

climate study series - 1



**Climate Change, Vulnerability and Livelihood
Possibilities and Prospect of the Charlands of Bangladesh**

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1. Background

Bangladesh remains one of the world's poorest countries with over 50% (65 million people) of the population classified as poor. 36% of all Bangladeshis are extreme poor.¹ Bangladesh is also a highly disaster prone land with floods and cyclone affecting the country regularly. In the case of Bangladesh it can be said that 'Many natural elements are not favorable to human existence. Hazards occur when these potential threats to human lives and resources, in terms of loss and damage, emerge from the intersections between extreme geophysical events and a vulnerable human community'.²

To understand the lives and livelihoods of the people of a riverine country like Bangladesh and their vulnerability to disasters, it is necessary to explore how human needs and wants intersect with nature, and transform nature into resources by modifying its different facets. It is therefore important to know the degree to which socio-economic system or physical assets are either susceptible or resilient to the impact of natural hazards and environmental changes because vulnerability is determined by the interplay of a combination of several factors, including hazard awareness, the condition of human settlements and infrastructure, public policy and administration, etc.³

By definition households deemed unviable include some of the poorest of the poor. They have very limited potential to respond creatively to the situation and to develop other, less agrarian livelihoods. Households who possess somewhat more human and financial capital respond to the constraints on the viability of their agricultural base by building spatially complex and mobile strategies, ranging from the combination of on and off-farm activities.⁴ Thus livelihoods are

¹ Over the years there have been many cross-sectional studies of income distribution and poverty in Bangladesh, using various definitions. Nationally, the percentage of the population below upper and lower poverty lines fell by 9% and poverty headcount indices declined by 1% per year. For a good overview of the overall development trend of Bangladesh see *DFID – Department for International Development, 2002, Country Strategy Review 1998-2002, Bangladesh. DFID Bangladesh*. Also see GOB. 2002. "Bangladesh: A National Strategy for Economic Growth, Poverty Reduction and Social Development," draft .Dhaka: Economic Relations Division, Ministry of Finance.

² Emdad, C Haque. *Hazards in a Fickle Environment: Bangladesh*, Kluwer Academic Publishers, the Netherlands, 1997.pp 6-13.

³ http://www.dfid.gov.uk/pubs/files/whitepaper_1997.pdf. This is the 1997 white paper on Eliminating World Poverty, produced by Department for International Department of UK. This paper along with other development strategies had set scene for development strategy for Bangladesh. See also <http://www.livelihoods.org> and www.sdgateway.net for information on environment-poverty links.

⁴ Mamun, Z. Muhammad & Amin, A.T.M. Nurul., 1999.*Strategic Plans to Mitigate Riverbank Erosion Disasters in Bangladesh*, Dhaka, Bangladesh University Press Limited, pp 24-27.

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multilocal in Bangladesh, working across non-contiguous spaces while most development interventions continue to be spatially focused.⁵

Disasters, general instability and conflicts are the most visible evidence of the result of unsustainable development practices which increase risk and make disasters more likely and deflect scarce resources from critical development needs in any country. Sustainable development requires correction of such discordant policies, and harmonizing of environmental protection and development. Gender inequalities, if persisting in legal, social and economic institutions, can increase the hardships, discrimination, and inefficiencies, associated with disasters.

Therefore specific dimensions of social, economic and political vulnerability are related to inequality, gender relations and economic patterns of any community. The level of risk in relation to natural disasters in a society is, thus, determined by the levels of vulnerability, combined with the level of probability of the occurrence of a natural hazard (flood, drought, landslide, earthquake, volcanic eruptions, storm, and cyclone) as well as the level and intensity of such a hazard.⁶

The Yokohama World Conference on Natural Disaster Reduction (1994), a mid-term review of the International Decade for Natural Disaster Reduction, placed greater emphasis on the role of social sciences in research, policy development and implementation and emphasized the links between disaster reduction and sustainable development. It also recognized the need to stimulate community involvement and empowerment of women at all stages of disaster management programmes as an integral part of reducing community vulnerability to natural disasters.

2. Environment, Vulnerability and Livelihood in the Charlands

Bangladesh is mainly composed of the floodplains and delta of three rivers, the Jamuna, the Padma and the Meghna.⁷ Bangladesh was, and continues to be, formed by sedimentation and accretion of these rivers as they flow from the Himalayas to the Bay of Bengal.

Brammer, Hugh, *Agricultural Disaster Management in Bangladesh*, 1999 Dhaka, Bangladesh : University Press Limited, pp 12-16.

⁵ A. Bebbington and J. Farrington, 1993 "Governments, NGOs and agricultural development: perspectives on changing inter-organizational relationships." *Journal of Development Studies* 29 (2): 199-219.

⁶ Ashley, S., Kar, Kamal., Hossain, Abul. and Nandi, Shibabrata., 2000, *The Chars Livelihood Assistance Scoping Study: Final Report*, Crewkerne, UK. Development Ltd.

⁷ The *Brahmaputra* is called the *Jamuna* in *Bangladesh* while the *Ganges* is known as the *Padma*.

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In combination with natural resource degradation, natural hazards are leading to an increased frequency of small- or medium-impact disasters produced by recurrent floods in Bangladesh, for example, as well as slow on-set disasters such as land degradation and drought. The accumulated losses from these disasters are often responsible for even more aggregate suffering than major disasters. They do not figure in databases evaluating disaster impacts although their combined costs are considerable; some suggest that they may approximate or even exceed those associated with large, but relatively infrequent, disasters.⁸

Charlands are the sandbars that emerge as islands within the river channel or as attached land to the riverbanks as a result of the dynamics of erosion and accretion in the rivers of Bangladesh. Land is a major source of conflict in Bangladesh and the proportion of landless people has been increasing with nearly 50% of rural households functionally landless.⁹ Population pressure is, therefore obviously, very high in all areas (average population per square km is 800) with the poor and landless forced to live very marginal areas .i.e Chars.

The Chars are, thus, home to some of the poorest and most vulnerable people in Bangladesh. These areas are particularly prone to the effects of frequent climatic shocks (floods, drought and cyclones) which increases the precariousness of poor people's lives by wiping out their assets and pushing them deeper into poverty.¹⁰

An estimated 6.5 million people, around 5% of the Bangladeshi population live on the Chars and. Of the total land area of the country, 5% is *Char*, which comes to about a total area of approximately 7,200 square kilometers.¹¹ In addition to the major physical risks associated with the rivers, Char-dwellers in particular are

⁸ PhilipGayen., 1998. *Bangladesh Environment: Facing the 21st Century*. Society for Environmental Development, Dhaka.pp23-26.

⁹ BBS (Bangladesh Bureau of Statistics). 2002. *Statistical Yearbook of Bangladesh* Dhaka :Bangladesh Bureau of Statistics, Planning Division, Ministry of Planning.

¹⁰ People in the Chars undergo several rounds of displacement due to climatic shocks in their lifetime. A study of people living along the banks of the Brahmaputra in NW Bangladesh indicated that 25% of families have migrated three times over the last ten years. See CARE-Bangladesh and DFID-B.,2002, *The Findings of the Northwest Rural Livelihoods Baseline – 2002 Livelihood Monitoring Project*, Dhaka, Bangladesh.

¹¹ EGIS, 2000. *Riverine Chars in Bangladesh -environmental dynamics and management issues*. 2001. Environment and GIS Support Project for Water Sector Planning (EGIS). University Press. ISBN 984 05 1580 2. However, this is not a static statistic. The environment of *Charlands* is fickle and inconstant. A large area of these *Chars* gets flooded every year. In 1991, which is considered a high-average year, about 65% of the total land area was inundated in the upper reaches of the Brahmanputra-Jamuna. The 1998 floods inundated most of the area.

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marginalized from the benefits of mainland Bangladeshi society through their poor communication networks.¹²

The Char dwellers mainly depend on agriculture and agriculture related activities. Opportunities for off farm activities are marginal. As a result of river erosion cultivable land, crops and homestead are often damaged or devoured by rivers regularly. The level of awareness with respect to health, water & sanitation, environment, rights and gender is at a minimum. Livelihood strategies linked to environmental change and variability, are, therefore, by necessity, *mobile* to cope with regular erosion. Traditional development approaches are, consequently, rarely successful in the Chars. These areas have not been the focus of development efforts of the public or private agencies in Bangladesh.¹³ Only recently some research has been undertaken to assess the vulnerability and livelihood of Char communities.¹⁴

The lack of basic services and governance representation and dependence on limited and seasonally variable resource access demands highly innovative and diversified livelihood strategies in the Chars but this also leads to considerable social inequity. High food insecurity and low income results in the out migration of at least one household member (usually adult male) to find employment, leaving women and children to subsist. As a result there are many women headed households in the Chars and poorer women are burdened with household, crop cultivation and income generating (often food processing) demands.¹⁵

¹² Thompson, P.M.,2000, *Bangladesh Charlands: A review of assets and change*, International Centre for Living Aquatic Resources Management (ICLARM) Dhaka. Various studies have shown that the Jamuna bridge had negative impact on the livelihood of the people living downstream of Jamuna river. See for example, Mojibur Rahman., 1999, *Impact of Jamuna Bridge on Livelihood Strategies of Char Dwellers of Jamuna river*. Jamuna Char Development Programme., p 3-7.

¹³ Although NGOs play a major role in delivering services for the poor in Bangladesh, even they do not have major presence in the Char vividly showing marginality of these areas. For a review of NGO development activities in Bangladesh see, P Thornton,, Devine, J., Houtzager, P.P., Wright, D. and Rozario, S., 2000, *Partners In Development: A Review of Big NGOs In Bangladesh Commissioned By DFID*, DFID Dhaka.

¹⁴ ITDG Bangladesh., 2002 *Consensus for a Holistic Approach to Improve Rural-livelihoods in Riverine-islands of Bangladesh (Char)*. Project document submitted by at the Renewable Natural Resources Knowledge Strategy Natural Resources Systems Programme of DFID, Also see Department for International Development, UK *Chars Livelihoods Programme*. prepared for the Government of Bangladesh, 2002. Paul Thornton., *Char Livelihood Project: Management and Institutional Assessment*. Dhaka: Verulam Associates. 2000.

¹⁵ Rangpur Dinajpur Rural Services.,1999 *Annual Report 1999*, RDRS, Dhaka. The irony of impact on the disaster is very gender specific. Women suffer from both sides first as they have work hard to save from the floods and afterwards when men leave for the cities looking forward and the women are left fending for the families alone.

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3. Objective and Methodology

Every Community's livelihood strategies and practices of resource management are profoundly influenced and shaped by the conditions that exist in her or his socio-economic and environmental realities. Again, these conditions are interconnected while shaping the living pattern of an individual or a community.

Against this background the objective of this paper is to:

- Analyze the social processes of environmental management in Char areas that are highly complex due to acute flooding, seasonal erosion and deposition leading to shifting lands and the resulting insecurity of resource entitlements. Local development activities are designed for more stable environments are often inappropriate within the Chars.
- Explore various resource management approaches which will protect environmental resources, establish access rights, counter vulnerability, sustain the integrity and functions of the agro-ecosystem and conserve biodiversity of the Charlands.
- Demonstrate ways to build on people's indigenous knowledge and social capital, and to show how resource conserving practices can lead to improved productivity and environmental stability.

To achieve these objectives the methodology will therefore be to,

- Review of secondary information on floodplain and sandbar livelihoods in Bangladesh. The materials on Environmental management and livelihood security provided during this course will be mainly used.
- Assessment of the field level information regarding livelihood security based on the experience of this researcher on the Char lands will be analyzed against the theoretical framework and ways will be explored to see how these can be integrated.
- Recommendation will be made regarding better livelihood security in the Char lands of Bangladesh.

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4. Addressing Vulnerability: Livelihood Strategies of the Char Dwellers

The lack of basic services and dependence on limited and seasonally variable resource access demands highly innovative and diversified livelihood strategies in the Chars. Usually the resources available on *Charlands* are cultivable lands, natural vegetation, grazing land, various indigenous trees, open-water fish resources and domestic animals. Moreover the successful uses of these resources are highly limited by the restricted mobility of the Char dwellers because of the isolation which is further increased during disasters and natural hazards.¹⁶

The selection of crops in Chars is targeted to minimize food insecurity. High species and varietal diversity is, therefore needed to secure production. Both flood and drought resistant varieties of crops/vegetables have importance in terms of biodiversity in Char areas. The selection and preparation of food is therefore geared towards providing food security in the lean period and highly related to the available resources.¹⁷

For example women dry *path shak* (edible leaves of jute) as they are the only leafy item that can be dried in the sun and preserved for a long time. Another nutritious food called *shidol* is made from the heads of indigenous small weed fish or with whole fish if there is a surplus. To increase the nutritious value as well as taste of the dish, it also contains a vegetable locally called *kachu*. After the fish and *kachu* are pounded together, garlic and turmeric are mixed in for both flavour as well as preservation. More than 10 foods are preserved in various ways.

It is well known that women are the seed preservers in agrarian society. A recent study in one of the Char revealed that women of that Char know how to preserve seeds of more than 20 crops and vegetables and prepare seedlings of seven varieties. They also know about many other varieties that are grown on the

¹⁶ Naved Ahmed Chowdhury., 2003, *Comparative Assessment of Operational Characteristics of Rural Water Transport and its linkages with Rural Livelihoods*, Team Leader for Bangladesh Case Study. International Forum for Rural Transport and Development, UK and Department for International Development (DFID), UK.

¹⁷ Naved Ahmed Chowdhury., 2001, *Promotion of Household Food Security through Tree Plantation: Impact, Assessment and the Way Forward, Mid Term Evaluation* for Danish Church Aid (DCA) and EU Resident Office in Dhaka. *Kawan* and *Cheena* are indigenous cereal varieties.

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mainland.¹⁸ The women, especially, have their own network through which they constantly gather information about new varieties and their market feasibility.¹⁹

Soil fertility and maintaining the moisture content of the sandy *Char* soil are significant problems in the Char areas. To alleviate this problem, kitchen waste is composted to produce organic fertilizer. Pits are dug to collect rainwater for irrigation when there is scarcity of water.

People are also very particular about preserving the natural vegetation of *Chars*, which they consider to be a valuable resource and necessary for stability of the land. Several varieties of trees have been identified that grow fast on *Char* soil. Quick-growing varieties such as *Ipil ipil* and *Neem* are usually planted. *Char* settlers are reluctant to invest in slow-growing trees due to their own 'temporary' residence and the vulnerability of the land to erosion.²⁰

Kalu, a plant, which grows very quickly, is used for hedging and fuel. Both sweet potatoes and banana are grown widely. Banana trees are very useful in the Char context for its multifaceted uses: it provides food, the leaves are used for fuel, and stem is used for fencing the house as well as building material. Banana trees are also used for making rafts during floods. Catkin grass is also cultivated as it can accelerate silt deposition on *Chars*, and its decomposition adds humus to the soil. Catkin grass is used to thatch houses. The stem is often used for making fences in homesteads, particularly in betel leaf enclosures. When women collect the grass, they are careful to cut it at a certain height and leave the root intact.

Keeping in mind, the violent cyclones that frequently sweeps through the Charlands, houses built are quite low in height. Trees act as protection against storms and winds. For housing materials, People rely on locally available sources such as catkin grass and *dhoincha*, which is a long-stemmed plant which grows in water. When dried, the stem can be used as a building material as well as for fuel. The leaves are used as fodder.

¹⁸ Mahjabeen Chowdhury., *Gender Perspective in Disaster Risk Reduction: Experience from Charlands of Bangladesh*. Paper presented at the Expert Group Meeting on Environmental Management and the Mitigation of Natural Disasters: A Gender Perspective organized by United Nations Division for the Advancement of Women (DAW) Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR), Ankara, Turkey, 6 – 9 November 2001.

¹⁹ The information is gathered when they make social visits, when wholesale vendors come to their *Chars* to buy their produce, and men come home from the mainland. During my visits to the Char lands I have always been impressed by the openness of people to accepting and trying out new varieties of vegetables and crops.

²⁰ Naved Ahmed Chowdhury. *Evaluation of Road Side Afforestation Program of RDRS*. 2001. International Organization for Development Cooperation (ICCO), The Netherlands and Royal Netherlands Embassy, Dhaka.

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5. Conclusion

This analysis here on the impact on environment on livelihood strategies of Char people of Bangladesh, harsh as it is, forces careful reflection on the extent to which interventions to foster agricultural productivity – interventions which have been the centerpiece of rural development strategies for over three decades in Bangladesh - offer much prospect for the reduction of chronic rural poverty. Quite predictably, development interventions in marginal communities around the world are basing discourse on technology development that draws on the community's experience and feeds it, recognizes their potential and releases it, respects their environment and nurtures it and builds on their past, to sustain the future.²¹

This paper argues that, specially, in Char areas interventions to increase agriculture productivity without addressing the vulnerability context of peoples' livelihood strategies will do little to affect poverty dynamics. It may not offer options for those poorest families unable to incorporate the technologies introduced from the outside. Perhaps not surprisingly, therefore, the poverty impacts of development interventions are greater where there is convergence between the intervention strategy and household livelihood strategies.

Neither effective management of natural resources, nor effective policies to reduce risks or respond to natural disasters are possible if programming is not grounded in an understanding of how specific gender relations impact on, or affect, women and men in disaster contexts. This can lead to the unwitting reconstruction of gender inequalities and other dimensions of social vulnerability in the provision of emergency relief and process of long-term reconstruction. For example, failure to recognize women's economically productive work in the informal sector may reduce their access to much needed economic recovery assistance and undermine perceptions of women as full contributors to the recovery process.

This paper does not seek to assert that technological and scientific ability of communities at the grassroots are self-sufficient in a hazard zone. Rather, it argues that in order to incorporate vulnerability issues in mainstream development interventions, planning have to be based on an understanding of local livelihood strategies of the people. Intervention need to assist Char dwellers to better manage their mobile livelihoods, promote better access to services and economic opportunities, and to reduce vulnerability by addressing the underlying *causes* of such poverty and vulnerability. This implies a need to address the institutional relationships that determine Char dwellers livelihoods.

²¹ *Technology, Poverty and the Future of the Developing World*, seminar report. Intermediate Technology Development Group , London: Imperial College, September 2001, p. 27.

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The challenge of such institutional change is to enable Char dwellers to become active citizens, claiming their entitlements, rather than beneficiaries. The components of vulnerability in the Charlanads of Bangladesh, like any other community include elements of livelihood security and assets, personal health and access to basic needs such as food, water and shelter, and extent of social organization, preparedness and availability of safety nets.

The current weak state of policy implementation and accountable local governance acts as a significant barrier to the improved livelihood security of poor Char dwellers. Sustainable management of disasters through mitigation measures therefore requires increasing the livelihood options so that they gain more control over their lives and environment.

This paper also highlights the importance of paying much closer attention to household dynamics. A survey of households in a village which may have been done five or even two years ago does not accurately reflect the situation of individuals in those households now. It is therefore very important to involve members of the communities in ensuring up to date information on households. Sustainable development requires harmonizing of environmental protection and development so that the natural resource base be protected and enhanced, and institutions are established to promote equitable growth, both factors which are essential for reducing disaster hazard risk and vulnerability.

Projects concentrating on institutional capacity and research often fail to secure the support of poor people pressed by the necessities of day to day survival. What they require to underpin these social processes are more tangible approaches to solution for immediate livelihood problems that can in turn be built on in future development planning. Diversification of livelihoods will need to be addressed to reduce pressure on natural and common property resources.

Poor Char dwellers need to be able to effectively sustain their livelihoods and engage in the local and national economy by broadening economic opportunities and strengthening productive livelihood strategies (including targeting female headed households). This will reduce food insecurity; increase employment opportunities and income, and permit people to accumulate assets, which will improve their ability to cope with future shocks to their livelihoods without falling deeper into poverty.

Hence, the interventions for the future can include a) building the effective voice of poor Char dwellers, as citizens, to demand services; b) building accountable and responsive institutions in the public, private and civil sectors to supply pro-poor services and infrastructure; c) providing Char dwellers with choice in service provision and diversified channels for access to services.

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Government as well as NGOs needs to make efforts to develop, test and validate tools, methodologies, indicators and other instruments for in disaster risk management at local level. This may include participatory action research and diagnosis, training methods, the use of Geographical Information Systems (GIS) and others for mapping elements of hazard and vulnerability, with potential to improve the effectiveness of disaster risk management at the local and national levels.

Therefore the practical solution should be to promote and broadly support local, national and regional programmes and initiatives to enable societies to become resilient to the negative impact of natural hazards. By making local residents full and equal partners in the development of safer communities and by incorporating indigenous knowledge, skills and capacities, particularly of poor women and other disadvantaged groups, into environmental management and livelihood strategies, a sustainable livelihood strategy for the people of Charlands of Bangladesh can, indeed be, a reality.

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