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**SOCIAL SCIENCE LITERATURE ON
NATURAL DISASTER IN BANGLADESH :
A SOURCE BOOK**

S. M. Nurul Alam

PACT Bangladesh/PRIP

SOCIAL SCIENCE LITERATURE ON NATURAL DISASTER IN BANGLADESH : A SOURCE BOOK

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ABBREVIATIONS AND ACRONYMS

ADAB	Association of Development Agencies in Bangladesh
ADB	Asian Development Bank
AST	Agriculture Sector Team
BARC	Bangladesh Agricultural Research Council
BARD	Bangladesh Academy for Rural Development
BARI	Bangladesh Agriculture Research Institute
BCAS	Bangladesh Centre for Advance Studies
BEA	Bangladesh Economic Association
BIDS	Bangladesh Institute of Development Studies
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
BWDB	Bangladesh Water Development Board
CARE	Cooperation for American Relief Everywhere
CDL	Community Development Library
CIDA	Canadian International Development Agency
CIRDAP	Centre for Integrated Rural Development in Asia and the Pacific
DoE	Department of Environment
EPWAPDA	East Pakistan Water and Power Development Board
FAP	Flood Action Plan
FCD	Flood Control and Drainage
FCDI	Flood Control, Drainage and Irrigation
FPCO	Flood Plan Coordination Organization
FWP	Food For Works Programme
GoB	Government of Bangladesh
GUP	Gono Unnayan Prochesta
IDRC	International Development Research Centre
ISPAN	Irrigation Support Project for Asia and the Near East
IGU	International Geographic Union
ITDG	Intermediate Technology Development Group
IUCN	International Union for Conservation of Nature and Natural Resources
MOIWDFC	Ministry of Irrigation, Water Development and Flood Control
MPO	Master Plan Organization
MRTP	Medium Term Recovery Programme
NGO	Non-Governmental Organizations
ODA	Overseas Development Administration
PACT	Private Agencies Collaborating Together
SAP	South Asia Partnership
SPARRSO	Bangladesh Space Research and Remote Sensing Organization
WAPDA	Water and Power Development Authority
WFP	World Food Programme
WHO	World Health Organization
UNCRD	United Nations Centre for Regional Development
UNDP	United Nations Development Programme
UNFPA	United Nations Fund for Population Activities
USAID	United States Agency for International Development
WB	World Bank

INTRODUCTORY NOTE

To Second Edition

This is the second edition of the bibliography, since the first edition we have had the April '91 Cyclone, the September '91 floods, and the whole range of FAP studies. This bibliography therefore is of interest to all those involved with disasters or with the Flood Action Plan. It will be the easiest source of information available.

Richard Holloway
PACT- Bangladesh/PRIP

PREFACE TO THE SECOND EDITION

The preparation of the second edition was more difficult than the first one. This is because there are so many diverse materials that the selection of relevant titles were strenuous. However, I made my own judgement in selecting materials which will serve the purpose for whom this annotated bibliography is meant. Like the previous edition, the support for bringing this revised and enlarged edition into existence has been provided by PRIP. I am grateful to Mr. Richard Holloway Director - PRIP, who was always supportive for this type of work.

After the publication of the first edition, I kept up contact with my friends at home and abroad who are engaged in disaster research. In this respect, I would like to mention the names of Dr. Q.M. Zaman, George Washington University, USA, Dr. Bimal Kanti Paul, Kansas State University, USA, Dr. Russell R. Dynes of Disaster Research Centre, University of Delaware, USA and also Dr. C. E. Haque of Brandon University, Winnipeg, Canada, who regularly sent me materials published in North America. I would also like to thank Ms. Surayya Banu who provided invaluable research support in the preparation of the revised volume. My two sons Noton and Shovon are always appreciative of my work but they always wondered "why Abbu writes pages after pages". I hope when they will grow up then they will understand what their father is doing.

I have a plan to publish this volume as a book in the near future. Any comment, criticism and suggestion for improvement will be welcomed.

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August 31, 1994

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PREFACE TO THE FIRST EDITION

This annotation of social science literature on natural disaster in Bangladesh has been prepared with the financial support of PRIP, Dhaka. I am thankful to Mr. Richard Holloway, Coordinator, PRIP and his staff for their help and cooperation during the preparation of the report.

The idea of preparing an annotated bibliography came to my mind when I was preparing a country paper on Social Science literature on Disaster in Bangladesh for presenting at the Seminar on Research on Socio-economic Aspects of Disaster in the Asia-Pacific Region held at the AIT, Bangkok, on March 1988. Mr. Everett Ressler of ADPC was extremely enthusiastic and introduced me to Mr. Holloway at Bangkok. Mr. Ressler greatly encouraged me to undertake the job and complete it as quickly as possible. Dr. Bruce Currey, Programme leader, HRDP, Winrock International, Dhaka, helped me not only with getting access to literature from his library but also with advice and support which he unhesitatingly provided during the preparation of the report. In fact, some years back, I became interested in disaster research due to constant encouragement and support by Dr. Bruce Currey.

In preparing the report many persons helped me by providing literature and also by advice and support from time to time. In this connection, I would like to mention the names of Dr. Edward Clay, Director, Relief and Development Institute, UK, Dr. Hugh Brammer of UK, Dr. John Rogge, Professor of Geography, University of Manitoba, and Dr. Russell Dynes, Director, Disaster Research Centre, University of Delaware, USA who gave me support and valuable advice. I got access to different back issues of the journal "Disasters" through Dr. Clay. I could not have got access to a lot of literature published in North America on riverbank erosion and flood without the help of Dr. M.Q. Zaman of University of Lethbridge, Canada. I greatly appreciate his cooperation. Dr. C.E. Haque of University of Manitoba also sent me some publications from Canada. At Jahangirnagar University, Dr. Maudood Elahi, former Dean of Social Science and Professor of Geography encouraged me to pursue the work seriously and helped me with many publications from his collections.

I also appreciate the support and cooperation of staff and officials of many organizations who helped me with their publications. At the same time, I was also disappointed by the protective attitude of some in letting us use their publications. My research assistant Rabeya Roushan did a good job in tracing materials from different sources.

The field of disaster research is new. The literature is small, untraced and scattered. It needs time therefore, to make a work like this exhaustive. Only just two weeks back, I got some materials from North America and many more will be coming. Given the time, I tried to make this annotation as exhaustive as possible. Any omission is regretted. I would appreciate if any body notices any significant omission and kindly bring this to my attention for inclusion in future.

For the last one month, I was totally engaged in completing this work. I could hardly give any time to my two little sons Ncton and Shovon who were always wondering, "*Abbu tomi Eto Ki Koro*" (Father, what are you doing all the time ?). My sons were inquisitive but not impatient. I owe to both of them as well as to their mother for understanding.

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September, 1990

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CHAPTER 1

INTRODUCTION AND METHODOLOGY

Background : Recent Changes

This annotation has been published previously in 1990 in the background of tremendous interest on research on disaster related issues. An attempt is made through this revised and extended version to incorporate some significant changes that have occurred since its publication in September 1990. We summarise the changes as follows :

- A growing interest has been noticed among the social scientists to understand the disaster phenomenon from the social science perspective ;
- Flood Action Plan (FAP) which is basically regarded as a structural approach to the solution of flood problems in Bangladesh, has led to debate, discussion and review about the effectiveness of the structural approach. We notice a shift to a non-structural approach with an emphasise to understand the problems of flood from human behavioural perspective. A large number of publications have come out centering around the contemporary debate of FAP and also non-structural mechanisms of mitigating flood control ;
- Under the FAP, 26 activities have been incorporated altogether : 11 main components and another 15 supporting studies. To date significant information has been generated which covers physical, economic and social problems. The findings of many of these studies have been published and are available in report forms;
- A large number of papers, reports and books have been published after the 1991 cyclone. Many of these publications which are scattered, require to be identified and should be brought to the attention of concerned persons;
- Since the establishment of the Ministry of Environment and Forest and the Department of Environment in 1989 government's concern about the environment and natural hazard issues has got official recognition. This has resulted in the publication of reports and papers that are relevant and useful;
- In the last few years many NGOs have been actively involved in environment related issues. They played a very effective role in relief and rehabilitation activities in the aftermath of natural disasters especially after the 1987 and 1988 floods and also after the 1991 cyclone. Many papers, reports and research monographs have been published by NGOs. Articles published through Grassroots (Previously ADAB News), an ADAB quarterly reflect the interest of NGO on various environmental issues.

This enlarged edition of the annotation is an attempt to incorporate as many materials as possible capturing the main thrusts and issues for access by NGOs, donors and researchers. Many NGOs in the country have been endeavouring to develop programmes on disaster mitigation and management. **An understanding of the issues from human-behavioural and socio-economic perspectives will help the NGOs in their attempt to design programmes for disaster preparedness. It is expected that this annotation will act as a source book and help to identify the most appropriate literature by the concerned NGOs.**

Natural Disaster in Bangladesh

Bangladesh is one of the most disaster prone countries of the world. Almost regularly, Bangladesh experiences different types of natural disaster both natural and man-made. These include flood, famine, cyclone, drought, tidal-bore, pest-attack and riverbank erosion. During the period of 1960-81, Bangladesh has been struck by at least 63 different types of natural disasters of various intensity. Among the various types, flood is unquestionably the most recurrent and devastating kind of natural disaster in Bangladesh. Any abnormality in water level caused by excessive rainfall, may cause flood from normal to abnormal intensity. The annual flood effected areas usually varies between 25,000 sq. km. to 40,000 sq. km. The flood vulnerable area is much larger. Experts estimate that out of the total of 1,42,777 sq. km., 82,088 sq. km. (58%) area is flood vulnerable in Bangladesh. Another estimate says that the onrush of water from upstream drainage areas could create havoc by flooding about 80% of the country. In the last thirty five years since 1954, there were 28 occurrence of flood, out of which 11 floods were devastating and 5 were most devastating.

Besides flood, Bangladesh is also subject to several tropical cyclones which generally originate in the Bay of Bengal. Cyclones in Bangladesh occur in the April-May and October-November periods. Between 1960 and 1991, Bangladesh has been struck by 33 cyclones of which eight were most severe. The cyclone of April 1991 which killed 1,38,868 persons is considered as the most severe in recent memory. According to government estimates 840,000 rural homes in 16 districts were completely destroyed and the total loss in terms of money has been put at over Tk. 23 billion.

Every year northwesterners also cause damage to life and crops. Lack of rainfall causes drought that significantly effects normal agricultural operations. Pest attacks are infrequent but not rare. When there is a pest attack, crops of thousands of acres of land are damaged putting the farmers in a helpless situation. It should also be mentioned that floods cause enormous shifts in river course and widespread bank erosion causing dislocation to rural peasant population. It is estimated that annual riverbank erosion cause dislocation to an estimated one million population, many of them permanently. The demographic and socio-economic consequences of the problem are far reaching and often enormous. The relocation of the large displaced population with provisions for income earning opportunities is a gigantic national task.

Natural disasters not only bring immense suffering and misery to millions of people but also triggers a whole set of mechanism that effect the economic and social life of people in a variety of ways bringing many changes. Natural disasters accelerate the process of pauperization putting more people into poverty. It is also pointed out that frequent occurrence of flood increases the process of differentiation of peasantry, inequality, dependency relationships, indebtedness and also rural to urban migration. These changes have both short and long term socio-economic implications which require indepth analysis and study. Social scientists can play a vital role in this field which is hitherto an unexplored or least explored field. **A knowledge about these changes will help us to understand the dynamics of the socio-economic conditions of villages and accordingly chalk-out plans for development by both government and NGOs.**

Social Science Research on Disaster in Bangladesh

Natural disaster is a normal and recurrent phenomenon. A disaster-agent becomes a real disaster when it causes death, destruction and human suffering and brings socio-economic changes. It is indeed difficult to understand why, inspite of the importance of human dimension of the problem, natural disaster and related issues did not get the deserved attention from the social scientists of Bangladesh. We will, however, speculate three major reasons for this gap:

- Sociological interest on the social and behavioural aspects of disaster was not very common until the 1950s and it has not even beccme international at this time. Indeed research relating to social aspects of disaster mostly developed as a North American tradition.
- In Bangladesh, the magnitude of the human dimension of the problem has been realized and has received the attention of the concerned quarters only recently after the devastating flood of 1988 and also after the widespread death and destruction caused by April 1991 cyclone.
- Until recently, for example, the problems of flood have been handled solely through structural methods, without giving due attention to non-structural traditional methods that people have adopted to cope with the situation. The emphasis was on preventive rather than on corrective measures. This has resulted in an engineering approach to the solution of major disasters in Bangladesh. For example, engineers not only became the designers of various flood control projects/embankments, but also the implementor of these programmes.

The lack of interest and indifference to the socio-economic and environmental issues has created problems of tremendous human magnitude that are difficult to ignore. **This has resulted in the "creation of disaster by an attempt to manage disaster"**. As a result there has been a growing realization by government, NGOs (both multilateral and bilateral), donors and other concerned quarters, that disaster should not be treated only as a physical phenomenon, but rather also as a social phenomenon as well. **It is now being realized that social science research on natural disaster is a *sine qua non* for understanding the human problems in order to ultimately design an effective programme of disaster management.**

Bangladesh does not have a long history of social science research on natural disaster. Social science research on natural hazards began only in the early 1970s by a Dhaka University geographer Dr. Aminul Islam. He conducted a study on human adjustment to cyclone hazard as a part of the programme of International Geographic Union (IGU) commission on Man and Environment. Dr. Islam published a number of articles and working papers on hazard perception, human adjustment to cyclone hazard, and cyclone hazard and strategy of human occupance. **Recently economists, anthropologists, and sociologists also entered the arena of social science research on natural disaster.**

Objectives of this Work

Many papers were published, written and presented in meetings and a good number of studies and evaluation reports were completed. Numerous reports have been prepared while others are on-going under the FAP. Many of these are technical in nature, but some have social science components. We have provided an exhaustive list of all available FAP reports in the Annexure 2. A large number of papers have been written by academics, environmentalists, NGOs and policy planners for and against FAP. These and many other works are available in mimeographed form and are scattered in several places. Knowledge about articles published abroad is extremely limited. No systematic attempt has been made to locate and collect these works and to prepare an annotated bibliography. It is, therefore, felt that a literature search, collection of relevant literature and an annotation of the materials and repository of such literature at a common place, will be extremely useful to a wide variety of concerned people.

In 1990 this work had been undertaken with three main purposes : i) to assemble all available social science literature on the topic of disaster in Bangladesh from both overseas and local sources in one place accessible for NGOs in Bangladesh, ii) to provide an annotated bibliography on these materials to be distributed to NGOs and iii) to make a list and provide sources of technical literature on natural disasters.

In updating the 1990 annotation following objectives have been set forth : i) to review and make annotation of papers, reports, books and briefs published after 1991 cyclone; ii) to review and annotate literature on flood, riverbank erosion and other natural disasters on Bangladesh published since 1990 and iii) to review and annotate relevant FAP reports restricting these to social science and also including those published for and against the FAP. It was expected that the author would be able to collect and collate between 75-100 new titles.

Methodology

What is social science literature ?

We had difficulty in deciding what to include within the purview of social science literature on disaster. The problem is, if we limit our choice within strict or narrow definition of social science, then we will end up with few titles. The question is : can we include evaluation reports, or summary of NGO activities, or agricultural rehabilitation programmes or Government flood reports within the purview of social science literature? This is a justifiable issue and needs clarification regarding how and what we included within social science literature.

We took a very broad view of social science. We will argue that the main focus of social science is human beings and their various activities as members of society. Any event that affects human beings come within the purview of social science. When a disaster strikes a particular area all humans living in the area are affected. Any description of the effects of disaster event can be included within the purview of social science literature. However, this literature may be of different types. Some may be theoretical, analytical and critical, while others may be descriptive.

Besides clearly defined social science work, we also included reports concerning NGO activities, evaluation reports, government reports, damage reports, governments relief and rehabilitation programmes, flood control and drainage programmes, and disaster management manuals within the purview of social science literature. Many of these materials have a strong social science bias. Some issues described in these reports are illuminating - providing a good data base for further analysis.

How is the Annotation Done ?

The main purpose of this work is to convey the message of a particular text in a most effective way, so that the interested persons can find the relevant literature for their purpose. In most cases, we did this by summarising the main issues and the themes in our own language. In other instances, we also used extracts or full sentences from the originals, so that the main theme is properly conveyed and is not distorted. **Sometime abstracts from the originals have been either wholly or partially incorporated. We have not acknowledged it separately.** The mention of author's name, title, source etc. preceding a particular annotation is an adequate indication from where the abstract is taken or written. This annotated bibliography is unique because this is a first comprehensive work of this type in Bangladesh and will provide as a source book in the field.

Literature Search

We made an extensive search in locating relevant literature both in and outside Bangladesh (A list of organizations/persons contacted is given in the Annexure 6). The author also made some personal contacts. We got a list of disaster literature on Bangladesh, from the Asian Disaster Preparedness Centre (ADPC), at the AIT, Bangkok. We choose the most useful titles and procured them locally or through our friends from abroad. Our friends in Canada were extremely helpful in supplying the riverbank erosion papers published and available in North America. Even we received some dissertation abstracts and abstracts of papers selected for presentation in different professional meetings. We also contacted editor, "Disasters" and also Director, Relief and Development Institute, London, and Disaster Research Centre, University of Delaware, USA.

Locally, we contacted various NGOs, individuals, and research organizations. We could not locate much from the NGOs. Many of them do not have anything but those who have appear to be very protective, though friendly. Mention must be made of ADAB News (now Grassroots). Since inception this journal is doing an excellent job by regularly publishing general reports, short notes, conference briefs, articles, and summary of NGO relief and rehabilitation activities. We made an exhaustive list of these writings and presented this through annotation in this report. Since the publication of the first edition, the author maintained regular contacts with individuals who are engaged in disaster research on Bangladesh with the hope of updating this annotation in future. The author either got information about new publications or reprints from these persons which helped him considerably in the updating process. The PRIP library has a rich collection of materials. The World Bank library and the library of Research and Advisory Services also helped to enrich this work. We will emphasise that the annotation is comprehensive and any omission is inadvertent.

In the present edition, we made an addition of 149 new titles bringing the total to 359. We give the breakdown of number of titles on the basis disaster in the box below :

Box : 1 Break-down of Number of Titles	
Types	Number
General Disaster	66
Flood	156
Cyclone	54
Riverbank Erosion	52
Famine	20
Drought	11
Total	359

Layout of the Report

Some important changes have been made in the layout of the book. In this new edition the annotation of literature of each disaster has been put in a separate chapter. Now we have chapters on flood, cyclone, and riverbank erosion. Since we do not have many works on famine and drought, so, we have combined this into one chapter. Another noticeable change is that the annotation of literature in each chapter has been preceded by a brief analysis of the nature and type of literature covered, methodology and issues covered.

Including this introduction and methodology section, this book has seven chapters and an equal number of annexures. The second chapter begins with a discussion and annotation on general literature on disaster, followed by flood, cyclone, riverbank erosion and famine and drought in the third, fourth, fifth and sixth chapters. An attempt is made to delineate future research priorities in chapter seven. A new addition in the annexure is a comprehensive list of FAP reports and documents. Only minor changes have been made in the remaining annexures of the book.

CHAPTER 2

GENERAL LITERATURE ON DISASTER

Nature of Literature Covered

We took a very broad view of disaster while considering entries in this chapter. There are 66 titles in this chapter which cover issues relating to relief and development, public policy, disaster preparedness, agricultural rehabilitation, food crisis, human, government's, NGOs' and institutional responses.

In these entries the problem of disaster has been approached not necessarily from the perspective of any disaster-agent but from a general perspective regarding what to do and how to do during the different phases of the disaster cycle. In this chapter, we also summarised some disaster training manuals prepared recently which we thought will be useful to the potential users.

Another type of literature that we included in this chapter concerns general environment, NGOs' perspectives on environment, and also even some theoretical literature on environment. We were however, very selective in choosing these types of literature for annotation. We thought that it will be pertinent to incorporate these literatures because even in some general environment literature, there are mentions of disaster, disaster management and policies. **NGOs documents on environment and development have important implications because from their stated policy stand on environmental problems, they not only devise their environment friendly development strategies, but also decide how to face emergencies created by an adverse environment.** Two entries will illuminate the readers regarding how to conceptualise disaster from a social science perspective and also how to approach disaster i.e. from a generic or agent-specific perspective. We would argue that the nature and type of entries quite justifies the title of this chapter, "General Literature on Disaster".

Methodology Used

We already mentioned that entries in this chapter are very diverse and wide ranging. No uniform methodology can be discerned from these diverse materials. Many of the entries are impressionistic, based on authors experience, prepared from secondary sources. Some are descriptive and while others are even prescriptive. In some literature, an attempt is made to suggest some conceptual framework for studying disaster, and linkage between disaster and development. For example, in one paper the authors provided a methodology for coping with natural hazards.

ANNOTATION OF GENERAL LITERATURE

Aall, Cato, 1979: Disastrous International Relief Failure - A Report on Burmese Refugees in Bangladesh from May to December 1978. *Disasters*, Vol. 3, No. 4, pp. 429-434

The paper provides some facts and figures of the relief operation of Burmese refugees in Bangladesh. It is pointed out that as many as 10,000 (7,000 of them children) died due to misunderstanding, inefficiency, incompetence and lack of cooperation between the government of Bangladesh and the participating UN organizations and also their inadequate decisions and

choices of action. Some lessons were identified which might be kept in mind in order to avert such a disaster in future.

Key words: Disaster/ International support/ Relief failure/ Ration/ Food shortage/ Malnutrition/ Death

ADAB News, 1977: Relief versus Development. Vol. IV, No. 4, April, pp. 1-9

This note is based on a paper prepared by David Morris on "Weather Instability, Food Scarcity and Famine Policy". It is pointed out that three types of policy i.e. increase in average stability of agricultural output, increase in crop yields and migration can reduce the burden of weather cycle. The emphasis of relief activity should not be on relief rather on how the narrow focus on agriculture through work relief can be expanded for the rural sectors productivity. It is further pointed out that if famine policy is to be linked successfully with economic development, the existing ground rules for selecting projects must be changed. It is suggested that the allocations to public health, skill creation, and literacy campaigns could leave a larger residue of development benefits than what is now done.

Key Words: Disaster/ Relief / Development/ Cost effectiveness/ Relief policy

Ahmad, Quazi Khaliquzzaman, 1992 : Policies and Strategies for Sustainable Development in Bangladesh. Futures, November 1992, pp.8889-893.

The paper begins explaining the concepts of development and sustainable development and draws attention to the importance of these concepts. An analysis of the policies and strategies for promoting sustainable development in Bangladesh has been provided. Several key concerns that are necessary for such policies and programmes have been considered. These include rate and content of economic growth, failure of dependent development strategy, mobilization of resources, rural-urban migration, human resource development, the role of women, devolution, decentralization, equity and protection of environmental base. The need for a strong political commitment for pursuing the programmes of sustainable development and also general cultural acceptance by the people has been emphasised. It is further argued that effective implementation of policies and programmes are very much needed for promoting as well as for ensuring sustainable development for the country.

Key Words: Sustainable development/ Environment/ Population growth/ Political commitment/ Cultural acceptance/ Effective implementation/

Alam, S.M.Nurul, 1989 : Social Science Research on Disaster in Bangladesh: A Review of Existing Social Science Literature and Research Effort. A Country Paper Presented at the Seminar on Research on Socio-economic Aspects of Disaster in the Asian-Pacific Region, held at the Asian Institute of Technology, Bangkok, Thailand, March 22-24, 1988, 34p.

The paper has three parts. First part contains a brief resume of different types of natural disaster that Bangladesh faces from time to time. A brief critical review of the existing social science literature and research effort has been presented in the second part. The paper concluded with a discussion regarding the limitations and the gaps in knowledge of the existing social science research on disaster and also the author's thinking on the future needs and objectives.

Key Words: Disaster / Social Science Research / Literature

Alam, S.M. Nurul, 1990 : Perception of Ecological Problems and Bangladesh's Ecological Future. In W.L. Werner. Aspects of Ecological Problems and Environmental Awareness' in South Asia. South Asian Studies. Manohar, New Delhi, pp. 41-54.

Bangladesh is not only a country of natural disaster, but also gradually approaching to what is now called " ecological inferno." Taking people as the central concern it is argued that the ecological problems that are in sight developed due to lack of understanding of the problem both by the people and the government. It is emphasized that ecological problems are not only physical: it is also a problem of perception. An attempt is made to demonstrate how deforestation, riverbank erosion, land degradation and flood are jeopardising human existence in Bangladesh. It is important to realize and appreciate how people perceive and handle these problems. In the conclusion, it is further emphasised that by proper understanding of the people's perception, making them aware and also by educating them, the problem can be minimized to a great extent if not totally eliminated.

Key Words: Ecology / Perception/ People/ Land degradation/Riverbank erosion/ Population growth.

Alam, S.M. Nurul, 1994 : Social Science Research on Disaster in Bangladesh-Current Trends and Future Prospect. In S.M. Nurul Alam (ed.), Society, Disasters and Management: Theories and Experiences. Academic Publishers, Dhaka, Bangladesh.

In Bangladesh social science research on natural disaster is still in its infancy. It did not receive the deserved attention from the social and behavioural scientists. An inventory of social science works on natural disaster has been made. In doing so an attempt is made to find out what has been done in social science in the past and thereby making a case for social science research. No attempt is made to delineate the intellectual history of social science research on natural disaster. Some introductory remarks have been made to put the Bangladesh issues in the right perspective.

Key Words: Social Science/ Research / Natural Disaster/ Bangladesh.

Amin, Nurul A.T.M., 1989 : Public Policy Priority for Hazard Management in Bangladesh. A Paper Presented at the 23rd Bengal Studies conference held at the University of Manitoba, Winnipeg, Canada, 9-11 June, 21p.

This descriptive and suggestive article contains arguments for a public policy for management of hazards through identification of several priorities. A description of social and political awareness of hazard consequences can be found. It is followed by an analysis of hazard management and public policy in perspective. The author also discusses the various measures for a comprehensive approach to hazard management. It is felt that there is a clear need for interventionist policies and strategies for hazard prevention and mitigation to facilitate alteration of the low level equilibrium trap. Resources for these interventions cannot be generated from within, but from outside Bangladesh.

Key Words: Hazard management/ Awareness/ Hazard consequences/ Public policy/ Priority/ Interventionist policies.

Brammer, Hugh, 1980: Disaster Preparedness for Farmers - A Methodology. Disasters. pp. 140-144.

Provides a methodology and framework for disaster preparedness for farmers. The role of government and the information required for this are delineated. It is further revealed that the agricultural contingency plans should be specific considering the local cultural and socio-economic as well as the environmental factors. The main features of Bangladesh Drought Code and Flood Cyclone Code have been outlined. In the conclusion, the author emphasises four elements for introducing a national system of agricultural disaster preparedness planning. The importance of training has been also recognised.

Key Words: Disaster preparedness/ Government's role/ Information/ Disaster Code/ Bangladesh

Brammer, Hugh, 1979: South Asia Disaster Preparedness Seminar. ADAB News, Vol. VI, No.4, April, pp. 23-24

This is a report on South Asia Disaster Preparedness Seminar held in New-Delhi from January 1 to 1 February 1979. The list of issues covered in the seminar were included in the report. From the experience of the seminar it is recommended that more national and regional seminars on disaster preparedness should be organized to stimulate greater interest on the subject.

Key Words: Seminar/ National and regional/ Disaster preparedness.

Brammer, Hugh, 1979: Disaster Preparedness Precautions Against Water Shortage, ADAB News. VI, No.11, November, pp. 20-21

Some measures to help the farmers who are faced with a shortage of irrigation water have been suggested. Farmers should be given warning and helped whether there will be a shortage of water or not. In case of possibility of water shortage, some measures should be taken to organize supplementary or alternative methods of irrigation. Farmers should be advised to grow crops which need less water.

Key Words: Water shortage/Irrigation/Disaster/Alternative crops

Brammer, Hugh and H.R. Khan, 1991: Bangladesh Country Study. In Disaster Mitigation in Asia and the Pacific, Asian Development Bank, Manila, pp.73- 131.

This is country study focussing on flood hazard. This was prepared for the Asian Development Bank. The study particularly focuses on measures to reduce the exposure of capital investment to damage or loss by floods. The study comprises five sections : 1) disaster context ii) risk assessment iii) disaster management iv) international assistance and v) conclusion. In the first section disaster types and geographical setting are described. The section on risk assessment contains analysis on hazard assessment, vulnerability analysis and impact assessment mostly in relation to water control, road, railway and other investment projects. In the disaster management section, both structural and non-structural measures are discussed. Structural measures mostly include water control projects. Non-structural measures mainly refer to flood warnings, preparedness and flood-proofing measures. The description and analysis are evaluative. The authors also gave their impression regarding the effectiveness of the different

flood control and mitigation measures. The discussions on risk assessment, vulnerability, and water control measures are very illuminating and educative.

Key Words: Disaster/ Hazard/ Vulnerability/ Disaster management/ Mitigation/ Structural and Nonstructural/ Water control projects/ Flood proofing/ Warning/ Preparedness.

Centre for Mass Education and Science, 1991 : Bangladesh NGO Statement to the Earth Summit. Proceedings of the workshop on Environment and Development - NGO Initiative, Dhaka, November 1991.

Several documents have been prepared before the Earth Summit of 1993. In the Rio summit the NGOs of Bangladesh played a very effective role in highlighting and drawing attention to the environmental issues and their relation to development. The document under our review is a proceedings of the workshop on "Environment and Development : NGO initiative" held in Dhaka before the Rio summit. The report reflects the views and activities of the NGO community in Bangladesh on the issues that required serious attention at UNCED.

Key Words: NGO/ Environment/ Earth Summit/ Development

Chambers, Robert 1987: Issues in Agricultural Rehabilitation. Disasters. Vol. 11, No. 1, p.3

This brief note emphasises that the main issue in agricultural rehabilitation is how to enable households to gain or regain sustainable livelihoods in the face of disaster. Besides this, three other related issues are also identified: re-establishment or resettlement, disaster-proofing, sustainable self-reliance and safety nets. An elaboration of these issues are also provided.

Key Words: Rehabilitation/ Disaster/ Livelihoods

Chen, Lincoln (ed.), 1973: Disaster in Bangladesh. Oxford University Press, New York

The book addresses issues related to health and other problems precipitated by both man-made and natural disasters. The book has two parts. First part contains eight articles concerning health problems relating to population increase, nutrition and infectious disease, their spread and control. Second part focuses on the health relief and rehabilitation, refugee problems and famine situation precipitated by one man made disaster (civil war of 1971) and one natural disaster (cyclone of 1970). According to the editor the aims of this volume are: 1) to present the critical health issues confronting Bangladesh, 2) to examine scientifically the effect of disasters in Bangladesh, and 3) to analyze the lessons learned from the disaster relief experiences as they may apply to the future. The authors of the articles in the book derived the information from their own research and experience in Bangladesh. In fact, all of the contributors have lived and worked in Bangladesh. For this reason the articles of the volume appear both intimate and informative as well.

Key Words: Disaster/ Health/ Population/ Disease/ Nutrition/ Refugee/ Relief/ Famine

Chen, Lincoln C. and Robert S. Northrup, 1973: Framework For Disaster Relief In Lincoln C. Chen (ed.), Disaster in Bangladesh. Oxford University Press. pp. 257-274

An attempt is made to provide a framework and offer a constructive approach to effective relief planning and administration for future disasters in the developing regions of the world. The framework for disaster relief is divided into several components. First, the authors emphasised the need for pre-disaster planning. Through disaster planning it is possible to identify disaster prone-regions, coordinate warning systems against natural disasters, provide background information on local conditions, and offer contingency plans. Other components are : field assessment, relief operations under peaceful conditions, relief during military conflict and finally rehabilitation and development. Attention is drawn to the gamut of issues associated with relief and also how to make relief more useful, effective and development-oriented. In the conclusion, it is emphasised that relief is not a static process: on the contrary, many new techniques, innovations, and institutions may be introduced during relief operations, thereby making the old methods stronger.

Key Words: Disaster/ Relief/ Planning/Development-oriented/New techniques.

Chisholm, Malcolm, 1978: Lessons from a School Building Project, and Refugee Relief Operations-Bangladesh - 1975-77, Disasters, Vol. 2, No. 2/3 pp. 148-151

Two separate experiences, one from a school building project implemented by UNICEF and Sweden, and the other the refugee relief operations in 1975-77 in a border district are the subject matter of this article. It is mentioned that due to improper design, inadequate foundation depth, reinforcement and constructions and lack of proper supervision many of these constructions have become disasters in themselves. In most cases, the dual purpose of public buildings providing both community facilities and as places of refuge is often overlooked. Regarding relief operations, it is felt that the actual need of the people is not always assessed. It is important that every single need for example, shelter, must be seen in terms of part of the total needs of a refugee. Nine lessons from relief operations were identified. The paper ends with an indirect appeal (to donors and development practitioners) to use wisdom, with little less arrogance and show more respect for the people and culture of various countries.

Key Words: School/ Public building/ Community facilities/ Refugee/ Relief/ Need assessment

Crow, Ben, 1978: Why are the Ganges and Brahmaputra Undeveloped ? - Politics and Stagnation in the Rivers of South Asia. Journal of Concerned Asian Scholars. Vol. 10, No. 1 pp. 35-48

The importance of the Ganges and the Brahmaputra rivers in the life of 800 million people who live in the basins is discussed. It is pointed out that the coordinated development of resources of the two rivers could bring prosperity to the region, which has been, however, precluded by the intergovernmental dispute over the sharing of the Ganges water. The article provides the history of the Ganges water-sharing disputes, its origins and the way it has been conducted. A description of the causes of dispute can be also found in the beginning of the article. The paper reveals the political economy of water disputes relating to two mighty rivers of South Asia.

Key Words: Rivers/ Water dispute/ Flood/ Politics/ Bangladesh

Crow, Ben, 1989: Crisis and Foodgrain Markets in Bangladesh. Notes for a Talk at the Workshop on Crisis and the Rural Poor. School of Oriental and African Studies, UK, 12 May, 12p.

Provides a brief overview about the structure of foodgrain markets from an on-going research and how these effects the dynamics of crisis in foodgrain distribution. Four points about crisis and foodgrain markets were elucidated. These are : crises has to be understood in the context of the four systems of foodgrain distribution; crisis will have different implications in backward and advanced areas; a household's access to food may be determined by the conditions under which that household participates in the grain markets and also the relationship between the state and the private markets. It is also pointed out that the households ability to survive in a crisis depends on the dynamics of the system on which they depend on for food. Several causes of crisis were identified. These are : natural disaster (flood, drought and cyclone), social collapse (civil strife, political upheaval) and economic collapse. These crises have different effects on the food system. The author also describes the operation of usurious credit hierarchy and its influences on the formation of foodgrain prices. An analysis of the history of relations between Bangladesh government and the grain trade can be found in the paper.

Key Words: Crisis /Foodgrain markets / Distribution system / Exchange/ Disaster / Credit relations / Food prices / Bangladesh

Cuny, Frederick C., 1988 : Disaster Preparedness Recommendations For Bangladesh. UNDP, Dhaka, November 19, 1988, Mimeographed 23p.

This report contains recommendations for flood preparedness in Bangladesh. The author begins by defining flood and also conflicts in flood mitigation programmes. An outline for a national preparedness strategy describing activities at village and national levels have been incorporated. Several problems that a disaster preparedness programme may face were highlighted. These include : failure in communications, ineffectiveness of warning systems, and problems of mobilizing communities. Institutional arrangements for disaster preparedness have been suggested. It is pointed out that the most important decision to be made in the near future is the designation of a coordinating body and lead agency to manage over all pre-disaster planning. The author also argued for national flood and preparedness policy.

Key Words: Disaster/Flood/Preparedness/ Mitigation/Village and National levels/ Institutional arrangements/ Flood Policy

Currey, Bruce, 1988 : Natural Disasters and Micro Computers - A Long Term View. Draft for Discussion. September 27, 1988, American International School, Dhaka, 8p.

The author proposes using micro computers for disaster monitoring on a continuous basis. It is further pointed out that the proposed network of analysis, computers and study sites may be coordinated through HRDP (Winrock). A Social Science network will involve, a) on farm research sites, b) village study sites, and, c) NGO villages in vulnerable agroecosystems. It is felt that this kind of monitoring will fill the gaps of knowledge of policy makers during and after the natural disasters when some vital information is needed for policy purposes.

Key Words: Disaster / Monitoring /Computer /Network Agroecosystems

Currey, Bruce, 1982: Issues in Evaluating Food Crisis Warning Systems. Food and Nutrition Bulletin, Vol. 6, No. 2, pp.7-17

The paper discusses the food crisis warning systems in Asia. It is based on the author's experience from evaluating food crisis warning systems from the two predominantly rice growing countries of Asia. The countries are Bangladesh and Indonesia. An attempt is made to provide a conceptual framework for judging whether a food crisis warning system will be effective. The author also identifies nine criteria for judging any food crisis warning system and also provides a new paradigm for evaluating food crisis warning systems. The author expects that the article may provide a basis for a check-list for an evaluation handbook for various warning systems that are likely to be set up in the regions.

Key Words: Food crisis/Food system/vulnerability/Warning system

Cutler, Peter, 1985 : Detecting Food Emergencies- Lessons from the 1979 Bangladesh Crisis. Food policy, August 1985, pp.207-224.

The 1979 drought and the consequent food crisis that created an almost famine like situation were discussed. Although the 1979 crisis was extremely serious, much of the work on Bangladesh's vulnerability to food emergencies has centered around the 1974 famine. Using tables, diagrams and charts, the author outlines the main features of 1979 crisis. Various macroeconomic indicators and the degree of their usefulness were revealed. The indicators are: food availability, retail prices of rice, and wage price indices. The author also describes the nature of responses to crisis. It is further pointed out that there is a strong need for a central early warning unit for forecasting an imminent food emergency and also for better managing the crisis.

Key Words: Drought/ Famine/ Food emergencies/ Food availability/ Wage price/ Early Warning/ Bangladesh

Dean, P.B. and Wit Treygo, 1989: The Environment and Development in Bangladesh-An Overview and Strategy for the Future. A Report Prepared for the Bangladesh Programme, Asia Branch, CIDA, October 1989, 54p+ Appendices.

The report provides a wide but brief overview of the major natural and human resource features, as well as the major ecological concerns within different sectors. It is based on a review of literature and three weeks reconnaissance mission to Bangladesh. The report begins with a description of geographical setting, population and socioeconomic characteristics followed by sectorial issues and major ecological concerns. The sectors include water, land use and agriculture, forests and wildlife, fisheries and energy. Institutional framework and environmental issues have been also highlighted. The last part of the report gives a brief resume of donor's role in the environmental policies, planning and programme implementation and suggestative strategy towards sustainable development. In doing this CIDA's past role has been discussed and possible future roles have been specified. The report is very informative and has some beautiful pictures.

Key Words: Environment/ Development/ Population/ Water/ Land Use and agriculture/ Forest/Government/ NGOs/ Sustainable

Dynes, Russell, R., 1994 : Conceptualising Disaster in Ways Productive for Social Science Research. In S.M. Nurul Alam(ed.), Society, Disasters and Management-Theories and Experience. Academic Publishers, Dhaka, Bangladesh.

The paper traces the development of a social science research tradition which has emerged in the last forty years. It is emphasised that social science tradition suggests that disasters do not create dramatic breaks with predisaster behaviour but require the understanding of existing social structure as it deals with new problems. Based on the notion of local community as the locus of response to disaster, a conceptualization of disaster types is suggested. The social scientific study of disaster offers the opportunity to contribute to general theories of social structure. The author concluded that such research has the potential for informing the director of public policy.

Key Words: Social science research/ Pre-disaster behaviour/ Social structure/ Community stress/ Public Policy

Environmental Coalition of NGOs, 1992 : Environment and Development - Bangladesh NGOs' Perspective on Policy and Action. ADAB, Dhaka, 13p.

This is a position paper prepared by an environmental coalition of NGOs to present at the Rio Earth Summit. It briefly presents Bangladesh's NGOs position on different environmental problems that confronts Bangladesh in particular and the world in general. NGOs in Bangladesh believe that the growth-led development model is responsible for much of the world's environmental problems and intensification of poverty. Therefore, there is a need to devise a development model that integrates production process with resource conservation. The paper also highlights each of the major environmental problems and recommendations for sustainable alternative. The problems identified are : Population growth, floods and cyclones, destruction of forest, the destruction of soil fertility, water resource and biodiversity. The paper concludes with a note that the poor can hardly be blamed for environmental woes and indeed the poor are victims of environmental problems and can be utilized as a positive force for environmental protection and regeneration.

Key Words: Environment/ Sustainable development/Population/ Disaster/ Biodiversity/ Forest/ Poverty/ Poor/ NGOs.

Gomes, Ruben, 1986 : Relief and self-help. CARITAS-Bangladesh. August 1986, 15p.

The objective of the paper is to demonstrate that the poor and the uneducated people are capable of facing disaster with their own resources if they are organised and given proper guidance. Four case studies on the experience of two NGOs i.e. CARITAS and Association for Social Advancement (ASA) on relief and rehabilitation programmes were used. The case studies are : Flood recovery programme, Flood and tornado recovery programme, Cyclone rehabilitation activities and also Drought recovery programme. From the experience of these case studies, although varied, it becomes obvious that under certain circumstance relief became necessary and even unavoidable.

Key Words: Disaster/ Relief/ Self help/ Beneficiary/ Case study/NGO

Greenough, William b. and Richard A. Cash, 1973: Post Civil War in Bangladesh - Health Problem and Programmes. In Licoln C. Chen (ed.), Disaster in Bangladesh. Oxford University Press, pp. 241-256.

The impact of civil war on health and other related problems during the period of war were the subject matter of this article. The most significant impacts of war on health have been revealed through malnutrition, disease and consequent high mortality due to disruption of the basic needs of food and shelter. A description on post-war health programmes regarding what was done and could be done is given in the paper. In the end, the authors drew attention to three major health problems that were needed to be addressed on priority basis. These are : over-population, malnutrition and infectious diseases.

Key Words: Civil war/ Health problems/ Overpopulation/ Malnutrition

Hena, Hasna, 1992 : Why Women Appear Vulnerable. In Hameeda Hossain et. al, (ed.), From Crisis to Development-Coping with Disasters in Bangladesh. University Press Limited, Dhaka, pp. 67-73.

The article draws attention to one of the most ignored issues i.e. why are women vulnerable? It has been proved that the numbers of deaths of women and children are higher compared to men. The author emphasised the social rather than the physical causes of female deaths. She further argued that women's physical weakness was deliberately projected to draw sympathy, which led to an underestimation of women's role. It is suggested that a change is urgently needed in order to recognise the fact that women have great deal of resilience and they are not only victims but also fighters.

Key Words: Women/ Response/ Vulnerability/ Social and Physical causes/ Media projection/ Attitude/ Subordination

Hoque, M. Mozzammel, 1991 : Effects of Sea level Rise in the Costal Areas of Bangladesh. Paper presented at the UCLA International Conference on the Impact of Natural Disasters. UCLA, July 10-12, 1991, 13p.

An attempt is made to quantify the effects of sea level rise in the costal areas of Bangladesh. To quantify the degree and the extent of this possible effect of predicted sea level rise, an exercise has been initiated by simulating the effect with a computer based numerical modelling system. It is observed that the effect is more pronounced in the eastern side of the costal belt where the major islands are located. The predicted flood level contour maps show that about one-third of Bangladesh will be submerged due to predicted sea level rise.

Key Words: Flood/ Sea Level rise/ Costal belt/ Contour maps/ Computer model

Hossain, Hameeda, Cole P. Dodge and F.H. Abed (ed.), 1992 : From Crisis to Development-Coping with Disasters in Bangladesh. University Press Limited, Dhaka.

The book draws attention to the fact that crises created by disaster not only bring death, destruction and misery, but also create immense possibility of development. Development in this context depends on to what extent peoples' resilience and power can be transformed into real action. The book also provides a valuable analysis of how the people have learnt to live with natural disasters. The book has two sections. The first section has six contributions by those

who are directly involved in disaster management. These include government, non-paid volunteers and NGOs. An attempt to highlight gender differences in the impact and response to cyclone is based again on the actual experiences of women, both as victims and relief workers. Section two contains ten contributions by economists, demographers, NGO activists and social scientists. These describe the state of Bangladesh economy and society and its capacity to deal with an emergency situation over time. The successes of programmes such as Grameen Bank, BRAC's non-formal education programme are also highlighted.

Key Words: Disaster/ Development/ Impact/ Coping strategy/ Cyclone/ Relief and rehabilitation/ Women/ NGOs/ Government

Hossain, Md. Akbar, 1992 : *Durjog Upashaskrit : Akti Upakolio Grame Abhijogan Nirikhan.* (In Bangla) A Research paper prepared for MSS course. Department of Anthropology, Jahangirnagar University, Savar, Dhaka.

In this work the author used a concept of disaster subculture to explain the life and livelihood strategies of a coastal village of Bhola district. Several techniques combining both survey and anthropological methods have been used in the collection of data. The research report also include description of conditions of people before the 1991 cyclone, perception of cyclone and cyclone warning, survival strategies and also the condition of women and children during and after the cyclone. The author also investigated whether the specific situation and the unique adaptive strategies in the coastal area can be termed as a disaster sub-culture. The author also mentions the changes in adaptive strategies of people over time in the study village.

Key Words: Cyclone/ Disaster/ Subculture/ Adaptive and survival strategy/ Perception/ Warning/ Belief and Values.

Islam, Aminul M., 1986 : *Alternative Adjustment to Natural Hazards: Implications For Bangladesh.* Presidential Address. Bangladesh Association for the Advancement of Science. Rajshahi University, March 2-6, 15p.

Alternative adjustment strategies to natural hazards and their implications for Bangladesh are suggested. The paper starts with a general description of different types of natural hazards as extreme events, the growth and the development of hazard research in USA and Bangladesh. The author then discusses the flood hazard and coastal hazards in Bangladesh focusing on the various measures undertaken to mitigate these two hazards. It is pointed out that the behavioural aspect of flood hazard from the public policy point of view has been ignored. Reliance on narrow range of adjustments and employment of technology without knowing its social effects contributed in the increase of losses from natural hazards. Three possible types of natural hazard adjustment have been identified i.e. Folk or pre-industrial, modern technological, comprehensive or post- industrial adjustments. In the last section of the paper, the author provided a methodology for developing a comprehensive hazard damage reduction programme. In this methodology, the author identifies the stages as well as the possible types of adjustments for the flood damage reduction plan.

Key Words: Natural hazards/ Extreme events/ Hazard research/ Adjustment decision/ Damage reduction/ Comprehensive hazard/Damage reduction/ Bangladesh

Islam, M, Aminul and Howard Kunreuther, 1973 : The Challenge of Long Term Recovery from Natural Disaster- implications for Bangladesh. *Oriental Geographer*. Vol. XVII, No. 2, pp. 51-62.

An attempt was made to develop a methodology for coping with the natural hazards. This suggestive methodology is based on the earlier works of economists and geographers. It is emphasised that the economic and geographic effects of a particular disaster through proper survey should be understood before a reconstruction programme can be fully appreciated. Underlying the discussion is the implicit assumption that the government will bear a substantial portion of the recovery costs. In this paper, disasters have been viewed as a public responsibility and therefore, it is suggested, that its costs should be shared by all tax payers. Due to this, disasters recovery programme represents both a challenge as well as an opportunity to the concerned governments. Several possible types of adjustments and stages in the development of a long run recovery programme have been identified. Then the authors applied the methodology to the development of reconstruction programme for the coastal areas of Bangladesh effected by tidal surges and often violent cyclones.

Key Words: Disaster/ Long-term recovery/ Adjustments/ Economic and social effects/ Reconstruction

Islam, M. Aminul, 1993 : Environment and Sustainable Development- Social Science Perspective. A paper presented for Discussion in the National Seminar on Environment and Sustainable Development. National Economic Council Auditorium, Planning Commission, Dhaka, August 29, 1993.

An attempt is made to describe how the problems and issues relating to environment and sustainable development can be approached from social science perspective. The concepts of environment and sustainable development are defined. This is followed by a discussion of major socio-economic trends such as, population growth, land use change and conservation, forestry, wetlands, desertification, urbanization and also natural hazards. The need for Social Impact Assessment (SIA) integrating it in the planning process has been emphasised. The author further felt that the need for the adoption of a holistic rather than fragmented view of the problem is necessary.

Key Words: Environment/ Development/ Sustainability/ Socio-economic trends/ Social Impact Assessment/ Holistic approach.

Kabir, Khushi, 1992 : How Women Survived. In Hameeda Hossain et. al, (ed.) , *From Crisis to Development- Coping with Disasters in Bangladesh*. University Press Limited. Dhaka, Pp. 74-80.

The paper is based on the author's experience of relief work with Nijera Kori, an NGO as well as other NGOs for almost two decades. It is emphasised that many of the gender differences in coping with disaster, can be attributed to psychological or social reasons, as well as administrative lapses. The author cited from her experience why cyclone warnings have been ignored by people. Nijera Kori's relief strategy has been described. It is also pointed out that in the field, women relief workers are often discriminated and are not allowed access to the affected areas. A change in the traditional view point that men look after their families has been replaced. Women have now become a strong segment of society who survive through adopting their own means of survival. The paper concluded with strong plea that relief should never be used to destroy the dignity of human beings.

Key Words: Women / Crisis / Development / NGO/Relief/Workers/Human Dignity

Kabir, S.M.H. (ed.), 1993 ; Environmental Crisis in Bangladesh. Professors of World Academy of Bangladesh, Dhaka.

The book which is a collection of several articles provides a general overview of environmental crisis in Bangladesh. The book started from a basic premise that degradation of the environment now constitute a great challenge to human being and Bangladesh being one of the poorest and over populated countries is more amenable to such crisis. The book covers certain critical issues that include urban environment, pollution problems, Farakka Barrage- a man- made disaster, insecticides and environment, plants and sustainability and also forest and environment. Those who contributed papers have been drawn from the disciplines of geography, chemistry, botany, zoology, forestry and political science. The articles indeed depict views and synthesis of ideas drawn from multidisciplinary backgrounds.

Key Words: Environment/Disaster/Forestry/insecticides/Plants and sustainability.

Kafi, Sharif A. and Ashraf-ul-Alam, 1992: A Guide to Disaster Response Management. Bangladesh Development Partnership Centre, Dhaka.

This is what the authors called a practical handbook of disaster response management. The handbook begins with listing of types of disasters followed by a classification of implications of disasters in terms of damage and need of the population effected. Later on the usual institutional response pattern is highlighted. The authors also listed the elements of emergency preparedness and planning, different phases of disaster management, also the tasks to be performed at different phases. A primary survey checklist for determining the need of the people, extent of damage, availability of water, employment situation and rehabilitation prospect have been provided.

Key Words: Disaster/ Response/ Management/ Preparedness/ Damage/Population/ Relief/ Emergency.

Kafi, Sharif A., 1992 : Disaster and Destitute Women- Twelve Case Studies: Bangladesh Development Partnership Centre (BDPC), Dhaka, June 1992, 93p.

Twelve Case studies of randomly selected destitute women drawn from the districts of Cox's Bazar, Manikgonj and Jamalpur have been incorporated in the book. The twelve women have different backgrounds : four are affected by cyclones, two by floods, two by tornadoes, two by erosion and two are Rohingya refugees. The purpose of the case study is to portray the nature of vulnerability and sufferings, the different coping strategies, and also perception of need. The case studies appear to be very brief and more in depth information are needed to make these type of case studies useful and informative. However, one can have a good sense about the life history of destitute women in a disaster prone situation.

Key Words: Destitute/ Women/ Disaster/ Vulnerability/ Coping strategies/ Cyclone/ Flood/ Erosion.

Kamal, Nuruddin M., 1993 : Environment and Sustainable Development. A paper presented for Discussion in the National Seminar on Environment and Sustainable Development. National Economic Council Auditorium, Planning Commission, Dhaka, August 29, 1993, 46p.

An excellent overview of the state of environment, natural resources management issues and its relation to sustainable development is given by a bureaucrat planner. A general description

about socio-economic and demographic problems, natural resources management and the problems and issues relating to environmental degradation has been highlighted. It also emphasised the need for adopting appropriate policy reforms, complementary strategies and achievable action plans; accelerating training and education, need for increasing the support for the development of sustainable livelihoods for the poor and landless; and diversifying various production strategies to improve national environment in the long run. The paper emphasises adoption of policies that will involve NGOs, local leadership and formal and informal community organizations.

Key Words: Environment/ Poverty/ Development/ Natural resource management/ Environmental degradation/ Community participation/ Sustainable development.

Khan, Faruq Aziz, 1993 : Living with Natural Hazards- Bangladesh. House of Consultants Ltd. Dhaka, 106p.

An attempt is made to describe the different natural hazards that Bangladesh face from time to time. This descriptive book begins by providing information relating to physio-climatic and agro-ecological features of the country. Later on information relating to cyclone, flood, earthquake and riverbank erosion have been incorporated. The activities of different institutions such as SPARSO, Metrological department, BWDB etc. have been discussed. This sketchy book ends with a description of disaster preparedness programme and recommendations on monitoring and mitigation of natural hazards.

Key Words: Hazards/ River system/ Flood/ Cyclone/ Response to flood/ Disaster management/ NGOs/ Research/ Training

Khan, Abdullah Al-Mamun, 1973 : Geographic Research on Natural Hazards. Oriental Geographer, Vol. XVII, pp. 94-103.

The history and development of geographic research on natural hazards in Bangladesh and elsewhere in the world was discussed. This is mainly an inventory on what is done by geographers on natural hazard research in the last 50 years or so. Geographic research was mostly initiated in USA. Gilbert F. White was the pioneer in this respect who mostly concentrated on flood. However, the basic research paradigm was formulated at the University of Chicago in 1956 as a result of the flood studies which was later extended to new hazards like drought, costal storms, snow hazard and tsunami. International collaboration on hazard research was sponsored mainly by the International Geographical Union (IGU) Commission on Man and environment. IGU played a very crucial role in natural hazard research in the world. In Bangladesh, human ecological research on natural hazards was initiated by an eminent geographer at the Dhaka University where a research on human adjustment to the cyclone in a char was conducted under the IGU sponsorship. It is obvious from the paper that hazard research was mostly conducted by geographers and researchers from other fields have yet to show their interest in the field. The author concluded with an observation that the collaborative programme of natural hazard research should be continued and extended to other areas.

Key Words: Natural hazards/ Research/ Geography/ Collaborative research.

Ministry of Environment and Forest, 1991 : Bangladesh- Country Report for UNCED. GOB, Dhaka, Bangladesh, October 1991, 114p.

The Bangladesh country report is prepared for the United Nations Conference on Environment and Development held in Brazil 1-12 June, 1992. The report provides a comprehensive picture

of the state of Bangladesh environment. It contains brief information of the nations current development trends and major issues, a discussion on environmental strategy for sustainable development and the major current initiatives in environment. The section on strategy for sustainable development quite nicely depicts detailed strategy components and agenda. These include disaster management, population stabilization, poverty alleviation and environmental management. The report not only highlights the initiatives but also gaps in efforts and expect that regional and international arrangement that would emerge from UNCED would help the cause of environmentally safe, sound and sustainable development.

Key Words: Environment/ Disaster/ Sustainable Development/ Population/ Poverty alleviation/ UNCED/ Bangladesh

Myers, Desaix, 1973 : Civil War in Bangladesh - Relief Planning and Administration in an Insurgency Situation. In Lincoln C. Chen (ed.), Disaster in Bangladesh. Oxford University Press, pp. 206-224.

Given the various constraints in administering relief activities in Bangladesh, the author discusses some difficulties encountered in trying to plan and administer relief during liberation war in Bangladesh. In the beginning, background of disaster planning and existing framework of relief administration in Bangladesh have been discussed. Later actual problems faced during insurgency were highlighted. It is pointed out that out of the three main problems i.e. planning, transport, and distribution ;, these last two appear to be insurmountable. In such a situation donor can offer three things, relief supplies, transport and planning. The paper concluded with an emphasis planning is the easiest and is not likely to have some positive impact in an insurgency situations.

Key Words: Relief/ Planning/ Administration/ Civil War/ Insurgency

Nazem, Nurul Islam, 1988 : Management of Environmental Disaster in South Asia - A Regional Approach. BISS Journal. Vol. 9, No. 3, pp. 340-370.

Author gives a general overview of environmental disaster with a description of the origin, nature and types of disaster in South Asia. Flood, cyclone, drought and riverbank erosion have been considered as the major types of disaster. The intensity and the extent of damage is not same for all countries. The author also discussed the impacts of natural disaster under the headings of economic, social and political impacts. The last section contains analysis toward an approach to disaster management with an emphasis on the need for comprehensive regional approach. The paper concluded that the measures for disaster management in all stages including planning, designing and implementation at the regional levels should be coordinated as a part of an integrated regional system in order to ensure long term viability and effectiveness.

Key Words: Disaster Management/ Regional approach/ Flood/ Drought/ Cyclone/ Impacts/ South Asia

Nizamuddin, Khondakar (undated), The Impact of Development Projects on Environment. 8p.

The paper emphasises that there is a serious lack of concern on the part of development planners and engineers about the impacts of development projects on environment. As a result environment in which we live is frequently placed in jeopardy. The paper summarized the impacts under two headings : impact on natural environment and impact on socio-economic

environment. The author illustrates this two issues by citing the serious socio-economic and environmental consequences of the Costal Embankment Project on beel Dakatia situated in Khulna. The problems that have been created are : water congestion, siltation, damp and unhealthy surrounding creating health problems and displacement of people. The paper concludes that an environmental management approach should be undertaken in the planning and designing of a project in order to resolve the problems and contradictions created by development projects.

Key Words: Development projects/ Planning/ Environment/ Water congestion/ Health problems/ Beel Dakatia

Pramanik, M.A.H, 1992 : Natural Disasters and their Impacts on the Environment of Bangladesh. In Department of Environment, Training Manual for Environmental Management in Bangladesh. July 1992, pp. 141-47

The paper begins with a brief description of the major environmental concerns as well as the salient features of natural disasters and their impacts on environment in Bangladesh. An attempt is made to delineate the existing disaster warning, forecasting and mitigation techniques. In the end some recommendations were made for disaster mitigation. The necessity of international collaboration should be taken into consideration. The paper made a plea that although natural disasters cannot be prevented but attempt should be made to mitigate those so as to reduce loss of life, property and physical infrastructure.

Key Words: Environment/ Disasters / Mitigation/ Prevention/ Impact assessment/ International collaboration.

Quarantelli, E.L. , 1994 : The case for a Generic Rather than Agent Specific Approach in Disaster in S. M. Nurul Alam (ed.), Society Disasters and Management-Theories and Experience. Academic Publishers, Dhaka, Bangladesh.

At the outset the author raises a very critical but pertinent issue which is : Are disasters for planning purposes best approached generically or in agent-specific terms ? On the basis of various research findings the author concluded that generic research is more valid although this does not mean that there are no meaningful differences along other dimensions between disasters. It is emphasised that whatever the distinctions are made both the approaches are not equally valid for all phases of disaster planning cycle. It is found that the generic approaches is clearly best applicable to the emergency time phases, somewhat less so for the mitigation phase with recovery falling in somewhat between the others.

Key Words: Agent specific and generic - approach / Disaster planning cycle/ Mitigation/ Preparedness/ Recovery/ Prevention/

Rahman, Atiur, 1990: Human Response to Natural Disasters -Issues Involved. Paper for Discussion in the Joint Government/ UNDP Organised Brainstorming Session on Disaster Prepared- Preparedness and Management.9-10 January, 1990, Dhaka, Bangladesh 45p.(mimeographed).

Many issues of human response both theoretical and practical were described. Conceptual issues relating to absorption, acceptance, reduction and the real response found at the individual, social and public levels were also discussed. Individual response varies due to

difference in the socio-economic background of people. Some response may be spontaneous, while others are due to moral reasons and even there may be some who do so with an opportunistic motive. During the 1988 flood responses from all quarters, such as social, governmental and non-governmental were visible. The paper also made a point that people in general are not relief minded but want to involve themselves in the development process following a disaster. It is further argued that disaster plan should not be seen on piece-meal basis but rather as a continuous process. It must have several components e.g. motivation of people, inter-organisational coordination, quick dissemination of information, disaster warning, and also a proper plan for transition from a relief plan to a development one. People's own perception on disaster was incorporated in one section. The arguments and analysis in the paper have been supported by citing data, information and quotes from various previous studies. The appendix of the paper contains a general overview on natural disaster in Bangladesh which is informative and useful.

Key Words: Response/ Vulnerability/ Capability/ Individual/ Social/ Public/Relief/ NGOs/ Perceptions/Disaster plan

Rahman, Atiur, 1992 : Disaster and Development- A Study in Institution Building in Bangladesh. Grassroots. Vol.1, No.3, January-March, pp.

An attempt is made to understand the response pattern to disaster in Bangladesh from institutional and organizational perspectives. It is pointed out that the capacity of an organization to respond to disaster is conditioned by its knowledge of the community and its respect for people's own capacities. It is useful to document the practical lessons learnt from coping mechanisms of recent disasters in Bangladesh in order to prepare a disaster preparedness policy. A truly multi-sectoral, multi-disciplinary and self-reliant approach is needed for building institution for disaster mitigation. People's own efforts in coping with disaster, both natural and man-made have been described. Lessons learned from these responses are reflected in the outline of a tentative disaster plan which a disaster prone country like Bangladesh should integrate into its national planning exercise as a core input.

Key Words: Institution/ Organization/ Response/ Mitigation/ Vulnerability/ Development/ Preparedness plan.

Rahman, Atiur, and C.S. Ahrnad, 1990 : Disaster and Development - A Case Study in Institution-Building in Bangladesh. A study prepared for UNDP, Dhaka, Published through UNDA in CEO Occasional Paper No. 3 in August 1991, 74p.

The report is a part of global study on Disasters and environment. The study has been undertaken with a view to give a general overview of the impacts of natural hazards and to provide a critical review of the strengths and weakness of current mitigation measures and also to provide recommendations with regard to disaster mitigation. The report is based on information collected through discussion with concerned people, consultation and review of relevant literature and also field visits. The report begins with an introduction which contains some general information on Bangladesh, types and impacts of natural hazards and macro-economic adjustment of government. In part II, the authors discuss perceptions, attitudes and past approaches relating to natural disasters. An assessment of government mitigation measures and their effectiveness is also discussed. The role of UNDP and other multilateral organizations is given in part four. The report concludes with a set of recommendations that are applicable at national and sectoral level. In the annex-3 a case study on Grameen Bank's response to disaster provide an useful insight.

Key Words: Disaster/ Development/ Institution building/ Government/ NGO's / Mitigation measures/ Disaster Management/ UNDP/ Multilateral donors.

Rahman, Matiur Md, 1993 : Disaster Mitigation in Bangladesh - Peasants' Perceptions and Aspirations. Impact Assessment. Vol. II, No.1 (Spring), pp. 57-85.

Attention is drawn that disaster mitigation measures and assistance should take into consideration the victim's pre-disaster socio-demographic and economic positions. The issues, problems and policy measures that were raised and suggested in the paper is based on field data collected from two most erosion prone areas of Bangladesh. The paper assess peasants' perception of certain natural hazards, their coping strategies, and social expectations in the matter of disaster coping. The crux of the arguments is the two points which are rural floodplain inhabitants, and not all the poor are disproportionately located in natural hazard prone areas. It is further highlighted that although local community support is eroding with the ever increasing poverty, a local support system still exists. The author concludes that local level support system may be reorganized and coordinated by forming local voluntary disaster coping groups.

Key Words: Disaster mitigation/ Peasant's perception/ Moral economy/ Community support system/ Socio-economic groups/ Impact assessment/ Riverbank erosion.

Rahman, Md. Saidur, 1993 : Disaster Management Handbook for Bangladesh. 4 Vols. PACT and BDPC, Dhaka, February, 1993.

This comprehensive Disaster Management Handbook has four volumes. These are : Vol. 1- Disaster Stage, Vol. 2 Planning a Disaster Response, Vol. 3 Operational Response for up to first Three Weeks and Vol. 4 Communication/Record Keeping, Fishing and learning. Numerous issues were covered. Some of these include, nature of disaster, common diseases, rural health status, malnutrition, stockpile of supplies, logistics plan, assessment of needs, procurement of materials, rescue operations, first aid, burial of bodies/carcasses, distribution of flood, provision of safe drinking water, shelter, distribution of ration, and setting up of camps. The coverage is quite extensive and useful. The handbook has been prepared after interviewing several hundred people including women in the disaster prone areas and also with managers from government and NGO's who are involved in various disaster management activities. It is suggested that the handbook will act as an important guide for managers of disaster relief both at the national and grassroot levels.

Key Words: Handbook / Disaster/ Response/ Management/ Health/ Nutrition/ Need assessment

Ressler, Everett M., 1988: Recommendations for A Programme Strategy to Enhance Disaster Preparedness and Emergency Response in Bangladesh. Asian Disaster Preparedness Center, AIT, Bangkok, October 1988, 20p. (mimeographed)

This exploratory paper focuses on what additional measures can be under taken to prevent loss of life, avoid or reduce property damage, minimize human sufferings and speed up recovery in subsequent floods. Keeping this problem in mind some core components of disaster preparedness programme were identified. These are prevention, mitigation, preparedness, emergency response, rehabilitation and reconstruction. Seven strategies with comments for enhancing disaster management capability were also spelled out. This part of the paper contains detail discussion on the necessity of each strategy and how these can be adapted.

Key Words: Disaster/ Management/ Preparedness/ Strategy/ Damage/ mitigation/ Response/ Recovery

Rohde, Jon E. et al., 1973: Refugees in India - Health Priorities. In Lincoln C. Chen (ed.), Disaster in Bangladesh. Oxford University Press. pp. 145-166

An attempt is made to discuss the refugee migration to India after the 1971 crisis and conditions of camps which were hazardous to health. The various health programmes associated with natural disasters can be strengthened by survey, surveillance, and utilisation of existing knowledge. The authors mentioned about a nutrition survey which greatly helped to plan and adopt a nutrition programme called "operation Lifeline". Many other examples are also cited to support author's arguments. In the conclusion, the authors emphasised the importance of utilizing existing knowledge in the implementation of health programmes under emergency situations.

Key Words: Civil war/ Refugee/ Health problems/ Survey and surveillance/ Nutrition

Save the Children Fund, 1993 : Disaster Management Guidelines, Dhaka, August 1993, 102p.

This disaster management guidelines is written particularly for flood and cyclone but is also applicable to other disasters. The guidelines have detail description of what to do, how to do and when to do what during emergency situations created by natural disasters. The guidelines divided the flood/relief operations into three stages : Floods immediate, water recede-intermediate and harvest delay. It is emphasised that in order to respond to on emergency situation one needs the following: quick and accurate information, money, people, transport and communication and administrative and logistic support. The guidelines also identified types of operations in different phases of disaster response. There are also many other detail description of tasks which will be useful for any organization who are involved in relief and rehabilitation.

Key Words: Save the Children/ Guideline/ Disaster/ Flood/ Cyclone / Relief operations/ Stages/ Response/ Administrative and logistic

Shelley, Feldon and Florance Macarthy : 1983 Disaster Response in Bangladesh. International Journal of Mass Emergencies and Disasters. Vol. 1, pp. 105-124

The central focus of the paper is on the family and its changing forms and functions surrounding the socio-economic and political upheavals and also the environmental upheavals that include floods, typhoons and famine. The author suggested several social consequences of disasters that include increasing landlessness, migration both internal and external, change in wage rate and reduction in the size of landholdings alienating the people from the means of production. All these bring changes in social relations and social institutions that have become permanent aspects of daily life and social structure of the country. It is also hypothesised that disasters tend to exacerbate existing trends and patterns of instability and inequality rather than initiate completely new forms of response. Citing examples, the authors point out that disasters always attack the weakest link encouraging changes in the society and the economy.

Key Words: Disaster/ Family/ Response/Socio-economic Upheavals/ Migration/ Landlessness/ Economy/Change.

Sadeque, S.Zahir (ed.), 1992 : Environment and Natural Resource Management in Bangladesh. Bangladesh Sociological Association, Dhaka University, Dhaka.

This edited book include contributions by various experts having background in economics, geography, sociology, anthropology, fisheries, forestry and soil physics. The papers are quite

wide ranging and depict contemporary concerns on Environment and Natural Resource Management in Bangladesh. The issues covered in the book are : Environmental perception and management, forestry and environment, social research and aquaculture, aquatic resource management, survival in and adjustment to flood hazards, water and sanitation and also environmental crisis and human response. The coverage is comprehensive. It is a valuable addition in social science contribution in natural resource management.

Key Words: Natural resource / Environment/ Management/ Social Science/ Perception/ Flood/Survival and adjustment/ Land use planning/ Agriculture.

Shamim, Ishrat, 1993 : Natural Hazards in Bangladesh- Social Impact, Survival Strategies and Policy Implications. In Environment and Development Series. Rural Social Science Network, Dhaka, June 1993, pp.15-70.

This general paper highlights social impact, survival strategies and possible policy implications in the context of natural hazards in Bangladesh. Specifically it intends to evaluate the impact and consequences of the various natural disasters such as cyclone, floods and riverbank erosion. The paper is based on secondary sources that include published/unpublished papers, impact study reports, government reports and also NGO response study in disaster situations. The issues included in the paper are : response mechanisms, social structure of disaster prone areas, land tenure, kinship organization, and power structure. In the impact section author highlighted the cyclone of 1991 and riverbank erosion. People's responses during flood, cyclone and riverbank erosion have been discussed. The paper concluded with a note on disaster management and policy implications both in the pre and post disaster periods.

Key words: Natural hazards/ Response mechanism/ Survival strategy/ Disaster management/ Social impact/ Policy implications.

Shelley, Feldman and Florance Macarthy : 1983 Disaster Response in Bangladesh. International Journal of Mass Emergencies and Disasters. Vol. 1, pp. 105-124

The central focus of the paper is on the family and its changing forms and functions surrounding the socio-economic and political upheavals and also the environmental upheavals that include floods typhoons and famine. The authors suggested several social consequences of disasters that include increasing landlessness, migration both internal and external, change in wage rate, reduction in the size of landholdings and gradual alienation of the people from the means of production. All these bring changes in social relations and social institutions that have become permanent aspects of daily life and social structure of the country. It is also hypothesised that disasters tend to exacerbate existing trends and patterns of instability and inequality rather than initiate completely new forms of response. Citing examples, the authors point out that disasters always attack the weakest link encouraging changes in the society and the economy.

Key Words: Disaster/Family/ Response/Socio-economic Upheavals/ Migration/ Landlessness/ Economy/Change.

Taylor, Alan J., 1979: Emergency Sanitation for Refugees : Experiences in the Bangladesh Refugee Relief Camps, India, 1971-72. Disasters, Vol. 3, No.4, pp. 435-442.

This paper draws attention to an important issue i.e. emergency for people who are driven out from their country due to civil war and take refugee to another country. It outlines some efforts

which were initiated to solve some very serious and appalling sanitary problems. Discussing the various measures, it is emphasised that the sanitary needs of people should have to be met whenever they are needed. However, whatever method is chosen should be culturally acceptable, technically and economically practical, can be cleaned easily and must be capable of being brought into service quickly.

Key Words: Refuges/Emergency sanitation/Methods/Relief camps.

United Nations, 1984 : Disaster Prevention and Mitigation- A Compendium of Current Knowledge-Preparedness Aspects. UNDRO, Geneva, UN, New York, USA, Vol. II, 218p.

This compendium of current knowledge on disaster prevention and mitigation deals with the preparedness aspects of disaster. The purpose of this volume is to identify the existing knowledge and expertise which may be applied directly towards the prevention and mitigation of disasters. This may be possible through an identification of gaps in current knowledge which require action either of the local or national level. The contents of the volume include : introduction, general preparedness measures, special measures for different types of disasters, types of assistance and other preparedness problems.

Key Words: Preparedness/Emergency plan/Training and education/ Prevention/ Assistance/ Disaster.

United Nations, 1986 : Social and Sociological Aspects- Disaster Prevention and Mitigation. A Compendium of Current Knowledge, New York, USA, Vol. 12, 48p.

The sociology of disaster is a relatively young though very important field in understanding social and human issues of disasters. The purpose of this compendium is to identify and collate existing knowledge and expertise which may be applied directly toward the prevention of natural disasters particularly in developing countries. The report has nine chapters. It begins with a description of contents and has chapters on disaster related behaviour patterns, group and organizational considerations in emergency situations, social considerations in pre-disaster planning, forecasting, warning and evacuation. A useful and handy report for policy makers, NGOs, development practitioners, donors and also academicians.

Key Words: Sociology of disasters/Disaster behaviour/ Pre-disaster Planning/ Forecasting and warning/Preparedness.

USAID, 1990 : Disaster, Planning and Development : Managing Natural Hazards to Reduce Loss. Office of Foreign Disaster Assistance and Organization of American States, Washington, D.C. USA, December 1990, 80p.

This book is a synthesis of the natural hazard experience of the Department of Regional Development of the Organization of American States. It is emphasised that the most effective approach in reducing long term impact of natural hazards depend upon the incorporation of natural hazard assessment and mitigation activities into the process of integrated development planning, investment, project formulation and implementation. Except introduction, the book has two parts and eight sections. Part one describes some general issues as these relate to definition and features of hazard. Second part consists of guidelines for incorporating natural hazard considerations into development planning and project formulation. This part deals with

certain important issues that include susceptibility to vulnerability, loss reduction, strategies for specific hazards, strategies for selected economic sectors and tools for hazard assessment.

Key Words: Planning and development/Vulnerability reduction/ Economic sectors/ Hazard assessment/ Risk / Loss reduction/Natural hazard.

World Food Programme, 1991 : Distress Factor System- Poverty- Mapping and Targeting for the National Allocation of Development and Relief Assistance. WFP, Dhaka.

This WFP brief draws attention to the need of a Distress Factor System (DFS) as a means for the initial planning and allocation of food resources to the population. DFS is actually a set of methodological procedures for i) Weighing socio-economic indicators of poverty and mapping the relative level of distress geographically, and for 2) estimate the volume of food and other assistance needed. The DFS was first formulated in 1983 and updated in 1990 incorporating more indicators. These are mostly socio-economic indicators that include agricultural production, foodgrain prices, agricultural wage rates, incidence of natural disasters which have been extended to include landless population and population density. The DFS has been used to map the areas for possible interventions by WFP. However, the biggest drawback of the system is the implicit assumption that all factors that influenced the trend in the past have or will continue to do so. The poverty-mapping on the basis of DFS is an attempt to identify social categories for targeting the national allocation of development and relief assistance.

Key Words: Poverty mapping/ Socio-Economic indicators/ Relief and rehabilitation/ Natural disaster/ World Food Programme.

World Resource Institute, 1990 : Bangladesh Environment and Natural Resource Assessment. A Report prepared for USAID. Washington D.C., USA, September 1990, 64 + maps.

The report discusses the environment and natural resource situation and how these relate to economic growth and sustainable development in Bangladesh. It is conducted by a multidisciplinary team and is based on assessment of available information, consultations with government officials, donor agencies, the private sector and knowledgeable individuals in the field. The fundamental question addressed in the review is : How can societies meet human needs and nurture economic growth while conserving the natural resources and environmental integrity on which life and economic viability ultimately depend ? The report also contains an overview of economic development context for Bangladesh where an attempt is made to state the environmental factors and development challenges for Bangladesh. The linkages between population, development and environment are also highlighted. The discussion on environmental and natural resource management issues in Bangladesh include analysis on land use and productivity, fisheries, forest resources, energy, urbanization and industrial pollution, biological diversity and flood control. The report also presents a brief overview of institutional and policy framework as these relate to natural resource management. The assessment concludes with recommendations for natural resource management and priority of action areas for sustainable development.

Key Words: Environment/ Natural resource/ Assessment/ Economic development/ Land use, Productivity/ Fisheries/ Flood control/ Institutional framework/ Sustainable development.

Zaman, M. Munir-Uz, 1990: Government Response to Natural Disaster in Bangladesh. Paper for Discussion in the Joint Government UNDP Organised Brainstorming Session on Disaster Preparedness and Management. 9-10 January, 1990 Dhaka, 26p. (excluding maps and charts)

The paper contains a brief overview of different types of disasters that Bangladesh experiences from time to time. Three different types of natural disasters i.e. a) floods b) tropical cyclone and tidal surges, and, c) drought were mentioned. It is pointed out that in spite of this the rulers and the administration in various times of history had played important role to rescue the distressed people in the natural disasters. In the 1960s and 1970s, disaster management programmes included significant decisions regarding the formulation of codes and creation of a number of physical facilities. Gradual increase in the role of NGOs indicates a noticeable change in disaster management. The introduction of modern disaster (flood, cyclone) forecasting and warning cell helped the disaster management programme. In the conclusion, the author makes two points : 1) that the organisations and structure of disaster management and rules and procedures governing should not be modified and amended frequently, and 2) in different phases of disaster management peoples' should be properly motivated and their participation should be ensured.

Key Words: Disaster/ Flood response/ Government/ Management/ Disaster Code / Government / Relief

CHAPTER - 3

FLOOD

Before discussing the nature, types and trends of social science works on flood, it will be pertinent to briefly describe the importance of flood as disaster-agent in Bangladesh. **The relationship and interdependence of man and nature will also help to realize the critical role that social science may play in comprehending the issues from human perspective.**

Bangladesh is known as land of rivers. Three major rivers the Ganges, the Brahmaputra and the Meghna, their tributaries and distributaries numbering about 250 constitute only 8% of flood plain Bangladesh in the dry season. Flood which is a major natural disaster in Bangladesh is the result of the interplay of the forces of the three main rivers. As a result, 83% of the floodplain area in Bangladesh is normally flooded during the monsoon season. **The nature and the type of flood is very crucial for the survival of the population of the country. Floods which affect the life of the people have become a part of the life of people in the area for centuries.**

The ecological setting created by the active river systems influence the settlement patterns, the types of houses people build, subsistence patterns, cropping calendars and also the forms of technology. The settlement patterns and social interaction of people differ depending upon whether a delta is moribund or active. Rice is grown in water and fish that are caught in the rivers during floods constitute the main source of protein for Bangladeshis. In this consideration, flood is not a hazard but also a resource.

People's conceptualisation of flood is very much linked with topography and the cropping practices in the area. People in Bangladesh have learnt to live with normal and anticipated flood (*barsha*) while flood (*bonna*) is regarded by people as undesirable and damaging phenomenon. It is also noticed that some people distinguish between *shababik bonna* (normal flood) and *boro* or *ashababik bonna* (big or abnormal flood).

Trends in Flood Research

Having made the above observations we would emphasise that any flood control and mitigation measures should take into consideration not only the geophysical but also equally give importance to the human issues of flood plain Bangladesh. It is rightly emphasised that "the planning of flood control in Bangladesh needs intimate and thorough knowledge of its rivers, the geological past and present, the cultural history of its people and role played by the rivers in the land formation process of the country". People have their own way of understanding rivers, their activities and live with them. **People in this country do not consider rivers as their enemy but as part of their life cycle and therefore, have devised means to coexist and live rather than thinking these as formidable enemy who should be conquered.**

In the past little attention has been paid to the human issues and the flood problem has been considered basically as a physical phenomenon. Following the conviction that flood is a physical phenomenon, the attempts to minimize the effects of flood have been made through structural means embanking rivers by building embankments. Indeed since the early sixties until the present embankment building remains as the most accepted, common and popular means of flood control initiatives in Bangladesh. This emphasise only on structural measures have resulted in various human social-economic and environmental consequences.

However, after the 1987 and 1988 floods there have been new realization and appreciation regarding non-structural means of flood mitigation. It has been emphasised that attempts should be made to understand flood from people's point of view, their need, and also the indigenous adjustment over the years.

Post-1988 Development

After the two consecutive floods of 1987 and 1988 and the human sufferings and resilience of people to face disastrous natural hazards have led to a tremendous interest among the social scientists to conduct research on various human issues relating to flood. We notice that a definite interest has been emerging among the economists, geographers, sociologists and anthropologists. As we mentioned earlier that geographers were the first social scientists to conduct research on cyclone in the 1960s, but large scale involvement of social scientists from other disciplines is a post- 1988 phenomenon. After the 1988 flood numerous articles were published in news paper, journals, papers have been presented in the conferences, reports prepared and activities of NGOs, government and donors have been evaluated which reflect a growing interest in disaster related issues. **In all these writings human issues got preference over physical and people gradually began to raise questions on the environmental, social and human consequences of embankment centered flood control programmes.**

Issues Covered and Methodology

This change although significant could not create any definite trend and direction in disaster research. Many of these works are descriptive evaluation reports, disaster management manuals, criticisms of the interventions undertaken by government to control flood, and analysis of people's survival strategies. However, the studies that are now being conducted under the Flood Action Plan(FAP) are more sophisticated and developed in terms of coverage of issues and methodological rigour. **It will not be an exaggeration if we say that a significant leap forward in social science research on natural disaster has been made by the incorporation of social science component in almost all the major studies of FAP.**

The FAP has been widely criticised because of its bias towards structural measures of flood control as opposed to non-structural measures. Without entering into the on going debate on FAP, we may say that inclusion of issues in FAP that more help to understand the human problems in flood is a remarkable change. We notice that in most FAP studies, there is provisions for involvement of economists, sociologists and anthropologists. Both local and expatriate social scientists are working together. These studies are conducted with some definite objectives rigorous methodology and rigour. In this sense, some studies of FAP (For example FAP 16 Flood Response Study) are indeed praiseworthy. Following major issues have been covered by the Literature that we reviewed:

Box 2 : Coverage of Issues

Issues
Δ Flood : General Analysis
Δ Beneficial Effects of Flood
Δ Perception of Flood
Δ Socio-economic Impacts of FCD/FCDI Projects
Δ Flood Response
Δ Flood and People's Survival
Δ Government's Role
Δ Flood and Development Possibility
Δ Role of NGOs and Government
Δ Impact of FCD/FCDI projects on Agriculture
Δ Evaluation of Relief and Rehabilitation Activities
Δ Embankment and Flood Control
Δ FAP : Problems and Prospects
Δ Political Economy of Flood Control
Δ Women in Flood : Response and Survival
Δ Flood Policy.

Most literature that have been reviewed were general in nature. Fundamental research relating to human issues are rare. No attempt is made to put the issues covered in theoretical framework. This is understandable because only recently we have started to work on this field. Some writings on flood are simply impressionistic while others are based on secondary sources. Most empirical works are based on general survey and only a very few relied on intensive field work.

Types of Literature

We made an annotation of 156 titles in this chapter. The titles fall in several categories. Out of 156, 21 works have focused on the FAP and other related issues.

Box 3 : Types of Flood Literature

Types	Number
General	
Books	12
Book Chapter	14
Conference Papers	13
Reports :	
NGOs	13
Government	8
Donor	6
Others	12
Articles :	
Published	67
Mimeographed	11
Total	156

ANNOTATION OF FLOOD LITERATURE

Abbas, B.M., 1987: Flood Management in Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, PP. 89-96

The paper which is written by an eminent flood expert mentions that one of the major courses of 1988 flood was the synchronization of the peak floods of the major rivers. Other suggested causes of flood with brief comments have been included. The author argues for a various methods of flood control that have a structural bias. It is felt that flood cannot be controlled without the cooperation from the neighbours of Bangladesh and support from the international community. In the conclusion, a programme of work for flood management in Bangladesh is suggested.

Key Words: Flood/ Causes of flood/ Methods of flood control/ Neighbour's cooperation.

ADAB News, 1989: Dense Afforestation is a Primary Solution to Floods and Tidal Surge. Vol. XVI, No. 8, May-June, pp.26-27.

It is argued that the fury of flood and tidal surge can be substantially controlled by a dense afforestation programme. The maintenance of adequate forest cover is an ecological precondition for any country. A novel methodology of intensive afforestation with Ipil ipil as the primary component for flood control has been proposed.

Key Words: Flood control/ Afforestation

ADAB News, 1988: The 1988 Floods - The Response of ADAB. ADAB News. Vol. 15, No. 5, September-October, pp.20-22.

From this case study, one gets a picture that ADAB not only coordinated but also directly participated in relief activities in the aftermath of 1988 flood. Various activities of ADAB during the flood were incorporated in the short article.

Key Words: Relief/ NGOs/ Monitoring/Media

ADAB News, 1988: The Tragedy of Repetition? Vol. 15, No. 5, September- October.

This issue of ADAB News contains five articles relevant to the 1988 floods. These are: 1) The 1988 Floods: The Images of the Apocalypse by Azfar Hussain, 2) Glimpses into the History of the Floods: 35 years by Iqbal Shailo, 3) The 1988 Floods: Sources and Causes: Expert Views, 4) NGO Case studies: OXFAM, CARITAS, and ADAB, 5) Development Possibilities in Flood Prone Areas in Bangladesh by Hugh Brammer. The annotation of each of these articles are given later in this book.

ADAB News, 1984: Floods-'84, Vol.XI, No.6, November-December.

This issue of ADAB news includes several short articles on flood and other natural disaster. The first section (p.2-3, 6), contains ADAB's Disaster Report on 1984 Flood which is based on information furnished by NGOs from 85 Upazilas of the country. It is reported that some Upazilas experienced severe to extreme flood and an estimated 20 percent of the population in these areas were affected. In the 47 percent of the areas people live in extreme distress. The main causes of distress were loss of crops, starvation due to shortage of food which is again often due to lack of consumer's buying capacity. The areas of emergency assistance contains mostly meeting the basic needs, such as food, shelter, medicines, and distribution of agricultural seeds, poultry vaccination and tree plantation. The annotation of each of the articles in the volume is given later.

Key Words: Disaster/ Distress/ Population effected/ Emergency assistance/Relief/Food shortage/Buying capacity

ADAB News, 1977: Man and Water. Vol. 4, No. 1, January, p.19-20

This is an extract reprinted from a FAO publication titled "Man's Influence on the Hydrological Cycle". According to the report man's effort to control hydrology is affected by factors that include ecological, sociological, economic, cultural, political and other factors. Everyday decisions by politicians and economists also affect water resources. Irrigation projects which are also manifestation of man's role affect the hydrological cycle.

Key Words: Man's role/ Hydrology/ Economic, Cultural and Sociological factors/ Technology

ADAB News, 1977: Fertility of Flooded Soils, Vol. 4, No. 2, February, pp. 15-16, 20

This short piece written by Dr. Brammer points out that the the fertility of Bangladesh flood plain soils is maintained by silt deposits is a myth. It is further pointed out that the sources of fertility of

soils is biological properties that provide nitrogen and chemical properties of submerged soils. This makes phosphorous and the nutrients in solution in the flood water.

Key Words: Fertility/ Flooded soil/ Biological/ Chemical/ Nutrients/ Phosphorus

Adnan, Shapan and Abu M. Sufiyan, 1993 : State of the FAP - Contradictions between Policy objectives and Plan Implementation. Research and Advisory Services. Dhaka, 66p.

The book is a critique of the views and policies expounded by the sponsor of FAP that include the World Bank, the Flood Plan Coordination Organization (FPCO) and also other elements of FAP management. Excepting the executive summary the book has three chapters i.e. Introduction; FAP Organization and Development and Policy Issues Regarding Future FAP Developments. One important issue that emerged from the book is the contradictions between the stated objectives of FAP and the actual experience of plan implementation. The actual nature, sequencing and interrelationships between FAP components have seriously undermined the claim that this is an integrated and coordinated plan of action. The book although quite illuminating reflect the view of anti-FAP group and therefore, should be approached with caution.

Key Words: FAP / Flood/ Environment/ Institutional aspects/ FAP management/ Health/ Nutrition/Economic appraisal.

Adnan, et. al, 1992 : People's Participation NGOs and the Flood Action Plan. Research and Advisory Services. Dhaka, December 1992, 173p.

In recent years, FAP is one of the major undertakings that is likely to have a significant impact on the people and natural environment of Bangladesh. Considering the importance of the plan certain critical issues have been raised in the book. These are : How have ordinary people figured in the process of FAP implementation to date ? What have been people's responses to FAP, if any ? and what should be the nature of their involvements be ? The study aims to address these issues and also delineates the roles and policies of key actors including government, donors and concerned government agencies. The role of NGOs both in and outside the FAP process also require to be properly considered. In recent years NGOs have taken a very constructive but critical role in their attitude toward FAP. Excepting four appendices this independent study has seven chapters. These are : introduction; different ideas and approaches to people's participation; lessons from the past FCD/1 projects; people's participation and FAP; people's participation in FAP implementation; NGO options in relation to FAP and; conclusion and perspectives. It has been emphasised that the prime consideration of the study has been to make the findings credible to all concerned-not least, the people of Bangladesh.

Key Words: FAP/ People's participation/ NGOs/ Government/ Donors/ Flood protection/ Public cuts/ People's mobilization people's need and priority

Adnan, Shapan, 1991 : The Political Economy of Flood Protection Programmes in Bangladesh. Paper presented at the Ninth Biennial Conference of Bangladesh Economic Association. Dhaka, 17 January 1991, 7p.

Various issues relating to the politics of flood protection programmes have been raised and discussed. The paper highlights the short run trends in flooding during 1990 and also the institutional mechanisms which are adopted to cope with the flood-related problems. The social,

economic, demographic, environmental consequences of flood and also its impact on women and children have been documented. The author also deals with issue of faulty flood protection mechanism and also attempted to find out the underlying causes and the technical, institutional, and structural constraints as well as misappropriation of resources. Critical questions about public information and public responses about these issues are also examined. The paper concluded suggesting some hypotheses regarding possible future trends.

Key Words: Flood protection/ Political economy/ Social, demographic and environmental consequences/ Structural constraints/ Public information and responses/ Future trends

Adnan, Shapan, 1990 : Floods, People and the Environment- Institutional Aspects of Flood Protection in Bangladesh. Research and Advisory Services. Dhanmondi, Dhaka, 127p.

The book is concerned regarding how the people in Bangladesh and the environment within which they live have been affected by various flood control programmes. The observed patterns and processes are placed in the framework of the institutional structures which dealt with floods as well as protection programmes. From the available evidence author suggested that the people are not the major beneficiaries of faulty flood protection structures rather a coterie of business interests and officials functionaries involved in designing, planning, executing and maintaining such structures reaped the benefits from these constructions. The bulk of the sources that are used in preparing this report include academic papers, government publications, agency reports, news paper clippings. Many charts, maps, diagrams and pictures have been used to illustrate and support the arguments in the paper.

Key Words: Flood control/ Institutional matrix/ Affects of flood/People's response/ Resource misappropriation/ Institutional structure/ Policy implications.

Ahmad, Mohiuddin (ed.), 1989: Flood in Bangladesh. Community Development Library (CDL). Dhaka.

The book contains twenty five articles written by persons having different backgrounds. It gives a more or less a general overview of flood in Bangladesh. The articles of the book which are technical and general in nature are divided into five parts: 1) overview, 2) hydrology and morphology, 3) flood control and management 4) structural measures, and, 5) human interference. Some articles in the collection appear useful and interesting. We provide annotation of all the articles separately later.

Ahmad Mohiuddin, 1984: Deluge in the Delta. In Mohiuddin Ahmed (ed.), Flood in Bangladesh. CDL, Dhaka, pp.3-41

The author discusses flood in Bangladesh with an emphasis on 1988 flood. The article contains a detail description of 1988 flood. The author also highlights the types of flood, socio-economic impacts causes of flood and also the different flood control measures that were undertaken in the past. It is a general overview of floods in Bangladesh.

Key Words: Flood/Deluge/Types of flood/Causes /Flood control and management

Ahmad, Mohiuddin, 1988: Deluge in the Delta. Community Development Library, Dhaka, October 1988. 32p.

In just thirty two pages using charts, pictures and graphs, the author not only describes the deluge of 1988 but also discusses the flood in retrospect, causes of flood and even flood control measures. This report which is based on a very meticulous use of secondary sources contains a discussion of how the water rose gradually and also an account of damages and the grim battle that the people fought and survived. One can also get an idea about flood politics from the various statement of political leaders presented in the book. In the section on flood in retrospect the author discusses the types of flood and socio-economic impacts of flood. In the end of the report causes of flood and flood control measures are described.

Key Words: Flood/Deluge/ Politics/ Economic impacts/ Flood/ control

Ahmad, Manzoor, 1989: Food for Work Programme and its Interference to the Drainage System in Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh, CDL, Dhaka, pp. 199-212

The main emphasis is on the relationship between Food for Work Programme (FWP) and the drainage system in Bangladesh. The paper begins with a description of the origin and the growth of FWP programme, achievements of food for work schemes under BWDB and also the effectiveness of BWDB programme. Regarding the effects of FWP, it is pointed out that the natural condition of rivers which constituted a series of main branches linked by a complex network of canals has been changed due to man's intervention. In many polders, the initial planning has provided only for the embankment and the regulators with little concern for the system of canals. This has many serious consequences, which the author discusses. Several potential areas where, the FFWP programme can be effectively utilized have been suggested in the conclusion.

Key Words: Flood/ FWP / BWDB/ Polders / Natural condition /Rivers

Ahmad, Nilufar, 1992 : Women and Environment- The Bangladesh Case. Eshon, Women for Women : A Research and Study Group. Collected Articles, pp.16-23.

The article starts with the premise that there is a linkage between women and nature. It is suggested that since women have to look after the family and the household their dependence on nature become critical to sustain and nourish their family. Major ecological and environmental problems were also highlighted. It is further argued that the principal victims of environmental degradation are the most under-privileged people. Author also focussed on the poorly planned FCD/1 and other development projects. Brief mention is made on the important natural disasters of Bangladesh such as, cyclone and flood. The paper concludes with some recommendations on environmental problems with particular focus on women and environment.

Key Words: Women/ Environment/ Disaster/ Degradation/ Deforestation/ FCD/1 projects

Ahmed, Salehuddin, 1988: Socioeconomic Impact of Flood Control, Drainage and Irrigation (FCDI) Projects in Bangladesh - Some Aspects of a Monitoring and Evaluation System. Paper Presented for the International Symposium on the Impact of Riverbank Erosion, Flood Hazard and the Problem of Population Displacement, April, 1988, Dhaka, Bangladesh. . 46p.

The Socio-economic and environmental impacts of FCDI projects hardly received due attention from the concerned quarters. This is in spite of the fact that the FCDI projects are likely to play a

significant role in the future flood control and management programmes. The author raises some important issues that might be relevant in setting up a comprehensive Monitoring and Evaluation System (MES) of the FCDI projects. For this purpose benchmark data are to be collected and a set of key indicators for monitoring should be identified. The author also proposes to conduct the evaluation of FCDI projects on continuous basis. Formal methods of data collection (census, survey etc.) should be supplemented by the low cost key informant system. Mostly household level data derived from an on going study of 18 villages are used as illustrations. Some community level data are also cited. The socio-economic benchmark information relating to land ownership, land use, cropping pattern, crop calendar, crop diversity, annual income size and composition, agricultural income of land owners and income of landless, are used in the paper. Negative impacts of FCDI projects on fishery are described. The author even provides some hypotheses on FCDI impact for testing. It is, expected, that an understanding of the FCDI projects would help to improve planning and management of water resources development in Bangladesh.

Key Word : FCDI/Impact/ Socio-economic /Monitoring / Evaluation / Water Resources

Akash, M.M., 1990: *Bangladesh Bonna: Pariperkhit, Karan and Koronoy* (Flood in Bangladesh-Context, Causes and Tasks). *Samaj Bighan Probondabali*, Dhaka University, pp.64-108 (Bangla article)

This general paper describes the context and causes of flood and at the same time also identifies the future tasks. The context was 1988 flood. It is pointed out that the impacts of flood are different for different categories of people. The discussion of the causes of flood is followed by a discussion on the types of flood. The steps towards permanent solution and international issues have been also highlighted. It is pointed out that although permanent solution to flood is not possible, however, some temporary measures can be undertaken. The nature of such measures will depend upon the local and regional situations. Some concrete temporary measures have been proposed. In the last two sections the author presents the steps already undertaken for flood control and also the unsettled international issues.

Key Words: Flood/ Causes/ Impact/ Solution/Regional situation/ Temporary measures

Alam, Ashraful, 1991 : Dredging - A Tool to Flood Control in Bangladesh : Some Recommendations. *Grassroots*. Vol. 1, No.1, July-September, pp. 54-56.

An attempt is made to delineate to what extent dredging can be used as a measure for flood control in Bangladesh. Some recommendations were made regarding how dredging can be made effective and also how a relation between technical and financial issues can be established. The involvement of private entrepreneur may bring new dimension in the dredging process. The author suggested that along with dredging other measures such as excavation and embankment construction should also be continued for the greater benefit of the people.

Key Words: Dredging/ Flood control / Privatisation/ Benefit/ People

Alam, Jahangir, 1986 : The Effect of 1984 Floods on Indebtedness and Land Transaction in Rural Bangladesh- A Case Study in Four Districts.*The Asian Economic Review*. Vol.XXVIII, No.3, pp. 51-67

The paper contains information and analysis of a post flood impact study with a focus on indebtedness and land transaction in rural Bangladesh. The study has been conducted in four

districts affected by 1984 flood through administration of questionnaire to 200 rural households. The study found that the poor and marginal farmers have been severely affected by flood and government relief measures were inadequate to save people from starvation. It further reveals that institutional credit were inadequate and benefitted the rich farmers. This has turned a large number of farmers to non-institutional credit and accelerated the process of asset transfer.

Key Words: Flood/ Credit/ Indebtedness/ Land transaction/ Inadequate relief/ Asset transfer

Alam, S.M. Nurul, 1992 : Survival- An Analysis of General Issues and Concerns with Emphasis on the strategies to Cope with Floods in Bangladesh. In S. Zahir Sadeque (ed.), Environment and Natural Resource Management in Bangladesh. Bangladesh Sociological Association, Dhaka, pp. 122-140.

The author raises an unanswered question often ignored in discussing survival strategy during flood. The question is : are the various strategies that people adopt to survive unique in disaster affected situation ? It is suggested that the strategies rural households adopt to survive are both a reflection of their reaction to survive in natural disaster as well as to avert growing poverty and pauperization. Given the complexity of the problem, it is emphasised that a discussion of survival mechanisms of rural households cannot be made only by referring it to natural disaster, issues relating to poverty and general economic impoverishment are also needed to be addressed. Several issues relating to survival in natural disaster have been raised. The paper also highlighted the different strategies that people in Bangladesh generally adopt to survive in floods.

Key Words: Flood/ Survival strategy/ Poverty/ Land Transactions/ Food shortage/ Migration

Alam, S.M. Nurul, 1991 : Training for Disaster Reduction in Flood Prone Areas -Human Behavioural Aspects. In Proceedings of Seminar on Training Materials for Disaster Reduction. Disaster Emergency Reference Center. Delft University of Technology, Netherlands, July 1992.

The paper is written with the objective of demonstrating that an understanding of the human problems in flood- prone areas is a sine quo non for the success of any disaster reduction programme. It is suggested that sequence of events before a disaster, during and post disaster periods are either insufficiently recognised or improperly understood. The paper emphasised mobilization as a strategy for fighting disaster by utilizing existing social networks and also local bodies at the community and regional levels. Due attention should be given to women and children. It is strongly felt that training of people of different backgrounds is expected to equip them for effective implementation of disaster reduction programmes.

Key Words: Training/ Disaster reduction/ Human problems/ Social mobilization/net-work/Women and children/Institutional mobilization/ Flood

Alam, S.M. Nurul, 1994 : Conquering Nature-Myth and the Reality of Flood Control in Bangladesh. In S.M. Nurul Alam (ed.), Environment, Society and Disasters: Theories and Experiences. Academic Publishers, Dhaka, Bangladesh.

The paper is written in the backdrop of a large number of projects that are currently being undertaken to mitigate flood. It is argued that many of these initiatives are based on certain myths which are : Devastating flood is always caused by high precipitation; Flooding is caused by deforestation in the upstream Himalayas; Flooding in the floodplain can be controlled by

building embankments; A regional approach is needed for flood control; storage reservoirs behind dams on the mountainous upstream will lesson the intensity of flood downstream in Bangladesh and Flood victims always need relief. These myths were elaborated. The paper argues for holistic approach towards flood amelioration combining both physical and socio-cultural structures. An understanding of people's perception of flood is essential. Adoption of cost-effective and ecologically less disruptive measures are needed. The paper warned against creating disaster by an attempt to manage disaster. In the conclusion the need for long term intensive research of a fundamental nature on river morphology, topography, hydrology, settlement patterns, perceptions and survival in floods have been emphasised.

Key Words: Nature/ Mitigation/ Flood control/ Embankment/ Perception/ Fundamental research

Alam, S.M.Nurul, 1990: Perception of Flood Among Bangladeshi Villagers. Disasters, Vol. 14, No.4 , pp.354-57 Basil Blackwell, for the Relief and Development Institute, U.K.

Perception of flood by some households drawn from two villages is discussed. The article presents data on how the flood victims perceive flood and how far their perceptions conform to reality. The focus is on the perceptions of durjog (disaster), including the causes, nature and types of flood, and of relief. It is revealed that people consider flood as the worst disaster which they classify as barsha (normal flood) and bonna (abnormal flood). The paper concluded with an observation that people are not always seeking relief and there is no evidence of relief hysteria in the study area.

Key Words: Flood/Disaster/Perception/Flood types/Causes/ Relief

Alam, S.M. Nurul, 1990: Natural Disaster and Rural People in Bangladesh -A Study on the Pattern of Response of Rural Households in Two Selected Villages (mimeographed).

This research report is based on field work in one disaster-prone (flood) and another disaster-free villages located in Comilla and Chittagong districts respectively. The purpose of the study is to compare and contrasts the physical, demographic and socio-economic backgrounds of the people in the two villages and find out how these effects the livelihood and survival strategies, such as selling of land and household assets, eating of unusual food, borrowing of money and also temporarily migrating to nearby areas for extra income. These strategies, however, are not different when compared with the survival strategies in the relatively disaster-free village. From this, the study concluded that the main problem in the two study villages is poverty and pauperisation which effect people's survival strategies in many ways.

Key Words: Natural disaster/ Flood/ Rural households/ Survival strategy / Poverty and pauperisation

Alam, S.M.Nurul, 1989: Perceptions of Sugarcane Growing and Gur Production, in Rajoir Upazila, Madaripur District. A Social Anthropology Consultancy for ITDG (UK), Dhaka, August, 1989, 70p.

How natural disaster effect the choice of crop is one of the subject matters of this report. The study was conducted in the aftermath of 1987 and 1988 floods. It is revealed that the farmers consideration of vulnerability to natural disasters is gaining importance in their decision making process of crops. This is due to experience of two consecutive devastating floods. The two

floods in 1987 and 1988 although caused significant damage to many agricultural crops, damage to sugarcane was relatively low, which gave the farmers a big incentive to cultivate sugarcane. The report further shows that the effect of flood also effect the way farmers conceptualise good and bad year.

Key Words: Perception/Sugarcane cultivation/Flood vulnerability Flood damage/ Choice of crops

Alam, S.M. Nurul , 1989: A Study of Flood Perception in Some Selected Villages of Bangladesh. A Consultancy Report Prepared for War on Want. Dhaka, September 1989, 62 p.

The study was conducted after the devastating flood of 1988 on some selected households of Dhamrai and Manikgonj. The information were collected through a combination of survey and intensive interviews. The homogeneity in the socio-economic backgrounds of respondents have been reflected in the perception of disaster. It is found that the respondents make distinction between normal and abnormal floods. The respondents link their loss with their principal sources of income. The study further revealed that people do not consider relief as permanent feature, although many of them think that it is necessary. The past experience of the respondents coupled with their common sense have contributed significantly in the formation of perception. The research report also contains a section on woman's perception of flood.

Key Words: Flood/ Perception/ Types of flood/ Loss due to flood/ Relief

Alam, Shamsul and Dara Shamsuddin, 1988: *Bangladesh Bonna, Karon O Er Shahaabastoner Upaya* (Floods in Bangladesh: Causes and the Ways to Coexistence) (In Bangla) *Boghul Patrika* (Jahangirnager University), No. 7, 1988, pp.1-16

Discussing history of flood control measures and their consequences, lessons from the geophysical, physical features of Bangladesh and the different causes of flood, the authors pointed out that there is no permanent way out of the scourge of flood. Different flood control infrastructural development through embankments may control flood locally and temporarily but permanent solution lies beyond Bangladesh border where most of the mighty rivers of Bangladesh originated. Considering this situation the authors proposed a number of long term measures in order to coexist with flood. These include building of houses on raised land, gradual change in agricultural calendar and also excavation and re-excavation of already silted rivers. Protective embankments should be built only to protect industrial areas and towns.

Key Words: Flood control/ Geophysical features/ Coexistence/ Infrastructural development/ Embankments/ Agricultural calendar

Ali, Syed Md, Mir Waliuzzaman and Al-Amin Mohammed, 1984 : South Asia Partnership-Environmental Study Programme. Mimeographed. 157p+bibliography.

This report contains the findings of a study commissioned by South Asia Partnership-Bangladesh (SAP-BD) in order to assess environmental programmes of NGOs. Fifty-six NGOs were selected for the study. A general overview of environmental situation and concerns of Bangladesh has been incorporated in the first six chapters of the report. The important issues covered are : environmental and resource base and its dynamics, impact of demographic pressures, deforestation, depletion of fish resource, erosion and siltation, industrial pollution and natural hazards. There is a brief discussion on Banglauesh environment from the global and

regional perspectives. Institutional aspects of environmental control and donors priority have been delineated. The authors also gave an in depth overview of environmental concerns of NGOs in Bangladesh. It is stated that although NGOs had not been explicitly mentioned, in the policy documents of NGOs, many organizations had been pursuing such programmes long before the term environment become a global concern. A list of environmentally sound programmes for SAP-BD, and also a proposed environmental screening list have been suggested in the report.

Key Words: Environment / Hazard/ Resource base/Deforestation/ Erosion/ Pollution/ NGOs/ Donor/ Sustainable development

AST/CIDA, 1988: A Study of the 1987 Floods. Interim Report. AST/CIDA. February, 1988, I-VI, I-44 P.

This is a report on the adverse impacts of 1987 flood prepared on the basis of a survey of 1,750 households from 35 Upazilas located in different areas of the country. The impact of flood has been discussed under two main headings: Agriculture impact; and socio-economic impact. The report has five chapters. These are; introduction where the rationale, objectives and methodology of the study have been delineated. Second chapter contains a review of existing literature and the third chapter presents the general characteristics of the regions covered. The impacts of flood is discussed in chapter 4, followed by a summary and conclusions in chapter 5. The impacts of Agriculture are described in terms of loss of different crops while the socio-economic impacts include loss of lives, decline in food intake, loss of employment, dwelling houses, various assets, livestock and poultry. Regarding policy options the report emphasises the need for moving away from the short term crisis management approach to more enduring measures on a short, medium and long term basis.

Key Words: Flood/ Households/ Socio-economic impacts/ Agriculture/ Policy options

Bangladesh Government, 1984: *Bonna Upadruta Elakaya Krishi Punorbashion Kaizsha Suchi* (Agricultural Rehabilitation Programme in the Flood-affected Areas) May- August, 1984), Ministry of Agriculture, Agriculture and Forestry Department, September, 1984, 46p.

This is revised agricultural rehabilitation programme of 1984. It contains detailed description of the crops damaged in 338 Upazila of 53 districts, rehabilitation programme in different districts and Upazilas including the requirement of seeds, fertilizer and money needed for grant. It gives a general overview of agricultural rehabilitation programme .

Key Words: Agriculture/ Rehabilitation/ Crop damage/ Upazila

Bangladesh Government : Floods, 1987-Medium Term Recovery Programme. Ministry of Agriculture, Government of the People's Republic of Bangladesh.

This document was prepared as a medium term recovery programme (MTRP) after the 1987 floods. After considering the damages and the problems faced during the 1987 floods, the Ministry of Agriculture evolved four medium term recovery strategies for preparing the ground for restructuring Bangladesh's agriculture not only with regard to flooding but with regard to any agricultural risks which may potentially reduce agricultural growth rates beneath the third five year plan levels. The main body of the report starts with a methodology for flood damage assessment, followed by a description of the characteristics of 1987 floods and the lessons

learned. The document identifies ten lessons which appear relevant and should be kept in mind in any flood preparedness, mitigation and recovery programmes. Many maps, charts, graphs and tables were used in the report. The ten lessons are : 1) Floods are a recurrent phenomenon, 2) Floods are not specific events, but are an integral part of national development, 3) Floods must be viewed in an international context, 4) Fluvio-geomorphological changes can change Bangladesh's flood regime, 5) Flood heights are not the sole determinant of flood damage, 6) Crops tolerance of floods vary, 7) Agricultural households tolerance of flood vary, 8) The need to reassess agricultural policies, 9) The need for a framework for policy issues in disaster situations and, 10) The need for agricultural Geographical information system. The document ended after identifying what is called "felt needs for the future."

Key Words: Flood damage/ Recovery/ Policy potions/ Damage assessment

Bangladesh Government, 1984: Emergency Standing Orders for Flood. Relief and Rehabilitation Division, Ministry of Food. February, 1984, 51p.

This is a booklet prepared by the Relief and Rehabilitation Division of the Ministry of food after the 1984 flood. It contains description of numerous tasks that are expected to be performed by different ministries and government departments from the national to the local levels. The index of the booklet shows the names of many departments and ministries. The tasks are called the Standing Orders and have been based upon action plans submitted by the various ministries and concerned agencies. It is expected that these orders will help to handle unforeseen and other demanding situations quickly with boldness.

Key Words: Ministry / Relief and Rehabilitation / Tasks

Bangladesh Water Development Board, 1987: Flood in Bangladesh, 1987- Investigation, Review and Recommendations for Flood control. Ministry of Irrigation, Water Development and Flood Control. December, 1987.

This is a comprehensive report on 1987 flood prepared by a team of experts of BWDB. Considering the extent, intensity and damage, the report termed the 1987 flood as the most severe in recent past. Excessive rainfall and delayed drainage due to obstructions created by development infrastructure and also public cuts and breaches in the embankments caused flood. It is observed that the flood control and prevention is heavily dependent on international cooperation. Internally, it is important to build embankments and create outlets for the natural flow of water. This lengthy report contains many maps, charts and graphs. Numerous tables with information have been used to show the intensity and the damage caused by flood.

Key Words: Embankment/ Public cuts/ Breaches/ International co-operation

Bangladesh Agricultural Research Institute, 1988: *Bonna-Uttor Punarbashna Bikolpa Krishi Projukti* (Alternative Agricultural Technology in Post-flood Rehabilitation) Bangla Booklet. Field Research Department. Joydevpur, Gazipur, September 1988. 11p.

This booklet contains results of field research department of BARI . From the experience of 1984 flood, BARI researchers suggested several alternative agricultural technology in crop cultivation as a part of post-flood rehabilitation programme.

BARC, 1990: Floodplain Agriculture .Bangladesh Agriculture Research Council, Dhaka , 15p

This policy brief is the result of multidisciplinary discussion forum organised at the BARC. The brief highlights the several serious environmental effects of embankment centered flood control projects. It draws attention that it is important to understand the full range of the agronomic, economic, social and ecological effects before massive investments in such projects in the future. It is further pointed out that through the flood control and drainage projects Bangladesh is gradually being transformed into a land without water. There is also considerable concern over the significant second generation problems relating to FCD projects. The brief also expressed reservations about Action plan for Flood Control dated November 7, 1989.

Key Words: Embankment/Floodplain/Flood control/Ecological effects

BARD, 1985: Flood, 1984 - Survey of Nine Villages in Comilla. First, Second and Third Phase, BARD, Kotbari, Comilla.

The three reports published by BARD contain the results of a survey conducted in nine villages of Comilla after the 1984 flood. The villages for the study were purposively selected on the basis of intensity of flood, duration and damage and also the accessibility by the researchers. This three phase study conducted after some intervals collected information relating to the causes of flood, damage to crops, peoples' response to flood and governments efforts to mitigate the sufferings of people. The emphasis of the study was on survey method and many tables in the reports were presented. The coverage of one full year through three surveys pursuing the same issues provided scope for identifying the changes and the processes. The study revealed that there is differential impacts on different categories of villagers in terms of income, employment, indebtedness and other socio-economic indicators. The survey is longitudinal in nature and can be repeated in future for comparison.

Key Words: Flood/ Causes/ Damage/ Response / Changes

Basu, Manjusri, 1988: Marginalisation and Floods: A Case of East Bengal Migrants in the Ajay Valley in Bardhaman District, West Bengal, India. A Paper Presented at the International Symposium on the Impact of Riverbank Erosion, Flood Hazard and the Problem of Population Displacement. Dhaka, 11-13- April, 1988.

The paper reviews the socio-cultural circumstances under which a migrant rural community colonises in floodprone areas of a seasonal river. It also examines how they interpret flood. The area where the migrant community is exposed to floods lies within the district of Bardhaman. Initially the migrants face the problem of flood and learnt how to live with flood. Later they adapted to the situation by better utilisation of local resources. The migrants developed a different attitude and know how to live with flood. The refugees have developed an affective bond with their behavioural environment.

Key Words: Flood/Environment/Migrants/Social space/Marginalisation

Begum, Mahbuba, 1994 : Women in Disaster-An Analysis of Division of Labour and Survival Strategies in Disaster. In S.M. Nurul Alam (ed.) Society Disasters and Environment : Theories and Experience, Academic Publisher, Dhaka, Bangladesh

Floods affect rural women more than the men because of their vulnerability compared to men. Despite their endless sufferings, rural women adopt some strategies to cope with flood. This paper focuses on women in disaster in emphasising on their response and survival strategies

during flood. The data for the study has been derived from an on going Ph.D. dissertation work of the author. The paper starts with an introduction following a description of the significance of women in disaster research. This is followed by the sources of data and techniques of data collection. The author describes the process of changes in the division of labour during flood, survival strategies of both males and females with emphasis on the survival strategies of women during flood and non-flood times. The paper concluded drawing attention that more research on women in disaster situation is needed.

Key Words: Women/ Survival strategies/ Division of labour/ Flood/ Research on Women

Begum, Mahbuba, 1991 : Response to Natural Disaster- A Study of Survival Strategies of Rural Women in Coping with Floods in Bangladesh. A dissertation Proposal. Department of Sociology, Massey University, New Zealand.

In this dissertation an attempt is made to focus on rural women in order to identify the responses during flooding. The study is likely to be conducted around five major and many other minor objectives. Division of labour between men and women during flood is also likely to be considered. A methodology combining both quantitative and qualitative approach of data collection has been proposed. A flood prone village is likely to be selected for the purpose of the study.

Key Words: Women/ Response/ Survival strategy / Perception/ Division of labour

Bhattachaprya, Debapriya, 1989: Social Responses to Natural Disasters: Insights from 1988 Flood Relief Camps of Dhaka City. BIDS, Dhaka, January 1989, Mimeographed, 33p.

This is an outcome of a study carried out by BIDS on 54 relief camps of Dhaka city during the 1988 flood. It contains detail description of the conditions of relief camps, materials distributed, expectation of flood victims and also the management and distribution of relief materials. It is pointed out that most people were confident that they would be able to overcome the challenges of flood but all of them expected that the government should play its desired role after the flood water totally recedes. The study further reveals that although there were many-efforts by government, NGOs, political parties and individuals to help the distress people, the society appeared to be totally unprepared to respond appropriately. Numerous concrete incidences of misappropriation of relief goods and funds by the local power groups were incorporated in the report.

Key Words: Flood/ Relief camps/ Relief distribution/ Government/ NGO/ Power groups / Misappropriation

Bhuyian, Abdul Majid, 1976: *Bangladesh Bonna Niyontron* (Flood Control in Bangladesh). A booklet. 19p.

This is private publication in Bangla on flood and flood control problems of Bangladesh. The brief booklet contains six sections. It begins with a description of geophysical and climatic features of Bangladesh, causes of flood, effect of flood control measures. It is pointed out that the unplanned construction of roads, bridges and culverts that obstruct natural and normal flow of water cause flood.

Key Words: Topography / Rainfall / Roads and Bridges / Unplanned development

Bingham, Annette, 1989 : Floods of aid for Bangladesh. New Scientist. Vol. 2, December 1989, pp.42-48.

Different options that have been suggested by foreign governments and international agencies to mitigate and solve flood problems are reviewed. Numerous quotes and recommendations have been used to depict the views of different schools and ideas. It is pointed out that the favourite option in this respect is the building of an embankment along both banks of the Brahmaputra and the Ganges rivers to channel flood water through the country to the Bay of Bengal. The limitations of embankment-centered flood control programmes have been also stated. Need for rural embankments and special *bunds* to protect Dhaka city has been delineated. The paper concluded that the flooding problem is quite gigantic and even if links are established between the increasing erosion in the Himalayas and more frequent and severe floods in Bangladesh, then re-afforestation and soil conservation to contain flood will take many decades.

Key Words: Flood problem/ Aid/ Water resources/ Embankment/ River-training/ Soil Erosion/ Re-afforestation

Bottrall, Anthony, 1984: Floods, Food and Information system - must we be Pessimistic? ADAB News, Vol. XI, No. 6, November- December, pp. 4-6

This short notes was prepared as a reaction on Bruce Currey's earlier writing and discussion regarding feasibility of "high-technology national early warning system" versus "community oriented information system" to monitor flood, food shortage and other unforeseen problems. The author feels that if one supports the necessity of such a information system, the problem will arise how the system might be organized. He draws attention to two pertinent issues: executive responsibility and sponsorship. The author did not elaborate the sponsorship issue but argued that the management committee comprising representatives of government agencies, as well as universities, research institutes and NGOs will be useful. At the end the author suggests that along with the establishment of information system there is also a need for synthesising the collection and analysis of information from different sources. He appears optimistic about the prospect of establishing an effective rural information system in Bangladesh.

Key Words: Information system/Network/Floods/Food/ Analysis and synthesis

Boyce, James K., 1990 : Birth of Megaproject : Political Economy of Flood Control in Bangladesh. Environmental Management. Vol. 14, No.4, pp. 419-428.

A critique the FAP from the political economy perspective is provided. A brief analysis of history of the plan, how, when and by whom it was initiated have been described. An attempt is made to describe the setting, Bengali perception of flood and also how the French entered into the scene after the 1988 flood. The author raised the issues related to flood prevention vs flood management, economic issues, environmental risks and also the technical problems associated with the idea of embankment. It is strongly emphasised that the wisdom of embankment centered structural solution to flood problem can be questioned on economic, social, cultural, ecological and technical grounds. Resourcefulness of people and their knowledge in coping with flood have been ignored in the action plan. The huge expenditure that will be required to build embankments will put heavy burden on the economy and also on the future generations. The paper concluded with a note that the cultivators and fisherfolk who have lived with rivers for

generations are likely, however, to remain unrepresented in the future discussion in embankment.

Key Words: Embankment/ Economic issues/ Flood Prevention/ Management / Action Plan / Environmental risks / Indigenous adjustment

BRAC, 1989: The Flood of 1988 and People's Survival. Seven Case Studies from Gheor. Research and Evaluation Division, BRAC, Dhaka, January, 1989, 54p. (mimeographed).

The report presents case study of seven flood victims of Gheor. It contains description of events gathered from the flood victims regarding how flood water came, engulfed the area, what they did, how they survived, their problems and the sufferings, relief operations and many other issues. The description is in depth with an anthropological perspective. It is a description of flood from the insider's point of view. The end part of the report contains a general discussion of the overall impressions gathered from the seven respondents.

Key Words: Flood/Sufferings / Survival/ Shelter / Food/ Relief

Brammer, H, 1990: Floods in Bangladesh- II Flood Mitigation and Environmental Aspects. The Geographical Journal, Vol. 156, No.2, pp. 158-165.

The 1987 and 1988 devastating floods drew the attention of the world community which stimulated major aid donors to examine different options in order to help Bangladesh in mitigating this recurrent disaster. A brief discussion on UNDP funded Flood Policy Study, French and Japanese study and USAID- Eastern Water Study have been made. The World Bank Coordinated FAP comprises several studies as a prelude to Flood Master Plan proposed in the UNDP Policy study. The author then describes the salient features and component of the action plan. Other options highlighted in the USAID study consist of three major alternatives : Upstream storage; detention basins with floodplains and artificial draw-down of ground water to absorb excess monsoon rainfall and floodwater. Elucidating the environmental aspects of flood it is stated that there is no conclusive evidence that environmental degradation in the Himalayas or rise in the sea level have caused disastrous floods in Bangladesh.

Key Words: Flood control/Mitigation/ Structural and non-structural measures/ Environmental issues / Green house effect/ Environmental degradation

Brammer, H., 1990 : Floods in Bangladesh-II : Flood Mitigation and Environmental Aspects. The Geographical Journal, Vol. 156, No.2, pp. 158-165.

An attempt is made to describe the geographical background of two recent major floods of 1987 and 1988 which drew considerable attention in recent years. In the beginning the author mentions floods overtime followed by a description of the country, ecological features, flooding characteristics and finally features of 1987 and 1988 floods. It is stated that floodplains which occupy 80 percent of Bangladesh have diverse characteristics and are affected by flash floods, river floods, rainwater floods to different extent. It is mentioned that 1987 floods have been caused by heavy precipitation all over the northern parts of the country while the 1988 floods were river floods caused by heavy monsoon rainfall over the whole of the Ganges- Brahmaputra region, 90 percent of which lie outside Bangladesh. The floods have been aggravated by cutting of embankments around polder projects in and adjoining that region either to relieve rainwater flooding or to reduce flood water levels outside embankments. In the conclusion the author

stated that compensatory increase in crop production in the areas not affected by flood helped to reduce the damage to crops in the flood affected areas.

Key Words: Floods Control/Morphology/Types of flood/ Embankment cutting/Crop damage/ Compensatory increase/Mitigation/ Environmental issues

Brammer, H., 1990 : Floods in Bangladesh- Geographical Background to the 1987 and 1988 Floods. Part 1. The Geographical Journal. Vol. 156, No.1, March 1990, pp. 12-22.

A general discussion about the floods in Bangladesh is made. The author who has long experience of working in Bangladesh mentions that recurrent floods constantly undermine government and international efforts to improve social and economic conditions. The paper begins with a description of geographical background of the country, characteristics of flood, morphological features and flood types. It is mentioned that floods- both normal and damaging can be classified into three main types : flash, river and rainwater. Discussing the 1987 and 1988 floods, it is stated that 1987 floods were predominantly a rainwater floods caused by exceptionally heavy monsoon rainfall while 1988 floods were mainly river floods caused by heavy monsoon rainfall over a wider area of the Ganges and the Brahmaputra river catchments. The cutting of embankment during floods further accentuate the situation. Crop losses were most severe on the floodplains adjoining the major rivers. However, in most cases compensatory increase in crop production in the non-flood affected areas and in the following dry reason reduce the impact considerably.

Key Words: Flood/ Floodplain/ Types/ Damage/ Crop losses/ Ganges/ Brahmaputra/ Meghna

Brammer, Hugh, 1988: Development Possibilities in Flood Prone Areas of Bangladesh. Relief and Development Institute, Ferdinand Place, London, September 1988, 33p.

A former FAO agricultural advisor, the author describes the major development problems of the floodplain regions of the Ganges, Brahmaputra, Jamuna, Tista and Meghna rivers. In the first part, the characteristics of floodplains which effect the development prospect in the region have been described . The concrete steps to increase crop production without undertaking massive flood protection schemes have been suggested in the section two. In the third section, different options for development with flood protection, delineating several institutional aspects of intensive agricultural development have been provided. The author concludes his writing with a summary description of floodplain features.

Key Words: Development/ Floodplain/ Soil types/ Rainfed cultivation/ Dry season cultivation/ Flood protection/ Disaster preparedness / Institutional aspects

Brammer, Hugh, 1988: Development Possibilities in Flood-Prone Areas (Part 1). ADAB News, Vol. XV, No. 5, September-October, pp. 25-28

This is a first of three parts article in which the author identifies the major floodplain regions and their basic geophysical features. A distinction is made between "normal flood" and "disastrous flood" in order to demonstrate the damage caused by flood and also the development problems that emanate from this situation. A description of the characteristics of floodplain landscapes has been given to demonstrate how these might effect the agricultural development possibilities.

Key Words: Flood/Development/ Flood plain/ Damage

Brammer, Hugh, 1988: Development Possibilities in Flood-Prone Areas (Part-11) ADAB News, Vol, XVI No.6, November-December, pp. 28-34.

The author draws attention regarding the prospect of floodplain agriculture. Two strategies i.e. flood protection or improvement in crop production without flood protection can be adopted to increase agricultural production in the floodplain areas. The author, however, emphasised that each step in floodplain areas depend on the geophysical features of the region, the state of technology and also the resources available to bring changes. It is pointed out that the improvement in crop production without flood protection is simpler and less costly. Therefore, the author favours rainfed cultivation without flood protection and the provision of irrigation and drainage during the dry season which may increase and stabilise crop production within the shortest possible time. In the conclusion, the necessity of disaster preparedness of severe floodplain lands through some contingency plans have been emphasised.

Key Words: Flood/ Floodplain / Geophysical features/ Crop production / Disaster preparedness

Brammer, Hugh, 1989: Development Possibilities in Flood-prone Areas (Part III). Vol. XVI, No. 1, January - February, pp. 22-28

This is the final of three parts article. The author discusses some pertinent institutional aspects of intensive agricultural development in floodplain regions and different options in this respect. It is pointed out that flood protection and drainage is a complex and multifaceted venture and requires understanding of agroecological features not only of floodplain regions but also of the areas from where the water comes. It is also argued that along with the flood protection programme the development agents, planners, researchers and extension agents must catch up with the farmers in their knowledge and understanding of environment-man relationships. He outlines some proposals for doing this. These are: farming systems research, participatory planning, land use planning, thana gazetteers, education, training and communications. The last section of this part provides summary description of floodplain characteristics i.e. relief, soils, hydrology, climate which influence land use and development possibilities.

Key Words: Development/ Floodplain/ Soil types/ Crop suitability/ Rainfed cultivation/ Drainage/ Dry-season irrigation/ Disaster preparedness / Institutional aspects/ Flood protection

Cain, Mead, 1981: Risk and Insurance : Perspectives on Fertility and Agrarian change in India and Bangladesh. Population and Development Review, Vol. 7, No. 3, pp. 435-474.

The author analyses environments of risk and mechanisms available for adjusting to risk in two regions of South Asia. The regions are a flood prone village of Bangladesh and a drought prone, semi-arid region of India. The analysis focuses on the recent history of land transactions among sample of villagers in two regions, patterns of household economic mobility measured as gain or loss in land assets. The paper also contains description of the features of the villages, a comparative analysis of distributional change in land assets, intragenerational economic mobility and also land sales according to purpose of sale. The sources of risks and insurance with emphasis on natural disasters have been delineated. The implications of the analysis for fertility are also examined. The paper concluded with a discussion on policy implications highlighting the merits of public employment schemes as an instrument of population policy.

Key Words: Flood/ Risk/ Insurance/ Disaster/ Response/ Distress Sale/ Economic mobility/ Fertility

Chowdhury, A.M., 1989: Flood 1988. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 235-240

This is a general article on 1988 flood. An attempt is made to delineate the causes of flood into primary and other causes. The primary cause of flood is the rainfall in the catchment areas of the rivers of Bangladesh while the other causes include snow melting in the Himalayas, deforestation, and construction of unplanned roads, railways and embankments. The short article also include a description of the role of Bangladesh Space Research and Remote Sensing organisation (SPARRSO) in flood preparedness.

Key Words: Flood causes/ Primary cause/ Flood monitoring/ SPARRSO/ Flood preparedness

CIRDAP, 1986: An Interim Report on the Impact of Selected Flood Control, Drainage and Irrigation (FCDI) Projects in Bangladesh - Benchmark Survey and Initiation of a Monitoring and Evaluation Systems. CIRDAP, Dhaka, Bangladesh, 113p.

The report is an account of the impact of selected flood control, drainage and irrigation (FCDI) projects in Bangladesh. The study of three FCDI projects located in the Meghna-Muhuri flood plain was conducted with two main objectives: a) to familiarise the concerned quarters about preliminary benchmark findings in order to ascertain if the right issues are raised or the right approach is adopted, and b) to carry out methodological exercises including internal and external checks. It is a resource inventory and a situation report primarily in the form of self-explanatory summary tables covering local resources, infrastructure, agriculture, fishery and environment. The report pointed out that the impacts of FCDI projects on environment i.e. soil, micro and macro flora, impact on fauna (insects, pest, fish, livestock and poultry) were significant.

Key Words: Impact/ FCDI Projects/ Irrigation/ Environment/ Resources/ Infrastructure/ Agriculture/ Fishery

Citizen's Response, 1993 : Special Issue on Flood Action Plan. January-March, 1993, 91p.

This issue of the journal focuses on the diverging perceptions regarding Flood Action Plan. It is claimed that citizen's response corroborates to the need of the people and seeks to find out effective ways to deter those actions which undermines peoples pivotal role in development activities. Ten articles have been included in the journal many of which were published previously elsewhere. The articles are : (i) Action Plan for Flood Control : A Review of by Interim Government of Bangladesh, (2) Bangladesh Action Plan for Flood Control : Achievements and Outlook, (3) Summary of People's Participation : NGOs and the Flood Action Plan; (4) No to Foreign Wisdom for Paper Dyke in Bangladesh (5) Politics of Flood Control (6) An Investment Trap (7) World Bank Dilemma with Basic ABC of FAP (8) Impacts of Flood Control Projects. The articles present the view of both sponsor and critique of FAP. It gives a very good general over view of the state of FAP.

Key Words: FAP/ Citizen's response / World Bank/ People's Participation/ NGOs/ Ecosystem/ Flood control

Clayton-Dalal, Barry, 1990: Environmental Aspects of Bangladesh Flood Action Plan. International Institute for Environment and Development. London Issues Series No.1, 19p.

The paper presents a general overview of the environmental aspects of FAP. It begins with a description of background and different elements of FAP. The paper also highlights the possible

negative impacts of the action plan. The pros and cons of building embankments for flood control are described. It is stated that some effects of future intervention is still unclear and lay insufficient emphasis on the longer term uncertainties. The author felt the need for generating more environmental base line data and the possible impact of action plan. The findings of the environmental study and a thorough analysis of the issues could be used as a public discussion document which has been hitherto ignored while preparing the action plan.

Key Words: Action plan/ Environmental impact/ Embankments/ Agricultural and Industrial pollution/ Public participation/ Baseline data

Cobb Jr. Charles, E, 1993 : Bangladesh- When the Water Comes. National Geographic, June 1993, pp. 120-134.

A general overview of Bangladesh, its people, country and riverine ecology has been provided. This descriptive profile include discussion on the importance of rivers in the life of Bangladeshis, how the river system changed and affected the life cycle of people, nature and types of flood, people's view about flood and their survival strategies. The author mentions about the FAP and quotes different critics of the plan. This is a very general and informative article which depicts Bangladesh with many interesting quotes from a cross section of people. The paper also contains several pictures which the author used to support his discussion.

Key Words: Flood/ Water/ River system/ Cyclone/ Boat/FAP/ Government

Cuny, Federick C., 1991 : Living With Floods-Alternatives for Riverine Flood Mitigation. In Managing Natural Disasters and the Environment. Alcira Kreimer and Mohan Munsasinghe (eds.), The World Bank, Washington D.C, pp. 62-73.

The author wrote this paper in the background of contemporary debate regarding structural vs non-structural mitigation of flood and drew attention to the various issues raised against structural measures on both technical and environmental grounds. He suggested that some flood control projects may be counterproductive. It is now being emphasised that there is a great deal of rationality in encouraging people to live with floods by utilizing the ways people adapt to floods and consequences in traditional societies. The author suggested this as alternative strategy for riverine flood mitigation which is cost-effective, easy to implement and compatible to environment. These measures which can be applied in the pre and post flood situations can be gradually integrated in the long term development programmes.

Key Words: Riverine flood/ Living with flood/ Structural and non-structural/ Embankment/ Traditional response/ Disaster planning

Currey, Bruce, 1984 : Fragile Mountain or Fragile Theory. ADAB News, Vol. XI. No. 6, November-December, pp. 7-13

The author disputed the popular belief that rampant deforestation of mountain slopes in the upstream causes flooding in the plains. The author cites several examples to demonstrate that although the argument is elegant but unproven. The reforestation will not solve the problem. It is further argued that deforestation must not be allowed to detract attention from the equally important question of how changes in the agricultural calendar in the plains with the introduction

of crop varieties is also making plains more or less prone to flood damage. The article contains a good bibliography on the issue.

Key Words: Fragile/ Flood plain/ Damage/ Derorestation/ Reafforestation/ Social forestry

Currey Bruce, 1990: Questioning the Nilometer in Bangladesh- Monitoring the Dynamics of the Environment and the Vulnerability of Rural Poor Households. South East Asian Studies, Kyoto University, May, 1990, 12p.

Drawing an analogy of the Nilometer of ancient Egypt, for understanding the relationship between floods and rural welfare, it is suggested that instead of Nilometer the concept of Ecometer should be used to indicate levels of distress making use of specific measure components of household budgets within their web of changing local, regional and international structures. In order to demonstrate the dynamics of environmental and economic interaction, 30 poor or landless rural households from a village of Chilmari Upazila which is a considered highly vulnerable agroecological zone have been selected. Considering the impact of 1988 floods and also the time series of 1984-88 when the rivers remained at peak, it is revealed that the various exogenous factors, such as changes in world prices, withdrawal of credit etc. may in some cases become more disastrous to the rural households welfare than high floods. Many tables, graphs, charts, and pictures were used to support the arguments in the paper. The resilience or cushioning in the households significantly effect the impact. It is important to monitor the extent of resilience that may help to improve the information base for formulating policies to mitigate the situation.

Key Words: Flood/ Ecometer/ Nilometer/ Agroecological zone/ Households/ Resilience or cushioning/ Information base

Custers, Peter, 1992 : Banking on a Flood Free Future-Flood Mismanagement in Bangladesh. The Ecologist. Vol. 22, No. 5, September-October, 1992 pp. 241-247.

A distinction is made between floods caused by rivers and far more destructive flood caused by cyclones. The action plan on flood control fails to adequately address the later type of flood. It is pointed out that it is difficult to control geophysical nature and type of flood. Discussing the history of flood control measures, it is argued that embankment-centered flood control cannot be successful because Bangladesh is located in earthquake prone areas, river and delta system are extremely complex and also expensive. The compartmentalization concept of the action plan is not even likely to succeed because of many inherent weakness such as inlets and outlets silting and waterlogging. The paper draws attention that cyclonic floods which cause more destruction have been ignored in the FAP. The author feels that given the existing socio-economic inequality centering around land control and ownership, a particular interest group is likely to gain from the FAP and its subsequent programmes as well. In the conclusion, it is suggested that not only from the consideration of social Justice, but even from their effectiveness it makes more sense to spend a fraction of resources from the proposed action plan to support grassroots organizations of women and men.

Key Words: Cyclonic flood/ Riverine flood/ Embankment/ Fisheries/ Land and social issues/ Adaptation/ Social Justice

Cutler, Peter et al 1989: Evaluation of Post-flood Rehabilitation Projects of Four NGOs in Bangladesh. Dhaka, April, 1989. 75p.

This report reviews the activities of four NGOs in the post-flood rehabilitation programme in Bangladesh. It is based on field visits to different locations and discussions with the field staff of NGOs and the beneficiaries. The authors also draw attention to some of the shortcomings of rehabilitation work and suggested measures for improvement. It is pointed out that in undertaking development projects insufficient attention has at times been paid to technical quality and the socio-economic and ecological considerations. Financial reporting and accounting has been generally of high standard but the report questioned the capacity of some NGOs to absorb more funds and materials for larger emergencies. In the last section, under the heading summary and discussion of NGO experience of post flood rehabilitation, the authors present the issues, problems relating to rehabilitation and also offer suggestions for improvement.

Key Words: NGO/ Flood Damage/ Relief and Rehabilitation/ Housing/ Development projects

Cutler, Peter, 1984: Food Crisis in Bangladesh? Report on a Visit to Dhaka, 2nd - 21st July 1984, Disasters, Vol. 8, No. 4, pp. 242-43

A possible food crisis situation in July 1984 was discussed. It is observed that during the times when the prices of rice were expected to fall, in fact, registered a sharp increase which was a worrying trend. Two factors i.e. pumping of money to influence local elections coincided with the Amon harvest bringing a general inflationary expansion of the money supply which rose by 32%. Drought in late March-April delayed the sowing of Aus and Amon crops until the late April. Widespread flooding in May in North-Eastern Bangladesh further accentuated the problem. However, the imminent food crisis could be averted by government food distribution system that was aimed towards vulnerable groups. Abnormal excess mortality from starvation during the year has been noticed but food crisis management performance was getting better which helped to reduce the crisis.

Key Words: Food/ Crisis/ Inflation/ Drought/ Flood/ Distribution/ Management

Das, Subash Chandra, 1988: *Bangladesher Bonna Artha Samajik Patikriya* (Flood in Bangladesh - Socio-economic Effects) in Bangla. *Boghul Patrika* (Jahangirnagar University), No.7, pp. 17-23.

An analysis of the socioeconomic consequences of flood can be found. Various figures relating to the extent of damage of flood since 1954 were presented. It is pointed out that flood has some beneficial effects which are often ignored. Both structural and non-structural measures can be adapted to control flood. However, considering the reality of Bangladesh the author felt that the non-structural measures are more viable. Provision for cluster settlement, and flood shelter may act as some non-structural measures. A comprehensive flood preparedness scheme is considered as the need of the time.

Key Words: Socioeconomic/ Damage/ structural and non-structural/ Preparedness

Dodge, Cole P. and Paul D.Wiebe, 1980: Practical Application of Nutritional Assessment - Malnutrition in the Flooded Area of Bangladesh 1974. Disasters, Vol. 4, No. 3, pp. 311-314

The need for an accurate and reliable nutritional survey has been emphasised in the paper. This kind of assessment survey may indicate the extent and nature of developing famine before it

assumes disastrous proportions. The arguments for the nutritional assessment and its practical application is drawn from the experience of relief operation in the Rawmori Upazila of Rangpur district.

Key Words: Nutrition Assessment/ Famine/ Disaster/ Voluntary agency

Douglas, Derek, D.K. Mishra and Sarah C. White ,1989 : Bangladesh Floods 1988- An Evaluation of the OXFAM Response. Mimeographed. August 1989, 58p.

This report of Oxfam's relief and rehabilitation activities after the 1988 flood takes a critical view of nature and types of activities undertaken, management at both Dhaka office and head office of Oxfam, implementation at the field level and also coordination at different phases. It is pointed out that achievements of relief and rehabilitation activities and implementation was good, beneficiaries selected usually fitted the criteria laid down, and the dedication of the staff was outstanding. However, it is felt that the scale of the programme both in terms coverage of areas and phases have been extended too much, that created problems of supervision. Decisions that have been made between the local areas and potential beneficiaries were often arbitrary. The report made observation that there need to be further challenging of gender bias in their own institutional and personal assumptions and practices.

Key Words: NGOs/ Oxfam/ Relief and rehabilitation/ Management/ Phases/ Supervision/ Beneficiaries

Elahi, K. Moudood, 1989: Geographic Approach to Flood Management in Bangladesh. Paper Presented at the Fifth National Geographical Conference, Rajshahi, March, 2-4, 12p.

The nature, extent and types of flood in Bangladesh is described. It also contains a general overview of the socio-economic impacts of flood during the period of 1984-88. It is pointed out that the vulnerability syndrome of flood reflected through the expansion of flooded area, damage to regional basin area and complexity in the evaluation of flood impacts is gradually becoming apparent in Bangladesh. The author suggests flood management through non-structural and environmental measures. This includes traditional or non-technical measures which may provide a comprehensive framework for flood management. It is further suggested that structural and non-structural measures may form the crux of a comprehensive flood management programme. The environmental structural measures, such as building of FCD and FCDI projects are necessary to control and rejuvenate natural courses of rivers. Detailed hydraulic and environmental planning is needed. The non-structural measures contain variety of options relating to human aspects of flood control and are generally adopted to keep down flood damage. These include flood preparedness, land use and land management, and educating people how to live with flood. The paper ends with an observation that both these measures are needed to mitigate flood problem in Bangladesh.

Key Words: Recurrent Floods/ Impacts/ Damage/ Flood management/ Structural and non-structural measures/ Government policy

Expert views, 1988 : The 1988 Floods - Sources and Causes and Some Policy Options. ADAB News, Vol. 15, No. 5, September- October. pp. 9-12.

ADAB News sought opinions regarding sources and causes of flood and possible policy options from Mr. B.M. Abbas AT, Prof. Ainun Nishat, Mr. Amjad Hussain Khan and Dr. Zahiruddin who

are considered eminent experts in the field. The views of expert are presented in this article. The experts have different views on the causes and policy options that, in fact, reflected in their independent perspectives on the problem. Some experts hold that one of the causes of the recurring floods in Bangladesh is the Farakha Barrage in India, while some others felt that the excessive rainfall may be identified as the chief cause of flood. Some even emphasised the need for regional cooperation for flood control. The concluding part of the piece contains a geologists analysis of flood who point out that flood generally occur due to a complex interaction of climatological, geological and man-made structures.

Key Words: Flood/ Causes/ Excessive Rainfall/ Regional Cooperation

FAP -14 : Flood Response study - Draft Final Report :Preliminary Review Draft, ISPAN, GOB, July 1992.

The Flood Response Study of FAP is the first major attempt to capture how people presently respond to the full range of water regimes of the Bangladesh flood plain with significant input from the different branches of social sciences. The overall aim of the study is to be able to better predict the social impact of interventions i.e. the way people will perceive them affecting their lives and livelihoods. It is expected that the study will provide an interdisciplinary methodological model with regional planning studies and in the long run the departments of the government of Bangladesh will be able to utilize in their planning and feasibility assessments. The data for the study have been collected from 30 villages in 15 different thanas. The study also assess the possible impacts of structural or non structural measures on life and work in rural areas. The report contains information relating to flood preparation, flood coping, agricultural adjustment and household consumption, cropping patterns and crop calendars, consumption patterns, crop yields, crop losses, evaluation of possible changes in the water regime, evaluation of flood control and drainage structures, institutional responses to floods and finally programme and policy recommendations. It is an extremely exhaustive report and is a valuable addition in the disaster research of Bangladesh.

Key Words: Flood/ Response/ Structural and non-structural measures/ Flood preparation/ Household consumption/ Cropping patterns/ Institutional response

FAP 16 : Nutrition and Consequences of Bio-diversity of Fisheries. Special Studies Programme. Pilot Study Report. July 1992.

The study has been conducted in four areas with the objective of designing and developing a framework and survey instruments for a comprehensive study of the role of fish bio-diversity on human health and nutrition. The impact of flood control projects on various aspects of floodplain fisheries was assessed. Results of the study show that capture fisheries provide a very high percentage of the protein to the study households. Eighty five percent of the households consume small fish which are rich in vitamin A. It is suggested that flood control projects that would decrease water levels and negatively impact capture fisheries would have a very damaging affect on these types of households.

Key Words: Bio-diversity/ Health/ nutrition/ Fisheries/ Consumption/ Protein/ Flood control projects

FAP - 26 : Institutional Development Programme - Report On Needs Assessment Survey, UNDP, June 1992.

This paper presents the findings of a consultancy to look into the institutional framework for the rooting of FAP activities and to make projections in relation to the need for the required institutional strengthening. The report has been prepared after reviewing documents, papers and programmes of different institutions involved in water sector, their structure and functions, and also by interviewing different officials who are working in these institutions. BWDB has been identified as the most important institution for the implementation, operation and maintenance of flood and other water related projects. It is felt that this institution should be strengthened in its capacity as an engineering and project implementation agency. The study also contains a recommendation which stated that the present project planning methodology be changed to, in a much higher extent, to encompass people's participation at all stages of the present project planning cycle. In addition some general principles for an institution building programme has been recommended in the report.

Key Words: FAP/ Institutional Arrangements/ BWDB; Planning Cycle/ People's participation

Gallagher, Rob, 1984: Flood Monitoring in Bangladesh - A Study of Responses to the 1984 Crisis. War on Want, UK, 89p.

This report has been prepared on behalf of a British NGO to highlight the various responses in the aftermath of 1984 flood. The focus of the study was NGOs role and also how the different agencies monitored the situation and coordinated their efforts. The author felt that the NGOs made a very important contribution to the national response of 1984 flood. The government response was, however, limited and focused mainly on the urban areas. Although a famine could be averted after the 1984 flood due to participation in relief activities by government, donors, and NGOs, however, it is pointed out, that there was significant room for improvement in terms of monitoring, targeting, and implementation of the emergency programmes. Excepting introduction and conclusions, the report has three chapters. One chapter gives background to the food crisis, events, responses and monitoring. Second chapter highlights government action and the third one specifically deals with the NGOs contribution.

Key Words: Floods/ Damage/ Response/ NGO/ Government/ Relief/ Rehabilitation/ Monitoring/ Food crisis/

Gani, Mohammad Osman, 1983: Report on Socio-economic Feasibility on Parsuram Flood Control Scheme, Noakhali, NTAP/SIDA, Dhaka, May, 1983.

The results of socio-economic feasibility study of Parsuram Flood Control Scheme in the Noakhali district have been presented in the report. Discussing the physical, demographic and economic features of the area, the author felt that although the distribution of benefits in terms of more agricultural production is likely to benefit all, the distribution will be different because of unequal access to land and other resources. The quantum of benefits that will accrue to different groups have been specified. It is pointed out that the technical design of the project is defective and the design overlooked the necessity of watering the flow space of the Muhuri river below the Fulgazi Railway bridge. It is recommended that the project should be accepted and the technical issues relating to hydrological, topographical and geomorphological aspects should be carefully reviewed in order to ensure long term efficiency.

Key Words: Flood control/ Irrigation and drainage/ Benefits/ Target groups/ Technical aspects/ Short and Long term effect

Gono Unnayan Prochesta: Life and Living with Flood. Mimeographed. undated, 25p.

Eight short write-ups prepared by the field staff of a *Gono Unnayan Prochesta* (GUP), an NGO working mainly in the Madripur district have been included in the report. It describes the relief and rehabilitation activities undertaken by GUP after the 1988 flood. The write-up by field staff also describes the field experience of how people survived in the flood and also how GUP conducted relief operations.

Key Words: Flood/ Relief/ Rehabilitation/ Survival

Government of Bangladesh 1993 : Emergency Standing Orders for Flood. Final Draft. Disaster Coordination and Monitoring Unit, Ministry of Relief, February 1993. 144p.

Government of Bangladesh promulgated the Standing Orders for Flood (SOF) as a part of preparedness measures in 1984. This SOF has been revised and updated in the light of experience of 1987 and 1988 floods. The SOF lay down various actions to be undertaken and tasks to be performed by government ministries, departments, directorates, corporations, district and thana level administrations during various stages of flood disaster. The stages include : preparatory stage, disaster stage and post disaster stage. The SOF also include instructions how the different committees will be formed and who will be the members of these committees. It also delineates the functions and activities of different, councils and committees both at the national and local levels. Involvement of NGOs in various activities have been also emphasised. The SOF also draws attention to the need for co-ordination of disaster related activities at various levels.

Key Words: Flood/ Disaster/ Management/ Ministry/ Relief and rehabilitation/ Government/ NGOs

Government of Bangladesh and the World Bank, 1993 : Proceedings of the Second Flood Action Plan Conference held in Dhaka, Bangladesh, March 1-5, 1992, FPCO, Dhaka.

The book contains a the proceedings of the Second Conference of the Flood Action Plan which was held in Dhaka from March 1-5, 1992. The conference was organized to present FAP achievements, provide an opportunity for dialogue between FPCO, government organizations and development partners and also to develop an understanding of the needs and targets of FAP in relation to national development goals. The proceedings began with a description of achievements and outlook of FAP, followed by record of informal discussion of the two meetings of local consultation group. The session summaries were presented later. These include physical setting, river management, flood mitigation and cyclone protection, economic, environmental and social issues of FAP. This will act as a useful reference book.

Key Words: Flood / Flood control/ Physical/ Social and economic issues/ implication of FAP/ Government/ Development partners

Halim, Md. Abdul, 1990: US Response to Bangladesh Flood Disasters with Special Reference to the Enactment of the Bangladesh Disaster Assistance Act 1988. In B.K. Jahangir (ed.), Perspectives in Social Science. Centre for Advanced Research in Social Sciences. Dhaka University, pp. 69-126

The U.S. response to Bangladesh flood in the aftermath of 1988 flood through the Bangladesh Disaster Assistance Act of 1988 passed by Congress is the subject matter of the paper. The

author argues that the U.S. cannot be expected to take foreign policy decisions on humanitarian ground alone, global compulsion and political consideration always act as an imperative in such decisions. The paper describes how the act was passed, identifies the persons in the decision making process and how their commitment and political coalitions expedited the enactment of the act. Media in USA played a crucial role in mobilising public opinion and creating favourable climate for passing the act. It is further pointed out that along with the material help, U.S. should also endeavour to make positive and meaningful contributions to the solution of dual problems of shortage of water in the dry season and severe flooding in the monsoon. The author felt that this is essential to prove that U.S. is sincere.

Key Words: Bangladesh flood/ U.S. response/ Public opinion/ Media

Hannan, Abdul, 1989: Embankment for Flood Control in Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 159-172.

The author argued that flood control through storage reservoirs at the upper catchment although attractive was not much used in the region. Building of embankments is an alternative major method of flood control. However, embankment height necessary for confinement of flow is a major factor controlling the suitability of this method. In the conclusion, it is pointed out that flood control activity through embankment construction should be linked with overall water resource development of the country.

Key Words: Flood control/ Storage reservoirs/ Water flow/ Embankment

Haq, Shafiqul, 1989: Floods, Whether Dredging is the Answer. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 144-145

Geological history of Bangladesh was discussed. It is pointed out that although dredging will not give a total solution, one cannot completely rule out the use of dredgers in Bangladesh. Some specific areas where dredgers can be useful are: reclamation of land, execution of control structures and building of protective embankments around cities and towns for flood protection. The author also draws attention to the other uses of dredging.

Key Words. Dredging / Flood control/ Geological History/ Silt storage

Haque, C. Emdad and M. Q. Zaman, 1993 : Human Responses to Riverine Hazards in Bangladesh: A Proposal for Sustainable Floodplain Development. World Development, Vol. 21, No.1, Pp. 93-107.

The paper discusses the causes, nature and types of impacts of 1988 flood and also evaluates the range of possible human adjustments in mitigating such hazards. A distinction is made between two types of hazard mitigation: 1) the first of these where environmental hazards is conceived as nature-generated phenomena requiring structural adjustments and ii) the second one emphasises non-structural adjustments to floods without involving massive engineering works. Desirability of both the options in the context of Bangladesh is discussed. It is argued that physical prevention of floods through structural means will cause untold human sufferings as well as pose serious threats to long term sustainability of floodplain ecology and socio-cultural resources of Bangladesh. A proposal for sustainable floodplain development through non-structural measures which will be ecologically less disruptive is suggested.

Key Words: Floodplain/ Sustainable development/ Human response/ Technological-fix/ Adjustments/ Mitigation/ Prevention/ Sociocultural resources

Haque, Nazmul, 1991 : Flood Disasters and Vulnerability- The Role of NGOs. Grassroots. Vol.1, No.1, July-September, Pp.

An attempt is made to describe flood and vulnerability of people in flood-prone situation and the role of NGOs. Three types of vulnerability are distinguished: Physical/material; social/organisational and motivational/attitudinal. It is pointed out that government programmes in reducing vulnerability were not effective which created scope for NGOs intervention. NGOs in recent years proved their effectiveness in relief and rehabilitation activities. Author suggested some ways through which NGOs can play an effective role. Poverty alleviation programme is also likely to reduce the vulnerability of people. An integration of NGOs regular development programmes in the pre-flood and Post-flood context is urgently needed.

Key Words: Vulnerability / Disaster/ Government/ NGO/ Poverty reduction/ Relief/ Rehabilitation

Hofer, Thomas, 1992 : Floods in Bangladesh - Process Analysis and Process Understanding of Case Studies in our Century. A Project Proposal. Research in Progress. University of Berne, Institute of Geography, Switzerland.

This is a proposal for research on flood being financed by Swiss Development Corporation. The research is currently conducted around three basic questions : Process of understanding; Frequency of flooding and human impact. Considering the broad and complex nature of the problem, the research is aimed to concentrate on a few case studies of monsoonal flood events in Bangladesh. Different methods and data sets have been expected to be used in the research. These include climatological and hydrological investigation and statistical analysis of data series.

Key Words: Flood/ Process analysis/ Human impact/ Climatological and hydrological investigation/ Statistical analysis

Hossain, Azfar, 1988: The 1988 Floods and Images of the Apocalypse. ADAB News, Vol. 15, No.5, September-October, pp. 3-6.

Author in this article describes the various types of damages caused by 1988 flood under separate headings. It also includes two case studies and two pictures which supports the description of the article.

Key Words: Flood/ Media/ Damage

Hossain, Azfar and Saleem Samad, 1987: The 1987 Floods: NGOs on the Move. ADAB News. Vol. 14, No.5, September -October, PP. 1-38.

This is a cover report of ADAB News where the authors consider the 1987 flood as the worst in 40 years. One then gets a very good description of the magnitude of the effect and damage to life, property, standing crops and physical infrastructure. In presenting the figures of effect and damage from various sources, attention has been drawn to the discrepancies in facts and figures cited in the media. However, the authors, added that instead of impugning, Hamlet-like, the obvious digital discrepancy-17 million or 24 million? - One can perhaps look at the situation in terms of realising its intensity and its ruthlessness. The causes of flood deriving views from geographers, environmentalist, hydrologist and water experts were presented. The last section

highlights the main theme of the article describing the NGOs involvement in relief and rehabilitation activities. This section contains information relating to number of NGOs involved, nature of programme activities, project areas (i.e. Upazilla, district) and also their tentative budget.

Key Words: Flood/Damage /NGOs /Relief / Rehabilitation

Hossain et al, 1987: Floods in Bangladesh- Recurrent Disasters and People's Survival, Universities Research Centre, Dhaka, Bangladesh

This is a macro study on flood problems conducted by a interdisciplinary team consisting of social scientists, engineers and geomorphologists. The book has several chapters. It begins with a general analysis of the nature, causes and consequences of flood in Bangladesh. In the chapter 2, the authors presented the results of a survey conducted in some flood affected areas of Bangladesh. The focus of the survey was on the economic and social impact of floods. A total of 1819 households were surveyed through a questionnaire which generated information relating to 1) the size and composition of households in the flood- prone areas, 2) the occupational distribution , 3) asset ownership, 4) havoc of flood on rural households and, 5) response of households to floods. The findings of the study are quite illuminating and presents information how the people in flood free and flood- prone areas survive and the difference (if any) in their adaptation . Next chapter contains a review of the policies and programmes which have been adapted by the government at various times to reduce the incidence of flooding. The book ends with some general conclusions and suggestions regarding various options to control flood.

Key Words: Flood/ Disaster/ Survival/ Households/ Economic and social impact/ Flood damage/ Flood control

Hossain, Mahbub et al, 1988 : Economic Impact of the Floods - Impressions from Field Visits. Bangladesh Institute of Development Studies. Dhaka, December 1988, Mimeographed, 65p.

This report prepared by a group of three economists provided the first glimpses of the economic impact of 1988 floods. The survey is based on several quick visits to different areas of country. The objective of the survey was to get first hand impression on two issues : 1) the nature and extent of damages caused by flood, and, b) the response to the crisis at the individual level. Indicators used to demonstrate the economic impacts are: damage to crops, infrastructures, livestock, fisheries and forestry. The authors also discussed the economic conditions of the areas covered with an in depth perspective. Economic conditions of people were described in terms of loss of work, limited employment opportunities, low agricultural wage, damage to crops and loss of properties. Although prepared from a short field visits, the description has an ethnographic flavour. Authors used tables, charts, maps and photographs in their report.

Key Words: Flood/ Impact/ Damage/ Agriculture/ Economic conditions/ Relief

Hossain, Mahbub, 1990: Impact of the 1988 Flood on the Rural Economy of Bangladesh. A paper presented at the National Seminar on Floods in Bangladesh - Bangladeshi Views. Flood Study Forum, Dhaka, January 24, 1990.

The information, derived from a short field trip immediately after the 1988 flood, was used to assess the impacts on the rural economy. It was observed that in spite of the severity the

incidence and impact of the 1988 flood was found quite uneven from region to region. Impact on crop production, damage to property, forestry, livestock, fisheries and infrastructure was mentioned. The damage to roads, bridges and culverts was extensive. The burden of flood damage fell heavily on the poor compared to other classes of people. The general economic conditions measured in terms of wage, income of rural households in flood effected villages has declined. Nearly 60 percent of the households reported that they borrowed from some sources after the flood. A consolidated statement of the estimates of flood damage in value terms gives a general overview of the impact and damage of flood.

Key Words: Impact/ Rural economy/ Intensity/ Crop production/ Infrastructure/ Economic condition

Hossain, Mosharraf, 1985: The 1984 Flood and Population Displacement in Serajganj. REIS Newsletter, No. 2, pp. 8-10

This brief review on 1984 flood and population displacement by a civil servant provides glimpses of the impact and damage of flood in one of the most flood prone areas of the country. The paper begins with a description of the BWDB flood embankment and the erosion problem. The author then discusses the 1984 flood, its socio-economic effects and also the extent of damage in the Serajganj district.

Key Words: Flood/ Embankment/ Socio-economic effects

Huda, Nurul, 1989 : Flood Control Proposal for the Major River Systems of Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 116-131

This is a typical article where the author begins with a description of the topography of Bangladesh, the situation of the major rivers, the causes of flood and then proposes certain remedial measures that should be undertaken within and outside Bangladesh to control flood. The author proposes building embankments along the major rivers, improvement of drainage facilities, dredging and afforestation programmes. Outside Bangladesh reservoirs should be constructed in Nepal and India to control flood. The author ends with an observation that regional cooperation is of great importance to mitigate flood in Bangladesh.

Key Words: Flood control/ Major rivers/ Causes of flood/ Regional cooperation

Huq, Mahfuzul, 1989: Some Permanent Cost Effective Co-solutions of Green House effect and Flood Problem of Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh, CDL, Dhaka, pp. 107-115

Some concrete proposals with a structural- bias have been proposed for the solution of flood problem. It is said that the proposal will bring high economic returns through irrigation, generating hydroelectric power and also saving fossil fuel with many environmental benefits. This least expensive method, in the author's opinion, will also help to solve, at least partially, the predicted global environmental disaster known as "green house effect" which is likely to effect Bangladesh significantly. The author suggested that a series of dams and barrages should be built along the southern flanks of the Himalayas and the Khasia - Jayanti hills in a specified manner. It is obvious from the article that cooperation of neighbouring countries will be crucially important for the success of the programme.

Key Words: Flood control / Green house effect / Economic and environmental effect / National and international cooperation

Husain, Saadat, 1989: Villagers' Struggle for Survival During Flood-A Story from Karaikandi. BARD, Kotbari, Comilla. 12p (mimeographed)

A very brief village study on 1988 flood. Description relating to topography, climate, causes and effects of flood can be found. The author also highlights the different strategies of survival in the flood by the villagers. He argues for a long term planning for flood mitigation by taking into consideration the survival mechanism adopted by the villagers.

Key Words: Effect / Damage / Survival /Money lending /Relief/ Long term planning

Hye, Hasnat, Abdul et al,1986: Flood-1984 BARD, Kotbari, Comilla

This is one of the very few books published on flood in Bangladesh. This book is an outcome of a survey conducted in nine purposively selected villages drawn from four severely affected thanas in the aftermath of 1984 flood. The data were collected by administering two sets of questionnaire, one meant for families with dependency on land (including tenant farmers) and the other was administered to the landless. The authors claim that the coverage of one full year starting from the occurrence of the flood and completing a cycle of seasons that intimately govern the activities in the rural areas and influence the lives of the rural population, is an innovative approach to a study of this nature. The objective of the study was to collect information relating to the causes of flood, effect on different crops both in the years of 1984 and 1985, land sales, condition of employment, wage rate, food intake, impact on basic needs, response of villagers to flood, and the description of measures taken by government to mitigate flood. The objective and scope of the study appear very broad. A look at the appendix show that the study generated a large body of information: . The authors felt that the study provided useful information relating to physical, social and economic aspects of village during periodic traumatic experience. The study revealed that loss of food crops resulted in food shortage, employment decline, sale and mortgage of land and also in increasing indebtedness for the cultivators. This is an informative work.

Key Words: Flood / Family / Crop damage / Land sale and mortgage/ Indebtedness

Islam, Aminul M. , 1992 : Alternative Adjustment to Flood Hazards in Bangladesh. In S. Zahir Sadeque (ed.), Environment and Natural Resource Management in Bangladesh. Bangladesh Sociological Association. Dhaka, Pp. 140-152

The author takes exception to the prevailing dominant notion that flood can be controlled by structural means by building embankments. A brief resume of flood control efforts in Bangladesh to date, choice of adjustments, review of public policy related to flood hazards, and flood action plan is provided. Attempt is also made to advance an alternative strategy of flood mitigation and survival. It is suggested that non-structural measures can be implemented at a nominal costs and in a very short time. These will result into positive benefit to the flood plain inhabitants.

Key Words: Adjustment strategy / Structural and non-structural measures/ FAP/ Costs of flood control/ Embankment

Islam, Nazrul, 1990: Let delta be a delta : An Essay in Dissent on Flood Problems of Bangladesh. The Journal of Social Studies (Dhaka), Vol, 48, :April 1986, pp.18-41

Discussing the various flaws and dangers associated with the conventional way of thinking about the flood problem, the author argues that most of Bangladesh still represents an active delta and any interference with the normal flow of water through embankments-which is cordoning of rivers,-will bring further disaster for the country. From a brief review of flood control and water development efforts in Bangladesh in the past the author pointed out that the flood problem is not a problem of more hydraulic dynamics rather the problem reaches out to the issues of the economy, ecology, society, demography, settlement pattern, transportation, and even of politics and culture. It is, therefore, strongly pleaded that an "opening up strategy" rather than a "cordoning off strategy" through controlled flood will help to give some relief from flood. The crux of the idea is that given a particular volume of water, the more is the area upon which it is allowed to spread, the less is the height at any particular place. In this way, it is argued that one can enhance the beneficial effects of flood and yet mitigate it at the same stroke.

Key Works: Flood/Delta/ Flood control/ Embankments/ Cordoning-off Strategy/ Opening-up strategy

Ives, Jack, 1991 : Floods in Bangladesh- Who is to blame ? New Scientist, April 13, 1991, pp. 34-37

The prevailing notion that deforestation in the Himalayas has intensified flooding in Bangladesh has been challenged. The Himalayan farmers who cut down the trees are the ecological villains responsible for the massive loss of life and property for down stream. The author identifies three myths: the Himalayan forests are everywhere being destroyed; Deforestation causes soil erosion; Himalayan sediment causes flood. Deforestation may not necessarily cause soil erosion while there is no guarantee that reforestation will reduce either soil loss or flooding downstream. Therefore, it is emphasised that deforestation as the cause of flood need more proof and the present evidence is inconclusive.

Key Words: Himalaya/ Deforestation/ Soil erosion/ Flood/ Sediment/ Afforestation/ Sediment

Jones, Steve, 1986: Considerations in the Evaluation of Flood Control, Drainage, and Irrigation Projects. Bangladesh Agricultural Research Council and Winrock International. Methodologies to Evaluate the Performance of Irrigation Systems. Dhaka, 1986, pp. 246-270

A common methodology for the evaluation of flood control, drainage and irrigation projects is suggested. Eight problems relating to the studies of water sector project have been identified. Some of these are : narrowly conceived terms of reference, single-discipline approach, use of imperfect indices, heavy reliance on enumerators and questionnaire and absence of rigorous fieldwork and analysis. A distinction is made between monitoring and evaluation. It is pointed out that monitoring is a continuous process while evaluation is generally conducted when a project is completed and full benefits are achieved. Taking a position that there is no universal blue print for evaluation, the author proposed a project evaluation process consisting of four parts which may be useful in such works. The four parts are: a socio-economic survey, a cost study, a management and engineering study and an economic evaluation using some indicators. A figure is used to demonstrate the relationship among the four processes. Full evaluation is time consuming, expensive and sometime one needs to wait long till benefits are achieved. Therefore, the author, discusses the possibility of mini evaluations, a type of rapid rural appraisal to be undertaken by small interdisciplinary teams of professionals supported by

one or two field staff. The importance of coordination of such studies and opening of an evaluation unit by government has been emphasised.

Key Words: FCDI projects/ Project Evaluation/ Methodology Evaluation Process/ Monitoring/ Mini evaluation/ Government coordination

Kalimullah, Nazmul Ahsan and F. Farid Ahmed, 1991 : Floods - A Tragedy of Repetition NGOs on the Move. Grassroots. Vol. 1, No.1, July - September, Pp. 62-64

The article is written with the objective of demonstrating that NGOs have a significant scope to play a vital role in helping the disaster-stricken people. The article begins with a description of nature and types of flood, causes of flood, past major floods in Bangladesh and also the extent of damage. It is suggested that compared to the large government bureaucracy, NGOs have proved more responsive, useful and effective for the people at the grassroots. The role of NGOs in relief and rehabilitation activities are praiseworthy. Therefore, they should come forward with more pro-people and environment friendly programmes.

Key Words: Flood/ Nature and Causes/ NGOs/ Government/ Relief and rehabilitation

Kamal, Md. Mustafa, 1989: *Bonna 1988-Chrunchi Gram Shamikha* (Flood 1988 Chrunchi Village Survey). Palli Unnayan (BARD), Vol. 3, January, pp. 40-49.

This is a survey of 1988 flood in a village located in the Rajbari district of Bangladesh. The causes and intensity of flood, nature and the type of damage, and survival strategy in the face of flood is described. It is a descriptive work based on the people's perceptions and opinions regarding how they looked at 1988 flood.

Key Words: Rainfall/Flood/Effects/Damage/Survival

Karim, M.A., 1985: The Impact of 1984 Flood on Kazipur Thana. REIS Newsletter No. 2, pp. 10-11

This brief paper by a *Upazila Nirbahi Officer* provides glimpses of the impact of 1984 flood on Kazipur Thana of Serajgonj district. This Upazila was severely effected by 1984 flood and is constantly vulnerable to riverbank erosion. The author briefly describes the effect and damage caused by 1984 flood. He also mentioned the different administrative responses that include the formation of relief teams for each of the eleven unions of Kazipur, opening of an information centre and also the distribution of relief under the supervision of the Upazila administration.

Key Words: Flood/ Erosion/ Impact/ Damage/ Administrative response

Khan, Abdur Rob and Nurul Islam Nazem, 1988: Abundance and Scarcity of Water in Bangladesh Issues Revisited. Bliss Journal, Vol. 9, No. 4, pp. 460-483.

Two authors discuss the paradox that in Bangladesh when the country does not need it there is an abundance of water and there is too little when it needs a lot. These two situations cause problems. Then the authors concentrate on the issue of abundance i.e. flood, issues relating to the causes of flood, nature, and magnitude of flood and issues relating to solution of flood problem. Issues relating to the scarcity of water are delineated. It is pointed out that scarcity of surface water specially in the Ganges basin is due to the withdrawal of water at Farakka. The

authors argued for a regional solution of the problem which they feel will need significant diplomatic effort.

Key Words: Flood/Water abundance and scarcity/Causes/Control of Flood/ Adjustment/ Regional solution;

Khan, Akhter Hameed, 1981: Bengal Reminiscences. Vol. 1, Food and Flood. BARD, Kctbari, Comilla.

"Bengal reminiscences" is an informal and very in depth portrayal of socio-economic, food and flood situations in the Comilla region of the country where the author worked. The scenario of the description is 1950's and 1960's. Nature, type and suffering's of people during and in the aftermath of flood caused by the river Gumti is described very intimately.

Key Words: Reminiscences/Development/Flood/Food

Khan, Md. Amjad Hossain, 1989: International Cooperation on Flood Control. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 151-153.

The nature and consequences of 1988 flood are discussed in the article. The author strongly argues that for flood mitigation in Bangladesh, international cooperation is a must. It is suggested that there are four potential developments which can be undertaken on a regional basis in the upstream. These are: construction of storage, change of catchment use, halting deforestation and new afforestation and improvement in flood forecasting.

Key Words: Flood control/International/Regional Cooperation

Khan, Mozaharul Islam, 1988 : Power and Location- The Examples of Flood Shelters in Chilmari. MS Thesis. Department of Geography University of Dhaka, February 1988.

The work draws attention to a critical issue regarding how the powerful local elites influence the allocation of services during a natural disaster like flood. Interference by local elite results in imperfect location of flood shelters which fail to provide services efficiently. The author used both qualitative and quantitative techniques to analyse the causes and consequences of flood shelter location. The flood shelters of the char areas of chilmari thana in North Bangladesh has been used as setting for this research.

Key Words: Flood shelters/ Local elite/ Resource allocation/ Power/ Qualitative and quantitative techniques

Khan, Md. Mozaharul Islam: Analysis of the Local Power Structure for Disaster Preparedness and Planning: The Case of Flood Shelter Location in Northern Bangladesh (mimeo), Undated, 29p.

How the local power structure effects the location of flood shelters and operations and activities of these shelters has been vividly described from the case study of four villages located in the northern Bangladesh. The paper also contains discussion regarding what is power, what makes people powerful, and also how people assert and exercise power. The spatial analysis of the flood shelter location, effect of flood shelter mislocation, access to employment in constructing

the flood shelters, access to the use and allocation of space within shelters and environment within the flood shelters have been described in the paper. It is pointed out that the bindings relating to power structure and flood shelters in all likelihood is also applicable to other resource allocation decisions e.g., schools, tube-wells, roads etc. In sum, this paper is an empirical portrayal of biases that emanate from the existing power structure in the distribution and allocation of scarce resources.

Key Words: Flood Shelter/Power Structure/Access/Biases/Spatial location/ Environment

Khondker, Habibul Haque. 1991 : The Socio-Political Consequences of Floods in Bangladesh - The Flood of 1988 in Perspective. Paper presented at the UCLA International Conference on the Impact of Natural Disasters. July 10-12, UCLA, Los Angeles, California, USA, 20P.

The paper written in the background of 1988 devastating flood which submerged a large part of the capital city and also inundating the diplomatic enclave and the cantonment. The paper highlights the social and political context and of the 1988 flood and the unusual response it evoked. It is further stated that the nature and type of response to flood is determined by several factors that include who is affected (i.e. class background of the victims) and how the affected segment of the population is linked to the center of power and accessibility to media. Since the affected community belong to the elite group, the diplomatic crops, the military and the most affluent sections of the Bangladeshi community in the capital city, therefore, the flood received a great deal of media coverage which led to tremendous response from the international community. In the words of author the paper seeks to contribute to our understanding of the social determinants of the consequences of natural hazards.

Key Words: Affect of flood/ Victims/ Class background/ Socio-Political Content/ Media Coverage/ International response

Koudstaal, Rob, 1989: Flood Protection and International Aid. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 273-276.

The author emphasises that flood protection is not only complicated in a social, economic and financial sense, but also in a physical sense as well. Government involvement is needed because most flood protection measures can be realized more effectively and efficiently on a bigger scale than the individual approach. Operational plans should concentrate on the formulation of a medium and long term national policy rather than investment in large infrastructure works. Donors should consider all these aspects while supporting any flood protection programmes.

Key Words: Flood protection/Government involvement/International aid

Latif, A., 1989: Control of Flood in Bangladesh - Need for International Cooperation. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 97-106

Giving a general background of the nature and causes of flood and also of 1988 flood, the author discusses the various studies and investigates on flood and flood control. The author also highlights the different aspects of international cooperation. In the last section, various short and long term plans for flood control are suggested.

Key Words: Flood/Flood Control/International Cooperation/Short and Long term plan

Masum, Muhammad, 1989: Some Aspects of Impact of Floods on Bangladesh Economy. A Paper Presented at the International Seminar on Bangladesh Floods, Regional and Global Environmental Perspectives. Dhaka, March, 4-5 1989, 11p.

Various impacts of flood on the economy at the macro and regional levels are discussed. It is pointed out that severe floods cause enormous loss which not only disrupts the current economic activity but also significantly reduces the future growth potential of the economy. Citing examples of damage caused by the 1988 flood, the author demonstrates that the impact of flood significantly varies over different regions and also amongst different social groups within a region. Since the factors that cause flood are beyond the control of Bangladesh, therefore, the development planning of the country needs to be reformed accepting the position that Bangladesh has to live with flood. Along with this international cooperation to control flood should be sought.

Key Words: Flood/Impact/Economy/Region/Social groups

Mia, M. Maniruzzaman, 1990: Chairman's Speech Delivered at the Inaugural Session of the Seminar Organized by the Flood Study Forum on Floods in Bangladesh - Bangladeshi Views. 24- 27 January, 1990. 15p.

Discussing the history of flood in Bangladesh, the author points out that the past efforts to control flood have a distinct structural bias that failed to consider the both short and long term effects of such plans. Providing some pertinent facts of geography, hydromorphology and economy of Bangladesh, the author feels that structural elements, more specifically, the proposals for embankments and river-training are not conducive to the country. Although in the last three decades 200 FCD and FCDI projects were completed, their performance has been far below the expected level. Several reasons were mentioned why these kinds of projects may not be beneficial to the country. The presentation concludes with some observations of what can be done for the future. The crux of the observations is that the entire network of rivers should be allowed to flow freely in times of normal floods.

Key Words: Flood/History/Control/Structural solution/Embankment/ River training

Mia, Maniruzzaman, 1988: Flood in Bangladesh - A Hydromorphological Study of the 1987 Flood. Academic Publishers, Dhaka.

This is a hydromorphological study conducted after the 1987 flood. It contains information relating to the general pattern of flood, history of flood and also the causes of flood. The book is brief but quite informative. This is an outcome of a study conducted with five main objectives. It has four chapters and a postscript of the 1988 flood. The first chapter contains discussion on floods in historical perspective, causes and types of flood, methodology and objectives. Numerous tables, maps, charts, and diagrams were used to support authors arguments and analysis in the book. The general pattern of flood level and discharges of different rivers both small and large were presented in the context of 1987 flood. In analysing the causes of flood in chapter 3, the author not only considers rainfall but also the whole gamut of causes including the impact of declining river-channel volumes and also the effects of various engineering/earthworks. In support of his arguments the author uses examples from different areas of the country. It is emphasised that the 1987 flood has wrought more damages as a result of faulty planning and design of many flood control and drainage projects. The book ends with a postscript of 1988 flood. The author pointed out that the 1988 flood is caused by heavy

precipitation in the upper catchments of the Brahmaputra and the Meghna combined with an attainment of simultaneous peak levels of the big rivers.

Key Words: Hydromorphology /Flood/ Discharges/ Rainfall/ Flood Causes and Types/ Damages /Overland run-off /River channel

Ministry of Relief and Rehabilitation and ADAB, 1988 : Survey of Relief Operation in the Dhaka Municipal Areas- A Survey of Relief Camps. Dhaka, September 1988, 34P.

The report prepared during relief operation of 1988 floods provide good insight and evidence in different relief camps of Dhaka city. The study was conducted in 12 police stations of Dhaka Metropolitan area covering a total of 12 wards. Two structured questionnaires were administered in order to derive information relating to the date of opening of the camps, number of persons taken shelter, nature, type and sources of food supply, type of disease suffered, Medical facility and the number of deaths in the camps. The report is informative and useful because it draws attention to the relief operation in a metropolitan area which is not always covered by researcher.

Key Words: Relief/ Camps/ Metropolitan and Municipal area/ Food/ Flood

Mohammed, Wahiduddin, 1990: Introduction to the Theme of the Seminar on Flood in Bangladesh Bangladeshi Views. Flood Study Forum, Dhaka, 24-27 January 1990, 11p.

Socio-economic Impacts of flood and the burden of damages on the poor have been highlighted. It is pointed out that flood causes different problems to different people. The actual impacts are yet to be objectively identified. The issues relating to embankments are discussed. It is felt that there is no unique engineering blue-print for flood control by embankments. There are wide-ranging options in the planning and design of embankments, each entailing very different costs and benefits to the society. Some adverse environmental effects of embankment may be addressed by means of controlled flooding. An extensive system of river embankments has been recently proposed with a provision for undertaking a number of studies and experimental projects on river morphology, topography, hydrology and socio-economic impacts. The author opines that these issues require intensive and prolonged studies and in some cases scientific research of fundamental nature. The author feels that it is unlikely to be met by the type of studies usually carried out by consultants, mostly expatriate. The research and development activities in the context of flood should be given serious attention.

Key Words: Socio-economic impacts/Damage/Burden on Poor/Embankment /FCDI schemes/ Control flooding/Fundamental research

Montgomery, Roger, 1985: The Bangladesh Floods of 1984 in Historical Context. Disasters. Vol. 9, No. 3, pp. 163-162

Flood losses are described in terms of loss of crops which bring hardship and deprivation not only to farmers but also to farm labourers who depend upon these both for food and employment. A description of the crop by crop losses in 1984 and a historical perspective comparing this loss with other large losses and a consideration of whether those particular losses mean an overall decrease in crop production can be found in the article. The loss of different rice crops, such as Aman, Transplant Aman, Broadcast Aman, and Aus were estimated and compared with the loss of these crops since 1969. The losses were different in different

years depending upon the impact of weather. From this exercise it is pointed out that losses must be considered separate from overall production estimates. This is because overall food availability, as measured by total rice production or total grain production disguises profound losses suffered by certain regions and masks the true degree of severity of the problem caused by flood damage during monsoon. It is further mentioned that in 1984, the loss was at a historical high and surpassed the 1974 level of loss that caused famine. In 1984, the Government of Bangladesh had sufficient early warning and procured ship and distributed food in time and thus could avert famine.

Key Words: Floods/Production/Crops/Damage/Shortage/Famine/Distribution

Murshid, K.A.B., 1988: Floods and Food Crisis in 1987. Paper presented to the BEA Conference, Dhaka, July 15-17, 1988, 32p.

The paper highlights some major government interventions which are claimed to have achieved success after the devastating flood of 1987. In spite of the large scale successful government role these touched the problem of mass starvation only marginally. From his observations after the 1987 flood, the author felt that there were quite distinct indications that the strength and resilience of the peasantry and rural poor have improved significantly in the 80's compared to 70's. The success of government should be judged in the background of this change. The author also discusses the role of markets, different government intervention strategies and their impacts, vulnerable group feeding programmes and test relief. The issues relating to agricultural growth, poverty, inequality, and the beneficiaries from growth have been elucidated. The author concluded that in recent years the economy has undergone certain changes that have led to greater strength to withstand shocks. This has happened despite any explicit policy of egalitarian growth strategies.

Key Words: Food/ Flood/ Crisis/ Government intervention/ Economy/ Agricultural growth/ Inequality/ Poverty

Nazem, Nurul Islam and M. Humayun Kabir, 1986: Indo-Bangladesh Common Rivers and Water Diplomacy. BIISS Papers, No. 5, December 1986, p. 1-51.

The paper is an attempt to depict the problems relating to the common water resources between Bangladesh and India. The discussion starts with a description of the geopolitical setting and hydrological situation in Bangladesh. The latter sections of the paper include discussions on India's water diplomacy, glimpses of legal issues and also an account of impact of upstream activities and diplomatic postures of India vis-a-vis Bangladesh. The paper also makes an attempt to offer certain options for Bangladesh to evolve a strategy for a comprehensive development of water resources.

Key Words: Water resources/International water/Common rivers/ Water diplomacy/Legal issues

Nishat, Ainun, 1990: Planning of Evacuation Sites and Clustered Village Protection Against Flood. Disaster Management and Regional Development Planning with People's Participation. Vol. 2, UNCRD and CIRDAP.

This paper focuses on two aspects of flood management namely, planning and operation of evacuation sites and planning for protection of clustered villages against floods. The main

emphasis is on the first issue. There is threadbare discussion on the different stages for disaster management, components for flood preparedness, evacuation planning, evacuation sites, and finally, the protection of cluster villages. It is obvious that significant emphasis has been given on evacuation planning. Two types of protection measures depending upon the nature of habitation were recommended. First is the raising the plinth above flood level for houses which are scattered. For clustered/agglomerated villages measures, such as construction of polder/ring bund around the village may be undertaken. This should be supported by reliable flood forecasting and warning from appropriate authority.

Key Words: Protection/ Evacuation / Clustered village / Disaster management.

Perera, J.S., 1988: The 1988 Floods and Rehabilitation Measures.- The CARITAS Approach. ADAB News, Vol. 15, No. 5, September- October, pp. 16-19

This brief review draws attention to one NGO's rehabilitation measures which is called CARITAS approach. It is pointed out that the rescue, relief and rehabilitation or reconstruction should form the core of any disaster management programmes. The author then mentions seven principles on the basis of which CARITAS rehabilitation programme were conducted. This description, in fact, takes us inside of an NGO's emergency operation.

Key Words: Rehabilitation / Housing / Health / Shelters

Paul, Bimal Kanti and Harun Rasid, 1993 : Flood Damage to Rice Crop in Bangladesh. Geographical Review. Vol. 83, No.2, April, Pp.150-159.

Damage to rice crops due to river flooding has been discussed. The period covered for the analysis is 1962 to 1988 for the whole country and from 1967 to 1988 for the districts. Data for the paper were derived from secondary sources which include statistical and agricultural year books. Floods annually damage approximately four percent of total rice production, but flood related losses were different in different districts. An understanding of temporal spatial patterns of crop damage is useful for planning flood control measures. The paper ends with an emphasise that absolute magnitude of these losses over time may not justify expensive and controversial flood control initiatives that are being planned in Bangladesh.

Key Words: Rice production/ Damage/ Spatial and temporal patterns/ Flood control

Paul, Bimal Kanti, 1984: Perception of Agricultural Adjustment to Floods in Jamuna Floodplain, Bangladesh. Human Ecology, Vol. 12, pp. 3-19

The perception of and the agricultural adjustments of rural households to both normal and abnormal floods in the Jamuna flood plain is the subject matter of this article. Collecting the information from randomly selected farmers inhabiting the area, the author makes a distinction between barsha(normal flood) and bonna (abnormal flood). Due to this difference in the conceptualisation of flood adjustment strategies which are traditional in nature and transmitted through generations, also differ. The author emphasises that the people do not consider normal flood as a hazard and successfully cope with it . In the conclusion, the paper, emphasises the need to undertake more research in the perceptions, adjustments and other related issues.

Key Words: Perception/ Normal Flood/ Abnormal flood/ Adjustment strategy/ Crops / Damage

Pearce, Fred, 1991 : The Rivers Won't be Tamed. New Scientist, April 13, 1991, Pp. 38-41.

This is basically a critique of flood control attempt through structural means mainly by building embankment. It is argued that embanking river would bring more harm than benefits. The big mistakes in the embankment venture is the assumption that it is desirable to vanish floods from Bangladesh and that the floods bring nothing but harm. The author draws attention to the experience of the past and argued that there are significant reasons for the Bangladeshis to live with flood.

Key Words: Rivers/ Floods/ Embankment/ Fisheries/ Crops/ Flood Control

Rahman, Aminur, 1989: In Search of Flood Mitigation. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka pp. 41-51

The article begins with a description of the nature and types of flood, history of major rivers and also how these rivers changed their courses during the last several centuries. The author also makes a critical analysis of the different expert reports on the flood problem. These reports include, The Krug Mission Report, J.R. Hardin's report, Master Plan for Flood control and J.T. Thijsse report. It is pointed out that structural measures through embankments are not likely to solve the flood problem. Different adverse effects of flood are discussed. The author feels that if the main objective of flood mitigation is to minimize or limit the damage caused by flood, then flood forecasting and warning could be one of the most effective non-structural tools to attain this goal. The Dhaka Narayanganj- Demra (DND) irrigation project and the experience gained from it might act as a guiding example to move forward, with due adjustments, to live with the floods and flooding.

Key Words: Flood mitigation / Flood reports Embankment / Structural and non- structural measures / Forecasting and warning

Rahim et al 1985 : A Record of the 1984 Floods. Project Evaluation and Identification Team. AST/CIDA and Ministry of Agriculture, Government of the Peoples Republic of Bangladesh. December 1985, pp. 1-79

This comprehensive record of 1984 flood is an attempt to amalgamate the surveys, news paper articles, government reports and the findings of various organizations. According to the authors this document was compiled because people tend to forget our past experience and very often have to relearn what had been known before. In the first twenty pages, the authors provided a detail description of 1984 floods during different periods of the year. This is followed by illustration through many maps, charts and numerous tables. The tables contain information relating to effected population by district and upazila, damage to different types of crops. One important feature of the tables is that the information is provided by flood periods. The whole document can be treated as a statistical handbook of 1984 flood. This record can be used in comparing the 1984 floods with the previous and later floods.

Key Words: Flood/ Record / Document

Rahman, Md. Ataur, 1989 : Is there a Permanent Solution for Flood in Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 132-140.

The floods, causes and consequences of floods have been discussed. It also contains suggestions of five different alternative solutions which are considered practicable and pragmatic. The suggested alternatives are preventive/ indirect and curative/direct in nature. Implementation of some of these measures requires regional cooperation, understanding and agreement. The preventive measures have structural bias, involve colossal engineering construction works and cooperation from neighbouring countries. However, in case this is not possible for any reasons, it is suggested that Bangladesh should mentally and physically prepare to control flood through curative or direct methods.

Key Words: Flood control / Preventive and curative methods / Flood zone/ Cooperation

Rahman, Atiur, (undated), Human Responses to Disasters : An illustrative Study on Grameen Bank Borrowers. Human Resource Development Division, BIDS, Dhaka, 77p

The paper deals with the peoples responses and adjustment strategies in the backdrop of natural disaster. At the outset various individual, households and social responses are discussed. In doing so the author specifically uses the example of Grameen Bank to discern whether the people who belong to an organizational network do better in coping with the disaster. The paper also contains discussion on the background and dimensions of natural hazards in Bangladesh. How different categories of households, such as landless, landpoor, small, middle, rich peasantry respond to flood are described. Later, the author discusses the institutional responses and uses the example of Grameen Bank. It has been observed that the rural poor belonging to Grameen Bank faced recent floods more boldly than others of similar socio-economic backgrounds. It is further revealed that Grameen Bank workers stood by their borrowers during disaster and provided goods and services against repayment and discouraged relief. In spite of good work done by Grameen bank their impact was limited due to limited coverage and could not reach all the poor.

Key Words: Disaster / Flood / Human responses / Household / Social and Institutional response / Relief / Credit

Rahman, Md. Anisur et al., 1990: Flood and Development - A Study of the Socio-economic Impact of 1988 Flood in Rural Bangladesh. Bangladesh Public Administration Training Centre, Savar, Dhaka

The study was conducted in four villages drawn from four districts worst effected by 1988 flood. It presents information relating to socio-economic backgrounds of the study respondents, nature and type of damage caused to crops, trees, poultry, houses etc. Impact of flood on the conditions of share cropping, unemployment, wage rate, land sale and mortgage, rural-urban migration, relief and rehabilitation programmes undertaken by the government and the NGOs are also described. Data from both primary and secondary sources are used. The primary data are collected through administration of questionnaire to 232 randomly selected households from four villages. This is a typical flood study with a comprehensive coverage of issues. The majority of the respondents (40%) were landless and suffered most. The damage to crops, fruit bearing trees and houses were significant. The major portion of borrowers borrowed from non-institutional sources. It is revealed that during the flood the relationship between the poor and

the middle class was good. The study concluded with a note that the flood 1988 increased the process of differentiation of peasantry, inequality, dependency relationship and indebtedness.

Key Words: Flood Damage/ Households responses/ Socio-economic background/ Survival strategy/ Sharecropping/ Unemployment/ Government's policy and response

Rahman, Saidur, 1988: NGO Intervention in the 1988 Floods, -OXFAM - A Case Study. Vol. 15, No. 5, September - October, pp. 13-15

The study describes facts about OXFAM's relief activities in Bangladesh. It has been reported that OXFAM distributed food to 61 Thanas of 30 districts through 131 NGO Local organisations, institutions and groups, during peak time of 1988 floods.

Key Words: NGO / Relief / Food / Thanas / Local Organizations

Rashid, Salim, 1991 : Flood Action Plan- A View From Abroad. Grassroots. Vol. 1, No. 1, July - September, Pp.8-11.

The author an economist sought some information from the Bangladeshi academics, bureaucrats and intellectuals regarding FAP. It is pointed out although there is little ground for disagreement on a substantial class of actions called non-structural, however, the author felt confused with the opposing views on the issues. A number questions have been raised regarding social, financial and physical implications of high cost environment-centered flood control programmes. The author concluded it is imperative that all should be convinced that FAP is indeed the best that can be done.

Key Words: Embankment/ Protection/ Non-structural / Cost/ Agricultural economy/ Development.

Rasid, Harun and Azim Mallik, 1993 : Poldering vs Compartmentalization- The Choice of Flood Control Techniques in Bangladesh. Environmental Management. Vol. 17, No. 1, Pp. 59-71.

Bangladesh is embarking upon a compartmentalization project instead of traditional polder concept to mitigate the flood problem under the ambitious FAP. An attempt is made to extrapolate some adverse environmental impacts of the polder to the compartmentalization scheme. The authors conducted a questionnaire survey on the impact of small scale polder, the Dhaka- Narayangang-Demra (DND) project. It has been found that although the project was successful to alleviate flood but it also resulted in considerable environmental degradation due to stagnation of water within the enclosed environment. It is also pointed out that during the major flood event in 1988 the project experienced numerous problem of structural instability. The findings of the study do not provide any firm reasoning in order to assess compartmentalization plan. It is felt that questionnaire survey like the DND one may be useful for obtaining pertinent information from floodplain residents for EIA and other purposes.

Key Words: Polders/ Embankment/ Compartmentalization/ Water stagnation/ Floodplain/ Flood control

Rashid, Harun and Bimal Kanti Paul, 1987: Flood Problems in Bangladesh. Is there an Indigenous Solutions ? Environment Management, Vol. 11, No. 2, pp. 155-173

The paper begins with a description of environmental settings, nature of flood problem, types and extent of damages. It then draws attention what was done in the past and could be done in the future. Bangladesh experiences two distinct types of inundations : 1) river floods caused by excessive runoff due to monsoon precipitation and, 2) coastal floods induced by storm surges or tropical cyclones. Floods may be normal annual events (normal flood) or abnormal that might occur once in every few years. It is emphasised that the people of floodplains have shown tremendous resilience and adaptability to normal floods by developing a series of indigenous or traditional adjustment mechanisms. The adjustment to coastal floods is, however, inadequate. Solution will be highly expensive, time consuming and probably will be beyond the means of the internal resources of Bangladesh. It is concluded that there is no total indigenous solution and ultimately the solution lies in the effective control of downstream flood levels through international collaboration, by constructing small public projects, such as polders, and also by encouraging and reinforcing various types of indigenous adjustment to floods. Numerous FCD and FCDI projects were completed within Bangladesh to control and to minimize the loss of abnormal floods. The authors opine that a successful solution would require international collaboration and support.

Key Words: Flood Problem/ River floods/ Coastal floods/ Solutions/ Structural and Nonstructural/ Adaptation/ Indigenous/ Collaboration

Ressler, Everett, 1990 : What Families can Do to Reduce Flood: Resource Information for the Development of Literacy, Educational and Public Awareness Materials for Family Level Flood Preparedness and Response. Mimeographed Draft. January 1990, 34p.

The paper provides information which will help and encourage the households effected by flood to take action in order to reduce further losses of life and personal property. It contains information regarding what people know about flood, how they can reduce deaths, illness and injuries, agricultural damage, damage to houses, properties, loss to livestock and poultry etc. The paper draws attention to the actions both before, during and in the aftermath of flood by rural households. The information collected by a NGO from survey of villages effected by flood were used to prepare the paper. It is expected that the materials of the paper may be used as reference information for the development of literacy, educational , or public awareness literature for use at the rural household level.

Key Words: Flood/ Loss / Reduction / Family / Damage

Rogers, Peter et al, 1989: Eastern Waters Study : Strategies to Manage Flood and Drought in the Ganges - Brahmaputra Basin. Asia Near East Bureau, USAID, Washington D.C. April 1989.

The Eastern Waters Study was sponsored by USAID focuses on the watershed management in the Ganges and the Brahmaputra basins. The report makes a strong reservations that large scale flood control projects through embankments are a feasible solution in dealing with the flood problem in the near future. Flood control by embankments unlike reservoirs makes no contribution to irrigation or hydropower but brings very large environmental disruptions. The cost of construction as well as maintenance of embankments is also high. It is pointed out that drainage improvements are less disruptive ecologically and technically and economically more feasible than dams and embankments. The recommendations of the report are divided into three categories, general recommendations, action recommendations, and recommendations

relating to technical and scientific research. Each of the recommendations are divided into several subcomponents.

Key Words: Population/ Resources/ Flood ecosystem/ Causes/ Flood control/ Embankments/ Feasibility

Sadeque, S. Zahir, 1991 : Flood Plain Agriculture Adjustment and Household Survival Strategy. Grassroots. Vol. 1, No. 1, July-September.

In this brief but in depth article author describe how people in a floodplain Agriculture make their own adjustment and choice. These require due attention from natural resource management planners and programme/project administrators. The information for the article has been collected from the farmers in Gopalganj district which suffer yearly inundation. It is suggested that although flooding brings misery, suffering and substantial loss of assets, the affected people imbued with resilience or developing adjustment mechanisms to co-exist with natural calamities. These are to be considered in a flood management and mitigation programmes.

Key Words: Floodplain/ Agriculture/ Cropping Changes/ Subsistence needs/ Response/ Adjustment

Sadeque, Syed Zahir, 1990 : Capture Fisheries and other Common Property Resources in the Floodplains of Bangladesh. Paper presented in the Second Workshop of European Network of Bangladesh Studies, held at Bath, UK, August 30-September 1, 1990, 25p.

Provides a general description of the nature of capture fisheries and other common property resources in the floodplain Bangladesh. It is stated that deltaic Bangladesh is extremely rich in both inland and marine fisheries which contribute substantially to the economy. With respect to common property resources the issues relating to livelihood security, access, equity and conflict resolution, mode of production, ecological sustainability have been addressed. A detail discussion of fisheries resources and their development provides some insight which is the major source of protein of Bangladeshis. The author also provides information regarding how the decline in common property resources have been occurring. Several reasons were cited as contributing factors to the depletion of fish resources. These are : Farakka dam, embankments, sedimentation and over-fishing. The author concluded that the future of millions of poor Bangladesh is depend upon careful management of common and open access resources in the Bangladesh floodplain.

Key Words: Flood plain/ Capture fisheries/ Common property resources/ Sustainability/ Resource conservation/ Rural poor/ Embankment.

Safiullah, Syed et. al. (ed), 1989 : Proceedings of the International Seminar on Bangladesh Floods: Regional and Global Environmental Perspectives. Bangladesh Research Bureau Bureau, Dhaka March 4-7, 1989, Part one- General Volume, 82p.

A brief synopsis of the International Seminar on Bangladesh Floods have been given. The seminar had five technical sessions. These are : (i) Living with flood (ii) Geomorphological process giving rise to flood; (iii) Socio-economic and legal aspects, (iv) Flood control and management; and (v) Continuing anthropogenic perturbation of the environment and green house effect-outlook for the future. A resume of recommendations of the technical sessions provide some insight of what has been discussed. Inclusion of the papers would have made the

book more useful. Some recommendations on each of the themes of the technical sessions have been included in the conclusion.

Key Words: Floods / National/ Regional/ Global/ Green house effect/ Living with flood/ Socio-economic aspects

Safiullah, A.M.M., 1989 : Embankments for Flood Protection - Success and Failure. In Mohiuddin Ahmad (ed.) , Flood in Bangladesh. CDL, Dhaka, pp. 173 -

In this article , attention has been drawn to the fact that flood protection through embankments is likely to continue as an important method in the near future. Properly planned, designed and constructed embankment projects provide a wide variety of benefits in addition to protection of life and property. Every year in Bangladesh, there is large number of cases of embankment failures which are due to inadequate planning, faulty design without following the standard procedure of the principle of soil mechanism, and lack of quality control during construction. The author felt that much of the success of embankment projects have been jeopardized due to these reasons . From a number of case studies the author revealed that the most failures are related to hydrologic and geotechnical inadequacies followed by subsequent low standards of maintenance. It is obvious from in the article that the embankments are not bad but some of the conditions related to embankment design and construction that are unique to Bangladesh require serious reconsideration and further study.

Key Words: Flood protection / Embankment/ Hydrological and geotechnical information/ Design / Construction

Salauddin, Khaleda, 1992 : Women and Disaster- Bangladesh in 1988 Floods.Eshon. Collected Articles. Women for Women:A Research and Study Group. Pp. 24-39.

A general overview of the situation of women during the 1988 floods has been provided. Author used various sources such as statistical information released by government sources, and also some quick surveys conducted by national and international agencies in the flood-affected areas. The issues relating poverty, employment, housing, health, nutrition and education have been highlighted. Some measures for reducing the effect of flood were suggested. It is emphasised that disaster readiness implies a commitment to anticipate the impact of disaster rather than simply accept it passively. The suggestive steps for disaster reduction include assessment of the flood risk and disaster preparedness. In the conclusion several recommendations were provided.

Key Words: Women/ Disaster/ Flood/ Poverty/ Employment/ Health/ Housing/ Flood risk/ Disaster preparedness

Shahjahan, M., 1989: The Devastating Flood of 1988. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 141-143

This brief article begins with a discussion of flood pattern in Bangladesh. The author suggests three types of measures for flood control. These are short, medium and long term measures. Short term measures are mostly non-structural while the medium and long term measures are structural. It includes among other things the construction of storage reservoirs in the upper catchments.

Key Words: Flood control/ Short, medium and long term measures

Shahabuddin, Quazi and Stuart Mestelman, 1986: Uncertainty and Disaster-Avoidance Behaviour in Peasant Farming -Evidence from Bangladesh. *Journal of Development Studies*. Vol. 22, No. 4, pp. 740-752

Farmers in traditional agriculture are subject to various uncertainties that put them to numerous risk. An attempt is made to test predictions of a safety - first model and of a profit maximisation model of farmer's behaviour. The data for the purpose were derived from small holding farmers of Pabna region. The paper also contains a discussion on the model, data and estimation procedures. The result shows that predictions of a safety-first model of decision-making strongly conform to the empirical evidence but predications of profit maximisation model could not be supported. It is further pointed out that in case of major outputs, such as rice and jute, the safety first model performs better compared to the profit maximisation model.

Key Words: Agriculture/ Uncertainty/ Peasant behaviour/ Disaster avoidance/ Safety first model/ Profit maximisation model

Shailo, Iqbal and Rumana Siddique, 1991 : Legacy of Floods- 1954- 1991. *Grassroots*. Vol. 1, No.1, July-September, Pp. 65-67.

Authors provide a history of flooding in Bangladesh since 1954. Out of 29 floods, the floods of 1954, 1974, 1987 and 1988 have been described as the most devastating and terrible ones. According to the authors, although the 1991 flood did not draw national attention, some field level NGO workers consider it critical for some areas. Three stories have been cited to delineate the gravity of the situation. The article also contains description of relief operation and GO- NGO cooperation.

Key Words: Floods/ History/ Damage/ GO -NGO/ Relief

Shailo, Iqbal, 1988: Glimpses into the History of the Floods - 35 Years. *ADAB News*. Vol. 15, No. 5, September - October, p.7-8

Although not comprehensive, one finds here a brief overview of the history of floods in the last thirty five years . Floods in Bangladesh are cyclical phenomena, but in recent years this has become an annual event. Quoting a renowned statistician who conducted a survey in 1927, the article reveals that flood is generally experienced in this region at an interval of two years and a quarter. Out of the 28 floods in the last 35 years, 5 floods are categorised as the most devastating and terrible. The paper also contains a graphical presentation of water levels of major rivers in three floods i.e. 1954, 1987 and 1988. Estimates of flood damages can be found in the paper.

Key Words: History/ cyclical phenomena/Water levels/ Damage

Shaw, Rosalind, 1989: Living with Floods in Bangladesh. *Anthropology Today*, Vol. 5, No. 1, February 1989, pp. 10-13

Through this brief note an anthropologist describes her experience of the 1988 Bangladesh flood and how people survived in a relief camp in the Dhaka city. The nature and the type of flood, peoples' perception of flood both as hazard and resource have been discussed. The author felt that until recently the capacity of people to survive in flood has been sufficient to permit a favourable balance between the risks and the advantage of living on a fertile floodplain,

but in the last few decades this adaptive capacity of the majority of Bangladeshis has declined due to deteriorating levels of poverty. It is observed that in urban relief camps communal divisions between households tended to harden, even as social support and mutual co-operation between them increased. On the contrary, in the rural communities social support networks are very important during the time of crisis. The high-tech construction will not solve flood problems; rather an attempt should be made for building people as well as embankments.

Key Words: Flood/ People/ Survival/ Poverty/ Social support/ Relief/ Embankments

Siddique, A. B. M., 1989: Impact of Flood on the Economy of Bangladesh. In Mohiuddin Ahmad (ed.), Flood in Bangladesh. CDL, Dhaka, pp. 245-253

The impact of flood on various sectors and subsectors of the economy are discussed. These include impact on roads and highway, railways, inland waterways, agriculture that includes subsectors like crops, livestock, fisheries and forestry, industry and urban infrastructure. The effect on the economy is also discussed in terms of its effect on GDP growth rate, on investment, on cost of living and on balance of payments.

Key Words: Flood/Impact/Economy

Sklar, Leonard, 1992 : Technical Review of Bangladesh Flood Action Plan. Mimeographed. Dhaka, January 1992, 40p.

The report is prepared as a reaction to FAP an ongoing multibillion dollar international aid programme to construct flood control embankments and implement other flood control measures in Bangladesh. It also aims to explore what alternative strategies might be employed to solve the flood related problems. This review study is based on detailed examination of technical documents and other published document on FAP and other related issues. The report concluded that FAP is not a cost effective means for flood control and it does not in any way solve the flood problem rather aggravates the problem. It is suggested that many flood control alternatives, such as high ground refuges, flood warning systems and flood proofing are likely to be significantly more cost effective.

Key Words: Flood control/ FAP; Embankment/ Benefits of flood/ River protection/ Sedimentation/ Maintenance of embankments/ Flood warning/ Flood proofing

Stok, Marian van der and Kees van Straaten (ed), 1991 : Embankments Against Impoverishment ? The Action Plan for Flood Control for Bangladesh from the Perspective of social Constructivism. Bangladesh Peoples Solidarity Centre, Agriculture University, Wageningen, Netherlands.

The book which contains several chapters took exception to the ambitious action plan to flood control and put arguments that the plan will create many adverse socio-economic consequences. It is argued that "embankment technology" will strengthen the existing power structure in favour of rich farmers and landlords and increase the dependency of marginal farmers and landless labourers. Excepting introduction and technology chapters the book has three more chapters. These include history of floods and flood control in Bangladesh; recent developments in flood control in Bangladesh; and finally conclusion and discussion. The book has several appendix which are quite pertinent to understand the dynamics of flood control programmes in Bangladesh. Some areas which have been covered in the appendix are : social

content of rural Bangladesh, and two examples from the river Nile of Egypt and the case of the Mekong Delta. The appendices on green revolution technology in India and Bangladesh and tubewell irrigation technology in Bangladesh provide good insight of the agro-ecological situation of the country.

Key Words: Embankment technology / Flood control/ Social content/ Flood Action Plan/ socio-economic impact/ Power structures/ Compartmentalization project

Task Force, 1991 : Report of the Task Forces on Bangladesh Development Strategies of the 1990s. Vol. III., The Flood Action Plan, University Press Limited, Dhaka, Pp. 360-402.

This report by the Task Force constituted by the Planning Advisor of Acting President of interim government make a general review of the FAP. In order to facilitate the review process the task force divided the issues under five headings. These are : General issues; Technological issues; Social, economic and Planning issues; Ecological and environmental issues and Organizational and management issues. The report raised several questions regarding the above issues. It is pointed out that due to unique geography and location, flood problem in Bangladesh is usually complex and challenging. The solution of flood control involve both structural and non-structural measures. It is important that a right approach should be chosen. The TOR of studies of different component of FAP should give more attention to agricultural, socio-economic and environmental issues, peoples ideas, views, and perception about flood, trade-offs between social benefits and costs, and also larger participation of the local academics/experts in the FAP studies. The report further felt that the proposition of FAP as regards disaster preparedness and flood management need more elaboration and decentralisation in terms of both administration and operation. In sum, the Task Force Report is a delineation of what is missing in FAP and how it can be made effective considering socio-economic, cultural and physical reality of Bangladesh.

Key Words: Flood control/ FAP/ Ecological and environmental issues/ Structural and non-structural/ Social benefits and costs/Disaster preparedness/ Larger participation of local academics

Tim, R. W. Fr., 1989: Causes of Heavy Flooding in Bangladesh. Mohiuddin Ahmad (ed.), CDL, Dhaka, pp. 271-272

Various causes of flood are described. However, the author draws attention to another issue i.e. riparian right which he links to human right. Since the basic human right is the right for everyone to live therefore, the countries bordering on the upper reaches of international rivers have legal duties and obligations towards those living in the lower reaches. All these countries should cooperate and separate discussions on a country to country basis can have little effect.

Key Words: Causes of flood /Rainfall/ Deforestation/ Riparian rights/ Human right

UNDP, 1989, Bangladesh Flood Policy Study. Final Report, May 1989

The Bangladesh flood policy study is an outcome of study/ deliberations of a multidisciplinary and multisectoral study team/ steering committee to initiate a study which would examine the causes, nature and effects of the floods, recommend remedial measures and establish a comprehensive flood policy. One important observations of the study is that solutions should be sought through plans which can be implemented within the country. Several options were identified in this respect. These are: upstream storage, shallow storage reservoirs in plains and

embankments. Considering all these the flood plan includes both structural and non-structural components. It is pointed out that properly planned and maintained embankments provide the best solution to the country's flood control endeavour. Along with these non-structural activities, such as flood forecasting, early warning and flood preparedness have been emphasised. In order to provide water control to the protected areas and secure environment for intensive agriculture the flood plan proposes to divide the protected areas into compartments to be managed locally. For implementing the plan the flood policy programme has been divided into several phases (preparatory, short term and medium term). The plan also identifies some high priority projects.

Key Words: Flood policy/ Structural/ Non-structural/ Embankments/ Flood forecasting and preparedness/ compartmentalisation

UNDP, 1988: Draft Contingency Plan for 1989 Flood Preparedness in Bangladesh. Dhaka, June 1988, 32p.

This paper is a product of the on going dialogue between UNDP and Government of Bangladesh on disaster preparedness following the devastating floods of 1987 and 1988. The paper has three sections. In the first section, the scenario for 1988 floods reviews the possibilities for flooding in 1989 on the basis of experience of the two previous years. The flood preparedness recommendations in section 2, outlines steps that are to be undertaken to improve the nation's flood preparedness. In the section 3, the background report contains some revisions of the flood policy study of UNDP. It is an useful document and first of its kind in Bangladesh.

Key Words: Flood/ Emergency / Preparedness

White, Sarah C., 1988: Forests and Flood - Connections and Questions. Oxfam. October 1988, 8p.

The paper questions the widely held view that floods in India and Bangladesh can be linked to deforestation of the Himalayas following rapid population growth. It is always believed that population growth along with the poverty of masses is to be blamed for deforestation, but it is not the the wealthy, urban interests that receive the blame. This is not surprising because the history of forest dwellers in India shows that their way of life has been blamed since colonial times for environmental degradation. It is further pointed out that the connections between the two is not conclusive. Deforestation in the region began 200 years ago. The quality of the forested area was declining, its extent was not. Damage is not generally due to the cutting of trees but to the way they are removed. The issue of the Himalayan deforestation is yet to be properly researched and need conclusive evidence . In the last section, the author draws attention to the negative effects of flood control by embankments.

Key Words: Flood / Forest / Deforestation / Environment

Woodrow, Peter (ed.), Floods in the Char Areas of Kurigram District - A Case Study. Undated, 6p (mimeo)

This is a brief case study of 1987 and 1988 floods in the char villages of Chilmari Upazila of Kurigram district. The socio-economic conditions of people, their livelihood features, agriculture and other related issues are discussed in the write up. The last section contains an analysis

emanating from flood. The extent of inundation, the number of people who suffered and how they survived the ordeal are described.

Key Words: Flood / Char/ Poverty / Socio-economic features / Relief / Crisis

World Bank. 1989: Bangladesh - Action Plan for Flood Control. Main Report. The World Bank, September 22, 1989

This report has been prepared by the Bank staff, with significant contributions from government staff and also from appropriate experts. This report provided a basis for discussion at the London conference in December 1989 convened to discuss the flood problems and control programmes which was participated by the countries and the agencies interested in this. The report has twenty five elements divided into three groups : Plan components, supporting activities and non structural programmes. The report further outlines a five year action plan for the implementation of a comprehensive long term programme for flood control and drainage in Bangladesh. The plan is a mix of projects that are likely to be implemented in the next 2/3 years and studies leading to further projects in the near term and subsequent plan periods. The provision has been made for supporting technical, socio-economic and environmental studies.

Key Words: Flood control / Action plan / Studies / Projects / Structural and Non - structural Programmes

Zahurul, M.I., 1991 : Embankment Failure in Bangladesh- Causes and Recommendations. Grassroots. Vol.1, No.2, October - December.

The building of embankments for flood control purpose is an established practice in Bangladesh. However, the problem is that there are numerous embankment failures all around the country. The causes are rarely addressed by any systematic research. The article made an attempt to give an analytical insight of the causes of embankment failure in Bangladesh. Data were collected through field visits and discussions with affected people, contractors, government organizations and other people connected with the design and construction of breached embankment. The paper has a good literature review, followed by a description of the objectives and methodology. The causes of embankment failures have been analysed case by case. Three major reasons for embankment failure were identified: failure due to improper construction, due to improper maintenance and due to river migration. The paper concluded with certain recommendations which the author feels will minimize the frequency of embankment failures.

Key Words: Embankment/ Design/ Construction/ Breach/ Failure/ River migration/ Maintenance

Zaman, M.Q., 1993 : Rivers of Life- Ways of Living with Floods in Bangladesh. In S.M. Nurul Alam (ed), Environment, Society and Disasters: Theories and Experiences. Academic Publishers In Press.

The duality issue relating to flood as a hazard and resource has been raised in the paper. Flood always plays a vital role in Bangladesh economy and society. It is necessary for peasant agricultural production; at the same time flood also occasionally works as agents of massive death, destruction and suffering. It is further pointed out that, this duality, the paradox of the importance of flooding and periodic devastation caused by high flood is an ever present view of

Bengali peasant's world view system. A critical examination of the current technological-fix strategies has been made suggesting a more practical approach to living with floods.

Key Words: Resource/ Hazard/ Agricultural production/ Flood control policies/ Living with floods

Zaman, M.Q., 1990: Water, Water, High Water - Living with Flood in Bangladesh. A Paper presented at the 24th Bengal Studies Conference, held at the University of Chicago, May 18-20, 1990.

The author begins the paper with a discussion on the nature and types of flood in Bangladesh . It is pointed out that people in the floodplain are well adjusted to normal flood whereas the high flood brings massive destruction and displaces hundreds and thousands of people. This duality in importance of normal flood and periodic devastation by high flood is a dominant theme in the Bengal peasant's world view system. It is felt that it is not possible to eliminate flooding completely, so attempts should be made toward limited protection recognising how we have to live with flood in future.

Key Words: Flood/ Devastation/ Flood Protection/ Public policies

CHAPTER - 4

FAMINE AND DROUGHT

Famine is not a regular phenomenon. We could not locate many materials on this man-made disaster. **What is, however, revealing that although drought quite frequently effects various parts of Bangladesh and bring misery to millions of people, it did not get due attention from the researchers.** In this chapter, we could identify and review a total of 31 materials. Some of these materials are quite rich in information and content.

ANNOTATION OF FAMINE LITERATURE

ADAB News, 1977, Disaster Preparedness Section- - Famine Mapping, Vol. IV, No. 4, April, pp. 1-8.

This report described an on-going project of famine mapping by a social geographer which is likely to fill the information- gap on the problem. The researcher formulated and listed the environmental factors, assessed the relative importance of each factor and also suggested preventive and precautionary measures for areas in accordance with these identifiable factors. The last part of the report includes a background of the study provided by the researcher Bruce Currey. Here the researcher describes when and how famine occurs, how Akal (scarcity) becomes Durvickha (famine). He also defines famine vulnerability as equivalent to the absorptive capacity of an area in terms of its absorptive capacity, its degree of isolation, its purchasing power, and its storage and savings capacity.

Key Words: Famine Mapping/ Disaster/ Preventive and Precautionary Measures/ Scarcity/ Vulnerability

ADAB News, 1979: Prospect of Famine-1979. Vol. VI, No.11, November, pp. 27-28.

This is a report on Dr. Bruce Currey's research on famine and his predictions of famine in 1979. It points out that Dr. Currey felt in 1979 that the government officials gradually accepted the reality surrounding the famine while in 1974 the situation was totally different. The report also mentions different indicators that may be used in forecasting a famine. Detailed hydrological information may also be useful for this purpose.

Key Words: Famine/ Food Stock/ Indicators/ Forecasting a famine

Alamgir, Mohiuddin, 1978: Bangladesh - A Case Study Below Poverty Level Equilibrium Trap. Bangladesh Institute of Development Economics. Dhaka, Bangladesh.

In this book an attempt is made to make a structural analysis of poverty, inequality, famine and death (PIFD). To explain the PIFD a theoretical construct called "Below Poverty Level Equilibrium Trap" has been developed. Including introduction and conclusion the book has seven chapters. In all these chapters the author discusses the trends in real income and poverty, pauperisation and polarisation, laws of motion in Bangladesh society and also elements of development strategy. In the chapter on pauperization and polarization, the author draws

attention to the 1974 famine and the vulnerability of people to famine. The socioeconomic background of famine-affected people, langarkhana gruel kitchen inmates, compared with the households drawn from the other areas of the country. An analysis of transfer of assets, distress sale, and nature of exchange entitlement can be found in the book. It is pointed out that in 1974 the most important reason for people to move from rural areas into Longarkhanas in urban areas was drastic reduction in income and employment opportunity. The author also compares the income, employment and wage rate of famine and non-famine areas. Indeed, the book brings into focus the gamut of issues relating to poverty, inequality and famine.

Key Words: Poverty/Inequality/Famine/Polarisation/Pauperisation/ Bangladesh

Alamgir, Mohiuddin, 1980: *Famine in South Asia-Political Economy of Mass Starvation*. Oelgeschlager, Gunn & Hain, Publishers, Inc. Cambridge, Massachusetts, USA.

This is a comprehensive study of famine in Bangladesh based on a broad based field study conducted during 1974 famine. At the outset the author attempts to provide a theory of famine, then describes the various Indian famines of the past. Chapters 4 to 8 contains a detail analysis of Bangladesh famine with supporting data from a famine survey. The data for the book is obtained from a survey carried out in eight villages and eight langkarkhanas (gruel kitchen) of Bangladesh during November 1974. The sample observations include 1774 households in eight villages and 788 inmates of eight langarkhenas. The author discusses the effects of famine on different groups of households. Later the author describes societal response to famine, foodgrain availability at the national, regional and household level. General price situation, wage, employment and real income situation are also elucidated. The study is quite informative gives both a micro and macro perspective of famine situation in Bangladesh.

Key Words: Famine/ Flood/ Foodgrain availability/ Employment/ Income/ Wage/ Price/ Bangladesh

Ali, Mehtabunesa, 1984 : *Women in Famine -The Paradox of Status in India*. In Bruce Currey and Graeme Hugo (ed.), D. Reidel Publishing Co. pp. 113-133.

The paper shows that women play a crucial role in Indian famines and in similar other crises. It also takes exception to the conventional demographic notion that there has been a devaluation of women concerning the status and role of women by describing their roles during the famine. The paper also contains a review of literature on the role and status of women in India. It examines departures during famine from women's traditional roles and highlights the ability of women to expand their traditional roles as food processors and food preparers to fulfill traditionally male roles as income earners and food procurers. The paper depicts the famine responses of poor women, who may be considered as most vulnerable during a food crisis with focus on studies of women in famines in Bihar and Bengal and also drawing instances from women studies in contemporary Bangladesh. The paper emphasises that there is a necessity to reexamine the existing criteria for assessing status and women's roles in the development process.

Key Words: Famine/ Women status/ Food crisis/ Decision-making/ Bangladesh

Anonymous, 1974: Famine in Bangladesh. mimeographed. 62p.

This study was conducted by a group of university researchers with a view to understand the nature, causes and the implications of famine which started before the unprecedented floods, and crop failures due to drought. It is based on information collected from official documents and reports, news paper reports and opinions of officials and also direct observations of the affected areas and the people. The study begins with a description of past famines and then the background of the 1974 famine. It points out that although flood, drought and consequent crop failures may be identified as the most important immediate causes of famine, in reality the factors that caused famine are many and inter-linked. These are: population growth, pressure on the means of subsistence, pauperisation of the general masses and also the failure of the government food distribution system. It is further observed that the famine is not directly caused by man but its severity and human sufferings are aggravated by human actions. Numerous figures and tables are used to analyse the different causes. Later, the study contains a detail description of the 1974 famine in Rangpur, one of the worst famine-affected areas. This is followed by a discussion of famine relief in Bangladesh. The study concludes with a description of the impacts of famine and the future prospects. It can be discerned from the study that famine brings immense misery for the people, and causes gradual pauperisation which reduce peoples capacity to face future disaster.

Key Words: Famine/Food/Drought/Crop failure/Foodgrain/availability/ Effects of famine/ Bangladesh

Berry, Leonard, 1978:Environment -A Critical Aspect of Development and Food Production in Bangladesh. Ecology of Food and Nutrition. Vol. 7, pp. 73-86

Provides a critical analysis of the environmental aspects of development and food production in Bangladesh. The effects of population growth, changes in the Ganges - Brahmaputra catchment, problems of physical systems within Bangladesh and finally environmental problems and the possible developmental changes are discussed. The emphasis is on the environmental issues and their implications which have been given scanty attention in the literature. The author observed that many important aspects of environment are not yet fully understood or quantified. Although Bangladesh is not a very environmentally heterogeneous country, a regional development approach might be useful even given whatever heterogeneity is there.

Key Words: Environment/ Development/ Population Growth/ Development change/ Food production

Brammer, Hugh, 1984: Development Strategies in Famine-Prone Areas. ADAB News, Vol. XI, No. 6, November-December, pp. 20-25.

Identifying *char* and *beel* areas of Kurigram and Faridpur districts as the famine prone areas, an attempt is made to suggest development strategies for these areas. At the outset the author discusses the common agroecological features and also the constraints to development. Both the areas are characterised by unstable environments, insecure living conditions, poor communications and backward social conditions. Considering these situations the author suggests that two courses of development need are to be considered: i) what can be done within the area and, ii) what can be done outside the area to ensure secure living conditions. He suggests that within the char area an obvious need is to increase production of crops, generate employment, develop appropriate infrastructure, land improvement etc. In the conclusion, the

author suggests that outside the char area employment opportunities should be created to attract people from the most insecure char sites.

Key Words: Agro-ecology / Char and beel/ Unstable environment/ Insecurity/ Production/ Employment

Brennan, Dr. Lance, 1984: The Failure of Famine Relief in Bengal in 1943. A Paper Prepared for the Asian Studies Association of Australia, Fifth National Conference, University of Adelaide. May 13-18, 1984, 19p.

Failure of famine relief in the background of 1943 famine is discussed. Some general factors that are identified include dislocations caused by war, the paucity of lower level administration in Bengal and also the difficulty of communications. Examples of several districts of both East and West Bengal were cited. Lack of any plan for relief, lack of coordination and reliance on Famine Codes without considering the reality further accentuated the problem. Pointing to several factors that contributed to failure, the author concludes that there was also a failure, mainly in the higher political and administrative structures of the province to work together to establish a relief policy and organization which could have saved more of those affected by the crisis.

Key Words: Famine/ Relief/Grain market/ Relief failure/ East Bengal

Chen, Lincoln C. and Jone. Rohde, 1973: Civil War in Bangladesh - Famine Averted. In Lincoln C. Chen (ed.), Disaster in Bangladesh. Oxford University Press. pp. 190-205

The paper analyses how a much predicted famine after the 1971 civil war that precipitated major disruptions in an already marginal economy could have been averted. To investigate the issue, the authors reviewed the rationale for the famine forecasts, critically analysed why a major famine failed to materialise, examined the impact of war on nutrition, and offered some perspective on the future nutritional situation in Bangladesh. Many facts relating to foodgrain production, food availability just before and after the 1971 disaster are presented. It could be discerned that famine could be averted due to several reasons: 1) substantial reduction of population due to civilian war deaths, 2) large scale migration to India which afforded Bangladesh a significant food saving, the burden of which could be shifted to India, 3) Although there was some deficit in food availability in 1971, the major portion could be met by taking into consideration the refugee exodus and civilian deaths, 4) the capacity of numerous waterways to facilitate food grain movements by country boats, and 5) a surprising lack of private hoarding, profiteering, and speculation. The authors also draw attention to the fact that the resilience of Bengali peasants who faced many disasters for generations are either underestimated or ignored, which might have contributed significantly to averting famine in 1971.

Key Words: Famine/ Civil War/ Food production and availability/ Migration/ Population reduction/ Resilience of Peasants

Chowdhury, A.K.M. Alauddin and Lincoln C. Chen, 1977: The Dynamics of Contemporary Famine. Ford Foundation. Dhaka, January 1977, 32p.

This is a study of the demographic impact of a famine like the situation after the 1971 war of liberation and 1974 famine on Matlab thana, a riverine rural area located 40 miles away from Dhaka. Although the effects of the two crises were different, both of these exerted a profound influence on all three demographic vital variables, such as births, deaths and migrations. The

rates, however, varied immediately after the famines and later. Another finding was that the impact of the 1974 famine was of longer duration than the effects of the 1971 disaster. The impact and fluctuations of births, deaths and migrations are also disaggregated and analysed. From the experience of two contemporary famines, the authors also developed an analytic framework delineating the multiple interacting causes and consequences of famine. The framework postulates that several mutually reinforcing vicious cycles, between infection and malnutrition and between the three demographic variables, that contribute to the impact of acute nutritional crisis. Various statistics and figures have been used to support the arguments. The authors also suggest some preventive and remedial measures to face the problem. For example, it is suggested that the early warning system should be strengthened.

Key Words: Famine/ Demographic variables/ Food consumption/ Nutritional crisis/ Price fluctuations/ Migration

Cole, Patrick Dodge and Paul D. Wiebe 1976: Famine Relief and Development in Rural Bangladesh. *Economic and Political Weekly*. May 29, 1976. pp. 809-817.

The paper contains a description of relief operation conducted by government, a cooperative institution, one foreign and one local NGO during the 1974 famine. The authors make some comments on the factors that helped in the successful implementation of relief programmes and constraints that hindered the operation. The setting of the operation was Rowmari Upazila that lies within Rangpur district in the northern Bangladesh. This was one of the worst affected areas by 1974 flood. The paper reveals that relief operations are conducted more or less smoothly due to better understanding of local problems by two NGOs, cooperation among NGOs and government officials. The problems that were faced however, include transport and communication and accommodation. The relief programme included food supply in the gruel kitchen, child feeding and health support programme. A brief tension that developed between the workers of a NGO and local people were amicably settled through the intervention of officials. In the end the paper raises an issue which needs attention . The issue is to what extent the NGOs can work through the local power structure ?

Key Words: Relief/Food/Health/Cuoperation/ NGOs/ Flood/Local people

Currey, Bruce, 1979: Mapping Areas Liable to Famine in Bangladesh. A Ph.D. dissertation submitted to University of Hawaii, Department of Geography. December 1979.

An attempt is made in mapping the areas liable to famine. Better understanding of the casual mechanisms underlying famine vulnerability is critical for adopting a famine mitigating policies. The author used a method called "Delabecq-Delphi Process" to gain a consensus view on the areas most liable to famine. The areas thus identified are evaluated against a series of mental maps, news paper reports, the places of origin of urban bastees dwellers, and against a famine field survey conducted during 1974-75 famine. The author suggested remedial measures to each of the areas liable to famine. The types and components of vulnerability are also considered.

Key Words: Famine mapping/ Vulnerability/ Delbecq-Delphi Process/ Policy measures/ Structural factors

Currey, Bruce (undated Draft): Is Famine a Discrete Phenomenon.11p

Reviewing two recent books on famine the author raises an issue whether famine can be treated as a discrete phenomenon. It is pointed out that traditional approach to treat famine as discrete phenomenon, do not give an exact picture regarding what is famine and the processes that led to a situation of famine. So, the author argues that rather than looking at famine as a discrete phenomenon it is important to see it as a subjective window on poverty and hunger. The focus, therefore, should be on invisible children that slip towards starvation. The author used two tables to support his arguments.

Key Words: Famine/Discrete phenomenon/Structural hunger/Starvation

Currey, Bruce, 1978: The Famine Syndrome-Its Definition for Relief and Rehabilitation in Bangladesh. Ecology of Food and Nutrition. Vol.7, pp. 87-98.

The author provides a definition of famine from a different perspective. As opposed to the commonly accepted notion of famine as epidemic malnutrition, the author also views famine as the community syndrome which results when social, economic, and administrative structures are already under stress and also further triggered by one, or several discrete disruptions. He used two examples-one from Dhaka city which supports the presently accepted definition; the second example is from the rural area of Rangpur region which emphasises the potential of monitoring early indicators. This analytical paper uses several graphs, tables, and figures to illustrate various arguments in the paper. It is further pointed out that it is possible to quantify several of the signs of famine syndrome. The background of the 1974-75 famine in Rangpur is quite nicely described in a table. The analysis and definition provided by the author has significant implication not only for flood relief but also for general relief and rehabilitation activities in Bangladesh. The author stressed a more eclectic approach to the understanding of famine drawing from various disciplines , such as agricultural economics, transport logistics, rural demography, social anthropology, land use planning, international relations, and public health.

Key Words: Famine syndrome/ Malnutrition/Symptoms/ Food availability/ Prevention/ Relief and rehabilitation

Khondker, Habibul Haque, 1984 : The Famine of 1974. In M. H. Khan and John Throp (ed.), Bangladesh-Society, Politics and Bureaucracy. Center for Administrative Studies. Dhaka, Bangladesh, pp. 43-74

The causes of 1974 famine are explained beginning with a definition and context of 1974 famine. The author also identifies several factors that are believed to have caused the 1974 famine. These include : the geographical and climatic factors, the economic, social-structural and politico-administrative factors. It is pointed out that the 1974 famine was actually an outcome of complex interaction of various factors. Attention is also drawn to the existing poverty situation, the elimination or reduction of which to a tolerable level is greatly needed to build up peoples capacity to face disaster like famine. In the conclusion, however, it is said that hard and unpopular political decisions are necessary in freeing Bangladesh from the specter of famine.

Key Words: Famine / Causes / Natural disaster/ Structural / Politico-administrative

Muqtada, M., 1981: Poverty and Famines in Bangladesh. The Bangladesh Development Studies. Vol. IX, Winter (1981), No. 1, pp. 1-34

Drawing largely from the experience of 1974/75 famine, the author provides a structural analysis of famine. He argues that rather than considering famine as an after-effect of natural disasters, it should be seen as simply an extension of the existing state of poverty. The paper begins with a framework for analysis which he calls a structural approach. Then he discusses the scenario of 1974/75 famine and the various attempts in seeking the causes in natural disasters, food availability decline (FAD) and fluctuation; in exchange entitlement. It is argued that all these causes are less than a complete account of famine and individually they do not explain the famine in its proper perspective. Therefore, in depth analysis considering famine as an extension of poverty linking the factors that are believed to cause famine may give a justifiable and acceptable explanation of famine. The author further points out that given the current agrarian structure, the short term break-down of economic relationships that occur in the wake of famines can, in effect, aggravate vulnerability of the rural poor, leading to impoverishment.

Key Words: Famine/ Structural approach/ Poverty/Natural disaster/ Food availability / Exchange entitlement

Rahman, M. Mujibur, 1978: The Causes and Effects of Famine in the Rural Populations - A Report from Bangladesh. Ecology of Food and Nutrition. Vol. 7, pp. 99-102

Experiences of famine from a micro perspective are described. The author attempts to relate the experiences of 1943 and 1974 famines emphasising the reactions of rural people and their attempts to avoid starvation and death. The role of infectious disease as a source of mortality in the 1974 famine has been brought under attention. It is further pointed out that since the majority of the population are extremely poor, they remain continually vulnerable when a natural disaster like flood and drought hits them. The result of this is crop failures. In fact, the author observes that both 1943 and 1974 famines were the results of consecutive crop failures. Describing the effects of famine on rural population, the author further says that famine leads to a reduction in their income and shrinkage of their purchasing power. Several events that usually occur in the aftermath of scarcity in rural areas are nicely presented. Several infectious diseases made their appearance in epidemic proportions caused by shortage of food, starvation and also the civil war preceding the 1974 famine.

Key Words: Famine/ Crop failure/ Effects of famine/ Natural/disaster/ Rural population/ Infectious disease

Seaman, John and Julius Holt, 1980: Markets and Famines in the Third World. Disasters. Vol. 4, No. 3, pp. 283-297

The relationship of famine and markets in Third World context describing it as a market event are considered. The authors point out that the major features of famine as a general phenomenon can be described by considering four points. These include market in food, monetary income, degree of population involved in the market and the existence of institutional arrangements to meet any shortfall. Examples from Bangladesh, Ethiopia and Sahel have been used. The paper also contains some general considerations on the market. Discussing the case of Bangladesh, it has been pointed out that the 1974-75 famine was caused by crop failures which effected the lower strata of people most. The nature and types of changes in market price and also the impact of government interventions in the market have been assessed. The relationship between income, wage-price indices and starvation have been elucidated. It is

pointed out that the price rise effected the food intake of the poor in 1975. The crux of the argument of the paper is that starvation is related not with the quantity of food produced in an area rather it has much to do with the market and other means of storage and redistribution. The paper concludes with a observation that in a situation where the market mediates some or all of starvation, a rational approach to relief should be not entirely free distribution rather food should be sold.

Key Words: Market/Famine/Prices/Starvation/Income and wage/Market surplus/Bangladesh

Yusuf, A.N.M. and Bruce Currey, 1979: The Feasibility of a Famine Warning System for Bangladesh. Ministry of Relief and Rehabilitation. Government of Bangladesh. 119p.

This extensive though largely impressionistic report examines the complexity as well as the feasibility of designing a famine warning system for Bangladesh. The report starts with descriptions of famine in the Bangladesh context followed by an evaluation of some potential famine warning indicators at national, district (Dhaka) and thana level. Various problems and difficulties in providing an early warning system are discussed. Finally, the authors suggest a pragmatic course towards a more effective system for both short and long term duration. The report is based on several sources that include statistical series and reports available in Dhaka and also discussions and interviews of people in the relief ministry, other government officials and also officials at Rangpur, one of the worst famine effected areas in Bangladesh. The authors also interviewed 50 destitutes at Rangpur and 45 villagers from a village which provides an insider's viewpoint on famine.

Key Words: Famine/ Early warning/Warning indicators/ Rice prices/ Destitutes/ Effects of famine

ANNOTATION OF DROUGHT LITERATURE

ADAB News, 1979 : Drought Response Forum. Vol. VI, No. 9, September, PP. 1-2

This is a brief report of ADAB drought response forum which was organized in response to the drought situation with the possibility of flooding from heavy monsoon. Many options are discussed. One suggestion is that there should be an attempt to make optimum use of water.

Key Words: Drought/ Response/ Crops

ADAB News, 1979 : ADAB's contribution in the Drought Emergency. Vol. VI, No. 9, September PP. 2-3

ADAB's contribution and its role in drought emergency is highlighted. It contains a report on different meetings and their recommendations during the drought emergency.

Key Words: ADAB/ Drought/ Emergency

Adnan, Shapan, 1992 : Perspectives from the Dry Season-Interactions Between River Activity, Sedimentation, Waterlogging, Floods and Water Control Structures. Grassroots. Vol.1, No.3, January- March, pp. 5-23.

The article highlights, the interactions between river activity, sedimentation, waterlogging, floods and water control structures linking these with the dry season. The research is mainly based on secondary sources that include reports by professional agencies, academic and seminar papers, government publications and news paper clippings. Data from limited field work supported the secondary sources. The paper begins with a description of the interrelation of the patterns of river activity, flooding, waterlogging and sedimentation, followed by an in depth analysis of the social, economic and demographic consequences. The role of various institutions, misuse and misappropriation of resources in relation to various water control structures have been also included. Author has also drawn attention to the pattern and type public discussions and press coverage on the issue. In the conclusion it is emphasised that due attention should be given to the issues raised in the paper while drawing any plan for water control programmes.

Key Words: Dry season/ Water control/ Sedimentation/ Waterlogging/ Flood/ Institutional structure/ Malpractices/ Public discussion

Adnan, Shapan, 1993 : Living Without Floods- Lessons from the Drought of 1992. Research and Advisory services. Dhaka, 28 August, 1993, 67p.

This report covers a full annual cycle of 1991-92 (both dry and wet seasons) in order to assess the impacts of the absence of normal flooding which has vital functions in the life of the people of Bangladesh. The report is based on secondary sources that include news paper and periodicals, papers and reports by professionals as well as reports by FPCO, the World Bank, BWDB etc. The findings include: similarity in socio-economic consequences of floods and drought and critical difference due to the absence of normal floodings. The author points out that the on-going FAP fail to take into consideration the problem of drought and sub-normal flooding despite the fact that the impact of the later are similarity problematic like flood problem. The author argued for a more comprehensive approach subsuming both floods and drought, the wet and the dry season, surface and ground water. The report further outlines the impact due to failure in responding to drought, failures in disaster preparedness and management, failure and adverse impacts of flood, and also nature and extent of people's participation. The author concluded drawing attention to a pertinent aspects of flood protection and water management which is the need for international cooperation for the common rivers both for sharing water and also for flood control.

Key Words: Drought/ Flood/ Environment/ Socio-economic impacts FCD/1 projects/ People's participation/ Common rivers/ International cooperation

Brammer, Hugh, 1985 : Development Strategies in Drought Prone Areas 1. ADAB News, Vol. XII, No. 2, March-April 1985, PP. 3-10

This is the first part of a two parts article on development strategies in drought prone areas. The article is concerned with the description of conditions in Bangladesh's driest environments and also identification of appropriate development strategies for overcoming the constraints. In the first section the author defines what is a drought prone area followed by identification of the areas which he considers 'dry zone areas in the country. It is also pointed out that climatic and soil variability should be considered while one considers agro-ecological conditions in

Bangladesh's driest regions. By climatic variability the author indicates mostly rainfall and by soil variability he means different types of soils and their relation with rainfall and how these effects choice of crops by farmers

Key Words: Drought /Dry Zone/ Heavy rainfall / Soil types / Soil Moisture

Brammer, Hugh, 1985 Development Strategies in Drought-Prone Areas 11, Vol. XII, No. 3, May-June, PP. 3-9

In this part, the author discusses the constraints and development possibilities in the dry zones of Bangladesh. The constraints include unpredictability and variability in rainfall, soil problems, salinity, irrigation, drainage and soil conditions. Four types of measures are suggested to accelerate development. These are agro-economic measures, provision of irrigation, provision of drainage and socio-economic measures

Key Words: Development/ Constraints/ Rainfall/ Soil variability/ Irrigation/ Drainage

Brammer, Hugh, 1987: Drought in Bangladesh-Lessons for Planners and Administrators. Disaster, Vol. 11, No. 1, PP. 21-29.

In spite of the intensity and widespread effect of drought, it has attracted little attention compared to floods and cyclone. A drought is defined as a period when soil moisture supply is less than what is required for satisfactory crop growth. In this paper, the author describes the several techniques which the farmers adapt to mitigate drought. The scenario is 1978-79 which the author describes in detail. He describes the extent, nature of drought, different incidence of drought, drought tolerance and also the lessons for planners. It is revealed that the farmers use new practices, such as irrigation of crops, normally grown rainfed, and transplanting crops that normally are direct seeded. Crop-rotation is another alternative. The various location-specific responses by farmers provide important lessons for planners and administrators. The author argues that agricultural development and production plans should be as flexible as possible so that adjustments can be made whenever it is needed. It is further pointed out that different drought mitigating techniques by farmers should be recorded which can provide a basis for future research, extension and development programmes. In the end, the author emphasises the need for drought monitoring which will help to formulate plans and mitigate the problem.

Key Words: Drought / Mitigation / Farmers response / Lessons / Planners and administrators / Rainfall monitoring/ Disaster preparedness

Brammer, Hugh, 1980 : Disaster Preparedness - Apply Lessons Learnt From 1978-79 Drought. ADAB News, Vol. VII, No.1, January, PP. 26-29

In the light of 1978-79 drought, several measures for drought preparedness are suggested. It is suggested that in drought preparedness activities will vary from area to area, according to estimate, soils and traditional cropping patterns. It is important that attempts should be made to increase the security of agricultural production. Farmers should be more involved in groups where they can share their experience and discuss issues relating to irrigation, drought-tolerant crops, moisture-saving practices and drought-avoiding practices. It is pointed out that several new practices were observed during 1978-79 drought which should be extended further. These include the transplanting of seedlings to fill in gaps in Aus, deep water Aman and jute fields, and the cultivation of quick maturing crops.

Key Words: Drought / Irrigation / New Practices / Farmers groups/ Agricultural security

Paul, Bimal Kanti, 1993 : Farmer's Response to Drought in Bangladesh- Lessons for Planners and Administrators. In S.M. Nurul Alam (ed.), Society Disasters and Management : Theories and Experience, Academic Publishers. Forthcoming in Press.

The author draws attention to a critical disaster agent drought which unfortunately received less attention from researchers. Considering the virtual absence of study on drought, an attempt is made to analyse the spatial patterns of rice crop damage due to drought and also to identify the drought hazard regions of the country. The paper begins with a definitions of drought followed by its impacts, spatial patterns of rice crop damage, an estimate of losses of rice production due to 1982 droughts, and finally on the basis of 15 years rainfall data for 17 weather stations, an attempt is made to delineate the drought- prone regions of the country. It is emphasised that the mapping of drought hazard regions, can help the government to formulate policies to reduce effect of drought hazard in Bangladesh.

Key Words: Drought/Impact/ Spatial patterns/ Drought-prone region/ Crop damage/ Estimate of loss

Shailo, Iqbal, 1989 : Drought in Bangladesh. ADAB News. Vol. XVI, No. 8, May-June, PP. 8-14

The discussion of 1989 drought is preceded by some useful information relating to drought. The author begins by making a distinction between drought vs aridity, types of drought, drought overtime and also causes of drought. The causes of drought is categorised as terrestrial and extra-terrestrial. Man-made causes (green-house effect) also figure prominently in the article. Quoting some previous works on drought, the author points out that a major drought is experienced in Bangladesh once in every eight to ten years which causes damage to crops almost equal to the ravages of floods. It has been revealed that the entire south western parts of the country were worst hit by drought following the withdrawal of the Ganges water by India at Farakka. Rangpur was the worst effected district in the northern region. The effect of this drought has been enormous. The effect, however, depends on the time of the year and the stage of plant growth. In the conclusion, the author suggested several prevention measures, such as early warning system (EWS), Union EWS, Upazila EWS, District and National EWS.

Key Words: Drought / Aridity / Types / Man-made causes /Effects / Prevention/ Early/ Warning Systems

Shailo, Iqbal, 1992 : Cycles of Drought in Bangladesh. Grassroots. Vol.1, No.3, January-March, Pp.58-63.

Drought is not a much discussed disaster in Bangladesh. This paper emphasises that there is nothing new about the severity of drought which in fact quite endemic in the country. A distinction is made between different types of drought followed by a discussion on the causes of this disaster which is classified as terrestrial and extra-terrestrial and man- made cause. Next the paper contains two case studies: The drought scenario of 1989 and the drought of 1992 which the author considers were quite severe. It is suggested that drought can be prevented by early warning system and proper irrigation in drought prone areas. One can also avoid drought by reducing dependence on agriculture and government should formulate a drought policy to face this disaster.

Key Words: Drought / Causes / Destruction / Agriculture recovery programme/ Prevention/ Irrigation/ Early warning system/ Drought policy

CHAPTER - 5

CYCLONE

The study of cyclone has a special significance in the research on natural hazards. This is because the hazard research in Bangladesh began through a study on human adjustment to cyclone as a part of the programme of International Geographic Union in the early 1970s. In spite of the beginning in the early 1970s, it did not make significant headway because of lack of interest in the concerned quarter and also non-availability of fund. When we prepared the first annotation in 1989, we could locate and incorporate only 12 titles. This indicates a lack of interest in disaster research in Bangladesh.

The situation began to change after the devastating cyclone of 1991. Indeed we noticed publications of numerous articles, reports, books, and project proposals centering around the many issues of cyclone. These documents are written by persons with various backgrounds for NGOs, donors, government and research organizations. Some of these documents are full of data, while others are descriptive and analytical. Methodology followed in the preparation of these documents were mostly survey and in depth study were rare.

In the present edition we have included 42 more entries mostly prepared after the 1991 cyclone, thus bringing the total entries to 54. The books and reports prepared by the Bangladesh centre for Advanced Studies (BCAS) and Community Development Library (CDL) and Bangladesh Rural Advancement Committee (BRAC) are worth mentioning. **The issues covered through cyclone were many and quite wide ranging.** Following box will give some idea about the general issues covered in the literature.

Box 4 : Coverage of Issue

Issues Covered
Δ Response to cyclone Warning
Δ Cyclone Preparedness
Δ Effects of cyclone
Δ Socio-economic background of affected people
Δ Perception about cyclone
Δ Survival Strategy
Δ NGO Activities and their roles
Δ Relief and Rehabilitation Activities
Δ Nutritional Assessment
Δ Medical Issues/Epidemiology
Δ Women and Cyclone

ANNOTATION OF CYCLONE LITERATURE

ADAB, 1992 : The 1991 Apocalypse - The Role of NGOs in Emergency Cyclone. ADAB, Dhaka, May 1992, 34p.

This informative document provides valuable insight regarding how NGOs responded to the 1991 cyclone and conducted their relief operation in many remote areas of the country. The report contains information relating to nature and type of NGO response, response from the public, NGO-GO coordination, NGO-donor Coordination and also NGOs relations with public in the aftermath of this type of disaster. It is suggested that NGOs response was very quick and in coordinating the relief activities, both government and NGOs, particularly ADAB, the apex body of NGOs played their respective role quite effectively. The problems and successes of NGO operations are also highlighted. The report ends by incorporating 32 recommendations that will help to improve relief operation by NGOs in future.

Key Words: NGOs / Response / Relief operation/ Government/ Donor Coordination

Adnan, Shapan, 1992 : Disaster Management and Social Responses to the Cyclone of April 1991. Vol. 1, Research and Advisory Services, Dhaka, April 25, 1992, 68p.

The report has been prepared in the aftermath of 1991 cyclone in order to critically assess and evaluate the impact as well as the social and institutional responses to mitigate the catastrophe. The study heavily draws from secondary sources and to a limited extent supplemented by primary data from the field. The contents include nature and type of prior warnings, actual experience, area affected followed by an analysis of socio- economic, demographic and environmental consequences. A critical assessment of disaster management capabilities has been included. The study has a section on public discourses and people's responses which provide an insight in this critical area. In the conclusion the author identified lessons from the cyclone and the possible implications for the FAP. One important lesson the author felt is that with better coordination between government agencies and NGOs, the overall performance of relief and rehabilitation activities could be improved and duplication avoided.

Key Words: Cyclone/Social response/Disaster management/Demographic and environmental consequences/ Emergency relief and rehabilitation/ People's response

Ahmed, Salahuddin and Neena Afreen, 1992 : Early Warning and Preparedness. In Hameeda Hossain (ed.), From Crisis to Development- Coping with Disasters in Bangladesh. University Press Limited, Dhaka, pp. 81-92.

A brief but in depth description of early warning and cyclone preparedness activities has been provided. The warning relating to cyclone was timely, however, it is pointed out that signals are port-oriented and not understandable to ordinary people. Media coverage through radio and television were extensive, however, these failed to convey the urgency and seriousness of the disaster which was about to befall the coastline. Education for disaster preparedness is emphasised. It is also suggested to encourage people to build concrete houses on higher ground resistant to wind. The paper concluded with the plea that documentation and research should be made on the ingenuity and resilience of ordinary people who have learned to survive with so little resources.

Key Words: Warning / Preparedness/ Vulnerability/ Education/ Wind resistant house/ Documentation and research/ Peoples' resilience

Anonymous, 1989 : Cyclone and Causes of Cyclone. Study Funded by PRIP, Dhaka, 37p.

The report highlights the causes of cyclone activities in the pre and post cyclone period and an analysis of capacities and vulnerabilities of people in the cyclone-prone areas. It then describes the activities of Bangladesh Red Crescent Society as it relate to Cyclone Preparedness Programme. A Case study on the experience of Char Bhatta Union of Noakhali Sadar Thana portrays the activities of Red Crescent Society in field situation. It includes activities of volunteers, cyclone house shelter and the community development project which was undertaken to develop skills through training and to provide financial assistance to people in different activities such as, health, cottage industry and agriculture.

Key Words: Cyclone/ Vulnerability/ Red Crescent/ Shelter project

BRAC Cyclone' 91 - A Study of Shelters. Second Draft Report. Research and Evaluation Division, BRAC, Dhaka, December 1991, 20p.

The report presents the findings of a study conducted after 1991 cyclone about the extent of utilization of different types of shelters by effected people, location of shelters, condition of shelters when used and also the problems faced while staying in the shelters. The study was conducted by BRAC volunteers in three worst effected thanas i.e. Kutubdia, Sandwip and Banskhali. A distinction is made between formal and informal shelters. The dilapidated and unhygienic conditions, lack of latrine and drinking water have been highlighted as the common problems of shelter. It is revealed that many people used the shelters during the cyclone which have shown their usefulness and utility. It is recommended that for making the shelters most useful authority must consider the location, maintenance and also provision for water and toilet.

Key Words : Shelters/ Formal and informal/ Utilization/ Location/ Condition of shelter/ Death rate/ NGOs

BRAC, 1991 : A study of Epidemiology, Research and Evaluation Division, BRAC, Dhaka, December 1991, 18p. (mimeographed).

A detailed epidemiological study was conducted in 12 worst affected unions of the districts of Chittagong and Cox's Bazar to assess the losses particularly human losses and the factors associated with it. The study revealed that the number of deaths was less than what is normally expected from a cyclone of 1991 intensity. This is due to several reasons: improvement in the cyclone warning and preparedness activities, a large number of people use cyclone shelters and also that the costal embankment prevented initial on rush of water. Women and children died disproportionately more in this cyclone as is found in other disasters. It is found that the number of deaths were also related to literacy. In the post cyclone period deaths were mostly caused by diarrhoea, respiratory problem and old age.

Key Words: Epidemiology / Human losses/ Warning/ Preparedness/ Women and Children/ Cyclone shelters

BRAC, 1991 : Cyclone '91 Alerts- What people knew and Did. Research and Evaluation Division, BRAC, Dhaka, October 1991, 44p.

This is a report based on a study conducted with the objective of knowing the response of people to cyclone warning, how they perceived it and what precaution they undertook to face the cyclone. The field work has been conducted in two badly affected thanas of Chittagong and Cox's Bazar districts. The respondents were interviewed through a checklist. In depth interviewing was the main tool of data collection. The report has sections on the perception about cyclone and also on process of survival. These are quite informative. It is revealed that although in some places people got warnings much before the cyclone, they perceived and responded differently. Regarding the meanings of different warning signal people had some general and sometime had vague ideas. Therefore, it is suggested that warning system should be changed in such a way that it becomes meaningful for the people living in coastal areas.

Key Words: Cyclone warnings/ Meaning/ People's attitude/ Survival perception

Bangladesh Red Crescent Society (BRCS); 1976 : Cyclone Preparedness Programme. BRCS, Dhaka, May 1976, 14p.

This is a government booklet prepared with the objective of information those who want to know more about the cyclone preparedness programme of BRCS. The booklet starts with a brief history of the programme, experience of preparedness programme and progress of the programme upto late 1973. It also describes and emphasises the need for volunteer refresher training course and convening of frequent public gathering before and during every cyclone season in order to popularise the BRCS preparedness programme. The warehousing and cyclone shelter provision is another important feature of the programme.

Key Words: Preparedness/ Red Crescent/Warehousing/Cyclone Shelter/ Volunteer

Brammer, Hugh, 1980 : Disaster Preparedness - Are You Prepared for a Cyclone ? ADAB News, Vol. VII, No. 10, October - November, PP. 26-29

This paper draws attention to the various issues relating to cyclone preparedness in Bangladesh. A cyclone is defined as an atmospheric disturbance which brings very strong winds, heavy rainfall and sometimes tidal flooding to large areas for a period of several hours. The author also discusses the effects of cyclone in terms of agricultural and other damages. Several long and short term measures to lessen the intensity of cyclone damage are suggested. However, it is pointed out that the best precautionary measure against cyclones is to know the kinds of damage and problems which a cyclone can cause in a particular area. The author also emphasises the need for cyclone warning and also agricultural rehabilitation programme after a cyclone. Some constraints are also noted which mostly relate to the unsuitability of soils for growing some crops.

Key Words: Cyclone/ Damage/ Loss reduction/ Precautionary measure/ Cyclone warning/ Agricultural rehabilitation

Brammer, Hugh, 1977 : Cyclonic Storms. ADAB News. Vol. IV, No. 5, May. PP.2

It is pointed out that the different terms used to describe storms often cause confusion when the scale of relief requirements is considered. Several correct technical terms for various kinds of

storms have been suggested. These are : cyclones, cyclonic storm, tornadoes, whirlwinds, Norwesters, and tufan.

Key Words: Cyclone/ Technical terms/ Storms

Chowdhury, A.M., 1991 : Cyclones in Bangladesh. Bangladesh Quarterly. Vol. 12, No. 1, September 1991, Pp. 7-12.

This is a general article on cyclone in Bangladesh. The author starts with the origin of the word cyclone followed by an analysis of causes of cyclone, classification of cyclone, main features of cyclone, and also the determination of the cyclone track. The role of weather satellites in cyclone warning is also delineated. The author called the cyclone of 1991 as super cyclone. In the conclusion a question has been raised whether cyclones can be prevented ? It is pointed out that cyclone warning system can be strengthened and relief and protective measures can be adopted to minimize their onslaught. The author also stated that in the past cyclone shelters have been quite effective and suggested that coastal embankments may also be useful to protect people from storm surges. The author felt that forest can stabilize land and therefore, he suggested that a forest belt should be created throughout the costal area.

Key Words: Cyclone / Causes of formation/ Protection/ Cyclone track/ Weather satellites/
Cyclone warning

Chowdhury, Mushtaque et. al. 1992: Cyclone Aftermath- Research and Directions for the future. In Hameeda Hossain et.al (ed.), From Crisis to Development-Coping with Disasters in Bangladesh. University Press Limited, Dhaka, Pp. 101-133

This is a review paper and the results of studies particularly those initiated by the working group on Essential National Health Research (ENHR) are presented. The topics covered in the study are : early assessment of health effects, economic losses, post disaster environment, epidemiology of the cyclone, usefulness of shelters, peoples perceptions about cyclone warnings, reasons for structural failures of semi-pucca buildings and impact of nutritional status. The topics are critical and demonstrate very useful insight of some pertinent issues. It is claimed that the impact of 1991 cyclone has been studied by more research than 1970 and these research have been conducted by Bangladeshi researcher.

Key Words: Health/ Disease/ Economic losses/ Nutritional status/ Epidemiology/ Research
Results

Chowdhury Mushtaque R. et. al, 1991 : Bangladesh Cyclone of 1991 Why So Many People Died. BRAC, Dhaka, 29p +Maps.

An attempt is made to discern the causes why so many people died in the 1991 cyclone. Several case studies and experience of BRAC volunteers provided valuable information. The study reveals several causes which are: poor housing, high population density, inadequate shelter, problem with signals and warning indifference attitude toward warning and vulnerability of groups particularly the women and children. The study also recorded the immense utility of trees as life savers.

Key Words: Death / Causes/ BRAC/ Housing/ Population Density/ Warning/ Signals/ Trees

Community Development Library (CDL), 1992 : The April Disaster - Study on Cyclone Affected Region in Bangladesh. CDL, Dhaka , January 1992, 56p.

This one of the few broad based study conducted in twelve Upazilas of five costal districts. It is conducted through house to house survey of 720 households of 24 villages. The study highlighted the nature and the type in damages, sources of people's information, people's response to warnings, provision of shelter, relief and rehabilitation activities, role of NGOs and also perception of people about cyclone. It is revealed that due to lack of faith warning system is not found to be effective and there is also inadequate provision of emergency shelter. Immediately after the cyclone, NGOs were the first to provide relief to the affected people. In the end the report contains some important recommendations. Two of these are : the cyclone warning system should be oriented to the need and understanding of people; and the cyclone preparedness programme should be integrated with the grassroots initiative.

Key Words: Cyclone warning/ Damages/ Shelter/ Preparedness programme/ People's response/ Relief and rehabilitation/ Grassroots initiative

Edwards, Steven, 1989 : A Review of Cyclone Protection Measures. VSO paper. Dhaka, January 1989, 26p. (mimeographed).

The paper is written to review the problem of tropical cyclones, current and past cyclone protection measures, and also to suggest some measures for future improvement. The review is principally focussed with the physical measures of protection from cyclone. It is emphasised that a detailed inventory should be made of all existing cyclone shelters and killas. However, it is pointed out cyclone shelter constitute a major component in cyclone protection programme. Consideration must be given to people's perception and cyclone shelters should be designed to incorporate features that are important to local people. The actual effectiveness of afforestation programme in cyclone protection need to be properly evaluated.

Key Words: Cyclone protection/ Physical measures/ Shelters/ Killas/ Embankments/ Afforestation/ People's perception

Government of Bangladesh, 1985: Papers and Documents of 1985 Cyclone. Dhaka, July 1985, 81p.

This booklet contains various paper and documents which were prepared in pursuance of actions/decisions taken from time to time just before and after the 1985 cyclone. The booklet begins with a description of what is a cyclone. This is followed by a documentation of different activities of government. These include minutes of the meetings of different committees such as, national and central coordination committees, policy committee, inter-ministerial committee. The booklet also contains plans of relief and rehabilitation, guidelines for the NGOs, damage statement and the amount of relief sanctioned at different times by the government.

Key Words: Government/ Actions/ Committees/ Relief and Rehabilitation/ Damage/ NGOs/ Cyclone

Government of Bangladesh, 1992 : Proceedings of a Workshop on, " Lessons Learnt During Cyclone - April 1991" Dhaka, October 28-31, 1991 published in May 1993, 143p + Appendices.

The document is a proceedings of a workshop organized after 1991 cyclone has made a revealing insight into the current disaster management practices particularly in the health sector.

The proceedings contain summary of 25 papers presented by persons with experience in health, government, Red crescent, science, NGOs, and international organizations. People's perception and community response to disasters have been reviewed. The extent of damage both in human and materials terms were presented. The proceedings have a section on workshop outcome which summarizes the key findings under three main headings i.e. policy and planning, operational management, health sector and technical issues. The workshop recommended that more emphasis should be given on disaster preparedness over response. The sponsor of the workshop expect that the recommendation of the workshop will help in formulating a detailed plan of action on disaster preparedness and response for the public sector

Key Words: Damage / Management / Health / Response / Relief and Rehabilitation/ Need assessment/ Cyclone

Government of Bangladesh, 1985 : Standing Order for Cyclone. Ministry of Relief and Rehabilitation, Dhaka, November 1985, 93P.

The Standing Orders of Cyclone (SOC) is an updated version of a similar documents lay down actions by all concerned during the various stages from the detection till the aftermath when a cyclone strikes a particular area. The various actions under the standing orders generally fall into several stages: pre-disaster stage, alert stage, warning stage, disaster stage and post-disaster stage. The SOC contains description of detail actions to be undertaken and tasks to be performed by different ministries, departments/agencies, defense services, police, voluntary organizations, local government institutions and other concerned agencies at different stages. This in fact constitute a handbook of cyclone preparedness and mitigation.

Key Words: Government / Preparedness and Mitigation / Standing orders/ Different stages/ Cyclone

Government of Bangladesh, 1991 : The 1991 Cyclone in Bangladesh - A Draft Report Prepared for Presentation at the Special Meeting of the Economic and Social Council of UN. June 1991, 41p + appendices.

The report prepared by the joint Government-UN Interagency Task Force coordinated by UNDP attempts to give a comprehensive overview of the social as well as economic impact of cyclone. It contains information on macro economic impact, domestic production, budgetary impact, balance of payments and investment. The issues relating to health, water supply and sanitation education, physical infrastructure both urban and rural have been highlighted. It was expected that the report would facilitate a balanced and positive response from the international community to continuing relief and reconstruction needs in Bangladesh. The report depicted what was already done and what can be done in the light of colossal death and destruction.

Key Words: Damage/ Impact/ Economic/ Health and Water supply/ Education/ Relief/ Reconstruction; Cyclone

GOB and UNDP, 1992 : Multipurpose Cyclone Shelter Programme, Draft Final Report. Annex S5. Social Anthropology. July 1992.

This brief report contains review and analysis of the socio- economic situation of the costal areas in order to devise a management model for cyclone shelters. The emphasis of the review

was on the following factors: land tenure pattern, the power structure, the kinship pattern, women's situations and folk wisdom and perceptions. The study is based on a review of available literature on the coastal areas. The review is concluded with many recommendations regarding how to manage cyclone shelter programme in the coastal areas.

Key Words: Cyclone shelter/ Management/ Social structure/ Kinship/ Folk Wisdom and perceptions

GOB and UNDP 1992 : Multipurpose Cyclone Shelter Programme. Women in Community Development and Shelter Management, Annex F2, Draft Final Report July 1992.

The problems that women face in the multipurpose community shelter have been delineated. In addition to the types of losses suffered by women in the catchment areas, women's perceptions and felt needs for constructive use of the proposed cyclone shelters during normal time have been analysed. While exploring the possible use of cyclone shelter and potential management sources, enormity of the proposed cyclone shelters are considered. The method of investigation was interviews with the focus groups at the thana and union levels. Household questionnaires were administered to the women members of the simple households. The study was conducted behind the assumption that women are the main mobilizing agent of the family. The 1991 storm surge, cyclone, existing cyclone shelters and also the respondents experience of 1991 cyclone and tidal surge have been described. The study recommended certain measures which will help us to effectively utilize the cyclone shelters in the coastal areas.

Key Words: Cyclone Shelter/ Women/Management/Felt needs/Community shelter

Gupta, Tarit Datta, 1991 : Consequences of Cyclone and Tidal Surge of April 29, 1991- An Analytical Review. PACT - Bangladesh. May 1991, 38P.

The report is not based on field information rather it is based on news paper reports, reactions of NGOs and quotes from the leaders of NGO community. The objective of this exercise is not clear, although it is stated in the preface that it is prepared to highlight on the consequences of tidal surge and cyclone. After providing a general overview of the cyclone, death and destruction, relief operation the report made some recommendations regarding the solution of the problem which the author termed as temporary, semi-permanent and permanent solution.

Key Words: Cyclone/ Tidal surge/ Relief/NGOs/ Government/ Solution/ Availability of fund

Gupta, Tarit Datta, 1991 : Natural Disasters- the National Issues and the Development Agencies. Diakonia. Mimeographed, 47p.

The report which is based on secondary sources made a plea for a concerted and unofficial effort for facing a disaster of the magnitude of 1991 Cyclone. The report begins with a description of the cyclone followed by a presentation on the losses and damages. The author also highlighted the roles of government, opposition political parties, people's organizations and NGOs. The author quite explicitly depicts the problems of relief distribution specially who will control the relief. The need for peoples' participation has been also emphasised. The need for a single mechanism in the distribution of relief is greatly felt during the relief and rehabilitation operation.

Key Words: Relief/Rehabilitation/Disaster/Cyclone/Distribution/ NGOs/ Government/ Political parties

Haider, Raana (ed.), 1992: Cyclone '91 Revisited-A Follow-up Study. Bangladesh Centre For Advance Studies. Dhaka, 144p.

This book is a follow-up of a previous study attempts to show how people are coping in the aftermath, their perceptions and strategies. The data for the book were collected a year after the 1991 cyclone by researchers. interviews with knowledgeable persons and also in depth case studies. A multidisciplinary group was involved in the compilation of the book. A stock taking of the scenario after one year relating to human adaptation, housing, infrastructure, agriculture, livestock, fisheries, water supply, health and infrastructure provided valuable information how the situation gradually became normal over this period. The resilience of people to adopt and survive has been also brought into focussed. Finally it is emphasised that growing pauperization and an environment of poverty created a situation where people become a easy prey to where disaster can strike with a single force or it can have a silent, menacing and corrosive effect.

Key Words: Cyclone/ Disaster/ Coping strategies/ Poverty/ Agriculture/ Fisheries/ Environmental health

Haider, Raana, A. Atiq Rahman and Saleemul Huq, 1991 : Cyclone '91 - An Environmental and Perceptual Study. Bangladesh Centre For Advanced Studies, Dhaka.

The book is based on a study and experiences by an interdisciplinary group consisting of NGO administrators, geographers, planners, engineers and journalists immediately after the cyclone 1991. A large amount of information were collected and integrated in the book. Numerous pictures taken from field are included. The book starts through an explanation of the scientific background of cyclone followed by an actual description of the April 1991 event. The impact of cyclone on human lives, trees and vegetation, agriculture, water supply and sanitation, livestock, fisheries, wildlife, infrastructure, industry, public health and nutrition and also on the socio-economic structure have been described. Also the book contains very nice analysis of the role of NGOs and print media pre and post-cyclone periods. Attention has been drawn to different coping strategies that people adapted to survive in disaster. A section on the perceptions of survivors relating to the experience of cyclone provide in depth information about public insight of the disastrous cyclone. In the concluding section the book highlighted issues relating to relief administration and also rehabilitation and reconstruction. In sum, the book constitute a valuable contribution based on empirical evidence in understanding the situations in the aftermath of a major disaster like the cyclone of April 29, 1991.

Key Words: Environment/Cyclone/Disaster/Impact/Coping strategies/ Perceptions of survivors/ NGOs/ Print media/ Relief/ Rehabilitation and reconstruction/ Administration

Hamida, Abdul,1991 : Reconstruction of Cyclone-prone Coastal Areas. ADAB News. Vol. XIX, NO.2 (April-June) Pp. 4-13.

The paper provides a comprehensive framework for the reconstruction of cyclone-prone costal areas of Bangladesh. It is suggested that the problems of cyclone-prone areas should be viewed first as a emergency situation created by cyclone and second relate to the problems of normal times. A comprehensive solution require an in depth understanding of the prevailing poverty situations in the area. A distinction is made between human settlements in normal areas and in the costal areas. The author suggested that it is critical to take the costal perception of human settlement in any reconstruction plan. A compact village instead of a scattered homesteads is preferable for saving the life and property of the people in the costal areas and off-shore islands. The author then provided a detailed description of the proposed village. This

informative article concludes with a set of recommendations and tasks to be undertaken in future in establishing a new settlement System that will help in minimizing death and destruction in the coastal region.

Key Words: Cyclone/ Coastal areas/ Reconstruction/ Human settlement/ Village/ Nature/ Homestead land/ Agriculture

Hamid, Abdul, 1991 : Reconstruction of Cyclone-prone Coastal Areas of Bangladesh. Dhaka, June 23 1985, 29p + plans, (mimeographed)

The author suggested survival village concept as a tool for reconstruction of cyclone-prone coastal areas of Bangladesh. It is claimed as a comprehensive approach in village planning. The paper begins with a discussion on the relationship of cyclone, land formation, settlement system and pattern, and socio-economic backgrounds of people. This is followed by a "theoretical approach" to the problem of reorganizing the settlement pattern with special reference to economic development as well as protection against natural disasters like cyclone and flood. The paper concludes with a case study of a proposed survival village in Bangladesh.

Key Words: Reconstruction/ Survival village/ Land formation/ Settlement pattern/ Agriculture/ Economic development

Haque, C. Emdad and Danny Blair, 1992 : Vulnerability to Tropical Cyclones - Evidence from the April 1991 Cyclone in Coastal Bangladesh. Disasters, Volume 16, No. 3, Pp. 217-228.

The results of a survey conducted after two weeks of April 1991 cyclone have been reported in the article. The survey mainly attempted to discern the responses to cyclone warning by general public. The authors also identified the primary sources of early warnings and the precautionary measures taken by the households. Two main reasons given for not evacuating are : fear of burglary and faith in the warning system. The paper concluded with some recommendations. These include the creation of infrastructural facilities that will provide shelter to people in emergency situation and also to make people aware of the severity of the cyclone hazard and to teach them how to prepare for and respond to it. It is suggested that need based educational and developmental schemes will ameliorate the plight of the poor. It is found that although most households received early warning, very few indeed leave their houses to take shelter elsewhere.

Key Words: Vulnerability/ Response/ Cyclone warnings/ Evacuation/ Shelter/ Infrastructural facilities

Hossain, Azfar, 1989 : Tornado in Manikganj- NGOs on the Move. ADAB News, Vol. XVI, No. 8, May-June, PP. 14-25

The devastating tornado that had hit Manikganj district in April 1989 and the NGOs relief and rehabilitation operation aftermath is the subject matter of this exhaustive write-up. The report describes how quickly and efficiently NGOs went into action and also the type of activities conducted by NGOs. It is revealed that since the relief activities were conducted by NGOs, two coordination committees- one at the local level and the other at the national level were formed through which many overlappings in relief operations could be avoided. The report also highlights the effective role of the government in the post tornado period.

Key Words: Tornado/ NGO/ Destruction/ Rescue/ Relief Rehabilitation/ Coordination

Huda, K.S. and Azfar Hussain, 1991 : NGO operation in Emergency Relief Plans for Rehabilitation - An ADAB Note. ADAB News. Vol.XIX, No.2, (April-June).

This ADAB note provides a general overview of NGO operation in emergency relief after the 1991 cyclone. An estimate of areas affected, extent of devastation is also provided. The nature and type of NGO response, response from the public and issues related to coordination of relief activities are also highlighted. The coordination issues include : NGO-NGO coordination, NGO-GO and NGO-Donor coordinations. The note brief deals with the concerns and priorities of rehabilitation programme delineating some important tasks that are needed to be undertaken on a priority basis.

Key Words : NGO/Donor/ Government/ Response/ Relief and rehabilitation/ ADAB/Cyclone

Islam, M. Aminul, 1971 : Cyclone Hazard and the Strategy of Human Occupancy in the Coastal Areas of Bangladesh. *Oriental Geographer*. Vol. 15, PP. 37-45

The article starts with a description of the cyclone hazard, nature and the type of human occupancy in the coastal areas of Bangladesh. It is revealed that in recent years a large increase in the number of deaths is due to several factors, such as occupational hazard, sea-level fluctuations and other co-related factors. The author pointed out that people hardly want to leave their place of residence because people are guided by their innate optimism or submission to the Almighty and also their belief that they have no choice but to stay for subsistence. It is emphasised that before undertaking any reconstruction programme the relation that exists between man and hazardous aspects of the natural environment in the coastal areas should be fully understood and appreciated. The problem of damage assessment is also mentioned. The author then mentions different strategies of hazard adjustment. He argues that various adjustment options should be considered in any recovery programme. The author feels that before a long term recovery programme can be undertaken it is essential that government specify the broad objectives of such a plan. It is also suggested that surveys of attitudes of the respondents in the coastal areas is important for planners for formulating and successful implementation of their programmes.

Key Words: Cyclone hazard/ Adjustment/ Damage adjustment/ Recovery plan

Islam, M. Aminul, 1981 : Human Adjustment to Cyclone Hazards in Coastal Bangladesh. In K. Maudood Elahi (ed.), *Perspective of Bangladesh Geography*. Bangladesh Geography Association. Dhaka, Bangladesh PP. 36-62

The paper is the result of a study conducted on some selected coastal dwellers in Char Jabbar with three objectives : 1) to study the processes which have led to the present pattern of occupancy, 2) to study the degree to which the various hazards are recognised by those who live adjacent to the shore, and 3) to identify the range of adjustments that are practised or might be practised in dealing with the cyclone flooding problem. The paper includes discussion on the study design, geographic and socio-economic characteristics of the area, morphological changes, flood and tidal surge, losses and damages. It is revealed that respondents have high awareness of past experience, although the link between awareness of the past and expectation of future events is complex. A large number of respondents think storm occur due to God's will. The adjustment is divided into two broad categories, namely, a variety of adjustments requiring prior preparation and, emergency adjustments without prior preparation. A detail discussion on this two categories can be found in the paper. In the conclusion, the paper emphasises the need

for better coordination between public and private actions to reduce the future effects of natural hazards.

Key Words: Cyclone Hazards/ Perception/ Human adjustment/ Coastal flooding/ Public and private actions

Islam, Aminul M. 1974 : Tropical Cyclones - Coastal Bangladesh. In Gilbert F. White (ed.), Natural Hazards - Local, National and Global. Oxford University Press. PP. 19-25

An attempt is made to offer some in depth and accurate insights about the coastal flood and cyclone hazards as perceived by respondents chosen from Galachipa Upazila of Bangladesh. The study also focuses on the options and choices that are open to the respondents in making adjustments and living with the cyclones and coastal inundations that frequently hit Galachipa and other adjoining areas. A description of physical features and flood protection schemes, house patterns, quality of homesteads, and socio-economic and class indices can be found in the paper. In analysing the data gathered, the author reveals that all respondents are aware of the coastal flood-hazard which created a sense of pessimism among them. No relation is found between past experience and decision making to settle and maintain settlement. It is, therefore, suggested that decision-making has not been a function of natural hazard events system. The study reveals that the relief and rehabilitation programme has added a new dimension to the perception of hazard. It is found that relief without obligation has reduced respondents concern about hazard. The provision of relief has caused an increase in flood-loss potential. No relation is found between cyclone hazard and adoption of specific adjustments. Public perception of hazard does not lead to any effective approach to crisis. The author suggests that the cyclone control programme is piecemeal, and corrective rather than preventive in nature. No attempt is made to organize a community programme against coastal hazards taking into considerations of local situation. On the basis of the study of perception, the author suggests certain optimal or desirable sets of adjustments.

Key Words: Coastal hazards/Perception / Socio-economic background/ Adjustments/ Settlement / Relief and Rehabilitation/ Adjustment options

Islam, M.A. 1971 : Human Adjustment to Cyclone Hazards - A Case Study of Char Jabbar. Natural Hazard Research Working paper No.18, Department of Geography, University of Toronto, Ontario, Canada.

Could not get it for annotation

Jones- Palmer, R.W. and Stuart Rutherford, 1992 : The Cyclone of April 1991 in S.E. Bangladesh- Some Thoughts at January'92 on Relief and Rehabilitation, Coping and NGOs. PACT Bangladesh/ PRIP. Dhaka, 32p.

The document was prepared after spending two weeks in some worst affected areas of April 1991 cyclone. Although the authors limited their attention to NGO activities, however, building on the experience of evaluating the people's and the NGOs response, document highlighted not so much of what was done, but of what was not done providing valuable lessons for similar tasks for the future. The impact of relief and rehabilitation (R & R) activities immediately after 3-4 weeks of the cyclone was uneven. It appeared that most people drew mainly on traditional coping mechanisms rather than assistance from NGOs or government. People suffered most with the withdrawal of outside support by the end June. The rehabilitation activities were not well

planned and broad based and little of the R & R was specifically targeted on the needs of women.

Key Words: NGOs/ Government/ Relief and Rehabilitation/ Response/ Housing/ Credit; Women's need

Khan, Tanvir Ahmed, 1991 : *Aftermaths of the Century's Worst Devastating cyclone - The Response of the Community*. ADAB News. Vol. XIX, Vol. 2, (April-June), Pp. 38-40.

The brief paper highlights the experience of some individuals who organised a very modest relief effort in the aftermath of 1991 cyclone. The time spent on the preparation for organizing the project was one week. The author describes how they reached the destination, what relief times they took and how they distributed these items. It also contains a brief resume of destruction. The papers ends after describing the lessons and suggesting few recommendations.

Key Words: Relief/ Response/ Community/ Destruction/ Cyclone

Karmaker,Ranjan, 1986 : *Gurni Jorer Rajniti-Artha Samajik Bishleson (Politics of Cyclone-Socio-economic Analysis)*. *Gono Unnayan Pathagar*, Dhaka (A Bangla Book)

The book written in Bangla contains a very in depth description and analysis of cyclonic storms that has become a regular feature in the coastal areas of Bangladesh. The book is a depiction of what the author observed and felt during his visit to the coastal chars and island before and after the devastating cyclone of 1985. The first section of the book presents a description of the geophysical and environmental features of coastal areas, violence centering around control over land, population features, land ownership pattern, changes in land ownership and also the pattern of agricultural wages. An attempt is made to depict the life and features of special groups, such as women and fishermen. In the second chapter, one can find a minute depiction of the devastating cyclone of 1985, death, destruction and damage, and how people fought for survival during the fateful night and immediately after the cyclone. The author raises an issue whether the intensity of damage could be minimized by timely forecasting, warning and proper disaster preparedness. Later one finds a discussion on politics of cyclone from local, national and international perspectives. A discussion on the relief and rehabilitation efforts by Red Cross, government and non-governmental organizations can be found in the last chapter of the book.

Key Words: Cyclone/ Costal area/ Geophysical features/ Destruction/ Relief and rehabilitation/ Politics

Khan, Abdullah Al-Mamun, 1974 : *Perception of Cyclone Hazard and Community Response*.*Oriental Geographer*. Vol.18, No.1 (January 1974), PP. 1-25

The paper is based on a study of 122 permanent coastal residents of Chittagong area who were interviewed through a questionnaire. Information was also collected through informal interviews with persons involved in hazard decision-making, field observations and from other sources. The paper incorporated the findings of the study that depicts the perception, attitude and related behaviour of coastal dwellers. The paper begins with a general description of cyclone hazard, study area (Chittagong coast) and also the objectives and methods of study. It is found that due to religious background the coastal occupants show a relatively moderate hazard expectancy. Although people are aware of their vulnerability, their psycho-religious sentiment has given them

a orthodoxy to rise above it, creating a fatalistic and indifferent attitude. The author also notices a variety of adjustment strategies which have been evolved over the years.

However, the level of adjustment appear to be what is called sub- optimal. Therefore, the author argued for a comprehensive planning for the proper utilization and management of coastal resources.

Key Words: Cyclone perception/ Hazard/ Community perception/ Adjustment strategies/ Sub-optimal adjustment / Comprehensive management plan

Loewenstein, Mathew S. 1973 : The Cyclone : Nutritional Assessment with the Quac Stick. In Lincoln C. Chen (ed.), Disaster in Bangladesh. Oxford University Press. PP. 133- 144

The importance and need of nutritional assessment based on sound epidemiologic principles for increasing the efficiency and effectiveness of all relief operations have been emphasised. The method was QUAC stick which was first used in Biafran crisis later employed in Bangladesh in the aftermath of 1970 cyclone. QUAC stick is a height measuring rod that help to classify individuals and groups according to nutritional status. The author thinks that this method may become a very useful tool for future nutritional relief programmes following disasters.

Key Words: Nutritional surveillance / QUAC stick / Relief and rehabilitation

Nishat, Ainun, 1991 :Environmental Issues : Pertinent to the Recent Cyclone and Storm Surge and Considerations for Future Management Plans. ADAB News. Vol. XIX, NO.2 (April- June).

The paper discusses environmental issues pertinent to cyclones and storm surges. The author identified several serious environmental concerns which are : decomposed dead bodies and carcasses, ingress saline water inside the embanked areas of islands and mainland, sparse vegetation around homesteads, absence of forest in the costal belt submerged embankments, depletion of fresh water fishes and sunken ships, barges and trawlers. Environmental considerations for future plans in the costal areas are also suggested. The emphasise is given mostly on the agro-physical as well as socioeconomic features of the coastal areas. It is felt that planning for facing future events may be based on a four stage disaster management programme i.e. disaster preparedness; Pre-disaster and post-disaster preparedness plan and also response during disaster. Finally author argues that any future mitigating plan should consider cyclonic storms and tidal surges as two separate as well as interlinked physical action.

Key Words: Cyclone/ Disaster/ Mitigation/ Degradation/Environment/ Embankment/ Land use/ Cyclone warning

Rahman, Aminur, 1991 :In Search of Cyclone Mitigation in Bangladesh. ADAB News. Vol. XIX, NO.2, (April-June), Pp.

The article describes the cyclone from historical and physical perspectives. A brief description when, where and how cyclone occur in the area is provided. Later the author took a critical review of different cyclone mitigation measures, such as building of embankment, erection of cyclone shelters, voluntary and involuntary settlement or growth of habitations in the newly formed char lands. Cyclone forecasting and warning system is almost incomprehensible even to most educated persons. It is suggested that more elaborate and easily comprehensible warning system is needed.

Key Words: Cyclone/ Mitigation/ Shelter/ Embankment/ Settlement/Warning system

Rahman, Atiur, 1991 : Impact of Tornado on the Process of Migration in Saturia. Mimeographed Dhaka, January 1991, 32p.

The study is conducted in order to find out the extent of migration in Saturia after the tornado in 1989. Data were collected from 80 villages through a village level questionnaire and later through an indepth questionnaire. It is found that not much migration has taken place, however those who migrated have left for the neighbouring country. It is concluded that 1989 tornado have not led to large exodus of migrant out of the disaster site. A timely response from NGOs and government agencies have a positive effect on migration situation.

Key Words: Tornado/ Demographic features/ Migration/NGOs/ Government agencies/ Response

Rahman, Atiur, et. al. 1991 : Disaster and Disability : A look into the situation of the Long Term Disabled in Saturia. Mimeographed. Dhaka, January 1991, 42p.

This report provides useful insight on disaster and disability drawing information from the tornado affected areas of Saturia, Manikganj. The study is based on primary level information collected from 80 villages of Saturia thana. It is revealed that a great number of people from different socioeconomic groups were affected physically, socially and psychologically. Most disabled are illiterate and belong to informal sector. More than half of the disabled are women and disability included amputation, deformation and also disjoint of limbs. Recommendations include doing something for the most vulnerable groups i.e. landless, women and children. Establishment of disaster rehabilitation centre is also proposed.

Key Words: Disaster/ Disability / Tornado/ Physical/ Social/ Women/ Rehabilitation

Rahman, Hussain Zillur, 1991 : Field Notes from Relief Work, May 1991- Banshkhali to Moheshkhali. ADAB News. Vol. XIX, No.2 (April-June), Pp. 34-38.

This field note contain description of the situation in the cyclone-affected areas from May 6 to 9. Attempts are made to estimate damage at the local and household level, response of people and also to provide a general recovery agenda. Peoples' resilience and courage to face, rebuild their own homes and survive are indeed extraordinary. The author suggested that a major flow in the relief effort could be summarised as an attitude of you come to us as distinct from we go to you which in fact limited the disaster response capacities of the administrative bureaucracy. Four priority needs on the recovery agenda have been suggested: repair of protective embankments, temporary housing, economic loans and repair of community facilities such as schools.

Key Words: Cyclone/ Relief/ Damage/ Response/ Recovery/ NGOs

Rahman, Md. Saidur, 1992 : The First Five Days. In Hameeda Hossain et.al (ed.), From Crisis to Development-Coping with Disasters in Bangladesh. University Press Limited, Dhaka, pp. 13-25.

This is a descriptive essay written by a NGO administrator from personal experience about what happened during the first five days after the cyclone. The essay contains information regarding how news paper covered the event, the nature of people's response, role of NGOs and the

government immediately after the cyclone. The author also described stories of survivors which is extremely sensational.

Key Words: Cyclone/People's response/NGOs/ Government/ News Media/ People's survival

Save the Children 1991 : Bangladesh Field Office Progress Report on Cyclone Relief Operation. June-August 1991, 12p.

This is a field report of activities of Save the Children (USA) and Red (Barnet Denmark) in the post- 1991 cyclone period. It highlights how and in what manner the two foreign NGOs responded to the need of the people. The report contains information relating to sources of funding, relief operations, types of items distributed as relief and also activities in the rehabilitation phase. It is an informative document and can be used by those who want to undertake relief and rehabilitation activities in an emergency situation.

Key Words: Cyclone/ Relief/ Rehabilitation/ NGOs/ Report

Sevenhuysen, G.P, 1991: Report on Cyclone Disaster Response in Bangladesh. Disaster Research Unit, University of Manitoba, Canada, June 25 1991, 51p.

The report is sponsored by UNDP/UNDRO for documentation of actual disaster management for use in the global DMPT project. It describes and analyses the nature and type of response of various government ministries and departments, UN and donor agencies and also NGOs in the aftermath of the April 1991 cyclone disaster. The situation before the event and the results of actions of many agencies are highlighted. The report draws attention to various vulnerable aspects of infra-structure. It is felt that the role of UNDP/UNDRO needs to be defined more clearly. The administrative procedures and delegation of authority limits the ability of most UN agencies to respond to emergency situations in time. The report emphasised the need for more staff training and recommended more research to provide information on economic facts for programme planning.

Key Words: Response / Relief / Rehabilitation / Emergency needs / Government/ NGOs/ UN agencies/ Training/ Research

Shahjahan, M., 1991 : Mitigation of Damages due to Cyclone Disaster in Bangladesh. ADAB News. Vol. XIX, No. 2 (April- June).

The article begins with a description of the nature and type of cyclones, the frequency of cyclones, area affected and death caused by cyclone in the area comprising Bangladesh since 1793. Three measures have been suggested which are expected to minimize the losses caused by cyclone. These are : Cyclone plan; Cyclone emergency action plan and community preparedness action plan. A brief description of each of the three measures is provided.

Key Words: Cyclone / Damage / Mitigation / Types / Action plan / Community preparedness

Shamim, Ishrat, 1993 : Women as Disaster Managers-Coastal Ecology and the Experience of Cyclone'91. In S.M. Nurul Alam (ed.), Society, Disasters and Environment: Theories and Experience. Academic Publishers. Forthcoming in Press.

The Capacity of an individual, family or village community to economically survive any crisis depends on the resources they have at their disposal. Natural hazards uproot people from their settlements, cause unemployment and marginalize people with few resources. The paper emphasised that after a natural disaster it is most difficult for women to cope because of their poverty. During and after a disaster, it still remains the women's responsibility as wife and mother to cook and provide water for those of her family who survive. The author argued that it is important that women's role as disaster manager should be properly appreciated and strengthened.

Key Words: Women/Coping capacity/Poverty/Disaster manager/Economic loss/ Survival

Sommer, Alfred and W. Henry Mosley, 1973 : The Cyclone : Medical Assessment and Determination of Relief and Rehabilitation Requirements. In Lincoln C.Chen (ed.),Disaster in Bangladesh. Oxford University press. PP. 119-132

Draws attention to the importance for rapid and accurate assessment of medical relief in the aftermath of natural disasters, such as cyclone. The authors mentions two surveys that were conducted after the November cyclone of 1970. These surveys were conducted to document the extent of the tragedy and helped to define the emergency relief needs and also the future requirements for rehabilitation. Through the surveys an estimation of relief and rehabilitation requirements of the cyclone-affected areas could be made that helped to conduct relief operations effectively, avoid unnecessary duplications, save money and spend the same in the most desired sectors. From the experience of Bangladesh the authors propose a three phase survey and surveillance system. They further argued that such a data-gathering system can provide a framework for future rehabilitation efforts and evaluate the adequacy of existing relief measures.

Key Words: Survey/ Need assessment/ Relief and rehabilitation/ Requirement

Swiss Disaster Relief Unit, 1987 : Killa Unit- An Integrated Cyclone Shelter, Swiss Disaster Relief Unit in Bangladesh. Dhaka, June 1987 33p.

The short report prepared by Swiss Disaster Relief (SDR) aims to let people know about SDR's activities in Bangladesh from 1985 to 1987. An informative discussion on the socio-economic context of cyclone prevention precedes the arguments why the Killa Unit is the most economical answer to the specific needs in the high- risk cyclone affected areas outside the embankments, on chars and unprotected islands. The main features of killa and how this is an effective means of Cyclone protection is presented. A Killa is a huge earthen mound entirely build with local soil. It is pointed out that a successful implementation of killa project needs high degree of cooperation from government, government organizations and NGOs. The paper also contains information relating to past experience with killa project, implementation of killa unit, cost of building a killa unit, and community participation in such venture.

Key Words: Cyclone Protection/ Killa unit/ High-risk areas/ Government/ NGOs/ Cost of construction

Talukder, Jyotrimoy, G.D. Roy and Mohiuddin Ahmed, 1992 : Living with cyclone- Study on Storm Surge Prediction and Disaster Preparedness. CDL, January 1992, Dhaka, 124p.

The book has been prepared with the objective of providing theoretical knowledge as well as empirical evidence on cyclone disaster in Bangladesh. The book has thirteen chapters which relate to definition and process formation of tropical cyclone, historical account of cyclone, storm and surge phenomena, green -house effect, rise of sea level and their implications. The theoretical section of the book mainly deals with storm surge prediction, i.e. mathematical modelling, and estimation of flood probabilities. The empirical section of the book includes description of April 1991 Cyclone, disaster preparedness, state of infrastructure, people's perception and development strategy. It is emphasised in the book that with existing human knowledge and technology cyclone can not be avoided but deaths and damage can be minimized by adopting two measures: prediction of flood level accompanying a cyclone and construction of the required protective infrastructure to save human lives.

Key Words: Tropical cyclone/ Storm and surge phenomena/ Green house effect/ Storm surge prediction / Disaster management/ People's perception/ Live with cyclone

UNICEF, 1992 : Health Effects of the 1991 Bangladesh Cyclone - Report of the UNICEF Cyclone Review Group, Dhaka, 40p.

The report summarizes the findings of a UNICEF sponsored team that evaluated the health effect of the cyclone that struck in April 1991. It includes information relating to mortality, prevalent disease, health needs, magnitude of health response, coordination and effectiveness of health response, diarrhoea morbidity, management of diarrhea, supply of drugs and also water supply and sanitation. In sum, the report is a general overview of the health situations in some cyclone affected areas. The study was conducted by a team of doctors who visited some affected areas and also met and discussed the issue with UNICEF staff, government officials, donors and also NGOs.

Key Words: Health/ Mortality/ Disease/ Health needs/ Health response/ Water supply and sanitation/ Diarrheal morbidity/ UNICEF

UN Centre For Regional Development, 1991 : Cyclone Damage in Bangladesh. Nagoya, Japan, December 1991, 119p.

This is a book on the extent of April 29 cyclone damage in Bangladesh. Field study and investigations on the cyclone damage, emergency rehabilitation activities and future programme of disaster mitigation have been conducted by a team of seven experts. The data for the book were collected by the experts through field visits. Excepting summary the book has also incorporated individual reports by the study team experts. Different issues that were covered include: standing problems in counter measures for cyclone disaster; Integrated approach to cyclone disaster management and regional development planning; Field study and investigation on the damage caused by cyclone. In the conclusion, several measures to mitigate cyclone is suggested. These are : building cyclone shelters; improvement in forecasting and warning system; construction of structural measures and appropriate land use planning. Several themes for future research have been also suggested: population in vulnerable areas; topographic and risk map of vulnerable areas and application of remote-sensing satellite technology.

Key Words: Cyclone damage/ Disaster management/ Integrated approach/ Physical measures/ Remote-sensing/ Relief and rehabilitation/ Mitigation/ Vulnerable areas/ Risk map

CHAPTER - 6

RIVERBANK EROSION

Research on Riverbank Erosion

Riverbank erosion hazard is a regular phenomenon in the deltaic Bangladesh. Every year thousands people are displaced from their homes and landed properties and are permanently made homeless and destitute. It is pointed out that the dislocating impact upon the rural peasant population is tremendous and the costs due to land lost to erosion are incalculable. In spite of the perennial nature of the problem and the long run socio- economic impacts caused by this hazard, it hardly got the necessary attention of the planners, engineers, administrators and researchers. The measures so far undertaken by engineers and planners are mostly protective measures through structural approach. Since this is a hazard the impact of which is gradually felt and do not cause havoc through a single strike, so the magnitude and dimension of the problem is less visible. **This is quite obvious when even in the multi billion dollar FAP there is hardly any mention about the riverbank erosion hazard which effect almost a million people every year.**

Due to these reasons literature on this important hazard were almost nil until 1987. The entries that have been included in this chapter were all published after 1987. Most of these publications were an outcome of the Riverbank Erosion Impact Study (REIS) jointly participated by the Jahangirnagar University and the University of Manitoba. The project was funded by the International Development Research Centre (IDRC), Canada.

REIS project is important for another reason. In Bangladesh, there was no tradition of hazard research. Whatever is done is through individual initiative, single-discipline centered and without any definite goal to provide feedback to policy planners. The REIS project is a significant step in creating a tradition of hazard research in this country. **Another important feature of the project is the multidisciplinary approach of the problem involving experts and scholars representing various relevant fields that included geography, economics, anthropology, population studies, hydraulics, and hydrology.**

Methodology and Issues Covered

A total of 52 entries have been included in this chapter. Out of these 47 materials have been prepared by utilizing data generated by REIS project. Since these materials are outcome of a research project, compared to many other works on natural disaster in Bangladesh, these are methodologically developed and analytically more rigorous. Some articles are extremely revealing and contain in depth information and analysis. The study has adopted a two parts methodology that include a remote sensing and hydrological study and a socio-economic and demographic study. **The socio-economic and demographic methodology include general survey by administering questionnaire and intensive interaction with the respondents by staying in the research areas and also by case study.**

In the literature that we reviewed, the following issues got the most attention.

Box 5 : Coverage of Issues

Issues Covered
Δ Perception to bank erosion hazards
Δ Survival Strategies and adjustment
Δ Population displacement and settlement
Δ Socio-economic and demographic features of displacees
Δ Accretion and resettlement
Δ Displacement and urbanization
Δ Families in disaster

We see the coverage of issues are pertinent and mostly relate to the human dimension of the problem which is the main concern of social science research. However the mode and depth of analysis differed depending upon the background, theoretical motivation and perspective of particular researcher.

ANNOTATION OF EROSION LITERATURE

Ahmed, Mohiuddin and Andrew Jenkins,1988: Traditional Land-grabbing and Settlement Patterns in the South Eastern Delta. Paper presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazard and population Displacement. Dhaka April, 30p.

The fights relating to access and control over newly accreted char land is nothing new in riverine Bangladesh. Through two case studies on Urir-char and Char Bagger Dona, the authors demonstrate how a group of local Jotedars and influential people through faction building, effective linkages with and subversion of government institutions, and calculated use of terror sought to establish themselves as new Zamindars. Fieldwork on which the paper is based is conducted in the south of Sudharam Upazila of Noakhali district during 1979-86. The case study also gives indications of the settlement process and social dynamics taking place in the south-eastern delta. The case study contains detailed descriptions of the background of the two chars, settlement history, settlement mechanisms, factions, power structure and also how a power war among various government functionaries delayed the transfer of land to landless cooperatives for the most effective and desirable use of land. From the two case studies, it is concluded that traditional land- grabbing/settlement patterns may be a major obstacle impeding the rapid achievement of higher levels of agricultural production on new land.

Key Words: Accreted land / Land control / Violence / Power Structure/Settlement process and mechanism

Akhter, Golam Morshed and Nasimul Gani, 1988: Riverbank Erosion Impact Study - Response Strategies to the Problem of Landlessness, Rural Impoverisation and Marginalisation. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement, Dhaka, Bangladesh, April, 1988, 36p.

The paper incorporates information to depict the problems of impoverisation derived from two villages, one is severely effected while the other is relatively less effected. The villages which are located in the Sariakandi Upazila of Bogra district demonstrate extreme problems of land loss, damage to property, crops, livestock and other assets. The study conducted on the basis of a household survey contains information relating to the socio-economic background of households, nature and magnitude of the problems caused by erosion and also the survival strategy of the displaced populations. It is revealed that people undertake three types of strategies either in combination or independently. These are: selling of assets, seeking alternative employment and also migrating to other areas. The paper contains many maps and graphs, tables to support the arguments. The paper argues for an appropriate policy on the basis of a proper assessment of the problem. Government should come forward for this purpose.

Key Words: Riverbank erosion/ Displaced populations/ Socioeconomic background/ Survival strategy/ Policy options

Alam, S.M. Nurul, 1990: Socio-economic and Political Dynamics of Char Land Settlement and its Implications for Poverty. In A.Q.M. Mahbub (ed.), Proceedings of the Seminar on People and Environment in Bangladesh. UNDP/UNFPA, Dhaka, February 1990, pp. 61-76.

The paper emphasises that the char land in Bangladesh presents a good prospect for addressing the problem of landlessness by a planned programme of land distribution. However, in the past this has not received attention due to lack of definite government policy on char land. It is pointed out that the large amount of land which has emerged as a result of riverbank erosion needs proper surveys in order to bring this land within government control. Existing settlement in char land is a product of local level socio-economic and political dynamics which is a reflection of the character of the state. It is also shown how through selective violence a few land grabbers maintain their control over char land and settlement. The paper cites examples of how government backed programme for the distribution of land to landless has been thwarted by the unscrupulous jotedars in collaboration with the local politicians and dishonest officials.

Key Words: Char land/ Settlement/ Riverbank erosion/ Violence/ Land control

Amin, A.T.M. Nurul, 1988 : Settlement Strategy for Riverbank Erosion Displacees in Bangladesh- A Human Resource Development Approach. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement. Dhaka, Bangladesh, April, 1988, 42p.

The paper focuses on the settlement strategy for riverbank erosion displacees and argues for human resource development as a device for evolving a settlement strategy. The author distinguishes between two groups of displacees (1) those who are principally dependent on farming and had little education or skill, and (2) those who had some education, skill and experience in some non-agricultural occupations. This two groups have different attitude and socio-economic backgrounds. The observed association between background in socio-economic and personal characteristics and emerging settlement patterns among the riverbank erosion displacees offer an important lesson to policy makers. This is simply the essentiality of

human resource development on a priority basis for the inhabitants of erosion-prone areas. The paper ends with a set of policy recommendations necessary for human resource development. These include, mapping of erosion-prone areas, encouraging diversification of economic activities, delimiting land according to suitability and unsuitability of habitation, providing compensation to the victims of river erosion without delay and distribution of accreted land to the deserving people. The author bases these recommendations on the premise that permanent bankline along all rivers is neither possible nor even desirable.

Key Words: Riverbank erosion/ Settlement strategy/ Displacement/ Human resource development/ Policy options

Chowdhury, Abjad Hossain and M. Kabir, 1988: Socio-economic and Demographic Characteristics of Displaced in Kazipur and Bhola - A Comparative Study. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement. Dhaka, Bangladesh, April, 1988, 12p.

This typical paper investigates the socio-economic and demographic features of the displaced population selected from Kazipur, Chilmari and Bhola Upazila who are significantly affected by riverbank erosion. The paper contains information relating to age and sex distribution, education, employment status, socio-demographic and economic characteristics and respondents' knowledge about family planning. It is revealed that the average age of population is low with 50% under 15 years suggesting a high fertility of the population. The average educational attainment is low compared to the national figure. It is further found that most respondents have agriculture as principal occupation followed by agricultural labour in the survey areas. A large number of households were landless during the survey period. Statistical technique of factor analysis is used to have an idea about socio-economic status of the respondents at household level. The multivariate analysis strongly confirms uniformity in the socio-economic status of the two study areas.

Key Words: Riverbank erosion/Occupation/ Age and sex/Educational level/ Socio-economic status/ Factor analysis

Elahi, K, Maudood, 1989: Population Displacement due to Riverbank Erosion of the Jamuna in Bangladesh. In Clarke et al (ed.), Population and Disasters, Basil Blackwell, Oxford, pp. 81-97

The paper discusses the problem of population displacement due to riverbank erosion caused by the shifting of the Brahmaputra-Jamuna river. The impact on human habitat is described taking Chilmari and Kazipur Upazila as case study areas. A section of the paper also focuses on the morphological behaviour of the Jamuna river, together with its shifting tendencies using landsat imageries, large scale maps, extensive field observation and anthropological investigation. The author uses many maps, charts and tables to support the arguments in the paper. Erosion has a significant impact on differential population change, on related human occupancy and bankline settlements of the displacees. One major aspect of human occupancy is the development of rural slums inhabited by the displacees who mostly permanently settle along the flood protection embankment. In general, the displacees tend to live closer to their original place of residence in the hope that lands might reemerge in future. The displacees do not have any permanent type of occupation and live almost a nomadic life. It is pointed out that the current state of land use and land tenure system do not depict a bright future for the displacees unless some measures are undertaken through government initiative to take control of khas and char land and distribute the same to the displacees.

Key Words: Erosion/ Displacement/ Population variation/ Human habitat/ Rural slums/ Government initiative

Elahi, K. Maudood, 1988 : Riverbank Erosion, Flood Hazard and Population Displacement in Bangladesh - An Overview. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement. Dhaka, April, 1988, 17p.

An attempt is made to link flood hazard, riverbank erosion and population displacement. It is pointed out that although the erosion caused by shifting of rivers is hydrologic, the association of it with widespread flood brings untold sufferings for the people and the country. An inventory of major floods is made. It also contains discussion on the nature and extent of riverbank erosion and population displacement in some selected areas. In depicting the extent of riverbank erosion, the author uses examples from some erosion-prone areas that include Chilmari-Kurigram area, Sariakandi, Kazipur -Serajganj, Jamalpur, Chandpur, Manikganj and also coastal areas. A number of figures are quoted to portray the dimension of the problem. A distinction is drawn between the displacees caused by flood which is stated to be temporary in nature and displacees caused by erosion which are mostly long range and permanent.

Key Words: Flood/ Riverbank erosion/ Population displacement

Elahi, Maudood K., 1985: Riverbank Erosion and Flood in Bangladesh - Need for Inventory Planning. REIS Newsletter, No.2, pp. 4-6.

This inventory paper discusses the nature and extent of riverbank erosion and flood problems and their human implication with focus on population displacement. The author argues for intensive investigation and research on the aspects of population rehabilitation, housing, alternative employment strategies and land reallocation. Integration of the findings of the physical and socio-economic researches is emphasised.

Key Words: Research priority / Population displacement / Human implications

Elahi, K. Maudood et. al. 1991 : Riverbank Erosion, Flood and Population Displacement in Bangladesh. Riverbank Erosion Impact Study, Jahangirnagar University, Dhaka.

This book includes a selection of papers presented in the final symposium in 1988 after the end of the four year cooperative research programme undertaken by Jahangirnagar University and University of Manitoba on the Impact of River bank Erosion. The volume includes twenty two papers including an introduction. The papers are divided under three main sub-headings. The first structure and process depicts the physical dimension of the riverbank erosion that include features of riverbank erosion, shifting characteristics of the Ganges and also on bank erosion and channel processes in the Jamuna river. The second part concentrates on the demographic and socio-economic impacts followed by papers on displacement and resettlement of population in part 3. This is an informative and useful collection and individual articles have been reviewed elsewhere in this annotation.

Key Words: Riverbank erosion/Physical dimension/ Socio-economic/ Population Displacement/ Resettlement

Ferdous, S.K. Zahrul, 1988: The Utilisation of and Accessibility to Accretion Lands by Displaced Populations -A Riverbank Erosion Impact Study. A Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards and Population Displacement. Dhaka, Bangladesh, April, 1988, 30p.

The paper incorporates the results of a study conducted in Gazaria and Daruna Chars of Sariakandi Upazila. Gazaria is an old while Daruna is a new Char. The general objective of the paper is to see the socio-economic impact of riverbank erosion on the displaced populations and the problems associated with their settlement in and the utilisation of the accreted lands. The socio-economic conditions of 68 households in terms of land holding, occupation, income, family size and housing quality are analysed. The authors note the deterioration of conditions after their settlement at the chars. It is pointed out that those who once left chars did not come back and those who came back occupied their lands by surveying through surveyors. Various types of crops, such as local varieties of rice, millet, jute, chilli, potato and pulses are grown by settlers using primitive methods. It is further revealed that people in these two chars are peace loving people and the authors could not find any record of conflict or dispute in respect of possession and utilisation of land which is endemic in the case of other chars in Bangladesh.

Key Words: Riverbank erosion/ Accreted lands/ Agricultural activities/ Socio-economic status/ Displaced Population

Greenberg, Charles and Ziarat Hossain, 1987 : Adjustment of Riverbank Erosion Displaces - A Case Study of Serajgang in Bangladesh. In V.S. Pendakur and O.P. Dwivedi (eds.), South Asia Horizons. Canadian Association of Asian Studies, University of Montreal, pp. 27-23

This paper is based on a survey of 207 displacee households who migrated to Serajgang district town due to displacement caused by riverbank erosion. Based on the results of the survey, the paper investigates the dynamics of the adjustment process of the involuntary migrants in their new living environment. An analysis of the condition of housing, employment and health of the displacees can be found. It is pointed out that the displacees who reside in the squatter settlements are not adapting to their current living environment. They lack adequate housing and health care facilities which are considered basic amenities of life. The paper concluded that since displacees have become a permanent component of Serajganj town life, therefore, some steps should be undertaken through policy measures to improve their plight and current conditions.

Key Words: Riverbank erosion/ Involuntary migration/ Settlement/ Adjustment/ Policy measures

Haque, Chowdhury E., 1987: Impacts of Riverbank Erosion on Population Displacement in the Lower Brahmaputra (Jamuna) Flood plain. In V.S. Pendakur and O.P. Dwivedi (eds.), South Asia Horizons. Canadian Association of Asian Studies, University of Montreal, pp. 34-46.

The paper contains a discussion on the general impacts of erosion hazards in the lower Brahmaputra (Jamuna) floodplain of Bangladesh. The impacts of bank erosion hazards have been assessed in terms of loss of land, change in occupation, and impacts on social ties and relationships. The basis of analysis of impacts was a survey conducted on 547 randomly selected displacee households. It is indicated that a large number of households who had agriculture as their primary occupation became labourers following dislocation by the bank erosion hazard. The paper concludes that some social measures should be undertaken to ameliorate this problem.

Key Words: Erosion hazard/ Land loss/ Occupational change/ Primary Occupation/ Social measure

Haque, Chowdhury E., 1988: Human Responses to Riverbank Erosion Hazard in Bangladesh - Some Lessons from Indigenous Adjustment Strategies. Paper presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazard and Population Displacement. Dhaka, April, 1988

The paper, based on a detailed household questionnaire conducted in one of the severely erosion effected Upazilas of Seraganj district, focuses on the nature of perception of hazards among floodplain inhabitants and also on the indigenous adjustment strategies to cope with the hazard effects. Peoples' perception of erosion demonstrates a mixed picture where people mention fast currents referring to velocity and stream power as the major cause of hazardousness bank erosion in the floodplain. This is followed by the assertion that this is caused by Allah's will. A distinction is made between the corrective type of responses at individual level and the preventive types of responses at community level. The preventive measures usually involve control works and other structural-engineering schemes to technologically control or prevent the effects, whereas the corrective measures include purposeful attempts to modify events. The indigenous response strategies in rural Bangladesh are usually formulated and undertaken at independent household or local social organization level, such as guthi or samaj. These are incidental rather than purposeful. The paper contains detailed discussions on the indigenous adjustment strategies. The results of the survey were presented in several tables which further support the discussion in the paper. In the conclusion, the paper identifies some lessons from indigenous adjustment strategies which are vital for formulating policy options for the future. It is pointed out that more attention should be given to the socio-economic alternatives of riverbank protection schemes with emphasis on various indigenous adaptation to floods and bank erosion problems.

Key Words: Riverbank erosion/ Human resource/Adjustment strategies/ Corrective and preventing measures/Indigenous adjustment adjustment/ Policy options

Haque, Chowdhury Emdadul, 1988: Impacts of Riverbank Erosion Hazard in the Brahmaputra - Jamuna Floodplain: A Study of Population Displacement and Response Strategies. A Ph.D. Dissertation. Department of Geography, University of Manitoba, Winnipeg, Manitoba, Canada.

This Ph.D. dissertation critically discusses the behavioural-ecological paradigm of human responses to extreme natural events using empirical evidence of riverbank erosion hazard of Kazipur Upazila residents located in the Brahmaputra - Jamuna floodplain. There are two specific objectives of the research. The first relates to the nature of relationship and the dimensions of human responses with respect to previous experience, hazardousness of an area and socio-economic entitlements. The second objectives relate to the determination of relationship of household welfare of floodplain users to displacement occurrence. The empirical evidence reveals that human responses are significantly linked to socio-economic entitlements among floodplain users and available resources and opportunities. It is also further found that floodplain users have high levels of hazard perception, and the majority have either accepted hazard loss or reduced their loss through incidental and/or purposeful actions. The displacement status of floodplain users significantly effects their behaviour pattern and their external relations both within and outside their habitat. One final observation of the theses is that the individual's entitlements to available resources, constitute a significant explanatory variable in the natural hazard studies. Numerous maps, charts, graphs and statistical tables have been used to support the argument in the dissertation.

Key Words: Riverbank erosion/ Natural hazards/ Behavioural and ecological Paradigm/ Human adjustments/ Socio-economic entitlements/ Population displacement/ Response strategy

Haque, Chowdhury E., 1988: Human Adjustments to Riverbank Erosion Hazard in the Jamuna Floodplain, Bangladesh. *Human Ecology*, Vol. 16, No. 4, December 1988, pp. 421-437

The paper attempts to focus on the nature and type of different human adjustment strategies that the displacees adapt to cope with the riverbank erosion in the Jamuna floodplain of Bangladesh. The scenario for the study is the Kazipur Upazila of Serajganj district. A total of 547 households were chosen as statistically significant sample size for interview. Different adjustment strategies at the community and household levels were elucidated. A distinction is made between the corrective and preventive types of adjustment strategies in the area. It was found that the strategies taken at the community level fall in the preventive category while the individual level adjustment measures were corrective in nature. The paper also draws attention to some overt behaviour in adjustment measures in coping with hazard that reflect the perceived adjustment strategies of the displacees. The paper concludes that given the nature and the type of adjustment strategies, several social and institutional adjustment measures should be incorporated in the long-run policies and strategies of hazard management.

Key Words: Hazard/ Adjustment strategy/ Preventive and corrective measures/ Individual and community response/ Overt behaviour/ Displacement/ Riverbank erosion

Haque, Chowdhury E., 1986: Impacts of Riverbank Erosion on Population Displacement in the Lower Brahmaputra (Jamuna) Floodplain. *Population Geography*. Vol. 8, No. 1 and 2, June-December, pp. 1-16.

The paper is based on a survey of 547 randomly selected households of Kazipur Upazila of the lower Brahmaputra (Jamuna) floodplain. It focuses on the dimensions and impacts of displacement by riverbank erosion. It is stated that the two thirds of the floodplain inhabitants experienced displacement at least twice in their life time. Most displacees either stayed within the Upazila or moved to the distant rural areas within the district. It is pointed out that the hope for reemerged land, financial inability to bear transport cost for a longer distance, and closer ties with local social organization were the prime determining factors for such patterns. The amount of land lost, change in occupation, impact on family conditions and impact on social ties and relationships have been assessed in the paper. It is observed that all these impacts are accelerating the process of marginalisation and pauperisation and some social measures should be undertaken immediately to ameliorate the sufferings of the displacees.

Key Words: Riverbank erosion/ Displacement/ Settlement/ Land lost/ Occupational change/ Social ties and relationship

Haque, Chowdhury E., 1985: Characteristics of Human Strategies to Cope with the Riverbank Erosion Hazard in the Jamuna Flood plain of Bangladesh. Mimeo, 22p.

The paper is written with the objective of delineating and analysing the type, nature and characteristics of human adjustment strategies to cope with the riverbank erosion hazard in the Jamuna floodplain. The Kazipur Upazila where the two thirds of the areas are chars and which constitute one of the worst areas effected by erosion provided the setting for the study. A description in general terms of the possible range of human options and choices in adjustment and a conceptual framework is provided. Distinction is made between purposive and incidental adjustments and also various modes of adjustments to cope with hazards that include acceptance, reduction and change. In the last section of the paper, the author describes adjustments to erosion hazard in Kazipur, making a distinction between community and individual responses. It is pointed out that the adjustment strategies at the community level were

characteristically preventive, while, at the individual level they were corrective. Different actual preventive and corrective measures were also delineated which depict people's adjustment from a micro perspective.

Key Words: Erosion/ Adjustment/ Options/ Community and Individual Response/ Preventive and corrective measures

Haque, C.E. and M.Q. Zaman, 1989: Coping with Riverbank Erosion Hazard and Displacement in Bangladesh - Survival Strategies and Adjustments. *Disasters*. Vol. 13, No. 4, pp. 300-314.

The paper is written with the triple objectives of identifying the magnitude of river channel migration and encroachment on land; in determining the extent and nature of population displacement caused by erosion and also to bring into focus the adjustment strategies within the socio-cultural system operating in the region. The paper begins with a description of the riverbank erosion problem and then brings into focus the extent of bank erosion and vulnerability of population from national and local level perspectives. The local scenario has been described by citing examples from Kazipur Upazila of Serajganj district. A number of tables and maps were used to support the arguments in the paper. It is pointed out that kinship, friendship and samaj play significant role in determining survival and adjustment strategies. The issues relating to politics, patronage and char violence and dynamics of local policies were brought into focus in the last section of the paper. It is pointed out that there should be a clear char land policy for Bangladesh which will help the displaced population.

Key Words: Erosion hazard/ Displacement/ Adjustment strategy/ Local and national perspective/ Politics/ Patronage/ Violence/ Char land policy

Haque, Chowdhury E., and Ziarat Hossain, 1988: Riverbank Erosion in Bangladesh. *Geographical Review*, Vol. 78, No. 1 (January, 1988), pp. 20-31.

Riverbank erosion causes incalculable human misery to a large segment of rural population who live in the Brahmaputra floodplain in Bangladesh. The reason for bank erosion is unpredictable channel encroachments into densely populated rural areas. The paper focuses on the magnitude and effects of riverbank erosion on 240 households who provided data for the study. The paper begins with a discussion of channel characteristics and bank shifting in Kazipur Upazila. Later the data collected from a survey of Kazipur villages were presented. It is pointed out that erosion hazard cause damage not only to human habitat but also swept away houses, fields, trees and many other objects. The paper also reveals how the surveyed households perceive the causes of riverbank erosion. The various adjustment measures and perception of socio-economic changes by the displaced persons have been discussed. In the conclusion, it is emphasised that appropriate resettlement policy, land management and adoption of movable structures for shelter should be undertaken to minimize the effects of erosion.

Key Words: Riverbank erosion/ Channel encroachment/ Socio-economic impacts/ Perception of causes/ Migration pattern

Haque, Chowdhury E., 1986: Human Strategies for Coping with the Riverbank Erosion Hazard in the Jamuna Flood plain on Bangladesh. In Tony K. Stewart (ed.), *Shaping Bengali Worlds, Public and Private*. Asian Studies Center, Michigan State University, USA, pp. 271-280.

In this paper, attempts are made to analyse the nature and the characteristics of human strategies that are adapted to cope with the erosion hazard. First, various possible ranges of

options in general terms are outlined. Second, the individual and community responses are delineated and then the impact of various adjustment strategies are discussed. The scenario for the study is the Kazipur Upazila of Serajganj district which is severely effected by erosion every year. Individual responses include abandonment of land, selling of livestock, cultivable and homestead land and also ornaments. The author calls these corrective measures. The community level responses are preventive in nature and include building of embankments, dropping bamboo baskets filled with bricks, and also building of cross-dams. It is also pointed out that in Kazipur most people take shelter on the bank as an emergency and temporary adjustment.

Key Words: Riverbank erosion/ Community and Individual Response/ Adjustment strategy

Hossain, Ziarat Md., 1988: Displaces of Riverbank Erosion in Urban Squatter Settlements in Serajganj, Bangladesh - The Process of Impoverishment. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement. Dhaka, Bangladesh, April, 1988. 26p.

The paper focuses on the issues of the process of marginalisation and impoverishment of a group of riverbank erosion - affected displacees currently living in the urban squatter settlements in Serajganj town. Serajganj town is not well developed and administratively prepared to receive a large influx of displacees which further put them into a process of pauperisation. It is pointed out that the problem is related not only to physical phenomena but also to social, economic, demographic and psychological aspects of the society. These on going processes further accelerate the problem of poverty of the displacees. In order to analyse the condition of displacees and process of pauperisation, the author used the results of a survey conducted on 207 displacee households. It is revealed that the land is the major loss of displacees which result in loss of all other means of livelihood, such as employment, income, housing and other socioeconomic activities. Change in occupational structure of heads of households is also significant. All these bring multiple socio-economic changes accentuating poverty which constrain any retreat from the current status quo.

Key Words: Riverbank erosion/ Population displacement/ Urban squatter/Socioeconomic Change/ Poverty/ Pauperisation

Indra, Doreen Marie, 1993 : Living with the Jamuna Displaced River Eroded People in Bangladesh. In S.M. Nurul Alam (ed.), Society, Disasters and Environment : Theories and Experience, Academic Publishers. Forthcoming in Press.

The Findings from an on-going study of river erosion displaced people in Kazipur, Sirajgonj district is incorporated in the paper. It also addresses several reasons why social science research has so far represented such people as, consistently identified with crisis and the immediate, as more homogenous and individualized than they actually are, and as the passive victims of natural and social forces outside their control. At the outset the author describes the setting followed by a discussion on dissonant but not necessarily contradictory aspects of the lives of displaced people, long term adaptations to change, and also individual enterprise and strategic choice concerning resettlement. The paper also identifies complex temporal sequences of adaptation to erosion. It is emphasised that forced migration researches should be more aware of the externally imposed constraints coming from flood protection and development discourses.

Key Words: Erosion displacees / Resettlement/ Adaptation /Flood / Protection / Development discourse/ Production and reproduction/ Social science research

Islam, Anwarul, 1987: Bhola Island - Some Impressions from Field Experience. REIS Newsletter, No. 3, pp. 16-17.

This short write up describes the experience of fieldwork in Bhola. The description is indepth and ethnographic in nature.

Key Words: Erosion/ Field impression/Char control

Islam,Waliul and Aatur Rahman,1987:Riverbank Erosion in Bangladesh Bangladesh - An Overview of Field Observation.REIS Newsletter, No. 3, pp. 13-15.

Experience of field surveys and data collection for the riverbank erosion impact study is described . Authors described the duration of the study, methods of data collection and also suggests the ways how future surveys can be made more effective. Information generated from the various other erosion prone areas, such as Chandpur, Serajganj, Sariakandi, Jamalpur, and Gaibandha is also incorporated.

Key Words: Field observation/ Surveys/ Erosion prone areas

Mafizuddin, Mirza and K. Maudooob Elahi, 1987 : Bank Erosion and Consequent Impact on Human Habitat in Bhola. REIS Newsletter, No. 3, pp. 4-7.

Overtime changes of bankline of Bhola is compared with recent changes and its impact on human habitat. The data derived from micro study during 1985-86 are used. It is pointed out that in Bhola, erosion exceeded accretion during the last half century with significant impact on population structure and peoples' adaptation. Very high degree of population changes were recorded in six mouzas. Apart from loss of agricultural land, a large number of population are displaced who mostly stay near the effected areas. It is revealed that erosion phenomena has a significant bearing on population variations and related human occupations, such as housing, land occupation and bankline settlements.

Key Words: Erosion/Accretion/Population Variation/Housing/Bankline settlements

Mafizuddin, Mirza, 1987: The Characteristics of Riverbank Erosion Kazipur Case Study. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement,Dhaka,Bangladesh, April, 1988, 7p.

The paper discusses the physical characteristics of riverbank erosion and also emphasizes the environmental perception and human adjustment to flood. The study is located at the Kazipur Upazila. It is based on the interpretation of maps, toposheets, serial photos and a survey through a questionnaire. The characteristics of erosion are mapped which depict that bankline configuration changes drastically over the years and are sometime unpredictable. The paper ends with some general remarks that due to persistent erosion the loss and damage caused to properties, roads and human habitation is enormous.

Key Words: Riverbank erosion/ Environmental perception/ Human adjustment/ Loss and Damage to properties

Mahbub, A.Q.M. and Nazrul Islam, 1988: Urban Adjustment by Erosion Induced Migrants. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards and Population Displacement. Dhaka, April 1988, 16p.

The paper concentrates on the socio-economic features of urban in-migrants, particularly those who are pushed out due to riverbank erosion. The research was conducted in two squatter resettlement camps, namely Demra Bastuhara camp near Dhaka city and Dattapara Bastuhara camp near Tongi town. The paper contains information relating to the causes of migration, migrant's place of origin by sex and flight of migrants from villages. It also presents information regarding the migration process and adjustment strategies. It is revealed that urban ward migration due to erosion hazard is an involuntary type of movement where the migrants largely come from the lower socio-economic stratum. Although erosion effects all, when out migration starts the poor and destitutes leave the village first. The poor and the destitutes consider the city as a final destination or an ultimate place for getting a job.

Key Words: Riverbank erosion/ Urban squatter/ Resettlement/ Migration/ Causes/ Job opportunity

Rahman, Atiur, 1986: Impact of Riverbank Erosion - Survival Strategies of Displaces. ADAB News. Vol. XIII, No. 4, July -August, pp. 3-13.

Economic strategies for the survival of rural populations effected by riverbank erosion is described. The emphasis being on economic strategies, therefore, differs from similar other studies. It is emphasised that the survival strategy of the rural population has to be understood in the wider context of environment and society. The economic strategy is likely to be different due to differences in class and economic backgrounds. The author then delineates separately economic strategies of landless and landpoor households, small, middle and rich peasantry incorporating this into a model. The survival strategies of the displacees are also described. It is revealed that the displacees affected by riverbank erosions are the most wretched ones of the landless. It is pointed out that more indepth and wide ranging studies are needed to discern the actual situation and the economic strategies adapted by rural people. This analytical part is followed by an empirical examination of the model drawing data from two areas of Bhuapur and Hizla Upazila where the author conducted brief but indepth investigation.

Key Words: Riverbank erosion/Economic strategies/ Peasant categories/ Human problems/ Erosion displacees

Rahman, M.M., 1988: Vulnerability Syndrome and the Question of Peasants' Adjustment to Riverbank Erosion and Flooding in Bangladesh. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement. Dhaka, Bangladesh, April, 1988, 31p.

Contrary to the widely held view that extreme natural hazards cause economic crisis and poverty, the paper raises the question whether the issue is so simple as to be presented in a cause and effect relationship. It is pointed out that the problem is much more deep-rooted and structural. The farmers response and adjustment strategy to any natural hazard vary depending upon their social class structure which is stratified. This effects the ability and inability of farmers to cope with hazards. The paper also investigates the reasons why the time-honoured adjustment experience which hitherto worked so well have faded out gradually. The author supports his argument from information derived from a total of 80 farm households. Field data from the study area reveal that people's sufferings and distress is not caused by extreme

physical phenomena only rather natural hazards accentuate the prevailing socio-economic conditions. Existing social institutions, like land tenure are bound to be already vulnerable due to excessive population growth and other reasons which is altering the pattern of land use and the capacity to manage hazards.

Key Words: Riverbank erosion/ Peasants adjustment/ Economic crisis and poverty/ Institutions/ Social class structure/ Vulnerability/ Disintegration/ Agrarian relations/ Hazard management

Rahman, Md. Matiur, 1992 : Peasants' Adjustment to Natural Hazards in Bangladesh - A Case Study of Two Upazilas in the Brahmaputra Floodplain. A thesis presented to the University of Manitoba in Partial Fulfillment of the Requirements for Ph.D.in Geography. Winnipeg, Manitoba, Canada.

Through this dissertation, an attempt is made to understand the causes of erosion of adjustment ability through examining the agrarian structure of selected households in the two Upazilas of the Brahmaputra flood plain. It has been argued that the structure of social relations of production moulded the peasants' ability to respond to natural hazards. The distress, dislocations and poverty of peasants are not due to extreme physical phenomenon only. Rather, natural hazards also accentuate the prevailing socio-economic conditions. The author found that there is a positive relationship between farm size and natural risk. Households with higher agricultural income are those who experience higher loss of land due to river bank erosion. Several important adjustment strategies have been noticed. These are : abandon land, sell livestock, and dismantling housing structures and move out. The author argued for a new look at the rural development strategy which will encourage informal sector investment and diversify income generating activities. It is concluded that peasants urgently need a more pragmatic form of support to be successful in their struggle with nature.

Key Words: Riverbank erosion/ Adjustment ability/ Agrarian structure/ Poverty/ Household/ Farm size/ Natural risk/ Informal sector

Rogge, John R., 1988: Individual and Institutional Responses to Riverbank Erosion Hazards. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazards, and Population Displacement, Dhaka, Bangladesh, April, 1988. 25p.

Various responses to riverbank erosion hazards at individual, local and national levels are described. Although population displacement through riverbank erosion hazards is endemic throughout Bangladesh, little exists in the way of institutionally initiated assistance to displacees. The paper draws attention to the many dimensions of the human and the institutional causes which in concert with one another, create an array of direct causes accentuating levels of poverty and marginalisation. Several impressive figures showing the interaction of variables to depict the process of marginalisation, the dimension of the direct causes of poverty and marginalisation, determinants of responses to population displacement and also the social, economic and psychological impacts of displacement on population are used in the paper. Locally and regionally the government's initiative to undertake measures to mitigate the sufferings of people are very inadequate which, in fact, reflects the national government's limited action toward the problem. In the conclusion, the author argued that an array of radical structural adjustments and human interventions are needed to deal with the problem.

Key Words: Riverbank erosion/ Poverty/ Improvisation and marginalisation/ Population displacement/ Impacts of displacement/ Preventive and corrective measures/ Structural adjustment

Rogge, J.R., 1985: Some Comments on the Problems and Potentials of Survey Research - the Case of a Rural Survey of Riverbank Erosion Displacees in Bangladesh. REIS Newsletter, No. 2, pp. 6-8.

This is a paper on methodology on the research project on the impact of Riverbank Erosion focusing mainly on the problems and potentials of survey research. Describing the development of survey research, the author concentrates on the aims of the survey. The paper also provides a format of the survey that is likely to be conducted during the project. Although brief, the paper appears very informative.

Key Words: Survey research/ Questionnaire/ Sampling/ Pre-test

Romanowski, J., 1987: Impact of Riverbank Erosion on Agricultural Productivity - A Case of Bangladesh. In V.S. Pendakur and O.P. Dwivedi (eds.), South Asia Horizons. Canadian Association of Asian Studies. University of Montreal, pp. 10-26.

This is a preliminary paper prepared for further study of the establishment of a rigorous model of riverbank erosion impact on Bangladesh agriculture. The paper begins with a very general description of the features of Bangladesh agriculture, productivity of land, agrarian structure and relationship of land to people. It is pointed out that riverbank erosion exacerbates the conditions of agriculture by reducing the productivity of the land, intensifying the over supply of agricultural labour and destroying the meagre capital stock of the countryside. The author argues that it is only the landlords who can effectively handle the problems of erosion by using their economic, social, and political leverage and they can even benefit by asserting control of newly-emerged alluvia known as char lands.

Key Words: Riverbank erosion/ Agrarian structure/ Land/ Unemployment/ Productivity

Romanowski, Jacek I., 1988: Impact of Riverbank Erosion on Agricultural Productivity. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood Hazard and Population Displacement. Dhaka, April, 1988, 4p.

Agricultural wealth and productivity of a selected group of households effected by riverbank erosion is the subject matter of this paper. The selection of the respondents was based on the desire to ascertain the effects on productivity of distance from river, of socio-economic status, and of the general processes of development in the region. It is argued that riverbank erosion effects all categories of farmers which erode not only the land but also the jobs which the land could provide. Therefore, from the point of view of effected people, the author considers erosion both as a hazard and a process. It is pointed that the impact of hazard as a process is clear but its effect as a factor which effects the people's conditions and strategies of coping is likely to be significant in effecting agricultural productivity. The paper also attempts to prove (or disprove) that riverbank erosion hazard and erosion process yield measurable impacts on agricultural productivities of land, labour and capital.

Key Words: Riverbank Erosion/ Hazard/ Process/ Effects of erosion/ Agricultural productivity

Saleheen, Mesbah-us, 1988: Mobility Characteristics of Displaces -- A Case Study from Riverbank Erosion Hazard Area. Paper Presented at the International Symposium on the Impacts of Riverbank Erosion, Flood hazards and Population Displacement. Dhaka, Bangladesh, April, 12p.

The mobility characteristics of the displacees of riverbank erosion of Kazipur Upazila of Serajganj district is described. It is pointed out that although displacement through erosion is not a new phenomenon in the area, the pace of displacement has been accelerated after the massive erosion of Jamuna in 1983. Rural to urban movement of displacees is a widespread feature in the region and the out migration of villagers can be seen as a part of forced movement of people from homestead. The author argues that mobility of people can be seen as a process accelerated both by a natural and economic push. Regarding the specific mobility features, the paper reveals that in general the displacees want to remain close from their homestead and surroundings. It is also observed that those individual who move away from an area were different in many ways than those who remain in their original place of residence. Several tables with figures are used to support the arguments in the paper.

Key Words: Riverbank erosion/ Mobility/ Socio-economic background/ Migration

Saleheen, Mesbah-us, 1987: Displaces of Riverbank Erosion - Some Theoretical Consideration, REIS Newsletter, No.3, pp. 12-13

The paper draws attention to some theoretical issues relating to riverbank erosion displacees. These issues relate to time and space dimension, individual decisions regarding employment, wage, migration and also the problems of social and community bonds.

Key Words: Erosion displacees/ Household adjustment/ Social and community bonds

Weist, Raymond E., 1988: Domestic Group Dynamics in the Resettlement Process Related to Riverbank Erosion in Bangladesh. Paper presented at the International Symposium on the Impact of Riverbank Erosion, Flood Hazard and the Problem of Population Displacement, Dhaka, April, 1988, 23p.

Taking household as unit of research, the paper attempts to examine how riverbank erosion impacts upon rural Bangladesh at the level of domestic groups are effected by displacement and settlement. It also discusses the implications of household structure differentials in terms of practical assistance and targeted support. Methodologically the paper is unique because it combines the survey and indepth anthropological approach to collect data. The perspective is anthropological in the sense of treating phenomena in a holistic manner. It is pointed out that households do not exist in isolation but relate to other households, both developmentally and experientially. From a macro-structural perspective family fragmentation is a process which is facilitated by riverbank erosion and displacement. A distinction is made between nuclear and extended households, which the author thinks is subject to fragmentation due to economic and political conditions within households as well as external to the household surroundings. It is observed that domestic groups undergo transformation overtime as a part of the natural development cycle. The paper concludes with a note that kin-based domestic arrangements shall continue which conform to the dominant ideology and cultural tradition of the society. However, the author feels that extended families do offer safeguards and sanctuary that can be extended through development projects efforts which emphasise meaningful control through participant control.

Key Words: Riverbank erosion/ Household/ Domestic groups/ Settlement and resettlement

Weist, Raymond E., 1987: Riverbank Erosion Impact in Bangladesh - An Assessment of Findings and Approaches. In V.S. Pendakur and O.P. Dwivedi (eds.), South Asia Horizons. Canadian Association of Asian Studies. University of Montreal, pp. 47-49.

In this paper, the author highlighted the findings and issues raised in similar other papers in the panel. It is pointed that all the papers in the panel drew attention to the overwhelming land shortage condition that which is severely aggravated by the regular but unpredictable riverbank erosion. Some aspects of the consequences of widespread population displacement have been also brought into focus.

Key Words: Riverbank erosion/ Multidisciplinary research/ Impacts/ Population displacement.

Weist, Rayment E, 1993 : Families in Disaster. In S.M. Nurul Alam (ed.), Society, Disasters and Management : Theories and Experience, Academic Publishers.Forthcoming in press.

Family organization is considered critical in hazard preparedness and mitigation as well as recovery from disaster. The paper is based on data collected from the riverbank erosion displaces. It addresses the response of domestic groups to riverbank erosion in riverine Bangladesh to determine how families are affected by displacement and resettlement, and how household structure related to vulnerability and to adjustment capacity. The growing number of Women-headed households deserve special attention. Attention is given to unique vulnerability of women-headed households. The empowerment of women may improve the capacity of the family to face and mitigate disaster like riverbank erosion. The author also delineates the prospects of such empowerment.

Key Words: Domestic groups/ Family/ Disaster preparedness and mitigation/ Response/ household structure/ Women- headed households/ Empowerment

Zaman, M.Q. and R.E. Weist, 1985: Local Level Socio-economic and Political Dynamics of Accretional and Depositional Land Utilisation. Paper Presented at the Workshop on the Impact of Riverbank Erosion and Flood Hazard in Bangladesh. Jahan- girnagar University, Savar, Dhaka, Bangladesh, 16p.

An attempt is made to give a general overview of the social and political dynamics of the problem of resettlement, land conflict and violence which is further elaborated later through intensive fieldwork. The paper begins with a description of the problem of riverbank erosion and accretion of lands known as char. Existing rules governing char land administration, the inadequacy and the problems of implementation of these rules were also elaborated. It is revealed that the use of violence, dispossession, murder and confiscation of crops have become local practices and part of char life. The paper proposes that in the study of char village, the problem is to be treated at two levels: (a) an examination of the interrelationship of relocation and domestic group dynamics, and (b) a study of political economy of resettlement in char lands. The paper also contains discussion on these two issues. The authors then quite vividly describes the landless, the landlords and the land grabbing and the conflicts and violence associated with land control and settlement.

Key Words: Erosion/ Depositional land/ Settlement/ Social and political dynamics/ Domestic groups/ Land control and grabbing

Zaman, M.Q., 1986: The Role of Social Relations in the Response to Riverbank Erosion Hazards and Population Resettlement in Bangladesh. *Studies in Third World Societies*. No. 36. (Special Issue on Natural Disasters and Cultural Responses. Guest Editor: Anthony Oliver Smith), College of William and Mary. Williamsburg, Virginia. USA, pp. 177-199.

Taking a position that the behavioural approach to natural hazard studies is inadequate, the author argued that the individual response to natural hazards should be studied in broader socio-political and historical context. This approach is useful for understanding the individual, the family, and community responses. The author applies this idea by examining aspects of social and cultural life of people who are displaced by riverbank erosion in the Brahmaputra - Jamuna floodplain. Attention has been paid to how friends, relatives, corporate groups, village factions and patronage systems influence adjustment and resettlement options of the erosion displacees. Later in the paper, the author uses examples of several hundred displaced households drawn from one of the most erosion-prone areas in Bangladesh and their responses and measures of adjustments. The paper concludes with an overview of village factions and patronage systems demonstrating how these effected the settlement and resettlement and the consequent survival strategies of the displacees.

Key Words: Riverbank erosion/ Floodplain/ Kinship/ Patronage system/ Social relations/ Response and adjustment strategies

Zaman, M.Q., 1987: Endemic Land Conflict and Violence in Char Villages of Bangladesh. In V.S. Pendakur and O.P. Dwivedi (eds.), *South Asia Horizons*. Canadian Association of Asian Studies. University of Montreal. pp. 50-57

The paper highlights the endemic land conflict and violence centering around char land which have become a regular event in contemporary Bangladesh. It is based on secondary mostly daily and weekly news paper reports. The paper begins with a description of char land administration and a review of land laws which is felt inadequate to protect the rights of common people. Discussion on the nature and type of land conflicts can also be found. It also contains several case studies which provide background information that are helpful to identify the structural factors responsible for endemic land conflict over char land.

Key Words: Char land/ Land conflict and violence/ Land laws/ Land survey/ Policy

Zaman, M. Q., 1986: Socio-Economic Profile of Squatters on the Brahmaputra Right Bank Flood Embankment. *Journal of Indian Anthropological Society*. Vol. 21, No. 3, November 1986, pp. 209-218.

The paper draws attention to rural squatting caused by population displacement due to riverbank erosion. It is pointed out that squatting is not only an urban phenomenon rather it is also a rural phenomenon as is obvious from the case study of squatters population of Kazipur Upazila where over 30,000 people have been displaced between 1972 and 1982. The data for the paper were drawn from 182 households who are clustered into a major squatting location between Kudbandi village and Meghai Market centre of the Upazila. Socio-economic background of households, their occupation and income were also discussed. The paper also contains displacement history where data pertaining to displacement, land lost by riverbank erosion and squatting of the embankment were presented. In the conclusion, the author discusses the future resettlement options. It is pointed that the displacees population cannot occupy the embankment permanently so their future is uncertain. The author suggests that the

only visible policy option that can be considered is the resettlement of the displacees using khas land and newly emergent char land.

Key Words: Riverbank erosion/ Squatters/ Flood embankment/ Settlement and Resettlement/ Policy options

Zaman, M.Q., 1987: Endemic Land Conflict and Violence in Char Villages of Bangladesh. REIS Newsletter, No. 3, pp. 8-11.

This is a brief overview of endemic land conflict and violence in char villages based on news of land conflict and violence published in a local vernacular between 1978-82. A total of 40 cases were reported from nine districts. From these reports the author discusses various aspects of land conflict and violence. The brief overview reveals some important facts: absence of police in maintaining law and order, inappropriate, and faulty revenue survey, corruption of revenue officials and violence of Jotedars backed by local political leaders to grab land.

Key Words: Violence/ Land control/ Terror/ Jotedars

Zaman, M.Q., 1988: The Socio-economic and Political Dynamics of Adjustment to Riverbank Erosion Hazard and Population Resettlement in the Brahmaputra - Jamuna Floodplain. A Ph.D. Dissertation, Department of Anthropology, University of Manitoba, Winnipeg, Manitoba, Canada.

This dissertation using primary data from the riverbank erosion study project describes and explains human responses and adjustment of displacees as a result of riverbank erosion displacement in the Brahmaputra - Jamuna floodplain. The scenario was micro-level social, economic and political environment which significantly influences the local adjustment strategies and also the options available for settlement. Both survey and indepth anthropological data have been used which contrasts with the behavioural approach commonly used in natural hazard studies. The author argues that this kind of approach is inadequate to understand human responses to hazards. It is pointed out that the people effected by riverbank erosion have differential responses and adjustment strategies. The endemic fought for char land has been also brought into focus. This is accentuated by insufficient land for subsistence and survival for the most households. The author nicely describes the political economy of char land settlement, the development of dependent relations between patrons and dependent clients. In sum, the dissertation deals with the gamut of issues relating to displacees due to riverbank erosion, their adjustment and resettlement and endemic conflict in the newly accreted char land.

Key Words: Riverbank erosion/ Displacement Settlement and resettlement/ Adjustment/ Subsistence and Survival/ Char land/ Dependent relations

Zaman, M.Q., 1988: Jore Jar Jomi Tar-A Case for Reform in Char Land Policies and Administration in Bangladesh. A paper presented at the International Symposium on the Impact of Riverbank Erosion, Flood Hazard and Problem of Population Displacement. Dhaka, April, 1988, 27p.

The paper contains a general overview of erosion and accretion of lands in Bangladesh and in Kazipur Upazila of Serajganj district a discussion on the power structure and violence in char areas. Data and information from both secondary and primary sources are used. The method of study is anthropological and analysis is done with a holistic perspective. The author uses a concept called "char land subculture" to show the dichotomy between the main land and char

culture. It is pointed out that the people on the mainland consider the char culture as inferior and tough because of the poor, tough, uncertain but necessarily repeated and habitual adjustment to everyday risks of riverine hazards, erosion and displacement. The section on power and violence presents some case studies as well as description of conflicts centering on the possession of char land. It is pointed out that the main problem of char land administration is the lack of any proper census relating to char land and settlement in the new chars. It also describes how delayed survey and settlement helped the jotedars and talukdars to establish their control over char land. The last section contains a discussion on policy options for future where the author recommends the immediate formation of a high powered commission with the objectives for reformulation of a comprehensive char land policy for Bangladesh.

Key Words: Riverbank erosion/Accreted land/ Land control/ Power/ Violence/ Land policies/ Land administration

Zaman, Q.M., 1986: Rural Bastees - A Socio-economic Profile of Squatters on the Brahmaputra Right Bank Flood Embankment. Paper presented for the 20th Bengal Studies Conference. Lake Geneva, Wisconsin, USA, May, 16-18, 17p.

Attention has been drawn to the fact that rural squatting is happening in areas where there is a large scale population displacement as a result of riverbank erosion. This development is considered important because so long squatting has been primarily considered as an urban phenomenon. In the Kazipur Upazila, the Brahmaputra right bank embankment built by Water Development Board, is considered by displacees as a right location for taking shelter and building huts forming innumerable squatting locations. From the socio-economic backgrounds of the sampled displacees it is revealed that most displacees are poor and have agricultural wage labour as their main occupation. The paper also contains a section on displacement history that include a description on the number of displacement, amount of land lost and also years of residence on the embankment. Future resettlement options is described in the last section, which the author feels is bleak. This is due to lack of a firm government policy regarding khas and newly remerged char land.

Key Words: Displacement/ Urban and rural squatting/ Socio- economic backgrounds/ Resettlement/ Future options

Zaman, Q.M., 1989: The Social and Political Context of Adjustment to Riverbank Erosion Hazard and Population Resettlement in Bangladesh. Human Organization, Vol.44, No. 3, pp. 196-205.

Using both survey and indepth anthropological data drawn from the villages effected by riverbank erosion in the Jamuna floodplain, the paper describes the social and political context of adjustment to riverbank erosion. It is pointed out that an understanding of the socio-economic and political factors of adjustment to riverine environment and hazard reveals social composition and local sociopolitical dynamics of adjustment and resettlement. The author views individual responses from the socio-political and historical context. The paper also describes the socio-economic and political dynamics of population resettlement with an indepth focus on the processes and the complexities. Further observations include that there is a significant connection between rural social structure and adjustment behaviour of the riverbank erosion displacees. Regarding policy options for resettlement of the riverbank erosion displacees, the paper argues for inter-district relocation which may ease population pressure by moving excess population to more sparsely populated areas.

Key Words: Riverbank erosion/ Population displacement/ Adjustment and resettlement/ Social adjustment/ Endemic conflict

Zaman, Q.M., 1989: Patron-based, Non-kin Segmentary Model - The Dynamics of Political Alliance in Riverine Bangladesh. Paper presented at the 1989 Annual Meetings of the American anthropological Association, Washington, D.C., November, 15-19, 30p.

The paper makes an ethnographic description and analysis of the lathiyali system which play a crucial role in determining the access to and control of newly accreted land known as char. It is pointed out through an example and indepth analysis that the development of of lathiyali institution which is designated as a patron-based segmentary system depicts an adaptive response to displacement caused by riverbank erosion in the floodplain Bangladesh. Due to endemic erosion of land in the floodplain, most households have insufficient land and fight with one another for land. Such a situation of non-availability and unequal distribution of land force peasants to develop asymmetrical patron-client ties with local landed elites. The use of lathiyal by the local elites to establish their control over the depositional land has become significant. The author calls this a patron-based segmentary political structure. This is different from kin-based segmentary model, hitherto made popular by anthropologists to explain political order of non-state societies. The paper contains detail description of char villages, samaj, village leadership and the structure of segmentary alliance, relationship of the Lathiyals, the Talukdars and the state. It is pointed out that the existing segmentary lathiyali system will continue to dominate as an important political structure in the riverine Bangladesh characterised by riverbank erosion and emergence of char lands.

Key Words: Segmentary model/ Riverbank erosion/ Char land/ Patron-client relations/ Lathiyali system/ Floodplain/ Bangladesh

Zaman, M.Q., 1991 : The Displaced Poor and Resettlement Policies in Bangladesh. Disasters. Vol.15, No.2, June 1991, Pp. 118-125.

Riverbank erosion which displaced thousands of people every year is a recurrent problem. The resettlement of the displaced poor through appropriate policy is urgently needed. The paper critically examines resettlement options of the displaced poor in the light of existing policies for developing more effective short and long term resettlement and development strategies. Two areas of public policy concerned have been identified: local level institutional response to riverbank erosion displacement and also current government policies with regard to resettlement of the displaced populations. The discussion of the paper has been presented in four parts. First part introduces the local ecology, the nature of erosion and the extent of displacement. The second part examines institutional response in terms of evacuation and assistance to the displaces, followed by an analysis of current resettlement policies of the government. The article concludes with some suggestions of short and long term policy options.

Key Words: Population displacement/ Displace poor/ Resettlement/ Local ecology/ Institutional response/ Policies

Zaman, M.Q., 1991 : Social Structure and Process in Char Land Settlement in the Brahmaputra-Jamuna Floodplain. Man, Vol. 26, No. 4, December 1991, Pp. 673-690.

The newly accreted land (char) in the floodplain has been always a source conflict and fierce battle between the contending landlords in Bangladesh. Author provides a social-economic and political analysis of accretion land (char) settlement in Bangladesh. The use of lathiyals a group of dependent peasants by powerful land grabbers jotedars has become very vague. The author explains the social origins and the structure of the lathiyali system and their political role in mobilizing regional disputes. Later the author demonstrates how the local power holders

(Talukders)take advantage of the unstable riverine situation by maintaining invisible armies of lathiyals.The author also took exception and made a criticism of the existing analysis of local deployment of violence in terms of isolation, marginality and weak state system.

Key Words: Char land/ Settlement/ Social structure/ Ecology/ Village patronage/ Factionalism and violence

Zaman, M.Q. and C.E. Haque, 1991 : Working Together-Reflections on Collaborative Research in Bangladesh. Canadian Journal of Development Studies. Vol. XII, NO.2, Pp. 387 - 403.

The articles provides a resume of the experience of multidisciplinary and collaborative research between the University of Manitoba (Canada) and Jahangirnagar University. The research was conducted in 1983-88 to investigate the impact of riverbank erosion on rural population. The project known as Riverbank Erosion Impact Study (REIS) was first of its type and made tremendous contributions towards development of a new awareness about problems related to flood and riverbank erosion in Bangladesh. The articles discusses several issues including conceptual and methodological issues, data-base, training and institution -building, research findings and policy recommendations. The authors opined that the experience of the project were quite useful which helped a lot to understand a critical natural disaster of a Third World country.

Key Words: Research/ Natural disaster/ Riverbank erosion/ Flood/ Data base/ Findings/ Policy recommendation

Zaman, M.Q. and R.E. Wiest, 1991; Riverbank Erosion and Population Resettlement in Bangladesh. Practicing Anthropology. Vol.13, No.3 (Summer 1993), Pp. 29-33.

An attempt is made to draw attention to perennial riverbank erosion problem and the issues and relating to population displacement and resettlement. It is mentioned that despite the gravity of the problem, no systematic socio-economic survey of the impact of riverbank erosion has been undertaken prior to the joint programme known as the Riverbank Erosion Impact Study participated by University of Manitoba and Jahangirnagar University sponsored by IDRC. The project generated mass of socio-economic and physical data. In the paper the problems of people who live in the small island (locally known as char) is also highlighted. Examples is cited from a several affected area. It is argued that a long term resettlement plan is urgently needed. The authors recommended that local peasant organizations be involved both in the formulation and in the implementation of any future char land reform and settlement policies.

Key Words: Riverbank erosion/ Displacement/ Resettlement/ Char land/ Land reform/ Policy and implementation

CHAPTER - 7

FUTURE RESEARCH PRIORITIES

General Feature of Disaster Literature

In the last several chapters we reviewed numerous materials on different natural disasters from a broad social science perspective. The issues covered in these materials are multidimensional as well as diverse. The interest on issues did not show any uniform pattern. Some issues are over-emphasised while others were little addressed or ignored. One such issue is : women and children in disaster situation - their response and survival strategies. This is an issue which we cannot afford to overlook in a country like Bangladesh where women and children represent a most variable group.

Lack of uniformity in methodology has been noticed. Many of the studies and research were conducted without any methodological rigour. The main emphasis was on survey method. Many works are based on secondary sources while others are impressionistic. Qualitative component and understanding of the problem from the victims point of view was not given proper attention. Therefore, some of the works suffer from methodological shortcomings.

Most of the works that we reviewed are typical descriptive and impact study which aimed at determining the causes of a particular disaster agent, nature and extent of damage, adjustment strategies of people during and after the natural hazards and also evaluation of relief and rehabilitation activities. There are some exceptions. **In general, no attempt is made to understand the changes and the processes of change overtime.** The analysis of data are in most cases static, i.e. "Flood 1987", " effects of 1987 Flood", etc. The crux of the issue which is often forgotten that a farmer "A who faced and survived the 1984 flood, may not be in a similar condition when he was effected by 1988 flood. Significant changes might have occurred in the village say, X since it was effected by 1974 flood. Therefore, the emphasis here is that we need to collect and store information that may act as bench-mark later and compare these and discern the changes and processes of change resulting from natural disaster. **We cannot just say that natural hazards are accelerating pauperization in Bangladesh unless we understand the process of pauperization. In other words, we need to collect, store, compare and analyse information that are gathered over a period of time in order to understand the process of change. Here, we emphasis the need for logitudinal study on disaster related issues.**

Possible Research Areas

Future social science research on disaster can include many issues of vital national importance. In fact, social scientists may act as provider of valuable information to planners and policy makers to plan and also to select strategies that will not only accelerate development but will also prepare people to live with flood. Keeping in view the issues covered in the literature, we suggest that the following themes in any research on natural disaster in future:

Box 6 : Possible Areas For Future Research

Areas	
A. ENVIRONMENT	
Δ	Perception about environment and environmental problems;
Δ	Environmental degradation overtime;
Δ	Population growth and environmental degradation;
Δ	Over exploitation of resources;
Δ	Common Property Resources (CPRs); Control of CPRs;
Δ	Population growth and CPRs.
Δ	Measurement of environmental risk and policy response.
Δ	Tragedy of commons and Bangladesh;
Δ	Depletion of resources : Fish and Forest; Socio-economic factors;
Δ	Social forestry; People's participation;
B. DISASTER	
Δ	Perception about disaster;
Δ	Development and disaster response
Δ	Ethnography of disaster;
Δ	Disaster sub-culture; Floodplain culture;
Δ	Vulnerability: factors determining vulnerability
Δ	Vulnerability across groups and classes;
Δ	Vulnerability and disaster mitigation;
Δ	Family and community response to disaster;
Δ	Relationship between culture and disaster response;
Δ	Role of Social net-work in disaster mitigation;
Δ	Survival strategies;
Δ	Rural- Urban response strategies: Comparisons; and relationship;
Δ	Disaster mitigation: Decision-making and participation in disaster reconstruction;
Δ	Women in disaster : nature and type of survival strategies;
Δ	Women as disaster manager;
Δ	Women and Children in disaster;
Δ	Institutional response to disasters: the roles of GO, NGOs and other agencies;
Δ	Psychological approaches to disaster management;
Δ	Mass media and disaster response;
Δ	Impact of disasters on vulnerable groups;
Δ	Impact of FCD and FCDI projects and their implications for development;

We listed some areas which need immediate attention from researchers. It is however, pertinent to mention that there are may be many other unexplored areas which should be addressed too.

ANNEXURE 1

A LIST OF TECHNICAL LITERATURE AND ANNUAL REPORTS OF BWDB

In this section, we provide a list of technical literature on flood, cyclone and riverbank erosion. We divide the whole set into two parts. First is the technical papers and reports. Second is the annual reports on flood published by Bangladesh Water Development Board (BWDB). Before the independence BWDB was known as East Pakistan Water and Power Development Authority (EPWAPDA). For publications preceding independence we used EPWAPDA as the proper citation. This is what we found in our literature search otherwise readers might be confused.

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ANNEXURE 2

LIST OF FAP DOCUMENTS

We provide below a almost complete list of FAP documents for easy reference. The entries in the list have been organized alphabetically by author and whenever necessary by project names. The list is exhaustive but any inadvertent mistake is regretted. These documents are available at the library of FPCO and World Bank Resident Mission's library.

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ANNEXURE 6

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1. Master Plan Organizations (MPO)
2. Department of Water Resources and Engineering, BUET, Dhaka
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8. Library, Ground Water Hydrology, BWDB
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12. Library, SPARRSO, Dhaka
13. Rangpur Dinajpur Rural Service (RDRS), Dhaka
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15. Proshika, Dhaka
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17. CARE - Bangladesh, Dhaka
18. Association for Social Advancement (ASA), Dhaka
19. ADAB Library
20. Community Development Library, Dhaka
21. Research and Advisory Serviceo
22. PRIP Library
23. World Bank Library
24. Winrock International (HRDP)

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