

EDITORIAL BOARD

Chief Patron

Major General Abu Tayeb Muhammad Zahirul Alam, rcds,psc

Editor-in-Chief

Commodore Khondker Moyeenuddin Ahmed, (G), ncc, psc

Associate Editors

Lieutenant Colonel Md Mahfuzur Rahman, afwc, psc

Lieutenant Colonel Shah Atiqur Rahman, psc

Assistant Editor

CSO-3 Mr Md Nazrul Islam

Editorial Advisors

Prof Firdous Azim

Ms. Suchi Karim

Computer Make-up

Captain Masudur Rahman

DISCLAIMER

The analyses, opinions and conclusions expressed or implied in this Journal are those of the authors and do not necessarily represent the views of the NDC, Bangladesh Armed Forces or any other agencies of Bangladesh Government. Statements of fact or opinion appearing in NDC Journal are solely those of the authors and do not imply endorsement by the editors or publisher.

ISSN: 1683-8475

INITIAL SUBMISSION

Initial submission of manuscripts and editorial correspondence should be sent to the National Defence College, Mirpur Cantonment, Dhaka-1216, Bangladesh. Tel: 88 02 8019892, Fax: 88 02 8013080, Email : ndc@ndcbd.com. Authors should consult the Notes for Contributions at the back of the Journal before submitting their final draft. The editors cannot accept responsibility for any damage to or loss of manuscripts.

Subscription Rate (Single Copy)

Individuals : Tk 100 / USD 10

Institutions : Tk 150 / USD 15

Published by the National Defence College, Bangladesh

All rights reserved. No part of this publication may be reproduced, stored in retrieval system, or transmitted in any form, or by any means, electrical, photocopying, recording, or otherwise, without the prior permission of the publisher.

Printed by:

DOT NET LIMITED

55/B, Purana Paltan (3rd Floor), Dhaka-1000, Bangladesh

Phone: 880-2-9563578, 9562198

CONTENTS

College Governing Body	iv
Vision and Mission Statement of the College	v
Foreword by the Commandant	vi
Editorial	vii
Faculty and Staff	viii
List of Individual Research Papers: 2003	ix
Scope for Privatization-Logistic Services of the Bangladesh Armed Forces	01
- Cdr S Sharif,(C), afwc, psc, BN	
Influence of Changing Society on Soldiers and Soldiering: Bangladesh Perspective	31
- Brig Gen Anup Kumar Chakma, ndc, psc	
Cooperative Maritime Security-Options for Bangladesh	63
- Cdr M A R Khan,(G), afwc, psc, BN	
Land Record System in Bangladesh: An Analysis of Problems and Possible Solution	79
- Addl Secy Md Abdul Aziz, ndc	
Earthquake Disaster Management Requirement in the Context of Bangladesh	95
- Capt C D Nowroj,(E), ndc, psc, BN	
Rural-Urban Migration: A Case Study on Agargaon Slum of Dhaka	125
- Capt M. Amjad Hossain,(S),ndc, psc, BN	
Turning Dhaka into a Healthy City: The Solid Waste Management	151
- Brig Gen Mohammad Mahboob Haider Khan, ndc, psc	

COLLEGE GOVERNING BODY

CHAIRPERSON

Begum Khaleda Zia
Hon'ble Prime Minister
People's Republic of Bangladesh

VICE CHAIRPERSONS

Lieutenant General Hasan Mashhud Chowdhury, awc, psc; Chief of Army Staff
Rear Admiral Shah Iqbal Mujtaba, ndc, psc; Chief of Naval Staff
Air Vice Marshal Fakhru Azam, ndc, psc; Chief of Air Staff

MEMBERS

Major General A I M Mustafa Reza Noor, ndc; Principal Staff Officer, Armed Forces Division
Major General A S M Nazrul Islam, ndc, psc; Commandant, Defence Services Command and Staff College
Major General A T M Zahirul Alam, rcds, psc; Commandant, National Defence College
Mr Faruq Ahmad Siddiqui; Secretary, Ministry of Education
Mr Zakir Ahmed Khan; Secretary, Ministry of Finance
Mr Shamsher M Chowdhury, BB; Secretary, Ministry of Foreign Affairs
Mr Mesbah Uddin Ahmed; Secretary, Ministry of Defence
Mr Safar Raj Hossain; Secretary, Ministry of Establishment
Professor S M A Faiz; Vice Chancellor, Dhaka University
Professor Khandaker Mustahidur Rahman; Vice Chancellor, Jahangirnagar University
Professor Aftab Ahmed; Vice Chancellor, National University

MEMBER SECRETARY

Commodore Khondker Moyeenuddin Ahmed, (G), ncc, psc, BN;
Senior Directing Staff (Navy), National Defence College
Captain M A Rahman, (S), ndc, psc, BN; Colonel General Staff,
Defence Services Command and Staff College

VISION AND MISSION STATEMENTS OF THE COLLEGE

VISION

The National Defence College is dedicated to be the premier National Centre of Excellence in security, strategic and development studies.

MISSION

- ❑ To Educate and Train Selected Senior Armed Forces and Civil Services Officers at Operational and Strategic Level of National Security and Development.
- ❑ To Focus on Long Term National Security and Development Issues and Suggest Appropriate National Response.
- ❑ To Support the National Agencies in Policy Making on Security and Development Matters.
- ❑ To Support the Armed Forces on Strategic and Operational Level Planning of Warfare.
- ❑ To Strengthen Civil-Military Relation in Bangladesh.
- ❑ To Strengthen Military to Military Cooperation in the Region and Beyond.



FOREWARD

National Defence College of Bangladesh is a premier national institution only of its kind in Bangladesh to conduct training and research on defence and national security. To fulfill this mission, study at National Defence College (NDC), Bangladesh includes all subjects and issues that impact or impinge on defence and national security. The study covers topics and issues like economic development and growth, socio-political environment and institutions, socio-cultural fabric and social infrastructure, environment, human resource development, human security, use of technology, vital and strategic resources and their management, governance and law enforcement, external relations at bilateral and multilateral levels. In depth study is also carried out of issues that constitute traditional and non traditional military threat and insecurity of both endogenous and exogenous origin, military power and potentials as a component part of national power, doctrinal issues of war fighting and structural, leadership and managerial framework to deal with national security and defence. All these issues are examined and analyzed at national, regional and global context. Ultimate objective is to develop amongst the course members balanced view and vision to provide effective and knowledge based leadership at strategic realm. Representation of the civil service and overseas countries in the courses run by the college also create an enabling environment for broader perspectives.

From the very beginning the NDC has been putting its utmost effort to stay dynamic in terms of its course curriculum and teaching methods. This year we were able to introduce seminars in each module, case study leading to a simulation exercise of nation building, national integration and national security taking a real problem torn country as subject and a leadership sub module among others in the National Security Study, which is the 5th module of the National Defence Course.

In the meantime many interested NDC graduates have already completed their first part of M-Phil degree from the National University, which is yet another step forward. More and more new graduates are showing their interest to pursue M-Phil studies, which is highly encouraging.

This is the 3rd issue of the annual NDC Journal. The selected Individual Research Papers of the course members have been published in the journal accommodating as far as possible diverse subjects and merit. As the college has created the free and enabling environment for the deeper and unbiased perception of core National and International issues in the class owing to the policy of not attribution which stipulates that anything said in the class cannot be quoted outside a reflection in the research papers of superior understanding of varying perspectives of a subject or issue is what we expect. I must mention that the articles have been condensed from the original ones' because of the requirement of downsizing those. Understandable in some cases this might have some how told on the quality of the articles compared to the original Individual Research Paper.

I congratulate all course members who have contributed in this Journal. I thank the Editorial Board for editing and publishing the journal on time. This edition is yet another milestone in the path of progress of NDC. I invite response and comments from the readers. These will be invaluable in our endeavour to generate more debate and further improve our standard.

Abu Tayeb Muhammad Zahirul Alam
Major General
Commandant

Dhaka
30 June 2004

EDITORIAL

It gives me much delight to present the third issue of the NDC Journal. The Journal aims at fulfilling the college motto "Security through knowledge". It addresses the much talked subject like national security of Bangladesh in the context of regional and global environment. The articles have been chosen from the individual research papers of the Course Members. The Members have submitted papers on security and development related issues as part of the curriculum during their nearly year long stay at the National Defence College.

The College considers it a dire necessity for the Course Members to spend a lot of time in understanding major economic, political, social and environmental issues facing the nation. The Course Members get a first hand knowledge on research methodology by competent Academic Advisers from various universities and institutions. They carry out research independently on various national and international issues and put the findings in a paper that is substantial, readable and intellectually inspiring.

In this issue we have published seven articles written by officers who graduated from this college in the year 2003 from both the National Defence Course and the Armed Forces War Course. The subjects of the Journal are namely, Scope for Privatization, Influence of Changing Society on Soldiers and Soldiering, Cooperative Maritime Security, Land Record System in Bangladesh, Earthquake Disaster Management, Rural-Urban Migration and Turning Dhaka into a Healthy City.

The authors may not be professional researchers but they have practical experience in various areas of the government where they were exposed to decision-making and implementation process. Their knowledge and experience could often be of great value to many. I am convinced that they have much wisdom and incisive minds and those have been reflected in their articles appropriately. I hope the articles in the NDC Journal will stimulate intellectual growth and the development of the security studies of all.

In terms of output, we plan to produce one issue per year. Each issue will consist of four or more selected dissertations that are submitted by the Course Members. We intend to cover shorter book reviews and a correspondence section subsequently.

I would like to express my gratitude to the Commandant for his invaluable advice and guidance. I thank all the members of the Editorial Board for their steadfast assistance and cooperation. I am also indebted to Prof Firdous Azim and Ms Suchi Karim of BRAC University for their editorial advice. We sincerely regret if any inadvertent error has crept in. I shall be looking forward to hearing from the readers for their suggestions for improvement in future.

Dhaka
30 June 2004

Khondker Moyeenuddin Ahmed
Commodore, Bangladesh Navy

LIST OF FACULTY AND STAFF

COMMANDANT

Major General Abu Tayeb Muhammad Zahirul Alam, reds,psc

NDC FACULTY

Brigadier General Khandokar Kamaluzzaman, ndc, psc; SDS (Army)

Commodore K M Ahmed, (G), ncc, psc; SDS (Navy)

Air Commodore Iqbal Hussain, ndu, psc; SDS; (Air)-1

Air Commodore M Alauddin Chowdhury, ndc, psc; SDS (Air)-2

Joint Secretary A K M Kamal Uddin; SDS (Civil)

AFWC FACULTY

Brigadier General Md Mainul Islam, awc, psc, CI (AFWC Wg)

Lieutenant Colonel Md. Mahfuzur Rahman, afwc, psc, DS (Army-2)

Lieutenant Colonel Sohel Ahmed, afwc, psc, DS (Army-1)

Captain K M Hassan, (C), ndc, psc, BN, DS (Navy)

Wing Commander M Naim Hassan, afwc,psc, DS(Air)

STAFFS

Lieutenant Colonel A T M Ezharul Hoq, psc; GSO-1 (Admin)

Lieutenant Colonel Shah Atiqur Rahman, psc; GSO-1 (Trg)

Major Omar Faruque, psc; GSO-2 (Coord) AFWC Wg

Major Md Mahbubul Alam, Accts & Messing Officer

Major Md Jalal Ghani Khan, psc; GSO-2 (P&C)

Major Md Dewan Mizanur Rahman, GSO-2(Coord) AFWC Wg

Squadron Leader Mokhlukar Rahman Khan, psc; GSO-2 (SD)

Major Syed Mostafa Jamal, MTO & QM

Captain Masudur Rahman GSO-3 (Computer)

Mr. Md Nazrul Islam CSO-3 (Library)

**LIST OF INDIVIDUAL RESEARCH PAPER
NATIONAL DEFENCE COURSE-2003**

1. Law and Order Situation in Bangladesh: Effects on Socio Economic Developments
Brig Gen Mohammad Ali Mondal, ndc
2. Population Control Management in Bangladesh: The Scope for Improving the Quality
Brig Gen Muzaffar Ahmed, BB,ndc, psc
3. The Role of Military in the Changing Security Environment of Bangladesh
Brig Gen Md. Mahbub Ul Alam,ndc, psc
4. Corruption in Bangladesh: An Analysis of the Present State and Suggest Measures for the Reduction
Brig Gen Mohammad Tanveer Niaz,ndc, psc
5. Turing Dhaka into a Healthy City : Solid Waste Management
Brig Gen Mohammad Mahboob Haider Khan,ndc, psc
6. Bangladesh-Myanmar Strategic Relation in the new Millennium: A Critical Analysis
Brig Gen Md. Najeeb Hasan, ndc,psc
7. Influence of Changing Society on soldiers and their Soldiering: Bangladesh Perspective
Brig Gen Anup Kumar Chakma, ndc, psc
8. Disaster Management in Bangladesh: A Study on Disaster Preparedness Plan for a Hospital
Colonel Md Abedur Rahman, ndc
9. Rural-Urban Migration: A Case Study on Agargaon Slum of Dhaka
Capt M Amjad Hossain (S), ndc, psc BN
10. Earthquake Disaster Management Requirement in the Context of Bangladesh
Capt C.D. Nowroj, (E), ndc, psc, BN

11. Viability of Deep Sea Port in Bangladesh
Cdre M S Kabir (G), ndc,psc BN
12. Bangladesh Biman: Prospects and Constraints
Air Cdre Muhammad Khusrul Alam, ndc, psc, GD(P)
13. Prospect of Renewable for Inhabitants of Remote Areas of Bangladesh
Gp Capt Muhammad Mostafizur Rahman, ndc, psc
14. Local Government for Good Governance : Bangladesh Perspective
Gp Capt Abu Nizam Md Rafiqul Alam, ndc, psc
15. Impact of Export Processing Zones in Bangladesh Economy
Jt Secy Salehuddin M Musa , ndc
16. Contracting out Programme- A Revenue Generation Tool in the State Owned Enterprises with Special Reference to Dhaka WASA
Jt Secy Md Iqbal Hossain Khan, ndc
17. United Nations : How to Meet the Challenges of the 21st Century
Jt Secy Md. Tofazzel Hossain, ndc
18. Land Record System in Bangladesh: An Analysis of Problems and Possible Solutions
Addl Secy Md. Abdul Aziz, ndc
19. Bangladesh Police: Need for Immediate Reform
DIG Md. Abu Hanif, ndc
20. India-China Relations: Implication for Regional Peace and Security
Brig V K Ahluwalia, ndc, YSM, VSM
21. Terrorism in South Asia: Causes and Strategic Imperatives for its Eradication
Brig Muhammad Abdul Qadir Khan Shahid, ndc, afwc, psc

ARMED FORCES WAR COURSE-2003

1. Attrition and Manoeuvre Warfare in the Battlefield Environment of Bangladesh
Lt Col Md Mahfuzur Rahman, afwc,psc, E Bengal
2. Research and Development in Bangladesh Armed Forces
Lt Col Sohel Ahmed, afwc,psc, AC
3. Equipment Management in Bangladesh Army
Lt Col Md Refayet Ullah, afwc, psc, EME
4. Indigenous Military Production in Bangladesh: Realities and Prospects
Lt Col Sufi Hammad Zulfiquar Rahman, afwc, psc, E Bengal
5. Turning Unconventional Warfare into a War Winning Strategy for Bangladesh
Lt Col Shabbir-Ul Karim, afwc, psc, E Bengal
6. Land Operation Under Unfavourable Air Situation
Lt Col Murshedul Huque, afwc, psc, E Bengal
7. Anti-Terrorism Operations Training Parameters for Bangladesh Armed Forces
Lt Col Md Faruque Hussain, afwc, psc, E Bengal
8. Operational Doctrine for Paramilitary Forces Under Joint Warfare Environment
Lt Col Sardar Hassan Kabir, afwc, psc, BIR
9. Numerical Superiority Vis-à-Vis Technological Advancement: Viable Balance for Bangladesh Armed Forces
Lt Col Kazi Masud-Ul Mahmud, afwc, psc, Sigs
10. The Dynamics of Psychological and Physiological Effects of Combat and Consequences of Killing in Battlefield
Lt Col Md Monowarul Islam, afwc, psc, Engrs

11. Equipment and Organizational Orientation of Unconventional Forces for Bangladesh Armed Forces in the Light of Blending Conventional and Unconventional Warfare
Lt Col Md Zahidur Rahman, afwc, psc, G+, Arty
12. Engineers in the 21st Century – Bangladesh Defence Perspective
Lt Col Md Samsul Alam Khan, afwc, psc, Engrs
13. Enhancing Efficiency of the Overseas Deployments of Bangladesh Armed Forces
Lt Col Ibrahim Jamal, afwc, psc, G, Arty
14. Total People's War Concept-Budgetary Implication on Bangladesh Armed Forces
Lt Col Md. Habibur Rahman, afwc, psc, E Bengal
15. Media Policy for Bangladesh Armed Forces
Wg Cdr A K M Ahsanul Hoque, afwc, psc, ADWC
16. Scope of Privatization-Logistic Services of the Bangladesh Armed Forces
Cdr Saber Sharif, (C), afwc, psc, BN
17. Nuclear Proliferation in South Asia and Implications for Bangladesh Armed Forces
Wg Cdr M Aminul Islam, afwc, psc
18. Cooperative Maritime Security-Options for Bangladesh
Cdr M Aminur Rahman Khan, (G), afwc, psc, BN
19. Integrated Logistics System for Bangladesh Armed Forces
Lt Col Md Abdus Salam Khan, afwc, psc, Ord

SCOPE OF PRIVATIZATION - LOGISTIC SERVICES OF THE BANGLADESH ARMED FORCES

Commander S Sharif, (C), afwc, psc,BN

Many countries have inducted privatization in their respective Armed Forces since long. The aim of such privatization is to provide with a required level of defence at a minimum cost by tapping on to the resources, potentiality and expertise available in the private sector. Experiences of these countries depict that private sector's competitive nature and economy of scale provided the required services more efficiently and cost effectively. Though Bangladesh is strongly pursuing privatization in the civil sector, but defence is one sector that remains out of its scope. The orthodox dogma prevailing amongst us that privatization of defence sectors may compromise with the required degree of operational readiness required by the Armed Forces, is not based on substantial facts and figures. This paper, attempts to analyze the prospect of inducting privatization in the Bangladesh Armed Forces, particularly in the areas of logistics. In fact, privatization of logistics functions is a viable and cost-effective option, which is expected to render various advantages considering our meager budget and manpower constraints. However, such privatization will require policy shift, establishment of organizational framework and change in our attitude towards the subject.

INTRODUCTION

The Armed Forces of Bangladesh, in its present realities, have resource constraints and are under intensifying pressure to manage increasing volume of tasks within a tight budget allotment. The broader concept of privatizing suitable sectors/functional areas of our Armed Forces has not yet been addressed in its core essence. No known formal approach has been carried out to conceive the viability and suitability of identifying sectors under which privatization may be considered as an alternative option considering the experiences of other foreign armed forces, based on its cost-beneficiary ratio, qualitative, operational and security dimensions.

Armed forces of today are increasingly seeking commercial support for their in-house functions. This is motivated by the need to tap into competitive markets to reduce cost and to improve performances. US Secretary of State for Defence¹ stated: "Our Armed Forces deserve the very best. By working in new partnerships with the private sector, we in the Ministry of Defence (MOD) will deliver the best possible training, equipment and support to our service personnel."

Though civil sector's privatization of sick industries in Bangladesh has gone through various phases since independence, but privatization of defence related units has always remained out of its scope. The basic question that needs to be dealt with is, what benefit do some countries achieve through privatizing defence related sectors, and whether those benefits are applicable to the Bangladesh Armed Forces? Therefore, it is probably interesting at this stage to study the existing Bangladesh Defence Services' logistics system in a critical and analytical way, comparing its cost effective ratio against the private sector; and subsequently derive alternative schools of thought, if any. This paper has sought to summarize generic understanding of the basic pertinent issues, studies and practices of other countries including regional countries as to how privatization has been inducted in their armed forces; and subsequently focuses on the core issues relating to the scope of privatization in the Bangladesh Armed Forces. It will further review, whether such privatization will meet the particular requirements of a fighting force as a quality and cost effective service provider while retaining operational demands. Finally, the paper will attempt to reflect broadly on the institutional framework required for the fusion of privatization and put forward some attainable recommendations by limiting the scope within the logistic services only.

OBJECTIVE

The objective of the paper is to study the scope of privatizing logistic services of the Bangladesh Armed Forces.

1. Stated by Rt Hon Geoffrey Hoon MP.

SCOPE OF PRIVATIZATION

Privatization

In its simplest form, to privatize is "to make private".² The UNDP Guidelines on Privatization (1991) defines it as the marketisation of public sector activity. However, privatization does not merely dictate total handing over of functions and operations to a private body. Privatization can take various forms, for example, by blending ownership and functional activities between a state and a private body. A private company in today's context can, therefore, be totally private owned or partly government owned. Similarly, in its functions a private body could be either autonomous or semi-autonomous or even managed under government control in administrative respects. The objective of privatization is often to increase the efficiency of government activities.

Logistics

In military science, logistics include all activities of armed forces units in roles of supporting combat units, including transport, supply, signal communication, medical aid, and like. In general term, "logistics" is the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, it includes aspects of military operations, which deal with the followings:

- a. Design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of material.
- b. Movement, evacuation and hospitalization of personnel.
- c. Acquisition, construction, maintenance, operation and disposition of facilities.
- d. Acquisition or furnishing of services.

The overall gamut of activities covered under the term "logistics" is shown in the following diagram:³

2. Privatisation of Public Sector Activities with a special focus on telecommunications, energy, health and community services, United Nations Department of Economic and Social Affairs, 1999, p.1
3. JP 4-0, Chapter I, para 2, "US Doctrine for Logistics Support of Joint Operations".

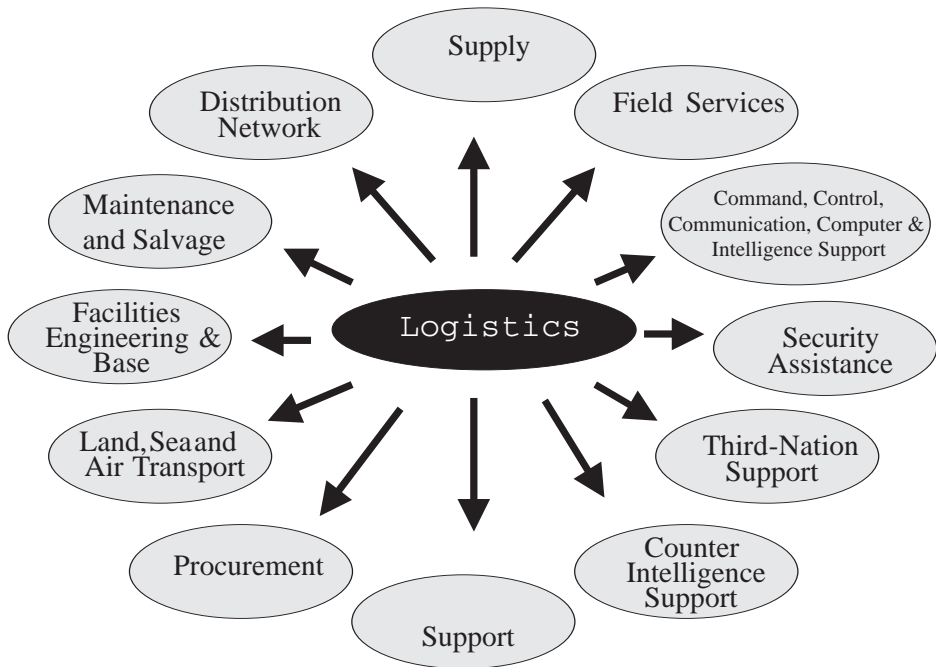


Figure 1: Scope of Logistics

PRIVATIZATION POLICY IN BANGLADESH

Reasons

The three basic reasons, which prompted the Government of Bangladesh to divert to privatization are⁴:

- a. Positive effects on Government's fiscal situation.
- b. Improvement of efficiency through privatization, as government's effort of reforms failed.
- c. To promote greater investment for higher growth.

4. Handout on "Privatisation in Bangladesh", Privatisation Commission, Cabinet Division, p.1

Policy

Article 13 of the constitution of Bangladesh emphasized on "creation of an efficient and dynamic nationalized public sector", which lead to the nationalization of all industries in the beginning. Unfortunately, this caused the state to suffer losses⁵ due to various reasons like poor infrastructure, under developed system and bad governance. Private enterprises that subsequently flourished created pressure by emerging more competition. Bangladesh Government, therefore, focused on the issue of privatization of state-owned industries.

Privatization in Defence

The "Revised Investment Policy" of December 1975⁶ paved the way to reorient the economy towards more dependence on private sector activities while "arms, ammunition and allied defence equipment" was kept reserved for the public sector.⁷ Subsequently, as the New Industrial Policy (NIP) was announced on June 1, 1982;⁸ where defence related industries were further kept reserved for the public sector, a state, which has not changed till today.

Existing Institutional Frame Work

"Privatization Board" was formed in 1993 to expedite privatization process. Eventually it was elevated to "Privatization Commission" in 2000 with more authority.⁹ This structure, though has relevance in regard to policy formulation, but is considered insufficient in respect of privatization of defence sector. Roles and status of the Armed Forces Division (AFD), Ministry of Defence (MOD) and the Services Headquarters are not clearly delineated within this structure. Any privatization of defence sector will, therefore, demand policy changes at the highest government level. Such privatization, if considered, should reflect the core policy values stated under the privatization policy and industrial policy adopted by the nation.

5. Loss of Tk 17 billion incurred by the SOEs in the financial year 2002, which amounts to Tk 105,000 per minute. Commodore M S Kabir, "Privatisation in Bangladesh" NDC Study Paper, 2003, p.1

6. Clare E. Humphrey, Privatization in Bangladesh - Economic Transition in a Poor Country, 1992, p.47

7. Clare E. Humphrey, Privatization in Bangladesh - Economic Transition in a Poor Country, 1992, *ibid*, p.48

8. Clare E. Humphrey, Privatization in Bangladesh - Economic Transition in a Poor Country, 1992, *ibid*, p.65

9. Status and Authority elevated by the "Privatisation Act 2000 (Act No 25)" published in Bangladesh Gazette Extraordinary dated 11 July 2000.

PRIVATIZATION PRACTICES IN OTHER ARMED FORCES

Requirement

Today's challenge for nations is to render the required level of national defence at a minimum cost. A significant number of foreign countries have introduced privatization in the armed forces in some form or the other. The nature and scope of this privatization varies between nations. In general, the promotion of outsourcing and privatization in the armed forces have only been considered when they met the following fundamental conditions:

- a. Private sector firms must be able to perform the activity and meet war-fighting missions.
- b. Privatization must focus on to improve quality, to increase efficiency and to reduce costs.
- c. Outsourcing and privatization activities must result in best value for the government and the services.
- d. Must meet the specialities and operational requirements.

The US Experience

The US Armed Forces technical/industrial base is and has virtually always been in the hands of private industry. In 1945, the US industrial, logistics and maintenance services, in private hands but under close government supervision provided support as shown in Table 1 below :¹⁰

			Table - 1
S N	Item	Quantity	
1.	Aircraft	310,000	
2.	Tanks	88,000	
3.	Landing Craft	82,000	
4.	Rifles and Carbines	12,500,000	
5.	Trucks	2,400,000	

US Private Sector Support in 1945

10. "Defence Industry Privatization And National Security Requirements: The United States Experience", website : scheurweghs@hq.nato.int.

"Public Private Partnerships (PPPs)"¹¹ offers new ways of doing armed forces business more efficiently, making best use of the available skills in the public and private sectors to deliver better services. There is no predisposition towards either public or private sector. The main drive is the better use of resources in defence and the maintenance or enhancement of operational effectiveness. US MOD has a rich-wide-ranging "Private Finance Initiative (PFI)" programmed that includes accommodation, training, equipment, logistics, communications and utilities. To date, 45 deals have been signed that have brought over \$2.3 billion of private sector investment into defence.¹²

The current policy vision on privatization of defence, in simple terms, is one that hopes to minimize the size of "defence-only" capacity and maximize the size of "dual-use" capabilities, which can be sustained.

The United Kingdom (UK) Experience

In UK Armed Forces, PFI remains the cornerstone of the PPP programmed. PFI provides a service, based on the creation or replacement of capital assets by the private sector. "PFI and other forms of PPP play an important part in modernizing defence and changing the way in which MOD does business, to the mutual benefit of the armed forces, industry and the taxpayer".¹³ "Sponsored Reserves" is a category of employees, whose terms of employment would require them to accept reserve forces liability. Sponsored reserves are used in a number of PFI deals.¹⁴ Partnering arrangements¹⁵ are emphasized in the British Armed Forces and outsourcing remains a key method of achieving targets set under the Public Service Agreement. Outsourcing contracts are often in the order of 5 to 7 years in length and other forms of PPP prove to be more appropriate when a longer-term relationship is envisaged or capital investment is needed. Under "Defence Estate Prime Contracting Programmed", the UK Defence Department retains ownership and responsibility for the full capital and running costs of new facilities, but looks for a single contractor to take responsibility for the integration and management for the

11. PPP is an umbrella term covering a variety of procurement initiatives, all of which benefit from a close, and normally long term, relationship with a private sector partner. The main techniques are the Private Finance Initiative, (PFI), Partnering Arrangements, Outsourcing, the Wider Markets Initiative and the Defence Estates Prime Contracting Programme.

12. Download from Internet "Public-Private Ventures Could Ease the Pains of Privatization in USA".

13. Stated by Kevin Tebbit, Permanent Secretary, British MOD.

14. http://www.mod.uk/business/ppp/ppp_defence.htm.

15. A Partnering Arrangement is a term used to describe one form of long-term contract based on the partnering ethos. It establishes a framework within which the Department's relationship with a contractor can grow over time. In a Partnering Arrangement, it is not necessarily needed to be clear about final outcomes. Generally, such arrangements promote a developing relationship with a private sector partner over a range of possible activities. The partner is given opportunities to achieve innovation and value for money.

entire design and construction supply chain, including the delivery of the completed project on time, within budget and fit for aimed purpose. British Armed Forces privatization projects include equipment, storage, transportation, communications, logistics support, environmental control services, etc.¹⁶

The Singapore Experience

Since the early seventies, Singapore Armed Forces have adopted a more deliberate policy to contract out logistics functions like the management of supply bases, intermediate and even organizational level maintenance support. This is part of the 'Total Defence Concept' so that local industries and civil resources can be involved in the defence effort. Logistics functions, which have been privatized, involve supply, maintenance, and catering, training and logistic services.¹⁷

The Malaysian Experience

Logistic support services in the Malaysian Armed Forces (MAF) are gradually being privatized. In all functions, integration of various logistics corps and several civilian departments has been coordinated through MAF Headquarters. The base level assets and services functions, which have been privatized, are very static.¹⁸

The Indian Experience

India, at present, is promoting private sector initiatives particularly in logistics and maintenance sectors. The production by the eight public sector undertakings particularly "Bharat Earth Movers" and "Bharat Electronics" have gone up. In 1987, procurements from ordnance factories were shifted from the defence production head to defence allocation. Research & Development (R&D) funding registered a growth in the last ten years, which had an effect on the total defence allocations. R&D for defence also has bearing on other allied research agencies, including private sectors. Private firms and agencies are being involved increasingly.¹⁹ Major overhauling and maintenance are increasingly allocated to private sectors. Increasing involvements in indigenous defence hardware production also made logistics dependable on private sectors. Indian experience has relevance to the realities of Bangladesh.

16. <http://www.mod.uk/business/ppp/index.htm> and http://www.mod.uk/business/ppp/guidelines/annex_a.htm

17. Download from "Commercial Support for Singapore Armed Forces Logistic Functions", website : <http://www.pasols.org/Log%2018-%206.html>.

18. <http://www.pasols.org/Log%2016%20-%204.html>.

19. <http://www.geocities.com/TheTropics/3328/idr00010.htm>.

PERFORMANCE EVALUATION - LOGISTIC SERVICES OF BANGLADESH ARMED FORCES

To analyze the scope of introducing private sectors in the Bangladesh Armed Forces, performance of defence logistics infrastructures needs to be evaluated. For this, a number of case studies have been highlighted to evaluate existing logistic practices in the Bangladesh Armed Forces, with a view to determine scope and feasibility of privatization.

Case Study 1: Performance of Bangladesh Ordnance Factory (BOF)

A total of TK 35.55 Crore budget was allocated in the year 2002-2003 to the BOF. Table 2 below shows the expenditure in this regard:²⁰

Allotment (TK in Crore)	Expenditure Item	TK in Crore	Percentage
35.55	1. Foreign Loan Payment	0.75	2%
	2. Pay and Allowance	11.09	31%
	3. Supply and Services	8.69	24%
	4. Repair and Maintenance	1.78	5%
	5. Purchase/Capital Items	11.70	34%
	6. Construction & Works	1.54	4%
Total Expenditure		35.55 Crore	

Table 2: Expenditure in 2002-2003

At present, 31% of the allocated budget was consumed for pay and allowances, which is very high. Table 3 below, further analyses the comparison between the actual expenditure involved in production against the overhead/auxiliary costs:

²⁰. Interview with Col Mustafa Kamal, afwc, psc, Director Production, BOF.

Table - 3

S No	Expenditure directly related to Production			Overhead Expenditure		
	Item	TK in Crore	%	Item	TK in Crore	%
1.	Foreign Loan Payment	0.75	2%	Pay an Allowance	11.09	31%
2.	Repair and Maintenance	1.78	5%	Supply and Services	8.69	24%
3.	Purchase/ Capital Items	11.70	34%	Construction & Work	1.54	4%
TK in Crore		14.23	41%	TK in Crore	21.32	59%

Table 3: Expenditure Related to Production vs. Overhead Expenditure

As 59% of the budget is expended on non-productive heads, the BOF compared to private industries needs to be more cost effective. Ratio of production cost against overhead cost per unit production is given below in Table 4:

Table - 4

S No	Nomenclature	Production		Overhead	
		Cost (In TK)	%	Cost (In TK)	%
1	7.62 SAR	12454.19	24.5%	38507.22	75.5%
2	7.62 Ammunition	5.46	34.15%	10.53	65.85%

Table 4: Production Cost vs. Overhead Expenditure per Unit

The overhead cost of 75.5% and 65.83% have been exorbitantly high and this clearly dictates the need of outsourcing to make BOF a cost effective production unit. Pakistan and Malaysia in this region have opened the door of outsourcing in their respective ordnance factories.

Case Study 2: Military Engineering Services (MES)

MES ensures basic services like electricity, water, sewerage and other day-to-day maintenance of barracks, messes, offices, utilities and accommodation buildings for the Armed Forces. For this, MES depends on other primary services providers²¹ for providing such services. Figure 2 below shows the dependency of MES organization in this regard:

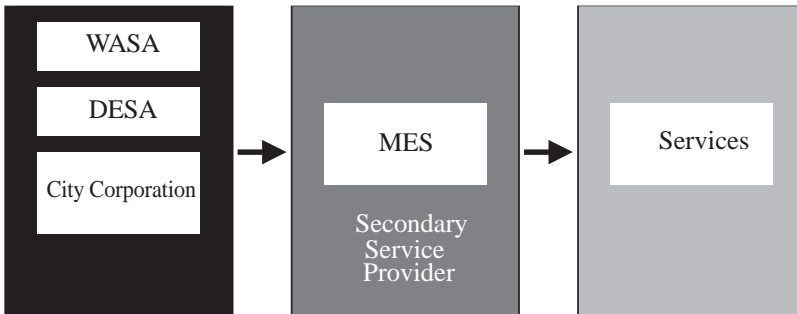


Figure 2: Flow Diagram of MES Maintenance Services

While civil consumers receive similar services directly from the primary sources, MES, on the other hand, is an additional link between primary service providers and the consumers in the case of armed forces. Whether, these services can be provided more cost effectively and by reducing administrative bureaucracies is studied in this section.

The total strength of personnel of BN including civilians is approximately 10,500 against which the strength of MES Navy is 1029. Therefore, an organization of 9471 personnel is supported by 1029 MES personnel. The ratio between consumer and maintainer is shown below in Figure 3:

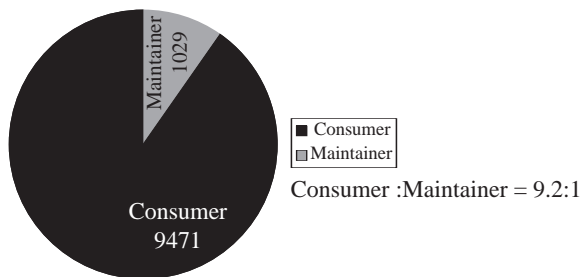


Figure 3: Ratio between Consumer and Maintainer

21. Such as Dhaka Electricity Supply Authority (DESA), Power Development Board (PDB), Water and Sewerage Authority (WASA), City Corporations, etc.

The majority of the 872 Casual Person (CP) and Regular Temporary (RT) personnel presently employed in MES (Navy) had initially joined against project works, which have been already completed.²² On completion of those project works, they were subsequently retained without considering the actual need of personnel required for efficient maintenance and service support.²³ TK 5,12,80,000/00 was remitted to these CP & RT personnel as pay and allowances in the year 2002-2003. TK 6,75,52,800/00 (35%) was spent on pay and allowances of all MES staff against maintenance and repair works allocation of TK 12,60,47,300/00 (65%).²⁴ This analysis does not include other overhead costs such as ration, medical facilities, accommodations, etc. The existing MES organization is, therefore, not cost effective and manned on requirement basis. In almost all European countries, Singapore, Malaysia and the US, preliminary maintenance and repair functions of the armed forces have already been privatized.

Case Study 3: Medical Services

Combined Military Hospital (CMH) at Dhaka started its "Cardiovascular Surgical Section" in 1990, which gradually developed into "Cardiovascular Thoracic Surgery Department (CTVD)". More than Tk. 42,82,00,000/00²⁵ has so far been expended in the CTVD considering fixed and variable expenses excluding pay and allowances. Cost of cardiac surgery in India, Thailand and Singapore varies around Tk 3-5 lac per procedure depending on the nature of treatment. A study²⁶ reveals that, the expenditure of any particular type of cardiovascular surgery conducted in CTVD and number and type of investigations carried out during pre-operative, intra and post operative period are significantly high, in comparison to other renowned hospital abroad. An article published by Tucson Medical Center in the USA mentions: "to run a cardio vascular hospital is a very expensive affair and maximum expenses involve pay and allowances of personnel. Next to it equipment, facilities and supplies are among the biggest expense areas in the hospital". At least 4 operations per day are to be conducted to ensure financial viability of such hospitals. This indicates that the CTVD of CMH Dhaka is under utilized and is less likely to be a cost effective venture. Bangladesh Heart Foundation at

22. Source : Interview with DW & CE (Navy).

23. The sources of these employees are as following:

- a. Supervisory Staffs for past projects (ie, Overseer, Superintendent, UDC/LDC, Storeman, etc).
- b. Tradesman of the corps of Engineer (ie, Valveman, Carpenter, Painter, Plumber, Wireman, etc).

24. Figures collected from DW & CE (Navy) Office.

25. This includes initial establishment cost Tk 9,00,00,000/00, maintenance expense Tk 42,00,000/00, supporting pre-surgical investigation machines Tk 12,00,00,000/00, yearly post surgical laboratory support expenditure Tk 1,40,00,000/00 and construction expenditure Tk 20,00,00,000/00.

26. Source : "A Study on Cost Analysis of Cardiovascular Patient Undergoing Surgical Intervention in Combined Military Hospital, Dhaka" carried out by Major (Dr) Syed Iftekhar Uddin.

government level and Sikder Medical Hospital in the private sector provide much cost effective cardio vascular treatments, as each of these deal with considerable numbers of patients per day.

Case Study 4: Issue of Ration

Significant numbers of service and civilian personnel are employed for providing ration facilities to the Bangladesh Armed Forces personnel. This study analyses the probability of privatizing the collection, store keeping and distribution process associated with issuance of ration, as an alternative option. State of BN personnel authorized to draw ration in 2002-2003 is given below in Table 5:

Table - 5

Name of Base	Married			Single		
	Officer	Sailor	MODC (N)	Officer	Sailor	MODC (N)
BNS ISSA KHAN	190	1132	64	74	503	72
Base Supply Organization	300	2100	60	204	3465	40
BNS HAJI MOHSIN	275	793	44	110	582	15
BNS TITUMIR	97	1007	42	34	337	15
BNS S/MOZZAM	22	240	20	29	256	10
Grand Total		6386			5750	

Table 5: State of Personnel Authorized to Draw Ration

Thirteen servicemen and 12 civilian labors²⁷ are employed for victual ling functions in each major base. In case of privatized ration management, at least 60 to 65 personnel could be spared from the 5 bases and detailed for operational functions. BN has also expended at least Tk 15 crore²⁸ for constructing stores and other facilities.²⁹ Such investment will not be necessary in case of privatized management of the ration collection. The life cycle cost per civilian employee is much less, compared to service personnel. As such, outsourcing in this particular sector will certainly lower the overall expenditure and administrative complicacies to a great extent. Furthermore, it will allow significant numbers of servicemen to be deployed in operational functions. Such practices have been introduced in Pakistan, Singapore and Indian Armed Forces.

27. 1 x Lt Cdr, 1 x Chief Petty Officer, 1 x Petty Officer, 2 x Leading rates and 8 x Able rate.

28. Source : Interview of Assistant Chief of Naval Staff (Logistics), Navy.

29. Considering Tk 2 crores per base.

Case Study 5: Construction of Accommodation Building

It is a general practice in Bangladesh Armed Forces to construct accommodation facilities for officers, servicemen and civilian staff. A number of countries, particularly western countries, do not construct accommodation building for government employees, including defence personnel. Accommodation is provided through leasing private buildings. This section studies the facts and figures of recently completed 15-storied building at NHQ complex, as an example, to determine alternative options for providing accommodation facilities.

The 15-storied building provides 52 'D' type quarters, each of 1650 sqft area to BN officers. Total cost of the construction is Tk 15,83,67,500/00.³⁰ This figure does not include pay, allowances, ration and medical expenditures of MES personnel. Such apartments of 1650 sqft area can be hired in and around NHQ location, at a monthly rent of Tk 12000/00. Hypothetically, if it is considered that Tk 15000/00 per family is allocated per month as house rent, then it will require approximately 17 years to expend the construction cost of the building. In addition, BN will have to bear regular and periodic maintenance costs for the building. Therefore, for practical reasons, private accommodation leased by the government is considered a long-term viable and cost effective option for providing accommodations to service personnel.

Case Study - 6: BN Action Speed Tactical Trainer (ASTT)

In 1999, BN procured³¹ ASTT from Canadian manufacturer. Prior to the expiry of the warranty period, Naval Headquarters opted for negotiating a maintenance contract with the manufacturer. Subsequently, ATLANTIS Canada forwarded a " Proposal for Post Warranty Maintenance Contract - BN ASTT".³² Upon detailed scrutiny, it was calculated that the manufacturer's proposal for Post Warranty Support requires a minimum cost of US\$ 1,716,827/00, excluding material and repair costs. This would mean an expenditure of approximate Tk 8.5 crore, which was irrational as the total procurement cost of the ASTT was Tk 13,01,18,617/00.

BN, in consultation with the manufacturer, subsequently identified the compatible hardware components, which were commercially available in Bangladesh. During the process, it was learned that, a number of local reputed

30. All figures collected during interview with DW&CE (Navy) and Director Works, Naval Headquarters.

31. As per DGDP Contract No 218/4463/235/TS/DGDP/NP-3 dated 30 June 1996.

32. Source : ATLANTIS, Canada offer of 26 Jun 2001.

IT companies were, and are, capable of handling some of such high-tech system maintenance. However, major system/component defects, for which it is essential to replace specialized hardware / software provided by the manufacturer, need to be replaced or repaired by the manufacturer. BN also faced difficulty concerning availability of trained personnel to run and maintain the system. A viable option could be to train private company employees, who would have subsequently run and maintained the BN ASTT; as it is done in most of the NATO countries. Privatization of maintenance service of the ASTT will allow to form skilled and trained personnel within the country.

Case Study 7: Bangladesh Air Force's (BAF) Mess Service³³

BAF Officer's Messes are run by BAF servicemen and civilian personnel for whom no vacancy has been created in the Table of Organization and Equipment (TO & E). A typical mess organization of the BAF consists, as a whole, 37-40 personnel³⁴ who are employed for each mess. If we calculate then we will see that each of them dedicate only one hour per day, meaning 365 working hours are spent on the mess per year; i.e. each of them has wasted 40-45 working days in a year considering 8 hours in a working day. For the other service men, which are permanently attached, the whole year is lost. If the management and operation of the mess could be vested to private companies, then the committee members comprising BAF officers could be abolished and the airmen/civilians staff could be returned to their original functions as per the TO&E. Required degree of control over budget, expenditure, development, quality, etc could be exercised through negotiation and contract details. Like mess functions, it may also be considered to privatize catering services, libraries, swimming pools, entertainment facilities, cinema halls, golf clubs, computer clubs, internet services, etc to private managements.

Case Study 8: Khulna Shipyard

Management of KSY was handed over to BN on 5 May 1999.³⁵ Under BN supervision, KSY retained its status and modus operandi as a private company, the management being supervised by BN only. Numbers of permanent personnel, especially officers were drastically reduced in accordance with

33. Collected through interview of PMC, Air Force Officers Mess, Dhaka.

34. It includes President Mess Committee (PMC), Deputy PMC and Mess Secretary as nominated staffs, who carries out these responsibilities in addition. Other 8 to 10 selected Officers are also allocated with various duties (such as treasurer, entertainment, food, bar, library, sports members etc) of the mess. In addition, there are approximately 11 airmen and permanent air force civilians staffs employed for the smooth function of each mess, such as batman, washer-man, cook, table boy etc.

35. Handing over process coordinated between AFD, MOD, Privatisation Commission and the BN.

industrial norms. Cost analysis for each project was carried out to determine its viability. For business, KSY competed through quotations against other government owned and private dockyards. In this way, KSY was transformed quickly to a cost effective organization through better financial managements supervised by defence personnel. Financial state of KSY at the time of taking over and as on January 2003 is compared below in Table 6.³⁶

Table - 6

Main Heading Sub Heading		During Taking on	January
		Over (Crore Tk)	2003 (Crore Tk)
Asset	Fixed Asset	2.40	16.16
	Current Asset	22.45	96.63
	Accumulated loss	--	22.36
Total Asset		24.85	135.15
Liabilities	Shore Capital	3.00	--
	Long term loan	13.75	--
	Government equity	--	64.84
	Leave, Pay & Gratuity	11.67	11.20
	Current Liabilities	66.88	42.
Land	0.11	13.30	
Total Liabilities		95.41	132.13

Table 6: Comparison of Financial State

Adopting a private body approach, KSY did not depend on the armed forces only, but developed dual technical capabilities to compete for ship/pontoon constructions and maintenance works in the civil sectors as well. The process resulted into the diversification of production and maintenance capability. Therefore, outsourcing of defence related industry is a viable option. KSY can be taken as a successful model in this respect.

36. Interview with Naval Headquarters Plans Directorate and Naval Engineering Directorate.

OPTIONS FOR BANGLADESH ARMED FORCES

Analysis of Existing Logistics System

At present, logistics services of Bangladesh Armed Forces including maintenance are government controlled. Majority of logistic items procured by the Bangladesh Armed Forces are primarily manufactured in foreign countries and supplied locally by their local agents or contractors. 100% of spare parts and techno-based logistics are procured from foreign sources. No significant attempt has yet been under taken to reduce almost total dependence of the armed forces through development of indigenous capability. The orthodox dogma, that Bangladesh's economy does not permit sustainable development of indigenous defence capability; led to pre-conceived decisions, which prevented indigenous production capability.

Large numbers of government officials including service personnel are involved in the procurement process at Armed Forces Division (AFD), Ministry of Defence including Director General Defence Purchase (DGDP), services headquarters and concerned services depots/ maintenance establishments. The overall system is complex, slow, top-heavy and costly. Many countries do not possess such complex logistics infrastructure and generally appoints commercial firms that are responsible for designing, preparation of tender specification, preparation of contract papers, supervision of timely execution of the contract, quality control, and other associated functions. Such arrangement, if allowed, is cost effective considering the long time overhead expenditures.

Cost effectiveness, quality and diversity of product of defence production units such as BOF, BMTF, KSY, etc need to be further improved. Possibility of inducting controlled outsourcing or outsourcing similar to that of British or US PFI systems may be exploited, which will entail following advantages:

- a. Less government budget needs to be poured.
- b. It directly forces the management to focus on commercial cost management system, gradually transforming it cost efficient.
- c. Modernization process could be accelerated ensuring diversity of production, increase of capacity and quality.

There is a misconception that privatizing ordnance factory/units such as BOF, will compromise vital security aspects of the nation. In USA, UK and other western countries, private companies manufacture majority of armament productions. General perception of security prevailing amongst us, as stated above, is not based on evidence or experience. However, personnel associated with security affairs may be provided from the armed forces. British mode of the "Sponsored Reserves" may be considered for the civilian production and maintenance personnel in whom the private company may employ personnel, after thorough vetting by the concerned security agencies. Similarly, BMTF and KSY though placed respectively under Bangladesh Army and BN, are to function strictly as per financial norms of private companies.

Management of basic MES services such as water supply, electricity, sewerage and other day-to-day maintenance functions may be considered for privatization. Careful balance has to be drawn to retain minimum self-maintenance and repair capabilities by the services. Such privatization is likely to reduce governmental expenditures and administrative burdens drastically. This will require reviewing of the existing governmental policy.

The armed forces will have to decide at the highest level whether, non cost effective and expensive specialized medical facilities are required to be established in CMHs. An alternative policy could be adopted with a focus on the improvement of basic medical facilities relevant to the majority of the personnel of the armed forces, while depending on private sectors for specialized and costly treatments. Long time contracts with private, semi governmental or even with other governmental hospitals may provide similar medical services cost effectively.

Expansion of the existing personnel strength of the armed forces is less likely to happen considering our national economy. A viable option could be to reorganize the existing services TO & E, retaining the existing personnel strength but reducing personnel from logistics, maintenance and other supporting roles. Spared personnel may be subsequently deployed on operational tasks. Such restructuring, per nature, will have to invite participation of private sectors on long term/ mid term basis.

Private accommodation leased by the government on long-term basis is considered a viable and cost effective option for providing accommodations to service personnel. This will reduce initial bulk expenditure incurred in the

construction, maintenance/ repair facilities, and thus curtailing administrative functions involved in the process. In such case, number of MES personnel and maintenance budget can also be reduced significantly.

At present approximately 75-82% of the defence budget is spent on supporting functions. Particularly 50-58% of the budget is consumed for pay, allowances and pensions. Many foreign countries have reduced personnel by assigning majority of logistics functions to the private sectors, which has proved to be generally cost effective and efficient in man management. It also reduces medical, pension and other associated expenditures. As defence budget of Bangladesh is less likely to increase significantly, privatization may prove to be a viable option.

Many countries have adopted alternative arrangements to increase defence budget indirectly. Though official defence budget was not raised, but instead, funds were allocated for defence industries in private sectors. Privatization of defence industries will exclude running cost of these institutions from defence budget. Therefore, allocation of the present budget will, in fact, have an effect of substantial increase in the budget allowing more finance for essential priorities.

Any privatization of the logistics sector of Bangladesh Armed Forces needs to put emphasis on technology, which can be offered by the private sector either by their own or through their foreign business partners.

Scope of Privatization

Considering the various case studies mentioned above, following areas might be considered for the privatization of logistics services of the Bangladesh Armed Forces:

- a. All 3rd and 4th line repair and maintenance depot and services of vehicles, ships, aircraft, and heavy machineries.
- b. All MES repair, maintenance and construction functions except financial and major supervisory functions, which could be retained by permanent MES staff.

- c. Management of logistic depots.
- d. Specialized non cost-effective sectors of medical services.
- e. All defence related industrial/ production units providing security personnel from defence services.
- f. All messes, libraries, clubs, catering services, entertainment services, swimming pools, stadiums, Armed Forces Medical College, etc.
- g. Transportation not related to operation and field training, particularly transportation services provided as welfare.
- h. Accommodation buildings for service personnel considering long time cost effectiveness.
- j. Consultancy services for all procurement and MES projects may be privatized under defence control through qualified consultancy firms.

Long Term Partnership

Long-term partnership between the armed forces and private sector is required for items that are regularly required, e.g. provision, small arms, etc. This will provide the following advantages:

- a. Better assurance of continuous long-term support.
- b. Better ability to specify performance measures and targets that are critical to operations, and to provide incentives for the supplier to meet them.
- c. Better ability to define and measure supplier capability.
- d. Better integration of the contractor into the support system to cater for operational surge.
- e. Better control of cost escalation, especially after accounting for supplier's efficiency improvements.

Policy Considerations

Non-core functions of privatization are practicality and cost-effectiveness. But to ensure an over-all balance between the two essentially different sectors, some policy level guidelines should be followed. Such guiding principles are suggested below:

- a. It must not affect operational readiness.
- b. It must be economical.
- c. Business and operational activities of supplier and customer must be integrated.
- d. Contract terms should leverage on the inherent economics of suppliers.
- e. Risk and benefits should be shared.
- f. There should be continuous improvement with incentives for performance.

Ensuring Operational Readiness

The most important pre-requisite for commercial support is that the operational readiness and support to the services must never be compromised when activities are contracted out. To ensure this, following measures are needed:

- a. **Accountability:** Clear lines of accountability must be established for contracted out work.
- b. **Competence:** It is of prime importance that commercial contractors have the skills and expertise to provide the support, especially for highly technical jobs. Where certain skills are not readily available in the market, the services may retain skeleton group of such skilled personnel.
- c. **Sustainability:** It must be ensured that there is sustainability of the expertise in the market, especially when such skills are specialized and take a long time to nurture.
- d. **Surge Requirement:** Surge capacity for emergency needs must be catered for, during privatization of logistics functions. The contractor should have the flexibility to increase its capacity to cope with this surge requirement.

Partnership with Private Suppliers

This partnership aims to establish a mutually beneficial relationship for both parties. Essential elements of the framework are:

- a. **Long-Term Contracts.** This not only reduces the administrative cost of frequent renewal of contracts, but also allows for long-term focus on capability build-up and sustainment, and efficiency improvement.
- b. **Clear Performance Specifications.** In ensuring that performance requirements are clear, contractors' attention will be focused on areas that are truly important to the services as having a direct impact on their mission and operations.
- c. **Incentives to Improve Performance.** Direct and explicit rewards like monetary incentives are given to contractors who exceed pre-determined performance thresholds.
- d. **Incentives for Investment.** As a further incentive for continuous improvement, joint capital investments, sharing risks and benefits with contractors as strategic partners may be considered.
- e. **Optimization and Capacity Planning.** Close supervision is maintained to understand the trade-off between performance and cost. Joint capacity planning with the contractor, involving the three services may also be exploited.
- f. **Control of Cost Escalations.** Regular comparison of contractor's cost with original in-house cost, adjusted for changes in volume and cost escalation, and benchmark with market pricing where available to be made.

Safeguard

Whilst making every effort to ensure that contracting out would not fail, contingency plans are to be made to guard against the possibility of the commercial operator, for whatever reason, failing to meet its obligations. The easiest way is to go for an alternative source. Where this is unlikely to be available, it should be planned to retain some similar skill set in-house, enabling the services to build up the expertise again, if deemed necessary.

Legal Aspects

Concerned articles of our constitution need to be amended to allow privatization and outsourcing in Bangladesh defense forces. The "Privatization Policy" of the Government may also be changed to allow such effort. The "Privatization Commission" may issue policy directives identifying the roles of AFD, concerned ministries, services headquarters and the private companies associated in the process. National consensus on the issue may also be sought in the parliament.

Organizational Framework

A central organization under the MOD may be set for inducting privatization in the logistics sector of the Bangladesh Armed Forces. The government may determine composition, status and modus operandi of this central organization. A high level committee may be formed at the services headquarters level to conduct detailed studies for determining scope of privatizing logistics in each service. Report of the services headquarters forwarded to the MOD may subsequently be vetted by the central organization assisted by committee/defence personnel. Feasibility of standardization and joint logistics support may also be exploited at this stage. Services headquarters may allocate additional responsibilities to the existing R & D Directorate for arranging studies and carry out periodic cost effectiveness analysis of respective service's logistics functions to determine their viability. Additional and qualified staffs may be provided to this directorate accordingly.

CONCLUSIONS

Fusion of privatization in the defence forces, particularly in areas of logistics, has been practised by many nations. The scope and extent of such privatization in western armed forces have gradually increased emphasizing on the fact that partial privatization were viable and cost effective. Regional Armed Forces of India, Pakistan, Malaysia, Singapore are also depending on the private sectors for various services. Thus, the lessons derived from foreign armed forces clearly suggest that privatization in armed forces is a viable option, even for developing countries.

The sector specific case studies concerning Bangladesh Armed Forces highlight that introduction of privatization in the logistics services is a viable

option considering different realities. Initial privatization may involve 3rd/4th line repairs, maintenance and logistics depots, MES functions, specialized medical services, messes, libraries, clubs, swimming pools, catering services, transportation (other than operational), etc. All production units placed under the MOD requires being more cost effective and efficient in man management adopting strict private sector norms.

Article 13 of the Bangladesh Constitution and other relevant legal frameworks need to be amended at the onset to open any scope of privatization in defence services. National policy directives from the government; approved by the parliament; "Privatization Commission, AFD and MOD will be required.

Formulating policy approaches and methods to induct privatization in armed forces vary from country to country. Bangladesh needs to formulate own policies and methodology considering own ground realities. Furthermore, it is needed to set up an appropriate organizational framework involving the AFD, concerned ministries including MOD, privatization commission, services headquarters and private bodies to institutionalize the desired privatization process. Long-term partnership provides better integration of the private bodies for bulk and common logistics items. Policy consideration must focus to ensure operational readiness of the armed forces as a whole, which should be economical providing best value for the government and the services.

State-owned defence industries need to be more vibrant in terms of cost efficiency and man management. Compromising with these values, in the pretext of security consciousness, does not necessarily bring significant advantage to the government and the services. The attitude of relating operational concerns overriding core management aspects has not been validated through facts and figures. Awareness in this regard needs to be cultivated in the minds and hearts of defence personnel so that they can be more conscious in financial management. The study also reveals the need and suitability of privatizing concerned logistics functions of the defence services.

RECOMMENDATIONS

The paper recommends the followings :

- a. Existing bar on private investment in defence sector may be withdrawn by amending Article 13 of the Constitution.
- b. Subsequently, government may be persuaded to formulate a "Privatization Policy" to promote privatization in logistics sectors of Bangladesh Armed Forces. The same may be reflected in the NIP.
- c. Privatization commission may be persuaded to issue detail "Modus Operandi" and procedures, which may be followed to induct privatization in defence sectors.
- d. A central organization may be setup under the MOD for institutionalizing privatization in Bangladesh Armed Forces.
- e. Services Headquarters may allocate additional responsibilities to the R&D directorate to determine scope of inducting privatization in their respective services. Government may also pursue to sanction additional qualified staffs to the R&D directorates of each services headquarters and the AFD accordingly.
- f. Government may direct all defence industries, tri-service logistics institutions and services headquarters to infuse cost analysis procedures in all logistics functions including maintenance. Necessary directives may be issued either through AFD or MOD in this regard.
- g. Initially privatization may be considered in associated sectors of logistics as mentioned earlier. Subsequently, the scope may be broadened after observing its suitability and viability over a period.
- h. Steps to change the existing psyche of defence personnel against any privatization efforts may be induced through training, discussions, study periods and research works.

BIBLIOGRAPHY

Books

1. Savas, E.S, Privatization - The Key to Better Governor, New Delhi: Tate McGrow, Hill Publishing Company Limited, 1987.
2. United Nations Department of Economic and Social Administration, Privatization of Public Sector Activities, New York, United Nations Division for Public Economics and Public Administration, 1999.
3. Rao, C.P, Globalization, Privatization and Free Market Economy, London : Qiorum Books, 1998.
4. John S. Earle, Roman Frydman and Adrzej Rapaczynski, Privatization in the Transition to a Market Economy - Studies and Preconditions and Policies in Eastern Europe, London : Printer Publishers, 1993.
5. Kapur, BD, Major General, Building A Defence Technology Base, New Delhi : Lancer Press, 1989.
6. Rahman, A, Science and Technology in India, Pakistan, Bangladesh and Srilanka, Essex : Longman Group UK Limited, 1990.
7. Sen, Samir K, Air Vice Marshal, Military Technology and Defence Industrialization - The Indian Experience, New Delhi : Manas Publications, 2000.
8. Mathews, Ran, Defence Production in India, New Delhi : ABC Publishing House, 1989.
9. Wright, Vincent, Social Change in Western Europe - Privatization in Western Europe, Pressures, Problems and Paradoxes, Aron, UK : Printer Publishers, 1994.
10. Martin Brendon, In the Public Interest? - Privatization and Public Section Reform, Valtaire Cedex, France : Zed Books, 1993.
11. Humphrey, Clare. E, Privatization in Bangladesh - Economic Transition in a Poor Country, Dhaka : University Press Limited, 1992.

Periodicals

12. Pitroda, Sam, Founder Member, World Telecom Advisory Council, Privatization of Public Sector Activities - Developing Country Perspective, pp 45 - 48.
13. Paper of National Foreign Intelligence, US National Intelligence Council, Global Trends 2015 - A Dialogue About the Future with Non-government Aspects, NIC, 2000.
14. Grant, NB, Brig, "Military Budgeting and National Security", Indian Defence Review, January 1987.
15. Rajadhyaksha, V G, "Planning Development with Defence", Indian Defence Review, January 1991.
16. "Arms Policy and Industrial Strategy", Livre Blance Sur La Defence, 1994.
17. "The Defence Equipment Programme", Statement on the Defence Estimate, 1996.
18. Khan, Taslim Uddin, Brigadier General, psc, "Individual Research Paper", Bangladesh Armed Forces' vis-à-vis Development of the Country, 2001.
19. Comdts Paper, by Maj. Kazi Masudul Mahmud, titled "R&D in the Doctrinal Development", 1993.
20. Independent Research Paper titled "A Study on Cost Analysis of Cardiovascular Patient Undergoing Surgical Intervention in Combined Military Hospital, Dhaka", by Major (DR) Syed Iftekhar Uddin, MPH (Hospital Management) Course, Session 1998-98, AFMI, 1999.

Internet Sources

21. Download from "Commercial Support For Singapore Armed Forces Logistic Functions".
22. Download from "The Public Private Partnership in the Ministry of Defence, UK".
23. Download from "Improving the Combat Edge Through Outsourcing Volume 11, Number 30", A DO report, released March 1996.

24. <http://www.ets-news.com/abro.htm>.
25. http://www.burmafund.org/Pathfinders/Research_Library/Military/Preparing.htm.
26. Download from "Ministry of Defence/ Doing Business/ PPP/ PFI Guidelines/ Case Studies".
27. "Elements of PPP in Defence" http://www.mod.uk/business/ppp/ppp_defence.htm.
28. <http://www.geocities.com/TheTropics/3328/idr00010.htm>.
29. <http://www.iranexpert.com/2003/privatization10january.htm>.
30. Download from "Major PPP Projects - UK Ministry of Defence".
31. "The Privatization of Military Training Would Benefit U.S". <http://www.nationaldefensemagazine.org/article.cfm?Id=971>.
32. Download from "Public-Private Ventures Could Ease the Pains of Privatization in USA".
33. "Private Finance Initiative" <http://www.mod.uk/aboutus/factfiles/pfi.htm>.
34. Download from "Privatization Commission Homepage".
35. "The Malaysian Armed Forces" <http://www.pasols.org/Log%2016%20-%204.html>.

Author:

Commander Saber Sharif (C), afwc, psc, BN was commissioned in executive branch in 1985. He attended number of courses both at home and abroad some are Basic Officers Course in Germany, Long Communication Course in India, Staff Course in Germany and Armed Forces War Course in NDC, Mirpur.

Commander Sharif served in many appointments notably Commanding Officer Gunboats, Patrolboats and Submarine Chaser. Staff Officer Operations Sea Training Group. Project Officer Coast Guard and Deputy Director of Naval Operations at NHQ. Presently he is commanding a “Rapid Action Battalion” in Dhaka.

INFLUENCE OF CHANGING SOCIETY ON SOLDIERS AND SOLDIERING: BANGLADESH PERSPECTIVE

Brigadier General Anup Kumar Chakma, ndc, psc

Most of our soldiers come from rural background and join the Army without knowing what it does and how it works. They only start to understand soldiering; its purpose and uniqueness after entering it. Soldiering is a tough profession, demands of the soldiers to lead a regulated and regimented life. They are expected to be always ready to make great sacrifices in the sense that they ought to place duty before self and should be motivated to kill and be killed for the greater interests of the society. But one must not forget the fact that they are the products of society and that they have families - wife and children; they too have dreams, hopes and aspirations just as everyone else in the society has. Hence, they find it challenging - challenging to cope with the demands of the profession of soldiering, while at the same time fulfilling family and social obligations.

This study aims at understanding our soldiers and their soldiering by interfacing conflicting family and institutional requirements in the context of changing societal conditions. It also attempts to recommend ways of meeting the needs of our soldiers, so that they take soldiering not as a mere vocation but as a profession.

INTRODUCTION

This study involves the study of 'soldiers' and 'soldiering'. Therefore, there is a need to understand the terms '**military**', '**soldiers**', and '**soldiering**'. The word military is frequently used to cover all branches of the armed services - Army, Navy, Air Force, Marines and etc., whilst at other times it is used exclusively as a synonym for the Army.¹ And when we talk of soldiers we actually mean the uniformed members of the armed services. 'Modern-day soldiers are not solely employed to fight, they are employed to be soldiers and take part in all activities of soldiering.'² The word 'soldier' is really far too loose a term to be used in anything more than the most general discussion. 'Soldier'

1. Edmonds, Martin, *Armed Services and Society* (Colorado, 1990), p. 22

2. Patrick Milehan, 'Fighting Spirit: Has it a Future?' in *The British Army Manpower and Society into the Twenty- First Century*, edited by Hew Strachan (London, 2000), p.248

comprehends all the uniformed members of the Army, which also includes 'sailor' in the Navy and 'airman' in the Air Force. In Bangladesh the soldiers in the Army include anyone from *sainik*³ with hardly few weeks of service, to the oldest serving Junior Commissioned Officer (JCO) and officers of the rank of Second Lieutenant up to General. 'Soldiering' is nothing but the career these 'soldiers' have accepted as their way of life. There are unique differences between soldiers and their civilian counterparts in their recruitment, service conditions and housing arrangements. Soldiers live in cantonments, where free access of people in general is restricted. There are 'in-living'⁴ family quarters in cantonments for housing soldiers' families. They face the same life course issues that challenge most families in our society - raising children, coping with financial problems, managing career and family, dealing with marital problems, transitioning into retirement and so on as all others do. However, they have their distinct military ethos, which make them distinct within society.

In Bangladesh, we have soldiers from both urban and rural areas, but the majority belong to rural areas. To keep pace with the modern-day requirements, educational standard for recruitment in the Army as '*sainiks*' has been upgraded from class VIII to S.S.C passed.⁵ Hence, our soldiers are now more educated and more conscious of their duties and responsibilities as well as of their rights and privileges; they certainly have more commitment to the service but also have more hopes and aspirations just as others in the society have.

OBJECTIVE OF THE STUDY

The principal concern of this study is to understand the relationship between the society and soldiers in the context of Bangladesh as well as its impact on them. The study addresses the following issues:

- a. Our changing society and its impacts.
- b. Conditions that condition soldierly mind vis-à-vis attractions of soldiering.
- c. Influence of changing society on our soldiers and their soldiering.
- d. Recommendations.

3. '*Sainik*' is the lowest rank of a soldier in the Army.

4. 'In-living' quarters are army quarters in the cantonment allotted to married soldiers to live with families.

5. Minimum educational qualification for being recruited as a *sainik* is Secondary School Certificate (SSC) Exam. in 2nd division or equivalent. It is effective since 19 May 1996.

Research Methodology and Scope

Personal experience of the author, official documents relating to the Army as well as views and observations of different researchers on the issues concerning evolution of society provide the necessary basic research inputs. Efforts have also been made to empirically substantiate the arguments presented in this study by carrying out appraisal of a survey, case studies and the opinions of senior army officers. The study focuses on issues concerning only the married soldiers from sainiks up to JCOs⁶ of the Bangladesh Army.

OUR CHANGING SOCIETY AND ITS IMPACTS

Soldiers in Bangladesh are seen to remain separated from society as they mostly live in cantonments, which is also the case in many other countries of the world. As a matter of fact, typical service conditions, housing arrangements, their distinct ethos and moral keep them almost aloof from civilian society. They tend to form a distinctive community within the larger mainstream society, and hence do not always necessarily mirror society. Therefore, to understand soldiers' way of life, hopes and aspirations, it is essential to study the evolving society, which they live in, and the inter-linking factors that have their part to play to influence changes in our social fabric.

In order to understand the relation between society and soldiers, and its impact on the later, one must understand the make-up of present Bangladesh society, both at rural and urban level, as well as have an insight of the different development issues like economy, human development, education and gender relations for a better understanding of the changes that are gradually shaping our society.

Economic Development

Indeed, Bangladesh economy is doing well now in the sense that it has 'reduced its dependence on foreign aid significantly.'⁷ Its...economy [has] experienced a modest and reasonably steady annual growth of GDP of just over 4 percent... The population growth rate has declined remarkably particularly in recent years, and there has been considerable improvement in human development indicators, but the incidence of poverty is still one of the highest in the world. Food grain production growth has grown slightly ahead of population growth, but the rest of crop agriculture has performed poorly. In manufacturing,

6. JCOs include Warrant Officers, Senior Warrant Officers and Master Warrant Officers.

7. Wahiuddin Mahmud, 'Bangladesh Economy: Performance, Prospects and Challenges', in Bangladesh on the Threshold of the Twenty-First Century, edited by A.M. Choudhury and Fakrul Alam (Dhaka, 2002), p. 73

*the phenomenal growth of the ready-made garment industry has enabled Bangladesh to achieve a high growth rate of exports, and yet the envisaged development of broader, more diversified and modern industrial and export base has not taken place.*⁸

Agriculture and exports, especially of garments, have been our main drivers of growth. It is encouraging to note that our participation in the global economy has recorded a steady rise - the trade to GDP ratio rising from 10% in the mid-1970s to 16% in mid-1980s to almost 30% now.⁹ These do give us an idea about the economic performance of Bangladesh as well as their impacts on our society.

Human Development

According to Frederick T. Temple, World Bank Country Director for Bangladesh, Bangladesh has a reasonably strong development performance record with some outstanding successes in human development and moderately good growth performance, resulting in a fairly steady decline in the proportion of the population in poverty.¹⁰ The following data¹¹ illustrate Bangladesh's progress on human development:

- a. The primary school enrollment rate has risen from 62% in 1985 to almost 100% today.
- b. The ratio of girls to boys among primary school children has risen to 1:1 today, compared to 5:7 in 1985.
- c. Bangladesh reduced its population growth rate at unprecedented speed. It is now 1.5% per year compared to 2.4% in the decade following independence.

Educational Development

It is true that education has not as yet reached every person of our country. In 1995 adult literacy rate was 47.3%¹² and in 1997 it was 51%.¹³ Nevertheless, every year we find a large number of youths becoming educationally qualified to enter the job market, which is evident from the table below:

8. Mahmud, p. 73

9. Frederick T. Temple on 'Reforms and Socio-economic Performance in Bangladesh,' An Unpublished paper presented at a seminar on 'Accelerating Growth and Poverty Reduction in Bangladesh', organised by Bureau of Economic Research, Dhaka University, in 2003, p. 3

10. Temple, p. 2

11. Temple, p. 1

12. Bangladesh 2020, Published for the World Bank (Dhaka, 1998), p. 7

13. Statistical Pocket Book of Bangladesh 2000, Bangladesh Bureau of Statistics (Dhaka, January 2002), p. 351. Note that different sources have different data on the matter.

Performance of Examinees in S.S.C./H.S.C. Examinations

Table - 1

Year	S.S.C. Examination			H.S.C. Examination		
	Appeared	Passed	Passed %	Appeared	Passed	Passed %
1997	734475	373784	50.89	659533	242960	36.83
1998	870401	433934	49.85	480559	220748	45.93
1999	980680	555066	56.60	543745	290627	53.44
2000	928391	382744	41.22	502933	186234	37.92

Source: Statistical Pocketbook of Bangladesh 2000.

In the year 2003, a total of 9,21,024 took the S.S.C. Examination out of which 3,30,766 passed, the pass percentage being 36.85.¹⁴ Despite such poor results in these examinations in recent years, some progress in this field has certainly taken place. This may be attributed to the fact that 'educational enrollment as well as the percentage of literacy has risen. Education has been diversified. Particularly worthy of attention has been the interests the girls are taking in education'¹⁵ A relatively conservative analysis also reveals that attendance in the educational institutions has increased and drop out rate has declined over the years. This trend certainly has positive sides, but it also has some negative implications. The negative implications the society is to contend with are:¹⁶

- a. The number of educated unemployed almost doubled between 1977 and 1997.
- b. Higher education has spread to the middle class and the poor, which has also resulted in the increase in the number of unemployed youths.
- c. In 1977, most of the educated unemployed had only a tenuous connection with agriculture, because education has made them averse to manual labour and agriculture.
- d. In 1997, the trend was to get involved in business or so-called white-collar jobs, failing which they would simply sit idle.

14. The Daily Star, 16 July.2003, p. 1

15. Choudhury, p. 215

16. Siddiqui, Kamal, Jagatpur 1977-97 Poverty and Social Change in Rural Bangladesh (Dhaka, 2000), pp. 213-214. Here the author gives out his findings of only one village, but the picture is more or less the same in other villages of Bangladesh.

Gender Relations: Changing Role of Women

The population ratio of men and women in Bangladesh in 1996 was about 1:1 with male numbering 62712,000 and female 59413,000.¹⁷ It is true that educated young women who become educated wives and mothers are, in the final analysis, the most decisive factors in a developing country's bid to control not only the growth of its population but also to enhance its development. The following table reflects the present state of female education in Bangladesh:¹⁸

Female Education in Bangladesh

Table - 2

Indicators	Girls	Boys	Total
Primary Enrolment Ratio (Net) 1997	70	80	75
Secondary Enrolment Ratio (Net) 1997	16	27	22
Adult Literacy Rate (%) 1997	27	54	39
Drop-out Rate (%) 1994	33	31	-
Completion of Primary Cycle (%) 1997	67	69	-

Source: Human Development in South Asia 2000, Weekly 2000:2/3/2001.

It is understandable that women in Bangladesh are far behind the desired literacy level. The situation is worse for women in higher and technical education. This is because 'poor parents consider any expense for educating a girl unproductive as she leaves their family after marriage. A survey conducted in 1986 showed most men in rural Bangladesh considered educated women responsible for unhappy conjugal lives.'¹⁹ Against such negative trends - still in vogue in certain sections of our people - our womenfolk are seen to be emerging in their own right as responsible members of the society.

Technological Development

Indeed, the world is now experiencing the latest development of science and technology. We have no doubt as to the numerous benefits technology can offer us today and will offer us in the days ahead. Technological development is also taking place alongside all the developmental activities in both rural and urban areas of Bangladesh, of course, not at the rate we want it to happen.

17. Statistical Pocketbook, p. 135

18. Ahmad Sherafuddin, 'Women in Bangladesh', The Daily Observer, 09 May 2001, p. 5

19. Shawkat Ara Hussain, 'Status of Women', in Bangladesh on the Threshold of the Twenty-First Century, edited by A.M. Choudhury and Fakrul Alam (Dhaka, 2002), p. 237

Activities involving agriculture, irrigation and health-care, movement from one place to another etc. have become technology-dependent. The network of cellular phone, which now covers almost the entire country, is a great technological leap forward for Bangladesh. All these contribute towards improvement of our quality of life and overall development.

Rural Bangladesh: Changes through Development

On the changes taking place in the rural areas of Bangladesh, Mr. Serajul Islam Choudhury commented, 'Life in the villages has altered. Trees have been felled, and road links improved. Automobiles move about throughout the country. Electricity, mobile phones, power tillers and water pumps are active in the villages. The rural economy has itself undergone noticeable changes; ... Employment, however, remains scarce; and that is the main reason why there is internal migration towards towns and also the capital.'²⁰ The positive effects of these developments are that the people are now keen on improving their quality of life. However, there are adverse effects, and the most significant being the creation of rural townships and the road-networks at the expense of agricultural land. Besides, it has caused more and more people, who otherwise work on the land, to migrate to urban areas to find alternative means of livelihood.

IMPACTS OF CHANGING SOCIETY

Family and Household

Demise of the Concept of Joint Family Structure

Our society is now rapidly changing resulting in the disintegration of our traditional joint family structure. Agrarian Britain had almost the same kind of joint family structure in the late 17th and early 18th centuries. 'In agrarian Britain the typical family was centred on the village or the hamlet... Two or three generations of a family would live in the same village, would practise craft such as smithing or tanning or would work on the land, and upon the shoulders of the working father would fall the ultimate burden of providing for his family. He taught his sons, and perhaps his nephews too, the skills they would need to earn a living themselves, and his wife and daughters and plus any elderly dependent relatives, took on a supporting role'.²¹ Bangladesh, being an essentially agrarian country, has had similar family structure and social norms that have endured well into the last century and even into the current century to some extent.

20. Serajul Islam Choudhury, 'Society and Culture' in Bangladesh on the Threshold of the Twenty-First Century, edited by A.M. Choudhury and Fakrul Alam (Dhaka, 2002), p. 214

21. Ruth, Jolly, *Military Man Family Man* (London, 1992), p. 7

A survey, carried out in Jagatpur, one of the villages in Bangladesh, reveals a clearer picture about the present status of family structure in our rural Bangladesh. It shows that in 1997, 72.5% of the total households were nuclear, 26.5% were joint families and only 0.8% families were extended. Further study reveals that 79% of the poor households were nuclear, 74% of the middle-class families and only 24% of the rich families were nuclear.²² The advantage of a joint family was that a male member of the family could remain away from his wife and children for a prolonged period leaving them at the care of the others in the family and he did not have much to worry about. The greatest disadvantage of breaking up of joint families into nuclear families, as identified in the survey, was that there would perhaps be no one to fall back on in a nuclear family situation in times of adverse and emergency situations.²³

Changing Attitude of Men and Women towards Family Separation

Disintegration of the joint family structure has influenced the attitude of men towards their occupation. The land, each nuclear family owns after it detaches itself from the joint or extended family structure, is usually seen to shrink to the extent that it can no longer support the family. Therefore, we now find that all the members of a family - especially male members - do not necessarily want to cling to the family profession but do something different to earn their livelihood. Again, a nuclear family usually prefers to live together to see the father being active at home rather than remaining absent. A father needs to accommodate the demands of two careers within the household - being engaged in a vocation to earn a living and performing the responsibility of both husband and father. However, it is also not unusual to find families in our society where men live away from home to earn a living for the family and wives look after the household affairs including taking care of the children.

Changing Attitude towards the Task of Parenting

The change in our traditional joint family structure has also changed our general attitude towards parenting. In a joint family, children can grow up under the care of their grandparents or relatives, which does not happen in a nuclear family. Though wives do accept the compelling circumstances to let husbands live away from home for occupational purposes, yet they would always be happy to see that both of them share the responsibility not only of running their home but also the upbringing of their children. Birth and babies are women's matter and that dedication to the occupation to earn for the family is men's matter is an idea, which is gradually becoming moribund.

22. Kamal, Pp. 278-279

23. Kamal. p. 280. See the survey findings for more advantages and disadvantages that have been identified.

Employment Opportunities and Rural to Urban Migration

Overall rural development, now taking place in Bangladesh, has contributed in producing more and more educated youths for different types of jobs in industries, security firms, construction firms etc. These industries and enterprises located mostly in and around urban areas are attracting men and women from rural to urban areas. While it encourages internal migration from rural to urban areas, it also has some effects on the lives of our people of both rural and urban areas.

Changing Attitude towards Women's Participation in the Mainstream Economy and Activities

Changing conditions in terms of development in the country are also changing our traditional attitude towards women. Increasing numbers of women are seen to be participating in the country's mainstream economy. 90% of workers in the garment industry are women, and there are women working in industries like textile, electronics, pharmaceuticals etc. We see educated women pursuing career in engineering, medical and nursing services, teaching, banking, government cadre services and in non-governmental organisations. This will be evident from the following table:²⁴

Female Participation in Economy

Table - 3

Number (million) of female labour force	27
Female labour force as a % of total labour force 1998	42
Women as a % of total administrators and managers 1990-99	4.9
Women as a % of total professional and technical workers 1990-99	34.7
Female unemployment rate as a % total female labour force 1996	2.30
Female economic activity rate as a % of male 1997	77.2
Female earned income share as a % male 1997	33
Percentage of female labour in agriculture 1994-97	41.7
Percentage of female labour in industry 1994-97	27.8
Percentage of female labour in services	30.5

The significant change in our attitude towards the role and status of women in our society is also reflected in the fact that we now have women²⁵ as commissioned officers in the Armed Forces.

24. Ahmad, p. 5

25. Lt Col Md. Nazrul Islam, 'Bangladesh Armed Forces and Popular Expectations', The Daily New Nation, 26 March 2003, p. 5

CONDITIONS THAT CONDITION SOLDIERLY MIND

According to Huntington, the uniqueness of soldierly mind lies in certain mental attributes or qualities, which constitute personality of a soldier. Many a writer - civil and military - tend to agree that the soldierly mind ought to be 'disciplined, rigid, logical, scientific; but not flexible, tolerant, intuitive, or emotional.'²⁶ However, this approach to understand personality of soldiers may not be useful for outsiders, until soldiers are studied by relating their personality, values and behaviour to social context.

Though the Army does not differ in their basic characteristics from other Services, even civilian organisations, it distinctly differs in their emphasis, and in the detailed terms of engagement of soldiers generally incorporated in legally binding service regulations. Central to the notion of the possibility of death in the course of mission accomplishment is the transfer of individual values to those of the group, since experience suggests that individual survival is ultimately dependent on the cohesion, morale, discipline and preparation of the fighting group, each being a part of it.

Soldiers' Unlimited Liability

The fact, that the Army is formed, equipped and trained either to deter conflict, or to do battle against adversary makes it stand out as a symbol of independence, national sovereignty and territorial integrity. The Army is thus, and will certainly be uniquely engaged in a sphere of state activity where stakes are not just high but they are often total. It is this very characteristic that differentiates it from all other civilian institutions, whether public or private. Indeed, all soldiers of the Army have an avowed duty to respond to the utmost of their ability for the purpose, for which they are maintained. This is frequently referred to as soldiers' 'unlimited liability', which carries with it the real possibility of death in the course of carrying out their duty.²⁷ All out efforts are, therefore, made to prepare the soldiers to learn to survive under any kind of dangerous, unpleasant and hostile environment. This requires great emphasis to be placed on personal and organisational discipline, and self-discipline of every individual as well as the cohesion of the various sections that make up the whole fighting unit.

26. Huntington, Samuel P, *The Soldier and the State*, 13th edition (London, 1998), p. 60

27. Martin, p. 30

Soldiering Demands Enforced Obedience to Orders

The secret of the Army's ability to prepare its soldiers for the supreme sacrifice for the country lies in the supreme military virtue, which is obedience. In the Army, obedience stands out to be the greatest military virtue, which needs to be enforced and strictly managed. Therefore, personnel in our Army are subject to the Bangladesh Army Act (BAA), who are obliged not to '...disobey in such a manner as to show a wilful defiance of authority a lawful command given personally by his superior officer...' or not to disobey '...the lawful command of his superior officer, knowing or having reason to believe him to be such...' ²⁸ What is more important to note is that they are subject to two laws - law of the land and the Army law. The latter relates to preventing them from committing such offences as contained in the Manual of Bangladesh Army Law (MBAL), which also provides extra powers to regulate all the soldiers; these extra powers enable the Army to enforce compliance of its members in times of crisis.

The conflict in the military or the Army between obedience and professional competence usually involves the relation between the subordinate and superior. 'In operations, and even more particularly in combat, ready obedience cannot conflict with military competence: it is the essence of military competence.'²⁹ Lord Nelson said, "To serve my King and to destroy the French I consider as the great order of all, from which little ones spring, and if one of these little ones militate against it, I go back to obey the great order." He said so while justifying his disobedience to one of the operational orders he received, which now serves as a classic example of disobedience by subordinates of operational orders of superiors.³⁰ The officers and men in uniform, who revolted in favour of our Liberation War in 1971, also displayed similar Nelson-like disobedience to serve the spirit of our freedom struggle. However, these were extremely exceptional circumstances that called for such display of disobedience.

Terms of Conditions/Engagement

The loss of individual freedom of soldiers, when necessary, is seldom questioned as it is accepted uncritically because it is a precept, which reaches to the very heart of the military ethos. Men under arms or men in battle cannot be allowed to take unauthorised decisions because a collection of individuals may become a mob, but never an army. Therefore, any one willing to be a soldier is expected to accept this very way of life and conditions before enrolling himself

28. The Manual of Bangladesh Military Law: The Army Act - Offences (Dhaka, 28 November 1982), Pp. 147-187

29. Huntington, p. 75

30. Huntington, p.75, see footnote.

as a soldier. In Bangladesh too, soldiers are enrolled according to the procedure as laid down in the BAA Sections 11 and 12.³¹ Enrolment is voluntary but all need to sign a contract to the effect that they agree to accept the terms of engagement as shown in the table below:³²

The Period of Colour Service for Each Rank

Table - 4

Rank	*Selected Trade	Others
Sainik	21 years	21 years
Lance Corporal	22 "	22 "
Corporal	24 "	23 "
Sergeant	25 "	24 "
Warrant Officer	28 "	27 "
Senior Warrant Officer	30 "	29 "
Master Warrant Officer	33 years or 5 years tenure of appointment, whichever is earlier.	

From the table it becomes apparent that sainiks and corporals are expected to retire at the age of 38 - 41 years.

Training

Training, all-important for the Army, is what it mostly remains busy with. It is tough, repetitive and, perhaps, monotonous, but there is no way that one can risk compromising with it, lest soldiers fail to do what they are expected to do. However unpleasant, difficult and rigorous it might be, training in the Army must go on. It is essential to ensure that soldiers are adequately trained to prevail and survive under life-threatening and hostile conditions. The Bangladesh Army has been doing its best in this regard. We have soldiers well tested by time. Their contributions towards successfully containing the insurgency in the CHTs and their role in reaching a Peace Accord, which is under implementation, are enough to justify this contention. Besides, their activities in aid to civil power in combating natural calamities or their roles in the maintenance of law and order during national elections and other potentially volatile situations also bear the testimony of the high standard of our training. Again, it is because of training that our soldiers are performing well in UN peacekeeping operations and earning laurels for themselves and the country.

31. The Manual of Bangladesh Army Law, Pp. 413-418

32. The Bangladesh Army Instructions Number 65/54 - Amendment, 14 March 1988.

Living Conditions

Soldiers live in cantonments and so do their families. However, all married soldiers are not allowed to live with their families. For example, only 20%³³ of married other ranks of armour, infantry, artillery, engineers and signals units are allowed to live with their families in family quarters, both in-living and out-living quarters,³⁴ and the rest have to stay in barracks. This is essential for having adequate number of soldiers always readily available for any kind of duties that they are called upon to do.

The problems of soldiers, particularly of the married ones, need also to be understood from their perspective. These problems often centre on family issues and usually relate to living or not living with family. In a unit with about 800 officers and men, other ranks will number about 750. Experience suggests that this unit will have about 400 married other ranks to be allotted with family quarters. As per the current policy, out of these 400 only 80 will be allowed to live with their families in out-living and in-living quarters, and the rest will have to live in barracks. Plain arithmetic says that it will take about 5 years to complete allotment of family quarter to each married soldier, if each of them is allowed to retain the quarter for one year. The Indian Army reportedly faces the same problem of not being able to provide married quarters to their soldiers. However, the Indian Army attempts to reduce the effects of the problem by making an arrangement whereby soldiers may let their families live in 'the separated-family-housing areas', which are located in the vicinity of cantonments/garrisons and well looked after by the concerned cantonment authority. The houses are rented and maintained by the fund generated from the house-rent allowances of those soldiers whose families reside in these housing areas. Soldiers in India, therefore, need not usually worry much about moving with their families from one station to another as they may let their families live in these housing-areas.³⁵

ATTRactions OF SOLDIERING

Salary

The salary structure of the military including the Army ought to be based on institutional and occupational characteristics - institutional relates to salary as per rank and seniority. The salary and other privileges given in return for

33. It was 14% and increased to 20% on 30 April 1997.

34. 'Out-living' quarters are privately owned and located adjacent to cantonments. A soldier who cannot be allotted with an in-living quarter, despite being entitled as per policy, rents an out-living quarter. This happens because the Army still does not have in-living quarters as per authorisation. These are duly inspected before soldiers are permitted to rent such quarters.

35. This has been learnt from Brigadier Vijay Kumar Aluwalia of Indian Army.

compliant behaviour of soldiers and their rigorous service conditions are better than what their civilian counterparts in the public sector usually get. What is important to note is that our soldiers are to often live away from their families - wives and children. It certainly causes them extra expenditure and also hardships to their families. That is why, there are the allowances like defence services allowances, ration allowances, rations for wife and children at subsidised rate - all of which they receive as extra recompense for working under unpleasant or difficult conditions, which one call bonus or overtime in civilian terminology.

Career Prospects

The career pattern of soldiers,³⁶ as it exists in our Army, provides for a number of steps and also opportunities for progressing up these steps fairly rapidly. However, the career structure is like a pyramid and promotions are on merits and results. Therefore, every soldier has to earn his promotion by sustained effort over many years, and anyone who falls behind in advancing his career up the pyramid finds himself retiring early. The structure is such that only few go up while the bulk are left out to retire at different stages of their career and at different ages.

Comradeship and Variety

Tradition, esprit, unity and community are amongst the most important in the value system in the Army, which help develop 'comradeship' amongst soldiers. As a matter of fact, these are the most attractive aspects of soldiering. This is certainly not the case in ordinary life. Again, the repetitive and monotonous nature of training in the Army becomes interesting when there is variety in the methods of training and the environment in which it takes place. This is something to which due attention is always given. In the process, the Army is seen to offer opportunities for doing something different at different times.

Welfare and Rehabilitation

"The more the military's actions make service members and their families truly hear and believe the message that 'the military takes care of its own,' the less will be the conflict between the two greedy institutions of the military and the family."³⁷ Though this message relates to the welfare of soldiers and their

36. There are seven ranks from sainik to master warrant officer and three honorary ranks i.e. honorary lieutenant, honorary captain and honorary major.

37. Mady Wechsler Segal, 'The Military and the Family as Greedy Institutions' in *The Military More Than Just a Job?*, edited by Charles C Moskos & Frank R Wood (Virginia, 1998), p. 96

families of the American Army, it appears to hold good for our soldiers as well. Welfare of soldiers in the Army is essential because the profession in the Army makes demands upon its members that other forms of employment do not: fixed-term contracts of service, liability for 24-hour and seven-day-a-week service, frequent postings, strict military discipline and the possibility of being involved in life-threatening situations. The purpose is to reflect the Army's paternalistic attitude to ensure our soldiers that they have a secure environment in which they and their families live, work and grow.

In Bangladesh Army, we have the Welfare and Rehabilitation Directorate, which deals with welfare-related issues of the Army including soldiers. It is responsible to help serving, retired and distressed army personnel in their efforts to rehabilitate themselves. To this end, it arranges pre-release training on different trades for interested other ranks prior to their going on retirement and also helps them find suitable jobs in different government or private organizations.³⁸

United Nations Peacekeeping Missions

So far 41,311 officers and men of Bangladesh Armed forces have participated in 26 different UN peacekeeping missions. The economic return from UN peacekeeping functions to both the individual and the country is commendable. Our participation in peacekeeping operations has also greatly enhanced our image over the world. This is evident from the comment, which Hillary Clinton made during her visit to Bangladesh: "I know Bangladesh through its Armed Forces' role in UN peacekeeping".³⁹ Our achievements in many UN peacekeeping operations are matters of national satisfaction. The Army's increased participation and achievements in UN peacekeeping operations have received wide coverage in our print and electronic media, which have also helped create a positive image of the Army to our people at large. No other organisation of our country has been able to earn such laurels for the country in such a short span of time, and herein lies its difference from other organisations. And this very difference, more than any other thing, possibly encourages many to join the Army.

Did Our Soldiers Know of the Army Before Joining It?

Most of the candidates, majority being from rural areas, do not generally know the Army well before applying for joining it. They do not know what the

38. The Welfare and Rehabilitation Directorate of the Bangladesh Army is responsible for such tasks as per its Charter of Duties.

39. Lt Col Md. Nazrul Islam, 'Role of Bangladesh Armed Forces: Reconstruction and Peacekeeping', The News Today, 27.March, 2003, p. 5

Army does and how it works. They do not have much idea about soldiers and soldiering - its purpose and uniqueness, its attractions and hardships. The findings of a survey⁴⁰ revealed the following responses of 50 young soldiers on the matter:

- a. Most of them did not have any knowledge of the Army - what all it does and how it works.
- b. Most of them frankly and truthfully stated that their decision to join the Army was not influenced by their patriotism or their motivation to serve the country but to find a vocation.
- c. Many were, however, fascinated by the uniform the soldiers wear, the way they move about, and all good things they hear about the Army.
- d. Some of them were also motivated and encouraged by relatives and friends, who are serving or served in the Army.
- e. Many also said that they had formed a good impression about the Army for its role in the CHTs and UN peacekeeping operations.
- f. It was interesting to note that few of them claimed to have joined without knowing the kind of physical and mental hardships soldiers are to undergo and that given the option they were ready to quit the Army.

INFLUENCE OF CHANGING SOCIETY ON SOLDIERS AND SOLDIERING

Our soldiers develop as a result of a balance between nature and nurture - the totality being the result of these two influences. To understand them, it is fundamental to examine the whole social context - the context includes the society they live in and also changes in society in terms of social conditions, prevailing customs and so on. The emergence of so many forces and conditions for change - social, technological, economic - at times puts the Army in a state of off-balance. It is true that the social advances that have taken place over the years have empowered individuals and that they are more educated and have relatively improved standard of living. While they confront the conflicting requirements of the family and occupation, they also have the desire to reap the benefits of social advancements. Such a desire, which is quite understandable, may at times diminish the essential elements of soldiering.

40. A unit in Bogra Cantonment carried out this survey on 01 August 1998. 50 young soldiers had responded to the questions set for the survey. Young soldiers are those, who have just joined the units after their initial training.

Family Structure

The gradual disintegration of our traditional joint family structure is rendering the families to become smaller and independent. The role of men as husbands and fathers is also changing a great deal requiring them to be more responsible towards the family. This, in other words, demands of every husband, especially of a nuclear family, to live with his wife and children. It gives rise to a conflict between family demands and occupational requirements, which may also be equally applicable to soldiers of nuclear families. "A soldier that does not have peace of mind and is having so many family problems due to not being able to be home enough is not happy or confident in his work, and if that lacks, he is not giving his most".⁴¹ It only suggests us to realize the fact that the relationship between the Army-Family interface and the soldier's personal morale does have an impact on his ability to do his job, which can even be a cause of considerable strain on his soldiering.

Family Separations and Parenting

There are the field exercises, operational assignments in the CHTs or in aid to civil power, UN peacekeeping operations etc. All these result in family separations, which require adjustments by soldiers and their wives and children. Effects of separations on families are many and cannot be ignored under the changing societal conditions, especially when families are becoming smaller and independent. Family separations cause loneliness, and give rise to many associated problems. Here, the wife of a separated family is gradually being thrust into playing the role of both father and mother - a stressful experience for the family to cope with. The following two case studies may shed some light in this regard:

Case Study :1

It happened in 1998 and involved a sergeant of a unit located in Bogra Cantonment. The sergeant was allowed to live with his family - wife and two children - in the quarter allotted to him for a year. While living in the family quarter in the cantonment, he succeeded to get his son admitted in class VIII in Bogra Cantonment Public School - something he really craved for. After a year, when his son was in class IX, his turn to vacate the quarter was due. He was asked to vacate the quarter to allow others to get their turn. Fearing that his son's education would be affected if his wife and children went back to his village in Barisal, he made the following arrangement with the consent of his unit authority:

41. Rosen, Leora N. and Dorris B. Duarand, 'Coping with Unique Demands of Military Family Life', in *The Military Family* edited by James A. Martin and others (London, 2000), p. 68

- * His family would live separately in a rented house in the vicinity of the cantonment.
- * He would live in the barracks.
- * He would, however, be granted weekend-leave to be with his family as frequently as possible.

This arrangement enabled him to ensure uninterrupted schooling of his son, who reportedly performed very well in the S.S.C. final examination.

Case Study :2

A corporal, a driver by trade, was to retire in 2003. He hailed from Lalmonirhat and was happy to be serving in Saidpur Cantonment since 2000. He had been living with his family in Saidpur Cantonment for about a year. He got his only son admitted in the Cantonment Board High School in class VIII. In the middle of the year 2002, he was posted out to join a unit in Comilla Cantonment. He was a little disappointed and became worried that his posting would affect his son's education. He tried to get his posting order reviewed but failed. At one stage, he even opted to retire early.

Suppressed Family Problems

Many of our soldiers hesitate to let their family problems be known to others. The strains of separation may at times become serious at certain point of family life. Newly married couples that have had less time to solidify their relationships are more prone to confront such strains. Both the nature of service and the conditions of service stand in their way to solve such problems all by themselves. It is evident from the findings of the following case study:

Case Study : 3

In 1998, Lance Corporal X (of a unit hailed from a village in Kushtia) married after having attained the marriageable age as per policy.⁴² His father was a primary school teacher and he is the eldest son of his four brothers and sisters. He did not get a married family quarter in the cantonment for which he had to let his wife live with his parents at his village home. He, however, used to come home on leave every now and then - for about seven days after every

42. As per the Army policy a soldier is eligible for marriage after having served for six years or attained 24 years of age.

three months. Everything appeared to be going on fine but the situation started to worsen after about seven months. His wife developed psychic problem, which was nothing but a case that required greater time and emotional adjustments than established relationships. Knowing that he would not get a married quarter, he preferred to suffer in silence by asking for an extra favour from his unit authority in the matter. When the situation further worsened, he rented a private house in the vicinity of the cantonment and brought his wife to live there. Since his unit authority was not aware of this very arrangement, he was not granted leave to be with his wife as often as he needed. This seemed to have adversely affected the mental state of his wife to such an extent that she once attempted to commit suicide by taking poison. Fortunately, she survived as she could quickly be taken to the Combined Military Hospital (CMH) and was given necessary treatment.

The findings of this case were - firstly, the existing policy required him to wait for his turn to get a married quarter in the cantonment; secondly, he did not apply for allotment of a quarter on extreme compassionate ground, instead decided on his own to keep his wife in a rented house; thirdly, this arrangement did not solve his problem as he had to live in barracks and his wife remained far away despite being so near; and finally, his wife survived just because she was immediately evacuated to the hospital and given treatment. Lessons learnt were:

- * Conjugal life, particularly of newly married couples, may turn bitter if husbands and wives do not give adequate time and attention to each other.
- * Soldiers ought not to keep such serious problems suppressed.
- * Immediate medical treatment can save lives. In this case, she would have been dead had this incident happened at her village home.

Health and Welfare of the Family

The Army provides free medical treatment facilities for soldiers and their wives and children. These are available only in CMHs or medical establishments located in cantonments/garrisons. Soldiers, whether living with their families in cantonments or otherwise, want to get their entitled medical treatment facilities whenever these are needed. But it is a paradox that only soldiers having their families in and around cantonments/garrisons can have better access to these facilities while the family members, who live in places far away from cantonments/garrisons, cannot. Again, separations also deprive soldiers' wives

and children of the welfare benefits of the Army - good schools for children, good housing conditions and community living, family welfare services etc. - all of which are available in cantonments. Therefore, once a soldier's family gets the opportunity to live in cantonment environment, it hardly wants to return, particularly if it is to return to village environment. This happens because the family members - wife and children - do not want to miss the quality of life that they start getting used to while being in cantonment environment.

Spouse Employment

Despite the fact that the overall salary structure of our soldiers is good, it is gradually becoming difficult for them to meet their needs. These demands include good housing and living conditions, good food, health-care, children's education and so on. Soldiers, having separated families, find their hardships aggravating further when their families depend entirely on their income. Factors, such as soldiers having educated wives and their aspiration to be more independent, changing attitude of society towards working women, economic well-being of families etc., influence the issue of wives' employment. Nowadays, wives' employment is being considered essential not only for financial necessity but also for enhancing the standard of living, which is valued more in our society. However, these dual-service couples often have to accept family separation with husbands and wives remaining in different locations. It may have an impact on their peace of mind, and also on their occupational standard.

Balancing Family and the Stressors of Soldiering

The effects of family problems, some of which have already been discussed, are also our pressing concerns. All these are inter-linked with stressors that are specific to soldiering.

Duty Demands

Soldiering has to be balanced with family expectations. The conditions of service require soldiers to be available for duty day in, day out and year in, year out. Training activities, functions that occur outside normal duty hours, routine duties etc. keep them engaged all the time. There is often very little personal time for them to be with their families. Such conditions and demands affect soldiers' family-lives, their expectations and aspirations as well as their soldiering.

Duty-Related Separations

Soldiers, living in cantonments with their families, have also to accept duty-related separations at short notice. It can range from a week up to months. These separations create a number of problems for soldiers and their families. Newly married couples or couples having small children are affected the most by such separations as the burden of responsibility for the day-to-day running of the family befalls squarely on their wives.

Posting and Transfer

Posting and transfer - a routine phenomenon in the Army - is yet another duty-related stressor. The following case study reveals how posting and transfer can, at times, affect the family life of soldiers and their soldiering.

Case Study : 4

In early 2003, Sainik Y of a unit in Saidpur Cantonment brought his wife and a three-year-old son in the station and was just about to settle down when he was posted out to a unit in Dhaka. It was a matter of great agony and despair for him, as he would have to start afresh the whole process of getting a family quarter in Dhaka station if he were to have his family with him. However, the cost of living to maintain his family in Dhaka being very high and unaffordable, he altogether gave up the idea of having his family with him. It meant that he had to return his family to his village home in Sirajganj before joining his new place of posting - something that he found very difficult to reconcile with. He also felt himself being let down before his wife and his relatives.

Career Related Agonies

The career prospect in the Army is bright but only for those who are disciplined and efficient. This results in the majority of soldiers being superseded at different stages of their career. Let us take the example of a sainik. If not promoted to the next rank, which he is expected to get after 8-10 years of service, he remains a sainik for the next 11-13 years doing just only sainik's duties. One may imagine his agony and frustration that he has to bear with for all the remaining years of his service. What then are the implications? He starts to suffer from inferiority complex, tends to do things just perfunctorily or attends to his family needs more than necessary - all these only reflect his disinterest in the service. It affects his performance as well as the performance of his unit.

Education and Skill

The importance of having educated and well-trained soldiers cannot be denied. Our Army has already enhanced the selection criteria for recruitment as *sainik* as it is modernising itself in terms of its management, weapons and equipment in keeping with the technological development. Our involvement in UN peacekeeping operations, which now require our soldiers to serve alongside technologically superior forces, also require us to have more educated and skilled soldiers. Indeed, we now have more educated and skilled soldiers, who understand their responsibilities better but at the same time have enhanced hopes and aspirations.

On the Basic Professional Values

Soldiering calls for certain qualities, characteristics and traits, to be possessed by every soldier. These include courage, sense of duty, pride in the profession and above all discipline. Conflicting demands of the family and society as well as the service do have some impact on our soldiers and on their attitude towards soldiering. However, our soldiers, being more educated, are now quite conscious of the implications and consequences of doing things in breach of discipline and professional values. As per the existing policy, only soldiers with good discipline record are selected for UN peacekeeping operations. This has also positively influenced the attitude of our soldiers towards military discipline, thereby contributing to the improvement of the overall discipline standard of the Army.

Discipline

The Army demands of our soldiers to remain as disciplined as they should be without affecting their obligations towards the family and society. However, service conditions that allow only 20% of married soldiers to live with their families in out-living and in-living family quarters in and around the cantonments do not seem to adequately meet the needs of the separated soldiers' families. A soldier, not allotted with a family quarter, is to perforce leave his wife and children at the care of his parents/relatives or let them remain all by themselves. Most of our soldiers are from rural areas, which are either flood/disaster-prone and/or lack in basic health-care and education facilities. It, therefore, becomes essential that both soldiers and their families get together at

regular intervals, and that can be possible only if they are granted leave. But 5% leave policy, in which 5% of the unit can be on casual leave at any time, prevents them from being able to be with their families at their convenience. Leave is, therefore, what they need most, and any unit not addressing this issue carefully may have discipline problems that may affect the performance of soldiers as well as the unit.

Obedience to Lawful Command

'If there are two governments in the state, each claiming to be duly constituted and to be deserving of military obedience, the military officer cannot escape the political choice between them'.⁴³ Here lies the conflict between military disobedience and legality, which puts officers and more particularly soldiers in a state of dilemma as to the right course of action to be taken. The provision of the BAA, which allows them to seek redress against any unlawful command but only after obeying it,⁴⁴ is good enough to put them in a dilemma of choice in such circumstances. Involvement of soldiers in military coups and counter-coups between 1975 and 1992, which are still in our living memories, saw many of them becoming 'victims of circumstances'. The situation has now changed. Education has given them the ability to at least have a commonsense understanding of difficult circumstances, which prevents them from getting involved in activities detrimental to their soldierly image and to the image of the Army.

Post-Retirement Life

Soldiers on retirement will have to be back to civilian life but only after having spent the prime time of their lives in the Army. They need not change their jobs only but also learn new skills in order to be able to quickly settle down and at the same time adapt themselves to the changes. The way of life in the Army is more organised, disciplined and its working environment unique in the sense that it emphasises on collective efforts and esprit de corps. Therefore, many of the retirees, despite being young enough to be able to start with a vocation afresh, are found to face difficult and stressful situations during their transition to civilian life. This is owing to the fact that the only profession i.e. soldiering, which they have learnt, is not good enough to find them suitable jobs with suitable working environment.

43. Huntington, p. 78

44. The Manual of Bangladesh Army Law, Pp. 157-160

CONCLUSIONS

Our society is changing. There are changes taking place in all spheres in Bangladesh: the standard of living in urban and rural areas is improving; literacy rate is rising and more and more, youths are becoming eligible to join the work force; our womenfolk are gradually emerging in their own rights and participating in our mainstream economy; there is improvement in the standard of our human resources and so on. All these factors are contributing to bringing about changes in our society, in our outlooks as well as in our attitudes towards adapting to the changes. Our soldiers are an integral part of our society; our society is changing and so are the needs, hopes and aspirations of our soldiers. Indeed, the way of life of our soldiers is quite different from that of their civilian counterparts and the general population. Soldiers are different because of their distinct ethos and mores. They are different for their typical service and living conditions. They accept family sacrifices and place 'duty before self'. Most importantly, they are 'willing to kill and be killed' for the greater interests of the society and the country. They are obliged to display all soldierly values including the highest standard of discipline.

Every soldier is, indeed, a member of a household- he is a son, a husband, and a father. He needs to accommodate the demands of his family - wife and children and dependents. Most of our soldiers are members of nuclear families, who also prefer to have the same after marriage. Therefore, they are to face the conflict between family demands and occupational requirements. They want to be good husbands and caring fathers and want to ensure health and welfare of their wives and children. For all these they need to have their families living with them in cantonments or else they need to be with them as often as possible.

All must understand that soldiering cannot be a life-long profession. As discussed, the retiring age is different for different ranks. Most soldiers retire as *sainiks* at an age of about 38-40 years, who still have a long way to go. Their going gets tough if they do not prepare well for transition to civilian life, which is the case for most of them. Therefore, to prepare well for post-retirement life, they need to train themselves on a second career - a career that is different from soldiering. Indeed, our soldiers will have the will to care for our society and the country if they are well cared for. Therefore, the purpose of this study has been not only to identify the problems and predicaments of soldiers and soldiering in the context of our changing society but also recommend measures that may help us carefully care for our soldiers. Herein lies the significance of this study.

RECOMMENDATIONS

The study has revealed certain aspects of soldiering - something soldiers can be proud of as well as matters of concern and disquiet that are caused by certain service conditions and service-related predicaments. In order to have soldiers free of cares, as much as possible, certain pragmatic measures need to be taken to help them cope with these problems without affecting or compromising with institutional requirements. For only soldiers, who are free of cares, may have the peace of mind to do their best and live up to their military liability, and/or their 'unlimited liability' for that matter. Therefore, the following recommendations may be considered to this end.⁴⁵

Married Soldiers Living with Families under Own Arrangements

The policy relating to allowing only 20% of the married soldiers to live in the Army quarters with families should prevail. Nor should the 5% policy of granting casual leave should change. However, the effects of these two policies that are the main concerns of soldiers having separated families can be mitigated, if married soldiers are allowed to live with their families in excess of the 20% policy under their own arrangement. It may be considered under the following guidelines:

- a. A married soldier may be allowed to have his family in a rented house under his own arrangement, if he is so willing for meeting his family needs - treatment of family members in the CMHs, education of children - or for allowing time for establishing relationships, particularly applicable to newly married couples.
- b. The soldier, so allowed, shall continue to live in barracks as per the existing policy. However, his unit authority may let him spend the weekends and holidays with his family provided his absence does not affect his duties and responsibilities.
- c. Any soldier, having his family under own arrangement, shall keep his authority informed of his exact location/address. Again, when at home on leave he should keep his family members or neighbours informed of his whereabouts whenever he is away. The purpose is to quickly trace him out to call him for duty whenever it becomes essential.
- d. For this he should be obliged to have his family in the vicinity of cantonments.

45. Opinions of a number of senior officers on these recommendations have been sought. They have also opined that these recommendations are worth considering.

The advantages of this arrangement are many: soldiers can have their families under their direct care to attend to their family needs; they will not need leave as frequently as they need now, which will greatly reduce the leave problem of units.

Separated Family Housing Areas in the Vicinity of Cantonments

The Army should earmark and, if possible, manage Soldiers' Housing Areas wherein houses of required living standard will be available for rent. Married soldiers, who live in barracks and are still waiting for their turn to be allotted with Army family quarters, may rent these houses for their families. Besides the advantages of being able to live with their families, this arrangement will help them have a community living with better living conditions. Most importantly, the Army will be able to exercise proper supervision and render security assistance to these areas as and when required.

Soldiers' Housing Scheme at District/Thana Level

For certain compelling circumstances like wife's employment, few soldiers may not intend to have their families living with them in cantonments but have them with parents/relatives in the villages. At the same time, they may like to send their children to reasonably good schools or have their other basic needs fulfilled. In the circumstances, they may be happy if they can have the scope to keep their families in and around their district/thana headquarters. Keeping this in mind, the Army Welfare & Rehabilitation Directorate may undertake 'Soldiers' Housing Schemes' at district/thana level. A soldier may be offered an option to have a flat from this kind of housing scheme on the following conditions:

- a. Depending on the price of each flat, which may be between TK 4-5 lacs, the number of installments for payment over a period of 20 years should be determined.
- b. The payment of installment should start as early as possible, preferably immediately after a prospective owner completes one year of service.
- c. By paying an installment of about TK 1000/= per month, he should be able to pay three-fourth of the price of the flat in about 20 years. The amount, which still remains due, should be paid off by him or be realized from his pension on his retirement.

- d. The flat should be handed over to him on payment of one-fourth of its price, which he may be able to pay after about 9 years of service - the time when he will have been married. But the ownership should be handed over to him only after he makes full payment.
- e. Anyone dismissed on disciplinary ground shall not be given the ownership, and the money he will have paid as installments, be reimbursed to him after deducting certain miscellaneous service charges.
- f. A soldier, who retires prematurely on administrative grounds, may get the ownership of the flat provided he makes full payment of the remaining amount at a time.

This scheme will hopefully help reduce family-related problems of soldiers. This will enable soldiers to find an easy way of preparing themselves for transition to civilian life after retirement. This will let them plan to have a house in thana/district headquarters. Soldiers, who will have joined this scheme, will also surely be refraining themselves from activities detrimental to military discipline. As a result, it will have a positive impact on the standard of discipline of the Army.

Enhancing Soldiers' Performance Standard

It is very much possible that soldiers, who are generally content, will not only strive for furthering their career prospects but also contribute to enhancing their individual standard. To have content soldiers it is, therefore, essential to pay due attention to two of the important service-related aspects - posting/transfer and terms of engagement.

Posting/Transfer

Each administrative division of our country has more than one Army unit and formation. Effort may be made to allow soldiers to serve in units/formations located in and around their administrative districts/divisions. They may be posted out only for operational requirements/assignments such as in the CHTs, UN peacekeeping operations or when assumption of higher ranks and appointments demand so. The merits of this arrangement will be:

- a. Soldiers will have their families, if not living with them in cantonments, at a relatively closer distance from their units. They will be able to come home on short leave or on weekends to respond to family needs, and expenditure involved for the purpose will be affordable.
- b. Demands for family quarters in cantonments will reduce and there will be less number of soldiers requiring casual leave of more than one week or so. This will facilitate units to have better personnel administration.

Terms of Engagement.

The existing policy relating to terms of engagement requires a soldier to serve for minimum 21 years to retire at an age of about 40 years. As discussed earlier, a soldier, if not promoted which is the case with most of the soldiers, has to serve in the same rank for 10-11 years more. While these soldiers become disinterested in soldiering, they also gradually become unfit for starting a second career after retirement. Besides, the Army has also to pull on with aging soldiers. Therefore, the policy on the matter should be reviewed to reduce the terms of engagement e.g. for sainiks it should be 15 years. The advantages will be: the Army will have relatively younger soldiers; they will be retiring at relatively younger age to start with a new vocation; the services of these retirees as reservists, whenever required, will be more effective and be available for a longer period.

Instilling Basic Professional Values in Soldiers

The Army now has more educated soldiers, which itself is a great step forward to our having soldiers imbued with motivation and required professional values. However, there is a need to conduct dedicated programs to apprise our soldiers of the contents of the MBAL, which is in English. Better knowledge of the Army law will certainly help keep them more disciplined and out of dilemma as to the actions they need to take during trying conditions.

Besides, the Army should continue to participate in UN peacekeeping operations. At the same time, the present policy of selection for UN peacekeeping operations basing on discipline record should be adhered to owing to the fact that it is helping the Army maintain discipline and instill the basic professional values in our soldiers.

Transitioning to Civilian Life

Despite the efforts of the Army Welfare & Rehabilitation Directorate in addressing soldiers' post-retirement issues and needs, many retirees/retired soldiers are still found to be in distress. Therefore, Soldiers' Housing Scheme, as suggested in the foregoing, should be undertaken to relieve the soldiers of their housing need - which turns out to be the most pressing concern after retirement. Through the Army Trust Bank, the Directorate should also consider giving loans to retirees to start self-employment projects such as poultry farms, running workshops etc. Such welfare projects will not only help retirees to settle down quickly but will also help enhance the image of the Army. If it so happens, it will be able to attract quality youths to become quality soldiers in the Army.

BIBLIOGRAPHY

Books

1. Edmonds, Martin. *Armed Services and Society*, Colorado, 1990.
2. Huntington, Samuel P. *The Soldier and the State*, 13th edition, London, 1998.
3. Ruth, Jolly. *Military Man Family Man*, London, 1992
4. Siddiqui, Kamal. *Jagatpur 1977-97 Poverty and Social Change in Rural Bangladesh*, Dhaka, 2000.
5. *The Manual of Bangladesh Military Law*, The Bangladesh Army, Dhaka, 28 November 1982.

Reports

6. *Bangladesh 2020*, Published for the World Bank, Dhaka, 1998.
7. *Statistical Pocket Book of Bangladesh 2000*, Bangladesh Bureau of Statistics, Dhaka, January 2002.

Articles/Papers

8. Choudhury, Serajul Islam. 'Society and Culture' in Bangladesh on the Threshold of the Twenty-First Century, ed. A.M. Choudhury and Fakrul Alam, Dhaka, 2002.
9. Hussain, Shawkat Ara. 'Status of Women', in Bangladesh on the Threshold of the Twenty-First Century, ed. A.M. Choudhury and Fakrul Alam, Dhaka, 2002.
10. Islam, Md. Nazrul, Lt Col. 'Bangladesh Armed Forces and Popular Expectations', The Daily New Nation, 26 March 2003.
11. Islam, Md. Nazrul, Lt Col. 'Role of Bangladesh Armed Forces: Reconstruction and Peacekeeping', The News Today, 27 March, 2003.
12. Mahmud, Wahiuddin. 'Bangladesh Economy: Performance, Prospects and Challenges', in Bangladesh on the Threshold of the Twenty-First Century, ed. A.M. Choudhury and Fakrul Alam, Dhaka, 2002.
13. Milehan, Patrick. 'Fighting Spirit: Has it a Future?' in The British Army Manpower and Society into the Twenty-First Century, ed. Hew Strachen, London, 2000.
14. Rosen, Leora N. and Dorris B. Duarand. 'Coping with Unique Demands of Military Family Life', in The Military Family ed. James A. Martin and others, London, 2000.
15. Segal, Mady Wechsler. 'The Military and the Family as Greedy Institutions' in The Military More Than Just a Job?, ed. Charles C. Moskos & Frank R. Wood, London, 1988.
16. Sherafuddin, Ahmad. 'Women in Bangladesh', The Daily Observer, 09 May 2001.
17. Temple, Frederick T. on 'Reforms and Socio-economic Performance in Bangladesh' Unpublished paper presented at a seminar on 'Accelerating Growth and Poverty Reduction in Bangladesh' organized by Bureau of Economic Research, Dhaka University, in 2003.

News Papers

18. *The Daily Star*, 16 July 2003.

Interviews/Discussions (Opinions of the following senior officers have been very useful)

19. Ahmed, Muzaffar, Brigadier General, attending NDC 5 (Commanded infantry units and a brigade), 1-15 August, 2003.
20. Ahluwalia, Vijay Kumar, Brigadier, Indian Army, attending NDC 5, 1-5 July 2003.
21. Niaz, Tanveer, Brigadier General, attending NDC 5 (Commanded engineers units and an infantry brigade), 1-15 August, 2003.

Documents (Primary Sources)

22. The Bangladesh Army Instructions Number 65/54 - Amendment, 14 March 1988.
23. The Bangladesh Army Recruitment Policy relating to educational qualification, 19 May 1996.
24. The Charter of Duties of the Welfare and Rehabilitation Directorate of the Bangladesh Army.
25. The Policy relating to allotment of married quarters to soldiers, 30 April, 1997.

Author:

Brigadier General Anup Kumar Chakma (47) was commissioned in the Infantry Regiment of the Bangladesh Army in 1977. He has enjoyed extensive regimental service including command of two infantry battalions and an infantry brigade. Other important appointments include Brigade Major of a brigade, Directing Staff of the School of Infantry & Tactics and the Defence Services Command & Staff College, and Chief Operations Officer, at UNOMIG Headquarters in Abkhazia, Georgia.

He attended training at home and abroad. He is a graduate of the Defence Services Command & Staff College as well as National Defence College, Dhaka. He is also a graduate of the Command and Staff College, Hamburg, Germany. Brigadier General Anup holds Master of Defence Studies degree from the National University, Dhaka. Presently he is serving in the Army Headquarters as Director Military Training.

COOPERATIVE MARITIME SECURITY - OPTIONS FOR BANGLADESH

Commander M Aminur Rahman (G), afwc, psc, BN

Appreciating the preeminence of geo-politics, geo-economics is now finding profound overtone in the security discourse of nations. The experts are now defining the security of nations, where maritime domain has a significant connotation alongside the terrestrial consideration in security. Many nations and regions have come out of their sea-blindness and strategic insensitivity towards the oceans. Most significantly Association of South East Asian Nations (ASEAN), Latin America, and Europe have already engaged themselves in harnessing the benefits of "cooperative maritime security". In this respect, the need for cooperative maritime security to harness and preserve the marine resources merits serious attention, particularly in view of the transnational threats encompassing narco-terrorism, sea piracy, protection of marine environment, immigration control, natural disaster, gun-running, illegal fishing etc. In this paper the writer identified the pros and cons and came up with recommendations that could pave the way for future maritime cooperation in the region.

"Security means development. Security is not military hardware, though it may include it, security is not military force, though it may involve it, security is not traditional military activity, though it may encompass it. Security is development and without development there can be no security"

¹
- Robert McNamara

INTRODUCTION

Appreciating the classical definition, the concept of security today encompasses the issues ranging from economy, environmental degradation, gender crisis, illiteracy to increasing gap between the rich and poor and the digital divide between haves and have-nots. Now rather than geo-politics, to some extent, geo-economics is finding overtone in the security matrix of nations.² This new century, in fact, holds a lot of promises as well as perils. The delicate balance rests on the discretion of states as how they steer their security discourses and policy options. Driven by this changed perception of security, many nations are now consolidating their efforts and trying to share their common strength to offset the individual weaknesses through regional co-operation in different fields. The success stories of ASEAN, European Union (EU) etc. are noteworthy cases in point.

1. Robert McNamara, The Essence of Security, New York, Harper and Row, 1968, p.149

2. Richard H. Shultz, Roy Godson and George H. Quester, Security Studies for the 21st Century, Brassey's, London, 1997.

As we proceed through the 21st century, a host of maritime issues are now becoming indispensable for the security of the nations.³ Out of these, the problem of demographic explosion, environmental degradation, piracy at sea, drug trafficking, terrorism, smuggling, illegal fishing etc. will become crucial in defining destiny of the world and nations.⁴ As we focus on South Asia, the rationale for cooperative maritime security in the region lies in certain facts. In this region not a single country alone is fully capable of facing the upcoming challenges in the maritime field, be it for pollution prevention and control at sea, or disaster relief, and guarding against the drug-traffickers etc. because of various resource constraints like lack of expertise, technological prowess and other factors. Nevertheless, by unified effort they can face the common problems and challenges, and harness the opportunities for a more secured future.

In the above backdrop, this paper would first explain the concept of cooperative maritime security and then examine security concerns and related maritime issues affecting littorals of South Asia. Then it would highlight the rationales for regional cooperation in South Asia and bring forward a few case studies on cooperative maritime security in other regions. Subsequently, it will touch upon the options available for the littoral states. Finally, the paper will make some viable recommendations. The aim of this paper is to study the prospect of cooperative maritime security in South Asia and suggest a suitable option for Bangladesh.

THE CONCEPT OF COOPERATIVE MARITIME SECURITY

In the post-Cold War era, the concept of co-operative security has arisen from European principles of 'common security'. The concept of common security was first introduced in 1982 in the Report of Palme Commission, titled, "Common Security: A Blue Print for Survival". Later it was Eric Grove who first explored the idea of co-operative maritime security in his famous book titled "Maritime Strategy and European Security" in 1990. In South Asia, people either ignore this real politic of cooperation in world politics or it remains in oblivion. In fact, looking at the host of problems pertaining to overpopulation, poverty, depleted resources etc. the South Asian countries also have to understand the preeminence of geo-economics. They must come out of the vicious cycle of

3. B Guha, "Maritime Dimensions of India's Security- A Historical Perspective and Challenges in the 21 century" in Shekhar Basu edited, *New Approach: National Security*, Kolkata, Deep Prakashan, 2001, p. 174

4. David N.Griffiths, "Regional Maritime Security", Center for Foreign Policy Studies, Dalhousie University, collected from internet.

continual conflict and tense relation. It is high time to evolve some mechanism, which will pave the way for cooperation and friendship amongst the regional countries. The littoral states may be able to augment their security and peace through cooperative maritime activities.

THE SECURITY PERSPECTIVES AND IMPERATIVES FOR SOUTH ASIA

South Asia- A Geopolitical Perspective

South Asia is often described as the most dangerous place on earth.⁵ It has been subjected to tension between states since they gained independence from the British colonial rule in 1947. The security of this part of the world is a complex web of domestic, sub-regional, regional and global issues. Since the end of colonial rule, this region has been the battleground of several wars. A framework that could be conducive to greater peace and security is far from being rooted in the region. While the rest of the world has experienced the peace dividend, South Asia remains mired in tension. Actually, the pattern of inter-state relations in the region continues to be marked by conflicts and instabilities. Some of them are rooted in the colonial past; others are in the current dynamics of bilateral as well as intra-state relations. Main issues that constitute the regional security environment of South Asia are:⁶

- a. Arms race
- b. Territorial disputes inherited from the colonial past and the demarcation of land and maritime boundaries
- c. Sharing water resources of common rivers
- d. Intra-state conflicts involving actors with cross-border affiliations
- e. Divergent security perspectives
- f. Conflicting economic interests
- g. Smuggling and illegal cross-border activities

MARITIME ISSUES AND THE LITTORALS OF SOUTH ASIA

Present Scenario of Cooperation in South Asia

It is relevant to refer to the words of Mahan while talking about sea and maritime activities. A.T. Mahan wrote, " Sea Power embraces all that it tends to make a people great upon the sea, or by the sea". He listed geography, climate, population, commerce, industry and people's knack in seafaring activities as some valuable attributes of sea power.⁷ The littorals of South Asia must heed to

5. Dr Bhatti Maqbool, " Multilateral Approaches to Security Issues in South Asia- A Pakistani Perspective", at www.ndu.edu/inss/synopsis/pacific2001/bhatypaper.htm.

6. Ayesha Siddiqa Agha, "Maritime Cooperation Between India and Pakistan: Building Confidence at Sea", The Cooperative Monitoring Center Occasional Paper/18, USA, 2000, Pp.6-1

7. S N Koli, *Sea Power and the Indian Ocean*, New Delhi, 1978, p.23

the words of Mahan and seek to be great in their seas. They need to identify their challenges and interests in the maritime sphere. Since its inception in 1985, South Asian Association of Regional Cooperation (SAARC) has an achievement in terms of South Asian Preferential Trade Arrangement (SAPTA) and other issues were quite significant.⁸

Preconditions for Cooperation

While the neighbours have no qualms in accepting the preeminence of India, the problem arises when India tries to translate this pre-eminence into predominance through certain acts and policies. The need is, therefore, to remove the existing bilateral irritants between the littoral states. In fact, there is the need to start cooperating in the maritime fields of non-military nature. This in turn will work as a catalyst for confidence building measures and subsequently may lead towards 'handshake stage' to build confidence and mechanism for cooperation amongst the regional navies.

SAARC and Present State of Maritime Cooperation

Contacts initiated within the framework of SAARC continue to be effective, and thus facilitating the process of crisis management between the states of the region. But for long time, building of institutions for regional cooperation on maritime issues did not make any headway. In fact most of the regions of the world are now focusing on regional maritime cooperation.⁹

RATIONALE FOR COOPERATIVE MARITIME SECURITY IN SOUTH ASIA

As a habitat of one fifth of world's population, South Asia has to look south for her resources, be it for hydrocarbon, or fish or a source of alternative energy.¹⁰ Hence, ensuring a pollution free sea, rational harnessing of sea resources, ensuring an ocean order and protection of sea-borne trade will be the cardinal points in defining security in future.¹¹ As such, there is a rationale for talking about the cooperative maritime security in South Asia. One must realize

8. M Khurshed Alam, " Regional Maritime Cooperation under the Auspices of South Asian Association for Regional Cooperation (SAARC)", *BIISS Journal*, Vol 18, 1997,p.22

9. UNEP Report 1997, from Internet.

10. Mohammed Humayun Kabir, " The Indian Ocean Rim Initiative: Bangladesh's Interests and Role", *BIISS Journal*, Vol 16, No4, 1995,Pp.460-465

11. Geoffrey Till, " International Maritime Trends and Indian Ocean in the 21st Century", *Journal of Indian Ocean Studies*, Vol.9, No.2, August 2001,Pp.156-159

that lack of maritime cooperation may contribute to the rapid destruction of valuable resources. Moreover, unsustainable practices may lead to deterioration of political relation and weakening of the region in the global arena.¹²

Maritime Interests of the Littorals

All the SAARC countries have important and growing maritime interests, which are of common nature. The areas of immediate interest for SAARC countries may be studied under the following broad headings:

- a. Fisheries
- b. Ocean Matrix and Marine Environment
- c. Stakes in the New Ocean Order
- d. Marine Resources
- e. Marine Research
- f. Piracy
- g. Maritime Safety
- h. Drugs

COOPERATIVE MARITIME SECURITY AND SOUTH ASIA

From the above it is evident that all the littoral countries are having huge maritime interests. Hence, at the outset status quo should be maintained on the contentious issues, then broad areas are to be selected for cooperation. Accordingly, efforts are to be made for confidence building between the regional navies in the forms of multilateral meetings, port visits and training exchanges.¹³ At least in the initial phase navy-to-navy cooperation may not be possible due to endemic mistrust and other issues. Besides, the lack of required budget, common doctrine, interoperability etc. may be the main stumbling blocks.

The successful functioning of any regional cooperation depends on pragmatic choice of objectives and proper steps to translate these objectives into reality. Before highlighting the modalities and mechanisms for cooperative maritime security, one should look into the experience of other countries in the relevant or similar field. Hence, a few interesting case studies are illustrated in the following paragraphs.

12. A.K.H Morshed, " Cooperation in the Maritime Zones Among and Between the SAARC Countries", BIISS Journal, Vol.20, No.1, 1999,Pp.1-11

13. M Khurshed Alam, "Regional Maritime Cooperation under the Auspices of South Asian Association for Regional Cooperation (SAARC)", BIISS Journal, Vol 18, 1997,Pp.35-38

CASE STUDIES ON COOPERATIVE MARITIME SECURITY IN OTHER REGIONS AND LESSONS LEARNT

There are number of examples on such maritime cooperation. Noteworthy is the maritime cooperation in Latin America and ASEAN. Detail is given below:

Case Study : Latin America

In April 1998, an agreement was signed between Argentina and Chile to hold joint naval exercises and training for naval control over maritime traffic and sea rescue operations in the Strait of Le Maire. This was materialized despite of historical troubled relations. Cooperating in non-military areas of operations leads to develop understanding that could eventually pave the way for arms control and peace. It is also worth pointing out that the multinational naval cooperation efforts in the region are spearheaded by the US.¹⁴

Case Study: ASEAN

ASEAN realizes how critical security at sea is for the growth of trade and general economic progress. The countries of the region have adopted a two-pronged approach to ensure exploitation and control of the sea resources i.e. naval build-up and cooperation. The Track I exercise represented by the ASEAN Regional Forum has discussed the possibility of creating a maritime information database. The Track II activities, on the other hand, are conducted through the creation of the Council for Security Cooperation in Asia-Pacific (CSCAP). Depending upon the retrospective merit of different options they are focusing on the following areas:¹⁵

- a. Search and Rescue Cooperation
- b. A Regional Maritime Surveillance and Safety Regime (REMARSSAR)
- c. Regional Avoidance of Incidents at Sea Regime (INCSEA)
- d. Exchange of Fleet Schedules
- e. Joint Patrol Arrangement
- f. Annual Conference on Naval Cooperation
- g. Maritime Contingency Planning
- h. Shared Training Opportunities

14. World Commission on Environment and Development, *Our Common Future*, New York, Oxford University Press, Collected through Internet.

15. Fred W. Crickard, Paul T. Mitchell and Katherine Orr (ed), *Ibid*, p.126

CHALLENGES AND OPTIONS FOR SOUTH ASIA

Challenges

In spite of numerous examples on maritime cooperation elsewhere in the world the issue yet remains a far cry mainly due to three formidable challenges. First, "the ongoing debate on country's national security is exclusively a land-based one".¹⁶ Hence, till today, our security discourse is largely focused from a terrestrial perspective. As such "If national security is an abstractionist concept hunting for universal definition, then maritime security is its wild card...".¹⁷ "There are occasional reminders of "sea blindness" or "strategic insensitivity" even among those involved in maritime security. One has to see the ocean, its wealth, and the advantage. It provides to sustain life on earth. The terrain concept of oceans, physical and otherwise, evolves from these principles...".¹⁸ The second biggest challenge is realizing the importance of ocean in immediate vicinity. As Aspi Cawasji said "... the Atlantic Ocean was the ocean of the past, the Pacific is the ocean of the present and the Indian Ocean is the ocean of the future".¹⁹ Unfortunately, people of this region are somehow giving a blind look towards maritime front. The last challenge is the endemic fear-psychosis and mutual mistrust between the regional countries. Considering these challenges, few probable measures and options are highlighted below.

Modalities and Mechanisms

Confidence Building Measures (CBM)

Measures for confidence building at the regional level will enhance stability and predictability at sea. This will eliminate mutual misunderstanding, reduce inadvertent conflicts at sea arising from misperception of, or other nations' activities. The confidence building measures in South Asian region will be slow and painstaking. Nevertheless, following measures may be adopted for progressive improvement of the situation and instilling trust amongst the regional countries.

- a. **Multilateral Meetings.** Initiative may be undertaken to formulate suitable agendas, which will kick off the process of dialogue and interaction between the parties. For example, the Northeast Asian nations

16. Dr Abul Kalam Azad, " Maritime Security of Bangladesh", Security in the Twenty First Century A Bangladesh Perspective, M R Osmany and M Ahmed (ed), Academic Press and Publisher Ltd, Dhaka, 2003.p.164

17. Dr. Abul Kalam Azad, Ibid, p.159

18. Prabhakaran Paleri, " Maritime Security and Concept of Ocean Property", Journal of Indian Ocean Studies, Vol.10, No.1, April 2002, p.16

19. David Griffiths, " Regional Maritime Security: Four Case Studies", collected from Internet.

also initially started such multilateral meetings which paved the way for creation of working group on Maritime Cooperation of the Council for Security Cooperation in Asia Pacific (CSCAP) and Western Pacific Naval Symposium (WPNS).

- b. **Ports Visits Military-to-Military Contacts.** A multi-national port visit can be a useful level of naval cooperation. Military-to-military contacts, including personnel exchanges with regional navies, are another low-level form of multinational naval cooperation. In case of South Asia too, the regional navies, like Indian, Pakistani and Bangladeshi ships have been visiting each other's port frequently.²⁰
- c. **Incidents at Sea Agreements (INCSEA).** Except the Indian Navy none of the regional navies alone are capable to meet the challenges of accident at sea. Such incidents may not only affect the littoral state but may have other implications in terms of pollution at sea and endangering the livelihood of other littoral states of the region.
- d. **Joint Exercises.** Joint exercises are excellent tool for confidence building. Bangladesh Navy participated in a number of such exercises;²¹ but there was no major exercise comprising of regional countries exclusively.
- e. **Information Exchange Network.** Information exchange network on maritime activities could be a unique forum and a significant step towards better understanding between the regional navies and other maritime forces.
- f. **Port State Control.** Marine safety is implemented through a system of Port State Control (PSC), which includes inspections when ships are at port, maintenance of data on sub-standard ships and exchange of information among participating countries. Although PSC system is prevalent in other regions no effort have been made to introduce such system in South Asian region.²²
- g. **Surveillance and Sea Patrol.** With globalization, regional trade is increasing day-by-day both for export and import. Here navy-to-navy cooperation in areas such as information exchange, high seas patrol in the suppression of violence at sea, from criminal/terrorist activity, illegal-cross border flow of drug and gunrunning etc. may be beneficial for regional countries.²³

20. Mohd Khurshed Alam, Op.Cit., p.38

21. R.R.Chaudhury, "Multinational Naval Cooperation in the Indian Ocean ", Multinational Naval Cooperation and Foreign Policy into 21st Century, Dalhousie University, Pp.163-65

22. Mohd Khurshed Alam, Ibid, p.33

23. Rahul Roy, "Maritime Surveillance of the Indian EEZ", IDSA.

AREAS OF CO-OPERATION

Non-Military Cooperation. Before moving on the field of military cooperation the regional countries have to have a sound confidence on each other through cooperation in the non-military sector. These are highlighted below in broad terms:

- a. **Marine Environment.** Co-operation in the protection and preservation of the marine environment of the SAARC countries offers a promising platform for the initial start of the process.²⁴ The marine environment is threatened by activities of the coastal states of SAARC and even more so by external and extra-regional forces. Moreover, without co-operation in the maritime domain co-operation in the preservation and protection of the sub-continental environment as a whole may be substantially impaired.²⁵
- b. **Fisheries.** South Asian coastal waters are one of the most productive areas in the world. However, due to over exploitation, marine pollution and environmental degradation these resources are now severely threatened.²⁶
- c. **Marine Scientific Research.** There is an importance of monitoring the enhanced greenhouse effect and the possibility of long-term climate change. The global warming and rising sea levels, and their effects on regional countries, particularly low-lying islands and the delta region of the Bay of Bengal also needs due attention.
- d. **Maritime Safety, Search and Rescue, and Marine Pollution.** Cooperation in these areas is important because of traffic density in shipping areas, the dependence of regional countries on sea borne trade and the vulnerability of some of the littoral areas to maritime environmental degradation.²⁷
- e. **Mitigating Maritime Natural Disasters.** The Bay of Bengal is vulnerable to natural disasters, especially from the tropical storms. It is significant that many disasters are predictable, particularly climatic ones. Cooperation may cover information exchange, education and training, technology sharing, prediction mechanism, response planning, resources allocation and vulnerability assessment.²⁸

24. Narottam Gaan, "Comprehensive Security for South Asia: An Environmental Approach", BISS Journal, Vol.20, No.2. 1999, Pp.108-113

25. Nahid Islam, "Marine Pollution-Effect and Management", BISS Journal, Vol. 11, No.3, 1990.

26. "Deep Sea Fishing Policy Scrapped", Maritime International, March 1997.

27. Khurshid Alam, Op.Cit.

28. Morshed, Op.Cit.

COOPERATIVE MARITIME SECURITY

From the synergistic outcome and impact of the aforesaid activities, we may subsequently in the long term proceed towards cooperative security in the region by focusing on a number of measures which are discussed below:

- a. **Dispute Settlement.** A step towards joint management should not be confused with the compromise on sovereignty.²⁹ In fact, the matter of concern for the regional countries including Bangladesh should focus on diplomacy, international adjudication and arbitration as per the dispensation of the United Nation Convention on Law of the Sea (UNCLOS III). Or even conversely, the regional countries may opt for observing status quo on the contentious issues, and may think about joint development. Recent, initiatives by other region show that "joint management" is not a mere wishful thinking, but a stark reality. Question is how pragmatic the regional countries may be in solving the issue.
- b. **Centre for Maritime Cooperation.** During a recent conference at Malta in 2002, G Kullenberg said, " Regional organisation is an essential component to the emerging system of ocean governance. Regional level is the optimum level for solution of many problems, which transcend the limits of national jurisdiction but are not necessarily global in scope."³⁰
- c. **Frequent Navy-to-Navy Contact.** Frequent navy-to-navy contact³¹ will be of immense value. Besides, this will also act as a catalyst in bringing the regional navies to a common understanding on regional vulnerabilities and on the common well being of their states in the maritime sector.

OPTIONS FOR BANGLADESH

National Level

Coming out of Sea Blindness. The security discourse should take a wide approach and also transcend the orthodox thinking on national security. The government should come out of sea blindness and also consider the terrestrial significance of the ocean and the seas in the sustainable development and survivability of the nations. In sum, its needs a strong commitment and resolve from the policy makers both in terms of giving due importance to maritime activities and carrying the agenda to the corridors of regional and international diplomacy.

29. Abul Kalam Azad, Op.Cit., p.215

30. G. Kullenburg, " Integrating Sustainable Development and Security", Dr Abul Kalam Azad, " Maritime Security of Bangladesh", M R Osmany and M Ahmed (ed), Security in the Twenty First Century A Bangladesh Perspective, Academic Press and Publisher Ltd, Dhaka, 2003, Pp.219-220

31. Khurshid Alam, Op.Cit., p.38

Propagating the Ideas on Co-operative Maritime Security. Bangladesh may take the pioneering role in bring in the agenda of co-operative maritime security at the regional level under the auspices of SAARC.

Linkage between the Ocean and the People. The foremost task at the national level would be to raise public and political awareness about oceans, and bring more transparency in ocean affairs.³² People should be convinced to act sympathetically towards the sea and to make it peaceful, resourceful and healthy. As a matter of fact, formulation of a **National Ocean Policy for Bangladesh** will be crucial in elevating the maritime activities in Bangladesh, and thereby bringing breakthrough in its ocean management. Dr Azad has very aptly mentioned:

"It is deemed necessary for identifying the various issues of ocean governance for the state like transportation, defense, maritime services, exploitation of resources, international commitment. More important, unless such policy is formulated, maritime interests and security, whether domestic or international cannot be achieved. Also in the absence of such policy, major coastal and ocean related issues and sectors and the priorities in the domain couldn't be identified.... The formulation of national ocean policy would eventually facilitate the formulation of a Maritime Security Act absent at present".³³

The Act would guide the management of entire oceanic and coastal affairs.

Orchestration of all Maritime Organizations. In order to address the national maritime problems and issues, an integrated approach merits closer policy attention. This approach would bring all the concerned agencies and stake-holders like the navy, coast guard, police, customs, immigration, port authorities, department of environment and disaster management etc. under a common umbrella to enhance their effectiveness, facilitate sharing of strengths and offsetting the individual weakness.

International Level

It is fairly understandable that national efforts do not measure up to the colossal task of meeting Bangladesh's maritime concerns. As such, concomitant efforts are also required at the international level.

Bilateral Level

Keeping the national maritime interests in view we may go for multi-pronged approach. The ongoing stalemate on the maritime boundary conflict has wide ranging ramifications. As such, to pave the way for meaningful cooperation at least it needs to diffuse the tense situation at the bi-lateral level.

32. Dr Azad, Op.Cit., p.203

33. Dr Azad, Ibid,p.204

Sub-Regional Level

At times it becomes difficult to find coincidence of interest of all parties. As such, Bangladesh may also think for going towards a sub-regional co-operation in the subject field. Already we have embarked upon a number of sub-regional initiatives like Bangladesh-India-Myanmar-SriLanka-Thailand Economic Cooperation (BIMST-EC)³⁴ etc.

Regional Level

As highlighted in this paper, maritime issues affecting Bangladesh, may also be addressed under the framework of regional organisation, such as SAARC. As proposed earlier, establishment of **Centre for Maritime Cooperation** may bring changes in harmonizing myriad of maritime activities of the region. The centre should endeavour to bring together the countries in fighting the common menace and safeguarding the common interests. The centre may play an instrumental role in promoting maritime awareness amongst the people of the region and also in fostering the bridges of friendship across the seas. It may bring required resolve and commitment of the regional leaders and a concomitant pledge from the regional countries without jeopardizing one another's maritime interests.

CONCLUSIONS

End of Cold War Era has brought along renewed interests on geo-economics, replacing the erstwhile preeminence of geo-political paradigm of security studies. Accordingly, besides the territorial domain, the maritime fronts are also now becoming significant. As such the people have to come out from their age-old continental mindset and "sea blindness"; and have to have a keen eye on the oceans and seas for sustainable development. In the backdrop of this renewed interest over the maritime fronts and maritime activities, people are now coining new concepts like the "cooperative maritime security".

The countries of South Asia too cannot remain in oblivion ignoring this realpolitik of cooperative maritime security. The dynamics of South Asia and the security perceptions of the regional countries had always revolved around "perceptions and misperceptions" about each other. The region is still divided on many crucial issues. South Asian countries have a number of common maritime interests and issues. None of the countries as a single identity can face these challenges alone. But once united together, they can do a lot. Be it in terms of

34. Sanjaya Baru, "India and Asian Regional Economic Grouping", Jasjit Singh,(ed), Cooperative Peace in Asia, Dehli,1998,p.116

prevention of pollution at sea, or facing the post-disaster tasks, or stopping the menace of gunrunning, drug trafficking or piracy at sea.

What is required now is a proper mindset for going towards such actions. If the future of the world is going to be decided in the waters of Indian Ocean as the sea of the future, then undoubtedly the destiny of South Asian countries will depend on how people are harnessing the fleeting opportunities from the sea. And how preserve/safeguard waters for the sustainable development of regional countries through "Cooperative Maritime Security in South Asia".

RECOMMENDATIONS

In view of the above study, the followings are recommended:

- a. Dialogue between the littoral countries of South Asia may be initiated for starting Cooperative Maritime Security under the auspices of SAARC.
- b. More effort may be given for raising public and political awareness about the oceans and transparency on ocean affairs.
- c. A firm commitment, resolve, pledge and political will for such cooperation may be ensured by the regional leaders.
- d. A regional coordinating body may be set up for operating the regional efforts in this regard.
- e. Step may be taken on different studies regarding non-military cooperation and cooperative maritime security along with the require time frame for attaining the end state.
- f. CBMs may be undertaken.
- g. An 'Ocean Policy' may be formulated and promulgated at the national level.
- j. Emphasis may be given on coming out of sea blindness, ideas on co-operative maritime security and linkage between ocean and people.
- k. All norms, standards and procedures of regional cooperation may be harmonized with those of global rules and regulations concerning ocean governance.

Bibliography

Books

1. James Goldrick. No Easy Answers, (New Delhi, Sona Printers, 1997)
2. Rahul Roy-Choudhury, Sea Power & Indian Security, (Great Britain, Derek Doyle & Associate, Mold, Clwyd, 1995).
3. Richard Fieldhouse, Security At Sea Naval Forces And Arms Control, (New York, Oxford University Press, 1990).
4. Kabir Mohammad Humayun,(ed) National Security of Bangladesh in The 21st Century, (Dhaka, Academic Press & Publishers, 2000).
5. Romyantsev Yevgeni, Indian Ocean and Asian Security, (New Delhi, Allied Publishers Pvt Ltd, 1988).
6. S N Koli, Sea Power and the Indian Ocean, (New Delhi, 1978).
7. Robert Macnamara, The Essence of Security, (New York, Harper & Row, 1968).
8. Sam Bateman, Maritime Cooperation and Dialogue, in Fred, Paul and Katherined (ed), Multinational Naval Cooperation and Foreign Policy into the 21st Century, (Ashgate Publishing Limited, UK, 1998).
9. Jung Young Hyun (ed) Maritime Security and Role of East Asian Navy in the 21st Century, (Korea, Publication by Republic of Korea Navy, 1999).
10. Singh Jasjit, Cooperative Peace in Asia, (New Delhi, Shri Avtar Printing Press, 1998).
11. Kohli S N, The Indian Ocean and India's Maritime security, (New Delhi, The New Statesman Press, 1981).
12. Prof Talukder Maniruzzaman, The Security of Small States in the Third World, (Dhaka, Academic press and Publisher, 1989).
13. Stephan Philip Cohan, (ed), The Security of South Asia, (Chicago, University of Illinois Press, 1987).
14. M, Jane Davis, Security Issues in the Post-Cold World, (UK, Edward Elgar Publishing Limited, 1996).
15. R C Mishra, Security in South Asia Cross Border Analysis, (Delhi, Authors Press, 2001).

16. David Taylor and Malcolm Yapp (ed), *Political Identity in South Asia*, (London, Curzon Press Ltd, 1979).
17. M R Osmany and M Ahmed (ed) *Security in the 21st Century: A Bangladesh Perspective*, (Dhaka, Academic Press, 2003).
18. Dipankar Banerjee (ed), *Confidence Building Measure in South Asia*, (Colombo, Regional Centre for Strategic Studies, 1999).
19. Dr S M Rahman (ed), *SAARC in the New Millennium*, (Germany, Friends Publisher, 2001).
20. Richard H. Shultz, Roy Godson and George H. Quester, *Securities Studies for the 21st Century* (Brassey's, London, 1997)
21. B. Guha and Shekhar Basu (ed) *New Approach : National Security* (Kolkata, Deep Prakashan, 2001)
22. Graham P. Chapman, *The Geopolitics of South Asia*, (Ashgate Publishers, USA, 2000)

Periodicals/Journals/ Articles

1. Professor Geoffery Till "International Maritime Trends and Indian Ocean in 21st Century" *Journal of Indian Ocean Studies*, Vol.-9 No-2 August 2001.
2. Denis Venter, "The Indian Ocean Rim Association for Regional Co-operation : Reality or Imagery ? Revised Paper Presented at a Seminar on Conflict and Co-operation, Organised by the Centre for African Studies, University of Mumbai, India, 19 to 21 April 2001
3. Mohammad Humayun Kabir, " The Indian Ocean Rim Initiative : Bangladesh's Interest and Role", *BISS Journal*, Vol. 16 No 4, 1995.
4. Rahul Roy Chaudhary, "Multination Naval Cooperation in the Indian Ocean" *Multinational Naval Cooperation and Foreign Policy in to the 21st Century*.
5. Prof. Dr. Hasjim Djalal, *International Framework for Maritime Security : Current Situation and Problems*, "Paper Presented at the IIPS Meeting , Tokyo, 9-14 December 2001.
6. Admiral Sir Jonathon Band, "Maritime Security and the Security and the Terrorist Threat" *RuSi Journal*, December 2002.

Author:

Commander Md Aminur Rahman Khan, (G), afwc, psc, BN was commissioned in executive branch in 1982. He attended number of courses at home and abroad some are Staff Course in Germany, Missile Command and Tactics Course in China and Long Gunnery Course in India and Armed Forces War Course in NDC, Mirpur.

Commander Amin served in many appointments on board ships and establishments in all major area of BN namely Deputy Director of Naval Intelligence at NHQ, Training Commander of ISSA KHAN and Squadron Commander of Missile Boat Squadron. He also commanded number of ships of different size. Presently he is executive officer of a frigate commander.

LAND RECORD SYSTEM IN BANGLADESH: AN ANALYSIS OF PROBLEMS AND POSSIBLE SOLUTIONS

Additional Secretary Md. Abdul Aziz, ndc

Land Record System in Bangladesh forms an integral part of Land Administration encompassing preparation of record of rights through surveying and mapping of land plots, registration of deeds during transfer of land and updating ownership record. These are functions performed by agencies under three different ministries making operations compartmentalized and complicated. Despite a long history of land survey dating back to the period of Sher Shah, a lack of public confidence in the system features prominently due to inconclusive land record failing to authenticate landholder's rights. This has resulted in a major burden on the court system since majority of court cases involve land disputes. The author examines existing problems before coming up with recommendations suggesting a Coordinated Land Record System suitable to authenticate land ownership.

INTRODUCTION

Land record system in Bangladesh comprises preparation and maintenance of Record of Rights (ROR), and registration of land transfer deed. Three sets of documents as output of the system are ROR (Khatian) including mauza-maps, mutated (updated) ROR and registration deed. These documents are prepared and maintained by three offices - Directorate of Land Record and Survey (DLRS), Regional Administration and Registration Office quite independent of each other and are meant for ensuring property rights in land along with quantification and classification of landholding.

In olden times when population size was small and land was plenty, recording property rights in land was not all that important. The produce was the focus of interest for both peasants and the king. Manu Sanghita states, "The land belongs to him who clears it of jungles and makes it fit for cultivation".¹ Possession of land preceded ownership. The king claimed a share in the produce of the land not as owner but as sovereign protector for meeting security cost of owner. Gradually, with increase of population it was felt necessary for recording land ownership to facilitate collection of land revenue. Emperor Sher Shah (1540-1545) was the first to conduct survey in the subcontinent.² Later another survey was conducted during the rule of Akbar (1556-1605).³ After survey,

1. Rahman, H., Land Laws and Land Management in Bangladesh, Chittagong, New Concept Ltd., 2002, p.317

2. Debnath, N.C., Land Management in Bangladesh, Dhaka, Shahitya Prokashani, 2000, p.15

3. Ahmed, K.U., Land Survey Methods and Technical Rules, Dhaka, Payara Prokashani, 1994, p.6

pargana wise revenue demand was assessed. Both were limited surveys conducted solely for the purpose of assessing rent payable by individual peasant.

During the rule of British East India Company, Major John Renel, termed as the father of modern survey and who later became Surveyor General of India, conducted survey of riverine routes and prepared maps. In 1893, Lord Cornwallis introduced permanent settlement regulation, wherein Zaminders were given the ownership of land that caused peasants to lose their ownership rights on land reducing them as tenants at will.

Upto promulgation of East Bengal State Acquisition and Tenancy Act, 1953, land record had always been a tool for assessment and collection of revenue. After abolition of permanent settlement with Zaminders the recording system needed to emphasize protection of tenant's right. The effectiveness of such a system depends on its ability to provide an authentic, conclusive and contemporaneous document containing landholder's right. But it has failed to provide an effective title vesting document and thereby lost the confidence of common people. Its inherent complexity has resulted in over 80% existing civil and criminal litigations.⁴

AIM AND OBJECTIVE

The study aims to analyze the existing problems in the land record system and suggest possible solutions so as to make it an effective one capable of providing an authentic, conclusive and contemporaneous plot based document for land ownership. It is based on content analysis along with interviewing concerned government officials, Union Parishad (UP) chairman, members of civil society and landowners.

The paper is divided into three chapters. Chapter 1 throws light on the existing Record of Right (ROR) system in Bangladesh, its different stages and their problems. Chapter 2 offers a proposal on the Coordinated Land Record System (CLRS) and the possibilities within the system, and Chapter 3 concludes the paper with some recommendations.

RECORD OF RIGHTS (ROR) SYSTEM IN BANGLADESH

ROR Preparation

The preparation of ROR consists of two parts. The first part is to draw a mauza map showing location, area and characteristics of land. The second part

4. Rahman, H.Z., Rethinking Land Reform, In: Faruque, R., Bangladesh Agriculture in 21st Century, Dhaka, UPL, 1998, p.77

is to prepare the khatian indicating ownership, area and character of land. These two parts together are called the Record of Rights (ROR). Since in Bangladesh Cadastral Survey (CS) had already been completed in all districts excepting three Hill Districts, the present survey is actually a revisional survey focusing on modifying maps and khatians prepared during CS. But in areas where topographical changes are more than one third or landmass consists of newly accreted land (char), a complete new survey instead of a revisional one is conducted.

The Directorate of Land Record and Survey (DLRS) are entrusted with the responsibility of carrying out preparation of ROR in every parcel of land in the country. According to original plan, 22 Zonal Settlement Offices and 460 Upazila Settlement Offices were supposed to have been established. As of now, only 14 Zonal Settlement Offices and 209 Upazila Settlement Offices are functioning. Zonal Settlement Officer (ZSO), head of the zonal office is assisted by 2 Charge Officers, 1 Assistant Settlement Officer (ASO) and 24 other survey staff. An ASO heads the Upazila Settlement Office and is assisted by two Sub-Assistant Settlement Officers and 16 other survey staff. DLRS have 3803 full-time and 6141 part-time survey staff on its payroll.⁵ Part-timers are employed only during field season (November to May).

PROBLEMS AND LIMITATIONS OF ROR

Time-Consuming System. The main problem of ROR is that it is a time-consuming system. At present there are about 40 million land holdings in the country to be represented in khatians accommodating about 100 million plots. About 80,000 mauza maps are to be maintained, mostly of a scale 16"= 1 mile (larger scale in urban areas).⁶ Since commencement of Revisional Survey (RS) operation in 1965, only 6,121,885 khatians have finally been published up to 30 June 2002, which is only 21% of the ongoing program and 15% of the total work of the country. There are at present about 2047 survey teams working in DLRS to prepare maps and update ROR. Each team prepares records of 1.5 mauza maps equivalent to 1875 plots and 750 khatians on an average in a field season. At this rate it would take 22 years to update remaining maps and khatians of the country. But by that time products would become obsolete and useless due to topographical and ownership changes.⁷

Inconclusive Ownership of Khatians. Khatians are not conclusive evidence of ownership, as it does not possess the legal status to do so. They

5. Government of Bangladesh, Annual Progress Report, 2002, DLRS.

6. Siddiqui, K.U., Land Management in South Asia, Dhaka, UPL, 1997, p.341

7. Ibid., p.342

merely provide basis for possession at the recording time. Under the prevailing legal system khatians along with deeds and mutated documents together are relevant for ownership decision by a civil court. The lengthy and complex process of ownership determination further enhances conflicts adversely affecting social harmony.⁸

Nonspecific Individual Rights in Khatians. The existing family based khatians do not specify individual rights on a plot. A khatian contains particulars of khatian holders, plots, total area of plots. But it is not clear which specific portion of a plot belongs to an individual owner. So during transfer, he faces problems for handing over possession. Addressing such a problem calls for a plot based instead of a family based document containing not only spatial description but also a sketch map and appurtenant rights and encumbrances.⁹

Absence of Local Government (LG) Participation. The present system does not provide ample scope for involvement of people's representatives. Common people mostly illiterate and incapable of understanding intricacies of khatians are vulnerable to cheating. Participation of LG representatives particularly during Khanapuri and Bujharat could bring about a more transparent system.¹⁰

Corruption. Field level survey staff has earned notoriety for corruption. Temporary nature of their job and insufficient supervision of higher officers often induce them to adopt corrupt practices. A powerful landowner may try to exert undue pressure to get a parcel of land recorded in his favour depriving cosharers. Absence of a group of honest and motivated field workers has worsened the situation to the extent that rich and powerful people can easily twist decisions.¹¹

REGISTRATION OF LAND TRANSFER DEED

Registration of transfer deed on land in Bangladesh is basically meant for recording a transfer. It shows that a particular transaction takes place but it does not establish whether parties are legally entitled to enter into such a transaction. In fact it takes place without any critical examination of relevant records and does not even validate the transaction.

Registration department is under the jurisdiction of Ministry of Law Justice and Parliamentary Affairs (MLJPA) and looked after at the centre by Inspector General of Registration. Below him, there are District Registrars (DR) and Sub-Registrars (SR) at District and Upazila levels respectively. Actually a SR does

8. Mia, S.R., Rules on Mutation, Dhaka, Naya Dunia Publication, 1996, p. 66

9. Department of Land Administration, Report on Bangladesh Land Administration Reform, Dhaka, DOLA, 2001, p. E-15

10. Wachter, D., Experience in Rural Land Titles, In: Research Observer, vol. 2, The World Bank, 1999, p.32

11. Siddiqui, K.U., Land Management in South Asia, op. cit., p. 343

registration, and all others in the hierarchy above him are supervisors in their respective jurisdictions. When any deed is registered in SR Office, land transfer (LT) notice is to be sent to Assistant Commissioner (Land) Office. DR is supposed to inspect the office of SR once in 2-3 months. But it is mostly a routine inspection.¹²

Problems and Limitations of Registration

Registration - A Mere Record of Transfer. As per existing laws, ownership is not checked before registration of a transfer deed. So one without being owner of a parcel of land can register transaction. Many fake owners exploit the inadequacy of this legal provision and cheat many transferees. Since SR is not legally obliged to check the genuineness of ownership, he cannot be held responsible for false transaction. As a result, incident of false registration occurs frequently particularly in urban areas where land value is very high. Even one plot of land sometimes is sold to more than one parties leading to ownership litigations.¹³

Lack of Cooperation with Land Functionaries. After registration of transfer deeds LT notices are to be sent immediately to the AC (Land) Office. But in reality this does not happen. LT notices in bundles are sent from SR Office in an interval of 1-2 months.¹⁴ When false transaction is discovered AC (Land) Office merely rejects the mutation without informing SR Office. The gap between two offices complicates the whole process of land transfer. In the late 1980s, an administrative reorganization committee,¹⁵ commonly known as Mueyed Committee identified the shortcomings and recommended for bringing functions of registration and record-keeping under the executive authority of AC (Land). This, as per report, would ensure a crosscheck at the stage of registration on the authenticity of deed being transacted. The recommendation along with suggestion on simplification of a transfer deed sparked uproar among SRs and Deed Writers who feared of loosing their prevailing stakes in the proposed system.

Lengthy and Corrupt Process of Registration. The deed prepared by Deed Writers contains a lot of unnecessary words and sentences, which could be avoided. A phase in the registration process is copying the deed in a specified Volume (Register) maintained in the SR Office that takes about 9-12 months.¹⁶ This job is so reluctantly done that only copyist understands what he has copied.

12. Siddiqui, K.U., *Land Management in South Asia*, op. cit., p. 351

13. Rahman, H.Z., *Rethinking Land Reforms*, op. cit., p. 73

14. Siddiqui, K.U., *Land Management in South Asia*, op. cit., p. 351

15. Government of Bangladesh, *Report of the Study for the Future Land Policy and Land Reform Measures in Bangladesh*, Ministry of Land, Dhaka, 1993, p. 55

16. Mia, S.R., *The Registration Act and Procedure*, op. cit., p.167

The SR Office is noted for institutionalizing corruption¹⁷ with a fixed rate on the value of land, which is to be paid for officials. The staff of SR Office and Deed Writers colludes which frequently leads to lowering of Immovable Property Transfer Tax by understating land value.

MUTATION OF LAND RECORD

Mutation is the process of revising and updating ROR on transfer of land ownership and also on subdivision and amalgamation of landholdings. Ownership changes of land that takes place during this intervening period of consecutive regular survey operations need to be reflected in the ROR. An AC (Land) working under Deputy Commissioner (DC) does this revision.

The process starts in the case of transfer on receipt of LT notice and in all other cases with applications from the tenants or proposals from Tahsildars.¹⁸ AC (Land) initiates a mutation proceeding and sends the proposal to the concerned Tahsildar for inquiry. Tahsildar verifies the genuineness of ownership and possession of the transferor. He then determines whether any public demand is due on account of Land Development Tax (LDT), any certificate case lies pending on the land and whether with the proposed land transferee's holding exceeds the ceiling (60 bighas). On consideration of the report and if the land on verification is found not to be under the category of khas, abandoned and vested property, AC (Land) passes order for mutation. Accordingly ROR and relevant registers are updated.

Problems and Limitations of Mutation

Lack of Awareness among Tenants. Many people are not aware of the legal requirement of mutation as a means for consolidating ownership. They hardly go to the AC (Land) Office to get their right of inheritance on land updated. Without applications from tenants, AC (Land) cannot start suo moto mutation proceeding in favor of heirs of the deceased landowners. Union Parishad (UP) which is supposed to maintain the Death Register is reluctant to record it and even if it records occasionally on insistence of relatives of the deceased is not obligated to send the information to AC (Land) Office. This gap along with ignorance of the people obstructs mutation to be undertaken on account of inheritance.¹⁹

LT Notice: An Unreliable Basis for Mutation. As mentioned earlier, LT notices instead of being sent to the AC (Land) Office as soon as registration is completed, are sent irregularly in lots. Again carbon copies of them are mostly

17. Siddiqui, K.U., Land Management in South Asia, op. cit., p. 351

18. Siddiqui, K.U., Land Management in South Asia, op. cit., p. 351

19. Debnath, N.C., Land Management in Bangladesh, Shahitya Prokashani, Dhaka, 2000, p.172

illegible and incomplete.²⁰ As such they fail to form dependable bases for mutation proceedings. SR Office sends them as a routine formality and does not care much about their efficacy in subsequent recording phases. AC (Land) Office also does not take specific initiative to get the notices accurately filled in by sending them back. Functional compartmentalization thus complicates the mutation process with added suffering of tenants.

THE COORDINATED LAND RECORD SYSTEM (CLRS): A PROPOSAL

The Coordinated Land Record System (CLRS) takes into consideration remedial measures for identified problems and limitations. It also appreciates recommendations of Public Administration Reform Commission,²¹ which stressed for devising a plot based land ownership system to replace the existing family based one.

CLRS concentrates on Certificate of Land Ownership (CLO), which will be an official document to be held by a landowner as an alternative to khatian. A translated version of CLO is shown in annexure. Its preparation requires survey and mapping functions to determine plot descriptions in each mauza. Survey teams each consisting of a Kanungo, a Surveyor and two Chainmen are to work under supervision of Assistant Land Officer (Survey and Mapping) in Upazila Land Office (ULO). An upazila in rural areas and a specified zone in city corporations are to be considered as basic tier of CLO operation. The first step is to establish geodetic survey control network in the entire unit. This network provides unique reference framework so that ground position can be reestablished at any later time even if ground marks from previous surveys are disturbed or have disappeared. **The Cadastral Survey (CS) and Mapping methodology based on ground survey or aerial survey supplemented by ground survey is to be adopted.** The operation on completion would provide digital mauza maps. To establish connection of CS to geodetic network, **Control Survey would be carried out using Global Positioning System (GPS).**²²

After establishing plot descriptions the next step will be recording ownership in each plot. Record preparation teams each consisting of a Kanungo and a Surveyor will be working in the preparation phase. This team will be linked up hierarchically first to ALO (Recording) and then to Upazila Land Officer. Ownership will be determined through investigation of the documentary and other forms of evidence of ownership presented by the owner.

20. Mia, S.R, Rules on Mutation, Naya Dunia Publications, Dhaka, 1996, p. 35

21. Government of Bangladesh, Report on Modernization of Land Administration, PARC, Dhaka, 2000, p39

22. Department of Land Administration, Report on Bangladesh Land Administration Report, op. cit., p.C-6

The team would collect evidence of possession and ownership of land in open meetings with participation of LG representatives (UP Chairman and Members) and local elite. Alongside ownership rights, the same team will determine other interests relating to lease, mortgage, encumbrances and appurtenance using various sources including financial institutions.

Draft CLOs and mauza maps will then be displayed in the notice boards inviting objections, if any, from all concerned within a specific period. Complaints would be heard by ALO (Recording) or ALO (Survey and Mapping) depending on the relevance of objections. There would be yet scope for appeal to Upazila Land Officer, whose decision would be final. Hearing and appeal each would be confined to a definite timeframe of 30 days to avoid unusual delay. After disposal of appeal, ownership records would be finalized. Landowners would get final copies of CLOs from ULO. Computerization of the documents would be done with sufficient master copies to back up making it easier to be preserved in record rooms in DLRS and DC Office. Once CLO is complete, it along with mauza map will be maintained in the ULO on an ongoing basis.

Landowners requiring transfer of ownership will register it through conveyancing without going through hassels of SR Office. Conveyancing is the process of documentation necessary to transfer ownership of a land plot from one party to another. At present registration involves employing a lawyer and a licensed Deed Writer. The proposed system starts with a petition from the parties in a simple prescribed form showing schedule of land and particulars of involved CLO. Parties may take the help of licensed conveyancers who will be trained to get the form filled up correctly in exchange for a fixed fee. ULO would then verify the particulars from the computerized records. In case of correct ownership of transferors, required stamp duty and tax would be realized and then the transfer would be registered with official seal and signature by ALO (Recording). At the same time ULO would update CLO accommodating ownership changes.

Recording changes of ownership due to inheritance and inclusion of other rights involves submission of an application in simple prescribed form. But it will not require any stamp duty or tax. Particulars of the involved land would first be verified and then ULO would update CLO with changes of ownership in case of inheritance and recording of encumbrances and rights in others. **In case of any changes of plot boundaries as a result of subdivision or amalgamation, licensed surveyors would verify the matter before modification and issuance of CLO.**

Information Technology (IT) as a component of CLRS. This would involve land plots and relevant attribute to be stored in a computer database. Gradually, the database structure design would take into account the long-term objectives of bringing the land information into the public domain and creating a comprehensive Land Information System (LIS) with the following design criteria:

- a. **Upward scalability-** gradually building from upazila to district and to national databases facilitating easy access to offices and Courts;
- b. **Open data format-** non-proprietary format that can be accessed by all industry standard systems; and
- c. **Modularity for horizontal expansion-** in data structure allowing addition of new data blocks or elements to the database.

To guarantee the security of land record and map, a form of advanced technology of digital data with both a long life and higher damage-tolerances should be introduced. Appropriate and suitable legal, institutional and copyright related policies will have to be developed and implemented in support of working with digital information.

CONCLUSION AND RECOMMENDATIONS

This study was based on the existing land record system analysis along with interviews of concerned government officials, UP chairman, members of civil society and landowners, and after a thorough understanding of the matter, it can be said that the present land record system suffers from many administrative as well as structural limitations. Keeping all the limitations in mind, possible solutions are suggested so as to make it an effective system capable of providing an authentic, conclusive and contemporaneous plot based document for land ownership.

Legal Measures

- a. *The existing legal framework should be modified* to bestow conclusive validity on CLO. The Officials concerned with its preparation and recording have to be legally authorised to conduct proceeding and make ownership vesting orders.
- b. *The Registration Act,* so far as it relates to land transfer, *should be modified to make ownership checking as a mandatory obligation before registration.* Only owners with valid title should be allowed to transfer their land.

Institutional Measures

- a. Measures should be undertaken to establish the proposed CLRS. *The recording role of DLRS should be transformed into supervisory role with authority of active technical supervision on ULO, which will be the operational hub.* The existing field staff of DLRS could be made available to be posted in ULOs. Five posts of ALOs should be created where AC (Land) will be working as ALO (Revenue).
- b. *Land Registration Power should be vested to ALO (Recording)* An officer working under Upazila Land Officer. Officers, at present working as SR may be given an option to join as ALO (Recording) to ease any dismay that may arise from such modification. Registration on properties other than land may continue as usual under registration department.

Functional Measures

- a. *A timeframe should be given within which all heirs of deceased owners would get their ownership mutated from ULO.* For facilitating mutation, functional linkage should be made to collect particulars of dead landowners from UP in rural areas and pourashava /ward office in city corporations which maintain death registers.
- b. To expedite CS and mapping, *aerial survey supplemented by ground survey should be adopted.* An arrangement can be made with Space Research and Remote Sensing Organization (SPARRSO) to conduct aerial survey in a cost effective manner.
- c. *A computerized LIS involving land plots and relevant attributes should be established based initially on Local Area Network (LAN) and later on Wide Area Network (WAN).* WAN would link up ULO with Ministry of Land, DLRS, Divisional Commissioner Office and DC Office. It would consist of land recording and land pricing systems facilitating wide use in land planning and infrastructure development.
- d. To effectively activate CLRS, a large number of trained personnel will be necessary. *The training capability of Land Administration Training Centre and Survey Training Institutes should be expanded to cater for the enhanced training needs.*
- e. Transforming the whole country into CLO fold being a gigantic task, *there should be a pilot phase before full-fledged implementation.* For successful implementation, political and resource commitment would be essential prime movers.

- f. *Mass media should be used to sensitize landowners to extend their all-out cooperation during implementation of CLRS.* Equally significant is the community awareness, which also needs to be generated through seminars and workshops for facilitating accelerated implementation of the project and thereby ushering in a people-friendly land record system throughout the country.

It can be hoped that the government along with its partners will realize the importance of a revised land record system, and will take necessary actions to reform the existing structure to enhance administrative efficiency as well as to benefit its citizens

Annexure : A Translated Version of CLO.

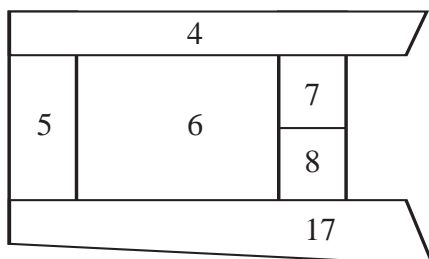
CERTIFICATE OF LAND OWNERSHIP

NO.-----

Certified that the person(s) in schedule-1 is/ are owner(s) of the land described below with encumbrances stated in schedule-2 and under conditions mentioned therein.

Seal and Signature
of Authorised Officer

DESCRIPTION OF THE PLOT							
District	Thana	Mauza	Plot No.	Description of Land			Class
Comilla	Sadar	Araiura	6	Sq.m.	Acre	Dec.	Agri.
12	11	102	6	725.57	0	17.9	Nal



FIRST SCHEDULE

Owner's Name and Address	Means of Ownership Deed No.	Share of Ownership
Md Abdul Malek, S/O Md Abdul Jalil, Vill. Araiura, Sadar, Comilla.	Gift, 1775, Dated 12.12.1980	0.5
Md Abdul Hamid, S/O Md Abdul Jalil, Vill. Araiura, Sadar, Comilla.	Gift, 1776, Dated 12.12. 1980	0.5

SECOND SCHEDULE*

Description of Deed		Descriptions	Date of Registration
Type	No.		

*Lease, mortgage etc. are to be listed.

Source: Bangladesh Land Reform Proposal, DOLA

BIBLIOGRAPHY

Books

1. Ahmed, K.U., Land Survey Methods and Technical Rules, Dhaka, Payara Prokashani, 1994.
2. Azad, A.K., Land Development Tax and Mutation, Dhaka, Lok Prokashani, 1997.
3. Barai, A., Land Ownership Protection Methods, Dhaka, Payara Prokashani, 1995.
4. Barkat, A., Political Economy of Khas Land in Bangladesh, Dhaka, BRAC, 2001.
5. Debnath, N.C., Land Management in Bangladesh, Dhaka, Shahitya Prokashani, 2000.

6. Faruque, R., Bangladesh Agriculture in the 21st Century, Dhaka, UPL, 1998.
7. Government of Bangladesh, Manual on Land Administration, Ministry of Land, 1997.
8. Government of Bangladesh, Manual on Land Management, Ministry of Land, 1991.
9. Mia, A.K., Land Survey and Land Management, Dhaka, Bai Mela, 1987.
10. Mia, S.R., Rules on Mutation, Dhaka, Naya Dunya Publication, 1996.
11. Mia, S.R., The Registration Act and Procedure, AK Prokashani, Dhaka, 1992.
12. Rahman, H., Land Laws and Land Management in Bangladesh, Chittagong, New Concept Ltd., 2002.
13. Siddiqui, K.U., Land Management in South Asia, Dhaka, UPL, 1997.

Journals

14. Kamal, A., " Land Management and Equal Rights of Men and Women, " Bhumi Journal, June, 2001.
15. Wachter, D., " Experience in Rural Land Titling, " The World Bank, Research Observer, Vol. 2, August, 1999.

Reports

16. Annual Progress Report, 2002, Directorate of Land Record and Survey, Government of Bangladesh.
17. Annual Report on Delivery of LT Notices in Savar Upazila, Office of the Assistant Commissioner (Land), Savar, Dhaka, 2001.
18. National Land Use Policy, 2001, Ministry of Land, Government of Bangladesh.
19. Report on Bangladesh Land Administration Reform, 2001, Department of Land Administration, W. Australia.
20. Report on Land Record and Survey, Ministry of Land, Government of Bangladesh, 1989.

21. Report on Modernization of Land Administration, 2000, Public Administration Reform Commission, Government of Bangladesh.
22. Report of the Study for Future Land Policy and Land Reform Measures in Bangladesh, 1993, Ministry of Land, Government of Bangladesh.

Articles

23. Rahman, M., Innovative Agrarian Reforms for Sustainability and Poverty Reduction, Bangladesh Report and Discussion Paper Presented in the Workshop "Access to Land " Bonn, March, 19-23, 2001.
24. Alamgir, M.H., People-Friendly Land Administration, Seminar Paper Presented in PATC, Dhaka, 25 October, 2000.
25. Mahmood, H., Land Reform, Internet, Human Rights Development Centre, 2003.

Interviews

26. Amin, A.R., Secretary, Ministry of Land, 4 March, 2003.
27. Kashem, M.A., Divisional Commissioner, Dhaka, 10 March, 2003.
28. Mahmood, H., Expert on Land and Human Rights, Ashoka Fellow, Human Rights Development Centre, Dhaka, 15 March, 2003.
29. Muslim, N., Deputy Commissioner, Dhaka, 13 March, 2003.
30. Nazem, N.I., Land Expert and Acting Team Leader, GPS Survey, and Associate Professor, Department of Geography, Dhaka University, 14 March, 2003.
31. Rahman, M., Editor, Land Journal, Association for Land Reform and Development, 17 March, 2003.
32. Rahman, T., Assistant Commissioner (Land), Savar Upazila, Dhaka, 5 April, 2003.
33. Uddin, B., Settlement Officer, Dhaka Zone, Directorate of Land Record and Survey, 20 May, 2003.

Author:

Additional Secretary Md Abdul Aziz, ndc, joined Bangladesh Civil Service (Administration) cadre in March 1979. He obtained his Masters Degree and B.Sc (Hon's) Degree in Chemistry from Dhaka University. He was placed in the first class in both the examinations. Prior to his joining in the Civil Service he had been working in Dhaka University as a Lecturer. In 1988 he was awarded and MSS Degree from Birmingham University, UK in Development Administration.

He participated in a number of training courses both at home and abroad. At home he undertook courses on Law and Administration, Financial Administration, Training of Trainers and Land Administration. He attended MATT (Managing at the Top) training of course in the UK in 1998, jointly organised by DFID and GOB for selected mid level civil servants of Bangladesh. He also participated in courses such as Entrepreneurship Development in India, Study of District Administration in courses such as Entrepreneurship Development in India, Study of District Administration in Malaysia, Distance Learning in Indonesia and Development Assistance of IDA in Srilanka.

Mr. Aziz served in various capacities in the field administration. As Upazila Nirbahi Officer he worked in three upazilas of Netrokona and Chittagong districts. He served as Deputy Commissioner in two districts-Habiganj and Dhaka. Besides he worked as Deputy Secretary in Economic Relations Division, Ministry of Commerce and Ministry of Establishment and as Joint Secretary in the Ministry of Land.

EARTHQUAKE DISASTER MANAGEMENT REQUIREMENT IN THE CONTEXT OF BANGLADESH

Captain C. D. Nowroj, (E), ndc, psc, BN

INTRODUCTION

Bangladesh, by virtue of its geographical location, is a disaster-prone country. It is vulnerable to a wide variety of natural calamities like drought, tornado, floods, cyclones, tidal surge, river bank erosion etc. that cause immense damage to life, livestock, property, life support system and infrastructure. But this is not all as Bangladesh is also vulnerable to earthquake disaster. During the last hundred years several great earthquakes devastated cities and towns in some parts of the Indian subcontinent. Earthquake could be one of the most disastrous hazards for Bangladesh as the country is located near the Alpide-Himalayan earthquake belt. Fortunately, earthquake casualties in this region have not been significant till to date. But it should not develop a sense of complacency among the population and the policy makers of Bangladesh. During the last 80 years the world has lost about 20,000 lives per year due to earthquake. Though this figure may not look very impressive, but when one considers an earthquake of magnitude 8.3 on the Richter scale, such as the 1905 earthquake of Kangra wherein about 20,000¹ lives perished in a few seconds and hundreds of thousands houses collapsed or severely damaged, one can imagine the impact of an earthquake. So the questions to be asked are: *what would be the shape of things in Bangladesh if a severe earthquake occurs here and, have adequate precautionary measures been ensured in Bangladesh to mitigate or avoid the possible earthquake disaster in future?*

Even though seismic zoning map of Bangladesh was prepared in 1979, and the Bangladesh National Building Code was prepared in 1993, but the code has not yet been officially enforced. As a result, with rapid urbanization, thousands of buildings without seismic resistant feature have been built in the seismic risk zones of Bangladesh where a significant portion of its population are living under constant threat of earthquake disaster. Public awareness is an important factor for reducing earthquake hazards. But are the people of Bangladesh adequately aware of the consequence of existing construction practice in the country? It needs not be emphasized further that ignorance of the population about consequences of earthquakes in general may be fatal and disastrous. In a situation like this the question that needs to be asked is *"how to avoid or minimize the sufferings of people from the devastation of a probable major earthquake?"*

1. Bangladesh Meteorological Department, 'Earthquake Data'.

There may be different approaches for handling earthquake disaster, but the most logical approach is to face the challenge by adopting appropriate preventive measures so that disastrous effects are either prevented or minimized.² The economic consequence of this approach is minimal although it needs adequate infrastructures to incorporate resistance feature in construction and building up a national capability to combat such disaster. Though earthquake prediction studies help in defining the hazard and stimulating preparedness action before and after the event, but prediction alone, as a means of earthquake disaster mitigation is unreliable and, therefore, needs to be supplemented with comprehensive pre-disaster and post disaster measures. Today it is widely acknowledged that to build up a national capability to cope with earthquake disaster the focus needs to be shifted from post disaster measures to disaster mitigation aspects, with a greater involvement of govt. and non-govt. agencies. Therefore, the need of the time is to apply all the resources towards improving pre-disaster measures and simultaneously evolve a more responsive post disaster measures.

Scope

The aim of this paper is to analyze the vulnerability and risk of earthquake in Bangladesh and suggest pre and post disaster management measures integrating all resources available in the country. The paper concentrates on the earthquake disaster mitigation techniques and post earthquake disaster management measures in the context of Bangladesh. It will also focus on the present state of preparedness and the requirements for implementing the pre-earthquake measures.

EARTHQUAKE RISK IN BANGLADESH

Seismicity of Bangladesh

Geologic and tectonic information play vital role in earthquake risk analysis. The probability of earthquake occurrence within a region can be estimated using geological data combined with historical seismicity data.³ The geological map of Bangladesh, provides a brief account of geology and tectonics of Bangladesh and its adjoining areas. The tectonic evolution of Bangladesh is explained as the result of collision of the north moving Indian plate with the Eurasian plate, and the southeastern arm of the Burma sub-plate. The tectonic frameworks of Bangladesh indicate that the northeastern part of the country, with the presence of Dauki and Sylhet fault system, and proximity to the southeastern Assam with the Jaflong thrust and the Naga thrust, is a zone of high seismic risk. Northern Bangladesh comprising greater Rangpur and Dinajpur

2. Carter W Nick, Disaster Management A Disaster Manager's Handbook, Asian Development Bank, Manila, 1991

3. Development Design Consultant Ltd. Seismic Zoning and Earthquake Risk Analysis of Bangladesh, April 1993

district is also a region of high seismicity because of the presence of Jamuna fault, and the proximity to the active east-west running fault and the main boundary fault to the north in India. The Chittagong Tripura Folded Belt, experiences frequent earthquakes, as just to its east is the Burmese arc where a large number of shallow depth earthquakes originate. The southwestern part, relatively free from active faults and away from tectonically active areas of India, is the region of least seismicity. The central part of Bangladesh is relatively less susceptible to high earthquake hazards. The Bogra fault system and other suspected basement faults, however, add to the vulnerability to earthquake. The tectonic provinces both within and around Bangladesh, which have been identified as the major sources of earthquake⁴ that may affect Bangladesh are: Bogra fault zone, Sub-Dauki fault zone, Assam fault zone and Tripura fault zone.

Probable Future Earthquakes in Bangladesh

The earthquake data of Bangladesh from 1910 to 2002 shows that Bangladesh experiences frequent low intensity earthquake almost every month. The Bengal Basin, most of which has been slowly subsiding due to tectonic forces, is responsible for building the Himalayas. The tectonic process causes the strata under the Himalayas and the adjoining areas lying at their feet to be in a state of tension and the strata are yet to settle down to their equilibrium plane.⁵ This tectonic process and the consequential settling of these strata are mainly responsible for occurrence of earthquake in this region. Bangladesh lies between Latitude. 21° N and 27°N, and Longitude. 88°E and 92°E, within which few earthquake epicentres can be observed But most of the major earthquake epicenters lie in the east and northeast Indian regions, adjacent to Bangladesh’s international border. These have, in the past, produced some shaking in the central part of Bangladesh.

Return Period (Years)	Earthquake Magnitude (Mb) for			
	Bogra Fault Zone	Sub-Dauki Fault Zone	Assam Fault Zone	Tripura Fault Zone
100	6.9	7.6	8.0	7.6
200	7.3	8.2	8.5	8.0

Table-1 Earthquakes for Different Seismic Zones

4. Goswami H C and Sarmah S K, Probabilistic Earthquake Expectancy in the Northeast Indian Region, 1982, Bull. Seism. Soc. Am. Vol-72, No.3, Pp. 999-1009
 5. Geophysical Institute, Quetta, Pakistan, " Seismicity of Bangladesh"

A total of about 365 earthquakes of magnitudes ranging from 4 to 7.9 occurred at different observation periods from 1897 to 1991 in the tectonic province bounded by Lat 20° to 28° N and Lon 87° to 94° E. The Table 1 shows the magnitudes of earthquake in Bogra, Sub-Dauki, Assam and Tripura Fault zone in 100 and 200 years return periods. From this information and the fact that the earthquake of magnitude 8.7 and 8 occurred in Shillong and Kangra in 1885 and 1905 respectively, it can be presumed that an earthquake of this magnitude is overdue in this tectonic province where Bangladesh is located.

EARTHQUAKE PREDICTION AND MEASUREMENT

Earthquake Prediction

Since early 1960s lot of studies and research works have been carried out to understand the phenomenon of earthquake. It is now well established that when an earthquake occurs, it releases energy in the form of waves that travel through the earth at different velocities⁶ from the earthquake source in all directions. This has formed the basis of earthquake prediction technique in the present days. But one of the problems of earthquake prediction is that it is grossly inaccurate because it cannot indicate a precise geographical point within a precise time window with an acceptable probability. Therefore, forecasting earthquake like weather has not been possible till to date⁷ and geophysicists in countries like China are trying to correlate earthquake and behaviour of animals, birds and insects. Emission of radon gas from fault lines is seen before an earthquake. But it needs to be studied further for confirmation.

Measuring and Recording Earthquakes

Earthquakes are measured and recorded by a seismographic network. Each seismic station in the network measures the movement of the ground at the site. Magnitude is the most common measure of an earthquake's size. It measures the total energy released during an earthquake. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded on a seismogram at a certain period and expressed in Arabic numerals.

6. Internet: <http://www.earthquakes.bgs.ac.uk/hazard/faq1.htm> - Earthquake Frequently Asked Questions

7. Internet: http://www.pbs.org/wnet/SavageEarth/earthquake/htm/side_bar_2.htm, "Savage Earth: Quake Prediction"

Earthquake Description	Magnitude M Equivalent TNT Energy, Tons	Approximate	Remark
Great	M>8	1,010,000,00	Any earthquake of magnitude greater than 10 would be able to destroy the world civilization.
Major	7<M<7.9	31,800,000	
Strong	6<M<6.9	1,01,000	
Moderate	5<M<5.9	31,800	
Light	4<M<4.9	1,010	
Minor	3<M<3.9		
Micro	M<3		

Table 2 Earthquake Magnitudes (Source: Magnitude & Intensity, NEIC)

The earthquake magnitude is classified as shown in Table 2. Intensity is a measure of the shaking and damage caused by the earthquake and this values change from location to location.⁸ The intensity scale or the Modified Mercalli scale has 12 levels of intensity expressed in Roman numerals.

Damage Profile

The extent of damage caused by earthquake depends on the intensity of earthquake, distance from the epicentre, soil condition, type of structure, design of building and quality of construction. An earthquake of magnitude 5 and above is likely to cause collapse of almost all kinds of structures, lifelines, sanitation, electric supply and communication system. Life and property can be damaged by fires originating from short circuits of power line and gas leaks from damaged gas lines. The most common failure will be the failure of stone masonry load bearing walls due to shear and tensile forces. Non-load bearing walls may fail by overturning, local crushing at the corners and diagonal cracking. Reinforced concrete framed structure may fail both due to buckling of columns under lateral force and the failure of joints. Shattering of gable walls and collapse of stone masonry walls may cause extensive damage to roofs.

8. Internet: <http://www.earthquakes.bgs.ac.UK/hazard/faq1.htm> "Earthquake:Frequently Asked Question."

EARTHQUAKE DISASTER RISKS FOR DHAKA CITY

Seismic Hazards for Dhaka City

According to a report published by United Nations, Dhaka and Tehran are the cities with the highest relative disaster risk (Cardona et al, 1999). Based on the historical data of major earthquakes that affected Bangladesh, it is conceivable that the Dhaka region may experience earthquakes with damage intensity greater than VIII. The following factors may explain the seismic hazards in and around Dhaka:

- a. **Movement of Major Lineaments.** The major faults and lineaments mapped in Dhaka are obvious. Movement of these lineaments, if happens, might pose significant seismic risk to the city (Hoque et al. 1994)
- b. **Ground Water Extraction.** There are concerns of increase in seismic hazard in and around Dhaka due to human activities. Recent research indicates that ground water extraction may trigger earthquakes in relatively stable regions (Prof Ansary M A, 2002).
- c. **Liquefaction Phenomena.** Liquefaction is a physical process that takes place during an earthquake and may lead to ground failure. Bangladesh including Dhaka is largely an alluvial plain consisting of fine sand and silts, which is susceptible to liquefaction, during earthquake.
- d. **Construction Technology.** Dhaka region has buildings of different categories including reinforced concrete frame buildings, brick masonry buildings with reinforced roofs, non-engineered brick masonry buildings and buildings made of other materials such as tin sheets, mud, wood etc. The non-engineered constructions are of lower strength. During the 1991 census, the Dhaka city was recorded to have a total of about 7, 43,480 dwellings which are now estimated to be over 12, 00,000. About 60% of these non-engineering constructions⁹ are likely to fall in a major earthquake.
- e. **Human Settlement on Surface Faults.** Dhaka city has been expanding in almost all directions. It is clearly evident from the **Micro-seismic Hazard Zoning Map of Dhaka city**, and the Tectonic Map of Dhaka region, that human settlements are growing on areas of faults and lineaments. These settlements are serious seismic hazards for Dhaka city.

9. Prof Ansary M A, Seismic Risk of Dhaka City and Role of the Insurance Community, Paper presented at National Sensitization Seminar on Response to Earthquake, Hotel Sonargaon, Dhaka, 6 March 2002

Earthquake Damage Scenarios for Dhaka City

On the basis of seismic hazard, structural vulnerability and building damage index the total number of buildings that would be damaged in Dhaka resulting deaths and injuries due to earthquakes of different intensities were studied by a committee of experts under a project funded by the Ministry of Science and Technology. The estimated number of building that would be damaged due to earthquake is shown in Table 3. The Dhaka census information, earthquake hazard, vulnerability data and the mortality information were combined to estimate the number of possible injuries, Table 4, and the corresponding deaths, Table 5 on the basis of the building occupancy

Item Description	EMS VII	EMS VIII	EMS IX
Reinforced Concrete Building	6,700	20,000	34,000
Engineering Masonry Building	81,000	171,000	250,000
Non-Engineered Masonry Building	82,000	145,000	200,000
Non-Engineered Constructions: Others	48,000	94,000	178,000
Fire	54,000	72,000	90,000

(Source: Prof Ansary)

Table 3: Estimated Number of Buildings that would be Damaged in Dhaka due to Earthquake.

Items Description	EMS VII	EMS VIII	EMS IX
Midnight	125,000	210,000	300,000
6 AM	100,000	170,000	240,000
12 Noon	65,000	110,000	160,000

(Source: Prof Ansary)

Table 4: Estimated Numbers of Injuries (Residential) due to Different Maximum Earthquake Intensities Occurring in Dhaka.

Items Description	EMS VII	EMS VIII	EMS IX
Midnight	52,000	86,000	119,000
6 AM	41,000	68,000	95,000
12 Noon	27,000	45,000	62,500

(Source: Prof Ansary)

Table 5: Estimated Numbers of Fatalities (residential) due to Different Maximum Earthquake Intensities Occurring in Dhaka.

EARTHQUAKE DISASTER MITIGATION PLAN FOR BANGLADESH

Priority in Disaster Mitigation Plan

To draw up plans for mitigation of earthquake disaster, the objects exposed to the hazards that need immediate attention may be placed in order of priority. All man-made heavy structures like dams, power plants, bridges etc. and places of assembly of people such as schools, hostels, auditoriums, mosques, etc. must be built with adequate safety margin. Emergency services like hospitals, fire stations, communications centers and lifelines of cities or even regions etc. should remain functional even after a major earthquake. Water and gas supply lines are to have in-built flexibility, with provisions for additional sub-zonal cross connections so that an affected zone may be isolated, while keeping the other zones functional. Power supply lines should be laid under ground, as much as possible. All private houses, including non-engineered houses are to be earthquake resistant. Industrial buildings and building in commercial areas should be built with earthquake resistance feature. The total disaster mitigation program that will reduce the impact of a major earthquake on the community can be divided into three phases¹⁰ discussed in the succeeding paragraphs.

Preventive Phase before Disaster. This phase should include the following actions:

- a. Preparation of earthquake catalogues, epicentre and geologic-tectonic maps for assessment of earthquake hazard, and preparation of seismic zoning maps.
- b. Development and enforcement of anti-seismic codes of building design and construction.

10. Arya A S, "Action Plan for Earthquake Disaster Mitigation", Proceedings of Disaster Management Training Country Workshop.

- c. Education and training of engineers and architects in earthquake engineering principles and use of building codes.
- d. Retrofitting of important existing building.
- e. Earthquake insurance for the buildings and structures.
- f. Installation of seismological observatory network.

Emergency Phase after Earthquake. This phase includes the following actions:

- a. Maintenance of law and order.
- b. Evacuation and medical care of stranded people and recovery of dead bodies and their disposal.
- c. Providing shelters, food and water.
- d. Restoring damaged lifelines, communication and transport routs
- e. Quick assessment of damage, cordoning and temporary shoring of severely damaged structures liable to collapse during the after shock period.
- f. Immediate actions to prevent certain chain reactions from developing.
- g. Collection of data from the observatories to monitor the after shock phase.

Consolidation and Reconstruction Phase. This phase should include the following actions:

- a. Survey of buildings and structure for assessment of damage.
- b. Repair or demolition of buildings.
- c. Selection of sites for new settlement.
- d. Adoption of strategy for new construction.
- e. Execution of reconstruction program.
- f. Reviewing of existing seismic zoning maps and seismic codes.
- g. Training of engineer/technical personnel based on lessons learnt.
- h. Statistical studies regarding the occurred earthquake.

EARTHQUAKE DISASTER MANAGEMENT PREPAREDNESS AND REQUIREMENT IN BANGLADESH

Seismic Zoning

In 1977, the Government of Bangladesh constituted a committee of experts for preparation of seismic zoning map of Bangladesh. Based on the analysis and interpretations of the earthquake occurrence data and the seismic tectonic setup of the country, the committee prepared a seismic zoning map, in 1979 under the aegis of the Geological Survey of Bangladesh. This zoning map was reviewed and a revised zoning map was prepared in 1993. On the basis of re-analysis of old and newly acquired data Prof Ansary M A, Department of Civil Engineering, BUET made a proposal in 2001 to revise the zoning map implying increased seismic risk.

Assessment of Earthquake Hazard

The data on earthquake occurrence in and around Bangladesh were collected by the Bangladesh govt appointed committee from the Catalogue of the Indian Society of Earthquake Technology¹¹ starting from the historical period up to 1978, and from Earthquake Data Files of the National Oceanic and Atmospheric Administration, USA from 1979 to 1992.¹² The Geological Map of Bangladesh, was prepared by Alam et al in 1990 under the Geological Survey Department of Bangladesh.¹³ But till to date the micro-seismic hazard zoning map of Dhaka city only has been prepared. The micro-seismic zoning maps of other cities in the seismic risk zones of Bangladesh i.e. Chittagong, Sylhet, Mymensing, and Rangpur are yet to be prepared.

Structural Mitigation

Structural mitigation is one of the major pre-disaster initiatives to minimize damage during earthquake. For buildings coming up in seismic zone 2 and 3 if appropriate design and construction codes are followed, it will reduce the damage during earthquake. Quality materials such as steel, stone, cement and other building materials in construction can make buildings stronger to withstand severe earthquake shocks. Bangladesh Standard and Testing Institution (BSTI) and House Building Research Institute (HBRI) have important role to play in this regard.

11. Catalogue of Earthquake in India and Neighborhood 1983, Indian Society of Earthquake Technology, Roorkee, India.

12. Earthquake Data File (1992), National Oceanographic and Atmospheric Administration, USA

13. Alam M K, Hasan A K M S, Khan M R, and Whitley J W (1990), Geological Map of Bangladesh, Geological Survey of Bangladesh.

Town Planning and Implementation

Lack of awareness in people about earthquake disaster has caused a very detrimental impact on the construction practice followed in the country and implementation of town plans. The Master Plan of Dhaka City, for example, was prepared in 1959 and was revised in 1995, but it has not been properly implemented. Individual houses and buildings have been built filling up ponds, ditches and surface fault lines without seismic strengthening. Presently, the building permit granting authorities do not have any mechanism for inspection and supervision during construction phase of private buildings. Consequently, almost all private owners temper with the approved design incorporating harmful changes in the design. To avert such problems town planning must be carried out taking the micro-seismic hazard zoning map into consideration and the plan be implemented through legal means. There is a serious lack of cooperation and coordination among city administrative bodies in implementing town plans and laying lifelines for cities. Lifelines should be centrally planned and laid through proper coordination.

Enforcement of Building Code

The outline of a “Code for Earthquake Resistant Design” of construction was prepared in 1979. In 1993, a team of consultants, appointed by the Government of Bangladesh, prepared the National Building Code for Bangladesh (BNBC 93). But this Code has not yet been enacted as law and hence the Code could not be enforced officially. In 1997, the Ministry of Works constituted a committee to develop a mechanism for its enforcement but it could not make any progress. Presently, the Ministry of Works is considering to accept BNBC 93 as annex to the Building Act 1952. Enforcement of building code should be the function of the government to assure uniformity and prevent conflict. Investigation should be the responsibility of a single institution, such as RAJUK. A branch or department of the same institution should constitute a court to carry out hearing and impose necessary penalties. Necessary laws and byelaws, in this regard, are to be passed and promulgated to ensure enforcement of the National Building Code after its enactment. Appropriate mechanism for inspection at all phases of building construction must be developed.

Retrofitting of Existing Building

Essential facilities such as hospitals, communication centres, fire stations, powers plants, water supply and treatment plants etc. play vital roles in the post disaster phase. Many old buildings in Bangladesh under these categories were not designed to withstand the shock of earthquake. Presently, there is no government policy to undertake retrofitting of such essential facilities. However, the retrofitting techniques of existing buildings and structures have already been developed. Therefore, programs may be taken up for retrofitting of important buildings that accommodate essential facilities. Effort may also be made to study the behavior of non-engineered houses during an earthquake and technology is to be developed for strengthening of such houses and buildings.

Education, Training and Research

The present level of education and training on earthquake technology available in the country is inadequate. Recently, the BRAC University organized an international training program titled "Earthquake Vulnerability Reduction in Cities". The National Center for Earthquake Engineering has been set up and engineering courses have been started in BUET. Bangladesh Institute of Technology, Chittagong has also set up an Earthquake Research Centre. Moreover, BUET has carried out a project to develop an earthquake database from historical period to recent past for seismic hazard analysis. It also created a database of civil engineering structures in selected areas of Dhaka city to develop a damage scenario of structures in the event of a probable earthquake. But still there are a lot more to be done to educate and train engineers and professionals on earthquake engineering principles and effective use of codes. Computer hardware and software may be acquired for carrying out analytical modeling and simulation studies different types of buildings and structures.¹⁴

Public Awareness

Public should be made aware of earthquake hazards and consequences and be motivated to take appropriate preventive actions in advance without developing a sense of complacency at any stage. In this regard the electronic and printed media must play their role effectively. Recently, the Institute of Engineers, Bangladesh (IEB) has organized few seminars in Dhaka, Sylhet, Chittagong, Katmandu and Agartala in co-operation with Nepal Engineers Association and Institution of Engineers, India. Bangladesh Earthquake Society has been formed drawing members from all disciplines of profession.¹⁵ But the general mass is still unaware of the likely consequences of a major earthquake, which demands special attention.

14. Dr Ali M H, 'Earthquake Hazard and Seismic Zoning Of Bangladesh'.

15. Dr J R Chowdhury, "Some Recent Development in Earthquake Disaster Mitigation and the Bangladesh Scenerio "

Observatories

To locate an earthquake correctly, a dense network of observatory is essential. In 1986 a project was started, with UNDP's contribution, for setting up a 4-station network with the existing one at Chittagong and three new stations namely at Dhaka, Rangpur and Sylhet. But the project was finally abandoned due to shortage of fund from the Government of Bangladesh, and UNDP withdrew its fund. The Government of Bangladesh took up another similar project in 1991 but this was also abandoned due to financial constraint and now it is waiting for funds from foreign donor.¹⁶ However, the need for setting up an observatory network in the country cannot be emphasized further as the lone observatory in Chittagong is now partially operational and unable to locate earthquake epicenter due to its operational limitation.

Instrumentation of the Seismic Stations

Bore Hole seismometers are required to be installed in Dhaka and Rangpur, which will cover the alluvial soil, whereas, broadband seismometers are needed in Chittagong and Sylhet, for their hilly terrain. Recently, it was decided that to collect information on ground motion a number of strong motion accelerograph will be installed on and in the vicinity of the Jamuna Multipurpose Bridge and four district headquarters (Bogra, Natore, Mymensingh and Gazipur) close to the bridge. Installation of seismic monitoring equipment in important structures may be made compulsory, for vital information in determining seismic design criteria in new structures.

Preparation at Government Level

Recently the Disaster Management Bureau (DMB) has taken a number of steps, such as preparation of list of essential vehicles, tools, equipments, possessed by different organizations, organizing training, seminars, meetings and workshops. But to face the challenge of a major earthquake detailed action plans are yet to be prepared. Very recently, a program has been initiated by the Ministry of Disaster Management and Relief for drawing up comprehensive action plans for facing the challenges of earthquake disaster. It involves all government agencies/departments including Army, Navy, Air Force and NGOs. The DMB has published a book titled "Earthquake Awareness Programme," and the same has been distributed to different authorities in Zilla, Upozilla and Union Parishod.¹⁷ Such book may be included in the syllabus of secondary school certificate curriculum.

16. Bangladesh Meteorological Department, Dhaka, "Position in Connection with Establishment of a Four Stations Seismic Network in Bangladesh "

17. Mir Fazlul Karim, " Earthquake and Public Awareness in Bangladesh " Proceeding of National Disaster Preparedness Day- 2002, Disaster Management Bureau.

EARTHQUAKE DISASTER MANAGEMENT IN BANGLADESH

Post Disaster Operations

Resource Management. Since it is impossible to maintain an exhaustive stock of all resources and facilities that would be required to face the catastrophe of a major earthquake, actions to face such challenges are to be initiated utilizing all available resources and facilities through organized and coordinated efforts. There has to be provision of specialists to assist in the coordinating activities of various government departments and liaise with outside agencies for emergency support.

Damage and Need Assessment. Immediately after an earthquake the whole devastated area is to be surveyed to assess and determine the extent of damage and requirement of rescue and relief operations.

Establishing Communication. Military type communications within and outside the disaster areas are to be established. Mobile/cellular telephone would play vital role in providing post earthquake communication links and search and rescue operations. Many of the cellular telephone antennas, now existing on building top, may collapse in the event of earthquakes. Therefore, the damaged antennas are to be repaired with due priority.

Collapsed Building and Debris Clearance. Provisions of earthmoving equipment including other special equipment for search and rescue operations and operators are to be made to clear debris and collapsed building/structures from the affected areas and roadways to ensure quick access to the trapped survivors.

Evacuation. Provisions of ground evacuation for large number of people and provisions of helicopter evacuation of casualties with in-flight medical treatment facilities are to be made.

Search and Rescue. Coordinated wide ranging search and rescue services are to be provided using both fixed and rotary-wing aircraft and ground and water transport to find out and remove affected/injured persons to safe areas and rescue centers.

Food and Water. Provisions of military type field messing facilities and

issue of military subsistence rations are to be arranged where authorized. Provisions of portable water for emergency drinking and cooking purposes are to be made. Assistance to be provided to the governmental departments and bodies in supervising the storage, transportation and distribution of consumer goods and commodities supplied by the armed forces and other agencies.

Temporary Housing and Shelter. Housing at military camps having facilities in excess of operational requirements may be provided, if possible. Camps and temporary shelter for public administrative offices may be erected utilizing military engineers.

Protection of Life and Property. Active military police units and military forces may be deployed, when authorized, in maintenance of law and order, and in prevention of looting and plundering within the disaster areas. Local fire services are to be assisted in suppression of fires by providing fire fighting equipment, operators and troops.

Repair of Roads and Bridges. Emergency repair of streets, roads, bridges and replacement of damaged bridges with temporary types of bridges utilizing engineer troops are to be arranged. Specialists' support is to be provided to assist the local government in supervising operations of Public Works Department within the disaster areas and in coordinating the utilization of resources provided by other agencies.

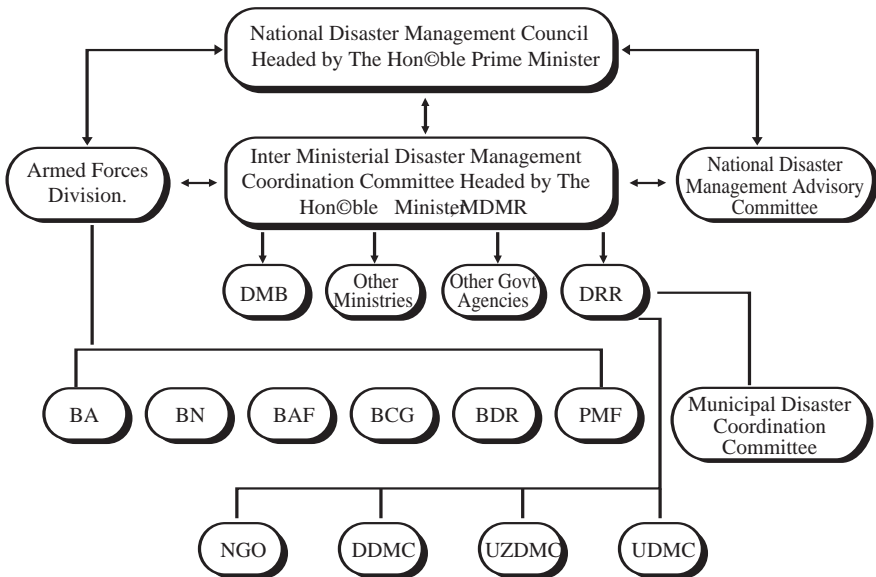
Restoration of Lifelines. Specialists to assist and advice government departments in restoring lifelines and sanitation system in the affected areas are to be provided. Emergency repair of these systems utilizing military engineers and troops is to be arranged as necessary.

Post Disaster Operation Management Plans

The Directorate of Relief and Rehabilitation (DRR), under the Ministry of Disaster Management and Relief (MDMR), mainly implement the relief and rehabilitation policies through its field organs and NGOs. But in case of an earthquake, neither the govt. bodies nor any corporate body alone can cope with the multitude of problems that would be left in its wake. Therefore, the responsibilities for execution of the rescue, relief and rehabilitation are to be shared by all the specialist departments of government and non-government agencies.

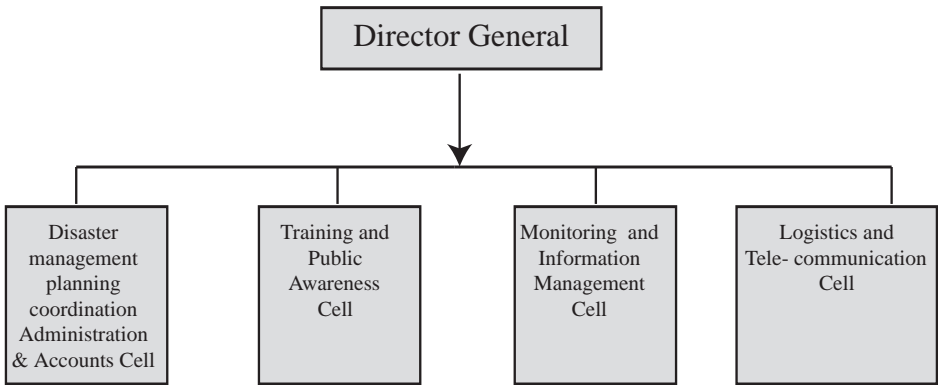
To conduct post earthquake disaster management activities the affected city/town/locality may be divided into sectors. The sector-wise area of responsibility may be distributed among the different government agencies. The operations are to be conducted under the National Disaster Management Council headed by the Hon`ble Prime Minister. The Inter-Ministerial Disaster Management Coordination Committee headed by the Hon`ble Minister, MDMR, is to implement the policy and decisions of the National Disaster Management Council.¹⁸ The committee will monitor the execution of the rescue; relief and rehabilitation related plans and keep the council informed of the progress. The committee is to coordinate and evaluate the activities of the line ministries, concerned, Armed Forces Division, Disaster Management Bureau, Directorate of Relief and Rehabilitation, all Para Military Forces, other government and non-government agencies concerned. The National Disaster Management Advisory Committee is to advise the National Disaster Management Council and MDMR on technical management, emergency response and development. The Armed Forces Division is to conduct all the post disaster activities, assigned by the government, through the services headquarters, which in turn, will execute action plans through formation/area headquarters and units/bases. The proposed organograms of the different disaster management organizations at the national and local levels including the DMB, Armed Forces, Para Military Forces and NGOs are shown below:

NATIONAL LEVEL DISASTER MANAGEMENT ORGANIZATION

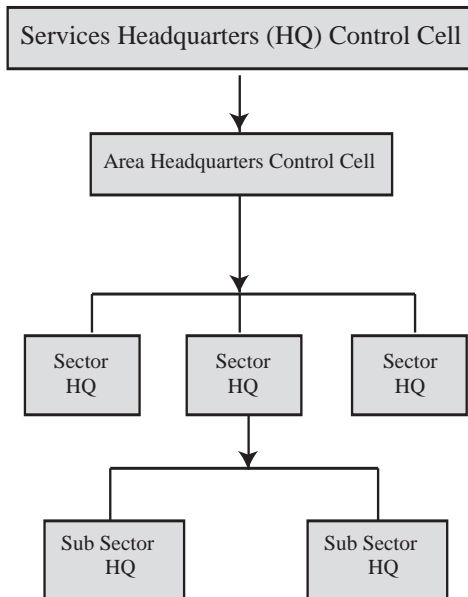


18. Ashraf M, " Role of the Government in Relief and Rehabilitation" Paper presented at National Workshop on Disaster Management and Media, CIDRAP Auditorium, Dhaka 12 Aug 2002.

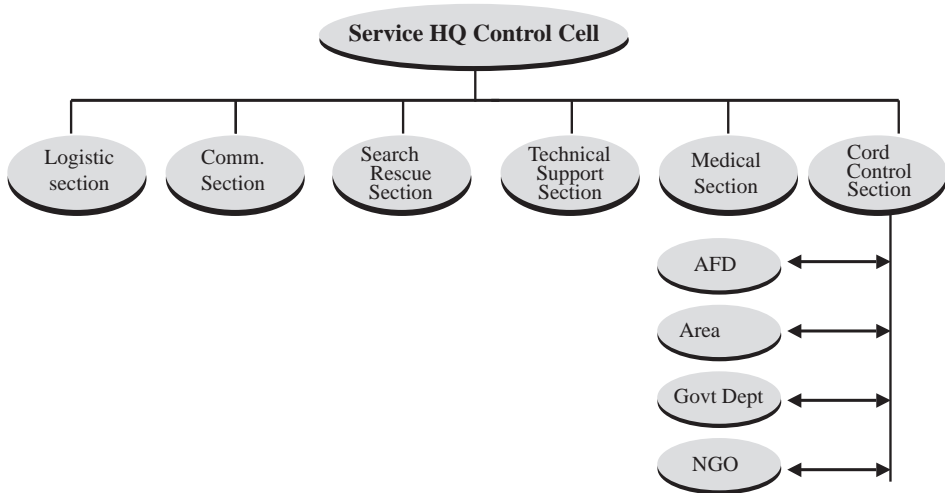
CORE STRUCTURE OF DMB



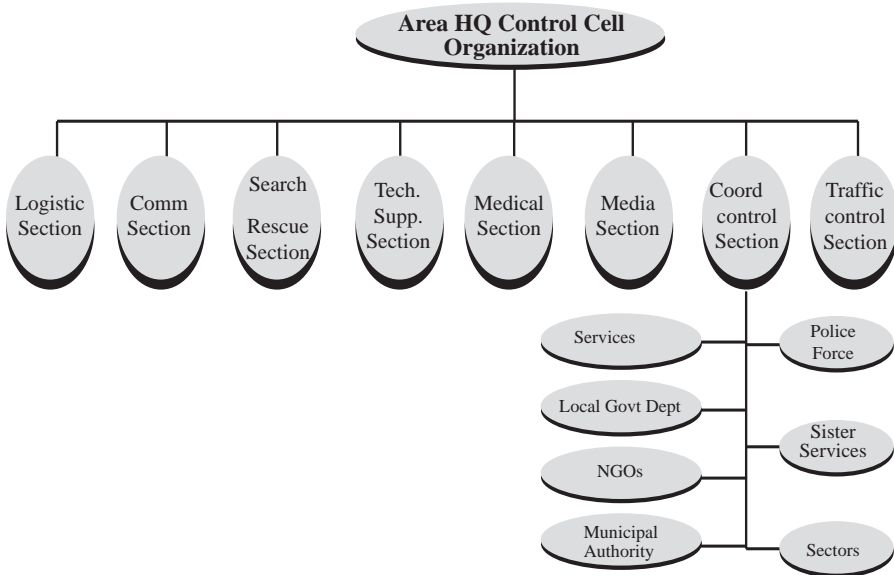
ARMED FORCES DISASTER MANAGEMENT ORGANIZATION



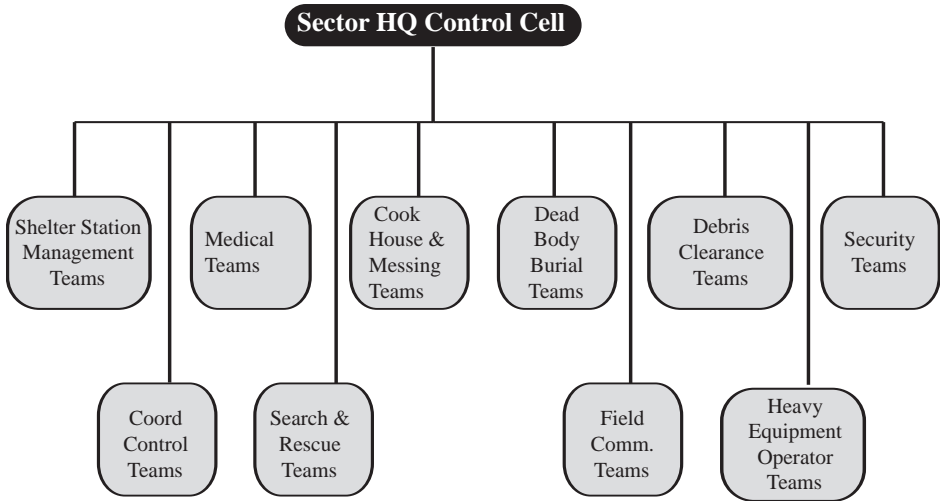
SERVICES HQs CONTROL CELL ORGANIZATION



AREA HQ CONTROL CELL ORGANIZATION



SECTOR HQ ORGANIZATION



Management of Special Tools and Equipments

An inventory of heavy vehicles, tools, special equipment and sensors available with different agencies/department that would be required for handling earthquake damages is to be maintained with DMB. Foreign assistance with appropriate tools, equipment and know how will be vital for post disaster operations. Such technical assistance may be called for immediately after an earthquake from different resourceful countries.

Earthquake Website. Earthquake website may be launched as it would be very helpful in collecting information in post-disaster situation. Departments and agencies, concerned, may then continuously update the information logging on to the website as and when required. This will enable international communities to assess special technical assistance needed for any particular operation and extend necessary support accordingly.

ROLE OF DIFFERENT AGENCIES IN EARTHQUAKE DISASTER MANAGEMENT

Role of the Ministry of Disaster Management and Relief

The Ministry of Disaster Management and Relief is to play its role to perform the following tasks with regard to relief and rehabilitation activities in the post earthquake situation:¹⁹

- a. Approach the Armed Forces Division to provide support for search and rescue operations and assessment of loss and damage.
- b. Request the civil authorities to assist the Armed Forces in carrying out search, rescue, relief and rehabilitation activities.
- c. Arrange meetings of the National Disaster Management Council and Inter Ministerial Disaster Management Coordination Committee.
- d. Coordinate rescue and relief work with NGOs.
- e. Assess requirement of funds, material and International support for rescue, relief and rehabilitation works.
- f. Arrange house building grants and food for works program.
- g. Coordinate overall rehabilitation program.

Role of the Directorate of Relief and Rehabilitation

The DRR is to perform the following tasks to ensure relief activities during post disaster period:²⁰

- a. Ensure adequate stock of relief and rehabilitation materials.
- b. Allocate and utilize relief and rehabilitation material received under the food for works program for various post earthquake disaster management activities.
- c. Ensure quick dispatch of relief material to the affected areas.
- d. Instruct field officers for helping the local administration in evacuation and rescue operation.
- e. Setup temporary shelter and feeding center at the affected areas.

Role of Specialist Department

Different specialist departments of the government are to take part in their specialized fields to carry out the following activities:²¹

-
19. Ashraf M, " Role of the Government in Relief and Rehabilitation " Proceeding of National Workshop on Disaster Management and Media "
 20. Ashraf M, " Role of the Government in Relief and Rehabilitation " Proceeding of National Workshop on Disaster Management and Media "
 21. Ashraf M, " Role of the Government in Relief and Rehabilitation " Proceeding of National Workshop on Disaster Management and Media "

- a. Fire services are to work for mitigation of fire accidents and rescue operation as necessary.
- b. Power Development Board is to restore power supply.
- c. Gas distribution authority is to ensure safety, repair damaged pipelines and restore supply.
- d. Water supply authority is to restore water supply to affected area and repair damaged pipelines and pump houses.
- e. Roads and High Ways, Water Development Board and LGED departments are to repair damaged infrastructure, embankments and roads and keep these useable.
- f. Public health department is to supply pure drinking water to the affected areas.
- g. Health department is to provide medical teams and check outbreak of epidemics.
- h. Telecommunication authorities are to restore communication network.

Role of the Armed and Para Military Forces

The Armed Forces (Army, Navy & Air Forces) and the Para Military Forces of Bangladesh can play vital role in the post earthquake disaster management activities because of their effective organizational and command control structure. The Bangladesh Armed Forces may perform the following operational tasks to assist the civil administration:

- a. Mobilize available resources to the affected areas for search and rescue of the trapped persons.
- b. Assess the damage and needs as per priorities.
- c. Provide transportation facilities by land, water and air for evacuation of stranded people and carrying relief material.
- d. Employ field medical teams and establish mobile hospital.
- e. Assist fire services in fire fighting.
- f. Restore lifelines in the affected areas.
- g. Ensure security of the distressed people.

- h. Remove and clear debris and collapsed building/structures to ensure accessibility to the affected areas.
- j. Remove dead bodies, animal carcasses and bury/dispose the same.
- k. Provide temporary shelter, cooking and sanitation facilities and supply drinking water and other needs.
- l. Establish emergency communication.
- m. Provide support in rehabilitation efforts.
- n. Besides all these, the Armed Forces can be deployed at any places, for any difficult task to meet the needs of the time.

Role of the NGOs

The NGOs in Bangladesh can play important roles in earthquake response both at national and local level. Following are the major tasks that NGOs may carry out in response to earthquake:

- a. Appropriate assessment of damage and needs in the aftermath of earthquake.
- b. Appropriate targeting of the affected population to ensure accountability and optimal use of limited resources.
- c. Respond in coordination among the involved agencies in the aftermath of earthquake.
- d. Exchange ideas and experience, in response of earthquake, with other involved agencies.
- e. Involve in post earthquake disaster response such as search, rescue, relief and rehabilitation work together with government departments/officials.

Role of Insurance Community

In mitigating the impact of earthquake, the insurance industries can play two major roles. The first relates to the mitigation of cost to the insured by bearing part of the cost of damage. The second role involves harnessing market forces to drive long-term improvement in seismic risk. By charging higher rates

for structures having poor or no seismic strengthening feature and for construction of structures at poor location, the insurance industry would encourage the private property owners to demand that the architects and engineers build structure that can be insured at reasonable rates.

CONCLUSION AND RECOMMENDATIONS

The aim of this paper was to analyze the vulnerability and risk of earthquake in Bangladesh and to suggest pre and post disaster management measures integrating all resources available in the country. The paper tried to concentrate on the earthquake disaster mitigation techniques and post earthquake disaster management measures in the context of Bangladesh with its focus on the present state of preparedness and the requirements for implementing the pre-earthquake measures.

From the findings of this paper it is evident that Bangladesh lies in an active tectonic province, and the history of earthquakes in and around Bangladesh, indicate that an earthquake of magnitude 8 is already overdue in the region. In case of a major earthquake in Sub-Dauki, Assam and Shillong Fault Zone, Dhaka City has all the possibilities of being severely affected. Depending on the time of occurrence, between 45000 to 86000 people may perish due to structural collapse. The number serious injuries may range from 1,10,000 to 2,10,000. About 60% of the existing non-engineered structures may collapse. Therefore, there is a need for extensive detailed risk assessment of different areas for formulating realistic mitigation policies.

There is a serious lack of awareness among the public and the govt. policy makers about the earthquake risks and hazards. Construction of non-engineered buildings is increasing frantically in the absence of a National Building Code. Human settlements are growing on seismically hazardous areas. There is a need for close cooperation and coordination among city administrative bodies in implementing town plans.

But unfortunately, there is no effective mechanism for implementing a new-effective town plan, and earthquake observational facility available in the country is absolutely inadequate. There is a lack of realization among the authorities at national level about the necessity of establishing a seismic network in the country as Micro-seismic hazard zoning map for cities in the seismic risk zones i.e. Chittagong, Sylhet, Mymensing and Rangpur are yet to be prepared.

In view of the seismic risk in Bangladesh, resources available in the country, existing construction practice and the present level of preparedness the following immediate measures are recommended:

- a. The Bangladesh National Building Code (BNBC93) is to be enacted as law and the mechanism for enforcement of the code is to be developed. Laws and byelaws are to be passed and promulgated for preventing construction of non-engineered structures and buildings.
- b. Town plans are to be implemented through more cohesive interactions and coordination among the city administrative bodies.
- c. The adequacy of important existing buildings and structures to withstand earthquake is to be evaluated and retrofitting is to be carried out as necessary.
- d. Standing orders detailing emergency action plans to be executed during and after earthquake are to be prepared and incorporated in the overall Disaster Management Plan under the DMB.
- e. Public awareness building program is to be undertaken. Private building owners are to be encouraged to insure their building /house to mitigate the cost of damage due to earthquakes. Insurance industries are to harness market forces to drive long-term improvement in seismic risk. The printed and electronic media are to be effectively utilized for this purpose.
- f. The government policy makers' awareness building would be an important step to be taken for overall earthquake disaster preparedness.
- g. General instructions on dos and don'ts before, during and after earthquakes should be included in the school curricula in the high-risk zones.
- h. Earthquake drills in the high-risk zones are to be organized on regular basis.
- i. Simple guidelines for strengthening of existing non-engineered constructions are to be developed and disseminated widely.

- j. Equipment held with different agencies may be earmarked to ensure their ready availability at the time of need.

With a view to building up a national capability for facing the challenges of a major earthquake the following long-term measures are recommended:

- a. Collection and analysis of earthquake related information to identify its sources and updating seismic zoning maps.
- b. Preparation of liquefaction potentials maps of major urban centers of the country.
- c. Micro-seismic hazard zoning of major cities in zone 2 and 3 starting with Chittagong, Sylhet, Mymensing and Rangpur.
- d. Development of planning guidelines to be used in locating major structures based on micro-seismic hazard zoning map and liquefaction potentials.
- e. Reviewing and updating of the building code at regular intervals.
- f. Development of facilities for research and education/ training of professionals specialized in earthquakes, seismology and geophysics.
- g. Development of analytical modeling and simulation facilities for carrying out studies for various types of structures subjected to earthquake excitation.
- h. Setting up of Seismic Network (at least 4-station) with fully equipped observatories and instrumentation of selected important structures to acquire strong motion data in zone 3 and 2.
- j. Arranging seminars and workshops on earthquake disaster management to identify shortcomings and develop capabilities.
- k. Simulation exercises involving the Armed Forces, NGOs and public.

In conclusion it can be hoped that Bangladesh Government and its people will wake up to the realities of a possible earthquake disaster in this region, and with the right kind of planning and awareness, together we can face such problem successfully.

BIBLIOGRAPHY

Books

1. Carter W Nick, Disaster Management A Disaster Manager's Handbook, Asian Development Bank, Manila 1991.
2. Syed Ashraf Ul Alam, Earthquake Manual, Barsha (Pvt.) Ltd. 2001.
3. Dhaka Metropolitan Development Planning, Rajdhani Unnayan Kartripakkha, Volume-I Dhaka Structure Plan 1995-2015, Haque Printing Press, Dhaka, Bangladesh 1997.
4. Dhaka Metropolitan Development Planning, Rajdhani Unnayan Kartripakkha, Volume II, Urban 1995-2005, Haque Printing Press, Dhaka , Bangladesh 1997.
5. Development Design Consultants Ltd., Bangladesh National Building Code 1993.
6. Development Design Consultants Ltd., Seismic Zoning and Earthquake Risk Analysis, Supplement to Bangladesh National Building Code 1993, Prepared for Housing and Building Research Institute, Dhaka, Bangladesh, April 1993.
7. Economic and Social Commission for Asia and Pacific, Atlas of Urban Geology, Volume 11, Urban Geology of Dhaka Bangladesh, United Nations. 1999.
8. Disaster Management Bureau, Earthquake Awareness Programme, UNICEF, Dana Printers Ltd. 2001.
9. "Seismic Zoning Map of Bangladesh and Outline of a Code for Earthquake Resistant Design of Structures", (1979), Geological Survey of Bangladesh.
10. Catalogue of Earthquakes in India and Neighborhood", (1983), Indian Society of Earthquake Technology, Roorkee, India.
11. "Earthquakes Data files", (1992), National Oceanographic and Atmospheric Administration, Boulder, Colorado, U.S.A.

12. Hunting Geology and Geophysics, (1981) "Interpretation and Operation Report of Aeromagnetic Survey of Bangladesh".
13. Alam, M.K., Hasan, A.K.M.S., Khan, M.R., and Whitney, J.W. (1990) "Geological Map of Bangladesh, Geological Survey of Bangladesh.
14. Goswami H.C and Sarmah, S.K (1982) "Probabilistic Earthquake Expectancy in the Northeast Indian Region", Bull. Seism. Soc. Am. Vol-72, No-3, Pp. 999-1009.

Journals

15. Dr J R Chowdhury, Some Recent Development in Earthquake Disaster Mitigation and Bangladesh Scenario, Paper presented at 47th Annual Convention, IEB, 5th January, 2003, Chittagong.
16. Prof Ansary M A, Seismic Risk of Dhaka City and Role of the Insurance Community, Proceedings of National Sensitization Seminar on Response to Earthquake, 6 March 2002, Sonaargaon Hotel, Dhaka.
17. Lt. Col. Khan M H R, Role of Army in Rescue and Relief Operation in an Earthquake Hazard, Proceedings of National Sensitization Seminar on Response to Earthquake, 6 March 2002.
18. Morshed M, Bangladesh : Earthquake Vulnerability and Possible Role of NGOs, Proceedings of National Sensitization Seminar on Response to Earthquake, 6 March 2002.
19. Ashraf M, Earthquake: Role of the Directorate of Relief & Rehabilitation, Proceedings of National Sensitization Seminar on Response to Earthquake, 6 March 2002.
20. Karim M F, Earthquake and Public Awareness in Bangladesh, Proceedings of National Disaster Preparedness Day 2002, PP 27-39.
21. Dr J R Chowdhury, Seismic Hazards and Bangladesh Scenario, Proceedings of National Workshop on Disaster Management and Media, 12 August 2002, CIRDAP Auditorium, Dhaka.
22. Ashraf M, Role of the Government in Relief and Rehabilitation,

Proceedings of National Workshop on Disaster Management and Media, 12 August 2002.

23. Kunda K C, Role of DMB in Raising Public Awareness for Disaster Preparedness, Proceedings of National Workshop on Disaster Management and Media, 12 August 2002.
24. Lt. Col Islam GMQ (et al), A Case study on Gujrat Earthquake and Lessons for Bangladesh, Paper presented at Workshop on Disaster Management, Organized by BAF in Co-ordination with DMB, 15 December 2002.
25. Capt. Bhuiyan BN (et al), "Earthquake Disaster Management Plan, Sector 5 (Gulshan Thana)".
26. Dr Ali M H, "Earthquake Hazard and Seismic Zoning of Bangladesh",
27. Thomas R Callaway, Code Enforcement, Proceedings of CENTO Conference on Earthquake Hazard Minimization, Pp 63-68, July 1968, Unkar
28. Arya As, "Action plan for Earthquake Disaster Mitigation," Proceedings of Disaster Management Training Country Workshop.

Internet

1. A Note on the Kangra Ms=7.8 Earthquake of 4 April 1905 by Roger Bilham and Colleague - [http://tejas.serc.iise.ernet.in/currsci/jul102000/general/20 articles 3.pdf](http://tejas.serc.iise.ernet.in/currsci/jul102000/general/20%20articles%203.pdf)
2. Why Turkey Suffer Earthquake Misery - <http://www.bbc.co.UK/>
3. 7.9 Magnitude Earthquake Strikes the Gujrat State in Western India - [http://www.eqe.com/revamp/india 2001.htm](http://www.eqe.com/revamp/india%202001.htm)
4. Inside Earth - <http://pubs.Usgs.gov/publication/text/inside.htm>
5. MOSIE Test New Way to Listen to Earthquake Noise - [http://www.mbari.org/News-releases/1997/dec10 Moise.htm](http://www.mbari.org/News-releases/1997/dec10%20Moise.htm).
6. Savage Earth: Restles Planet - <http://www.pbs.org/wnet/savage>

earth/ earthquake.

7. Savage Earth: Quake Prediction - <http://www.pbs.org/wnet/savage/earth/earthquake/htm/sidebar2:htm>.
8. Earthquake Frequently Asked Questions - <http://www.earthquakes.bgs.ac.uk/hazard/faq1.htm>
9. Earthquake Terminology-
<http://www.georisk.com/terminol/termeq.shtml>
10. Plate Tectonic - <http://geology.er.usgs.gov/eastern/plates.html>
11. Plate-Tectonic - www.seismo.unr.edu
12. Earthquake Preparedness: Summary
<http://bcauditor.com/PUBS/1997-98/report1s/sec-1.htm>.
13. Major Tectonic Plates of the World - Internet, USGS NEIC Map.

Author:

Captain Chisti Dadabhai Nowroj (E), ndc, psc, BN joined the Bangladesh Navy in July 1976. He obtained B. Sc Engineering Degree in Mechanical Engineering from the Bangladesh University of Engineering and Technology in 1976. He attained a number of courses both home and abroad. Some are Staff Course in 1989, Marine Engineering Application Course in United Kingdom in 1983.

Captain Nowroj served in the Bangladesh Navy in the capacities of Flotilles Engineer, Director of Works, Director of Defence Purchase and Managing Director of Khulna Shipyard. He also served as Project Officer of a ship building project of Bangladesh Navy at Hyundai Shipyard, Korea . Presently he is serving as Managing Director of Khulna Shipyard.

RURAL-URBAN MIGRATION: AGARGAON SLUM, DHAKA, A CASE STUDY

Captain M Amjad Hussain, (S),ndc, psc, BN

INTRODUCTION

Most of the developing countries of Asia, as in the South Asia, have adopted a development strategy aiming at rapid economic growth. In these countries, investments are concentrated in the large- scale, capital intensive industries usually located in a primate city or few metropolitan centers. The concentrated investment in these cities has expanded the scope and scale of opportunities for development creating competitive advantage over the vast rural area. As a result, rural to urban migration increases the size of urban population, which from the point of view of urban facilities and employment opportunities are extremely congested and strained. This is true for most of the low-income countries, but the situation in Bangladesh is graver than elsewhere in the developing world.

Broadly migration is a relocation of residence of various duration and various natures. A study of migration is of key importance in social science, particularly in population studies. The importance emerges not only from the movement of people between places but also from its influence on the lives of individuals and urban growth. The accelerating rate of urbanization is high among the least developed countries of Asia. For the period 1970 to 1990, the average annual growth rate of urban population was 6.5 percent for Bangladesh, 3.4 percent for India and 4.2 percent for both Pakistan and Sri Lanka. The urban growth rate is dominated mainly by rural-urban migration and it contributes between three-fifths to two-thirds of this growth.¹ Though the incidence of rural-urban migration in any developing country is higher, a distinct selectivity with respect to age, sex, caste, marital status, education, occupation etc., occurs and the propensity of migration differs significantly among these socio-economic groups.

Migration differentials have significant role in identifying the nature and strength of the socio-economic and demographic impacts of the population concerned. Many researchers have tried to establish some uniformly applicable migration patterns for all countries at all times. However, only migration by age has been found to be more or less similar for developed as well as developing countries. Determinants of migration vary from country to country, and even within a country, it varies depending on the socio-economic, demographic and cultural factors. High unemployment rate, low income, high population growth,

1. Hossain, M. Z. (2001), "Rural-urban Migration in Bangladesh : A Micro-Level Study", paper for presentation in the Session on Internal Migration at the Brazil IUSSP Conference in 2001, p. 01

unequal distribution of land, poor housing facilities, demand for higher schooling and prior migration patterns have been identified as some of the prominent determinants of rural out-migration.

The propensity of migration is usually influenced by a combination of push-pull factors. People migrated to cities and towns because they are attracted by livelihood opportunities. Regardless of skill, the migrated population can find diversified livelihood opportunities with various incomes in the towns and cities. Thus, the poor rural population considers migration a livelihood coping strategy. On the other hand, a considerable number of the population migrates to urban areas from villages for higher/better education, employment and investment opportunities.

In Bangladesh, adequate attention to migration aspects has not been given which may be due to lack of national level data. The existing micro-level studies mostly investigated the characteristics of migrants at destination places mainly in Dhaka city giving a little attention to the causes of out-migration from villages. Out-migration is generally higher from the villages characterized by land scarcity, unequal distribution of land, and high proportion of agricultural laborer. The census data of Bangladesh is not sufficient to study the causes and consequences of migration because only some information about place of birth is available in the census schedule. The studies carried out in Bangladesh are mainly destination based, and attention on causes and consequences of migration at individual or household level of a particular origin is ignored.

The aim of this paper is to focus on the causes of rural out-migration and its consequences at the destination level i.e. in-migration to the urban areas. Causes and consequences are analysed to understand the process of migration and urbanization respectively within the Bangladeshi perspective. Attempts are made to identify the factors that influence migration alongwith its differentials and determinants vis-à-vis its contribution and impact on urbanization.

Methodology

The study is based upon analysis of available secondary information and collected primary data. Primary data has been collected through structured questionnaire from one of the slums situated around Agargaon area of Dhaka city during May - June 2003. A cluster sampling was adopted to select the same slum area and covered 50 sample households. To cover the information on

migration, a household has been defined as a dwelling unit where a group of persons usually live together and takes food from common kitchen.

URBANIZATION AND MIGRATION

Trends and Challenges

Urbanization is a social as well as a cultural process of population concentration, which involves - (i) the multiplication of points of concentration, and (ii) the increase in the size of individual concentration. The obvious result is the proportionate increase of the population living in urban places. Level of urbanization denotes percent of total national population living in places defined as urban areas in the Census of Population by Bangladesh Bureau of Statistics. This definition of urban areas or urban centers remained consistent during the census of 1951, 1961 and 1974. According to 1981 and 1991 definition, there were 491 urban centers in Bangladesh of which at least 163 (33 percent) had population of less than 5000. While in 1974 out of a total of 108 urban centers only (3.7 percent) had population of less than 5000. If the 1974 definition were used, the level of urbanization in Bangladesh would have been only about 12 percent in 1981 instead of 15 percent.²

Rural - Urban Convergence

The interaction between urban and rural settlements in Bangladesh is increasing both in intensity and variety. Urban ways of living are completely divorced from the rural ways of living. The massive mobility of people, goods, services, capital and ideas have produced a considerable blurring of the distinction between urban and rural populations. Some degree of convergence has always been there as livelihood strategies of different groups and economic base of different enterprise straddled the rural- urban divide.

The effect of urban-rural linkages in Bangladesh is noteworthy. The urban area provides employment, shelter and extends scope for income earning activities, education and health facilities in both the formal and informal sectors. Every year a large number of rural working population gets into the urban areas in search of jobs and enjoy some health, education and housing facilities in the cities. These in-migrants to the urban areas otherwise would have either remained as surplus labor force in the rural areas or stayed as disguisedly unemployed. Now, this chunk of working population is absorbed in the urban

2 . Task Force Report 1991, Vol-III, p.414

formal and informal sectors. A study on rural-urban interactions and linkages between villages and small towns in Bangladesh observed that the small towns and the urban centers play a significant role in providing employment to the non-farm working population. The study noted that Dhaka city provided employment to 17 percent of the non-farm working people in 1992. Smaller towns and upazilla/ thana centers provided employment to 4.13 percent and 10 percent of rural working population. The nearby towns of the study area provided employment to more than 15 percent of the rural working population in 1992.³ The people working in the upazilla/ thana centers and nearby towns are all not migrants to the urban area but use to derive benefits and advantages of urban areas staying in their village homes.

The land area of Bangladesh is approximately 56,977 square miles. There exist 522 urban centers according to the definition of 1991 Population Census. Influence of these centers to the entire rural community is obvious except for some very remote and offshore areas. However, influence of rural-urban convergence can be discussed in three different aspects: physical, economic and social (Figure-1).

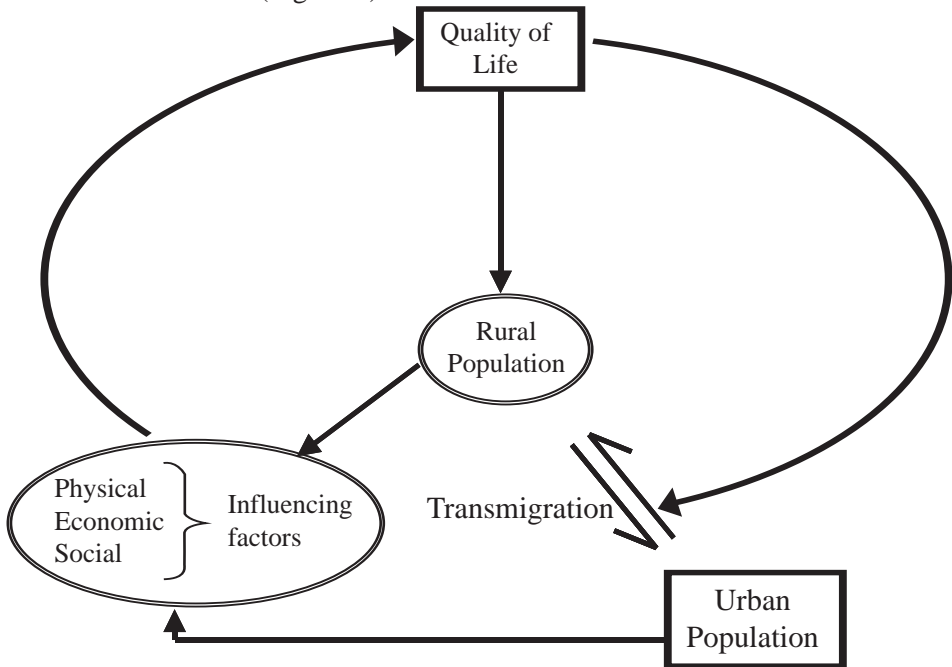


Figure - 1: Rural-Urban Convergence.

3 . Islam Nazrul (1997) - Addressing the Urban Poverty Agenda in Bangladesh, p.73

Physical. This aspect relates to the use of land. In Bangladesh, all the urban centers have grown up unplanned. To some extent, a picture of rural area is observed in almost all the urban center i.e. slums, squatters and huts etc. At the same time features of urbanization also exist in the rural areas, for example: metallic roads, electricity, better dwelling houses etc. Therefore, it can be termed as ruralization of urban areas and urbanization of rural areas.

Economic. Economic activities have increased both in the urban and rural sector. Communication network, especially the road-link has connected the rural areas with the urban centers. This has increased the volume of business both in the rural and urban areas. Influence of this form of rural-urban convergence is the strongest among all other aspects.

Social. Access to the better education facilities, employment opportunities, health care facilities etc. has become easier with the increased communication network and economic activities. Electrification and mass-media play also an important role in this respect.

Therefore, it is evident that the relationship between rural hinterland and the urban center is a two-way process - rural to urban and urban to rural. Between the two types of relationship of interaction, urban to rural one is more important. Findings of a qualitative sample survey reveal that all the respondents were influenced by strong 'push' factors of the place of origin, and 'pull' factors of the place of destination.

URBANIZATION IN BANGLADESH

Size, Trends and Patterns of Urbanization in Bangladesh

The developing countries of the world are undergoing a great urban explosion. As per 1998 United Nations World Urbanization Report, developing world registered six times increase in the urban population from 285 million to 1.7 billion over the period of 1950-1995. Forty six percent of the world's urban population amounting to 1.2 billion people lived in Asia in 1995. Table-A shows the clearly dominance of five large developing countries: China, India, Indonesia, Pakistan and Bangladesh in determining Asia's demographic situation.⁴

4. Afsar Rita - Rural-Urban Migration in Bangladesh, p. 21

Table - A: Size of Urban Population in Selected Asian Countries (1970-2015).

	Size of Urban Population (million)			
	1970	1990	1995	2015
Bangladesh	5.07	17.20	21.63	50.07
China	144.53	302.71	368.72	647.12
India	109.61	217.25	248.87	435.11
Indonesia	20.53	55.92	69.94	135.56
Pakistan	16.35	37.98	46.73	104.74
Total of five countries	296.54	626.12	760.93	1455.23
Asian total	481.73	974.26	1197.97	2158.56
Share of five countries as percentage of the total urban population of Asia	61.56	64.27	63.5	67.4

Source: Rita Afsar, 2000

Highly urbanized countries experience steady urban growth and low-level urbanized countries experience rapid urban growth. As per Dhaka migration survey report of 1991 and UN urbanization report of 1995, Bangladesh had 20 percent urbanization level compared to 34.7 percent in Pakistan, 26.8 percent in India and 22.4 percent in Sri Lanka in 1995. Table-A shows that from 1970 to 1995 the size of urban population in Bangladesh increased more than four times. As per the Asian Development Bank, Bangladesh Resident Mission Report of August 2002, total urban population in Bangladesh was about 30 million in 2001. This was approximately 23 percent of the national population. The Report also says that urban population grew at an annual rate of about 3.5 percent during 1991-2000 against the national population growth rate of 1.5 percent. The growth rates of secondary towns ranged from relatively low growth rates i.e. about 2 percent in most towns, to moderately high growth rates upto 4.5 percent in a few cases. The growth of urban population in Bangladesh was, and still is, mainly due to the growth of metropolitan cities.

According to the 1991 census, Bangladesh had 522 urban centers or urban areas. Considering the population size, only Dhaka and Chittagong had attained

the million-city category in 1991. A third city, Khulna recorded a population of 0.9 million in the 1991 census. Rajshahi, the fourth largest city recorded a population of about 500,000 in 1991. Dhaka emerged as the only such city in 1974 having 1.7 million populations. There were 23 urban places in 1991 with their populations ranging between one lac and one million. There were only two such cities in 1951, 4 in 1961, 5 in 1974 and 14 in 1981.⁵ The Statistical Metropolitan Areas (SMA) and several of the cities had recorded rapid growth during 1974-91 (Table-B). Dhaka experienced a growth of 227 percent during this period while Rajshahi, the fourth largest city experienced a growth of 281 percent.

Table - B: Growth of Major Urban Centers (1974-91).

Urban Center	Population Size		
	1974(000)	1991(000)	Growth 1974-1991 (%)
Dhaka (SMA)	1980	6487	227.62
Chittagong (SMA)	945	2080	120.11
Khulna (SMA)	437	921	110.75
Rajshahi (SMA)	133	507	281.20
Mymensingh	76	189	148.68
Comilla	81	135	56.68
Barisal	98	170	73.47
Sylhet	57	114	100.00
Rangpur	73	191	161.64
Jessore	76	140	84.21
Pabna	62	103	66.13
Sirajganj	74	102	37.84
Dinajpur	62	128	106.45
Bogra	47	120	155.32

Source: Nazrul Islam, 1997

5. Islam Nazrul (1997), Ibid, p.49

About 21 million people were added to the country's urban population from the beginning of the last century to 1991. This resulted thirty times increase in the urban population as opposed to only three times increase in rural population (Table-C). The urban population grew at an annual rate of one to two percent during the British period and about four percent during the Pakistani period with two noted exceptions. Higher growth rates of urban population were noted between the 1931 and 1941 censuses. These two censuses were conducted on the eve of the idea of Indian sub-continent partition. This high rate of urban population growth was believed to be politically motivated.

Table - C : Inter-Censal Growth Rates of Population by Residence (1901-1991).

Census year	National Population (000)	Growth rate (%)	Urban Population (000)	Growth rate (%)	Rural Population (000)	Growth rate (%)	Percent (Urban)
1901	28928	-	702	0.00	28226	0.00	2.40
1911	31555	0.94	807	1.40	30748	0.90	2.60
1921	33254	0.60	878	0.80	32376	0.50	2.60
1931	36501	0.93	1073	2.00	35428	0.90	3.00
1941	41997	1.70	1537	3.60	40460	1.30	3.70
1951	44166	0.50	1820	1.70	42346	0.50	4.30
1961	55223	2.26	3111	5.40	52112	2.10	5.60
1974	76398	2.48	7390	6.70	69008	2.20	9.70
1981	89912	2.32	14089	9.20	75823	1.30	15.70
1991	111455	2.01	21560	4.20	89895	1.50	19.34

Source: Rita Afsar, 2000

Components of Urban Growth

Urban growth takes place through a combination of three major components. These are:

- a. Natural increase of the native urban population.
- b. Area redefinition or reclassification or annexation.
- c. Rural-urban migration.

Natural increase is defined as the excess of birth over deaths. Reclassification refers to changes in the urban boundary by the addition of new areas, declassification of the existing urban areas and alteration in the territorial jurisdiction of urban areas. Whereas the term migration encompasses diversified forms of territorial mobility.

It is difficult to demarcate between internal migration and natural increase. For example, the children born to migrants after their arrival in the city which contribute significantly to urban population growth and is attributable to natural population increase. Both migration and natural increase should be seen as complimentary and not as competing factors. The other factor i.e. redefinition/ reclassification/ annexation also plays a key role in the urban growth.

Migration contributed about 40 percent to the urban growth in Bangladesh during 1974-1981. For some large cities, this share could even be higher, upto 70 percent as in the case of Dhaka.⁶ The variable contribution of migration to urban growth by cities is evident from Table-D.

Table - D: Components of Population Growth in 6 Major Cities in Bangladesh (1961-74).

City	Population 1961	Population 1974	In-migrants (in %)	Annexation (in%)	Net Increase
Dhaka	521,034	1,679,572	74	8	18
Chittagong	364,205	889,760	43	29	28
Khulna	175,023	437,304	73	-	27
Narayanganj	162,054	270,680	17	42	41
Mymensingh	53,256	182,153	25	58	17
Rajshahi	56,885	132,909	36	34	30

Source: Nazrul Islam, 2003

6. Islam Nazrul (2003), "Urbanization, Migration and Development in Bangladesh: Recent Trends and Emerging Issues", In: Demographic Dynamics in Bangladesh: Looking at the Larger Picture, Center for Policy Dialogue-Bangladesh, p. 130

URBANIZATION AND DEVELOPMENT IN BANGLADESH

Economic Growth

According to the United Nations Center for Human Settlements, over 50 percent of GNP of developing countries is generated by towns and cities.⁷ In the backdrop of the accelerating urbanization in Bangladesh it is expected that the urban sector will play a significant role in the country's economic development. 23.39 percent of the population of Bangladesh lived in more than 500 urban areas in 2001. More than half of the urban population (52 percent) live in four metropolitan areas, about one-third in the municipal towns numbering 250 and the rest, about 15 percent live in the small non-municipal urban centers. Urbanization in Bangladesh has contributed to the development of the world's 22nd largest mega city, Dhaka, home to about 10 million people in 2001. By the year 2015, Dhaka is expected to rank as 5th largest city with about 19 million people.⁸

The importance of the traditional rural sector in the national economy has declined, whilst that of the urban sector has increased. Despite the fact that agriculture is still the largest single contributor to the Gross Domestic Product (GDP) of the country, the share of this sector in National GDP has come down from 60.10 % (in 1972-73) to 19.49 percent (in 1999-2000). The rapid urbanization has contributed to the growing share of the urban sector to overall economic growth. Asian Development Bank, Bangladesh Resident Mission, Dhaka Report of August 2002, stated that over 40 percent of the country's GDP is now derived from the urban sector. Fifth Five Year Plan (1997-2002) projected the growth of urban sector GDP at around 14 percent. It is a well-established fact that urbanization process contributes positively to the national economy. As per the Task Force Reports of 2001, average household income in the urban areas was found to be nearly double that of the rural areas in 1999 (on an average Tk.6256.00 in the urban areas and Tk.3855.00 in the rural areas). However, it is also true that, while the average income in the urban areas is higher than rural income, inequality is also higher in the urban areas. Over the years such inequality has accentuated itself in the urban areas compared to the rural areas.

The twenty first century is deemed to be a period of globalization associated with the move towards a free market economy. Its impact is also evident in the case of urban Bangladesh. Metropolitan areas in Bangladesh serve

7. Task Force Report 1991, Vol-III, p. 411

8. Task Force Report 2001, p. 266

as peripheries of metropolitan centers or global cities of the developed world. The products of industries that are set up in our cities will be exported to the developed world. This may serve to enhance employment opportunities and eventually national income.

Urbanization and Employment

The urban sector plays an important role in providing employment to the labour force. Basic elements for employment i.e. industry, formal and informal sectors are mainly situated in and around the urban centers all over the world. Urban centers are the main sources of innovation, technological programme and culture. This sector has always acted as the 'pull' factor for in-migrants. In Bangladesh, the urban sector's contribution to employment was 17 percent in 1991,⁹ which has been increasing over the years steadily (Table-E).

Table - E: Contribution of the Urban Sector to Employment (1961-91).

Year and source	Bangladesh	Urban	Rural
1961 Census	16.9(100)	1.0(6)	15.9(94)
1974 Census	21.9(100)	2.1(10)	19.8(90)
1981 Census	25.9(100)	3.3(13)	22.6(87)
1983-84 LFS *	28.5(100)	3.9(14)	24.6(86)
1984-85 LFS	29.5(100)	4.1(14)	25.4(86)
1985-86 LFS	30.9(100)	4.7(15)	26.2(85)
1989 LFS	50.7(100)	5.7(11)	45.0(89)
1990-91 LFS	51.2(100)	8.7(17)	42.5(83)

Source : Nazrul Islam, 1997 * LFS - Labour Force Survey.
Figures in parentheses indicate percentage.

It is evident from the Table above that in 1961 the contribution of the sector to employment was only 6 percent while in 1974 it increased to 10 percent and to 15 percent in 1985-86. Although absolute contribution of the sector to labor absorption increased in 1989, its relative contribution declined to 11 percent.

The urban informal sector in Bangladesh is an important component that provides employment and generates income for a large section of people. The in-migrants to urban areas from both 'Push' and 'Pull' factors have been provided

9. Islam Nazrul (1997), *ibid*, p.65

with shelter and employment in the urban areas and are getting absorbed in the informal sector. Only 8 percent of respondents of qualitative sample survey are engaged in the low-level formal sector activities as compared to the 92 percent in informal sector activities (see Table-L).

Social Impact of Migration

The process of migration is an important aspect of social change. The social change that migrants experience in the urban centers are significant. Migrants are faced with certain aspects of urban life about which they were unaware of in the villages. The study of social adjustment is, therefore, vital in understanding migrant's adaptation to the urban environment because it indicates their behavioural and attitudinal change. The rural and urban social environment is very different in Bangladesh.

Women's Changing Role and Status

The role of rural urban population mobility in changing the traditional roles and status of women constitutes a priority area for systematic study. In spite of the liberal values, family in Bangladesh continues to be a hierarchical organization characterized by the domination of parents over children and men over women. One significant feature of recent urbanization in Bangladesh has been the large-scale migration of rural poor women to major cities, particularly to Dhaka. Women in the past would only migrate to cities as spouses or female members of the family. Now they also come as unmarried singles. In the last 15 years nearly a million women have joined the garment industries in Dhaka and also a large number in Chittagong. The total number of female workers is more in the rural sector than the urban sector. But urban sector's absorption of female labor increased by more than 20 times by 1990-91. This trend indicates increasing job opportunities in the urban areas for the female labor force since the mid-eighties. Table-F presents the pattern of absorption of labor force by sex and residence.

Table - F : Civilian Labor Force by Sex and Residence (1961-91)

Year and Source	Urban			Rural		
	Male	Female	Total	Male	Female	Total
1961 Census	0.9(90)	0.1(10)	1.0(100)	15.1(95)	0.8(5)	15.9(100)
1974 Census	2.0(95)	0.1(5)	2.1(100)	19.0(96)	0.8(4)	19.8(100)
1981 Census	3.1(94)	0.2(6)	3.3(100)	21.3(94)	1.3(6)	22.6(100)
1983-84 LFS	3.7(95)	0.2(5)	3.9(100)	22.5(91)	2.1(9)	24.6(100)
1984-85 LFS	3.6(88)	0.5(12)	4.1(100)	23.2(91)	2.2(9)	25.4(100)
1985-86 LFS	4.1(87)	0.6(13)	4.7(100)	23.6(90)	2.6(10)	26.2(100)
1989 LFS	4.2(74)	1.5(26)	5.7(100)	25.5(57)	19.5(43)	45.0(100)
1990-91 LFS	6.6(76)	2.1(24)	8.7(100)	24.5(58)	18.0(42)	42.5(100)

Source: Nazrul Islam, 1997

Note: Figures in parentheses indicate percentage.

Population , Amenities and Pollution

The positive correlation between economic development and urbanization is well recognized. The rapid growth of population and consequent landlessness alongwith other factors of population displacement in the rural areas lead to rural unemployment. This generates a growing number of potential migrants. This seems to be an inevitable process where the urban sector absorbs the surplus rural populace. Besides, urbanization plays a significant role in changing the quality of life for many people at the individual or household level. The scenarios in Bangladesh especially in urban areas do have some aspects in common with other developing countries. Rapid pace of population growth in Bangladesh is most severely felt in urban areas. Migration for various reasons, from rural to urban is one of the main causes of the increase of population in urban areas. As per the population census of 2001, the current urban population growth rate is 6 percent and 23.39 percent of total population live in urban areas of Bangladesh. If the pace of growth continues this way, urban population would exceed 50 percent of the total population by the year 2025.¹⁰

10. Bangladesh Environment 2002, Vol-2, by Bangladesh Poribesh Andolon (BAPA), p. 585

Such rapid and alarming increase in urban population surely creates immense pressure on the amenities, and a lack of which often results in extreme pollution. There are deficiencies in all urban services. Dhaka Water and Sewerage Authority (WASA) everyday supplies 1.3 billion liters against the demand of 1.6 billion liters of water for all purposes of water use in Dhaka WASA areas. So is the case of solid waste. Dhaka city produces 4500 metric tons of municipal solid waste per day. But Dhaka City Corporation can dump only half of it.¹¹ Supervisory Control and Data acquisition (SCADA) report shows that on 20 July 2003 DESA supplied 1286 mega watt electricity to its customers against the demand of 1393.29-mega watt. This is the common picture of electricity supply to all the urban centers round the year. This deficiency certainly deprives considerable number of city dwellers. On the contrary, it was found that all the respondents of this sample survey are using water and electricity from WASA and DESA sources through illegal connections. Only 30 percent of urban households use tap water for drinking and less than 20 percent have their own house connections. Only 25 percent of urban households live in dwellings with permanent structure.¹² In most urban centers, ambient air and water quality is extremely poor.

In spite of the entire adverse situation, migrants are able to secure their survival by themselves. They believe that migration in the city is a tangible solution to their poverty situation. On the other hand, urbanization is also considered as an index of development. In this pretext, it is justified to agree that urbanization and urban growth due to migration and other factors have both positive and negative consequences.

Therefore, the positive consequences of urbanization may be summarized as follows:

- Economic benefits: employment opportunity, better income etc.
- Socio-cultural benefits: modernization.
- Political benefits: empowerment.
- Improved access to information technology.

The negative consequences can be grouped as the following:

- Environmental consequences.
- Extreme pressure on urban services and growth of slums.
- Economic consequences leading to income inequality and poverty.
- Social consequences resulting in increased violence, crime and social degradation.

11. BAPA. Ibid. p. 587 and 733

12. Asian Development Bank, Bangladesh Resident Mission, Dhaka Report of August 2002, p. 02

SURVEY ANALYSIS AND DISCUSSION

An empirical study was conducted to collect migratory information. Fifty (50) households were interviewed through structured questionnaire in order to identify the differentials and determinants of their migration. The migration differentials at individual level have been discussed into four aspects of migration: a) selectivity of migrants, b) factors active for migration, c) place of migration, and d) nature of migration. The findings are discussed categorically according to these four features of migration.

a. Selectivity of Migrants

Migration is selective i.e. migrants are not random samples of the population at the origin. The individual characteristics like age, marital status, education and occupation of the migrants have been studied to understand the selectivity of migration process.

i) Age of the Migrants

Analysis of migration differential by age reveals the impact of migration on socio-economic and demographic structures at both the places of destination and origin. Table-G shows the distribution of migrants according to current age and the age at migration. The rate of migration was found significantly higher for the people who belonged to the age groups of 16-25 and 26-35 years (about 70 percent, and 24 percent respectively), followed by age group of 1-15 years (6 percent). It was found out that the proportion of migrants remarkably decreased with increased age group.

Table - G: Distribution of Migrants According to Age.

Age Group	Age at Migration (No)	Present Age (No)	Percent	
			Age at Migration	Present Age
1-15	3	-	6	-
16-25	35	1	70	2
26-35	12	31	24	62
36-45	-	14	-	28
46-55	-	4	-	8

Source: Survey Sample Data

ii) Marital Status of the Migrants

The migration decision of an individual is influenced by marital status. It was found from the qualitative sample data that the percentages of married and unmarried migrants were 66 percent and 34 percent respectively (Table-H).

Marital Status (at the time of migration)	No	Percentage
Married	33	66
Unmarried	17	34

Source : Survey Sample Data

iii) Education of the Migrants

As mentioned earlier, selectivity of migration varies according to education of the migrants too. It has been observed from the studies that larger number of migrants are comparatively more educated than non-migrants with respect to the place of origin. Table-J shows the distribution of migrants according to their educational attainment. Sixty (60) percent migrants reached upto below Secondary School Certificate level, whereas about 6 percent attained Secondary and Higher Secondary Certificate level. The percentages of illiterate migrants were about 34 percent. Thus, an increased rate of migration was found in people with medium level of education

Education (at the time of migration)	No	Percent	Family joined at the time of migration (No)	Percent	Family joined later (No)	Percent
Illiterate	17	34	1	9.09	16	90.91
Upto Primary Level	8	16	2	25	6	75
Upto Secondary Level (VI to X)	22	44	-	-	15	100
S S C Qualified	2	4	-	-	-	-
H S C Qualified	1	2	1	100	-	-

Source: Survey Sample Data

Highly educated people have better scope and opportunity for having formal jobs of permanent nature. Therefore, highly educated married migrants mostly tend to be accompanied by family members as compared to less educated or illiterate migrants. It is also observed from Table-J that the greater percentage of migrant's family did not accompany during migration belongs to illiterate and less educated group.

iv) Occupation of the Migrants

Whatsoever might be the quality, but availability of job opportunities at the place of destination plays a very important role in regard to the process of migration decision. On the other hand pre-migration occupation also helps to understand the causes i.e. push factors behind migration. Here migrant's profiles are discussed according to their occupation opted at the place of destination as well as pre-migration occupation.

The distribution of migrants according to their occupation both at the place of origin (before migration) and at the place of destination (after migration) are shown in Tables-K and L respectively. The findings indicate that 34 percent of the migrants were unemployed and 22 percent were involved with small business before migration. Further, 24 percent of the migrants were engaged in agriculture (landowner) and 12 percent were engaged in labour selling, mostly in agricultural sector. However, the rate of migration was observed to be the highest (34 percent) among the population who were unemployed and lowest (8 percent) with those who were engaged in other jobs other than the above-mentioned categories (Table-K).

Table - K: Distribution of Migrants according to Pre-migration Occupation.

Pre-migration Occupation	No	Percent
Unemployed	17	34
Small business	11	22
Day Laborer	6	12
Rickshaw Puller	1	2
Carpenter	1	2
Employed in own land	12	24
Sales man	1	2
Mechanic	1	2

Source: Survey Sample Data

Table - L: Distribution of Migrants According to Post-migration Occupation.

Post-migration occupation	No	Percent
Rickshaw Puller	20	40
Small business	5	10
Security Guard	3	6
Govt Job	3	6
Private Car Driver	3	6
Tea Stall owner	2	4
Van Puller	2	4
Maid	2	4
Rickshaw mechanic	1	2
Rickshaw Garage	1	2
Sales man	1	2
Tube-well Mechanic	1	2
Painter	1	2
Carpenter	1	2
Restaurant owner	1	2
Grocery shop owner	1	2
Construction worker	1	2
Garbage cleaner	1	2

Source: Survey Sample Data

As far as occupation opted at the place of destination in concerned, it was found that 40 percent were working as rickshaw pullers, 10 percent were engaged in small business, 22 percent were employed in service/ job and the rest 28 percent were engaged in different other activities (Table-L). It was also found that this 10 percent small business occupied migrants are from 22 percent pre-migrants of the same occupation. For example, the migrated rural carpenter and mechanic (Table-K) are engaged in their original occupation even after migration to the city (Table-L).

b. Factors Contributing to Migration

The causes of migration are usually explained by using two broad categories, namely, push and pull factors. People's decision to migrate from one place to another may be influenced by many economic and non-economic factors. Anwara Begum in her "Destination Dhaka" tabulated these factors in the following manner:

Table - M: Reasons for Migration to the City

Economic	Quest for Better Job/ More Income in City	Structural problem/ Lack of Enough Land	Lack of Employment	Present Income cannot Maintain Family	Release Mortgaged Land/ Repay Loan/Child's Marriage	Treatment for Parent's Illness/ Sister's Marriage
Social	Family Quarrel	Tricked by Relative/ Middleman Out of Land	Social Tension/ Threat to Life	Incapacitated/ Begging is only alternative	False Charge/ Rage at being Victimized	Intense Grief on Losing Son
Physical	River Erosion by Floods	Livelihood Lost due to Storm at Sea	House Destroyed by Fire	Land Lost Due to Salinity		
Psycho-logical	More Amenities in City : Less in Village Job	Is not Satisfying				
Political	Political Problem: General Lack of Law and Order					
Educa-tional	Better Education for Children					

Source: Begum, Survey 1993

The qualitative data of the survey sample and the findings of this study, however, show that it is the economic opportunity that play dominant role in migration decision. 100 percent of the respondents reported that they migrated due to poverty. Out of that 34 percent migrants were pushed off due to the influence of their family members i.e. their marriage and members of joint family (Table-H). Therefore, poverty was the main push factor and job searching was the main pull factor for migration out of these respondents.

c. Place of Migration

In developing countries like Bangladesh, migrants of a particular origin follow some established routes because resources (opportunities) are disproportionately distributed to a few cities. Where options for migration places are available, the social factor (reference) plays an important role in selecting the destination. The survey findings show that 78 percent of migrants took shelter in this particular place at the reference of known people (Table-N).

Table - N: Distribution of Migrants According to Factors Relating Site Selection.

Factors contributed to select this site	No	Percent
Through Known Source	39	78
Own Initiative	11	22

Source: Survey Sample Data

d. Nature of Migration

Migrant's futures plans for settlement are used as a proxy of their level of commitment to the place of destination or the origin, and thus identify the nature of migration. On the other hand, the nature of migration gives an idea about the employment status of the migrants at the place of destination. Their decisions are influenced mainly by the following reasons:

- Employed in Govt/ regular service oriented jobs.
- Established in their present work.
- Engaged in their original occupation.
- Employment of other members of the household.
- Marriage of the grown up daughters.
- No shelter or lack of housing at the place of origin.
- Unemployment at the place of origin.
- Establishment of male members of the household.
- Social/ internal family factors.

As it has been mentioned earlier that the level of education of migrants also influences nature of migration, it can be seen that usually illiterate and less educated migrants occupy temporary job/ services resulting temporary nature of settlement. Increased level educative migrants occupy permanent job/ services resulting permanent nature of settlements.

Determinants of Migration

The determinants of migration at individual, family and community levels provide a better understanding as to why some families participate in migration process while others don't. Analysis of the information given by the respondents reveal that the common determinants are- (a) education (b) occupation (c) agricultural land and (d) adult male member of the household.

Landholding of a household plays an important role in determining rural out-migration in an agrarian economy as people are mostly dependent on land for their livelihood. From the empirical study it was found that out-migration from rural areas is closely associated with unequal distribution of resources, particularly land. A higher propensity of out-migration from the households with more than one adult male member may be due to the fact that it is easier to spare some persons to migrate outside and remaining members can look after the household's work.

Push/Pull Factor. According to Everett S. Lee, all origin and destination areas are hypothesized to contain both push (negative) factors, which repel the inclination to stay and pull (positive) factors, which attract people to them. In Bangladesh the rural out-migration is basically influenced by factors of strong push and pull patterns.

a. Push Factor. In the last few decades population growth rate of Bangladesh has been phenomenal. This growing population is creating pressure on the limited cultivable land. On the other hand, fewer laborers are required for more production with the introduction of modern technology in the agricultural sector.

b. Pull Factor. Largely constitutes of employment opportunity, availability of other basic facilities and luring of new vicissitudeness life.

Determinants of Migration to Dhaka

Economic activity of the urban area provides 55, 70 and 85 percent of National Income of the low, medium and high-income group countries respectively. 16.4 percent of the total population in 1991 and 22.9 percent (estimated) in 2000 are living in the urban area. The rate of increase in the urban and rural population is 6.14 percent and 1.90 percent respectively during 1990-95 periods. If the trend continues, 34.2 percent of the total population will live in urban area by 2020. The percentage of the migrated rural people is 40 out of the total urban population and 70 percent of the total population of Dhaka city

consists of rural migrated people. About 35.20 percent of the total urban population of the country is living in the Dhaka city alone.¹³ In other words, we can say that in the case of Bangladesh, rural-urban migration is mainly rural-Dhaka migration.

CONCLUSIONS

Migration has been an unavoidable continuous process from the very beginning of civilization. The pattern and source of migrations is almost similar throughout the world. Rural-urban migration is considered to be one of the most important patterns of internal migration in Bangladesh. The process of urbanization and dynamics of urban growth of urban centers in Bangladesh have their unique features. Growth of urbanization observed both pre and post liberation period. Though, reclassification has contributed much but the rural-urban migration remains the main factor for the growth of urbanization. Rapid urbanization has contributed to the growing share of the urban sector to overall economic growth and source of employment in the country.

A study of migration differentials at individual level indicated that persons involved in the process of rural out-migration are adult and both literate and illiterate. Most of them were engaged in different occupations or unemployed before migration. Migration took place with a common objective. Comparatively literate migrants tend to be changed into permanent type, whereas temporary type of migration mainly associated with illiterate migrants. The migration rate was found significantly higher for the people belonging to the ages 16-25. Employment opportunity is very limited in the rural area, where lives the majority of the population. Poverty, job searching and family influence are the push factors for out-migration. On the other hand, better opportunity and job availability are the pull factors behind in-migration towards the urban centers especially the big cities.

This study gives an overview of the people and system involved in rural out-migration and urban in-migration process to identify the root causes of migration at individual/ household level, and also shows the consequences at the destination level. It is hoped that the findings of this study may help the planners and social scientists to some extent for better understanding, implementing and extending the rural and urban development programmes.

13. Shafique-uz-Zaman (2001), Rural-Urban Migration in the Era of Globalization : Perspective Bangladesh, p. 69

RECOMMENDATIONS

The impact of rural to urban migration is diverse and deep both at the rural origin and urban destination end. In Bangladesh like other developing countries, migration is taking place mostly due to the consequences of strong push and pull factors at the origin and destination respectively. In the present frame of economic, socio-political and environmental conditions the rural poor of Bangladesh might have high rate of rural-urban migration in future unless the scenario is changed by undertaking radical measures. Therefore, the measures must address both the urban as well as the rural poor.

In light of the above, following measures are recommended:

- a. Since very little studies had been conducted on the urban poverty situation, detailed studies should be undertaken immediately based on primary surveys.
- b. The policies and programmes of the government in alleviating urban poverty need targeting the beneficiaries.
- c. The urban poverty alleviation programmes and the projects should have an integrated approach to achieve desired results. Such integration should cover infrastructure, housing, education, health and family planning services and social and recreational facilities.
- d. The role of both local and foreign NGOs in the alleviation of rural poverty in Bangladesh has been very significant. There is a need for much greater NGO involvement in urban areas as well.
- e. There is a need for formulating a National Human Settlements Policy. This policy will lay down principles and suggest measures relating to long-term solutions with regard to urbanization pattern and rural-urban migration process.

As man-land ratio is decreasing with the increase of rural population, agriculture sector cannot accommodate the increased population. On the other hand, non-farming activities are also very insignificant in the rural area. Therefore, employment opportunity has become very limited resulting much scale migration. Following measures are recommended to control the rural out-migration :

- a. Infrastructure and service facilities to be extended upto union and thana/upazilla level through integrated rural growth centers. These centers may include small and medium size agro-base industries, cottage industries, vocational training institutes, hospitals and utility services.

- b. Decentralization of administrative, industrial and commercial activities to the divisional headquarters in order to promote balanced growth instead of capital based polarized growth. It will facilitate comparatively easier access of rural people to necessary development support and also to ease the pressure of migration to the capital.
- c. Diversification of agriculture sector and initiative for agro-based industrial action plan in order to create employment opportunity at the grass-root level.
- d. Extension of rural electrification and gas distribution network.
- e. Powerful disaster management infrastructure for disaster prone areas and strengthening of security arrangements.
- f. Distribution/ leasing of government khas land and fishing grounds to the actual landless farmers and fishermen. Arrangements for proper training also to be made to involve them into production oriented activities with adequate credit facilities.
- g. Creation of social infrastructure under government arrangement for child welfare, mother and health care centers at the village level.
- h. Extension of support to the unemployed rural educated youths for attaining their self-reliance. This can be done through proper training on computer, poultry, pisciculture, dairy as appropriate along with adequate credit facilities at the local level.

BIBLIOGRAPHY

- 1. Hossain, M. Z. (2001), "Rural-urban Migration in Bangladesh : A Micro-Level Study", paper for presentation in the Session on Internal Migration at the Brazil IUSSP Conference in 2001.
- 2. Ydava, K. N. S. (1988)", Determinants, Patterns and Consequences of Rural-Urban Migration in India", Independent Publishing Company, New Delhi, India.
- 3. CUS (1990), "The Urban Poor in Dhaka", Center for Urban Studies, Dhaka.
- 4. Rita Afsar (2000), "Rural - Urban Migration in Bangladesh: Causes, Consequences and Challenges", The University Press Limited, Dhaka.

5. Nazrul Islam (1997), "Addressing the Urban Poverty Agenda in Bangladesh: Critical Issues and the 1995 Survey Findings", The University Press Limited, Dhaka.
6. BBS (1993a), "Working Paper on Urbanization", Bangladesh Bureau of Statistics, Dhaka
7. Nazrul Islam (2003), "Urbanization, Migration and Development in Bangladesh: Recent Trends and Emerging Issues", In: Demographic Dynamics in Bangladesh: Looking at the larger Picture, Center for Policy Dialogue-Bangladesh.
8. Report of the Task Forces on Bangladesh Development Strategies for the 1990s, Vol. III, Dhaka-1991.
9. Developing a Policy Agenda for Bangladesh Civil Society's Task Force Reports-2001.
10. Asian Development Bank, Bangladesh Resident Mission, Dhaka Report of August 2002.
11. Hugo G.J. (1991), "Rural-Urban Migration, Economic Development and Social Changes: Some Important Issues", Paper presented in the Workshop on the Urbanization and Urban Poor, Dhaka: Bangladesh Institute of Development Studies, July 27-29.
12. Bangladesh Environment - 2002, Vol-2, A compilation of technical papers of the 2nd International Conference on Bangladesh Environment (ICBEN-2002) by Bangladesh Poribesh Andolon (BAPA), Dhaka.
13. Singh, S.N. and Yadava K.N.S. (1981), "On some Characteristics of Rural Out-migration in Eastern Uttar Pradesh", Society and Culture, vol. 12(1).
14. Singh, S.N. and Yadava K.N.S. (1981b), "Dimensions of Rural-Urban Migration in India and their Impact on Socio-economic and Demographic Factors", In: Urbanization and Regional Development, edited by R.B. Mandal and G.L. Peters, New Delhi.
15. Anwara Begum (1999), "Destination Dhaka, Urban Migration: Expectations and Reality", The University Press Limited, Dhaka.
16. Shafique-uz-Zaman (2001), "Rural-Urban Migration in the Era of Globalization: Perspective Bangladesh", Edited by Golam Abu Zakaria, Bangladesh Studies and Development Center, Germany.

Author:

Captain Amjad Hussain (S), ndc, psc, BN was commissioned in the Bangladesh Navy in September 1976. He obtained his Masters Degree in Accounting from the University of Dhaka in 1976. He attended a good number of training courses both at home and abroad. Some are Defence Services Command and Staff Course in 1987, Long Logistics and Management Course in India in 1984/1985, Naval Staff Course in Naval War College, New Port, USA in 1989.

Captain Amjad served in various capacities in Command and Staff appointments including as a Director General of Defence Purchase and in the Naval Headquarters. He also held a diplomatic assignment in the Bangladesh Embassy, Beijing, China as Naval Attache during 1998 -2001.

TURNING DHAKA INTO A HEALTHY CITY: THE SOLID WASTE MANAGEMENT (SWM)

Brigadier General Mohammad Mahboob Haider Khan, ndc,psc

Solid Waste Management (SWM) is a challenging problem faced by the large cities of the world. The most important factor for the emergence of solid waste as an environmental problem is the increased volume of waste due to the lifestyle of an ever-increasing urban industrial society. Increasing quantity of solid waste and its collection and disposal in Dhaka City has emerged as a serious problem. Cleanliness and safe disposal of waste are essential to public health and environment protection. In Dhaka, waste management is inadequate; a significant portion of the population does not have access to service and only a fraction of waste is actually collected. System for transfer, recycling and disposal of waste is unsatisfactory from environmental, economic and financial points of view. SWM is of course a complex task, which hinges upon cooperation between households, communities, private enterprises and Dhaka City Corporation. It also depends on the selection and application of appropriate technical solutions for waste collection, transfer, recycling and disposal. In recent years, SWM has attracted increasing attention, from all concerned due to the mounting urgency of urban environmental problems. Therefore, there is need of capacity building at the level of municipal management.

INTRODUCTION

Dhaka has emerged as the 17th mega city in the world, with a population of nearly one crore. A great deal of development work is being undertaken in the city throughout the year, and it is expanding every day. But the question is, does a resident of Dhaka feel secured in the capital when he is beset with health hazards and deprived of his basic civic rights? It is inevitable that environment will face degradation in the wake of development activities but there are methods, which can be embraced for the restoration of environmental balance. Unplanned waste disposal is one of the major causes of deterioration of environment of the city that affects the health of city dwellers. Scientific Solid Waste Management is the crying need of the hour. It involves technology and capacity building. The inhabitants can help the authority for better **Solid Waste Management (SWM)** through Community Based Organization (CBO). Solid waste can be used as raw materials for production of useful items. Many developed and developing countries are taking this advantage. Bangladesh can

learn lessons from the successful practices of these countries. Government should provide support in this area of economic exploration so that private sector finds interest to invest in SWM. In the light of the foregoing, it is time we look at SWM of Dhaka City and recommend measures for consideration.

Like some of the other predicaments, SWM of Dhaka has become a serious problem for the city administration and its inhabitants. In this paper a study will be carried out to assess the present state of SWM in Dhaka City and to identify its weaknesses. A review of scientific and modern methods for SWM shall be made to determine affordable technology. Lessons will be drawn from other countries to make a comprehensive and sustainable plan. A closer look will be taken into the composition of the waste generated in Dhaka City so as to produce compost for soil enrichment. For an efficient and cost effective waste management system the involvement of community and private organization shall also be considered. The aim of this paper is to examine SWM of Dhaka City with a view to suggesting integrated and scientific methods, exploring opportunities for turning waste into resource, and providing span for private sector participation in waste management.

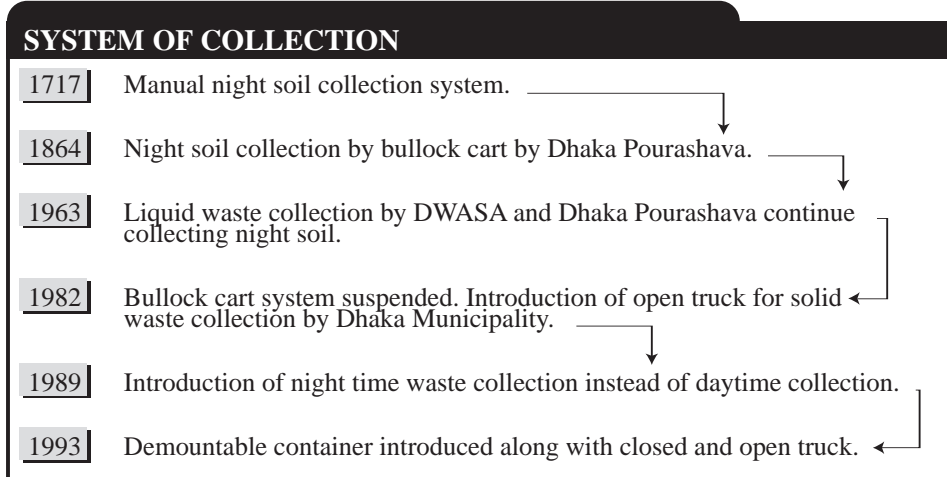
SWM IN DHAKA

Solid Waste of Dhaka City

There are broadly two types of wastes such as solid and liquid wastes. In Dhaka City, the Dhaka City Corporation (DCC) and Dhaka Water and Sewerage Authority (DWASA) manage solid and liquid wastes respectively. The conservancy department of DCC sweeps and accumulates garbage. The transport department carries the garbage by its vehicles to the final dumping depot. Mechanical Division-II has the responsibility of dressing and compaction of garbage at the disposal depot. The solid wastes of Dhaka City are composed of food waste, paper, polythene, cloth, garden trimmings, brick, wood, metal, glass, leaves/branches, shredded skin/leather, hospital, industrial and other wastes. These wastes can be broadly classified as:

- a. Domestic Waste.
- b. Commercial Waste.
- b. Industrial Waste.
- d. Hospital Waste.

The evolution of SWM in Dhaka is shown in the following table:



Cattle Van

Cattle Carrier

Shutter Truck

Open Truck &
 Container-Carrier

EVOLUTION OF SOLID WASTE COLLECTION SYSTEM

Survey indicates that approximately 0.50 kg of solid wastes per person are generated everyday in Dhaka City. The result is similar to that of SAARC countries.¹ However, socio-economic and industrial developments and seasonal changes affect the waste generation rate. Growth of population and rapid urbanization of Dhaka accounts for increasing trend in waste generation.² At present approximately 5000 tons of solid wastes are generated everyday in Dhaka City.³ The solid waste collection system of DCC has limitations associated with planning, operation and management in addition to resource constraints. Thus a considerable amount of solid wastes remain uncollected leading to public health hazards and environmental nuisance. The negative impacts of inadequate waste collection in Dhaka City have three major aspects – aesthetic, public health and traffic obstruction.

1. JICA, Expert, SWM Project of DCC, Final Report, Dhaka, August 2000. p.14

2. *ibid.*

3. Anwar Hossain Patwary, A Proposal For Integrated SWM, Dhaka, February 2003, p. vi

The analysis of financial information and data indicates that DCC's revenue income for SWM is on the average TK 14 crore per year, whereas expenditure incurred for SWM is about TK 60 crore. Out of these, the revenue expenditure is on an average TK 42 crore and average development expenditure TK 18 crore. Therefore, the average revenue expenditure is 300% more than the average revenue income.

Present solid waste stream is shown in the following diagram:

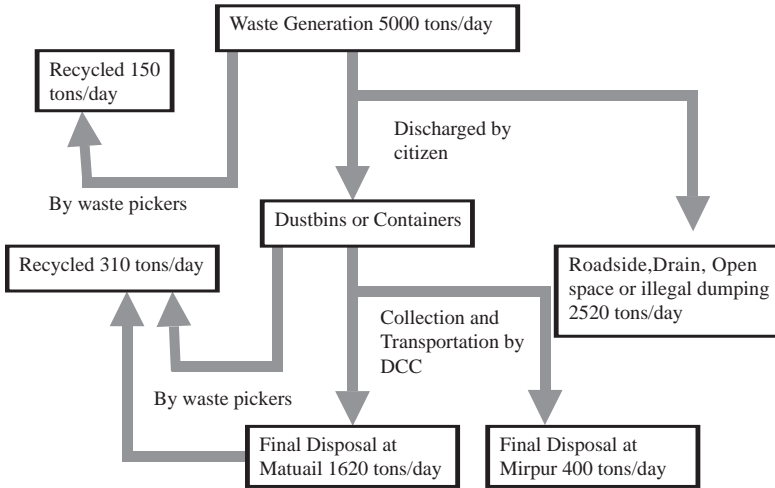


Figure Source: DCC.

SOLID WASTE STREAM IN DHAKA CITY

Problems Related to SWM of DCC

The following problems are confronted by DCC in respect of waste management:

- There is no master plan for SWM causing inadequacy and inefficiency.
- 60% uncollected refuse are scattered around collection areas discharging offensive odours, causing aesthetic and health problems.
- Insufficient number of conservancy vehicles for 100% collection, transportation and dumping.
- Low efficiency stemming from lack of inter-departmental coordination.
- Employees are not well trained, lack of motivation and commitment.

- f. The manual sweeping is slow and inefficient.
- g. Hospital/clinical wastes are dumped in the same bins and transported by same trucks. These hazardous wastes are required to be collected and transported separately by specially designed conservancy vehicles.
- h. Crude dumping is made at the final disposal site. The leachate contaminates water and organic/inorganic gases pollute air. Gases produced in the final dumping depot may cause explosion. Sanitary landfill arrangement can minimize these problems.
- i. There is no penalty for improper disposal of wastes.
- j. Existing laws/ordinances do not describe citizen's responsibilities towards waste management.

The solid waste generation in Dhaka City is enormous. DCC has not been able to perform SWM functions properly. Inadequate collection, imperfect disposal and absence of sanitary landfill have compounded the problem. The revenue expenditure is very high compared to income, which greatly strains DCC's budget. The requirement for large number of additional vehicles/equipment, shortage of fund and disappointing performance of DCC suggest privatization. Public awareness, recycling and composting shall reduce generation and disposal of waste. The absence of an integrated plan and scientific approach impedes SWM functions rendering the operations piece meal and unsatisfactory.

Towards a Scientific SWM

Scientific SWM is defined as integrating various approaches of SWM for an effective solution considering the economic and social conditions. Scientific SWM is a multi-disciplinary and dynamic field which includes:⁴

- a. Setting of policies.
- b. Planning and evaluating SWM activities by system designers, users and other stakeholders.
- c. Using waste characterization studies to adjust system to the types of waste generation.
- d. Physically handling waste and recoverable materials, including separation, collection, composting, incineration and land filling.
- e. Marketing recovered materials to brokers or end-users for industrial, commercial or small scale manufacturing purposes.

4. DCC, Scientific SWM, Dhaka, 1999, p.19

- f. Establishing training program for SWM works.
- g. Carrying out public information and education program.
- h. Identifying financial mechanisms and cost recovery systems.
- j. Establishing prices for services and creating incentives.
- k. Managing public sector administrative and operation units.
- l. Incorporating private sector businesses including informal sector collectors, processors and entrepreneurs.

Integrated Waste Management

Integrated waste management is a frame of reference for designing and implementing new waste management systems and for analyzing and optimizing existing systems. Integrated waste management is based on the idea that all aspects of the waste management system should be analyzed together, since they are in fact inter-related and developments in one area frequently affects practices or activities in another area.

Jurisdiction, Responsibility and Stakeholders

Sound practice in waste management systems necessitates clear delineation of jurisdiction and responsibility. All stakeholders participating in system design, and with those affected, at every level are aware of the lines of accountability. Apart from DCC, the following actors have close relation with waste management and, in some cases, significant levels of responsibility for policies or operations:

- a. Department of Environment(DOE).
- b. NGO and Community Participation.
- c. Dhaka Water Supply Authority(DWASA).
- d. Rajdhani Unnayan Kartipakkha(RAJUK).
- e. Community Based Organisation (CBO).
- f. Beneficiary Participation.
- g. NGO and Community Participation.

Present solid waste stream is shown in the following diagram:

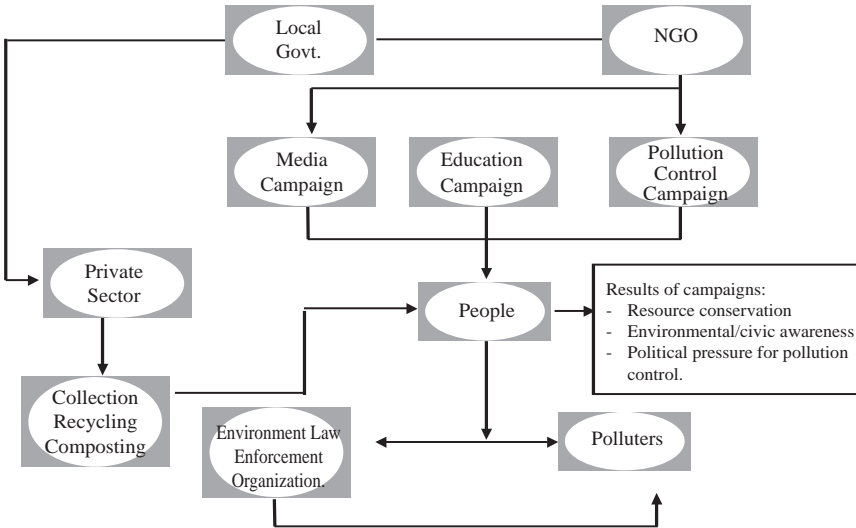


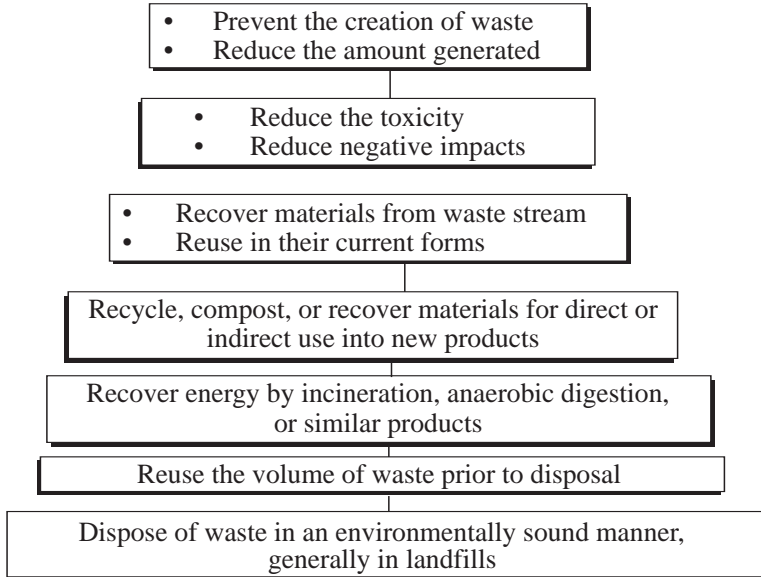
FIGURE-2: Citywide People's Participation Model

Tools For Scientific Waste Management

The scientific waste management is a widespread element of national and regional policy and is often considered a fundamental basis of sound practice. Virtually in all countries, the priority is defined as shown in the flow chart given below with the first entries having higher priority than those at the bottom.

Scientific SWM calls for an integrated approach allowing participation of public and private stakeholders to result in a range of SWM practices that complement each other. Integration allows for capacity or resources to be fully utilized. DCC and NGOs may assist in organizing the informal recycling sector. Indirect fees may raise necessary money required for waste management and to eliminate DCC's budget deficit. Successful applications of scientific and integrated design for SWM have solved waste management problems of developed countries in Europe, America and Asia.

WASTE MANAGEMENT PRIORITY FLOW CHART



SWM IN ASIAN CITIES AND LESSONS FOR DHAKA

Asia is a diverse continent characterized by varying SWM practices. Solid waste generation in the cities of this continent has been increasing at the rate of 3% to 7% per year. SWM consumes about 40% to 60% of the total municipal budget.⁵ In this section the different stages of SWM as practiced in different Asian countries will be discussed and will see whether lessons from other countries can be applied in the case of Dhaka.

The Different Stages of SWM Practice in Asia

a. Waste Reduction

Throughout the continent, cities have been practicing source separation formally and informally. The most common recyclables are ferrous metals, construction debris, scraps, rejected tyre, paper cardboards, plastics, glass, wood/timber, animal bones, feathers, waste oils, grease etc. In economically and technologically advanced Asian countries like, Japan, Korea, Hong Kong, China and Singapore a high degree of waste reduction, separation at source and recycling are being brought about through public education and new practices e.g., curbside collection and volume based collection fees.⁶

5. Scientific op.cit. p.29

6. ibid

b. Collection and Transfer

Collection and transfer dominate SWM cost in Asian cities. It is about 60% of the total cost of SWM.⁷ In most cities it is still the public sector's responsibility. Currently there is a trend towards contracting out some services. Collection through containers, collection bins, communal bins etc. functions side by side with door-to-door collection system. In the urban centers of Hong Kong, Japan and Singapore, collection and transfer systems are capital intensive and mechanized. Increasingly, collection services are being privatized. In the region as a whole roughly 20% of collection service is now contracted out to private waste collection companies.⁸

c. Training

In industrialized countries of the region, operators of SWM facilities are required to attend courses and pass certification examinations for promotion or to hold jobs. In addition to hands-on training on technology used in SWM, health and safety courses are conducted for both sanitation workers and management staff. SWM facilities are opened to the public for educational purposes. All Japanese school children visit the local incinerator and learn about recycling in their area.

d. Public Education

Subjects like ecology and environmental management are becoming part of the school curricula in countries like Japan, Korea, Singapore and Hong Kong. Despite lack of resources, campaigns are organized regularly to promote environmental awareness and resource conservation through recycling/reuse of waste materials.

e. Financing

Financial options and mechanisms vary from city to city and from country to country even within Asia. In general, there are three sources of funds, namely, municipal taxes, fees charged for services, and subsidies from municipal revenues received from government sources. Although privatization is a significant trend in the region, many believe that the most effective, efficient, and accountable system of SWM will evolve through a combination of government-run and privatized services.

7. *ibid.* p.30

8. *ibid.* p.31

Lessons Learnt for Dhaka

Experience from developed Asian countries and our neighbours are important inputs in formulating a master plan for Dhaka's SWM. Necessity for sanitary landfill to prevent soil, ground and surface water contamination and to stop methane emission should be emphasized. While for disposal of hazardous/hospital wastes incineration is identified as an affordable means for Bangladesh, privatization has also been successful in improving SWM and reducing expenditure. Cost recovery is suggested through recycling and composting. People involved in collection, separation and recycling within the informal sector should be recognized and supported by DCC. However, recovery of landfill gas for commercial purpose will not be viable in Dhaka because of the availability of cheap natural gas. Appropriate laws/regulations, promotion of public awareness, training of officials/staff/workers, involving NGOs and community are the essence of a comprehensive SWM system. Top down approach with no input from community does not and will not work well.

Reducing Waste into Resources

About 70 percent solid waste generated in Dhaka City is early degradable organic waste.⁹ Proper policy and adequate planning might bring a treasure of low cost organic fertilizer from solid waste composting and that could contribute to the agriculture sector for better crop production. Besides, semi-mechanical and/or manually operated composting could generate significant room for employment. Compost is the stable end product derived from the biological degradation of organic material, which can vary from¹⁰ dead leaves and roots to kitchen waste and vegetable remains.

A good market for compost exists in Bangladesh. NGOs such as Waste Concern may assist the communities to sell their compost to a number of outlets like fertilizer marketing companies and nurseries. Waste Concern is at present selling its compost at a price ranging from TK. 2.5 to TK. 5.0 per kg.¹¹ The quality of compost is monitored in the laboratory of Soil Resources Development Institute.

Community based decentralized composting program integrated with door-to-door collection of solid waste can yield substantial savings for municipal authorities. The experience of Waste Concern's model in Dhaka shows that if composting is undertaken in a decentralized manner, from one ton

9. Md. Zulhash Uddin and Nakajo Keigo, "Technology Selection For Sustainable SWM, Bangladesh Aspects", Bangladesh Environment 2002, vol 2, BAPA, p. 838

10. *ibid.* p. 29

11. Iftekhar Enayetullah and Md. AH Maqsood Sinha, "Decentralized Composting", Dhaka, Waste Concern, February 2003, p.26

of waste, only 15 percent of the reject has to be transported to the landfill site. This will decrease the quantum of land required for disposal of solid waste and also reduce the amount of leachate as well as methane emission.

But there are some practical problems regarding these projects. For example:

- a. Land is the biggest constraint for replication of the project. If land is not provided by the public agency to the private sector or community groups interested to run the project, the model is difficult to replicate. This highlights the necessity of partnership.
- b. Community may not agree to install community based composting units in the neighbourhood due to NIMBY (Not in My Back Yard) syndrome. If waste is not handled properly and aerobic condition is not maintained throughout the composting process, it may create problem of bad smell.
- c. Quality of compost has to be ensured for marketing purpose.

Future Prospects

Waste Concern had an agreement with Map Agro to market 500 tons of compost per year. Recently, due to heavy demand generated for enriched compost, Map Agro has requested Waste Concern to supply them with 15,000 tons per year.¹² Recently, the Ministry of Local Government, Rural Development and Cooperatives of GOB with support from UNICEF, has started replication of the decentralized composting project integrated with door-to-door solid waste collection program in 14 cities and towns of Bangladesh. Moreover, DOE is planning to replicate the project in 20 towns of Bangladesh.¹³

Composting can become a useful tool in reducing waste collection, transportation and disposal load to a great extent. Barrel type composting will contribute to SWM in slum areas. Over and above the economic potentials of compost can minimize SWM costs. Community based composting is economically viable which will also generate employment opportunities.

STRENGTHENING DHAKA'S SWM THROUGH PRIVATIZATION

Dhaka's SWM can be improved and strengthened with the right combination of privatization, strict and effective monitoring, and regular capacity building programs.

12. *ibid.* p.29

13. *ibid.* p.29

Scopes of Privatized Sectors

The principal reasons for privatization are to improve operational efficiency and to bring in private sector investment. By involving the private sector, Georgetown (Guyana) was able to increase the number of vehicles engaged in daily collection from 4 to 18, more than double the frequency of service, and increase city wide coverage from 50% to 85%.¹⁴

Most activities undertaken by DCC can be performed with participation of private sector at some level. DCC should focus on privatizing those activities that are most inefficiently done and consume a significant portion of budgets. For example, solid waste collection should be a privatization priority, as it is inaptly handled in the absence of competition. Furthermore, solid waste services are considered relatively easier for the private sector to undertake, considering the level of skills required, as well as the magnitude of the needed investment and investment risk. Maintenance of vehicles should also be considered for privatization in view of the delays typical of DCC workshop often caused by slow procurement procedures and cash flow problems in purchasing spare parts. Sweeping is another area for potential private sector participation because public sector is often subject to restrictions on working hours.

Monitoring of Performance

Performance monitoring establishes a basis for evaluating the efficiency, effectiveness and cost of service delivery. It defines the "rules of the game" and measures how well the "game" is being "played"! Comparative performance monitoring of all private sector and government players increases competition among service providers, leading to increased efficiency and improved service quality. By quantifying the performance measures to the maximum extent possible, accountability among service providers is increased. In addition, service delivery is linked with consumer satisfaction, and so actions are linked with their consequences. There is effective feedback. The aspects of performance that are monitored include:

- a. Service frequency and quantity.
- b. Service efficiency and productivity.
- c. Service reliability.

14. Sandra Cointreau Levine, "Private Sector Participation in Municipal Solid Waste Management," Swiss Centre for Development Corporation in Technology and Management, 2000, p.9

- d. Service quality.
- e. Service cost.

Cost Recovery

Apart from having the means to finance capital works, the private sector wants assurances that DCC will be able to meet its regular payment obligations to cover recurrent costs. Taxes are one means by which DCC can raise money to pay for service. The private sector usually prefers a direct cost recovery system based on user charges. Finance to cover recurrent costs for SWM may be obtained from the following sources:

- a. DCC revenues through tax or indirect charges.
- b. Penalties for littering, clandestine dumping and other solid wastes infractions.
- c. License fees from private haulers of solid waste.
- d. Revenues from the sale of recyclables and recovered resources such as compost.
- e. Direct user charges for collection services.
- f. Direct user charges for use of transfer or disposal facilities.

Capacity Building

It might appear that private sector participation would reduce the need for capacity building of DCC since work that is done by the City Corporation would be done by the private sector. In fact, the introduction of private sector participation usually requires municipal strengthening because of the new tasks which City Corporation officials are required to perform. DCC often need technical assistance and training so that it can:

- a. Write competent tender documents for privatization of solid waste service.
- b. Prepare estimates of waste quantities and service cost.
- c. Handle complaints.
- d. Monitor the performance of the private sector operations.

Present Situation of Dhaka: Introduction of Privatization by DCC

While this study is in progress, DCC has initiated partial privatization program on experimental basis. Ward Numbers 17, 18, 19, 20, 21, 37 and 38 of Zone 9 (Gulshan) and Ward Number 1 of Zone 10 (Uttara) have been included in this test project. The private companies have been performing their works for last few months. The tasks given to these private organizations are sweeping, cleaning, collection and transportation of wastes to Matuail. These companies do not have experience, adequate equipment/vehicle and enough funds for investment in SWM project. Therefore, survey of these wards reveals that the services are not very satisfactory. However, it is the beginning of a process, which has much to unfold towards effective SWM. The expenses have reduced, and the full benefits from privatization shall accrue if mechanisms and modalities as described are rigidly adhered.

A properly monitored and supervised private sector engagement in SWM may be a suitable response. The private companies are required to acquire technologies, expertise and funds for investment to be effective.

CONCLUSION

Dhaka is the capital of one of most densely populated countries of this world, and as a mega-city it faces an enormous challenge of solid waste management to keep the city running. Waste management of over a crore people is a challenge in itself and when it is combined with resource limitations and least civil responsibilities of its citizens, the task of DCC gets more complicated. But strategies implemented by other Asian countries that had almost similar backgrounds can be good lessons for us, and therefore, a more scientific approach and a partial privatization can be an answer to our SWM problem.

Keeping the realities of budget and other resource limitations, some steps are recommended for a better and scientific SWM for Dhaka.

RECOMMENDATIONS

An Integrated Scientific Master Plan . As a basis of performance oriented management, an integrated comprehensive SWM master plan is required for DCC to eliminate existing impediments. The plan will provide guidelines regarding the degree of decentralization of specific waste

management functions and responsibilities. It will encompass laws/regulations, application of technology, awareness building, and training and cost recovery mechanisms.

Private Sector Engagement. As potential service suppliers, private enterprises might be allowed to perform SWM in Dhaka City under appropriate conditions. Private companies are required to draw expertise and technologies from successful privatization programs abroad. The introduction of privatization could be done in a pragmatic and incremental manner, beginning with pilot program to assess and encourage interest and willingness of community to participate.

Composting. The organic fraction in Dhaka City's solid waste should be converted into valuable resource i.e. compost fertilizer through community based plants. It will enhance waste collection, stabilization and volume reduction minimizing disposal cost substantially. It is, therefore, an effective and logical approach to solve major problems associated with ever increasing volume of waste in a mega city like Dhaka.

Sanitary Landfill and Incineration. Construction of sanitary landfill is essential to prevent water contamination and air pollution. Incineration of hospital/hazardous waste is to be enforced.

It can be hoped that very soon Dhaka will be able to operate a better SWM structure that would benefit its people and become an example to other countries struggling with similar problems.

BIBLIOGRAPHY

Books

1. Ahmed, M Feroze, Saleh A Tanveer and ABM Badruzzaman, eds, Bangladesh Environment, Dhaka, BAPA, Dec 2002.
2. Akter, N. M. Kazi and A.M.R. Chowdhury, Medical Waste Disposal in Dhaka City : An Environmental Evaluation, Dhaka, ICDDR, Feb 1999.
3. Bagchi, A. Design, Construction and Monitoring of Sanitary Landfills, NY, John Wiley & Sons Inc, 1989.
4. Enayetullah, Iftekhar and Sinha, AH Md Maqsood, Decentralized Composting, Dhaka, Waste Concern, Feb 2003.

5. Community Based Solid Waste Management- The Asian Experience, Dhaka, Waste Concern, 2000.
6. HABITAT, Promotion of Solid Waste Recycling and Reuse in the Developing Countries of Asia, Handbook, NY, UN, Sep 1994.
7. Hickman, H. L. Jr. Principles of Integrated Solid Waste Management, NY, American Academy of Environmental Engineers, 1999.
8. Robinson, W.D. The Solid Waste Handbook, NY, Wiley & Sons Inc, 1986.

Document

1. Ahmed, M. F. and Rahman M.M. Composting : A Potential for Resource Recycling in Bangladesh, Source of Income, Goethe Institute, German Cultural Centre, Dhaka, 1994.
2. Cointreau Levine, Sandra, Private Sector Participation in Municipal SWM, SKAT, (Swiss Centre for Development Corporation in Technology and Management), 2000.
3. DCC, Scientific SWM, Dhaka, 1999.
4. Flintoff, F. "Management of Solid Waste in Developing Countries," WHO South East Asia Services No 1, New Delhi, 1976.
5. GOB, Environment Conservation Rule, Bangladesh Gazette, (SRO No 197-Law/97), Ministry of Environment and Forest, 1997.
6. Harris, J. M. and Gaspar, J. A. Management of Leachate from Sanitary Landfills, In J. F. Malina,ed. Environmental Engineering, Proc. of conference, ASCE, 1989.
7. JICA Expert, SWM Project of DCC, Final Report, Dhaka, Aug 2000.
8. Patwary, Anwar Hossain, A Proposal for Integrated SWM, Dhaka, Feb 2003.
9. Shehab, U. A Study on Hospital Wastes Management in Dhaka City, Research Paper, Dept of Civil Engineering, BUET, Dhaka 1999.
10. Tehbanoglous, George, Theisen, Hilary and Eliassen, Rolf, Solid Waste Engineering Principle and Management Issues, Mc Graw-Hill Kogokusha Ltd, 1977.

Journal/Magazine/News Paper

1. Faruqui, Feroz, I. "Health Hazards in Dhaka City," The Bangladesh Observer, 15-17 Jun, 2002.
2. Khan, M. A. Treasure from Trash, The Daily Star, 08 Nov, 2002.
3. Waste Concern, "Barrel Type Composting," Aborjona, Jul 1999.

Internet

1. Effectiveness of Privatization SWM,
<http://www.unescap.org/drrpad/vc/conference/ex-my-4-eps.htm>
2. PERI URBAN DEVELOPMENT SOUTH EAST ASIA, Waste Management,
<http://www.uni-giessen.de/fbr09/pudsea/waste.htm>
3. Wastenet Bangladesh, Waste Management,
<http://www.wasteconcern.org/wastenet/introduction.htm>
<http://www.wasteconcern.org/WasteNet-News.pdf>

Interview

1. Ahmed, Dr. Nizamuddin, BUET, 04 May, 2003.
2. Enayetullah, Iftokhar, Waste Concern, 16 Apr, 2003.
3. Farooqui, S. Commander, Bangladesh Navy, Chief Conservancy Officer, DCC, 10 Apr, 2003.
4. Gupta, Tapan Kumar Das, Chief Town Planner, DCC, 02 and 10 Apr, 2003.
5. Khan, Dr. Omar Faruque, Director General, DOE, 30 Mar, 2003.
6. Khan, Dr. Yusuf Sharif Ahmed, VC, Mawlana Bhasani Science and Technology University, Chairman, Committee for Social and Environmental Development, 20 Aug, 2003.
7. Rahman, Dr. Mujibur, Director, Centre for Environment and Resource Management, (CERM), BUET, 11 May, 2003.
8. Sinha, A.H. Maqsood, Executive Director, Waste Concern, 23 Apr, 2003.
9. Zayed, Q M Iqbal, Social and Environmental Development, Contractor for Uttara Conservancy Scheme, 14 Aug, 2003.

Author:

Brigadier General Md. Mahboob Haider Khan, ndc, psc was commissioned in the Corps of Infantry on 08 May 1977. He graduated from Defence Services Command and Staff College and National Defence College, Mirpur. He has attended a number of courses at home and abroad. He had held command, staff and instructional appointments in a various capacities; notably Instructor (Class-A & B), School of Infantry and Tactics; General Staff Officer-II and General Staff Officer-1, Army Headquarters and Infantry Division respectively, Command of three Infantry Battalions including Division Support Battalion and Independent Infantry Brigade, Private Secretary to the Chief of Army Staff at Army Headquarters and Founder Commandant of a new Infantry Regiment. He was a member of United Nations Iran-Iraq Military Observer Group (UNIMOG). Presently, he is serving as the Commandant of Non-Commissioned Officer's Academy.