizations steps in with its long experience to address local problems keeping global progression into consideration. Through DIPECHO and ECHO funded previous and existing projects activities, the consortium members are already working on early preparedness to ensure access to early warning message, food and water security, develop response plans and few others for the vulnerable groups. However, acting as a single platform gives NARRI the strength to advocate, influence and negotiate with social and market actors as well as to envision long term strategic goals for the consortium.

The strategy paper gives focus more on developing solutions for the vulnerable and excluded groups – with a hope to give them the choice of growth for a better tomorrow. Therefore, review of practiced strategy papers, internal consultations with program teams of NARRI members and further consultations with external stakeholders revealed dimensions that needed to fit into a holistic and comprehensive framework. A framework that is not limited to just first line of defence; rather it promotes and envisions the continual growth for the target beneficiaries. Therefore, the framework emphasizes on three major phases where programs /activities need to act upon. They are:

1. Build stability through preparedness, response and resource mobilization
2. Improve adaptive strengths by building resilient livelihood and access to basic services along with social safety nets
3. Develop transformative capacity through encouraging good governance and transformation of leadership

Research, Innovation and Knowledge Management are kept as an instrument to improve greater strategic environment for this framework.

Build stability through preparedness, response and resource mobilization

Many initiatives have already been implemented at the individual organisation level such as Plan International's safe school and urban resilience programme, Concern Universal's activities in the field of resilient WASH, DRR and value chain development , IR's community resilience programme, CARE's resilience building in food security and urban resilience programme, Concern WorldWide's resilience building in coastal communities, Action Aid's disaster resilience programme as well as Oxfam's resilience building in food security and resilient livelihood programs. While these activities work towards building stability of a community, more concerns are raised to address issues that occur from climate vulnerabilities (i.e. high tides, change in monsoon patterns, flash floods etc). Keeping higher impact and scale in mind, NARRI therefore needs to aid its programmes with following areas of support for greater sustainability.

- Advocacy with state actors to embed state services into the system when scale is a crucial
- Influence state agencies for developing public services
- Institutionalization of courses with GOB departments, private service sector actors with advanced training modules on emergency response and management

Improve adaptive strengths by building resilient livelihood and access to basic services along with social safety nets

More emphasis needs to be on developing *adaptive capacity* for communities to grow and improve their strengths. It will require NARRI to address areas such as:

▪ Develop resilient livelihood for offering alterative income opportunities to vulnerable groups. Initiatives that can accelerate alternative on- farm and off farm livelihood options need to be introduced.
▪ Improve the efficiency of value chain actors (private) such as - storage facility (rural), building construction (urban) etc that can support services to the primary beneficiaries.
▪ Collaborate in (re)designing government operated social safety net programmes (formal safety nets) operated by government, with particular emphasis on women and children
▪ Assist community based organizations for developing small savings or capital with the help of transparent and accountable financial intermediaries.

Develop transformative capacity through encouraging good governance and transformation of leadership

It is important to acknowledge that due to power structures and practices of the society- often the vulnerable women, older people, people with disability and children do not have access to entitlements and public services as equally as other citizens. Therefore, voicing out needs and wants require efficient self organization by such excluded groups. In order to build *transformative capacity* of communities the following areas has been prioritized -

▪ Create access to local GOB authorities and media for dialogues and services for the vulnerable
▪ Develop multiple advocacy channels for community members for collective negotiation at local, national or regional level.
▪ Aid in technical support to GOB (evidence based research, capacity building etc)

The super goal of the developed *Theory of Change* for this framework has been identified as - ***A resilient Bangladesh, where communities and institutions are able to anticipate, adapt and respond to shocks and stresses, take charge of own development ensuring rights, dignity and inclusion****.* Reaching this goal will require four major outcomes with relevant outputs and activities. While selecting activities, NARRI needs to give more emphasis on tangible benefits for its primary beneficiaries. Tangible benefits include new or improved public/private services or facilities through creating human, social and financial capital that are visible within the affected communities. It is important to bring in the vulnerable communities at the very core of the strategic initiatives and thoughts. Thus the designed activities can lead to resilient communities in Bangladesh with genuine capital development and service benefits.

1. INTRODUCTION

1.1 BACKGROUND AND RATIONAL

Globally major organizations addressing human development have been emphasizing on the issues of **Vulnerability**[1] and building **Resilience**[2]. It is important to acknowledge different conceptual perspectives exist and they vary both globally as well as locally. Communities who suffer due to various vulnerabilities have a very different outlook when it comes to the concept of resilience.

Despite the different definitions and outlooks, the nature of suffering and deprivation of communities come across few major phenomena. Prevalence of income inequality, loss of assets, depletion of natural resources, lack of social protection schemes, ineffective state systems and insecurity among the members of the community during and after disaster and climate change become more common and make communities more vulnerable. Thus, a community that is identified as vulnerable tend to show certain symptom that goes against healthy living and economic growth of its fellow members. Therefore, to strengthen their conditions and to allow them a chance of better growth, certain pathways need to be taken up followed by series of actions that are performed systematically.

This strategy paper gives a comprehensive look while collecting inputs from members of National Alliance for Risk Reduction and Response Initiatives (NARRI) as they run implementation activities on field - as of today. The current resilience strategy framework (2015 – 2020) has a long term vision to address the issues of vulnerabilities; that bases on previous works of NARRI members and builds further to create better growth opportunities for the communities.

WHAT IS VULNERABILITY?

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. - HFA

WHAT IS RESILIENCE?

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. -UNISDR

It is important to note that globally and regionally, organizations have already proposed and are working with resilience frameworks to address the issue of vulnerability. Locally, NARRI is on the shift from original HYOGO framework to SENDAI framework. The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters. It is the outcome of stakeholder consultations initiated in March 2012 and inter-governmental negotiations held from July 2014 to March 2015; which were supported by the UNISDR upon the request of the UN General Assembly.

---

[1]&[4] . United Nations Office for Disaster Risk Reduction (UNISDR), "2009 UNISDR Terminology on Disaster Risk Reduction", Geneva, May 2009 (http://www.unisdr. org/we/inform/terminology)

1.2 CONTEXTUALIZING WITH BANGLADESH AND NARRI CONSORTIUM

International frameworks remain as a reference point, but the framework needs local contextualization. Till today, the people of Bangladesh remain vulnerable[3] to natural hazards[4] and suffer from aftermaths of disastrous calamities[5] every year. The after effects of disasters, hazardous setbacks and associated incidents not only disturb the regular livelihood activities of the affected population, but also throw them into uncertainties when it comes to meeting major requirements to sustain their very life. Thus, comes the need of securing lives of those who are vulnerable and reintegrating them into a healthier, productive and improved livelihood. This further requires making the necessary changes into the socio economic subsystems - the state as well as non state actors who can offer relevant and on time services or assistance.

Variety of initiatives has been taken since the birth of Bangladesh by state actors, relevant functional bodies such as INGOs and NGOs as well as by international donors. Among the actors who are working with resilience, working from as a single platform gives NARRI members certain strengths and advantages. Therefore, after inception of the consortium in September 2010, ten international organizations as part of NARRI has been looking towards stronger policy for the state. Strengthening state bodies to bring a sustainable and wide scale change has been a priority working area.

Currently, for synchronising approaches across agencies, mobilizing resources more efficiently, making coordinated efforts and exerting influence over the government as well as the donors' policy - a comprehensive resilience strategy framework has been agreed upon by its members. Based on the collective vision- the goal, workable intervention areas and potential activity area are outlined (details in Section 3). In this context, the actors that influence and control the greater socioeconomic systems when it comes to working with resilience are described briefly below

GOB Participation
Government of Bangladesh has recognized climate change and disaster risk as the major setbacks for achieving the national target of eliminating poverty and becoming a middle income country by 2021. To build national resilience, the GoB developed the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), National Disaster Management Plan, Disaster Management Act, Planning commission documents, Agriculture strategy and so on. Bangladesh has also Bangladesh Climate Change Trust Fund (BCCTF) and BCCRF with support from development partners

Increased Involvement of INGOS towards building resilience
Many related initiatives have also been implemented at the individual agency level, other than NARRI members local NGOs are found who has certain capacity to address emergency response for flood hazards. Although urban resiliency management is very poor for even at state level

Community Organizations
Small community organizations such as farmers association can play major role in adaptive livelihood practices. While workers associations can make a difference in urban areas.

Knowledge and Research Platforms
ICCCAD, BRAC, ARCAB have established trend of action based researches on climate change and disaster risk management issues as well as deliver capacity building activities at various levels including government. Supported by academia such platforms can play a strong role being an advocate for needed change

Social Platforms
Local academia such as school and mosques serve as a very information hub for rural communities. While the mosque owns a mike which can give disaster alerts during calamities such channels are usually ignored. Local schools has always been an important facility during disaster if it is situated in highland- therefore such schools management always plays an important role in educating regarding simple safety issues for children (i.e drink safe water, WASH practices etc)

Technological Platforms
There are certain technological platforms that can be utilized if NARRI wants to leverage emergency information or livelihood information. Such platforms include advanced geographical information service from university research centers, weather alerts given by private players (miyaki), sms alerts by public or private actors, community radios etc

Knowledge and Research Platforms
ICCCAD, BRAC, ARCAB have established trend of action based researches on climate change and disaster risk management issues as well as deliver capacity building activities at various levels including government. Supported by academia such platforms can play a strong role being an advocate for needed change

Market Actors
In many cases the market actors move a lot faster than the public sector actors. For supporting community livelihood, market actors can act as human capital for assisting communities. Especially for urban resilience it is important to think how institutions can be influenced for adaptive procedures including building safety, evacuation or even managing carbon emissions

Chart 1: Actors who can work with resilience Issues in Bangladesh

NARRI consortium members have been working on various areas to build resilience in targeted communities. Each member comes with experience and certain organizational strength to administer

---

[3] Accessed from http://media2.intoday.in/indiatoday/images/stories/flood_350_062113072134.jpg, on 12th September, 2015.

[4] Hazard is defined in the Hyogo Framework for Action as: "A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydro meteorological and biological) or induced by human processes (environmental degradation and technological hazards).

[5] Vulnerability Index , http://reliefweb.int/sites/reliefweb.int/files/resources/Climate_Change_Vulnerability_Index_%202014_Map.pdf

intervention and activities. The following two tables (Table 1.2.2 and 1.2.3) give a snapshot of the current strengths of NARRI consortium members and actors or institutions in the market that can be leveraged for creating impact.

Table 1.2.1   **Strengths of Consortium**

Consortium Members	Current Projects with Resilience	Strengths
ActionAid Bangladesh	➢ *Community Based Adaptation Interventions* ➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Partnership with National GOB bodies such as MODM & R, LGRD & C, fire service and civil defence
		Partnership with rural NGOs and communities to organize conventions, to influence local governance for change
		Exposure to Urban Volunteer Program and training development capacity
		Working understanding with business associations for joint urban advocacy in resilience
CARE	➢ *Building Resilience for the Urban Poor (BRUP)*	Experience with Urban Resilience working with poor
	➢ *Where the Rain Fall*	Adaptive Agricultural practices and water body management experiences
Concern Universal	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh* ➢ *Community Based disaster Risk Reduction Project*	Experience in developing teach services for alerts
		Experience in development of Standard Training Manual for Ward Disaster Management Committee (WDMC)
	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Community based adaptation experiences
		Experience in strengthening institutional linkage
Concern Worldwide	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Experience in working with food security and WASH
		Experience in working with cash for work schemes, on farm water management, drainage etc
		Managing Advocacy for HAOR and Coastal programs to influence the national budget
Islamic Relief Bangladesh	➢ *Enhancing Climate Change Adaptation and Disaster Resilience in Bangladesh*	Experience with work in climate change and adaptation issues
	➢ *Resilience through Watershed Management, Risk reduction and development in Bangladesh*	Partnerships for Urban Resilience with City Corporations
	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Partnership with Bangladesh Water Development Board, Institute of Water Modelling, Flood Forecasting and Warning Centre, Cyclone Preparedness Centre, Bangladesh University of Engineering and Technology (BUET), University of Dhaka, Patuakhali Science and Technology University etc
	➢ *Strengthening Capacity of the Climate Change affected people through disaster preparedness and awareness actions* ➢ *Promoting Urban Resilience through Good Government and Private sector engagement*	Working understanding with business associations for joint urban advocacy in resilience
	➢ *Program for Augmenting Disaster Risk Reduction and Climate Change Adaptation Capacity of the Communities in the South-western Bangladesh*	Experience in strengthening institutional linkage
Handicap International	➢ *Reduce disaster risk reduction of people with disability to rehabilitation, social and economic integration*	Experience in working with rehabilitation care for adults with disabilities through rehabilitation offer and prostheses. Establishment of village committees to help before, during and after a disaster
	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Bridge the gap between organisation of people with disabilities and legal aid
Help Age International	➢ *Working through older people's association to cut the risk of disaster and provide jobs, benefits and healthcare*	Experience in working for improvement of access to health and financial services for Older people
		Advocacy on income generating activities for older people
Oxfam Bangladesh	➢ *Building community resilience to floods in central region of Bangladesh*	Experience in increasing food and income security for marginalised people
		Experience in strengthening institutional linkage

	➢ *Urban Resilience Bangladesh*	Act as a negotiating facilitator between wide range of power holders and poor people
	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Experience working with Urban poor and urban Government institutions.
Plan International	➢ *Building disaster resilience community to ensure sustained development*	Ability to engage children as active partner for catalysing action awareness regarding disaster
	➢ *Enhancing Inclusive Disaster Resilience in Bangladesh*	Strength in capacitating local government, communities, and civil society organisations to collectively address climate change issues
Solidarités International	➢ *Building Resilience and supporting livelihoods in Satkhira district, Bangladesh*	Experience in strengthening institutional linkage Partnerships with local government authorities and research institutes.
		GIS and mapping for risk analysis and land management
		Community based disaster preparedness model and inclusion of the ultra-poor
		Resilient livelihoods and livelihood diversification (on farm and off farm)
		Technical WASH and food security expertise to ensure access to basic needs in both emergency and chronic crisis
		Effective engagement of civil society (farmers associations, vulnerable groups)

Table 1.2.2 STRENTHS /CAPACITIES OF NARRI	**ACTORS/PARTNERS**	**Leverage Points/Entry Points**

✓ **Evidence based research capacity**
 	
 ✓ **Advocacy Experience to influence budgets for vulnerable**
 	
 ✓ **Capacity to transfer knowledge and technology**
	Government Of Bangladesh	Ministry of Disaster Management and Relief
		  - Assist in research
		  - Assist in developing panel experts
		  - Assist in creating pool of Experts
		Ministry of Environment
		  - Assist Climate Change cell
		Ministry of Agriculture
		  - Assist agricultural information service
		  - Assist Agricultural extension service
		Ministry of Water Development
		  - Influence repair and construction

✓ **Basic in hand Training modules to build skills/knowledge for response**
 	
 ✓ **Research and Advocacy materials-**
 	
 ✓ **Community networks for linkage**
	PRIVATE SECTOR ACTORS
	
	 Knowledge and Research Platforms
		Private Sector Media for information service
		Weather Alert Services for information service
		Commercial Security Services for urban calamities
		Chambers of Commerce for business service
		ICCAAD
		  - Training
		  - Advocacy and panel discussion
		  - Conventions on Urban
		BRAC
		  - Developing practical short courses for
		    emergency management or capacity
		District University
		  - Volunteer Management Skills
		  - Training for volunteers

1.3. VULNERABILITY DUE TO DISASTER AND CLIMATE CHANGE

The Asia Pacific disaster report states "in Asia Pacific the population of the region has increased from 2.2 billion to 4.2 billion people between 1970 and 2010, but the average number of people exposed to annual flooding has more than doubled from 29.5 to 63.8 million; the number of people residing in cyclone-prone areas has grown from 71.8 million to 120.7 million".[6] Within South Asia is Bangladesh, where various geo specific communities are prone to natural shocks and climatic disasters[7]. Alarmingly, considering mortality risk distribution of selected hydro-meteorological hazards (tropical cyclones, floods and rain-

---

[6] Reducing Vulnerability and Exposure to Disasters, The Asia-Pacific Disaster Report 2

[7] Natural Disasters, Risks, Vulnerability and Persistence of Poverty: An Analysis of Household Level Data Quazi Shahabuddin and Zulfiqar Ali , Bangladesh Institute of Development Studies (BIDS) Dhaka, Bangladesh

triggered landslides) in South and South-West Asia[8] Bangladesh has beenidentified as 'extreme' risk area (See Annex D).

The recently released sixth annual Climate Change Vulnerability Index, (Maplecroft) revealed that Bangladesh would feel the economic impacts of climate change most intensely. Moreover, our capital Dhaka will be one of the five most climate vulnerable cities in the world. In Bangladesh, significant threat is posed by natural as well as human induced hazards into multiple geographic areas through floods, cyclones, droughts, tidal surges, tornadoes, earthquakes, river erosion, high arsenic contents of ground water, water logging, water and soil salinity etc. NARRI however, will concentrate on natural hazard related issues when it comes to building resilient communities.
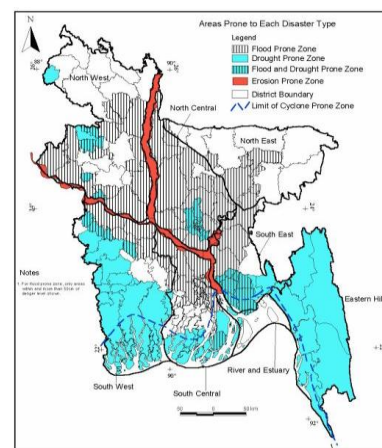
Other than natural disasters, climate change adds a new dimension to community risk and vulnerability. Current indications are that not only will floods and cyclones become more severe; they will also start to occur outside of their "established seasons".[9] Events, such as drought, may not have previously occurred in some areas but they may now be more evident. Therefore both rural and urban communities dispersed in various geographic areas remain   ecologically as well as economically vulnerable (See symptoms of Vulnerability in Annex C).

1.4 COMPLEXITY OF COMMUNITY LEVEL SYSTEMS- THE RURAL VS URBAN DIVIDE

In Bangladesh both **urban** and **rural** communities get affected with hazards or shocks. While urban communities are more

MAP 1: MAP OF DISASTER PRONE AREAS BANGLADESH

structured, rural communities tend to have fewer infrastructures (roads, power, basic facilities etc). Because of geo specific difference, even rural communities also differ in types (Such as *haor* areas are different than *chars*, or hilly areas are different than low lands). Nevertheless access to public and

private services and inadequacy of facilities dominates their livelihoods during disasters. It is important to note that even if facilities exist- poor, women, older people, persons with disability and children may not be able to receive assistance equivocally. Structural Barriers of society that are often biased, does not serve the socially excluded during crisis. Within both urban and rural communities target audiences differ, but usually encompass the primary beneficiaries as adult (male & female), older people, children inclusive of minorities and socially excluded. On the other hand, LGIs, school management committees, GoB bodies, research institutes and civil society comes as the secondary beneficiary.

Rural and urban communities need different plan of actions; therefore the secondary beneficiary groups also need to be selected carefully. So far urban resilience is less mainstreamed- for example authorities do not know what should be the effective plan of actions in case of an earthquake.
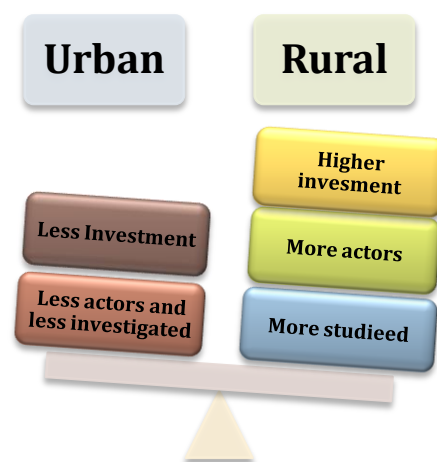
1.5. SCOPE AND LIMITATION OF THE STRATEGY

The scope of this developed strategy remains within the workable areas and strategic objectives of the members' organizations of NARRI, but the outputs needs to leverage on national or state level

---

[8] UNEP and UNISDR, The PREVIEW Global Risk Data Platform, http:// preview.grid.unep. ch (accessed May 2012). *Cartography:* UNEP/GRID.

[9] National Plan for Disaster, 2010-2015, Government of Bangladesh

institution to impact higher and wider scale. Additionally, the framework is kept flexible enough to take up further areas as needed to reach its super goal. Unanticipated change might affect the greater socio economic subsystems in due time, in that case the scope of the strategy may have to be revised for adjustments if needed. Current framework is thus developed with current research and concepts.
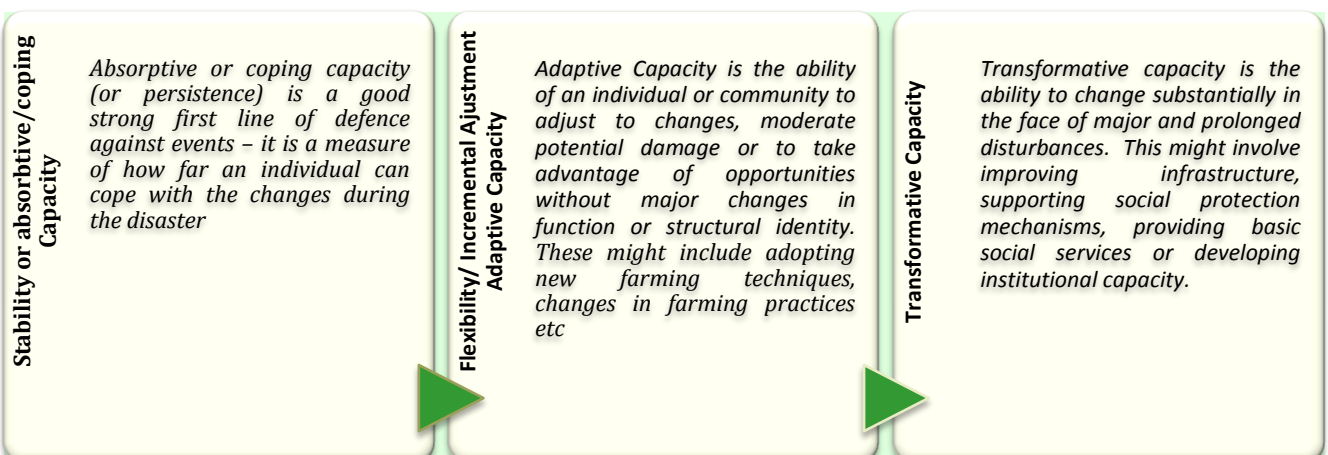
2. DEFINING RESILIENCE

The concept of Resilience has evolved over the decades. While growth was not seen as a concept embedded into resilience earlier, the more the concept is evolving – the idea of growth is also being acknowledged besides just coping with the shocks and stresses. Humanity in general tends to have an imperative of striving for resilient socio-ecological systems to gain sustainable development. Sustainable development has the objective of creating and maintaining prosperous social, economic, and ecological systems (Folke et al. 2002, p.1). Drawing from Carpenter et al. (2001), resilience can be best described by three crucial characteristics: (1) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction; (2) the degree to which the system is capable of self-organization and (3) the ability to build and increase the capacity for learning and adaptation.

Humanity and ecosystems are usually deeply linked. Therefore, while thinking about the resilience framework, it requires the necessity for rethinking *governance* issues. The resilience perspective shifts policies from those that aspire to control change in systems assumed to be stable, to manage the capacity of social–ecological systems to cope with, adapt to, and shape change (Berkes et al., 2003, Smit and Wandel, 2006). It is argued that managing for resilience enhances the likelihood of sustaining desirable pathways for development, particularly in changing environments where the future is unpredictable and surprise is likely (Walker et al., 2004; Adger et al., 2005). Therefore, to introduce the theory behind resilience is to refer a 2010 article by Folke et al. that "resilience thinking addresses the dynamics and development of complex social–ecological systems (SES)".

IPCC -*The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner.*

DFID - *Disaster resilience is the ability of countries, communities, and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses – such as earthquakes, drought or violent conflict – without compromising their long term prospects.*

Stability or absorbtive/coping Capacity

Absorptive or coping capacity (or persistence) is a good strong first line of defence against events – it is a measure of how far an individual can cope with the changes during the disaster

Flexibility/ Incremental Ajustment Adaptive Capacity

Adaptive Capacity is the ability of an individual or community to adjust to changes, moderate potential damage or to take advantage of opportunities without major changes in function or structural identity. These might include adopting new farming techniques, changes in farming practices etc

Transformative Capacity

Transformative capacity is the ability to change substantially in the face of major and prolonged disturbances. This might involve improving infrastructure, supporting social protection mechanisms, providing basic social services or developing institutional capacity.

Moreover, three aspects become central: **stability**, **adaptability,** and **transformability**.

3. FRAMEWORK FOR RESILIENCE IN CONTEXT OF BANGLADESH

3.1. EXISTING FRAMEWORK OF NARRI

While different organizations are applying their respective frameworks to address resilience, the local framework that is relevant to Bangladeshi communities needs contextualization. Besides local issues, global progress on resilience thinking and successes also had to be considered. The **Bangladesh Climate Change Strategy and Action Plan** (BCCSAP) mentions 6 major pillars of action which they want to build on to improve the lives of affected people due to climate change (See chart 4.1). The **Bangladesh National Disaster Management Plan**, gives a Disaster Management Action Matrix with key strategic areas which also have seven major goals identified (See chart 4.2). The Hyogo and Sendai Framework had mentioned key components (See Section 2) and they have been a guiding instrument as we develop the local strategic framework.

Food Security, Social Protection and Health

Comprehensive Disaster Management

Infrastructure

Research and Knowledge Management

Mitigation and Knowledge Management

Capacity building and Institutional Strengthening

NARRI has so far emphasized 6 areas as part of their resilience framework component. These are – Preparedness and adaptive capacity, disaster response mechanism, resource mobilisation by and for communities, laws and policy, international DP influencing, and green and resilient economy.

When it comes to building resilience, increasingly working teams envision complimentary components that require attention to reach their final vision. Issue of climate change comes parallel with disaster risk reduction initiatives within NARRI members.

Further consultations with outside stakeholders (BRAC, ICCCAD, MoDRM, MoEF, UNDP – CDMP phase II) also emphasizes dimensions for a comprehensive framework. Advancing concepts dealing with resilience has emphasized on 3 phases or 3 stages where programs need to look into to make their impacts scale down to the level of beneficiaries.

Therefore, the key strategic areas which require interventions in the greater socio economic system to achieve major 3 areas are:

1. Build stability through preparedness, response and resource mobilization
2. Improve adaptive strengths by building resilient livelihood and access to basic services and social safety net.
3. Develop transformative capacity through encouraging good governance and transformative leadership

Develop **transformative capacity** through encouraging **good governance** and **transformative leadership**

Improve **adaptive capacity** by building **resilient livelihood** and access to **basic services** and **social safety net**

Build **stability** through **preparedness**, **response** and **resource mobilization**

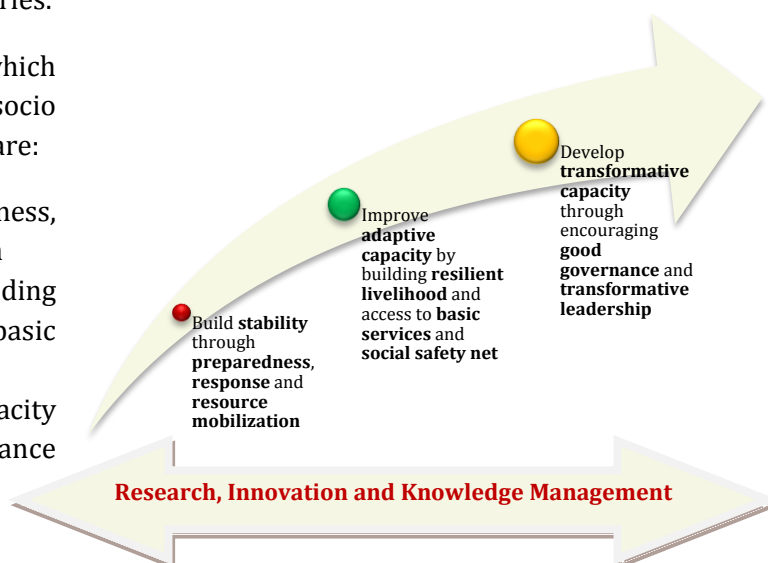**Research, Innovation and Knowledge Management**

DIAGRAM 1: RESILIENCE FRAMEWORK

And the overarching area of intervention is Research, Innovation and Knowledge management where its necessity is enormous to develop resilience.

3.2   STRATEGIC AREAS FOR INTERVENTION

3.2.1. BUILD STABILITY THROUGH PREPAREDNESS, RESPONSE AND RESOURCE MOBILIZATION

As discussed before through DIPECHO and ECHO funded previous and existing projects activities, the consortium members are already working on early preparedness to ensure access to early warning message, food and water security, developing response plans etc for the vulnerable groups inclusive of women, children, older people and socially excluded members when the disaster strikes in a geographic location in Bangladesh. DIPECHO is working to improve the capacities of communities at risk to better prepare and protect themselves. Certain progress has been done for community based disaster preparedness (CBDP) institutionalized model to increase resilience and establish a culture of DRR. This model focuses on strengthening the state mechanism for disaster preparedness through community based rural and urban preparedness. Many related initiatives have also been implemented at the individual agency level, such as Plan International's safe school and urban resilience programme, Concern Universal's activities in the field of resilient WASH, DRR and value chain development , IR's community resilience programme, CARE's Resilience building in food security and urban resilience programme, Concern WorldWide's Resilience building in coastal communities, Action Aid's Disaster Resilience Programs as well as Oxfam's resilience building in food security and resilient livelihood programs. While these activities work towards building stability of a community, more concern is now raised to address issues that arise from climate vulnerabilities (high tides, change in monsoon patterns, flash floods etc.

Still it is important to note, early preparedness remains an area where scale can be achieved for wider replication of behaviours for sustainability. Such as

PREPAREDNESS NARRI can emphasize on aiding its program team with advocacy or lobbying whenever chances of scale is there. Vulnerable communities - still needs to gain sufficient capacity in terms of knowledge development, information dissemination and skill building to prepare themselves for shocks and stresses when it comes to disaster and climate change. But to reach maximum program effect NARRI may use joint advocacy campaign with media or rounds of workshops with state actors to popularize current achievements for higher scale and replication.

RESPONSE NARRI can influence state agencies for developing services. Communities need to have access to basic emergency services during calamities besides regular relief assistance. Water security and food security are crucial for communities to become stable again. So, even before disaster strikes or climate change occur, communities need to be educated on better land and water body management. Therefore, any opportunity on knowledge dissemination regarding land and water body management can be looked into by the consortium.

RESOURCE MOBILISATION The vulnerable communities need to gain their access to locally developed sustainable resources, services and resilient facilities to improve their living condition in the face of hazards. The project activities can gear towards institutionalizing risk informed development plan where skill and resources will be required for running operations, but such soft skills of local GoB authorities(i.e. WDMC, UDMC, DMC etc) to implement CCA integrated risk reduction action plans at the community level needs to be institutionalised. NARRI can jointly develop and embed permanent courses with GOB.
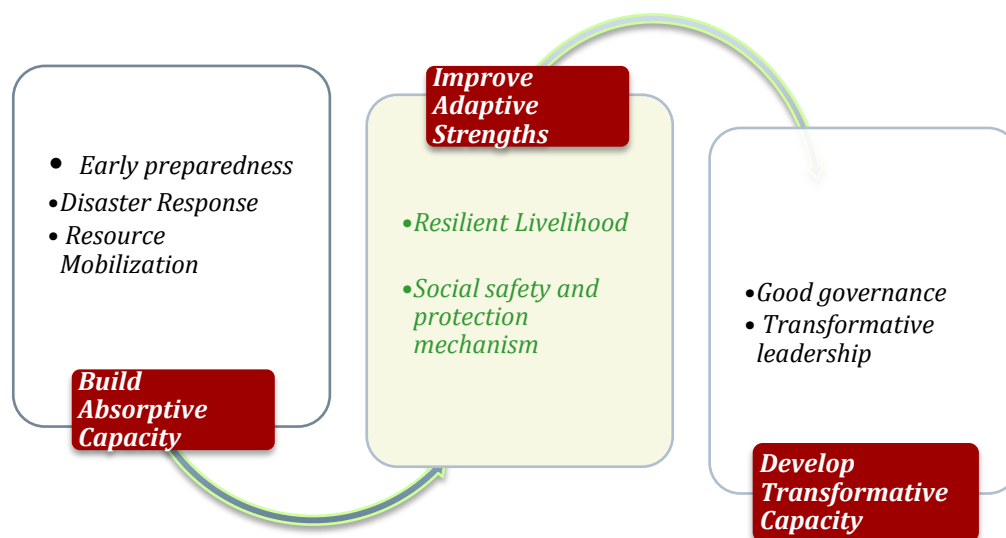
DIAGRAM 2: RESILIENCE FRAMEWORK

3.2.2. IMPROVE ADAPTIVE STRENGTHS BY BUILDING RESILIENT LIVELIHOOD AND ACCESS TO BASIC SERVICES AND SOCIAL SAFETY NET

Vulnerable poor community members need alternative livelihood options (both on farm and off farm) for incremental support to adjust with ecological and climatic changes. Unless they can engage in cash generating alternative choices, they often have to sell their assets (known as distress selling) to keep up with livelihood due to limited options. Reduction of distress selling requires access to minimal low cost financial and social capital while recovering from the shocks and stresses. Alternative livelihood options sequentially allow poor households (inclusive of women, children, person with disabilities, older people) to graduate from poverty. The choices also need to give special consideration to older people, who can engage in alternative income, allow women to get direct market access to sell their produces and have control over their resources. Alongside, communities need to produce adequate and nutritional food to grow and to feed its members.

RESILIENT LIVELIHOOD NARRI needs to emphasize more on this area in its upcoming work. This may include-
- Promote alternative livelihoods and engage vulnerable groups with other income generating activities jointly with Ministry of Agriculture
- Approach state to relax taxation for storage facilities and encourage low cost capital for storage service providers
- Approach international institutes to assist local intermediaries for crop insurance
- Assist in bringing in advanced satellite technology to monitor river erosion, flood and channel it to community (through Upazilla centres or Smartphone applications)

SOCIAL SAFETY NET Both **formal** and **informal** safety nets can be developed as such nets reduce distress selling and allow them to get back to their livelihoods. The formal social safety nets can become available to the vulnerable groups when state bodies allocate funds to offer safety nets, such as-
- Cash for work programs, mid day meals for children to prevent drop out from schools, engage women labours to repair and reconstruct during stress and hazards etc.

- On the other hand, through non state bodies (NGOs, financial intermediaries) the consortium can encourage farmer groups, producer groups to form financial group savings that can act as informal social safety nets during times of crisis.

3.2.3. DEVELOP TRANSFORMATIVE CAPACITY THROUGH ENCOURAGING GOOD GOVERNANCE AND TRANSFORMATION OF LEADERSHIP

According to the national Disaster Management plan of GOB, "All relevant organizations and agencies will integrate disaster risk reduction considerations into their sustainable development policy, planning and programming at all levels. DM&RD will act as the focal agency for disaster management and will provide the guidelines to be developed with the participation of sectoral experts to ensure its compatibility" (National Disaster Management Plan, GOB)". Since there is also a frame work BCCSAP existed along with the national disaster management plan, NARRI can identify key areas and assist in establishing good governance and encouraging transformative leadership.

GOOD GOVERNANCE NARRI can encourage good governance with the following initiatives -
- Technical support to GOB, evidence based research and capacity building. To advocate for rights that protect local interests, often specialized cells are required with adequate skills. Often experts in structured and stratified panels consisting of GOB personnel, sector based technical experts, legal advisor etc.

- Budget Allocation, activities and expense tracking from the very top to local ward level can be managed through advanced MIS. Since GOB is still not using advanced MIS to track allocated fund for disbursement and use, technological assistance to develop digital monitoring system can be areas where NARRI can look into. Development of such platforms should also need to look into online applications facility by community with the help of local WDMC (such as for improving infrastructure or to run a scheme).

- Think tanks/research institutes who can give intellectual support through evidence based research to government to bargain for better entitlement of facilities (i.e. better water treaty) and also can be potential entry for building negotiation and bargain power within regional and global platforms. (Climate Action Network South Asia or CANSA UN etc).

TRANSFORMATION OF LEADERSHIP Social groups inclusive of females, youth, persons with disability and older people need to advocate for themselves often to voice out their issues. Potential platforms to voice their needs are local committees, media and state authorities operating locally. Vulnerable groups also need certain skills to place their issues to correct authority for attention. Creating access to local GOB authorities for dialogues or access to media for addressing critical issues can be a first step for demanding facilities and entitlements. NARRI can assist in developing multiple advocacy channels for community members.

National scale policy dialogues and roundtables often create avenues with Ministry of Social Welfare and media to promote entitlement and rights (i.e bank account opening option for persons with disability below 10 taka). A joint advocacy with CBOs, farmers groups, women's networks, worker associations (urban areas) can enable opportunities for socially excluded groups.

3.2.4. RESEARCH, INNOVATION AND KNOWLEDGE MANAGEMENT FOR IMPROVING GREATER STRATEGIC ENVIRONMENT

This area remains as an overarching area of work for NARRI. The consortium can put emphasis on encouraging research and supporting innovation platforms to bring out and promote new technologies. Related knowledge sharing platforms can be made more proactive through developing soft skills where NARRI can give technical support. Local knowledge sharing platforms (Upazilla Information Centre) should give access facilities to person with disabilities, older people, and women and socially excluded. Potential national entry points for this area can be,

- A platform that is very specialized on climate change issues (such as ICCCAD) for research and knowledge sharing.
- Collaborate with tech based Agro-information providers to reach target beneficiaries (AIS helpline of GOB, other help lines such as Banglalink 7676)
- Encourage agriculture research and develop collaboration with universities (BAU, BRRI etc) to showcase innovation.
- Advocate the increasing role of clean renewable energy technologies on low carbon development, and how new technologies can increase the disaster and climate change resilience.

Apart from that, there should be more emphasis on research based actions initiated to mitigate the disaster risk and climate change. NARRI consortium can begin a dialogue on discussing new processes and technologies to reduce the environmental impact of private sector operations specially the supply chain with the sector actors. Additionally, the consortium can look into the opportunities and barriers to impact a sustainable transport mix for cities in the changing face of urban mobility.

4. RESILIENCE CAPACITIES AT DIFFERENT LEVELS

4.1. NATIONAL SCALE INDICATORS

When vulnerability and associated conditions in communities are assessed, there are variant indicators for each stage. In most cases major indicators are observed in 3 levels. They are;

- I. Indicators assessing Household level vulnerabilities
- II. Indicators assessing Community scale Vulnerabilities
- III. Indicators assessing National Vulnerability

One of the most established forms of vulnerability assessment is the analysis of food security, developed from the perspective to address famine mitigation and usually assessed at the very household level. A more comprehensive assessment of human and environmental vulnerability is the **Environmental Sustainability Index (ESI)-** which comprises measures relative success for each country for five components- environmental systems, reducing stresses, reducing human vulnerability, social and institutional capacity, and global stewardship. The United Nations Environment Programme (UNEP) Division of Early Warning and Assessment (DEWA) and GRID-Geneva are developing a Disasters Risk Index under their **Global Risk and Vulnerability Trends per Year (GRAVITY)** project. The GRAVITY project examines four major hazard types: cyclones, droughts, floods and earthquakes. The conceptual framework used by UNEP is represented by the following formula:

Risk = **frequency** X **population** X **vulnerability** where:

Risk = number of expected human losses per exposed population per time period
Frequency = expected (or average) number of events per time period
Population = number of people exposed to hazard
Vulnerability = expected percentage of population loss due to socio-political-economic Context

Socio Economic Indexes	General Indicators
Food security/ nutrition index	Cereals production per capita
Health Index	Animal protein consumption per capita
Asset Index	Life expectancy
	Dependency ratio
Social capital index	Literacy
	Flood prone population
Ecosystem Health Index	Population without access to clean water and sanitation
Economic/ Poverty Index	Population density
	SO2 emissions per area
Environment Sustainability Index	Land unmanaged
	Per capita income

4.2. INDICATORS TO MEASURE COMMUNITY RESILIENCE

Since most of the activities by consortium are geared towards communities residing in geo specific locations exposed to variant levels of vulnerabilities, this paper looks at indicators which can gauge community level indicators of changes. If required it can also look at changes in household levels. Each community are unique and have their own local needs, experiences, resources and ideas regarding the prevention, protection, and response and recovery mechanism from different types of disturbances. The baseline well-being and basic conditions measures that reflects the initial vulnerability of the communities usually include food security, health/nutrition, assets, social capital, access to services, infrastructure, ecological/ecosystem services, psychosocial measures and additional poverty measures. These can be single indicators or composite indices that represent some level or state of well-being/condition (Constas & Barrett, 2013). Some are collective action measures- such as to be resilient; communities must be able to perform collective action in at least five dimensions (i.e disaster risk reduction, conflict management, social protection, natural resource management and management of public goods).

As we discussed, building resilience requires an integrated approach that involves a long-term commitment to improving three critical capacities: absorptive capacity, adaptive capacity, and transformative capacity. Communities draw on their assets and capitals such as physical, human, financial, social etc to build such capacities. Given the strategic areas, a set of common indicators to work with are charted below -
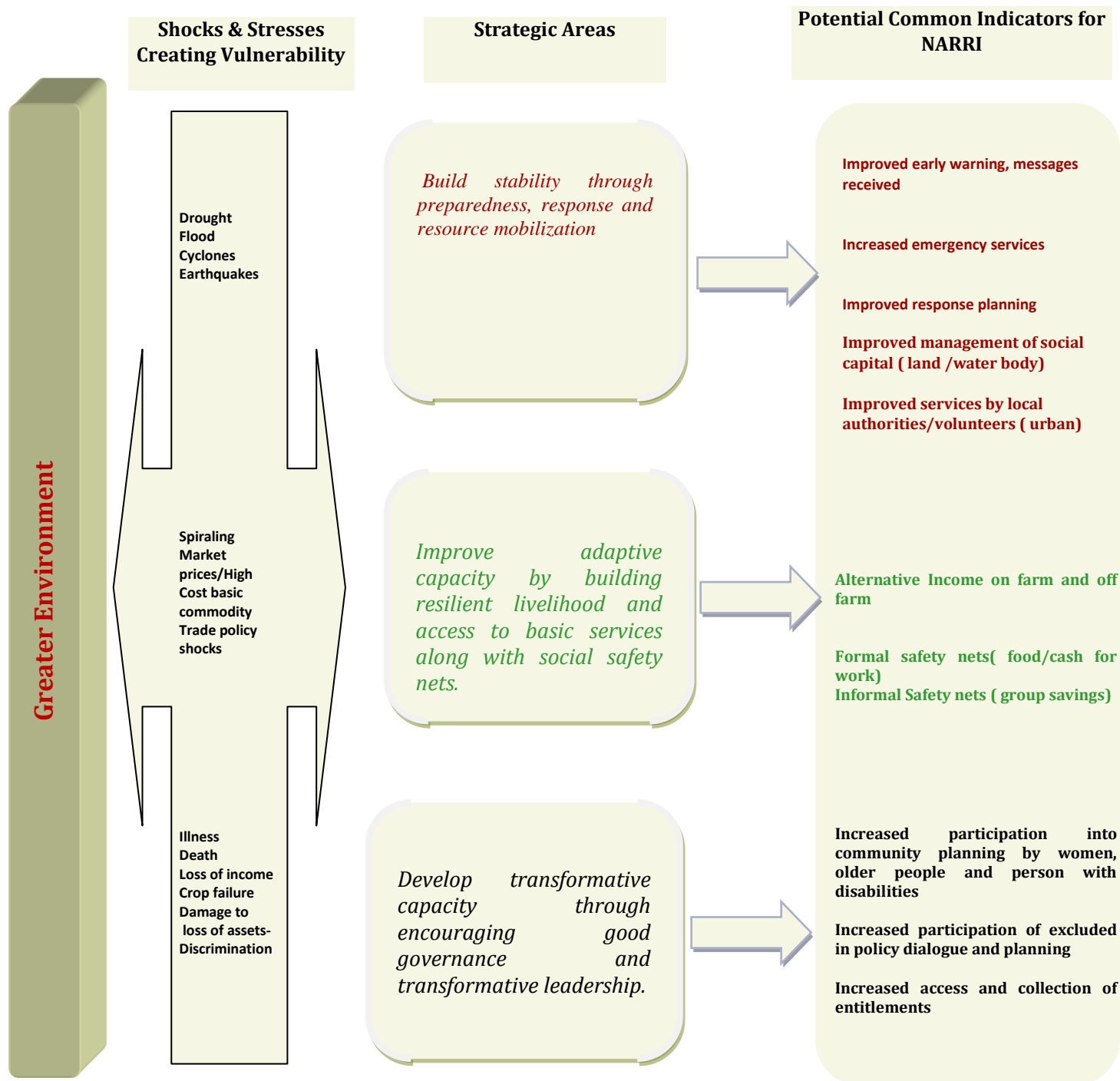
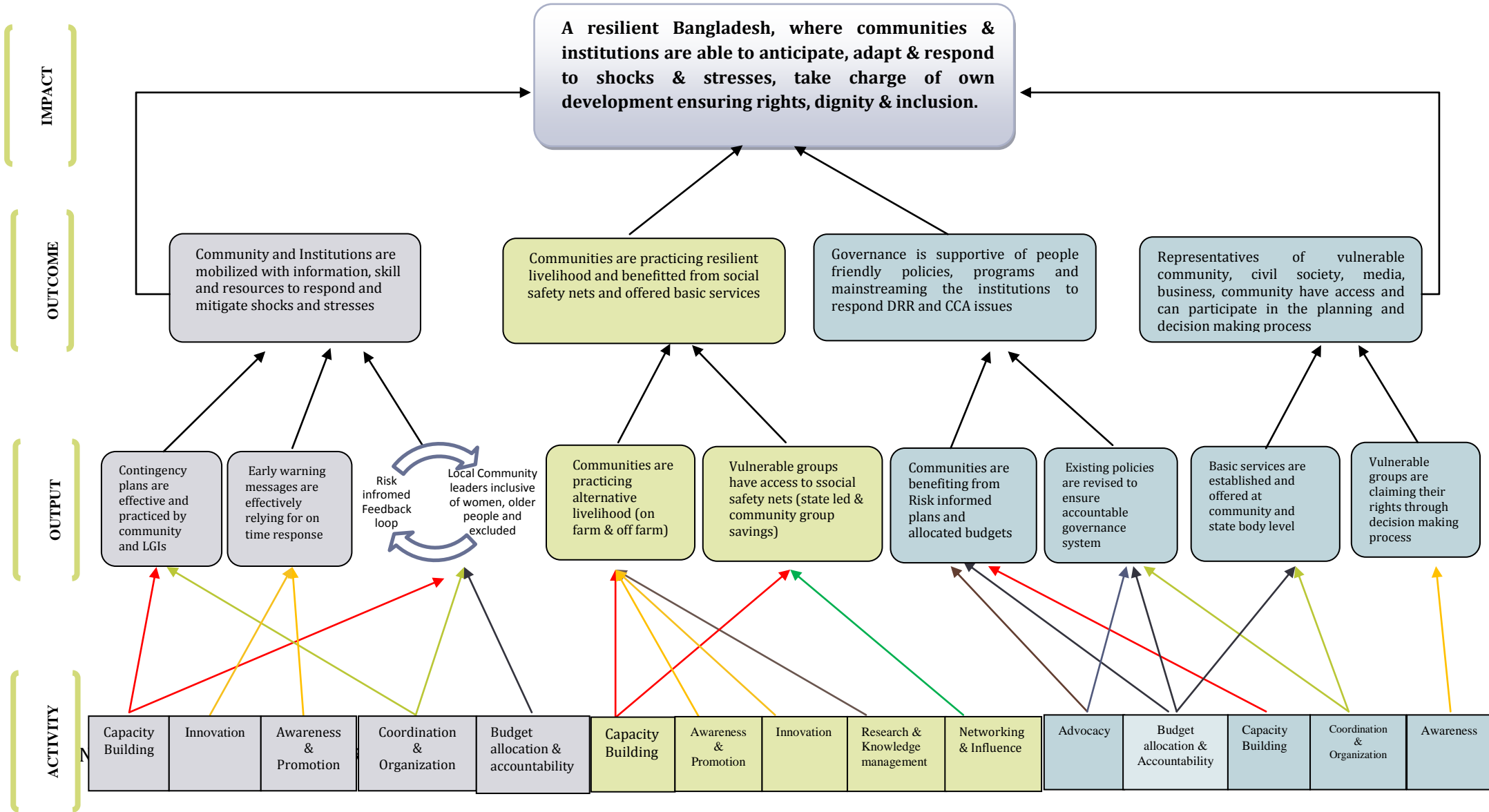| Shocks & Stresses Creating Vulnerability	Strategic Areas	Potential Common Indicators for NARRI
Greater Environment		
Drought Flood Cyclones Earthquakes	*Build stability through preparedness, response and resource mobilization*	**Improved early warning, messages received** **Increased emergency services** **Improved response planning** **Improved management of social capital (land /water body)** **Improved services by local authorities/volunteers (urban)**
Spiraling Market prices/High Cost basic commodity Trade policy shocks	*Improve adaptive capacity by building resilient livelihood and access to basic services along with social safety nets.*	**Alternative Income on farm and off farm** **Formal safety nets(food/cash for work)** **Informal Safety nets (group savings)**
Illness Death Loss of income Crop failure Damage to loss of assets- Discrimination	*Develop transformative capacity through encouraging good governance and transformative leadership.*	**Increased participation into community planning by women, older people and person with disabilities** **Increased participation of excluded in policy dialogue and planning** **Increased access and collection of entitlements**

DIAGRAM 3: Common Indicators for NARRI

5. THEORY OF CHANGE

NARRI consortium members understand that resilience needs to be looked at from the community perspective. It is also important to note the use of social capital and use of human capital to be given consideration keeping the community in mind. The TOC is developed with 4 basic simple layers articulating major pathways towards the super goal which is - '*a resilient Bangladesh, where communities and institutions are able to anticipate, adapt, and respond to shocks and stresses, take charge of own development ensuring rights, dignity and inclusion*'. To achieve this goal, four major outcomes needed to be fulfilled. These are described as follows-

Outcome	Output	Explanation of relevant activities	Assumptions need to be considered	Risk Factor
1. **Community and Institutions are mobilized with information, skill and resources to respond and mitigate shocks and stresses**. *Here it is expected that both vulnerable communities and local institutions will become efficient enough with received information, knowledge and skills in the face of a disaster and climate change and proactively respond to their demands.* *In order to gain certain self sufficiency at the community and institution level, 3 major outputs need to be achieved.*	1. **Contingency plans are effective and practiced by community and LGIs**	Through **capacity building** and improved **coordination and organization**, contingency plan at local level needs to be operational and responsive for the vulnerable targets	Institutions are actively offering the emergency services and communities are practicing it actively.	Low risk
	2. **Early warning messages are effectively relying for on time response**	Through **innovation** and further **awareness** or **promotion**, early warning messages are projected to reach the community for on time response. Such early warning messages include – TV/ Radio announcement or SMS.		
	3. **Risk informed feedback loop is present and local community leaders inclusive of women, older people and socially excluded are participating**	To create a risk informed feedback loop for local authorities, improved **coordination and organization** needs to be achieved at the local community level. Therefore, certain **capacity building activities** needs to take place so that local community leaders inclusive of women, older people and socially excluded can voice out their concerns. Parallel to this practice, **budget allocation and funds** need to be organized for implementing the risk informed planning and activities. Such as – canal excavation, dam repair etc.	The practice behaviour of feedback culture is exercised.	Medium risk in case of proper budget allocation and fund raising capacity
2. **Communities are practicing resilient livelihood and benefitted from social safety nets and offered basic services**	1. **Communities are practicing alternative livelihood (on farm**	Through capacity building, innovation, awareness and promotion, research and knowledge management.	Communities are aware of possibilities for alternative livelihood options.	

		& off farm)			
The basic assumption to achieve this outcome is that offered services are beneficial enough to the communities for recurring access	2. **Vulnerable groups have access to social safety nets (state led & community group savings)**	Certain Capacity Building may be required to develop group savings/capital and community level ; while networking and influence may result in better state led social safety net program	a. Communities are convinced and willing to practice alternative livelihood b. Communities have market access to sustain alternative livelihood	Low to medium risk
3. **Governance is supportive of people friendly policies, programs and mainstreaming the institutions to respond DRR and CCA issues** Government is proactively mainstreaming DRR and CCA issues into their related activities where else this assumption is bound with high risk factor if GoB becomes non responsive in their activities	1. **Communities are benefiting from Risk informed plans and allocated budgets**	Though advocacy there can be better involvement of communities in demanding their needs, certain capacity building needs to occur at this level. Finally budget allocation and accountability needs to be established for clear disbursement of the funds.	Vulnerable groups are proactively seeking social safety nets	Low risk
	2. **Existing policies are revised to ensure accountable governance system**	Improved co ordination and organization through specialized cells, influencing budget allocation and assisting in accountability will further result in policy implementation. Here certain capacity building may be required at local level to develop accountable disbursement of funds.	Local government bodies are acting as per SOD	Medium risk
4. **Representatives of vulnerable community, civil society, media, business, and community have access and can participate in the planning and decision making process** Decision making platforms are responsive to the ongoing and increasing demands of vulnerable groups	1. **Basic services are established and offered at community and state body level**	Establishing basic service would require budget allocation and accountability at local government level. It would also require co ordination and organization for proper delivery.	GoBs are implementing policies and program with accountability and transparency	High risk- requires mitigation
	2. **Vulnerable groups are claiming their rights through decision making**	Awareness campaigns needs to be administered jointly with local vulnerable groups to influence budget allocations and developing facilities or social capital at local level.	Vulnerable groups are interested and aware to claim their rights and be part of decision making process	Low risk

IN A GLANCE

A resilient Bangladesh, where communities & institutions are able to anticipate, adapt & respond to shocks & stresses, take charge of own development ensuring rights, dignity & inclusion.

IMPACT

OUTCOME

Community and Institutions are mobilized with information, skill and resources to respond and mitigate shocks and stresses

Communities are practicing resilient livelihood and benefitted from social safety nets and offered basic services

Governance is supportive of people friendly policies, programs and mainstreaming the institutions to respond DRR and CCA issues

Representatives of vulnerable community, civil society, media, business, community have access and can participate in the planning and decision making process

OUTPUT

Contingency plans are effective and practiced by community and LGIs

Early warning messages are effectively relying for on time response

Risk infromed Feedback loop

Local Community leaders inclusive of women, older people and excluded

Communities are practicing alternative livelihood (on farm & off farm)

Vulnerable groups have access to ssocial safety nets (state led & community group savings)

Communities are benefiting from Risk informed plans and allocated budgets

Existing policies are revised to ensure accountable governance system

Basic services are established and offered at community and state body level

Vulnerable groups are claiming their rights through decision making process

ACTIVITY

Capacity Building	Innovation	Awareness & Promotion	Coordination & Organization	Budget allocation & accountability
Capacity Building	Awareness & Promotion	Innovation	Research & Knowledge management	Networking & Influence
Advocacy	Budget allocation & Accountability	Capacity Building	Coordination & Organization	Awareness

6. CONCLUSION

Resilience is an important issue for sustainable development of Bangladesh. Thus it is crucial to listen what other stakeholders (relevant GoB Ministries, research institutes, UNDP's CDMP etc) have experienced and how to collaborate and share learning experiences from both ends to meet the desired resilience in communities for Bangladesh. Other stakeholders who are non members of NARRI consortium but possess and share greater working ethos regarding disaster risk reduction and climate change mitigation and thus are propagating resilience and development all together, also echoed similar concerns as NARRI members such as–

People at the Very Core- unfortunately sometimes there is less focus on keeping the people at the very core of the concept giving relief and rehabilitation more emphasis but solutions and services which are friendly to the actual vulnerable are not administered pro-actively.
 Critical Overview- needs to be done with existing approach and style with the way we look at resilience and the approach taken to assist the actual vulnerable. Also a common understanding and framework about 'resilience' needs to be developed within the country to minimize the incongruity.

Community Capacity as opposed to household only -needs more emphasis after each natural setback offering its members regular livelihood options, more access to business and trading opportunity for individual level but the pathway will be assisted by commonness. If possible assist or encourage very low cost or 0% cost capital through GOB, especially for the vulnerable.
Strengthening Partnerships - for Capacity Building and Finance for Local Climate Change Adaptation practices in Bangladesh where local organisation can build social and human capital fund in every community level can help the beneficiaries

 More collaboration with research hubs and knowledge platforms – is required to do action based research, foster adaptation and respond comprehensively to the effects of climate change and natural disasters. Already BRAC is conducting predictive research, information transfer and education in relation to environment, climate change and natural disasters within the community level along with capacity building of GoB stakeholders. GOB is also thinking of new future areas - where interventions can address issues such as health hazard from unsafe and contaminated food, road and waterway safety etc. Only effective collaboration of GoB, NGOs, and civil society can further address 'risk governance'.

As a consortium, NARRI has diversified strengths that it can channel to create a change in the greater socio economic system. It can use its strengths for collective negotiations in better service and facilities development which individually such vulnerable communities fail to bargain for. But for selecting activities, NARRI needs to give more emphasis on tangible benefits that it can create for the actual primary beneficiaries. Such benefits include new or improved public service, new public or private facility that are evident through creating human, social and financial capital within local communities. Such development can further facilitate sustenance and growth of *natural capitals*. Thus the pro people and pro poor activities can lead to development of actual resilient communities in Bangladesh.

REFERENCES

ARCAB, 2012, *ARCAB M&E and Baseline Strategy for CBA: Final Report.* November 2012.

Bangladesh Institute of Development Studies (BIDS) Dhaka, Bangladesh

CDKN & ODI, 2014, The future framework for disaster risk reduction: A guide for decision-makers, Climate & Development Knowledge Network and Overseas Development Institute.

Climate Resilient Development: A Framework for understanding and addressing Climate Change, 2014, USAID

Defining Disaster Resilience: A DFID Approach Paper, Department for International Development, UKaid

Fifth Assessment Report, accessed from http://ar5-syr.ipcc.ch/ on 6th Oct, 2015.

Human Development Report 2014, Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience

MoEF, 2009. Bangladesh Climate Change Strategy and Action Plan 2009. Ministry of Environment and Forests, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh. Xviii + 76pp.

National Plan for Disaster Management 2010 – 2015, 2010, Disaster Management Bureau and Disaster Management & relief Distribution, April 2010.

National Plan for Disaster, 2010-2015, Government of Bangladesh

Natural Disasters, Risks, Vulnerability and Persistence of Poverty: An Analysis of Household Level Data Quazi Shahabuddin and Zulfiqar Ali

Nick Brooks, Eunica Aure, Martin Whiteside, 2014, *Final report: Assessing the impact of ICF programmes on household and community resilience to climate change variability and climate change*, Landell Mills and Garama 3CLtd.

Pisano, U., 2012, Resilience and Sustainable Development: Theory of resilience, systems thinking and adaptive governance, ESDN Quarterly Report N26, ESDN, Austria.

Rahman, M.M. and Bux, M.K., 1995, *Post Disaster Situation of water supply and sanitation,* in Journal of Civil Engineering Division, The Institution of Engineers, Bangladesh, Vol-CE23, No-1.

Reducing Vulnerability and Exposure to Disasters, The Asia-Pacific Disaster Report 2

Reducing Vulnerability and Exposure to Disasters, The Asia-Pacific Disaster Report

Sendai Framework for Disaster Risk Reduction, 2015 – 2030, United Nations

UNEP and UNISDR, The PREVIEW Global Risk Data Platform, http:// preview.grid.unep. ch (accessed May 2012). *Cartography:* UNEP/GRID

United Nations Office for Disaster Risk Reduction (UNISDR), "2009 UNISDR Terminology on Disaster Risk Reduction", Geneva, May 2009 (http://www.unisdr. org/we/inform/terminology)

Vulnerability Index,
http://reliefweb.int/sites/reliefweb.int/files/resources/Climate_Change_Vulnerability_Index_%20 2014_Map.pdf

W. N. ADGER, N. BROOKS, M. KELLY, G. BENTHAM, M. AGNEW AND S. ERIKSEN, 2004, *New Indicators of Vulnerability and Adaptive Capacity,* Tyndall Centre for Climate Change Research, January 2004.

World Bank, 2013. Building Resilience: Integrating climate and disaster risk into development. Lessons from World Bank Group experience. The World Bank, Washington DC.

Annexure

ANNEX A: CONCEPTS OF VULNERABILITY AND RESILIENCE

The term "resilience" originated in the 1970s in the field of ecology from the research of C.S. Holling, who defined **resilience** as "a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Holling, 1973, p. 14). In short, resilience is best defined as "**the ability of a system to absorb disturbances and still retain its basic function and structure**" (Walker and Salt, 2006, p.1 and as "the capacity to change in order to maintain the same identity" (Folke et al., 2010). Drawing from Carpenter et al. (2001), resilience can be best described by three crucial characteristics: (1) the amount of disturbance a system can absorb and still remain within the same state or domain of attraction; (2) the degree to which the system is capable of self-organization; and (3) the ability to build and increase the capacity for learning and adaptation.

In the **need for persistence**, we can find a first connection with sustainable development. Sustainable development has the objective of creating and maintaining prosperous social, economic, and ecological systems (Folke et al. 2002, p.1). Humanity has a need for persistence. And since humanity depends on services of ecosystems for its wealth and security, humanity and ecosystems are deeply linked. As a result, humanity has the imperative of striving for resilient socio-ecological systems in light of sustainable development.

Resilience thinking is inevitably systems thinking at least as much as sustainable development is. In fact, "when considering systems of humans and nature (social-ecological systems) it is important to consider the system as a whole. The human domain and the biophysical domain are interdependent" (Walker and Salt, 2006, pp.38). In this framework where resilience is aligned with systems thinking, three concepts are crucial to grasp (Walker and Salt, 2006): (1) humans live and operate in social systems that are inextricably linked with the ecological systems in which they are embedded; (2) social-ecological systems are complex adaptive systems that do not change in a predictable, linear, incremental fashion; and (3) resilience thinking provides a framework for viewing a social-eco-logical system as one system operating over many linked scales of time and space. Its focus is on how the system changes and copes with disturbance.

To fully understand the resilience theory, the report focuses therefore on the explanation of a number of crucial concepts: **thresholds**, the **adaptive cycle, resilience**, **adaptability,** and **transformability**.

As shown, humanity and ecosystems are deeply linked. This is also the fundamental reason why to adopt the resilience-thinking framework is a necessity for **governance**. The resilience perspective shifts policies from those that aspire to control change in systems assumed to be stable, to **managing the capacity of social–ecological systems to cope with, adapt to, and shape change** (Berkes et al., 2003, Smit and Wandel, 2006). It is argued that managing for resilience enhances the likelihood of sustaining desirable pathways for development, particularly in changing environments where the future is unpredictable and surprise is likely (Walker et al., 2004; Adger et al., 2005).

A clever way to introduce the theory behind resilience is to report a few lines of a 2010 article by Folke et al. that perfectly and clearly explain the most important characteristics of the issue. In their words, "resilience thinking addresses the dynamics and development of complex social–ecological systems (SES). Three aspects are [therefore] central: **resilience**, **adaptability,** and **transformability**. These aspects interrelate across multiple scales: Resilience and Sustainable Development.

Source- European Development Network Publications, 2012

FRAMEWORK	CORE ELEMENTS
DFID DISASTER RESILIENCE Definition of Resilience: '*the ability of countries, communities and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses – such as earthquakes, drought or violent conflict – without compromising their long-term prospects*'.	• **Context**: Whose resilience is being built – such as a social group, socio-economic or political system, environmental context or institution • **Disturbance**: What shocks (sudden events like conflict or disasters) and/or stresses (long-term trends like resource degradation, urbanisation, or climate change) the group aims to be resilient to. • **Capacity to respond**: The ability of a system or process to deal with a shock or stress depends on exposure (the magnitude of the shock or stress), sensitivity (the degree to which a system will be affected by, or will respond to, a given shock or stress), and adaptive capacity (how well it can adjust to a disturbance or moderate damage, take advantage of opportunities and cope with the consequences of a transformation). • **Reaction**: A range of responses are possible, including: bounce back better, where capacities are enhanced, exposures are reduced, and the system is more able to deal with future shocks and stresses; bounce back, where pre-existing conditions prevail; or recover, but worse than before, meaning capacities are reduced. In the worst-case scenario, the system collapses, leading to a catastrophic reduction in capacity to cope with the future.
FRAMEWORK	CORE ELEMENTS
HYOGO FRAMEWORK FOR ACTION The World Conference on Disaster Reduction was held from 18 to 22 January 2005 in Kobe, Hyogo, Japan, and adopted the present Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. *Expected Outcome*: The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets	• **Prioritize Risk Reduction:** Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation. • **Risk identification and action:** Identify, assess, and monitor disaster risks- and enhance early warning. • **Understanding and Awareness:** Use knowledge, innovation, and education to build a culture of safety and resilience at all levels. • **Risk Reduction:** Reduce the underlying risk factors and protecting communities through

FRAMEWORK	CORE ELEMENTS
of communities and countries.	building resilience. • **Preparedness:** Strengthen disaster preparedness for effective response at all levels.
SENDAI FRAMEWORK *Expected Outcome*: The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.	• **Understanding disaster risk:** Policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. • **Strengthening disaster risk governance to manage disaster risk:** Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk. • **Investing in disaster risk reduction for resilience:** Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. • **Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction:** The steady growth of disaster risk, including the increase of people and assets exposure, combined with the lessons learned from past disasters, indicates the need to further strengthen disaster preparedness for response, take action in anticipation of events, integrate disaster risk reduction in response preparedness and ensure that capacities are in place for effective response and recovery at all levels.

TABLE C. 1

VARIOUS SYMPTOMS RELATED WITH VULNERABILITY IN THE COMMUNITIES

Deaths and Loss of Assets: *GOB reports reveal human death and asset losses are related to natural disasters (National Plan for Disaster, GOB, see data in Annex E).*

Food Shortages: Surveys confirm the households in unfavourable zones are more prone to food shortages and have lower percentage of households having surplus food as compared to those in the favourable zone. Moreover, clear drinking water becomes crucial for such communities for survival (Ruhman and Bux, 1995)

Extreme Poverty: About one third of the households in flood prone areas consider themselves as extreme poor (Shahabuddin and Ali, BIDS).

Illiteracy: The highest rate of illiteracy is observed in the flood-prone zone (52 per cent) and the lowest in the drought-prone zone (42 per cent). (Shahabuddin and Ali, BIDS).

Disruption in Regular Livelihood: A study on livelihood coping and recovery from disaster (Kamal, 2013)which investigated Aila victims suggested that the poor section predominantly relied on 'common property resources' or natural capital such as water and forests for their livelihood. The dominant coping strategies included fishing, collecting fish fry and State Resolving Fund resources. In addition, informal support mechanisms such as kin and community networks, credit from mahajans (local creditors) helped them to cope with the devastating situation.

Supply Chain Disruption: Disasters caused by natural hazards are one cause of disruptions to supply chains. This can easily result in widespread damage to several firms and facilities at the same time, in a common location (ADB, 2012).

Structural Vulnerabilities: Where social and legal institutions, power structures, political spaces, or traditions and socio-cultural norms do not serve members of society equally; they tend to create structural barriers for some people and groups to exercise their rights and choices—they give rise to structural vulnerabilities (Human Development Report, UN 2014) . Usually The poor, women, minorities (ethnic, linguistic, religious, migrant or sexual), indigenous peoples, people in rural or remote areas or living with disabilities suffer due to structural barriers and are less able to receive public services and access facilities. (Human Development Report, UN 2014). Locally, such structural vulnerabilities are also evident.

TABLE C. 2: COMMUNITY AND TARGET AUDIENCE HETEROGENEITY

Primary Beneficiary		Secondary Beneficiary
Adult (Male & female)	18+ to 61	Local Government Institutes
Older People (Male & female)	62+	Local Schools and Educational Institutions
Children	0 – 18	GoB
Minorities		Research Institutes
Socially excluded		Civil Society

TABLE C.3: INCIDENTS OF HAZARDS AND THEIR EFFECTS ON COMMUNITIES AT MULTILEVEL

Household	Community	National
Lack of access to Food, Water and WASH	Unusable basic services (tube wells, ponds etc, water supply)	-
Disrupted Livelihood	• Destruction of structures (schools, roads, dams etc) • Low investment in locality by legal financial intermediaries (banks) • Disrupted local market activity • Traders' networks are less active	Supply Chain Disruption of services and low supply from affected areas
Outbreak of diseases	• Health facilities infrastructure and service providers are inaccessible.	National health and disease indicators will fluctuate
Drop out from school	Literacy program can be disrupted	-
Homelessness / migration	• Increased social insecurity of person and assets • Social structure (kinship ties, family system) becomes weakened.	Migration into big city

Climate Change Vulnerability Index 2015

Rank	Country	Category
1	Bangladesh	Extreme
2	Sierra Leone	Extreme
3	South Sudan	Extreme
3	Nigeria	Extreme
5	Chad	Extreme
6	Haiti	Extreme
7	Ethiopia	Extreme
8	Philippines	Extreme
9	C.A.R.	Extreme
9	Eritrea	Extreme
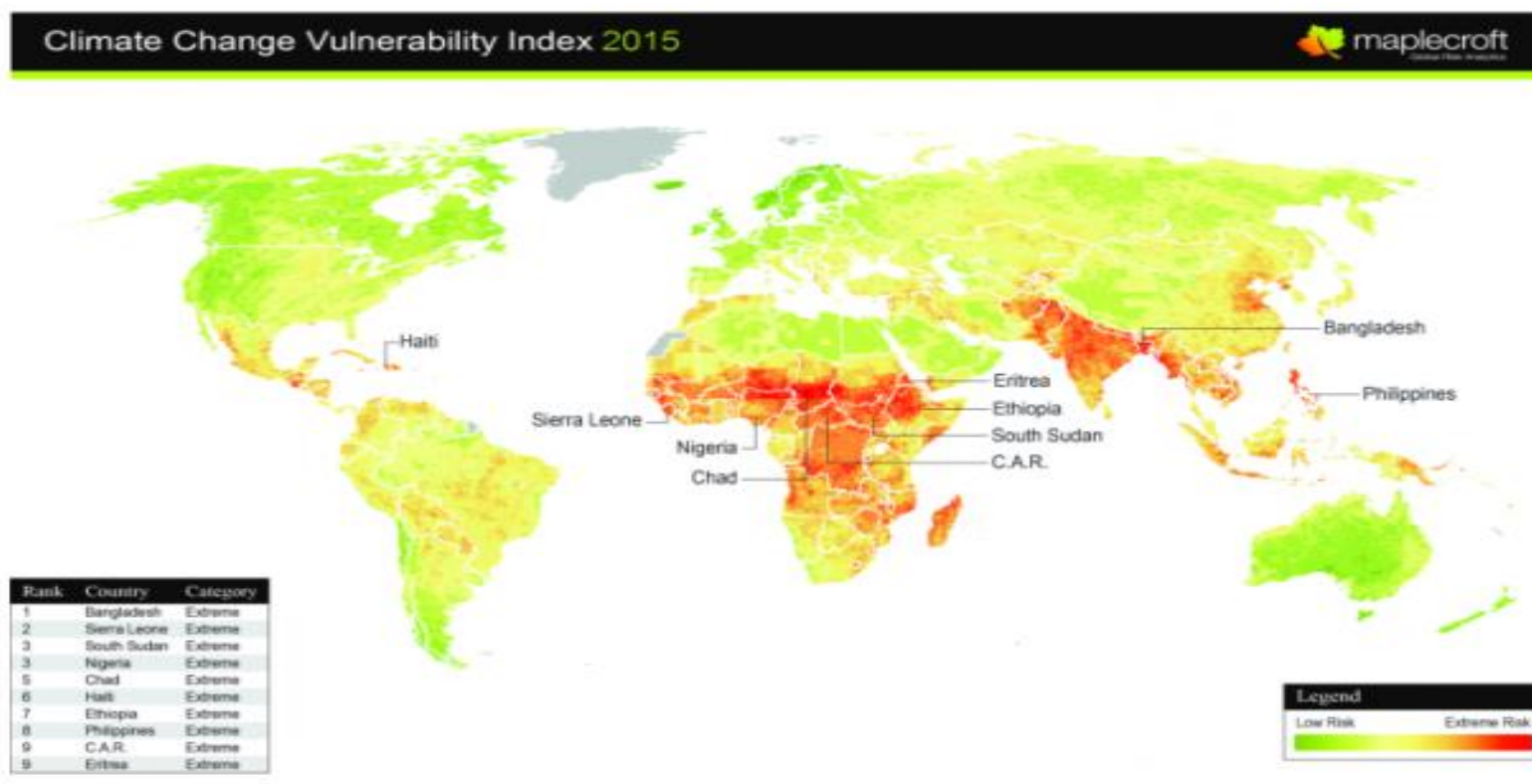
© Maplecroft 2014 | 1 Henry Street, Bath BA1 1JS, United Kingdom | t. +44 (0)1225 420000 | www.maplecroft.com | info@maplecroft.com

ANNEX E: DISASTER AFFECTED AREAS AND DAMAGES

Flood 2007	Sidr 2007
Affected District: 39	Affected Districts: 30
Affected Upazilla : 256	Most Affected Districts: 12
Affected Union: 2057	Affected Upazillas: 200
Affected Pourashava: 67	Affected Union/Municipality: 1,950
Families affected at present: 22,86,564	Affected Families : 2064026
Affected People: 1,06,55,145	Affected People: 8923259
Death (drowning, snake bite etc): 554	Fully Damaged Crop Fields: 186,883 hectare
Households (Full): 62,956	Partially Damaged Crop Fields: 498,645 hectare
Households (Partial) : 8,81,922	Fully Damaged Houses: 563877

Source: MHFP
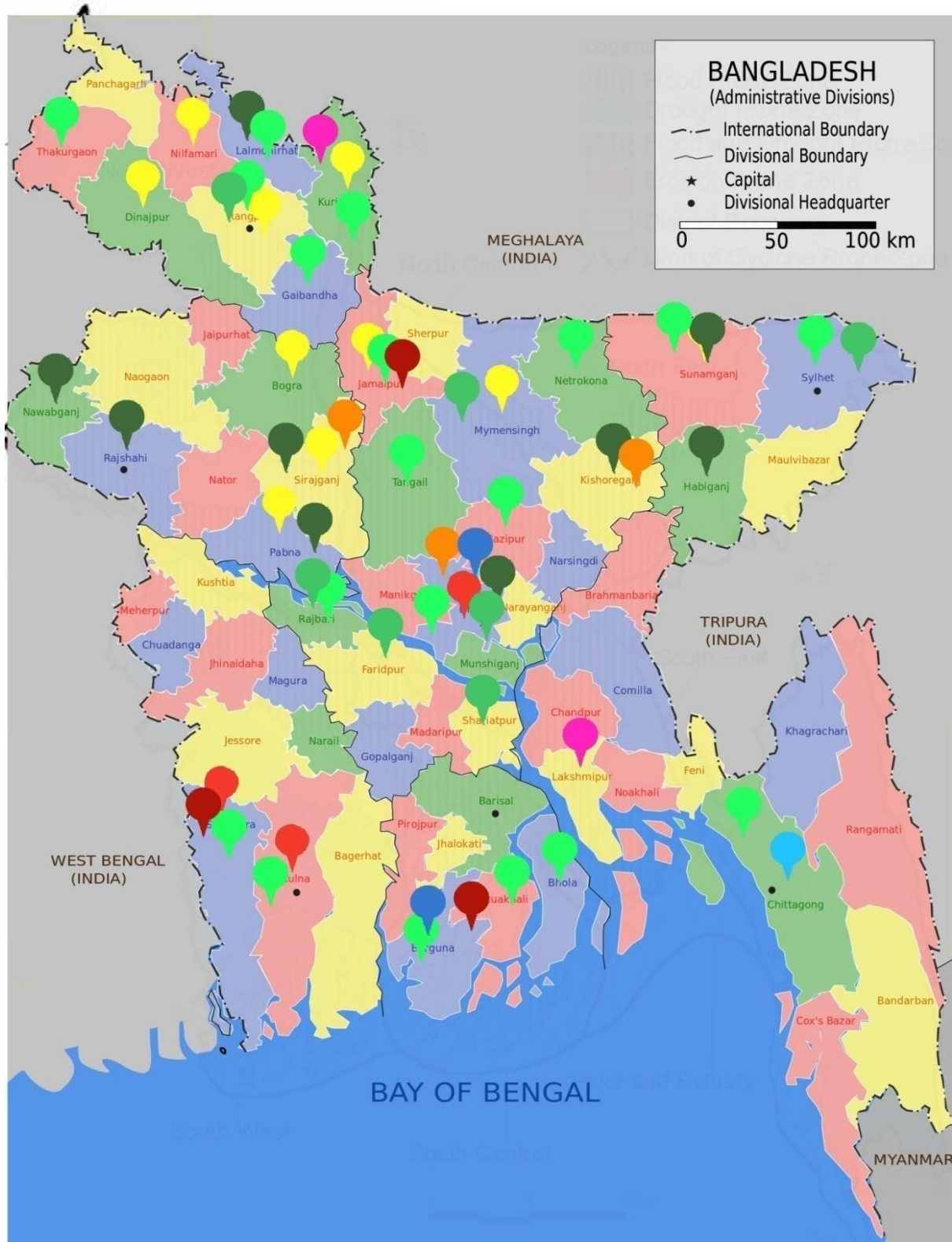
Organization	Logo	Legend	Location (District)
ActionAid Bangladesh			Khulna, Satkhira & Dhaka
Care Bangladesh			Rangpur, Kurigram, Nilphamari,Dinajpur, Sirajganj, Bogra,Pabna, Mymensing, Jamalpur and Sunamganj
Concern Worldwide			Sirajganj, Nawabganj, Rajshahi, Pabna, Lalmonirhat, Kishoreganj, Sunamganj, Habiganj & Dhaka
Concern Universal			Kishoregonj, Dhaka & Sirajganj
Handicap International Bangladesh			Chittagong
HelpAge International			Kurigram and Laxmipur
Islamic Relief Bangladesh			Lalmonirhat, Bhola, Sunamganj, Dhaka, Gazipur, Patuakhali, Khulna, Borguna, Satkhira, Rajbari, Rangpur, Thakurgaon, Sylhet, Gaibandha, Chittagong, Natrokona, Kurigram, Tangail, Jamalpur
Oxfam			Shariatpur, Faridpur, Rajbari, Sylhet, Dhaka, Mymensingh & Rangpur
Plan International			Dhaka & Borguna
Solidarités International			Jamalpur, Shatkhira &Borguna
NARRI			Khulna, Satkhira, Dhaka, Kurigram, Kishoreganj, Sirajganj, Sylhet, Gaibandha, Gazipur, Mymensingh, Rangpur, Barguna