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Bangladesh

"Read! In the name of your Lord Who has created (all that exists)"

Surat Al - 'Alaq (The Clot) XCVI

NDC JOURNAL
Security Through Knowledge

ENERGY CRISIS – BANGLADESH PERSPECTIVE

Major General AKM Abdur Rahman, ndc, psc

INTRODUCTION

Development of a country is measured in terms of per capita energy consumption. It means that countries having higher per capita Gross National Product (GNP) also have higher per capita energy consumption and vice versa. Quite obviously from the point of view of energy use, Bangladesh is one of the least developed countries of the world. In Bangladesh, approximately 60% of total energy need is currently being met by non commercial or traditional energy sources (biomass). The rest 40% is met from commercial energy sources. Among the commercial energy sources gas alone accounts for 70% and rest 30% is met by oil (25%), coal (4%) and hydro power (1%).[1] At present, Bangladesh Power Development Board (BPDB) is generating 4500 to 5000 Mega Watt (MW) power leaving a shortfall of approximately 1500 MW. Currently, 90% power is generated using natural gas and rest is generated by coal, diesel, furnace oil (FO) and water.[2] The total requirement of power is likely to be 8349 MW by 2013, 11405 MW by 2016 and 24000 MW by 2021.[3] This projected demand means proportionate increase of demand of gas. The average gas production at the moment is 2000 Million Cubic Feet (MMCF) per day and the daily gas demand is 2500 (+) MMCF resulting to a daily shortage of 500 (+) MMCF.[4] This shortfall of gas has virtually led the shortfall of power. As a result, the established industries including fertilizer plants are suffering long shutdowns causing losses in thousands of crores Taka. The disruption to knitwear and Readymade Garments (RMG) alone has been estimated to be over United States Dollar (USD) 01 billion.[5] This crisis has not befallen the nation all on a sudden but is the natural consequence of long negligence, lack of dedication and sincerity, poor vision and most importantly absence of patriotism. Furthermore, too much of dependence on the International Oil Companies (IOCs) and placing their interest before that of the nation and undermining the ability and sidelining the Bangladesh Oil, Gas and Mineral Resources Corporation (Petrobangla) are considered to be the main causes of the present crisis.

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1. Paper presented by Petrobangla to the Energy & Mineral Resources Division, Ministry of Power Energy and Mineral Resources, *"Petrobangla's Achievements and Roadmap,"* 05 April 2011, p.6.
2. Published by Bangladesh Power Development Board in "*Jugantor"* (a Bengali daily), Dhaka, 11 June 2011, P.10.
3. *Ibid*, P.11.
4. Presentation paper of Petrobangla, *op.cit.* P.4.
5. This was said by Mr. Shafiul Islam Mohiuddin, the President of Bangladesh Garments Manufacturers and Exporters Association (BGMEA) to the researcher during the interview on 30 May 2011.

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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.

FOREWORD

National Defence College is on track since 1999 with a vision: "to develop as the national centre of distinction on security studies-meeting the challenges of the 21st century". Since then the college has been relentlessly presenting time befitting academic curricula to the potential policy planners, leaders and strategic thinker of the future. Intent of the college is to create a balanced outlook and bring a visualization amongst the Course Members with a strategic and operational level understanding. Now 14 years track record recognizes this premier institution at home and abroad profoundly.

National Defence College has always been emphasizing on conducting research in contemporary issues on defence and national security. The main aim of the research is to enable Course Members to make original contribution to a subject of national or international interest, that has bearing on the national security of any country. The college journal is a mirror image of the research works that are carried out at the college. I am pleased to note that the second part, volume 11 of the NDC Journal contains the selected "Individual Research Paper" of the Course Members of both National Defence Course-2011 and Armed Forces War Course -2011. The Editorial Board has accommodated assorted subjects and stepped up the excellence. It is my firm believe that the readers will find the articles worth reading and academically thought-provoking.

I congratulate all the members who have contributed to this journal. I thank the Editorial Board for editing and publishing the journal timely. This issue of the journal is yet another landmark in the path of advancement of National Defence College, Bangladesh.

MOLLAH FAZLE AKBAR
Lieutenant General
Commandant

EDITORIAL

"NDC Journal (Volume 11)" is a bi-annual publication of National Defence College, the premier National Centre of Excellence on Security, Strategy and Development Studies. The articles for the journal are selected from individual research papers that the members of the Course had submitted as part of the course curriculum. The Course Members, during nearly a yearlong stay in the NDC spent a lot of time doing research on security and development related issues. The College believes that a senior officer from military and civil service should have a good understanding of the major economic, political and social issues facing the nation and be able to recommend measures to face the challenges.

National Defence College has been very regular in bringing out its `NDC Journal` every year on time. This speaks of the laborious effort and genuine commitment on the part of both the editorial staff and writers. While research papers are usually of 10000 - 15000 words, the abridged versions are of 4500 - 6000 words. The abridgement is executed in a manner that the inner significance and depth of the contents do not lose their objectives and preciseness.

Fifty three members of the National Defence Course-2011 and twenty four members of Armed Forces War Course-2011, as integral part of their course requirement, prepared Individual Research Papers (IRP) on topics pertinent to national security and warfare strategy. Out of all IRPs in total 8 (eight) have been adjudged for publication in the current issue in abridged form. The articles reflect complex and intricate multidimensional issues emanated from the diversified experience and the curriculum based deliberations and discourse during their training on various topics concerning comprehensive national security.

This volume includes papers of different categories concerning national security. These draw attention to Energy Crisis – Bangladesh Perspective, Prospects and Problems of Ship Building Industries: Bangladesh Perspective, ASEAN Non-Interference Policy: It's Relevance in Coping with Problems and Challenges in South East Asia, Emerging Challenges: Need for Enhancing Capacity of Chittagong Port, Solid Waste Management – A Public Health Problem in Dhaka City, Nigerian Air Force and Asymmetric Warfare: Issues and Prospects, Digitization of Land Management System in Bangladesh: Process, Progress and Prospects and Toward an Efficient and Sustainable Microfinance Operation in Bangladesh: The Regulatory Perspective. A reader, before getting into the pleasure of reading, can get an idea of what these papers are about from the abstracts included at the beginning of this journal. We would like to express our sincere gratitude to the Chief Patron Lieutenant General Mollah Fazle Akbar, ndc, psc, the Commandant of NDC for his valuable guidance.

Research is a highly committed undertaking. Despite all efforts, unintentional errors in various forms may appear in the journal. We ardently request our valued readers to pardon us for such unnoticed slights and shall consider ourselves rewarded to receive any evocative criticism. We hope that all papers included in this volume will satisfy our readers.

GAZI MD SOLAIMAN
Brigadier General
Senior Directing Staff (Army)

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    Lieutenant Colonel Md Nasim Parvez, afwc, psc

to the issue of whether non-interference policy should be changed in order to revitalize ASEAN as a regional manager in this region. This paper concludes with an assessment of what should be done to this policy.

EMERGING CHALLENGES : NEED FOR ENHANCING CAPACITY OF CHITTAGONG PORT

Brigadier General Md Anisur Rahman, ndc

Chittagong port, being Bangladesh's premier seaport and currently handles 92% of country's sea-borne trade, has been playing a vital role in the economy of Bangladesh. Chittagong port has been handling 2.5 times more container than its capacity. But the stakeholders were dissatisfied with the performance because of the standards of port being lower than the other countries in the region. Abnormally long turn-around time of ships and dwell time of containers/cargo, complex and lengthy handling and clearance procedure, delay in custom clearance, lack of integrated transportation system with hinterland etc, were the major bottlenecks hindering the efficiency of the port. Bangladesh economy has experienced moderately accelerated growth since 1996. Foreign trade has shown positive growth in the recent year. Such trend of trade has poised tremendous pressure on Chittagong port. The communiqué signed between Bangladesh and India on January 2010 offering the North East Indian states access to Chittagong port demand more capacity than ever. Anticipating the demand for port, GoB has already undertaken a project to construct a Deep Sea Port. But because of technological and economical aspect, it may take quite long time to execute the project. But the efficiency of the port should able to keep pace with the growth of national trade in order to achieving the nation's envisaged economic target. Appropriate measures includes immediate procurement of container handling equipments, expansion of container yard area, proper dredging of Karnafully river, simplification of procedures, integrated computerization of the entire port operations, effective coordination among the concerned authorities and implementation of an integrated transportation system with hinterland would turn Chittagong port in to an efficient port in this region and become a regional hub for trade.

SOLID WASTE MANAGEMENT-A PUBLIC HEALTH PROBLEM IN DHAKA CITY

Brigadier General Md Fashiur Rahman, ndc

In 2021 the projected waste generation in Dhaka City would be 15,000 tons/day. Everyday this City produces 4864 tons of solid wastes/day, of which

ABSTRACT

ENERGY CRISIS - BANGLADESH PERSPECTIVE

Major General AKM Abdur Rahman, ndc, psc

Bangladesh is an energy hungry country in the context of its ongoing economic development and therefore its importance is undeniable. The country although is not endowed with varieties and abundant of energy resources but the existing gas and coal reserve is enough to meet the growing demand for at least 50 years let alone the future discovery. Despite that, the country is going through an acute shortage of energy crisis particularly commercial energy. This crisis has not befallen the nation all on a sudden but is the consequence of long negligence, lack of dedication, poor political vision, inefficient bureaucracy and absence of patriotism. Furthermore, too much of dependency on the International Oil Companies (IOCs) and serving their interest before the nation and deliberately sidelining the national organizations like Petrobangla and BAPEX are considered to be the root causes of the current energy vis-à-vis power crisis. A spectrum analysis of the energy crisis also proved huge outflow of foreign currency which is affecting the economy of the country. In view of this, an effort has been made to find out the way forward taking into consideration feasibility, affordability, cost factor and domestic price structure. The analysis unearthed that the country needs to formulate a sound energy policy and strengthen Petrobangla and BAPEX so that these organizations can take care of the hydrocarbon resources of the entire country without depending on the IOCs. The analysis also suggested that the country must utilize its coal resource without any delay and avoid costly ventures like rental power, nuclear energy and importing LNG.

PROSPECTS AND PROBLEMS OF SHIPBUILDING INDUSTRIES: BANGLADEH PERSPECTIVE

Commodore Shawkat Imran (ND), ndc, psc, BN

In a globalized world, increased cross continent trading specially shipping trade pitching for an unprecedented demand for new shipbuilding besides repairs. Worlds traditional shipbuilding giants in the West now facing acute shortage of manpower and high labour costs is one of the major determinants in this cost competitive industry. This led to a gradual migration of shipbuilding activities to the East. Asian countries like Japan, Korea, Singapore, Vietnam took this opportunity closely followed by China and India. At present, even some of these countries are interested only to build larger vessel due to their restructuring of

yards, over commitment and enhanced labour cost. But due to global recession the demand of smaller to medium size ship has increased. Thus a window of opportunity has opened up in developing countries like Bangladesh having surplus cheap workforce. Due to natural geo-graphical advantage, strong heritage, culture of internal and seaborne trade Bangladesh has an enriched historical background of building ships. In the present context it is viewed that she has all the ingredients and potential to penetrate in the huge global shipbuilding market as an important player. The sector can augment economic development through much needed export diversification and also can generate net value addition and large employment opportunity like RMG. Recently, some of the local shipyards has shown their capability to build export oriented ships for high end market of European country and in fact the time is just ripe for Bangladesh to carve a niche in this sector. Thus it is essential for Bangladesh to put together well crafted strategies and all possible effort to avail this opportunity. Delay may be costly as opportunity does not come often. But it must be remembered that for sustainable growth and economic gain the extremely competitive sector can be equally challenging. It would be imperative to address concerned areas which could be detrimental to the future progress of this promising sector.

ASEAN NON-INTERFERENCE POLICY: IT'S RELEVANCE IN COPING WITH PROBLEMS AND CHALLENGES IN SOUTHEAST ASIA

Brigadier General Dato' Pahlawan Abdul Rahim bin Abdul Mutalib, ndc

The paper analyses the relevancy of the Non-Interference Policy of ASEAN in dealing with the problems and challenges in Southeast Asia. This paper is based on the argument that ASEAN is now beset with internal and external problems that threaten to tarnish its international prestige and undermine ASEAN's unity and cohesion. ASEAN has not managed to develop an effective concerted response to the Asian financial crisis or to the environmental hazard caused by Indonesia's forest fires. Perhaps more significantly, ASEAN has been unable to fashion a response to the regional spill over effects caused by the internal policies of Myanmar and Cambodia.

In July 1998, at the annual meeting of ASEAN foreign ministers, for example, ASEAN's least democratic states joined forces to block a Thailand proposal to reform the association so it could effectively deal with these new threats to regional security. With this backdrop, the paper will highlight how ASEAN works as a regional organization, to understand how non-interference policy came into ASEAN and how "ASEAN Way" supports the policy. The analysis will identify how ASEAN deals with regional problems and challenges and to see whether the actions are conforming to the policy. To determine the relevancy of the policy, the paper will analyse the debate among ASEAN leaders pertaining

household waste were 52.03%. Industrial, Commercial and Medical waste were of critical importance.

Middle and Lower aged people mainly females were involved more in solid waste management in households. Majority of the respondents had qualification above Secondary School Certificate, but in slum area 56% were found below class Five. Higher income people had higher generation of waste in households and they had higher education. The household's waste generation on an average was .44 g/ capita/ day and 33.3% people were doing recycling waste regularly.

Lack of sincerity, cooperation of staffs with insufficient cleaner and transport vehicles only 43% of solid waste is managed by DCC (Dhaka City Corporation). Strategy of management is suggested on strong Ward Based Approach that includes awareness and practices of the people of solid wastes, good recycling behavior and motivating community participation. Resources including Budget involved in Solid waste management of DCC seemed to be proportionately inadequate comparing with other cities of different countries.

Only 10 tons of medical wastes are managed separately. Infectious and hazardous substances present infest the whole bulk of wastes that becomes the source of diseases and pollute environment. Medical waste infects directly the concerned staffs, waste handlers, waste picker and recycler. Majority suffered not only from diseases but they remain as a carrier of diseases, which is dangerous for healthy people.

Descriptive and Survey method were adopted for this study and it analyzed the overall view of solid waste management in Dhaka City considering people's health and environment associated with socio-economic characteristics. This study brought out some recommendation which will help formulating policy guideline of solid waste management in DCC.

NIGERIAN AIR FORCE AND ASYMETRIC WARFARE: ISSUES AND PROSPECTS

Group Captain Ik Abdul, ndc, psc, DSS, PGDPA

This article is on the capability of the Nigerian Air Force (NAF) to combat asymmetric warfare (AW) threats. The article became necessary because of the inherent capabilities associated with air forces in combating AW threats. AW has profound negative implications on national security if efforts are not made to prevent them and where they cannot be prevented efforts are made to combat them. The objectives of the article include examining the concept and nature of AW, an evaluation of the capabilities and challenges that constrain the performance of the NAF in combating AW threats and finally, the article proffers ways of building NAF capacity to enhance its effectiveness in combating AW threats.

The article found that the performance of the NAF could be improved if the appropriate air power capabilities and weapon platforms are acquired. It also found the need for adequate funding of the NAF for aircraft maintenance. The article brought out the constraints in the state of readiness of NAF operational units. The need for NAF to build capacity to sustain operations for defined time frame was also highlighted.

Based on the research findings, the article made some recommendations to enhance NAF effectiveness in combating AW threats. The recommendations included the acquisition of search and rescue (SAR) kits as optional fitting for the Super Puma to enhance NAF SAR capability. Other recommendations are adequate funding for aircraft maintenance, the acquisition of more helicopter, and precision guided munitions and unmanned aerial vehicle to enhance combat support operations for AW. Finally, the article proposed that NAF should improve the state of readiness of operational units and define a time frame for the sustenance of air operations in an AW environment.

DIGITIZATION OF LAND MANAGEMENT SYSTEM IN BANGLADESH : PROCESS, PROGRESS AND PROSPECTS

Joint Secretary Md Nurul Alam Miah, ndc

Land is the scarcest resource in Bangladesh. Rapidly declining land-man ratio is about to push Bangladesh economically to an unsustainable level. On an average about 220 hector of arable land is being converted everyday to develop housing and infrastructure. The study depicts that land records are in a despicable state, land administration is ineffective and legal instruments are inadequate. Sufferings of land owners and service seekers have crossed the tolerance limit.

The dismal picture deserves a comprehensive change in the existing system of land management. The magnitude or volume of the land records information claims development of full automated data base, digital survey, and web-based flow of information which can help to frame a need based use plan.

Past experiences of land reform and digitization of land management efforts are neither satisfactory nor encouraging. The fundamental objective of the digitization of land management is to provide quick and user-friendly service to the consumers and formation of a pragmatic land use plan both at micro and macro level. Development of a web based information hub at Upazila level and issuance of legally authenticated Certificate of Land Ownership would be a gigantic task.

The analysis suggests that, without top level political commitment and full professionalism, challenges of digitization cannot be addressed. Cascading effects of changes with technical and human needs to be carefully considered

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The estimated coal reserve in the five discovered mines is about 3.3 Billion Metric Ton (BMT).[6] Out of five coal mine, only Barapukuria has been made operational from Fiscal Year (FY) 2003-2004 with less than one Million Metric Ton (MMT) extraction per year. Unfortunately, over the years negligence has stagnant the development of this vital resource. Natural gas on the other hand has been found to be the main source of commercial energy. Natural gas has gained an importance over the years starting from 1972 in particular: the increase from 67 Billion Cubic Feet (BCF) in the ten years period (1961-70) to 2495 BCF in the years 1991-2000. From 2001 it has grown over 07% annually to over 02 BCF a day (i.e. almost 750 BCF a year) now. The principal gainer has been power generation- from almost 'zero' in 1970 to over 90% today. Natural gas has been the saviour of the country in not only meeting the growing demand from total of 500 MW in 1972 to 6000 MW today but in keeping dependence on liquid fuel to nearly what it was twenty years ago.[7] Unfortunately, Bangladesh, despite having enough natural gas and coal, could not benefit itself as desired. Why it is so is a million dollar question and deserves an examination in order to explore the ways and means to get out of the present energy crisis. To do so, we need to find out the answer of three key questions. The first is what factors has led Bangladesh to the present energy crisis? The second is does Bangladesh have enough resources to meet the energy demand in the foreseeable future? The third and the final question is how to overcome the energy challenges and ensure energy security for foreseeable future? However, this paper mainly deals with the commercial energy and suggestions and recommendations would be relevant up to the year 2050.

AN OVERVIEW OF THE ENERGY SCENARIO

Basics of Energy

The sources of energy are basically two: Primary and Secondary.

Primary Energy: The energy extracted from stock of reserves of organic materials and other natural sources such as natural gas, oil, coal, biomass, hydro, solar, wind, tidal etc. The share of primary energy in Bangladesh in FY 2009-10 is shown in Chart 1.[8]

6. Paper presented by 'Barapukuria Coal Mining Company Limited' (BCMCL) during a formal visit of the National Defence College at Barapukuria Coal Mine on 03 April 2011.
7. This was said by Mr. Azimuddin Ahmad, former Secretary to the Ministry of Power Energy & Mineral Resources during an interview conducted by the researcher on 26 April 2011.
8. Paper Presented by Mohammad Mejbahuddin, Secretary, Energy and Mineral Resources Division, Ministry of Power Energy & Mineral Resources on "The Global and Bangladesh Energy Scenario: Challenges and Options for Bangladesh" at National Defence College on 28 June 2011.

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PROSPECTS AND PROBLEMS OF SHIPBUILDING INDUSTRIES: BANGLADEH PERSPECTIVE

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INTRODUCTION

History depicts that Bangladesh has a long heritage in shipbuilding. Large number of local shipyards support enormous number of sea as well as internal water transportation. Bangladesh also has shown lots of promises to emerge as a global standard shipbuilding nation in the recent time. She has the advantages like cheap labour, presence of large number of skilled and semiskilled workers and industry related educational and training institutes. A long history of maritime activity and a favorable geographical location can also be taken into consideration.

In recent time, the reputed leaders of world shipbuilding industry are not interested to build small ships due to high labour cost. But due to increase in international sea trade and the recent recession, at present, there are increasing demand of mostly small to medium sized ships. Thus a window of opportunity has developed for the other shipbuilding nations with cheap surplus human resources.

Presently, the average increasing rate of ships in tonnage is approximately 21 million GT (Gross Tonnage) per year. Considering US$ 7,620 construction cost per GT, total global market size is US$ 1,600 billion. Bangladesh can earn US$ 16 billion with 1% access to the market. If she can grab 1% of the market of small ships which is about US$ 400 billion, the amount will worth US$ 4 billion. Expert view that Bangladesh has the scope to emerge as an export oriented shipbuilding nation within a decade

But, unfortunately, Bangladesh with all the potential could not do justice in shipbuilding industries though it houses the 2nd largest ship breaking industry in the world. Lack of initiative was shown both by government and private investors for long. Short supply of utility services, technology and financial incentive are common problem. Highly skilled workforce is migrating abroad for better fortune. Suitable location is scarce and infrastructure cost is very high. Lack of research and updating of information are hampering technological development. Safety, health and environment are also major concern. To be successful Bangladesh need to adopt well crafted strategies to counter all the challenges.

Prospect of Bangladesh for Shipbuilding

The demand for ships both in global and local arena have been continuously increasing and this trend is likely to continue throughout the

modern era due to expansion of international trade. To fill this increasing demand, the shipbuilders of the world are facing acute shortage of skilled manpower and are exhausted due to high labour cost of this sector. Thus Bangladesh has a window of opportunity to fill the gap. She may feel encouraged to come forward in labour intensive shipbuilding sector due to availability of abundant unemployed manpower. Country also has all other potentials to capture a considerable share of increased shipbuilding market as well. Most of the traditional shipbuilding nation, even presently newcomers like India is showing little interest in the market of small size shipbuilding. With little effort Bangladesh can try to have a share in processing orders for 6000-10000 DWT and 15000-20000 DWT multipurpose vessels as well as small and medium size tanker market.[1]

Potential of Bangladesh for Shipbuilding

Considering all associated factors it can be predicted that the country has tremendous potentialities in respect of rising trend of shipbuilding capability. The unique nature provides convenient geographical advantage. The long heritage ensures availability of technically knowledgeable personnel, skilled and semi-skilled workforces. Presently, this industry is manufacturing different types of vessels as per the local demand for inland and coastal transportation. Bangladesh has already got exposure in international market by successfully exporting first ocean going ship and six other class ferries and boats to Mozambique. There are more countries Bangladesh exported ocean going ship. Considering its huge promises to develop country's multi-dimensional production base through development of linkage industries, Bangladesh government is showing keen interest in it. It is analyzed that the sector can greatly enhance the much needed diversification of the export basket and it has already been declared as a 'Thrust sector' .

Geographical Location

Bangladesh has lots of deep enough rivers connecting major cities with sea. They are used for extensive internal waterborne transportation for national need guaranteed water depth is generally 3.66m maintained up to Dhaka and other ports. Taking the advantage of tide commercial vessels navigate with up to 4.25m loaded draft. Thus vessels having a light draft of 4m on a reasonably even keel may be built in any place between the sea and Dhaka. Multipurpose cargo, oil tankers and container vessels having light weight of 7000/8000 tons i.e. DWT of

1. Soerensen, M., Sea Consultant and Representative of Foreign Ship Owner of 6100 DWT Multipurpose Vessel (At Ananda Shipyard) of Komrowski Maritim GmbH, on issue of different Aspects of Shipbuilding Industry of Bangladesh at his office in ASSL on 14 June 2009.

20000 – 25000 tons may be built. On the Western side Mongla basin with available water depth of minimum 8.0 m and natural protection of Sundarban may be considered as one of the better places for shipyards and dry-docks. In Eastern side the vast potential area beside Karnafuli River has been unfortunately handicapped by bridges of low height and extensive port operation. Besides some places in the Southern long coastal belt and river mouths falling to sea offer excellent scope for development of shipyards and shipbuilding zones provided they meet the other necessary infrastructural requirements.[2]

Weather Conditions

Bangladesh enjoys rather a moderate weather. Most of the year people are capable of working for long 14 hours except during monsoon season resulting high humidity and rains. Temperature is very reasonable and cold protection is not much required.[3]

Cost Effectiveness

Generally, the average productivity for export quality or class vessel of Japan shipyards is considered as 1. But that of Bangladeshi shipyards is estimated to be 11.43, which has been shown in table 1 and that in the present context is the poorest (Figure: 4) in the world.[4] But mere training and automation will definitely improve the productivity. On the other hand average hourly labour charge in Bangladesh is only US$ 1.00 or even less which for all category is the lowest in the world (Figure: 1, Figure: 2, Figure: 3). So, the relative labour rate (Resultant cost considering productivity vis a vis hourly labour charge) of Bangladeshi shipyards is 0.45 which is again the lowest in the world; thus country's shipbuilding industry remains at an advantageous position (Figure: 5) in the world.[5] Expert's view that Bangladesh can be reasonably cost competitive provided other factors are taken care off. For example compared to China, ships manufactured in Bangladesh taking in to all consideration will be 12.5% approximately cheaper which is a noticeable factor.

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2. Research paper of Dr Bari. Presented at International Conference ON MARTEC 2010 in BUET Bangladesh.
3. ibid.
4. Explanation – Hourly productivity of one labour of Japan, if considered 1 and that of Bangladesh is 11.43.
5. Commander Kh Akhter Hossain, M Sc thesis on Prospect and Potential of Bangladeshi in Line of Global Trend, BUET, January 2010).

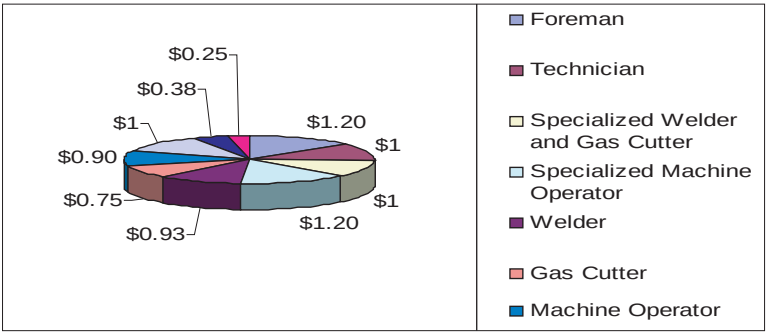
Table 1: Shipbuilding Productivity of Different Shipbuilding Nations

Country	Productivity
Japan	1
European Countries	2
United States	4
India	10
Bangladesh	11.43

Source: Article on Maritime Bangladesh – Her Shipbuilding and Vision 2021, World Maritime Day 2010 Journal

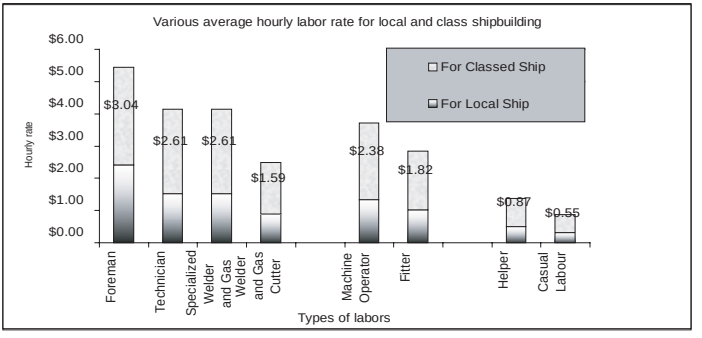
Figure 1: Hourly Labour Charge (in USD) for Class Ship in

Bangladeshi Shipyards.



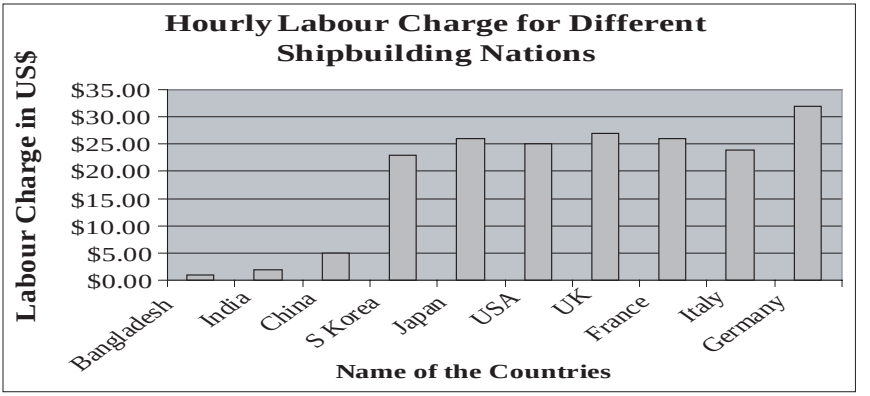
Source: Journal of Ship Technology Indian, July 2010

Figure 2 : Daily and Hourly Labour Charge in Bangladeshi Shipyards (Including Fringe Benefit and Manufacturer Overhead) [*1 USD=69 Taka Approx] (On Ground Data)



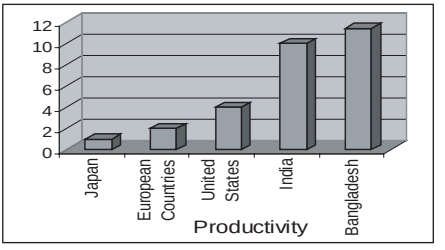
Source : Commander Kh Akhter Hossain, Dr N M G Zakaria, Dr K S Iqbal of BUET; Study on Bangladeshi Shipbuilding Prospect & Problem; Journal of Ship Technology Indian, July 2010.

Figure 3 : Hourly Labour Charge for different Shipbuilding Nations[6]



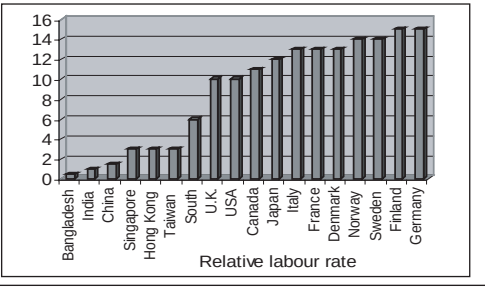
Source : Commander Kh Akhter Hossain, M Sc thesis on Prospect and Potential of Bangladeshi in Line of Global Trend, BUET, January 2010

Figure 4 : Shipbuilding productivity of different countries around the world



Source : Author

Figure 5 : Relative Labour rate for different countries around the world



Source : Author

6. N. M. Golam Zakaria, M.M. Rahaman and Kh. Akhter Hossain, Study on Some Competitive Parameters for Shipbuilding Industry in Bangladesh, International Conference of marine technology, December 2010.

Opportunities of Bangladesh as Shipbuilding Nation

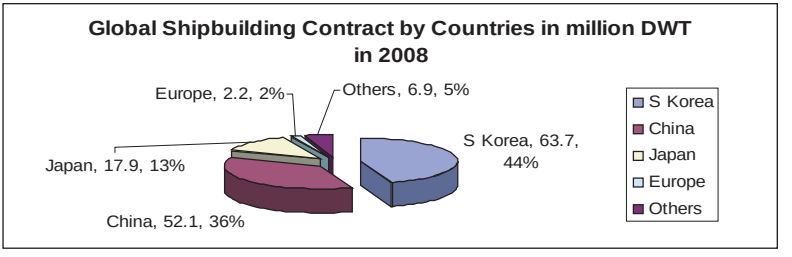
As per COMTRADE global shipbuilding market size is US$ 1,600 billion. If only 1% market share can be captured by Bangladesh, it will be worth US$ 16 billion. If she can grab 1% of the global order for only small ships market (which is about US$ 400 billion) the amount will be worth US$ 4 billion. Two leading local shipyards, Ananda and Western Marine have bagged orders to make 41 small vessels worth about US$ 0.6 billion mainly from European buyers. It is estimated that by 2012 the world will need more than 10000 vessels, mostly small to medium sized. This category of shipbuilding market is flourishing which will better suit Bangladesh. Market of 15000 DWT to 25000 DWT combined cargo vessel, multipurpose vessel, container ship and oil tanker will also likely to be available for Bangladesh in coming years.[7]

Present Boom in Shipping Business

World shipping along with shipbuilding industry is witnessing a high trajectory across the world in recent decades due to multidimensional reasons such as:

a. The practice of up gradation of older ships has become extremely difficult due to new regulations imposed by IMO leaving the option of replacing them with new ones.
b. Increasing price of fuel had made shipping business extremely competitive and older energy inefficient ships are getting obsolete.
c. Globalization has enhanced intercontinental shipping trade manifold.
d. In a flat earth there is no boundary for a industry or investors to continue business. Products manufactured in one continent are generally penetrating consumer markets on the other side of the world. This requires huge turnover movements across the globe preferably by ships. Obvious result is increased demands of ship thus shipbuilding industries.

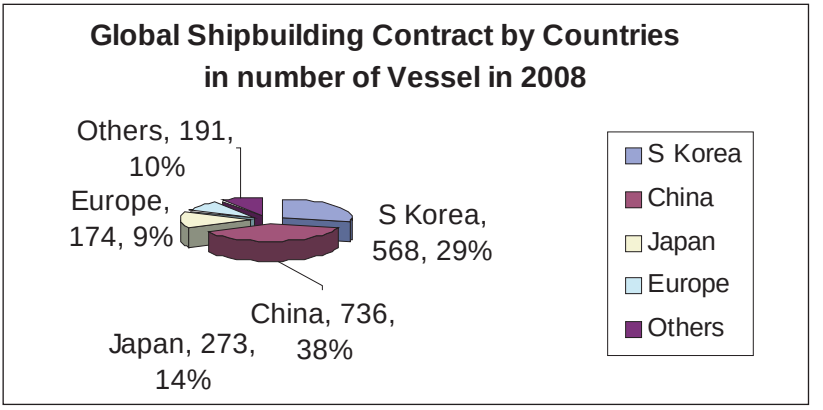
Figure 6 : Global New Shipbuilding Contract by Countries in million DWT, 2008



Source : Different Statistics & Charts related with Ship and Shipbuilding Business.

7. Commander Kh Akhter Hossain, Bangladeshi Shipbuilding and Vision 2020; Navy journal Nabik 2010.

Figure 7 : Global New Shipbuilding Contract by Countries in No of Vessel, 2008



Source : Lloyd's Register's "World Fleet Statistics

Global and Bangladeshi Shipbuilding Future

It can safely be observed that the global shipping and shipbuilding demand is gradually on the rise. So is the Bangladeshi shipbuilding capability, now as per time series analysis global demand is 43.03 million gross tonnages. Same time shipbuilding capacity of Bangladesh, as per the ground survey, is 0.184 million GT (in 2008) which is 0.42% of global share roughly. On the other hand if this increasing trend of capacity of local shipbuilding continue Bangladesh is likely to reach the capacity of 0.443 GT in the year of 2015, which is 0.83% of global share.[8]

Table 2 - Increasing trend in Global Demand and Bangladeshi SB capability

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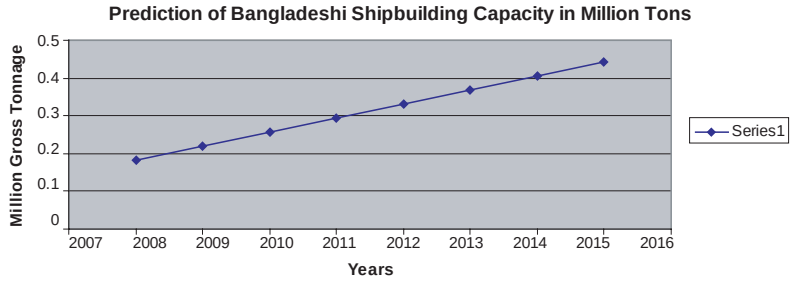
Year	Capacity of BD in MT	Global Demand in MT	Percentage
2008	0.184	43.03	0.42%
2012	0.332	49.35	0.67%
2015	0.443	54.09	0.82%

Source : Author

8. The actual figure could not be deducted from any reliable source. Some research material are taken from my fabourite junior colleague Commander Akhter, BN. The officer is doing a research on shipbuilding under Prof Hagy Goa, Dean of Global Architecture Department, University of OSAKA and Prof L Chone, Head of Korean Ship building and research.

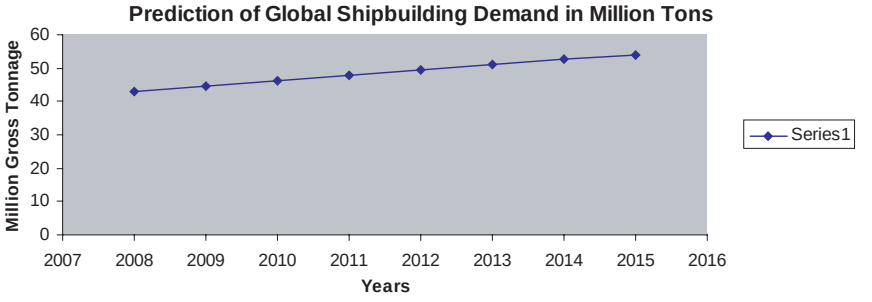
As per Time series analysis the future prediction of Bangladeshi shipbuilding capacity can be viewed in figure 8. On the same analysis future projection of global one can be seen in Figure 9. Comparing the two graph it can be noticed that the Bangladeshi shipbuilding capability in ratio presently is slightly faster than the global demand. Forecast of future of Bangladeshi shipbuilding capacity in line with global demand can be compared in Figure 10.

Figure 8 : Prediction of Bangladeshi Shipbuilding Capacity in Million Tons



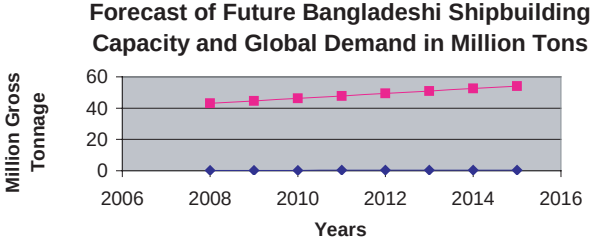
Source : Author

Figure 9 : Prediction of Global Shipbuilding Demand in Million Ton



Source : Author

Figure 10: Forecast of Future Bangladeshi Shipbuilding Capacity and Global Demand



Source : Author

Million Tons

If everything continues in similar fashion it can be anticipated that Bangladesh may provide everything continues in similar order. It is estimated that Bangladesh may successfully avail 1% of global shipbuilding market (worth $ 16 Bn) which is argued to be most practicably desired target in the present circumstances. This will enhance much desired export basket diversification, employment generation and sustainable economic development of the country. Risk of too much dependency on RMG for export will also be balanced well.

PROBLEMS AND CHALLENGES IN BANGLADESH SHIPBUILDING

Lack of Policy Guideline

The success story of shipbuilding of Japan, Korea and China has not happened by chance but by a carefully crafted policy where the government has provided the core administrative guidance and support. Declination of the shipbuilding industry in UK, Sweden and many European countries was partly attributed to less supportive policies. USA helps the sector by direct intervention with Jones Act which governs that ships that trade in the territory of the states must be built in USA. Due to absence of such policy and lack or no supports from the government, the Bangladeshi shipbuilders who lost comparative advantages have no choices but to leave the market.[9]

Financial and Economic Problems

a. Shipbuilding though primarily a labour intensive industry but requires huge capital, some time to the tune of 100 to 1000 core or more. Both the Entrepreneurs and Bankers always find it a risky and difficult proposition.

b. Existing rate of interest (12% to 16%) for Industrial and Working Capital Loans is too high.

c. Guarantee from both local and foreign banks is mandatory for export of ships from Bangladesh as buyers often do not accept the guarantee provided by local commercial banks. Bank guarantee for export of ships from Bangladesh is about 16% (local 4% + foreign 4% = 8%X2 years = 16%). But it is 0% in other competing countries like, Korea, China, Japan, India etc.(Source : Author, Experience as MD KSY)

d. Generally commission at the rate of 0.20% is charged by banks of other competing countries for opening import L/C whereas 1% per quarter i.e. 1X4 = 4 X 2 years = 8% is charged by the Bangladeshi commercial banks.

9. Marine International Limited, Overview of international merchant shipbuilding, Background report of European Union, Belgium, European Union, 2003.

e. The above mentioned additional financial cost of ships in Bangladesh is about 15% to 25% (bank interest 3% to 6% + guarantee 8% to 16% + L/C commission 4% to 8% + other charges 1%) higher than the other competing nations.

f. India is having only a 10% financing cost and a 30% cash subsidy.[10] Turkey is providing funding as stimulus package. China and Vietnam, in addition to funding existing shipbuilding contracts against cancellation, have provided incentive scheme to secure new shipbuilding contract. Export oriented shipyards of Bangladesh do not enjoy any incentives or Government back up which can synergize the sector in a big way.

Technological Problem

Having long heritage and all ingredients Bangladesh has failed to keep pace and consistency with the continuous technological development of global shipbuilding industry.[11] Most of the local shipyards lack modern shipbuilding tools, machineries and technology for building comparatively large ships for sustainability of shipbuilding industry.[12]

At present in Bangladesh there is lack of adequate design firms and expertise in design which is a great impediment for high value added product.[13] There are insufficient number of modern ancillary industries to support as backward linkage to provide service and ships' components.[14] In a ship there are about 4000 different components, which are installed within a very limited space. Unlike land electrical fitting and installation in ships are delicate and needs more precision but there are very less number of efficient manpower in this field.

There are lack of model testing & other facilities in Bangladesh. There is no full-fledged Towing tank which is very important for model testing for stability. Also NDT and Design laboratory facilities are poor in every training institutes and shipyards around Bangladesh.[15]

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10. Rahman, M.A., Diputy Director, Foreign Exchange Policy Department, Bangladesh Bank, Dhaka, on issue of different Aspects of Shipbuilding Industry of Bangladesh at EPB Seminar Hall on 16 July 2009.
11. Rahman, M. A., Ship Surveyor, Germannischer Lloyd, at ASSL office, on issue of different Aspects of Shipbuilding Industry of Bangladesh on several occasion.
12. Latif, M. A., Managing Director, NESL, on issue of different Aspects of Shipbuilding Industry of Bangladesh at his office on several occasion.
13. Biswas, M.J., Add Chief Engr, BIWTA, on issue of different Aspects of Shipbuilding Industry of Bangladesh at his office on 22 October 2008.
14. Chowdhury, M. R. K., Executive Director, MIST, Chittagong, at his office on issue of different Aspects of HR development of Shipbuilding Industry of Bangladesh on 11 July 2009.
15. Baree, M.S., Prof of Naval Architect & Marine Engr Dept of BUET, Dhaka, on issue of different Academic aspects of Shipbuilding of Bangladesh on 15 February 2009.

Infrastructure Problem

Lack of electricity and gas supply is a major impediment for setting up shipbuilding industries in Bangladesh. Shipbuilding industry needs a lot of components, parts, and accessories leading to emergency import during the construction period. Existing facilities are not adequate for emergency import requirements.[16] There is no backup industry to produce required standard of MS plate needed for ship construction. None of the shipyards have the dry docking facilities. After launching generally it is useful to give final touch of protective marine paint coat at the keel area in a dry-dock before delivery.

Except few, most of the shipyards are located in and around Dhaka, far away from the sea.[17] The rivers and channels are frequently silted and navigability of larger drought ships gets restricted. The restricted draught (Maximum 4.0 to 4.5 Meters) along with low bridges and overhead cables limits the size of ship that can be built in shipyards located in the hinterland.

Marketing and Management Problem

Potential of shipbuilding are not well understood by stakeholders like bankers, custom houses, foreign affairs department, government monitoring & regulating bodies.[18] Information on prospective overseas buyers or market is limited. There exist an image problem and lack of activities to promote Bangladesh as a capable shipbuilding nation.[19] Government foreign affairs department and missions usually are not playing adequate role in this respect.

Most of the local Shipyards do not follow corporate management culture rather operate at the will and greed of the owner. But every genuine customer will invariably look at the quality of management.

Human Resource Development Problem

Local shipyards owner commonly consider every human resource development programme as money drain not gain. The number of graduates, skilled supervisors, specialized welders, machine operators and other technically skilled manpower required for shipbuilding and allied industries are far less.

16. Shahabullah, M., Vice Chairman, Export Promotion Bureau, at EPB Seminar Hall, Dhaka, on issue of different Aspects of Shipbuilding Industry of Bangladesh at his office on 16 July 2009.
17. Khandker, S., Berlin University of Technology, on issue of different Aspects of Shipbuilding Industry of Bangladesh at ZIA on 22 July 2007.
18. Begum, A. A., Deputy Secretary, Ministry of Finance, at EPB Seminar Hall, Dhaka, on issue of different Aspects of Shipbuilding Industry of Bangladesh on 16 July 2009.
19. Svensson, G., Beyond Global Marketing & The Globalization of Marketing Activities, Management Decision, 2002.

Existing technical institutions are not much capable of producing the required number and level of skilled manpower. Attention of Govt. and private entrepreneurs is also inadequate.

Delay Delivery or Longer Lead Time Problem

Foreign shipyards deliver a ship within about six month, whereas local shipyards take at least two to three years to build and deliver a ship. Every ship is an individual project and requires specific planning or scheduling, maintaining highest standard of engineering work and quality control. Most of the local shipyard does not follow the modern job evaluation and execution technique (such as PERT, CPM, etc).

Quality and Price Problem

Local shipyards owners do not bother about working environment. Lack of dedicated Quality Control Group, their performances and capability are often questioned by the foreign ship owner or there representative. But local shipyards owner fail to understand that better quality accelerate probability to get the next contract.[20]

Except labour, almost entire shipbuilding industry is import oriented. Tax on imported shipbuilding machineries and components enhanced the ship price to further extent.[21] Indian shipbuilding industry are enjoying initial five-year (more than 30%) government subsidy to develop in to world standard. Most of the international export oriented shipyards around the globe get similar or better facilities from their respective government except Bangladesh.

Lack of Research

There are hardly any Research and Development (R&D) institution on shipbuilding in Bangladesh which ultimately failed to bring any innovation and technological development for price competitiveness in international markets.[22]

SOME OTHER IMPORTANT CONSIDERATION

Safety, Health and Environment Aspect

The export oriented shipbuilding is at infancy, more engaged in skill development, financing and marketing. Safety, health and environment are remaining

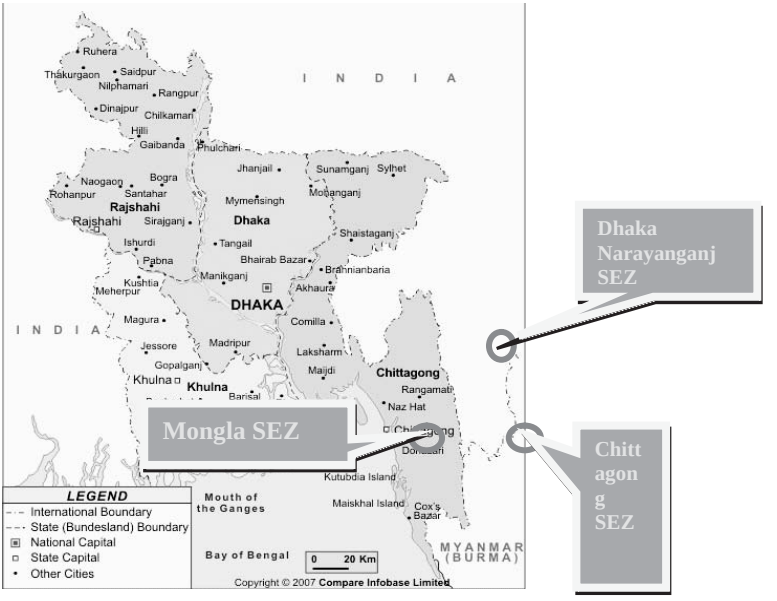
20. Banks, J., Principles of Quality Control, New York: Wiley, 1989.
21. Muller, W., Project Manager and Representative of Foreign Ship Owner of 6100 DWT Multipurpose Vessel (At ASSL) of Komrowski Maritim GmbH, on issue of different Aspects of Shipbuilding Industry of Bangladesh on 20 January 2009.
22. Hasegawa, K., Dept of Naval Architecture & Ocean Engineering, Osaka University, Japan, on issue of different Aspects of World Shipbuilding at Shipbuilding Seminar at BUET, in Dhaka, on 09 December 2009.

mostly unfocused specially the long term effects. There are serious lacking in Government regulatory provisions, proper awareness, training and implementation by the users. The cost involved in his regard are often considered as additional expenditure rather fruitful investment.

Requirement of Dedicated Shipbuilding Zone(SEZ)

Considering shipbuilding a profitable business anywhere anybody having money but not expertise can raise a yard for export oriented ship. It must be remembered that a shipyard will require good connectivity by roads, possibly train and rivers with enough draught up to sea. Connection of electricity and preferably gas is also needed. Ancillaries as backward and forward linkage need to develop along with the main fabrication yards as they are the key competitive differentiator for shipbuilding and ship repair facilities. Some facilities like Design house, automatic cutting and bending are very expensive and all entrepreneurs may not be able to meet the cost alone. Thus like many countries SEZ can be established in suitable places and cluster development approach for building ancillary capacity around those areas are much better option. Three such location where the SEZ can be established is shown on figure 10.

Figure 10 : Ship Building Exclusive Zone-Recommended Areas



Source : Author

Common User Facility

In some countries, at suitable location, Common User Facility is prepared with all the requirement for construction of ship. In Australia, at Perth, there is a huge complex called Australian Marine Complex (AMC).[23] This is made taking land on lease from Govt. This can provide world class design facility, fabrication, assembly, conversion, all machinery fitting and repair system. This type of effort prevents erecting of yards here and there. The builders after getting contract use the AMC giving requisition of the facilities as per there requirement. This is like hiring community centers with all associated facilities for arranging any event. If Government or large corporate houses jointly develop such facilities in suitable regions that can prevent mushrooming of yards all over the places. This is convenient for conservation of land, concentrated infrastructure development, easy channeling of utility services, SHE factors and regulatory activities.

Figure 11 : View of a Common User Facility (AMC)

Source : Author

Welfare of the Workers

Most of the local Shipyards' owners do not care about the welfare of the employees.[24] Labours normally do not enjoy fringe benefit and other welfare activities like medical, pension, travel & daily allowance, accident and other compensations. Most of the labours are employed in casual basis. The owners should realize that ensuring welfare is an investment not waste of money as availability of cheap labour being the single most important factor to flourish in this sector.

23. www.australianmarinecomplex.com.au
24. Islam, A. K. M. F., Chief Engineer & Surveyer, Department of Shipping, on issue of different Aspects of Shipbuilding Industry of Bangladesh at his office on 16 May 2009.

RECOMMENDATIONS

Bangladesh has a good opportunity in shipbuilding in global market due to skilled and low wage workforces. The following recommendations may be considered useful for staying in this sector in the long run.

Policy and Regulatory Matters

a. Shipbuilding has already been declared as Thrust Sector. Now what is required is to form a fully empowered apex body to regulate the sector and quick decision making.

b. Special zones having infrastructure, technical and geographical advantages including deep enough channel without obstruction to navigate up to sea may be set up. Uninterrupted electricity and gas supply may be established for 100% export oriented shipbuilding industries.

Human Resource Development Factors

c. For export competitiveness in price and long sustainability in this sector productivity and efficiency of Bangladeshi work force should be enhanced considerably.

d. Government should have long-term vision to produce skilled and useful human resource development plan not in Ad-hoc basis. A professional committee is to set appropriate course curriculum and need based syllabus for the universities, technical and vocational institutes suitable for heavy industry like shipbuilding.

e. Steps should be taken for opening Naval Architecture and Marine Engineering Department in the universities of Khulna, Chittagong & Barisal regions and in Military Institute of Science and Technology (MIST) of Bangladesh University of Professionals (BUP).

f. Individual shipbuilding industry should develop own training programme to produce sufficient number and level of skilled manpower.

Financial Aspect

g. Single digit rate of interest may be charged on industrial and working capital loan for setting up of shipbuilding yards.

h. Bank guarantee margin may be set to zero by the central bank. Bangladesh banks may ensure steps to avoid issuing counter bank guarantee by all foreign banks. L/C margin and the commission for the import L/C may be fixed at zero for 100% export oriented shipbuilding industry.

j. In case of economic recession government should provide all possible sympathetic assistance to the sector. Local shipyards should remain prepared themselves so that it can grab orders once the recent economic meltdown passes away.

Entrepreneurship Development and Government Assistance

k. Expertise of existing Small & Medium Entrepreneurs (SMEs) grown around the sector may be upgraded to produce quality product to support as backward linkage for export oriented shipbuilding purpose. Efforts should also be taken to use as many as local made fittings like furniture, tiles cables and other tools which otherwise has already attained international recognition.

l. Private initiative is to be encouraged with financial incentive to set up quality design farm, which is essential for competitiveness in export. Resource must be allocated for both public and private universities to develop R&D in shipbuilding. Joint effort is essential to set up Towing tank, NDT lab, Ship design lab, etc in universities and major shipyards as early as possible.

m. Government and all concerned agencies must provide adequate assistance for import of essential components such as marine engine, generator, compressor, etc to reduce the lead time of delivery of ship

n. Shipyards, buyers, government regulatory authorities and international monitoring bodies, as classification societies are to ensure strict quality control which is a prime need.

Others

p. For image building and branding Bangladesh as a good shipbuilding hub lots of efforts are required by Export Promotion Bureau (EPB) and Missions abroad. Regular participation in important international maritime exhibitions/fairs may be considered.

q. SHE aspects need to be strictly upheld by government or other stakeholders through awareness and training.

r. The government may take viable steps to form consortiums for funding shipbuilding as most of the single bank with limited asset is unable.

CONCLUSION

Shipbuilding is both a promising as well as challenging sector. Expert suggests that the shipbuilding market is US $ 1600 billion. Bangladesh with rich heritage and all the ingredients if can grab 1% of the market can earn US$ 16 Bn. Shipbuilding is a low tech and labour/ capital intensive sector which could generate net value addition. The present trend of shipbuilding boom is likely to continue for long. The opportunity that is available should not be lost due to lack of setting priority. Though Bangladesh has got some international exposure in export of ship but much is required to bring it to world standard and to be competitive for sustainable existence. If the sector is

given the same incentives as to that of RMG the net benefit will be higher. The strong commitment of the entrepreneurs and all out support of Govt. organs can pay dividend heavily. From analysis and with present trend it can be predicted that it is not very difficult for Bangladesh to emerge as a potential shipbuilding nation in near future and ranked within top 10 shipbuilding nations by the year 2021.

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5. Robert Gardiner and Arne Emil Christensen The Earliest Ships: The Evolution of Boats into Ships (History of the Ship), 21 October 2004.
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given the same incentives as to that of RMG the net benefit will be higher. The strong commitment of the entrepreneurs and all out support of Govt. organs can pay dividend heavily. From analysis and with present trend it can be predicted that it is not very difficult for Bangladesh to emerge as a potential shipbuilding nation in near future and ranked within top 10 shipbuilding nations by the year 2021.

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ENERGY CRISIS – BANGLADESH PERSPECTIVE

Major General AKM Abdur Rahman, ndc, psc

INTRODUCTION

Development of a country is measured in terms of per capita energy consumption. It means that countries having higher per capita Gross National Product (GNP) also have higher per capita energy consumption and vice versa. Quite obviously from the point of view of energy use, Bangladesh is one of the least developed countries of the world. In Bangladesh, approximately 60% of total energy need is currently being met by non commercial or traditional energy sources (biomass). The rest 40% is met from commercial energy sources. Among the commercial energy sources gas alone accounts for 70% and rest 30% is met by oil (25%), coal (4%) and hydro power (1%). [1] At present, Bangladesh Power Development Board (BPDB) is generating 4500 to 5000 Mega Watt (MW) power leaving a shortfall of approximately 1500 MW. Currently, 90% power is generated using natural gas and rest is generated by coal, diesel, furnace oil (FO) and water.[2] The total requirement of power is likely to be 8349 MW by 2013, 11405 MW by 2016 and 24000 MW by 2021.[3] This projected demand means proportionate increase of demand of gas. The average gas production at the moment is 2000 Million Cubic Feet (MMCF) per day and the daily gas demand is 2500 (+) MMCF resulting to a daily shortage of 500 (+) MMCF.[4] This shortfall of gas has virtually led the shortfall of power. As a result, the established industries including fertilizer plants are suffering long shutdowns causing losses in thousands of crores Taka. The disruption to knitwear and Readymade Garments (RMG) alone has been estimated to be over United States Dollar (USD) 01 billion.[5] This crisis has not befallen the nation all on a sudden but is the natural consequence of long negligence, lack of dedication and sincerity, poor vision and most importantly absence of patriotism. Furthermore, too much of dependence on the International Oil Companies (IOCs) and placing their interest before that of the nation and undermining the ability and sidelining the Bangladesh Oil, Gas and Mineral Resources Corporation (Petrobangla) are considered to be the main causes of the present crisis.

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1. Paper presented by Petrobangla to the Energy & Mineral Resources Division, Ministry of Power Energy and Mineral Resources, *"Petrobangla's Achievements and Roadmap,"* 05 April 2011, p.6.
2. Published by Bangladesh Power Development Board in "*Jugantor"* (a Bengali daily), Dhaka, 11 June 2011, P.10.
3. *Ibid*, P.11.
4. Presentation paper of Petrobangla, *op.cit.* P.4.
5. This was said by Mr. Shafiul Islam Mohiuddin, the President of Bangladesh Garments Manufacturers and Exporters Association (BGMEA) to the researcher during the interview on 30 May 2011.

The estimated coal reserve in the five discovered mines is about 3.3 Billion Metric Ton (BMT).[6] Out of five coal mine, only Barapukuria has been made operational from Fiscal Year (FY) 2003-2004 with less than one Million Metric Ton (MMT) extraction per year. Unfortunately, over the years negligence has stagnant the development of this vital resource. Natural gas on the other hand has been found to be the main source of commercial energy. Natural gas has gained an importance over the years starting from 1972 in particular: the increase from 67 Billion Cubic Feet (BCF) in the ten years period (1961-70) to 2495 BCF in the years 1991-2000. From 2001 it has grown over 07% annually to over 02 BCF a day (i.e. almost 750 BCF a year) now. The principal gainer has been power generation- from almost 'zero' in 1970 to over 90% today. Natural gas has been the saviour of the country in not only meeting the growing demand from total of 500 MW in 1972 to 6000 MW today but in keeping dependence on liquid fuel to nearly what it was twenty years ago.[7] Unfortunately, Bangladesh, despite having enough natural gas and coal, could not benefit itself as desired. Why it is so is a million dollar question and deserves an examination in order to explore the ways and means to get out of the present energy crisis. To do so, we need to find out the answer of three key questions. The first is what factors has led Bangladesh to the present energy crisis? The second is does Bangladesh have enough resources to meet the energy demand in the foreseeable future? The third and the final question is how to overcome the energy challenges and ensure energy security for foreseeable future? However, this paper mainly deals with the commercial energy and suggestions and recommendations would be relevant up to the year 2050.

AN OVERVIEW OF THE ENERGY SCENARIO

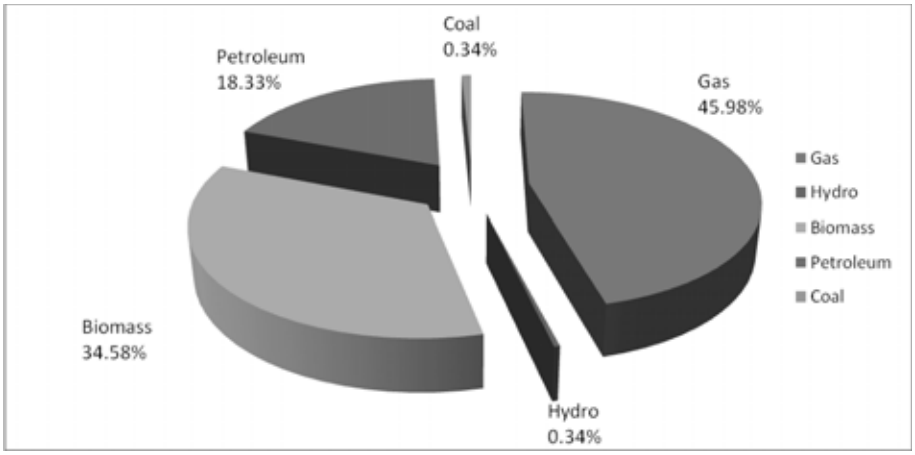
Basics of Energy

The sources of energy are basically two: Primary and Secondary.

Primary Energy: The energy extracted from stock of reserves of organic materials and other natural sources such as natural gas, oil, coal, biomass, hydro, solar, wind, tidal etc. The share of primary energy in Bangladesh in FY 2009-10 is shown in Chart 1.[8]

6. Paper presented by 'Barapukuria Coal Mining Company Limited' (BCMCL) during a formal visit of the National Defence College at Barapukuria Coal Mine on 03 April 2011.
7. This was said by Mr. Azimuddin Ahmad, former Secretary to the Ministry of Power Energy & Mineral Resources during an interview conducted by the researcher on 26 April 2011.
8. Paper Presented by Mohammad Mejbahuddin, Secretary, Energy and Mineral Resources Division, Ministry of Power Energy & Mineral Resources on "The Global and Bangladesh Energy Scenario: Challenges and Options for Bangladesh" at National Defence College on 28 June 2011.

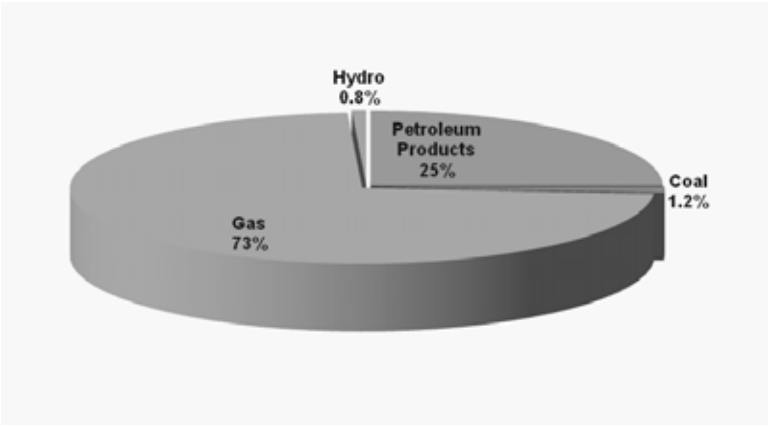
Chart 1 : Share of Primary Energy



Source: Energy and Mineral Resources Division

Secondary Energy: The energy available after transformation of a primary energy source e.g. electricity from oil, gas, coal etc. The share of energy sources for generating power (secondary energy) in Bangladesh is shown in Chart 2.[9]

Chart 2 : Share of Energy Sources for Generating Power: FY 2009-10



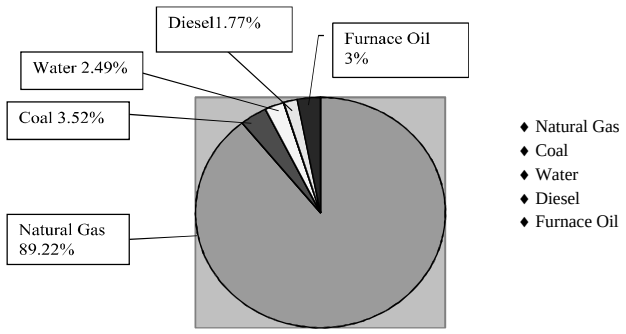
Source: Bangladesh Power Development Board

The energy can be renewable or non-renewable and it can further be divided into two types: Commercial energy and Non-commercial energy. The energy which is

9. Jugantor, 11 June 2011, *op.cit.*

wholly or almost entirely passes through the market system is called commercial energy e.g. oil, gas, coal, electricity, etc. Out of the total energy consumption in Bangladesh, 40% is commercial energy and rest 60% is non-commercial energy i.e. biomass. Currently, the natural gas accounts for 73% of the commercial energy consumption compared to 35% in 1980.[10] The share of commercial energy in Bangladesh for FY 2009-10 is shown in Chart 3.[11]

Chart 3 : Share of Commercial Energy



Source: Energy and Mineral Resources Division

Per capita energy consumption in Bangladesh is only 236 Kilo Watt Hour (kWh) which is one of the lowest in the world. The per capita energy consumption in USA and Europe is between 12000 to 15000 kWh and our neighbour India's per capita energy consumption is 600 kWh.[12]

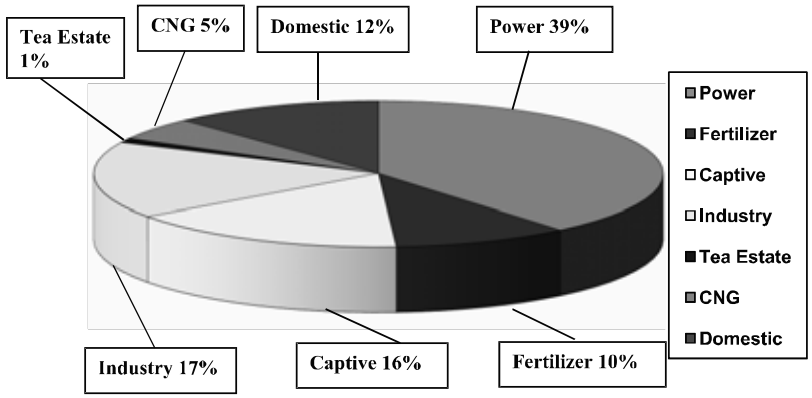
Present State of Energy Sources

Natural Gas. The first commercial gas discovery was made in 1955 in Sylhet district and the first gas supply was given to 'Chatak Cement Plant' in the same year. Since then, total 22 gas fields and one oil field has been discovered in Bangladesh.[13] Out of these fields, 17 are in production. Present gas production from these fields is 2000(+) Million Cubic Feet Per Day (MMCFD) of which Petrobangla is producing 957 MMCFD and the IOCs are producing 1043 MMCFD The total 'Recoverable Reserve' (RR) of gas has been estimated to be 20.63 Trillion Cubic Feet (TCF). This estimate was done back in 2003. As of December 2010, approximately 9.43 TCF of gas has already been consumed.[14]

10. Abdul Wadud, "Shortage of Gas for Power plant: Can't We Use Liquid Fuel?" *Energy and Power (fortnightly magazine)*, Dhaka, Vol. 8, Issue. 12, 16 April 2009, P.18.
11. Presentation by Mejbahuddin, *op.cit.*
12. *Ibid.*
13. Wadud, *op. cit.*
14. Presentation by Petrobangla, *op.cit.* P.4.

Category wise Gas Consumption. The Chart 4 shows the category wise gas consumption in the FY 2009-10.[15]

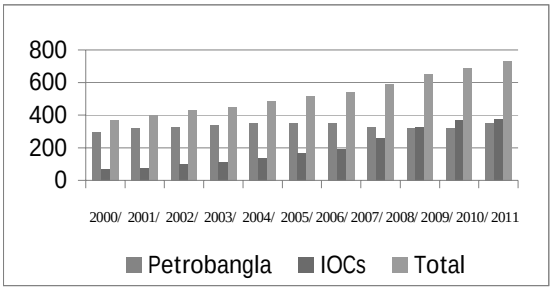
Chart 4 : Category wise Gas Consumption



Source: Petrobangla

Demand and Supply Scenario. Gas production during the last 11 years (FY 2000/01 up to 2010/11) and its share between Petrobangla and IOCs are shown in Chart 5.[16]

Chart 5 : Gas Production: FY 2000/01 up to 2010/11



Source: Petrobangla

The chart above indicates that the production of gas by Petrobangla in FY 2000/01 was almost three times more than the IOCs while from FY 2008/09 onwards, production of gas by IOCs surpassed Petrobangla.

15. *Ibid*, P. 7.
16. Presentation by Petrobangla, *op. cit.* P. 8.

Coal. Coal is the leading source of primary energy for producing electricity globally. Our neighbour India produces 55% of their electricity using coal even at times importing coal despite the fact that coal of India is inferior and hazardous compared to Bangladesh.[17] Average gross calorie value of Indian coal is 7000 British Thermal Unit (BTU)/lb whereas calorie value of Bangladeshi coal is 11000 BTU/lb.[18] Developed countries like USA, China, Germany and Australia also uses coal as their main source of energy. However, in Bangladesh coal was never thought of as alternative fuel till 'Barapukuria Coal Mining Project' was taken in hand about a decade before. The Barapukuria coal mine was discovered in 1985 by the Geological Survey of Bangladesh (GSB) at Dinajpur district. The coal reserve at Barapukuria was estimated to be 235 MMT.[19] The first and only commercial coal production in Bangladesh started at Barapukuria from 10 September 2005.[20] Barapukuria Coal Mining Company Limited (BCMCL) started the extraction with a target of 01 MMT per year. However, the yearly production remained below the target till today. The highest production was 827,845 tons (0.827MMT) in FY 2008 – 09.[21] From January 2006, BCMCL is supplying coal to BPDB for generating 250 MW power from the coal based 'Power Plant' (PP) near the mine site. The details of the discovered coal reserve in Bangladesh are shown in Table 1.[22]

Table 1 : **Discovered Coal Reserve of Bangladesh**

Location/ Field	**Year of Discovery**	**Drilled Well**	**Depth (Meter)**	**Estimated Coal (million tons)**	**Total In Situ Reserves (million tons)**	**Proved In Situ Reserves (milliontons)**
Barapukuria (Dinajpur)	1985-87	31	118-509	390	390	303
Khalaspir (Rangpur)	1989-90	14	257-483	685	685	143
Phulbari (Dinajpur)	1997	108	150-240	572	572	288
Jamalganj (Joypurhat)	1962	10	640-1158	1053	----	----
Dighipara (Dinajpur)	1994-95	5	328-407	600	600	150
			Total	3300	2247	884

Source: Energy and Mineral Resources Division

17. Paper presentation by Manpreet Sethi, PhD, Project Head, Nuclear Security, Centre for Air Power Studies, New Delhi, India on "Global Nuclear Challenges and Energy, Proliferation and Disarmament" at National Defence College, Dhaka on 11 July 2011.
18. Presentation by BCMCL, *op.cit.*
19. "*Annual Report 2009 – 2010*", Barapukuria Coal Mining Company Limited, P. 24.
20. *Ibid*, p.12.
21. *Ibid*, p.66.
22. Presentation by Mejbahuddin, *op.cit.*

Peat. Peat was discovered in 1953 at Baghia and Chanda beel of Madaripur and Gopalgonj district and in 1960 at Kolabarasat area of Khulna district. Smaller peat deposits were also found in Moulovibazar, Sunamgonj and Brahmanbaria districts totalling a reserve of 180.4 MMT. Caloric value of peat ranges from 6000 to 7000 BTU/lb. However, their extraction has yet not started.[23]

Power. According to the report of 'Power Division', 47% of the people have access to electricity.[24] The per capita electricity generation in FY 2010-11 is 236 kWh. The demand of electricity is increasing at 10% per annum. Demand of electricity in 2011 has been estimated to be 6765 MW by BPDB. The BPDB is generating 4500 – 5000 MW leaving a shortfall of 1500(+) MW.[25] In order to arrest the current power crisis, the Government of Bangladesh (GOB) worked out a plan to produce additional 7,800 MW of electricity by 2013. Presently 29 PPs with a capacity to produce around 2547 MW are under construction in the public and private sector. Moreover, the bidding process for installing 31 PPs with the capacity to produce 4166 MW is underway. According to BPDB demand of electricity is expected to rise up to 24000 MW by 2021 and 39000 by 2030 and GOB intends to generate it from the following sources:[26]

- 19,000 MW from own and imported coal.

- 4,000 MW from Nuclear Power.

- 9,000 MW from gas and LNG.

- 3,500 MW imported from Regional Grid

- 2,700 MW from others (liquid fuel, hydro, renewable energy etc)

Solar Energy. Various organizations like Local Government Engineering Department (LGED), BPDB and etc are undertaking solar energy projects ranging from 40.5 kwp to 233.095 kwp for the rural households.[27] However, as of now, not a single MW of solar power is generated by BPDB for the national grid.[28] Nevertheless, the GOB plans to implement a mega project of setting up 500 MW solar based power installations with the assistance of Asian Development Bank (ADB).[29]

23. Available at http://banglapedia.search.com.bd/HT/M_0246.htm, accessed on 25 May 2011.
24. Available at www.powerdivision.gov.bd/index.php?page_id=206, accessed on 22 August 2011.
25. Jugantor, 11 June 2011, *op.cit*., p.10.
26. *Ibid*, p.11.
27. Available at www.lged-rein.org/lged.php, accessed on 18 July 2011.
28. Daily Electricity Generation Report, Bangladesh Power Development Board, 17 July 2011.
29. Reported at "*The Daily Star"*, Dhaka, 15 May 2011, P. 20.

Wind Power. BPDB has installed pilot basis 01 MW wind PP at Muhuri Dam of Feni district and target to reach up to 10 MW power at the same place. Similar projects have also been undertaken by LGED, Grameen Shakti and BRAC ranging from 10 kW to 02 MW only as the prospect of large scale project is not viable in Bangladesh.[30] However the GOB plans to set a 100 MW (offshore) wind mill power plant at Anwara.[31]

Hydropower. At the moment we have only one hydropower plant at Kaptai with an installed capacity of 230 MW. Present de-rated capacity of this plant is 220 MW.[32] The average production was only 90 MW in the last two years (2009 and 2010)[33] However, BPDB is considering extending the capacity of the 'Karnafuli Hydro Station' by another 100 MW. Apart from this, two other prospective sites for hydro power generation at Sangu and Matamuhuri rivers are identified by BPDB. About 140 MW PP can be made at Sangu and 75 MW at Matamuhuri. However, no pre feasibility study of these projects has been done so far and remains subject to environment, social and economic factors.[34]

GENESIS OF THE PRESENT ENERGY CRISIS : A SYNOPSIS

No economic activity is possible without consumption of energy in some form. However, for Bangladesh, co-relation between 'economic growth and energy consumption' had been virtually 'economic growth and gas consumption'. Unlike most other sectors, development of natural gas from 1972 till 1996 (when its domestic efforts were halted) has been phenomenal and served as the most significant basis for the country's economic growth. With investment of only Tk. 900 crore out of the total of Tk. 6000 crore (the major expenditures being on the expansion of the gas network), Petrobangla discovered 10 gas field and one oil field. It also raised the gas production from less than 50 MMCFD during 1970s to around 1000 MMCFD in 2011. This helped develop the power sector from 500 MW to 5000 (+) MW and fertilizer from almost zero to 02 MMT (+), consuming 74% of gas produced. Without natural gas the oil bill of the country would have been at least three fold. Despite this, the country's expenditure on oil import today has risen from around USD 500 million to more than USD 03 billion annually, as a result of phenomenal increase from USD 25/barrel to USD 100/barrel in a few years' time.[35] Moreover, Petrobangla's performance has been not only rewarding but very

30. Available at www.lged-rein.org/database.php?pageid=21, accessed on 22 August 2011.
31. Reported at "*The Daily Star*", Budget special, Dhaka, 10 June 2011, P. 5.
32. Daily Electricity Generation Report, *op.cit.*
33. Reported at "*Jugantor*", (a Bengali daily), Dhaka, 17 July 2011, P. 16.
34. Abul K Azad, *"A Review on Renewable Power Sources: Prospect of Bangladesh and Scotland"*, available at www.cfsr-uk.com/Alternative%20Power%20Sources.pdf, accessed on 16 August 2011.
35. Azimuddin Ahmad, "The Gas Crisis", Pp. 1-2.

economical also. As a result, gas consumption continued to increase more than 7% annually. This underscores the need for further exploration and augmentation of supplies from the existing fields under Petrobangla. Unfortunately, these realities have been ignored totally, knowingly or unknowingly? Since last 15 years (from 1996 till July 2011) no exploration was carried out by Bangladesh Petroleum Exploration Company (BAPEX).[36]At the same time, instead of increasing the gas production by Petrobangla, it remained almost same during 2001 to 2010 (evident from Chart 5). Whereas, the involvement of the foreign companies in the domestic ventures increased during the same period that was not only unjustified but financially disastrous also. The gas production by IOCs was less than 100 BCF in FY 2000-2001. In the same year Petorbangla produced nearly 300 BCF. Since then although production by Petrobangla remained nearly same but the production by IOCs continued to increase and rose to more than 400 BCF in FY 2009-2010 (As shown in Chart 5). It is amazing that despite stark findings by the 'Gas Utilization Committee' in its report submitted in 2002, dependence on IOC supplies has been increased ignoring its clear recommendations to augment supplies from five earmarked Petrobangla fields namely Titas, Habigonj, Sylhet, Kailashtila and Beanibazar.

It is a sad commentary that more than 50% (1043 MMCFD) of gas is currently coming from IOCs field with less than one third RR in their field whereas Petrobangla is producing less than 50% (957 MMCFD) with more than two third of RR in the Petrobangla's field. While recognizing gas supplies from Bibiyana gas field (IOCs' field) unavoidable, the 'Gas Utilization Committee' recommended that Petrobangla's own output be enhanced from those five earmarked fields by 300 MMCFD to 650 MMCFD. It now appears that while Bibiyana supplies have enhanced beyond these numbers, Petrobangla's own output has been allowed to stagnate where it was. The implementation of the Committee's clear recommendation could have ensured sufficient gas in addition to reducing dependence on IOCs' supplies. This quantum of gas would have been sufficient to feed more than 3000 MW of power in addition to catering to even new industries/enterprises. In addition it would have reduced purchase of at least 200 MMCFD from IOCs' field thus saving almost USD 400 thousand a day (taking Petrobangla's share into consideration).[37] It is now evident that had Committee's recommendations been heeded, the present shortage of gas vis-à-vis power would not have occurred.

36. Petrobangla discovered the last gas field at Saldanadi in 1996. Since then no new gas field has been discovered by either Petrobangla or IOCs till July 2011. This was also confirmed by Mr. Mohammad Mejbahuddin, Secretary to the Energy and Mineral Resources Division during the interview taken by the author on 17 July 2011.
37. Azimuddin, *op.cit*. p.34.

Entry of IOCs in the Gas Sector – A Case of Subversion

Scimitar, a foreign company contracted for oil discovery, discovered gas at Jalalabad but no oil in 1989 and sought for a supplementary gas contract in the event of no oil being found. But unaccountably, three years later, this discovered field with 1195 BCF of gas worth more than USD 02 billion at USD 2.5/MCF(thousand cubic feet) was handed over to a third party (Occidental who did not invest a single cent) instead of Petrobangla with disastrous consequences. Not only this gas field, but award of the same structural blocks (12, 13 and 14) subsequently resulted in two other gas fields (Maulvibazar and Bibiyana) being discovered by Occidental in the gas prone region. The loss to the nation, as a result, has been incalculable Bibiyana being in particular with 3144.5 BCF of reserve. If allotted, these gas fields would certainly have been found by Petrobangla. The combined reserve of these three fields exceeds 4.5 TCF.[38] At oil prices over USD 100/barrel, the BTU as well as replacement value of gas should be in excess of USD 7/MCF, which determines the value of 4.5 TCF at USD 31.5 Billion. It means that by parting with Jalalabad, the country has been made to suffer a loss of at least USD 15 billion at today's price with all its concomitant damages.[39] This marked the beginning of the pathetic episode which now pervades the entire energy sector.

The matter did not stop with Jalalabad. Next was block 16, where Union Oil (another IOC) had already discovered high reserve of gas in 1977 in Kutubdia structure which they gifted to Petrobangla, being interested in oil and not gas at that time. This time around the awardees, Shell and Cairn were permitted to explore a nearby site Sangu by avoiding Kutubdia altogether. The reason was again very simple. Kutubdia being already discovered would have yielded only 10% as 'profit' to the IOC while a new site although in the same structure, would assure at least 50% under the one-sided and inequitable contract signed. Besides, the new site also involved much higher cost recovery.[40]

Foreign Currency Outflow

Foreign currency outflows are the most significant outcome of the IOCs' involvement. Till introduction of the IOCs in the domestic gas market, the development in all sectors has been gas based entirely provided by Petrobangla. The import of oil for example would have been at least three fold without gas. All these have resulted in savings in foreign currency outflows. Wherein, since the arrival of IOCs, gas purchase has been a factor previously unknown. For example, buying

38. Statiscal Pocket Book of Bangladesh 2009, *op.cit.* P. 239.
39. Azimuddin, *op. cit*, P. 11.
40. *Ibid*, P. 5.

more than 01 BCF gas daily from IOCs today is costing the country at least USD 01 billion annually. This has led to unprecedented increase in the country's foreign currency outflows.

Petrobangla: From Net Earning to Trade Loss

Without any gas price increase Petrobangla had net earnings after tax of Tk. 235 crores (USD 48 million), Tk. 181 crore (USD 37 million), and Tk. 166 crore (USD 34 million) during 1995, 1996 and 1997 respectively. But this picture dramatically changed as under the terms of the two new contracts Petrobangla had to buy 71% of the gas produced ex Sangu and 53% ex Jalalabad at prices ranging from USD 1.75/ Thousand Cubic Feet (MCF): Tk. 86/MCF approximately while the domestic price ranged between Tk. 54 and 81/MCF. Although the total quantity supplied by the IOCs was only 20% of the total quantity produced during this period, Petrobangla suffered as a result of the aforesaid differentials a trade loss of Tk. 1663 crore. This loss was suffered despite hiking of gas price on three occasions from Tk. 54/MCF to Tk. 81/MCF (50%) from December 1998 till January 2002. Above all, the country had to purchase the gas in foreign currency to the tune of USD 431 million.[41]

ENERGY RESOURCES OF BANGLADESH AND THEIR POTENTIAL

Natural Gas

According to Petrobangla, as on December 2010, the present 'Remaining Reserve' (Proven + Probable + Possible) is 18.21 TCF. The daily gas demand in 2011 is 2500 MMCF or 2.5 BCF (912.5 BCF/year or 0.912 TCF/year). Considering 10% growth, total gas consumption from 2011 to 2021 will be 16.902 TCF. 'Remaining Reserve' after 2021 will be 1.308 TCF. This calculation is quite extreme in a sense that present shortfall in production being 500 MMCFD (approximately 182.5 BCF/year), it would take another few years to bring the demand and production at per. Therefore, actual remaining reserve in all probability will be more than 1.308 TCF after 2021. It can therefore be said that with the existing reserve, gas alone can meet the energy demand up to 2021. However, one may argue that the above estimate include the 'Possible Reserve' of 7.01 TCF where possibility of recovery is only 10% or more. This can be overcome by the established ways of ascertaining the gas availability – existing reserve as well as possible or potential reserve. These can be quite accurately determined by the following methods:

a. 'Potential' can be converted into 'discovery' by extensive seismic survey.

41. *Ibid.*

b. Gas availability once determined can be enhanced by methods such as (i) Petro-physical thin – bed analysis (ii) Compression and (iii) proper reservoir management.[42]

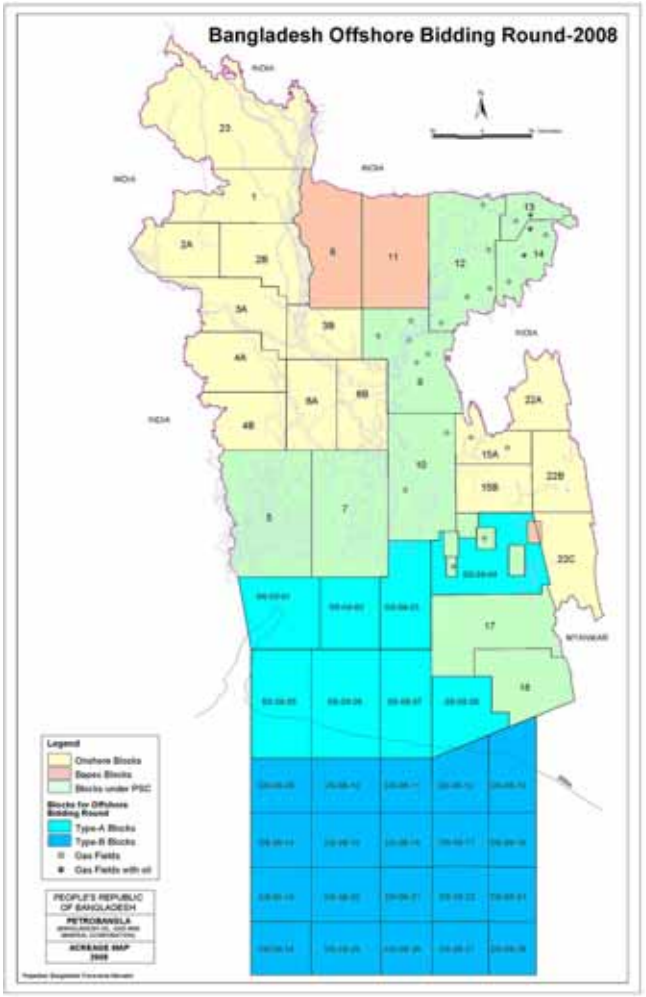
Now let us discuss about the prospect of natural gas beyond the existing reserve. According to the joint study conducted by United States Geological Survey (USGS) and Petrobangla, Bangladesh has a potential new gas reserve of 33.5 TCF.[43] Under the current reserve to production ratio, deposit of over 30 TCF can easily meet the demand for at least 30 years. In the absence of any other the USGS forecast about discovering 33 TCF (most likely 22 TCF on-shore and 11 TCF off-shore) may be accepted as a strong possibility. The discoveries so far made support this assumption.[44] The discovery of a new gas field by BAPEX at Sundalpur of Noakhali district on 17 August further substantiates this assumption.[45] Beside the on-shore and shallow water blocks, the deep sea blocks in the Bay of Bengal are also estimated to have great potential for the presence of hydrocarbons. Both India and Myanmar which made large discoveries in their parts of the bay lodged protest over Dhaka's move to grant exploration right to US Company Conoco Phillips in the deep sea block 10 and 11.[46] This also indicates that there are enough hydrocarbons available in the territorial water of Bangladesh. However, since all potential good blocks have already been awarded, the future of the country's gas prospects are now entirely in the hands of the IOCs. The development and production of gas will henceforth be to suit the interests of the IOCs and not as needed by the demand and supply equation of the country.[47] A decade before, the IOCs were pressing the GOB to export gas due to the non-existence of domestic demand. Surprisingly, now that the domestic demand has increased, we find shortfall of 500 MMCFD gas. What has gone wrong within a decade or so that a country that was being pressurized to allow IOCs to export gas is now running critical shortage of gas? Our knowledge of proven reserve is based on very limited basic works. We have not done much to further prove our known reserves. Even we failed to undertake seismic survey in major gas fields like Titas, Habiganj, Bakhrabad, Rashidpur and Kailahtilla.[48] Beside this, significant area of Bangladesh, both off-shore and on-shore, remains unexplored. Therefore, the crux of the matter that we need to examine is whether there is a gas crisis or, even better, whether there should have been a gas crisis.

42. *Ibid*, p. 22.
43. Available at www.english.peopledaily.com.cn/English/200102/09/eng20010209_61956.html, accessed on 25 July 2011.
44. Azimuddin, *op.cit.* p. 12.
45. Reported at "*The Daily Star"*, Dhaka, 18 August 2011, p. 1.
46. EP Report, "The Final Claim", *Energy and Power (fortnightly magazine)*, Dhaka, Vol. 8, Issue.19, 16 March 2011, p. 11.
47. Azimuddin, *op.cit*.
48. Khondkar Abdus Saleque, "Energy Alternatives for Bangladesh", *Energy and Power (fortnightly magazine)*, Dhaka, Vol. 5, Issue.17, 16 February 2008, p. 18.

It is a wonder to note that the IOCs are still holding gas blocks awarded to them 12 years ago without any exploration activity and Petrobangla is being obliged to allow extensions in violation of the terms of the contract. Petrobangla being sidelined, no gas discovery could be possible for them since last fifteen years (since 1996 till July 2011). On the other hand, what the IOCs have achieved by comparison for the past sixteen years since 1994? Since being given a discovered field 'Jalalabad', only two discoveries, Moulvibazar (1998) and Bibiyana (1999) have been made in the same structure (block 12, 13 and 14), none for the past twelve years. As regards the off-shore Sangu in block 16, same as Kutubdia (discovered in 1976), no further discovery has been made for the past fifteen years. How is it that the IOCs are still holding on to these areas for the past eleven years, despite the initial awards being only for three years (the standard practice)?[49] If one look at the terms and conditions of the original awards, one would find that these blocks should have been reclaimed by Petrobangla long ago for non-discovery of gas alone. Why this has not yet been done is a serious question. In the absence of any exploration over such a long time, saying that Bangladesh is critically short of gas seems to be a blatant and brazen falsehood. Bangladesh is a gas prone country. If not in sheer volume like the Russian Federation, Iran or Qatar, but certainly in terms of the strike rate, which has averaged over the years at 3:1 and been as low as 2:1 in certain areas against the global average of 7:1.[50] Hydrocarbon Blocks and Mineral Resources of Bangladesh are shown in table 2 and table 3.

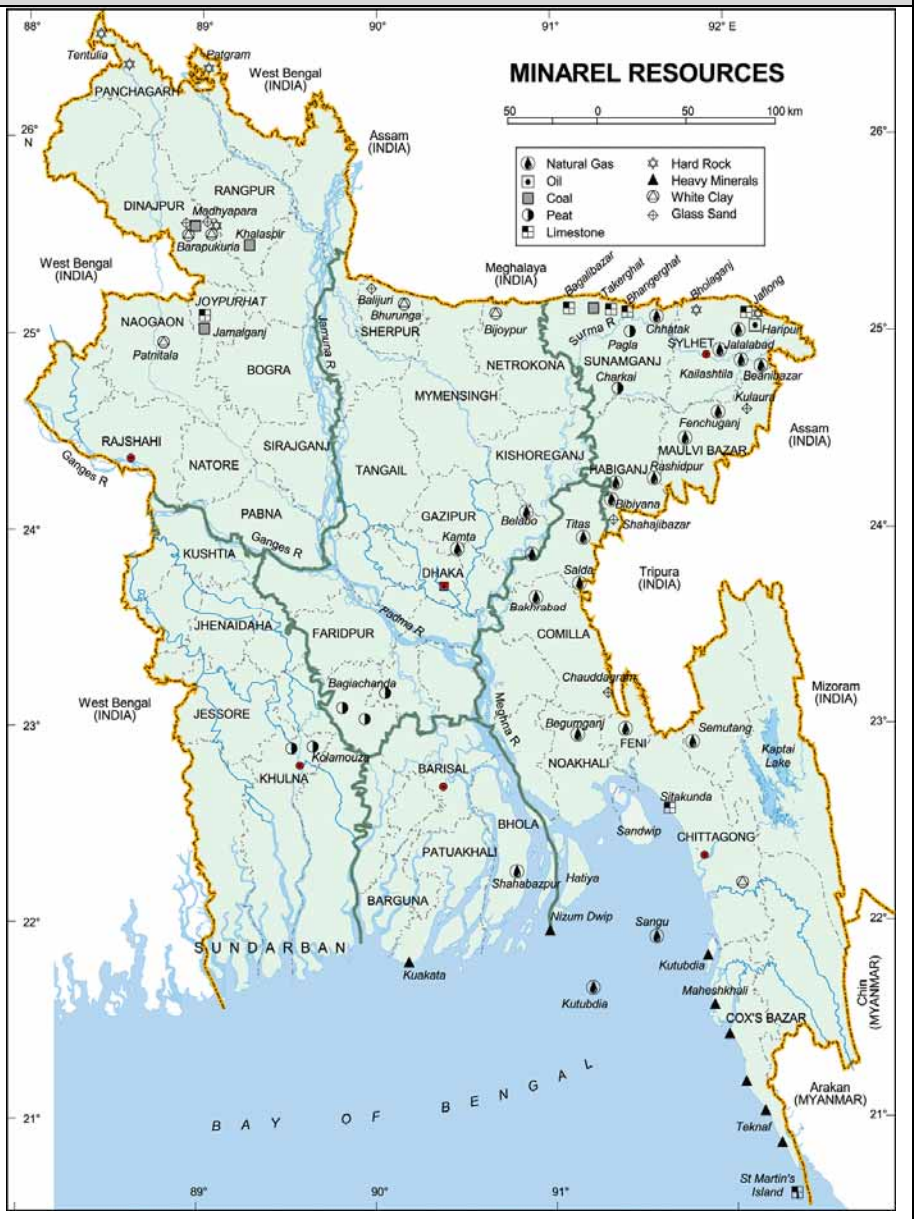
49. In the PSC signed with ConocoPhillips, the exploration period is fixed as nine years (5+2+2). The initial exploration period is five years (3+2). The first extension period is for two years and the second extension period is for another two years. Almost similar provisions were made with the previous PSCs.
50. Azimuddin, *op.cit*. p.3.

Table 2 : Hydrocarbon Blocks of Bangladesh



Source : Energy and Mineral Resources Division

Table 3 : Mineral Resources of Bangladesh



Source : Energy and Mineral Resources Division

Coal.

Almost 70% of the coal produced worldwide is used for electricity generation.[51] Unfortunately, despite having substantial quantity of high heating value, low ash and low sulphur bituminous coal reserve, the country is suffering from acute power and energy crisis due to inappropriate strategy. As of now, a total of 3.3 Billion Metric Ton (BMT) of coal has been discovered from five fields. It is also believed that further exploration drilling may find more coalfields in the North Bengal area.[52] Mathematically, 01 TCF gas = 38 MMT coal (heating value). That means the discovered 3300 MMT coal is equivalent to 77.94 TCF of gas.[53] Despite that, presently, share of coal for commercial energy is only 1.2%. Experts opined that effective mining of domestic coal can ensure the generation of 10,000 MW mine mouth power for minimum 50 years.[54] This is considered to be a very conservative estimate. It only needs 0.5 MMT of coal to produce 250 MW of electricity as evident from the only coal power plant, located at the mouth of Barapukuria coal mine.[55]

Out of the five coal mine four (Barapukuria, Phulbari, Dighipara and Khalaspir) are at a mineable depth and can be extracted by traditional mining method.[56] The 'Proved in Situ Reserve' of these four fields is about 884 MMT (as shown in Table 1). Following the basic calculation of 1000 MW = 02 MMT of coal/year, the in situ reserve of 884 MMT coal can generate 10,000 MW for 44 years or 15,000 MW for 29 years or 20,000 for 22 years or any other combination. This estimate is based on only 884 MMT, let alone the 3300 MMT. However, there remains debate about the extraction process and the amount of coal that can be extracted for commercial purpose.

Coal extraction from a new mine takes 03 to 04 years. However, Barapukuria being already functional would take less than 03 years to extract anything more than 01 MMT.[57] On the other hand, a coal based PP takes 02 to 03 years for installation. Therefore, additional 3000 MW power using coal only from Barapukuria and Phulbari can be made available in 03 years time. This can be increased to 6000 MW

51. Saleque Sufi, "UCG: Debate over Black Gold", *Energy and Power (fortnightly magazine)*, Dhaka, Vol.8, Issue.19, 16 March 2011, P.15.
52. *Ibid.*
53. Presentation by BCMCL, *op.cit*.
54. Engr Khondkar Abdus Saleque, "Underground Coal Gasification in Bangladesh", *Energy and Power (fortnightly magazine)*, Dhaka, Vol.8, Issue.13, 16 December 2010, P.15.
55. Interview, Quamaruzzaman, *op.cit*.
56. Sufi, *op.cit.* P.21.
57. Interview, Qumaruzzaman, *op.cit.*

in the next year.[58] The production can further be increased using the coal of the rest 03 mines. Unfortunately Bangladesh failed to utilize this resource due to neglect and mismanagement same like gas sector. The 'coal policy' also could not be finalized as yet.

SPECTRUM ANALYSIS AND SUGGEST WAY FORWARD

National Energy Policy (NEP)

At the height of power crisis in 1995, the GOB first realized the need for a NEP and a draft NEP was submitted to the National Committee in October 2006. Unfortunately the draft NEP remains to be scrutinized and formally approved.[59] At present the country has around eight different policies related to the various sub-sectors and strategic interventions.[60] It is felt that we need to have a holistic and all compassing NEP which should in essence be a platform for providing the guidance and direction to the various sub-sectors of energy and therefore does not need to be over-detailed. The details of 'how' should be spelled out in separate documents which should be the Strategic Action Plan (SAP) for each of the sub-sectors. To facilitate the proper implementation of the NEP, sector wise specific SAP will need to be prepared as a follow up to the NEP. For instance, the draft 'Coal Policy' as mentioned before should be a component of the NEP rather than a separate one. But it should have a detailed SAP for implementation of the policy.

Cost Factor: Gas vis-à-vis Diesel/FO

The people today are being made to believe that the country is indeed facing with a critical shortage of natural gas, not only on the short run but even on the longer perspective, thus necessitating adoption of emergency measures for alternative sources of power. In this exercise, the cost factor appears to have been of no consideration or importance. Let us examine and find out the comparative cost of electricity production by using gas vis-à-vis diesel/FO for a 100 MW PP. For this calculation, following assumptions are made:

a. Crude oil price has been assumed at USD 100/barrel, diesel at USD 120/barrel and FO at USD 80/barrel.

b. A ton of diesel has been assumed to contain 06 barrels and a ton of FO 05 barrels.

58. Considering 0.5 MMT can produce 250 MW as is the case with Barapukuria PP, 03 MMT can produce 1500 MW. If both Barapukuria and Phulbari is made operational then these two together can provide 3000 MW by the end of 2014 if a decision is made by the end of 2011.It can then be increased to 6000 MW in the following year as the production can be increased to 06 MMT in the next year.
59. Sayeed Shireen Kamal, "Some Thoughts and Views on the National Energy Policy", available at www.undp.org.bd/library/publications/Article-Energy%20&%20Power.pdf, accessed on 03 August 2011.
60. *Ibid*.

c. 100 MW gas fired combined cycle would require 15 MMCFD gas.

d. At Tk. 93/MCF – the gas price for BPDB and IPP – the price of 01 MMCF comes to Tk. 93,000 a day. It amounts to Tk. 1400,000 (14 lacs) a day adding up to Tk. 51 crore (USD 7.3 million at Tk. 70 to a Dollar) annually.

e. One BTU valuation is 01 ton diesel (06 barrels) equals 50 MCF gas. This works out to USD 720 (120x6) as replacement cost of 50 MCF, putting the replacement value of 01 MMCF i.e. 1000MCF at 1000/50 = 20 tons of diesel at USD 720x20 = USD 14,400x15 = USD 216,000 a day and the annual cost at USD 78.80 million.

f. Therefore, cost of one day operation is Tk.14 lac and one year is USD 7.3 million when gas is used. Whereas, operation cost becomes USD 216,000/day and USD 78.80 million/year when gas is replaced by diesel.

Calculation above shows that the cost of imported diesel as a replacement for gas would cost more than ten times. Gas cost to BPDB at Tk. 93/MCF comes to approximately 01 US cent/kwh whereas imported diesel would cost at least 10 US cents/kwh. FO at USD 80/barrel would cost less than diesel but still 07 times higher than the gas.

The Government at the moment is spending huge money for purchasing electricity from the existing Rental and Quick Rental PPs. This has already escalated pressure on national exchequer.[61] The deficit and losses suffered by Bangladesh Petroleum Corporation (BPC) and BPDB due to rental power is shown below in Table 4.[62]

Table 4 : Deficit and Losses Suffered by BPC and BPDB Due to Rental Power

Name of the Institution	In Crore Tk		
	FY 08/09	**FY 09/10**	**FY 10/11**
BPC	322.66	2049.65	7208.67
BPDB	828.61	635.76	4716.47

Source: Bangladesh Petroleum Corporation/Bangladesh Power Development Board

The above losses, although enormous and mind boggling, are only the tip of iceberg. The situation would be even more untenable when more payments for 'rental power' fall due. The import bill has already increased from USD 22 billion in FY 09/10 to USD 32 billion in FY 10/11. The balance of payment (which includes remittance) has come down from surplus of USD 2660 million in FY 09/10 to deficit

61. Reported in the "*Energy & Power" (fortnightly magazine)*, Dhaka, Vol.8, Issue.19, 16 March 2011, P. 23.
62. Reported at "*The Daily Star*", Business News, Dhaka, 12 June 2011, P.B1.

of USD 747 million. The trade imbalance has widened to USD 10 billion from 05 billion in one year from FY 09/10 to FY 10/11.[63] This underlines the need for more gas and coal based PPs to get rid of the PPs being planned to run with imported fuel.

Coal Sector

Cost of coal based PP will certainly be more than the gas based PP, yet it is far more feasible option than the other options. Besides the cost factor, the availability of huge coal itself is the single most important factor that dictates our dependency about energy immediately after the natural gas. It is good to see that the GOB plans to produce 20,000 MW electricity by 2030 (almost 53% of total generation) from coal fired PPs.[64] But it must be remembered that it just cannot be done over night. The time required for establishing coal based PPs and production of coal to the tune of 40 MMT (02 MMT/1000 MW) is a difficult task. The 'Coal Policy' is yet to be finalized let alone the extraction and generation of power to the tune already mentioned. In reality, it is already too late and further delay would be a disaster. A decision today would take at least 02 to 03 years to set up one coal fired PP of 1000 MW.

Other Renewable Energy

GOB intends to generate 5% (500 MW) and 10% (2000 MW) power by 2015 and 2020 respectively from renewable energy sources i.e. hydro electricity and solar power. The hydroelectricity potential of the country can be stretched to maximum 550 MW. On the other hand, the huge land requirement will be a major drawback of solar power in Bangladesh. The 'Solar Energy Generation Systems' (SEGS) plants in Mojave Desert, California occupy 6.5 square kilometre land area to produce 354 MW electricity.[65] More so, unit cost of solar is also one of the highest of all renewable and non-renewable power generation. Producing 500 MW power from solar energy as planned, would require huge initial cost apart from land problem. As per initial estimate, such a project will require USD 02 to 03 billion.[66] However, generating 5% (500 MW) power from renewable energy by 2015 may be possible but generating 10% (2000 MW) power by 2020 would be near to impossible.

Nevertheless, the country can import the hydro potential of Bhutan and Nepal as part of long term option with full cooperation from India on the regional basis and it would be a better choice than the nuclear energy for Bangladesh.

63. Reported at "*The Daily Sun"*, Dhaka, 23 July 2011, p.15.
64. Energy and Power, 16 March 2011, *op.cit*.
65. Nafisa Noor and Sadid Muneer, "Concentrating Solar Power (CSP) and its Prospect in Bangladesh", available at www.solarthermalworld.org/node/1215, accessed on 17 Aug 2011.
66. The Daily Star, 15 May 2011, *op.cit*.

Nuclear Issue

The Government plans to generate 4000 MW power from nuclear as part of its long term policy option. The parliament has already adopted a resolution on 09 December 2010 on the establishment of Nuclear Power Plant (NPP) in the country. Bangladesh has already signed a framework agreement with Russia for setting up 02 NPPs at Ruppur in Ishwardi and Pabna. About 2000 MW electricity is likely to be generated from these two NPPs and the construction is likely to begin by 2012.[67]

Actually scarcity or no scarcity, a NPP in the context of Bangladesh is a non-starter. A country where the technical expertise or skill (especially in the power sector) has degraded so much as to result even new plants suffering shutdowns for technical glitches, management of NPP would indeed be beyond available competence. The country's capacity for its development, operations, monitoring, supervision, maintenance of round the clock, safety at international standards and safeguard issues related to disposal of spent fuels is also in question.[68] Above all, a very compact and concentrated population in a small land area like Bangladesh cannot risk a 'Chernobyl' or 'Fukushima'. Some of the developed and industrialized countries like Germany and Italy have already decided to close their NPPs in phases in the wake of earth quake in Japan while others are reviewing their nuclear policy.[69] However, it does not necessarily mean the death of nuclear energy but there is serious rethinking about it all over the world after the Fukushima disaster. The second and serious negative is the cost factor. The initial cost of NPP is going to be about 05 times higher than the gas combined cycle. The NPP should not therefore be the priority choice for Bangladesh. The Government should reconsider its nuclear energy policy and adopt 'Go Slow Strategy' and side by side form a national committee comprising experts, scholars and important stakeholders to suggest the strategy for NPP in Bangladesh.

Strengthening Petrobangla and BAPEX

It is evident from the arguments made so far that the so called gas vis-à-vis energy crisis is the direct outcome of neglect to Petrobangla and its subsidies including BAPEX. Despite remarkable achievements they were kept sidelined for which the country has incurred enormous financial loss. The loss to the nation will continue in the near future also unless Petrobangla and BAPEX are adequately strengthened. BAPEX, as a result of being neglected, at the moment is not technically and financially equipped to undertake the drilling and exploration work

67. Reported in the *"Energy & Power" (fortnightly magazine)*, Dhaka, Vol.8, Issue.22, 10 May 2011, P.24.
68. Shireen, *op. cit.*, P.3.
69. Reported at *"The Daily Star"*, Business News, Dhaka, 31 May 2011, P. B2.

in the offshore blocks. [70] It has also not been beefed up with required manpower over the years.[71] The country therefore should first decide what capability the Petrobanla and BAPEX should have and what is expected out of these two organizations. The effort should be to make Petrobangla and BAPEX self reliant capable of undertaking the drilling and exploration load of the entire land mass of Bangladesh. Gradually, they should be able to attain the technical prowess and financial muscle to venture into the hydrocarbon exploration in the offshore including the deep sea of Bangladesh. The end state should be to bring the dependency on IOCs to zero level same as Petronas of Malaysia.

Redemption of Gas Blocks Awarded to IOCs

At the moment five gas fields including one off-shore gas field (Jalalabad, Moulvibazar, Bibiyana, Sangu and Bangura) are being operated by the IOCs. According to the PSC, the IOCs are supposed to carry out further exploration (usually after three years) within the block allotted to them. But that has not been the case and there is none to challenge them. Ideally those blocks should have been reclaimed by now for violation of the contract especially block 9. Therefore, all out effort must be made by redeeming the gas blocks already allotted to IOCs where no exploration has yet been undertaken and clear violation of the original contract has occurred.

Exploration and Augmentation of Gas Supply by Petrobangla

In November 2010, the Chairman Petrobangla disclosed the capacity of the Corporation to produce additional 500 MMCFD gas from own fields and another 500 MMCFD by the IOCs' field by 2012, thus making it more than clear that if given the green signal 1000 MMCFD gas could be easily available even without further discoveries.[72] But instead of implementing this proposal, the country has been dragged into high cost 'rental power' deals based on imported fuels. This additional 1000 MMCFD of gas can easily generate 4000 MW additional power using 600 MMCFD while rest 400 MMCFD may be used for other purposes like domestic, fertilizer, industry, captive and etc. As such, endeavour to augment additional 1000 MMCFD should be done with priority. However, for that, BAPEX must be allowed to carry out full scale exploration as soon as possible.

RECOMMENDATIONS

There are six recommendations that could be inferred logically as a respond to the energy security of Bangladesh for the foreseeable future:

70. Mohammad Mejbahuddin, "PSC: Setting the Records Straight", *Energy & Power (fortnightly Magazine)*, Dhaka, Vol.8, Issue. 26, 01 July 2011, p.15.
71. Mejbahuddin, interview, *op. cit*.
72. Reported at "*The Daily Sun*", Business News, Dhaka, 09 November 2010, p.B4.

a. A national committee should be formed by the GOB comprising representative from all stakeholders including scholars and professionals from the civil society and finalize the National Energy Policy as early as possible.

b. Petrobangla and BAPEX should be made competent with essential manpower, equipment and technology to take over the seismic, drilling and exploration work of all hydrocarbon blocks of Bangladesh including deep sea blocks.

c. Effective measures must be taken to augment gas supplies especially from Petrobangla's field in commensuration with the demand till the coal based power is added to the national grid.

d. No International Oil Companies should be allotted with any new hydrocarbon blocks in the on-shore areas and those which have already been allotted should be reclaimed where contractual violation has been made by them.

e. 'Coal Policy' must be finalized at the earliest and coal based PPs should be set up in phases with a target to produce 20,000 MW power by the end of 2030.

f. Government's policy and plan related to Nuclear Energy should be reviewed by a national committee comprising experts, scientists and representatives from civil society. The committee should also find out the feasibility of Nuclear Power Plant keeping in mind the density of population, land area and ability to control and mange in case of any accident.

CONCLUSION

Despite political instability, climatic onslaughts like floods, cyclones, droughts and occasional global economic meltdowns Bangladesh succeeded quite remarkably because of two main factors: agricultural growth and industrial expansion. The poor farmers facing sometimes almost insurmountable difficulties and problems achieved a mini miracle. Thousands of new industries, plants and factories cropped up all over the country fed by ever expanding gas production and power generation. The cost of living index, despite unavoidable devaluations of Taka, remained within the reach of the common man. Domestic price structure and production cost maintained steady level because of availability of gas and power at low price fully catering to even rising demand. Expansion of export with remarkable achievements in textiles and garments in particular would have been impossible otherwise. The import of oil, where price were beyond Bangladesh's control, remained within affordable limits. Even the rich countries like China with trillion dollars surplus put premium on foreign exchange earnings and on further widening the favourable gap in the trade

balance. Based on facts and facts alone this paper finds in its examination of the energy situation that the mismanagement of the 'gas sector' alone has converted the positives such as savings in foreign exchange outflows, ample availability of gas for power and industry into negatives. A country with USD 10 billion trade imbalance has imposed heavy dependence on the country's inadequate and depleting foreign exchange reserves. This paper has put a big question mark on the wisdom of it all.

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Major General AKM Abdur Rahman, ndc, psc was born in January 1964 and commissioned in the Corps of Infantry on 10 June 1983. Besides his regimental appointments as Adjutant, Company Commander and Second in Command in five different infantry units, he commanded an infantry battalion both at plain land and in the insurgency prone area of Chittagong Hill Tracts (CHT). He commanded an infantry brigade and worked as the Commandant of NCO Academy. Major General Abdur Rahman served as the Grade Two Staff Officer in the Military Operation Directorate in the Army Headquarters and Colonel Staff in an infantry Division. He also served in the Special Security Forces (SSF) as the Director of Training. He is a distinguished instructor and served as Instructor Class Three in the Military Police School, Class Two Instructor and Platoon/Term Commander in Bangladesh Military Academy, Instructor Class One and Directing Staff in the School of Infantry and Tactics as well as Defence Services Command and Staff College (DSCSC). Major General Abdur Rahman attended 17 professional courses both at home and abroad. He is a graduate of National Defence College and DSCSC, Bangladesh and obtained his Master of Defence Studies from National University of Bangladesh. He is also a graduate of Malaysian Armed Forces Staff College and obtained Post Graduation Diploma on Strategic and Defence Studies from University Malayu, Kuala Lumpur, Malaysia. He attended and participated in the United States Pacific Command International Military Operations and Law Conference in New Zealand in 2009. Major General Abdur Rahman is one of the 15 pioneer military officers of Bangladesh Army who served the United Nations Missions participated by Bangladesh for the first time. He served as UN Military Observer in 1988 in Iraq (UNIIMOG) and Force Provost Marshal in UN mission in Congo (MONUC) in 2006. He received the commendation of the Force Commander from both the UN mission he served. He sustained bullet injury during counter insurgency operation in the CHT and was awarded with the 'Major War Injury Stripe (Golden Injury)' by the Government of Bangladesh. He is married and blessed with a son and a daughter. His hobbies include music and playing golf.

ASEAN NON-INTERFERENCE POLICY: IT'S RELEVANCE IN COPING WITH PROBLEMS AND CHALLENGES IN SOUTHEAST ASIA

Brigadier General Dato' Pahlawan Abdul Rahim bin Abdul Mutalib, ndc

Use the ASEAN Foundation as one of the instruments to address issues of unequal economic development, poverty and socio-economic disparities'

- ASEAN Vision 2020

INTRODUCTION

Many agreed that the modern science and technology are pushing the world in the direction of globalization, and the new millennium which is globalized in nature also has ushered in a stronger sense of regionalism identity throughout the world especially across Europe and Asia Pacific. What is responsible for today's economic disintegration, disorder and violence is the resistance offered by nationalism to the irresistible counter-pressures of regionalism and globalization.[1]

As being viewed by J.A. Scholte, globalization is seen as "a process by which independent state, their economics, societies and people become increasingly integrated into international economic and society". He added, "national sovereignty would be eroded, the opening up of domestic economies and societies to external influences, the increasing social and physical mobility of people, and the consequent economic, social, cultural, and political challenges posed to nation-states by the very dynamic changes wrought by globalization".[2] In other words, nation states become more interdependent of each other and to certain extent, an action taken by one has significant effects on the major interests or concerns of others.

Background

ASEAN had an impressive record of maintaining security, political and social stability in Southeast Asia by promoting mutual trust and establishing a culture of peaceful and cooperative relations among the originally five ASEAN members, which by then had been gradually extended to the wider region (Brunei: 1984, Vietnam: 1995, Laos and Myanmar: July 1997, and lastly followed by the admission of Cambodia in 30 April 1999. Consensus decision making, quiet diplomacy and confidence building measures, and strict adherence to the principles of non-interference policy, have contributed to the ASEAN success story. Due to the effect of globalization, the security paradigm has greatly expanded to new security or non-traditional security issue. The question arises; can ASEAN with its doctrine of non-interference, cope with those new threats?

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1. S. Rajaratnam, *`ASEAN the Way Ahead,'* The ASEAN Reader, compiled by K.S Sandhu, Sharon Siddique, Chandran Jeshurun, Ananda Rajah, Joseph L.H. Tan and Pushpa Thambipillai. ISEAS. Singapore, 1992. P.xxiii.

2. J.A. Scholte, *`Globalisation Critical Introduction'*. Palgrave Publication, London, 1999. P. 33.

ASEAN AND THE CONCEPT OF NON-INTERFERENCE POLICY

Historical Outlook

The Association of Southeast Asian Nations (ASEAN), formed in August 1967 is one of the first regional organizations in Asia. ASEAN came into being at the height of the Cold War and the Vietnam War. The five founding members are Malaysia, Indonesia, Singapore, Philippine and Thailand. The agenda of the Association was the security, economic, social and cultural cooperation.

The Structure of Decision-Making Process among ASEAN Countries

Since the formation of ASEAN, all members' countries pledged commitment to the principle of consultation and "musyawarah" as the basis for settling differences among members. It's also known as "ASEAN Way." Hence, the decision making process in ASEAN's meetings are guided by this principle.

It may be presumed that each ASEAN decision makers acts and makes a stance according to what he perceives to be the best interests of his country.[3] If national interest is regarded as an important component of the decision making stances, it is an indication that there are frictions in the process of ASEAN decision making process. In fact, several measures have been formulated to address these problems. For instance, there is a practice not to allow bilateral issues within the organization to emerge as stumbling blocks in the discussions.[4] The conflict should be resolved bilaterally by the involved parties with the assistant of nominated country as mediator or certain problems are best kept aside for time being so that ASEAN could proceed with more important agenda.

It is important to note that ASEAN is not a military pack neither it works to make decision base on the majority votes. In the case of UNSC and EU, they are legitimate institutions where the Secretary General being empowered to enforce any resolution agreed by the organization toward the target country. Likewise NATO and OAS, they are a military pact which enables them to take a military action upon getting the mandate. I will deliberate further on the ASEAN practices to deal with any conflict in the subsequent chapters.

Non-Interference and Sovereignty in International Relation

The principle of non-interference (or is also known as non-intervention) is of Western origin, arising out of the Westphalia agreement in 1648, which laid the foundation for the European order of sovereign states. Non-intervention, sovereignty and the legal equality of states have traditionally been regarded as the three basic rules specifying "the accepted and expected forms of behaviour in relations between

3. Ibid.
4. Ibid, P.31.

states". [5] They are at the centre of several United Nations doctrines, which were also largely prepared by Western nations.

It was not until the upheaval in international relations brought about by World War II that national sovereignty came within the reach of peoples around the world - through revolution, the withdrawal of exhausted colonial powers or the ministrations of the new United Nations.[6] The late 1940s, the 1950s and especially the 1960s saw a parade of ex-colonies joining the ranks of independent states and the United Nations. The right to sovereign nationhood was enshrined in the Charter of the United Nations, which proclaims among the UN's purposes: "To develop friendly relations among nations based on respect for the principle of equal rights and self-determination of peoples." [7] The universal application of the concept of national sovereignty was meant to bring international order out of the chaos of the first half of the 20th century. At the same time, the United Nations was given the right, indeed the duty, to take "enforcement measures" against any state in case of "any threat to the peace, breach of the peace, or act of aggression."

Meaning of Non-intervention

What non-intervention has traditionally meant is that "governments can attempt to influence each other's behaviour only through established diplomatic channels".[8] Governments cannot seek to expand influence by a direct appeal to citizens of another country, by occupation, or by using home territory as a base for opposing another regime. Non-intervention is not the same as non-involvement. Cooperation between governments for mutual interest in political, economic or social affairs, including such diverse areas as increasing military cooperation, trade arrangements, or seeking to limit narcotics trafficking; is not prohibited by this principle, even though such activities usually impinge on national sovereignty.

The Inception of Non-Interference Policy into ASEAN

Hence, ASEAN member's countries signed a Treaty of Amity and Cooperation in Southeast Asia in 1976 which "Non-interference in the internal affairs of one another" is one of the fundamental principles underlying the treaty. The treaty

5. Holsti, K.J., `*International Politics. A Framework for Analysis'*. Prentice-Hall International Editions, Englewood Cliffs, 1998, P.81.
6. Rodolfo C. Severino, Secretary-General of Asean, *Sovereignty, Intervention And The Asean Way,* the Singapore Institute of International Affairs, July 2000, at *http://www.aseansec.org/3221.htm* cited on 5 May 2011.
7. According to Article 2 of the Charter, the UN and its members are to pursue its purposes according to certain principles, which include: a. "1. The Organization is based on the principle of the sovereign equality of all its Members... b. "4. All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations."
8. Ibid, P.80.

guarantees that each country in the region shall have the right to "lead its national existence free from external interference, subversion or coercion"; that there will be "non-interference in the internal affairs" of one another; that "settlement of differences or disputes shall be conducted only by "peaceful means"; and that the "threat or use of force" shall be repudiated, and that "effective co-operation among themselves" shall be fostered.

NON-INTERFERENCE PRINCIPLE AND ASEAN'S ROLES IN MANAGING PROBLEMS AND CHALLENGES

The most significant strength of ASEAN is their solidarity and cohesiveness among member states. There is no doubt that every leader of each country, always tries to keep their commitment to strengthen solidarity and cohesiveness of ASEAN. Regarding these two facts its seems that all the ASEAN members together will become more enthusiastic and dynamic to develop their region in order to strengthen their capability on all aspects of life, particularly the economic which is the most important driver for the future of ASEAN.

Problems of ASEAN

There are few domestic and regional weaknesses/challenges contain in ASEAN. However, many such problems were successfully handled with the help of non-interference policy and its well defined principles. Few major problems are highlighting bellow.

Traditional Security Threats

Many agreed that after the end of the Cold War and the demised of communism, there was no perceived military threat to ASEAN's members country. With the enhancement of cooperation in multi dimensions within ASEAN countries as well as the "plus three" members i.e. Japan, China and South Korea, the security posture in this region seem to be under control. The only remaining traditional security threat in the region is the overlapping claim of Spratly Islands of South China Sea within six countries claimant namely: China, Vietnam, Philippines, Indonesia, Brunei and Malaysia.

Transnational Crimes

ASEAN member countries have been fostering cooperation in combating transnational crime for more than two decades. Initially, ASEAN was concerned with the abuse of narcotics and trafficking in illegal drugs. However, with the expansion and diversification of transnational crime to include terrorism, arms smuggling, money laundering, illegal migration, and piracy, and the highly organised nature of such crimes, ASEAN has stepped up and expanded its co-operative efforts against these crimes.[9]

9. S. Pushpanathan, Assistant Director for External Relations, ASEAN Secretariat, Managing Transnational Crime In Asean, Paper presented at the 11th ASEAN Law Students Conference, Jakarta, 1 July 1999. Available at *http://www.aseansec.org/3221.htm* cited on 15 May 11.

However, combined diplomatic attempts are on to resolve this extra-regional "boundary" problem, the territorial and resources disputes in South China Sea.[10]

Non-Traditional Security Threat

The non-traditional security agenda had been propelled by the NGOs. This has been in particularly evident in Indonesia, Malaysia, the Philippines and Thailand, where NGOs has championed causes ranging from the environment to human rights. The awareness of the non-traditional security issues has not been absent in official circles, such has been the case of Vietnam which introduced a program of "Doi Moi", or restructuring in December 1986 as part of regime security and survival. Similarly to other countries, the 1997 regional economic crisis affected most state in the region, in the case of Indonesia where it led to riot outbreak, culminating in the fall of Suharto regime, and the ethnic violence. The impact of globalization on security, the issue of governance and the need for regional institutions to manage regional problems have all been sharply highlighted by these developments.

Transnational Crimes

ASEAN member countries have been fostering cooperation in combating transnational crime for more than two decades. Initially, ASEAN was concerned with the abuse of narcotics and trafficking in illegal drugs. However, with the expansion and diversification of transnational crime to include terrorism, arms smuggling, money laundering, cyber crimes, illegal migration, and piracy, and the highly organised nature of such crimes, ASEAN has stepped up and expanded its co-operative efforts against these crimes.[11]

ASEAN Response to Transnational Crimes

As being viewed by S. Puspanathan of ASEAN Secretariat, a number of ASEAN bodies are involved, directly or indirectly, in formulating policies and initiating activities against transnational crimes. These include the ASEAN Ministerial Meeting on Transnational Crime, ASEAN Finance Ministers Meeting (AFMM), ASEAN Chiefs of National Police (ASEANAPOL) and ASEAN Senior Officials on Drugs Matters (ASOD). The 2nd ASEAN Ministerial Meeting on Transnational Crime (AMMTC) in June 1999 adopted the ASEAN Plan of Action to Combat Transnational Crime.[12] The Plan established mechanisms and activities to extend ASEAN member countries' efforts to combat transnational crime from the national and bi-lateral levels to the regional dimension, and strengthen regional commitment

10. R. James Fergusion, P. 123.
11. S. Pushpanathan, Assistant Director for External Relations, ASEAN Secretariat, Managing Transnational Crime In Asean, Paper presented at the 11th ASEAN Law Students Conference, Jakarta, 1 July 1999. Available at *http://www.aseansec.org/3221.htm* cited on 15 May 2011.
12. S. Pushpanathan, `Managing Transnational Crime in Asean'. Availabale at http:///www.aseansec.org/3221 .htm

and capacity to undertake the expanded task. The Plan will put in place a cohesive regional strategy to fight transnational crime and will encompass information exchange, cooperation in legal and law enforcement matters, institutional capacity building, training and extra-regional cooperation as key programme activities. These regional efforts will complement and contribute to the bilateral efforts undertaken by ASEAN member countries.

With the expansion of transnational crime and its pervasive nature compounded by the adverse social effects of the financial crisis, ASEAN will have to intensify its efforts against transnational crime. The on-going efforts to develop action plans, work programmes and projects activities to deal with specific transnational crimes will help to suppress the rise of such in the region. ASEAN will have to strengthen its cooperation with its Dialogue Partners who have been playing significant roles in the international arena on combating transnational crime.

Combating Terrorism

Since the September 11 terrorist attacks, the United States has regarded Southeast Asia as an important strategic region in the war against terrorism.[13] This was due to the increase of terrorism activities in the region. Although Muslims account for approximately half of the total population of the ASEAN, most are politically moderate. There are however, few Islamic extremist groups held in the region.

There are five objectives in the outline plan of the 2001 Declaration.[14] Firstly is to deepen cooperation among ASEAN's front-line law enforcement agencies in combating terrorism and sharing "best practices". Secondly, to enhance information/intelligence exchange to facilitate the flow of information, in particular, on terrorists and terrorist organisations, their movement and funding, and any other information needed to protect lives, properties and the security of enhance information/intelligence exchange to facilitate the flow of information, in particular, on terrorists and terrorist organisations, their movement and funding, and any other information needed to protect lives, property and the security of all modes of travel. Thirdly, to strengthen existing cooperation and coordination between the ASEAN Ministerial Meeting on Transnational Crimes (AMMTC) and other relevant ASEAN bodies in countering, preventing and suppressing all forms of terrorist acts. Particular attention would be paid to finding ways to combat terrorist organisations, support infrastructure and funding and bringing the perpetrators to justice. Fourthly, to uphold the establishment of the Regional Counter-terrorism Centre in November 2002 in Kuala Lumpur. Lastly, close relationship among the civil Police to share all the information about terrorist.

13. The National Institute for Defence Study, *`East Asian Strategic Review 2003'*, The Japan times Limited,Tokyo, 2003, P. 52.
14. Declaration on Terrorism by The 8th ASEAN Summit in November 2001, Brunei Darussalam Available at *http://www.aseansec.org/13154.htm* cited on 15 May 2011.

The Debate for and against Non-Interference Policy in ASEAN

From 1997, the challenges posed by enlargement, economic crisis and upheavals in Indonesia prompted both outside commentators and ASEAN's original members to question whether the Association had the right tools to be a regional manager. Many external commentators concluded that the 'ASEAN way' had failed; some ASEAN members became increasingly disillusioned with the Association's role, and concerned that it was unprepared for the region's looming challenges.[15] Debate focused on ASEAN's principle of non-interference, and the related issues of its weak institutionalization and reliance on consensus decision-making. Enlargement had led to some changes in the consensus approach before July 1997. In 1995, for example, ASEAN members agreed that a 'consensus minus' principle could apply to economic decision-making, whereby the Association could take positions on issues without a consensus provided that the interests of hesitant countries were not effected.[16] The debate was, however, conducted without urgency, and with a reluctance to question the key tenets of the 'ASEAN way'.

Therefore, the critics towards ASEAN for its inability to respond quickly and effectively to recent problems confronting the region because of its norms i.e. adhering to the non-interference doctrine and allegations of ASEAN has even violating its own doctrine can be justified with the following arguments:

a. ASEAN is not and was not meant to be supranational entity acting independently of its members. It has no regional parliament or council of ministers with law-making powers, no power of enforcement, and no judicial system. Therefore, whatever actions taken by ASEAN must be base on the consensus by the involve county or according to UN charter.

b. ASEAN has to be measured against the purposes that it has set for itself and the limitation that it has imposed upon itself. ASEAN has to be judged by the results that it has produced in pursuit of those purposes and under those limitations, not against the wishes or expectations of others.

c. It is proven, through political dialogue and confidence building, no tension has escalated into armed confrontation among ASEAN members since its establishment more than three decades ago.

d. As being argued earlier, any armed intervention has to be carried out with the authority of the United Nations Security Council if a modicum of international law and order is to be maintained; indeed, if the concept of national sovereignty

15. Jeannie Henderson, *`Reassessing ASEAN'*, Adelphi Paper 328, Oxford University Press, London, 2001, P. 4.
16. Ibid.

is to continue to protect weak states from domination by the strong. In addition, the intervention must have a reasonable prospect of success, that the means used must be proportionate to the evil being addressed, that there are no better alternatives, that the measures taken must not inflict long-term harm on the people meant to be protected or on other countries and peoples, that the cure must not be worse than the disease. ASEAN policy makers are always considering those factors before making any decision to intervene into member countries internal conflict or even if it is an intra-state conflict. Moreover, ASEAN is non-military pact organization. That is why; ASEAN preferred method is diplomatic engagement.

RECOMMENDATIONS

Based on the study conducted, there are some recommendations for policymakers that can be formulated in order to assist ASEAN members with the concept of Non-Interference policy. As mentioned above ASEAN has made a significant effort to indicate its regional and international willingness to deal with the grouping seriously. However, there are so many remaining challenges faced by ASEAN. There are several criticisms which have emerged in response to ASEAN's actions towards achieving its goals. It seems that ASEAN so far has failed to resolve disputes within the region. So far, there have not been many significant outcomes with regard to their many activities. The economic crisis has redirected most government efforts towards resolving their own domestic problems rather than outside. Some argue that ASEAN is no more than just a 'talk shop'. It seems the success of ASEAN will depend on some challenges. There are at least five challenges faced by ASEAN: democracy, the development gap in ASEAN, economic liberalisation, human security, domestic and regional security.

a. **Democracy.** With respect to other member states, the impact of the economic crisis in Indonesia is of great consequence to other ASEAN members and to the nature of the association itself. Although ASEAN has a rotating chairmanship, Indonesia due to size and history, has always been its epicentre. The political reform in Indonesia as the 'positive' impact of the economic crisis has given new expectation for Indonesia as a democratic state. If Indonesia succeeds in exercising democracy, together with Thailand and the Philippines, the ethos of governance in ASEAN will shift. Democracy will not necessarily be a factor that all states will welcome. Furthermore, it is a fact that no universal values of democracy should be applied to all countries. It seems that some ASEAN countries have become more democratic than others. Consequently, this may cause tensions between ASEAN members. The controversy of the former Deputy PM Anwar Ibrahim's case in Malaysia is an example. The case of the opposition leader of Myanmar, Aun San Syu Kyi, has also caused high tension between Myanmar and other ASEAN members.

b. **Development Gap.** Huge differences in the level of human resources development among the 10 member countries of the ASEAN could be a cause of major concern. A human development index released recently by the United Nations Development Programme scatters the 10 members of ASEAN across all three categories based on their level of development. Singapore ranked best, coming in 25th of the developed' country group, followed by oil-rich Brunei. Malaysia was placed highest in the 'developing' category ahead of Thailand, the Philippines, Vietnam, Indonesia, Burma and Cambodia. Laos was the only member to fall within 'the less-developed' group, coming in 143rd of the 173 nations surveyed by the UN agency. Bridging this development gap, enabling the four new members (Vietnam, Cambodia, Myanmar, and Laos) to catch up with the rest and join them in advancing the ASEAN into a more prosperous economic community would be one bit of 'homework' that should be realised together among member states.

c. **Economic Liberalisation.** The ASEAN Free Trade Area has now been exercised. The six original signatory members have reduced tariffs of their products gradually on all products listed. Since 1 January 2003, tariffs on 99.55 per cent (44,160 tariff lines out of total 44,361 tariff lines) of products in the 2003 Inclusion List (IL) of the ASEAN-6 have been reduced to the 0–5 per cent tariff range. The newer members of ASEAN still have to reach the 0–5 per cent tariff for intra-ASEAN trade, Vietnam in 2006, Laos and Myanmar in 2008, and Cambodia in 2010. Ultimately, tariffs will be completely abolished by 2010 for ASEAN-6 and 2015 for the newer members with flexibility on some sensitive products until 2018. It is too early to identify the success of AFTA. One of the major problems could be how far the domestic economic resilience of every member state can create togetherness and cooperation in order to achieve regional economic resilience and power in the global arena.

d. **Human Security.** As mentioned earlier the impact of the financial and economic crisis was not only a fall in macro economic indicators, but more drastically was that millions of people lost their jobs and fell below the poverty line. Huge numbers of people feel insecure in many aspects of life. The gap between the rich and the poor has become wider. This situation can give rise to many criminal activities such as violence, riots, robbery, or even terrorism. This will be a challenge for most ASEAN countries, which have generally failed to provide social safety nets, especially for countries with large populations, huge disparities between urban and rural areas, and also small elite groups that have tended to monopolise wealth.

e. **Regional Security Community.** The many criticisms concerning the role of ASEAN in creating security and stability in the region should be taken as an

indicator or even proof of how important the existence of ASEAN is, not only for ASEAN itself, but beyond the region, or even for global security as well. The enlargement of the ARF membership has showed us that the world community needs ASEAN. The war against terrorism has compelled ASEAN to be much more pro-active in dealing with regional security. With respect to some actions that have already been taken, the initiative of Indonesia to establish the ASEAN security community should be taken as an opportunity to encourage ASEAN role in security and stability in a more realistic and practical way. It does not mean ASEAN will ignore the Fundamental Principles provided by the TAC in 1976. It seems, what should be done is to modify our perception of this Principle to make it more appropriate to the current reality and meet to new challenges and requirements.

CONCLUSION

The debates over non-interference, and the various steps taken to enhance cooperation between ASEAN states in the areas discussed in the previous chapters, do reflect an ASEAN willingness to address the principle (with varying degrees of success) and to modify it according to current needs. That has sometimes been obscured by the alarm that has followed any suggestion that the doctrine might be modified, and the vehemence with which some governments under political pressure have spoken out against alleged foreign interference. There has always been a need to balance the principle against the need to cooperate, and ASEAN has demonstrated flexibility in the past. There is an even greater need for flexibility in the current world of rampant globalization. At a time when ASEAN's image has been battered by economic crisis, the smoke haze and political unrest, it is particularly important that member states show willingness to subordinate sovereignty to the common good.

ASEAN as a group stands a much better chance of making itself heard than any of the countries individually. ASEAN also benefits from continuing to demonstrate willingness to be proactive in areas such as the environment and human rights, so that the non-intervention principle is not perceived simply as a convenient device to protect the interests of autocrats.

The relations between the developed and developing countries were far from smooth in the decades following the period of decolonization and Post Cold War. Powerful and rich countries dominate policy-making in various councils of the world. In various occasions, unilateral actions made multilateral consensus in vain, not without global consequences. Therefore, the preservation of independence, national sovereignty and territorial integrity is a fundamental and legitimate concern particularly of the weak, small, fragile, and newly independent states. Hence, preserving the principle of Non-Intervention policy is relevant to protect small and weak state from being intervened by big power states. It also aims to curb any

country within ASEAN to emerge and act like big power with the intention to dominate the small and weak countries in the region. It also can be used as strategy for ASEAN to fall back in case there is any eventuality of military intervention in another ASEAN member country from ASEAN's countries itself or from any country outside the ASEAN region.

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37. Opening Address by Vietnam's Prime Minister, Phan Van Khai, ASEAN Culture Week, Ha Noi available at http://www.aseansec.org/16298.htm (24).

38. Press Statement by ASEAN Secretary General at ASEAN Summit 2003, Bali. Available at http://www.aseansec.org cited.

39. Rodolfo C Severino, `Jr, Secretary-General of ASEAN in an interview by World Affairs: ASEAN and The Growth of Regional Cooperation in Southeast Asia, available on at http://www.aseansec.org/2831.htm.

40. Rodolfo C. Severino, Secretary-General of Asean, Sovereignty, Intervention And The Asean Way, the Singapore Institute of International Affairs, Jul 2000,at http://www.aseansec.org/3221.htm.

41. Rodolfo C. Severino, `Sovereignty, Intervention and The Asean Way', at the ASEAN Scholars' Roundtable organized by the Singapore Institute of International Affairs, 3 July 2000, cited at http://www.aseansec.org/3221.htm

42. S. Pushpanathan, Assistant Director for External Relations, ASEAN Secretariat, Managing Transnational Crime In Asean, Paper presented at the 11th ASEAN Law Students Conference, Jakarta, 1 July 1999. Available at http://www.aseansec.org/3221.htm.

43. Surin Pitsuan, "Thailand's Foreign Policy During the Economic and Social Crisis", Seminar at Thammasat University, 12 June 1998, available at http//www.aseansec.org/amm33wel.html,

44. Statement of Dato' Seri Abdullah Ahmad Badawi former Minister of Foreign Affairs of Malaysia at 31st ASEAN Ministerial Meeting, Manila, 24 July 1998, available at http://www.aseansec.org/4509.htm.

45. Syed Hamid Albar; Opening Statement, at 32nd ASEAN Ministerial Meeting, Manila, 23 July 1999 available at http://www.aseansec.org/4509.htm.

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Brigadier General Dato'Pahlawan Abdul Rahim was born in Perak, one of the states in Malaysia on 24 October 1958. He was commissioned as a Second Lieutenant on 15 June 1978 into the Royal Malay Regiment of the Malaysian Army after graduating from the Royal Military College, Kuala Lumpur. He currently holds Masters Degree in Defence and Strategic Studies (MDef Studies) from University of Kebangsaan Malaysia. Enhancing his military career, he attended several courses at home and abroad. These include: Young Officers Tactic Course, Company Commander Course, All Arm Tactics Course, and Senior Command at Malaysian Army Combat Training Center (PULADA). Malaysian Armed Forces Command and Staff Course (AFCSC) in 1992 and Malaysian Armed Forces Defence Course (AFDC) in 2004. Defence Management Seminar at Canberra Australia, Senior International Defence Management Course at Monterey California, USA and and UN Senior Mission Leader at Port Dickson Malaysia. Brig Gen Dato' Abdul Rahim has served in different capacity in both command and staff functions. Some of his major appointments are; Commanding Officer of 10th Royal Malay Regiment, Chief of Staff 7th Infantry Briged, Col Operation in HQ Army Field Command and Chief Directing Staff Malaysian Armed Foerces Staff College. Before attending National Defence Course at National Defence College Bangladesh in 2011, he was the Commander of 8th Malaysian Infantry Briged in Kelantan. He has visited several countries such as United Kingdom, United States of America, Sweden, Finland, Turkey, Australia, Indonesia, Singapore, Vietnam, Thailand, Philippine, Myanmar, Bangladesh and China. His hobbies include Golf and Travelling. He is married and blessed with 4 children.

EMERGING CHALLENGES : NEED FOR ENHANCING CAPACITY OF CHITTAGONG PORT

Brigadier General Md Anisur Rahman, ndc

"No matter how information technology advances, the world trade cannot be materialized without ports. This is exactly why every country needs to develop much more advanced and efficient ports for its prosperity."[1]

Dr. Mahathir Mohammad, Former Prime Minister of Malaysia

INTRODUCTION

Ports have been and still are the springboard for development. A closer look on the most advanced areas of the world will reveal that from the ancient days till today ports and coastal areas around the world have seen the earliest and fastest development. In Singapore, Hong Kong, Taiwan and South Korea ports were able to play a catalytic role in economic expansion, as ports were allowed to function freely and efficiently. The economy of Singapore and Malta is mainly based on port. About 11% of GDP of the Netherlands is generated by the activities of the port of Rotterdam alone. Chittagong is the major port for Bangladesh, handling around 85 – 90 % of the nation's trade[2].

However, despite immense potential, the port's reputation has been tarnished due to a number of irregularities, corruption, bureaucratic complexities, lack of safety for ships, lack of equipment, inefficiency, etc. In mid 2006 an ADB consultant characterized Chittagong as an inefficient, congested and expensive port with corrupt practices and demands for illegal payments.[3] Chittagong port has been known as one of the costliest and riskiest ports in the world.[4] However, measures taken in 2007 by the then Care Taker Government of Bangladesh greatly improved the efficiency of the Port which was hailed at both home and abroad.

The country's export-import trade has been increasing by 20-25% in recent years. If the expansion of the port facilities does not keep pace with the need of the growing economy its growth potential would suffer.[5]On the other hand, Bangladesh and India signed a Joint Communiqué on 12th January, 2010. In respect of transport connectivity, the Joint Communiqué includes use of Mongla and Chittagong ports by

1. Halima Begum 'Impact of Port Efficiency and Productivity on the Economy of Bangladesh - Case Study of Chittagong Port'.
2. Asian Development Bank's Technical Assistance Consultant's Report- "Bangladesh: Chittagong Port Efficiency Improvement Project ", Project Number: 37332 (TA 4506), March 2008.
3. Ibid, P. 1.
4. Tanvir Mahmud and Juliet Rossetti, "*Problems and Potentials of Chittagong Port: A Follow-up Diagnostic Study*", A Report by Transparency International Bangladesh, 12 May 2007.
5. Presentation on *Bangladesh Industrial Sector and Challenges* by Mamun Rashid, Professor, BRAC Business School at National Defense College (NDC) on May 4, 2011.

Nepal, Bhutan and India. Taking these factors into consideration, Bangladesh Government has very rightly envisioned the potential of a regional port and has undertaken the initiative to construct a Deep Sea Port (DSP) in Sonadia Island.

In this context, this paper seeks to answer the questions whether the existing port facilities of Bangladesh can meet the future demand from both domestic and regional level? What should be done to meet the future demand for port services by domestic and regional users? Also, a number of supplementary issues e.g. the existing problems of ports in Bangladesh, scopes to improve the efficiency of the ports, opportunity to improve of operation, space and navigability of the ports and maximum use of existing port facilities while we pursue for alternative will be addressed at the same time.

CHITTAGONG PORT AT A GLANCE: A LITERATURE SURVEY

Chittagong Port: Chronological Development

History. The history of Chittagong Port dates back to the fourth century B.C. The Yemeni and the Arab traders of Babylon used to trade with Greece, Macedonia and in the east with India, Java, Sumatra and China. For the purpose of trade they used to call on the Indian Ports of Surat, Cochin, Tamralipta and Chittagong. During the 9th century the Muslim traders from Arabia and Yemen started using the Port of Chittagong as their base Port and its control remained in their hands for quite some time. With the advancement of the British during the 17th and 18th centuries the Portuguese slowly gave way to them. The growing importance of Chittagong as a natural outlet for the North Eastern regions of the then British-India ultimately led to the enactment of Port Commissioner's Act of 1887 which was introduced on 25th April 1888 and the Commissioners for the Port of Chittagong started functioning. Chittagong Port Trust was formed in July, 1960, to do away with the dual administration of the Port by the Port Commissioners and the Port Railway. Later on, by an Ordinance in September 1976, the Chittagong Port Authority came into being.[6]

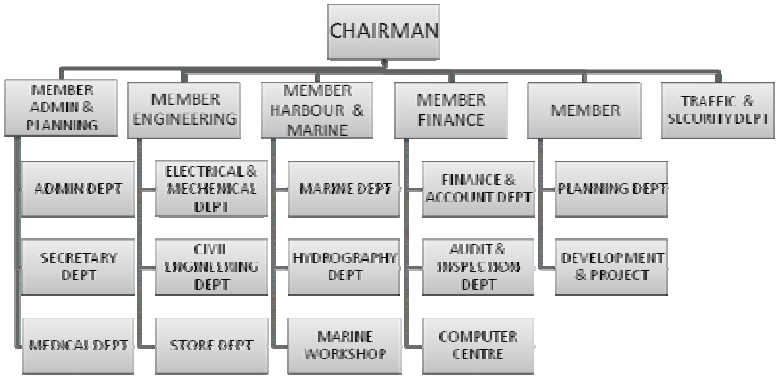
6. Chittagong Port Authority Year Book 2010.

Management of Port

Chittagong port is a body corporate having perpetual succession and a common seal under the Ministry of Shipping, Government of the People's Republic Bangladesh. The Organogram of Chittagong Port Authority is appended below as Table-1.

Table-1 : The Organogram of Chittagong Port Authority

ORGANOGRAM OF CPA



Source : CPA Year Book 2010.

Labour Management

Smooth and efficient functioning of the port operation mostly depends on the integrated efforts of all stakeholders i.e. berth operators, shipping agents, labours, C & F agents, Chamber of Commerce, truck owners etc. In the year of 2007, Dock Workers Management Board (DWMB) was abolished and Berth Operator (BO) system was introduced with the aim of efficient port operation. After abolition of DWMB, suitable and fit workers were enlisted and grouped and placed under the BO for employment in the port.

Port Facilities

Pilotage. Pilotage is compulsory for sea going vessels in the channel between outer anchorage and the jetties in Chittagong port. Such a technical and risky duty is performed by 10 pilots who are considered to be absolutely insufficient. This causes corruption and accident in Chittagong port. It may be mentioned here that maximum

permissible draught ranges from 8.50 to 9.20 meters and LOA of a vessel is 186m.[7] State of support vessels available for pilotage, navigational operation and port services of Chittagong port are appended below:

Table 2 : Existing Fleet of Harbour Crafts & Vessels	
Craft & vessel	**Numbers**
Tug	7
Pilot Vessel	5
Anchor & Buoy Lifting Vessel	2
Service Boat	1
Water Boat	3
Survey Boat	9
Petrol Boat	2
Dredger	1
Mooring Launch	8
Pontoon Barges	17
Deck loading Barges	6
Buffer Barge	2
Total	63
Source: Chittagong Port Authority Year Book 2010.	

Mooring Facilities. Chittagong Port Authority operates 12 berths with length of 2,131m and depth of 8.7~9.3m known as general cargo berth (GCB), out of which berths J6, J9 to J13 are frequently occupied by container vessels. Container vessels are handled at Chittagong Container Terminal (CCT), which is 450m in length and available depth of at least 9.3 m. CCT is suitable for two large feeder vessels with a length of 190m or as more frequently happens, three smaller vessels working simultaneously. There are pontoon berths available for handling of various types of commodities such as food grain, cement clinker and bulk oil to the adjacent storage facilities. Details of the mooring facilities at Chittagong are appended as table 3:

7. CPA Year Book 2010.

Table 3 : MOORING FACILITY			
Berth	**Nos.**	**Water Depth**	**Handling Type Cargo**
(Owned and operated by CPA)			
General Cargo Berth (133m~193m)	12	8.7~9.3m	General Cargo/Container
CCT Berth (450m)	3	9.3m	Container
(Berth for Bulk handling)			
Dolphin Oil Jetty (Public)	3	-	Discharging Crude Oil
Grain Silo Jetty (Public)	1	8.5m	Food Grain (Wheat)
Cement Clinker Jetty (Private)	1	9m	Imported Clinker
TSP Jetty (Public)	1	-	Imported Materials (R. Phos., Sulp)
CUFL Jetty (Private)	1	9.2m	Fertilizer
KAFCO Urea Jetty (Private)	1	10.5m	Fertilizer
KAFCO Ammonia Jetty (Private)	1	10.5m	Fertilizer
S. Alam Cement Ltd (Private)	2	-	Clinker
Diamond Cement Ltd (Private)	1	-	Clinker
(Repair Berth)			
Dry Dock jetty (Public)	2	-	Ship Repairing
(Mooring Berth)			
River Mooring	5~6	9~10m	POL/Edible Oil/Dry Cargo

(For Inland Coasters & Vessels)			
Jetty Berth	1	-	Petroleum Oil & Lubricant (POL)
Concrete Berth	1	-	Grain
Pontoon Berth	4	-	POL
Single Point Mooring	13	-	Bulk Cargo
Source: CPA Year Book 2010.			

Cargo Handling Equipment. CPA provides all types of cranes that include shore crane, mobile crane, forklift truck, tractor, trailer etc. Quay Gantry Crane (QGC), Rubber Tired Gantry Crane (RTG), straddle carrier, forklift truck, tractor, trailer reach stacker etc are used for handling of general or bulk cargo. Existing equipments for both bulk cargo and container handling are not sufficient to fulfill the requirement of the port. The shortage is to the tune of 24%[8]. On the other hand, very often a good number of the existing equipment remain in disorder.

Storage Facility. Details of the transit sheds and warehouses within the upper port area are shown in Table 4.

Table 4 : Transit Sheds, Warehouses and Open Storage

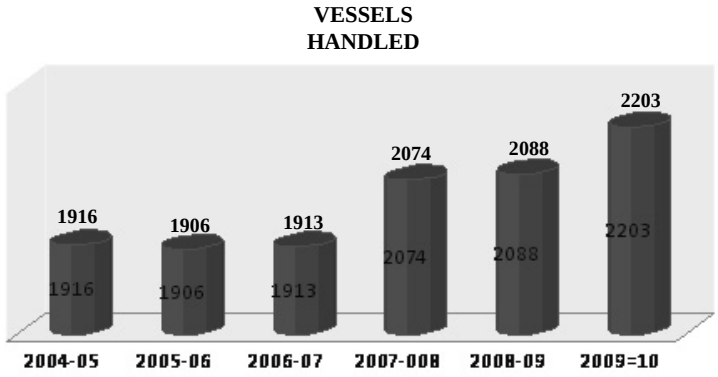
Facility	Nos.	Area (m2)
(Protected Area)		
Transit Sheds	9	52,069
Warehouses	7	26,746
Car Sheds	2	5,082
Open Dumps (Open Storage)	-	90,000
(Outside Protected Area)		
Warehouses	6	32,500
Open Dumps (Open Storage)	-	200,000
Source: Chittagong Port Authority Year Book 2010.		

8. Chattagram Bandarer Samassa O Sambhabana : Follow-up Diagnostic Study, Transparency International, Bangladesh, Dhaka, 12 May 2007.

Inland Container Depot (ICD). Inland Container Depot at Dhaka is in operation since 1987 with an annual handling capacity of 80,000 TEUs. Presently, two container Train runs daily each way between Chittagong port and Dhaka ICD[9].

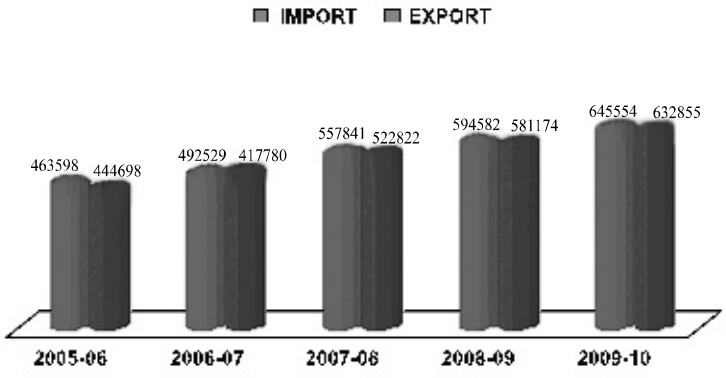
Traffic at Port. Number of calling ships and volume of cargoes (both bulk and container) handling in Chittagong port have increased significantly. State of calling ships and volume cargo handled at Chittagong port for the last 5 years are shown in appended below:

Figure 1 : Vessels Handled



Source : Chittagong Port Authority.

Figure 2 : Container Handled



Source : Chittagong Port Authority.

9. Chittagong Port: Overview, Chittagong Port Authority, January 2007.

Car Park. Chittagong port handles a considerable number of imported car / vehicles which occupies big space in the port. Details of available space for car park and state of imported car are as follows:

Table 5 : Space for car parking bystate of imported car

SL. NO.	Shed Name	Area (SQ.M)	Total Capacity	Vehicle Imported	
				Year	No of Vehicle
1.	F. Shed	Inside-8692	400 Units	2005	13298
		Out Side-8800	600 Units	2006	17342
2.	P. Shed	Out Side-12360	800 Units	2007	20895
3.	AB Shed	Out Side-31000	1700 Units	2008	31652
4.	Benlub Car	Out Side-10850	500 Units	2009	31760
Total		Inside-8695	4000 Units	2010	28469

Source: Chittagong Port Authority

OPERATIONAL EFFICIENCY ANALYSIS

Operations of the Port

Like any other port the operation system of Chittagong port also covers the two core operation systems i.e. Acquatorium System and Berth System.

Performance of the Port in Recent Years

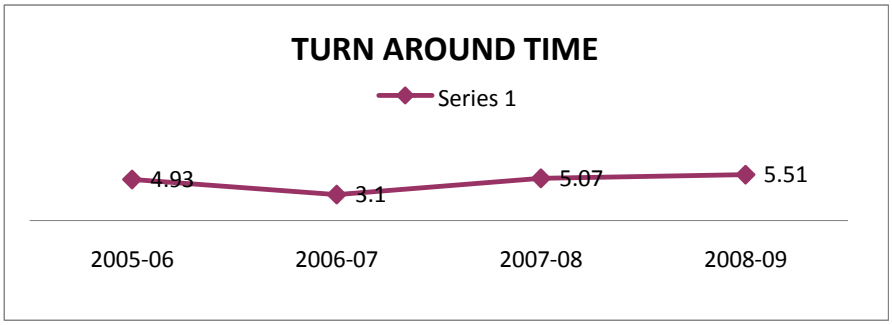
Efficiency Indicators. Prevailing situation including high berth occupancy and projected growth of traffic has underscored the need for developing the capacity of the port. For instance the container productivity per gang-hour of 9.73 is less than one third that achieved at the world's best ports.[10]. However, the performance of Chittagong Port Authority relates to globally recognized efficiency indicators are given in table 6 :

10. Asian Development Bank, Technical Assistance Report (TAR:BAN 36105) on Chittagong Port Trade Facilitation Project, July 2003.

Table 6 : Efficiency Indicators of Chittagong Port				
Indicators	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
Ship's turn around time (days)	4.93	3.10	5.07	5.51
Dwell time of container (days)	26	16	19.72	16.94
Berth Occupancy (in %)	91%	70%	66.15%	62.21%
Equipment availability (in %)	50%	48%	44.61%	44.78%
Source: CPA Annual Report 2008-2009.				

Ship's Turn Around Time (Days). Long turn–around time of ships causes extra expenses to the owners amounting US$ 10,000-15,000 per day per ship. The turnaround time for feeder vessels at Chittagong port was on an average 10 days compared to 2 days in Bangkok, 1 day in Singapore, 3 days in Mumbai and 5 days in Kolkata[11]. Currently, it is only 4 days due to stern measures and initiatives taken by the concerned authority including Armed Forces.

Figure 3 : Turn Around Time



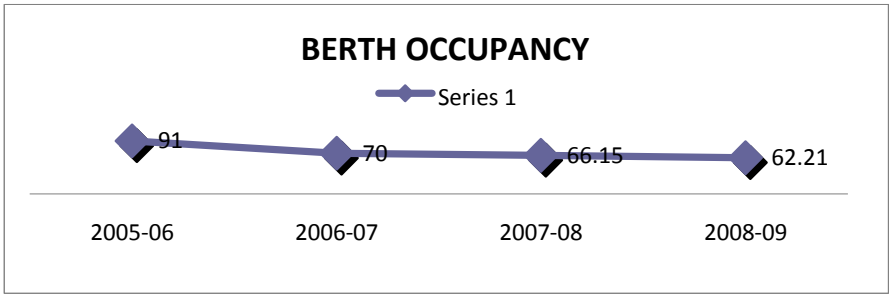
Source: Chittagong Port Authority.

Dwell Time. Dwell time for container is calculated basing on the date on which it is unloaded from the ship till it is delivered to the consignee. At present Container Dwell time is reduced to 13 days from 26 days in December, 2010.[12]

11. The Daily Star – A National Daily of Bangladesh, 14 March 2007.
12. Presentation given by CPA Chairman during visit of NDC team to Chittagong Port on 20 June 2011.

Berth Occupancy. All the modern port in the globe are equipped with appropriate equipments like Quay Gantry Crane (QGC). Chittagong port authority installed four units of QGC in Port in 2006 and went for operation in the same year. However, ships operational productivity was 16 container-box moves per hour per QGC on average in 2010.[13]

Figure 4 : Berth Occupancy



Source : Chittagong Port Authority.

Equipment Availability. Based on the container handling growth of CPA, this study made a necessary assessment of container handling equipments (CHE) for CPA in future. As CPA is an end port (where most of its cargo and container handled are consumed in the country), while doing the need assessment the following assumption has been made[14]:

a. Each box of container handled 5 (five) times in CPA e.g. Vessels hook point to Trailer, Trailer to Yard, Stacking in the yard, Keep down for Appraisement & /or delivery & finally the empty container to be shipped out to Vessel or gate out to Depot.

b. On an average, each equipment can make 15 moves / hour and the availability of equipment is 60% at any given time. Which means that one container handling equipment can be available for work in each day – 24*60% hour = 14.4 hour / day, i.e. in a year one CHE can operate 14.4*365 = 5256 hour. We have considered 15 move / hour which implies that one CHE can handle 15*5256 = 78,840 Boxes / hour rounding up as 80,000 moves / year.

13. Presentation given by CPA Chairman during visit of NDC team to Chittagong Port on 20 June 2011.
14. Karim Enamul, *Problem and prospect of container handling in Chittagong Port*- A research study for diploma management study at International Maritime Transport Academy, Netherland, 2*005*.

Table 7 : ASSESSMENT OF CHE FOR CPA							
Year	**Container Handled in Boxes**	**Average Move/ Box**	**Total Move**	**Std Move of Equipment /year**	**Equip ment Needs**	**Avail**	**Short**
2008	742,694	4.5	3,342,123	80,000	42	19 SC+9RST	14
2009	808,701	4.5	3,639,155	80,000	45	19 SC+9RST	17
2010	932,420	4.5	4,195,890	80,000	52	25 SC+9RST	18
2011	1,025,662	4.5	4,615,479	80,000	58	25SC+10F LT& RST	23
Source: Problem and prospect of container handling in Chittagong Port and compilation.							

Comparison with Major Regional Ports. The rationale of the widespread allegations of Chittagong Port being one of the most expensive and inefficient ports of the world can be found in Table below.

Table 8 : Ports and Terminal Handling of Major Regional Ports				
Country	**Export**	**Import**	**Duration (days)**	**US$ Cost**
	Duration (days)	**US$ Cost**		
Bangladesh	5	435	4	600
Cambodia	3	100	5	217
China	3	85	3	80
India	3	175	5	200
Pakistan	3	115	3	150
Sri Lanka	3	155	3	155
Bangladesh	5	435	4	600
Source: Doing Business, 2010, The World Bank.				

Labour and Employee Efficiency. The efficient handlings of containers demand a well coordinated planning, close supervision and strict control on the container handling and management system. But the state of employees and specialized equipment operators are not sufficient for smooth operation of the Chittagong Port. Detail states are table 9 and table 10:

Table 9 : State of Operator General Cargo Berth								
Equipment	Total	Op	Non Op	Total Operator	A Shift	B Shift	Short of Operator	Remarks
All Crane	30	22	08	33	16	17	09	Capacity 10,20&50 tons
Fork Lift	85	73	12	67	33	34	79	High/low mast
Tractor	14	13	01	04	02	02	22	Heavy/ light trailer
Total	129	108	21	104	51	53	110	
Source: CPA								

Table 10 : General Container Berth									
Equipment	Total	OPL	Non OPLT	Total Operator	A Shift	B Shift	C Shift	Short of Operator	Rmks
QGC	04	04		18	09	09	-	Nil	
RTG	11	11		28	14	14	-	Nil	
Loaded Reach Stacker & Fork Lift	22	19	03	21	04	04	04	33	
Empty Reach Stacker & Fork Lift	21	19	02	-	08	08	08		
Cont Mover	03	02	01	-	02	02	02		
Straddle Carrier	25	18	07	58	24	24	24	22	
Total	86	73	13	125	61	61	38	55	
Source: Chittagong Port Authority.									

Analyzing the state mentioned in the above table, it is vivid that requirement does not match with the demand. The operators try to exploit this situation and have the tendency to seek extra benefits which in turn increases the cost of business through this port.

ASSESSMENT OF FUTURE DEMAND FOR CHITTAGONG PORT

Possibility of a Deep Sea Port

Chittagong and Mongla are the two sea ports which provide services for sea trades of Bangladesh. Both the ports have limited permissible draft and length restriction of vessels. As a result, lighterage required for a substantial portion of the import trade from outer anchorage. The total tonnage of sea borne trade of Bangladesh is growing on an average of 10% per annum. Also the trend towards containerization persists and container traffic is growing on average 12% per annum. The present trend in world shipping is to have bigger ships but Bangladesh cannot realize the benefits of it due to limitations of her ports[15]. In this regards, GoB engaged the consulting firm M/S Pacific Consultants International (Japan) for conducting a techno-economic feasibility study. After completion of the study the Consultant submitted their final report on June 2009.

It is certain that from the current embryonic stage, Bangladesh would take a long time in analyzing and deciding on the site, size and design of the port. Mobilization of funds would also take a long time. One may put the long lead time taken for the construction of Jamuna Bridge and ongoing efforts in building the Padma Bridge. The proposal came from Chinese Transport Minister Li Shenglin in response to Bangladesh's request for credit from Beijing to construct the US$2.2 billion DSP (first phase only).[16] It has been established that Bangladesh needs a DSP to cope with its future domestic and regional demands for port services. But the issue here is, no matter how eager we are to build a DSP, it is set to take a long time. The desired time line of initiating the construction work of the first phase by 2010 is already missed and there is no definite indication that it will start soon. This means Bangladesh may have to depend on the existing port facilities, mainly Chittagong Port in foreseeable future.

Increasing Domestic Demand on the Port

Bangladesh economy is blooming and it has experienced moderately accelerated growth of 5.5% to 6.5% since 1996.[17] The country has established itself as a trusted sourcing zone for product like Ready Made Garment, Leather, Home Textile, Footwear, etc. Bangladesh export earnings in 1972-73 were US$ 348 million.

15. Preliminary Development Project Proforma for Establishment of Deep Sea Port at Sonadia, Coxsbazar, Ministry of Shipping, February 2010.
16. The Daily Financial Express.
17. Rahman M Abdur, Bangladesh Economy and Trades: An Overview, Export Promotion Bureau, 2011.

In 2009-10 the export earnings has reached US$ 16.2 billion i.e., growth is almost 4557% over this period.[18]

Table 11 : Projected Economic Growth Scenarios

Indicator	Unit	With consistent 4% GDP growth	With consistent 6% GDP growth	With consistent 8% GDP growth
Projected GDP at 2020	Million US$	99,643	140,393	196,550
Projected population at 2020	Million	163	163	163
Per capita GDP at 2020	US$	610	860	1,205

Source: Centre for Policy Dialogue (CPD), 2002

International/Regional Demand on the Port

a. **Bangladesh's Trade with North East India.** Bangladesh's geographical location has natural advantage as her trading partner of the North East states of India. The interstate trade profile of the North East indicates that the region had an incoming traffic of 5.8 million tones and outgoing traffic of 9.1 million tones.[19]

b. **Regional Economy and Trade Trend**. Chittagong port is the key factor to making Bangladesh the crossroads of the region which includes two giant economies like India and China, is desperately looking for direct shipping facilities to reach out to the world.

Untapped Development Potential of the Port

There lie huge untapped potentials of Chittagong Port. The infrastructure that is being put into place including the 1000 m length berths at the New Mooring Container Terminal (NMCT), could itself handle 1 million TEU. The CCT should also be able to handle another 500,000 TEU. Thus, improving efficiency will allow it to increase capacity by 67% without any new infrastructure construction.[20] There was no capital dredging of the river. A mega scheme for removing all sunken structures, widening and deepening the channel will enhance the capacity of the port a great extent.

18. Presentation on Trade and Commerce: Policies, Facts and Options by Khan Mohammad Faruk, Commerce Minister for NDC on 22 May 2011.
19. Rahman Mustafizur Bangladesh Export Opportunity in the Indian Market, A CPD occasional paper series, July 2010.
20. Asian Development Bank, Technical Assistance Report (TAR:BAN 36105) on Chittagong Port Trade Facilitation Project, July 2003.

ROADMAP FOR FUTURE DEVELOPMENT OF CHITTAGONG PORT

Need for a Strategic Plan

Considering the importance of Chittagong Port as one of the most key national installation, Bangladesh needs to formulate a strategic plan for the Port. The plan should include the maximum utilization of the space on both bank of the river Karnafuli. The whole area should be considered as an Integrated Industrial-Port Complex.

Capacity Enhancement

In previous sections current state of Chittagong Port was discussed and its ability to cope with the envisaged demand for port services was assessed. From the comparison between the current capacity and future demand it came up clear that there exists deficiency of capacity, particularly in container handling. The planned handling capacity of the Port is 100,000 MT cargos and 3,00,0000 TEU Container, where as it handles ± 3 times higher than the planned capacity[21].

Dredging of the River

The Karnafuli river, a lifeline for Chittagong port is gradually losing navigability with its width already shrunk by 50 to 270 meters at several points in the last two decades. Its depth reduced sharply for heavy siltation, disposal of huge quantity of waste from the city and lack of planned dredging.[22]

Construction of Additional Container Terminal

CPA should take appropriate step to construct new container terminals in suitable locations on either of the banks. CPA should make use of space available for container terminals using their own idle fund or private investors may be invited for the same.

Procurement of Container Handling Equipment

Presently CPA is in possession of less number of container handling equipments than the requirement. It is proved that installation of four new QGC in 2006 enhanced the Port's container handling capacity to a great extent. It has been estimated that the Port needs more units of equipments including QGC to be able to manage the present volume of containers.

21. Halima Begum; 'Impact of Port Efficiency and Productivity on the Economy of Bangladesh - A Case Study of Chittagong Port'.
22. The Daily Star, July 2, 2011.

Development of Container Yards

This study estimated that Chittagong Port handled 2 times more containers than its maximum workable capacity in the year 2009/2010. This has negative impact on the efficiency of the Port by increasing the Dwell Time and Turn around Time. GoB needs to immediately allow to build private container yard anywhere along Dhaka-Chittagong road/railway to enhance the container holding capacity of the Port.

Human Resource Development Scheme

Human Resources Development is needed for efficient management of the port. It needs integrated, professional, sincere and honest efforts by all employees but such outcome can only be expected from a well trained and motivated personnel's.

Introduction of 'Landlord' Concept

CPA should adopt 'landlord' port concept in terms of port operations. At the same time port authority should continue its initiative in port development and ensure a congenial working relationship with all other stakeholders. Maintaining the public port status of CPA, transforming port management system may lead to better operational performance and financial results.

Management of Port

Chittagong port is an autonomous body but practically the ministry-centric port management system is a complex bureaucratic process. The port authority has to depend for sanction and advices on important issues. Chairman CPA should be allowed to take decision up to a certain level prescribed by the ministry.

RECOMMENDATIONS

The study recommends following measures to enhance the capacity and efficiency of Chittagong Port:

a. GoB/CPA may undertake a study to formulate a Strategic/Master Plan in respect of future development of Chittagong Port.
b. GoB/CPA may immediately undertake a systematic capital dredging of the harbor to allow larger ships to berth at the Port and also to allow more operational hours for the movement of ships from outer anchor to the berths.
c. GoB/CPA may procure additional cargo/container handling equipment progressively keeping pace with trend of demand.
d. Customs regulations may be reviewed to allow speedier handling of cargo/containers including allowing containers to be stripped and stuffed in ICDs constructed outside the port premises.
e. GoB may announce financial incentives for private entrepreneurs to build container terminals in suitable places in inland waters.

f. GoB must make an endeavor to construct a DSP as soon as possible to become a regional hub.
g. Concept of "Landport" sytem may be introduced in Chittagong Port.

CONCLUSION

Chittagong Port plays a very vital role for Bangladesh, handling around 90 % of the nation's trade. The geographic location of this port creates an opportunity for easy and cost-effective foreign trade through this port with all the South Asian countries as well as other Asian countries. Besides, sufficient low cost labour has given a great opportunity to export oriented industries in Bangladesh. But the Port is recognized as one of the inefficient, corrupt and costly ports in compare to others. Its operation is adversely affected due to shortage of container handling equipments, inadequate yard space and other deficiencies in capacity and poor efficiency. This increases the cost for port services and reduces the trade competitiveness.

The economic structure of Bangladesh has changed from agricultural to industrial sector. Realizing the future demand for port, the GoB has embarked on a project to build a DSP in an attempt to cope up with the demands for port services by domestic and international users. But in all probability, Bangladesh has a long way to go before it can have a fully operational DSP. Till construction of DSP is completed and comes in to operation, the Chittagong port requires rendering necessary facilities and services in efficient handling of sea borne export-import cargo. To do so, CPA has to enhance its capacity by installing sufficient number of container handling equipment, provisioning for more container storage by enlarging container yard, improving hinterland communication and so on. To implement these projects CPA must be allowed to exercise its given authority without any political interference. It is expected that with the support and blessings of the government and sincere and relentless effort of CPA certainly, will contribute in transforming the Chittagong port in to an efficient port of this region.

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Abbreviation

ADB	Asian Development Bank
BC	Before Christ
BICM	Bangladesh, India, Myanmar and China
BIMSTEC	Bangladesh, India, Myanmar, Sri Lanka, Thailand Economic Cooperation
BO	Berth Operator
BOT	Build Operate-Transfer
CFS	Container Freight Station
C&F	Clearing & Forwarding
CPA	Chittagong Port Authority
CPD	Centre for Policy Dialogue
CCT	Chittagong Container Terminal
CHE	Container Handling Equipment
CMHI	China Merchants Holdings International Company Ltd
CY	Container Yard
CUFL	Chittagong Urea Fertilizer Limited
DSP	Deep Sea Port
DWMB	Dock Workers Management Board
FCL	Full Container Load
FY	Financial Year
GCB	General Cargo Berth
GDP	Gross Domestic Product
GNP	Gross National Product
GOB	Government of Bangladesh
ICD	Inland Container Depot
KAFCO	Karnafully Fertilizer Company
LCL	Less Container Load
LOA	Length over All
MDG	Millennium Development Goal
MOU	Memorandum of Understanding
NMCT	New Mooring Container Terminal
OP	Operational
POL	Petroleum Oil & Lubricant
PRS	Poverty Reduction Strategy
QGC	Quay Gantry Crane
RF	Radio Frequency
RTG	Rubber Tired Gantry
SAARC	South Asian Association for Regional Cooperation
SC	Straddle Carrier
SAGQ	South Asian Growth Quadrangle
SSG	Ship to Shore Quay Gantry Crane
TEU	Twenty Feet Equivalent
TSP	Triple Super Phosphet

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SOLID WASTE MANAGEMENT – A PUBLIC HEALTH PROBLEM IN DHAKA CITY

Brigadier General Md Fashiur Rahman, ndc

INTRODUCTION

The area of Dhaka city is 1530 sq km of which 360 sq km is under DCC and the population is 12 million (Bureau of Statistics 2008). Since, Dhaka city is the epicenter of all activities. So a huge number of populations expected to have increased per capita income, which enhances an enormous volume of waste both liquid and solid that poses a serious threat to environment and health (Rafia et al, 2010 factors affecting).

Waste is not a new emergence in the society; rather it is, since time immemorial. This waste always requires hygienic management for human society and environment. Still today in rural areas or even in satellite urban areas due to sparse density of habitations and populations, there are ample place of low land, bushes where dwellers traditionally dump their waste even in open air, though it is not health and environment friendly. With the increase of habitations, these informal landfills are being reduced in size, resulting a tangible waste accumulation in our area around that warrants central mechanism for management.

History of Solid Waste Management of DCC

The history of Dhaka begins from the 7th century but its name dates back to 1608, when it was ruled by Subedar Islam Khan. In 1864 Dhaka Municipality was established, the population was only 25000. Its conservancy service began since 1717. In 1820, a committee was formed for the sanitation of the town. Cleaners used to collect and dispose of human excreta in trenching grounds manually. Since 1864 refuse and night soil were collected by bullock carts and were dumped in nearby low lying areas. Long days after, in 1963, water carriage system was introduced with a separate organization DWASA. Dhaka Municipality continued collecting night soil. Night soil were collected into bucket and then transported by the carts (M Haider Khan, 2003). Afterwards the bucket and carts were replaced by trailer pulled by bullock. In 1982 DCC introduced open trucks for solid waste. In 1993 DCC introduced demountable container along with closed and open truck. Latest in 2007 DCC introduced compactor truck having excellent performance capability in solid waste transportation (Rafia et al, factors affecting …,2010).

Type and Generation of Solid Waste Dhaka City

Solid wastes are basically of two types (a) soft wastes or organic wastes, which include vegetables, fruits, leftover food staff from households, hotels and restaurants, and

(b) hard wastes, such as pieces of wood, metals, glass, plastics and polythene materials, shredded skin and leather, paper, rubber, cloths and textile factory waste, other industrial wastes and construction materials (Nazrul Islam et al 2004). Again it is Domestic, Commercial, Industrial and Hospital waste (M Haider Khan 2003). Construction waste now has become huge burden for DCC. Daily generation of construction debris is 350 tons (M M Kazi, Bangladesh Center for Advanced Studies).

Table – 1 Waste generation per day by area of generation

Area of generation	Waste generated per day in ton	% to total waste per day
Households	2531	52.03
Business or commercial	910	18.71
Industrial	973	20.00
Street sweeping	291	06
Hospital / clinic	159	3.26
Total	4864	100
Source: DCC staffs, supervisor and cleaners		

In this study composition of wastes were food, vegetable, garden and organic (66.29%) materials, plastic, rubber, polythene (85%) metals (2.01%) and paper products (67%). In waste generation of households on an average was 0.34kg/ capita/ day, but in affluent area average waste generation is 0.54kg/ day/capita.

Table 2 : Households waste generation by level of income (n=450)

Income category	No of households with members in each household	Total waste generated In Kg	Waste per capita per day in Kg
Higher	50 (8 members)	232	.58
Middle	120(8)	428.4	.51
Middle low	80(7)	274.4	.49
Lower	135(6)	307.8	.38
Lowest	65(6)	105.3	.27
Source: Primary data			

This study brought out that higher income group especially Gulshan, Baridhara, Banani, Dhanmondi etc area had more waste generation and less income group had less generation. Average per capita per day waste generation was 44Kg

Table 3 : Respondents by income per month (n= 450)			
Income group in Taka	**Non Slum**	**Slum**	**Total**
Higher >30000	50	-	50(11.11%)
Middle >20000	120	-	120(26.66%)
Mid low >10000	70	10	80(17.77%)
Lower >5000	45	90	135(30%)
Lowest <5000	15	50	65(14.44%)
Source: Primary data			

It was found that higher income and middle income respondents were from non slum residents only but no slum respondents were qualified in this group. Lower and lowest income respondents were more in slum residents.

Problems of Solid Waste of DCC

People of Dhaka city are concerned about health and environmental problems. In their view waste to be ranked high and considered to be an important aspect of human welfare (Rafia et al Factors affecting 2010). Due to limited capacity of DCC relating to solid waste, more than half of the amount left uncollected. DCC has budget constraint; it cannot spend sufficiently on solid waste management. DCC area does not have sufficient land for disposal of solid waste rather lands are quickly exhausted. Public awareness is not sufficient for waste management like reusing, reducing and recycling. There is no formal recycling business center. (Tariq Bin Yousuf 2010).

Slums are not covered by DCC for cleaning at all (Cover Story Cleaning the City 2010). Large amount of delayed and uncollected wastes produces strong offensive odour and pollutes the air. It acts as a breeding ground for mosquitoes, flies and other insects which affect living environment (National 3R strategy 2010). High humidity with heat causes the organic portion of the waste to decompose quickly. This affects the environment, health of the waste workers and the inhabitants (C Visvananthan, Municipal solid waste Asia).

Legal Responsibility of Solid Waste Management

DCC is legally obliged under Municipal ordinance 1983 and Bangladesh Environment Protection Act (EPA) 1995 (M H Khan 2003). Legal Basis of Waste Collection Dhaka City Corporation Ordinance is the basic law regarding street/drain cleaning, waste collection and transportation. According to Section 78 of the Ordinance, DCC is responsible for secondary waste collection to remove waste from its dustbins/containers, and transport the waste to final disposal sites. Residents are responsible for primary waste collection i.e bringing their waste to DCC's waste

collection points where dustbins/containers are located. For Primary Waste Collection, in 2002 DCC introduced an approval system of NGOs/CBOs/private organization (Clean Dhaka Master Plan, March 2010).

Potential of Recycling Solid Waste

In Dhaka City Corporation area 60% houses are of low income, 37% middle income houses. Separation of household waste is strictly maintained in poor families and they sell those to hawker. Well to do families do not separate household waste. (Bangladesh: Urban Public, Aus Health Intl November 2008) .

Slum people usually recycle waste in their household and at DCC collection points. In recycling and household management of solid waste female members are more concerned. About recycling, only 25.6% regularly recycled, 18.2% seldom recycled, and 56.2% never practiced recycling (Rafia et al, Factors affecting.., 2010). In this study, a total of 1440 (29.60%) tons are recycled every day.

Compost produced as the end product of organic waste is used as manure. According to 'waste concern' 500 tons of compost is produced annually (Rafia et al 2010).

Awareness and Practices of Solid Waste Management

Enhancement of supervision and control by DCC through regulations, monitoring, inspection, and community participation is required for building awareness. It takes time to change the habits of entire society. Awareness campaigns, especially for younger generation, can produce dramatic changes in behavior.

Table 4 : Awareness of people on SWM and waste discharge (n= 450)

Where to throw waste	Non Slum			Slum	
	2004	2010	This study respondents 2011(300)	2004	This study respondents 2011(150)
To door side collection van	66%	89%	93.6%(281)	5%	10%(15)
To waste bins	16%	10%	6.4%(19)	2%	10%(15)
Dump in vacant area	18%	0%	0%	63%	60%(90)
Road side and others	0%	0%	0%	30%	20%(30)

Source: DCC and Primary data

Responses of the Media

Media can play important role in waste management. It can instantly show the existing waste management scenario of the city as well as the sufferings of the citizens. Media can help improving awareness programme, also it can bring newer concept direct to the people. After adopting the Clean Dhaka Project by DCC different Media periodically giving their coverage on this project (JICA Expert Team, WMD, DCC 2010).

Collection of Solid Waste

DCC is responsible for secondary waste collection from dustbins and transport it to the final disposal sites. Because of rapid urban population growth, investment in secondary collection represents a priority area (Kundu D, AETEP, 2008). Households are supposed to dump their solid wastes in the CBs (Community Bin). When CBs are at far locations, households usually throw their garbage at any convenient places like road, ditches, ponds, lakes or surface drains (National 3R DOE 2010). In this study, Ten Mini Transfer Stations (MTS) were considered as collection points. Total wastes collected by Rwickshaw Van (RV) to MTS were 60 tons/day and average was 6 tons/day/RV.

To support the DCC activities, in addition to DCC cleaners, Primary Collection Service Providers (PCSP) are providing door-to-door collection services with rickshaw vans to carry domestic wastes to dustbins or containers since 2002. PRISM Bangladesh, a national NGO is working for Medical waste management , they collect and carry up to Matuail, Aminbazar for dumping (M Manzurul Hassan 2008).

Transportation of Solid Waste

Wastes are transported by open or closed or de-mountable container (hydraulically operated) vehicles from different areas of the city. 443 numbers of trucks, container carriers including newly included compactors are engaged in transporting the Solid wastes up to the disposal sites (Solid waste@DCC). For primary door to door collection Tri cycle Rickshaw van and 3000 hand carts are being used.

Due to traffic jam and usual crowed in the street, trip time to the landfill becomes higher. Average trip/day/truck was found 2.5. This study found average time per trip was 03 hour 31 minutes from loading place to landfills.

Regarding transportation time of solid waste city people have their own view, they suggested night time transportation.

Final Disposal of Solid Waste

Garbage Trucks & Carriers bring the collected Solid Wastes to the selected Dumping Sites, low-lying lands. The waste is presently being disposed off mainly in the landfill at Matuail and Amin Bazar. The uncollected wastes are dumped in

open spaces, streets, and clogs drainage system creating serious environmental degradation & health risks (Solid waste @ DCC).

In the landfill wastes are dumped on the open but technically developed ground. Wastes are then spread over without earth cover to allow decomposition and leachate formation. Leachate so formed are managed there. But the gases especially methane and others due to anaerobic decomposition polluting the environment. More over a good amount of leachate percolating through the fill and contaminating ground water. The study found a total 2130 (43.79%) tons of waste were transported to both Matuail and Amin Bazar landfill in a day.

Strategy of Solid Waste Management in Dhaka City

Word Based Approach (WBA) in Dhaka city has started getting momentum and seems to be effective. Peoples are improving awareness and waste management practices. Recycling behavior is improving and entices people to keep waste in a place or in basket and then throw it into dustbins. Door to door collection has been improving as Tri-cycle vans are moving up to doors.

Community participation is encouraged through social and community activities. Compactor vehicles help improves secondary waste collection. Primary collection may be in day time but secondary collection has to be in night to avoid traffic jam in the city. In addition to road transportation, rail and water way may be availed to transport waste to distant landfills for dumping.

Resources involved in SWM

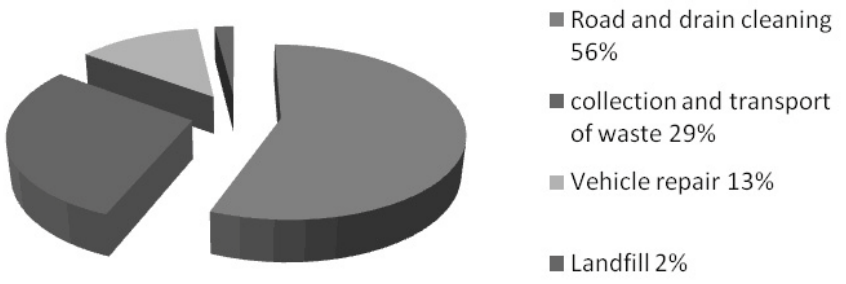
DCC has 1140 receptacles/dustbins, 3000 hand carts, 443 truck vehicles,400 drivers, 8500 cleaners and in private sectors 41 receptacles, 27 truck with drivers and 600 cleaners. Clean Dhaka Master Plan 2010 estimated that on an average, two cleaners are required for the service of 1000 people. In this sense over 22,000 cleaners are required for the smooth service in DCC.

On an average closed/ compactor vehicle are providing min 3 trips a day and open/ trailer vehicles min 2 trips a day (Clean Dhaka Master Plan 2010). Appropriate use of containers and receptacles plays hygienic and effective role in solid waste management. DCC has 564 containers distributed at 335 different locations of zones.

Budget Involved

DCC had 146.68 Crore Taka which was nearly 7% of total budget for FY 2010/11. The costs of SWM and conservancy tax were estimated Taka 45.06 and 13.69 Crore respectively (Clean Dhaka Master Plan 2010). DCC already announced its yearly waste management budget approximately 171 Crore Taka for 2011/12 Fiscal Year, which is about 10% of total budget.

Figure 1 : SWM expenditure DCC FY2010/11



Source: DCC

EFFECTS OF SOLID WASTE ON HEALTH AND ENVIRONMENT

Hospital Waste and Health Risk

More than 600 High Care Establishment (HCE) are delivering their services in Dhaka city that generates about 200 tons of waste a day (Lawson 2003). It is 4%-7% of total waste generated (Firoz Reza, arronno.reza@gmail.com). In hospitals, therapeutic procedures like cobalt therapy, chemotherapy, dialysis, surgery, delivery, resection of organs, autopsy etc are carried out and results infectious wastes, radioactive wastes and chemical materials, which are hazardous. Only 10%-25% of the hospital wastes are infectious or hazardous. And until recently it is not handled properly (WHO, 2001). Mixing with the domestic solid wastes, the total waste becomes potentially hazardous (Rahman, 1999, M Manjurul et al 2008, M Mahbubur IEB 2010). PRISM, Bangladesh has developed a disposal facility for medical waste at Matuail. They could not take the entire medical waste load, but 7 hospitals both public and private including Dhaka and Salimullah Medical College. PRISM collect approximately 7 – 10 tons of medical waste every day, rest huge amount mixes with other solid wastes (M Manzurul 2008).

In this study thirteen hospitals and three diagnostics from public and private sectors were surveyed. Average waste generation per patient was found 1.22 kg/day in hospital and .17 kg per day in diagnostics.

20 Doctors, 10 Nurses and 10 Cleaning staffs of different government and private hospitals were interviewed, where vulnerable group and diseases were identified with suggested measures.

Table 5 : Opinions of doctors, nurses, cleaning staffs

How infected	Who are vulnerable	% suffered and risk involved	Diseases responsible	Measures suggested
Direct contact with infested blood, organs etc, with sharp and pointed instruments etc. By inhalation.	Hospital cleaners, Waste picker, DCC waste cleaners, workers at landfill site, Waste recycler, un authorized hospital waste recycler.	100% of the vulnerable group suffered. They are risk for others as diseases are infectious.	Skin diseases, water born diseases, infectious hepatitis all types, respiratory diseases e.g Asthma, bronchitis, cancer, AIDS.	*Strong control on recycling matters *before segregation and recycling disinfection to be done. * recycling materials to be cut and broken into pieces. * vulnerable group to use gloves, masks and dress * Vulnerable group must be registered and to be brought under periodical check up.

Source: Primary data

More than 87000 poor and socially disadvantage people working in the street, waste bins, dumping site are involved in the recycling activity (The Independent 2006).

Health and Environmental Risk of Waste

In 1832 Edwin Chadwick, in England investigated the out- break of cholera with a view to improve the condition under which they lived. Efforts were directed entirely towards general cleanliness, garbage and refuse disposal (K Park 2009, P 569-60). In Dhaka city growing industrialization and rapid urbanization has emerged with numerous problems like creation of slums, overcrowding, accumulation of waste in the cities resulted increased sickness that includes infectious diseases like Hepatitis, Cholera, Typhoid, Tuberculosis, industrial and social problems-pathologies.

Sanitation and Waste

Waste that can cause health problems are human-animal faeces, solid waste, domestic waste (sewage, sullage, grey water), industrial waste, agriculture waste. Hygienic means of prevention can be engineering solution (sewerage and waste water treatment), simple technologies (latrines, septic tanks), or even by hygienic practices at individual level (WHO sanitation). It is connected with threats to overall health of a community (Winslow 1920).

WHO's Guideline of Waste on Health and Environment

Hazardous waste is potentially damaging to the environment and must be controlled. The nature of legislation required will depend on the constitution of the individual country. The general principles should be considered elaborating any legal framework for hazardous waste management; (1) The basic principles of waste management policy; (2) As a first step hazardous waste should be defined by law to set out the scope; (3) Legislation can only set out a frame work and should refrain from regulating disposal processes in detail; (4) Legislation should give due regard to predisposal options; (5) Legislation must be incorporated in, or harmonized with comprehensive legislation on hazardous substances; (6) Comprehensive legislation on hazardous substances.

Three steps are to be adopted of measures to control hazardous waste management. The first step is the control of waste generating process. Second step is licensing procedures for potentially hazardous activities. Third a comprehensive system of control of notification. As a basic principle, hazardous waste is disposed off to minimize adverse effect of the community; such that (a) Human health is not threatened and human wellbeing is not impaired; (b) Livestock, game, other wildlife and fish are not threatened; (c) Water bodies, soil, and useful plants are not harmed; (d) The environment is not harmed by air pollution or noise; (e) The interests of nature conservation, landscape management and town planning are safeguarded. (WHO Guideline 1983).

Industrialization and Solid Waste of Dhaka City

Industries are producing almost 1000 tons of solid wastes every day and directly polluting the environment of Dhaka City. Always there has been conflict between development and environment. Till 1962 the number of industries in Dhaka City were about 100, most of them were small to medium scale, that swelled up to 3000 in 2011. Industrialization having its deep connection with so many diseases and strongly with infectious diseases. The growth of industries has generally been unplanned without keeping the issue of environmental protection in careful consideration (Sohrab Ali, Daily Star 2010).

Twenty industries (Tanneries, Textiles, Garments and Pharmaceuticals) were surveyed, where 50 officers and staffs were interviewed. All the respondents opined that they suffered skin diseases, chest diseases and also infectious diseases by direct contact and from inhalation of waste. No industries have their own waste management plant.

Growing Population and Solid Waste of Dhaka City

In 1906 the population of Dhaka was 100,000 and in 1971 it was more than 500,000. Dhaka became the capital of Bangladesh and experienced sudden rise of population and is continuing till today (The Independent May 2006). As on 2008 the population is 12 million with 6% growth rate (Rafia et al 2010). Expected projected population of Dhaka City would be 18 million in 2015 and solid waste generation would be more than 6000 tons/day (Nazrul Islam et al 2004) and in 2021 it would be 15,110 tons/day(Prasanjit Sarkhel, India).

Historically, urbanization was the result of industrialization. In Dhaka 28% population are poor and live in the slums (The Independent May 2006 and Habibul Haque 2010). Waste generation in markets are also huge. Five raw markets were surveyed. Karwan bazaar produces 20 tons of solid waste a day. 60% to 70% of the commercial waste were collected by DCC.

Solid Waste Management in Cities of Different Countries

By 2025, 52 % population in Asia would be living in urban area. The per capita generation of solid waste in Asian cities is ranged from 0.2 to 1.7 kg/day. Urban population of India is 28%, Thailand over 23% as such their rate of economic growth causes higher generation of waste (C Visvananthan visu@ait.ac.th).

Kolkata City, India

It's area is 187sqkm and population is 8 million. It generates 3,000 tons/day of solid waste at a rate of .50 kg per capita per day (Chattyapadhya S 2009).

The budget allocation for 2007–2008 was Rs. 1590 million (Rs. 265/capita/year) on SWM (Tumpa Hazra 2008). KMC spends 70%-75% of its total expenditures on collection of solid waste, 25%-30% on transportation, (Chattayapadhya S 2009). Solid waste from residential and commercial areas are collected by NGOs from house to house twice in a week (SWM Master Plan Kolkata,ADB Project). Kolkata Municipal Corporation (KMC) has 245 transport vehicles and about 10,300 cleaners (Prasanjit Sarkhel India).

Delhi City, India

It's population is 18 million (2011) with the annual growth rate of 3.85. Presently the inhabitants of Delhi generate about 7000 tones/day of MSW, which is projected to rise to 17,000–25,000 tones/day by the year 2021. MSW management is the most neglected areas of the municipal system in Delhi. About 70%–80% of MSW is collected and the rest remains unattended on streets or in small open dumps. Only 9% of the collected waste is treated through composting, and rest is disposed in uncontrolled open landfills at the outskirts of the city (Talyan Vikash 2008).

London City

London City produces about 48000 tons of solid waste every day. Of this, 25% is collected by councils, mostly from households and some from businesses areas. The vast majority of London's municipal solid waste (73%) is currently disposed of in landfills, 19 % is incinerated, where the process generates electricity. Only 8% of solid waste is recycled or compost. Municipal waste is transported by rail, barge and road to landfill sites (Greater London Authority City Hall SE12AA). Recycling has a high level of public support. All schools have a recycling centre for pupils, learning recycling. The Mayor has therefore introduced the London Schools Environment Award (LSEA) (Waste 2 Tri City 2009).

Solid Waste state in USA

Every year, United States generates approximately 230 million tons of "trash"--at 2.09 kg/person/day. Less than one-quarter of it is recycled; the rest is incinerated or buried in landfills. More than 70 percent of the land filled waste could be reused or recycled, which includes valuable materials such as glass, metal, and paper. This would reduce eliminate potentially severe environmental, economic, and public health problem (Garbage Solid Waste USA). 80% of New York households recycle about 20 per cent of households waste (New York SWM Plan).

Public Private Partnership in SWM of Dhaka City

Due to limited financial and organizational capacity, it is difficult for the DCC to ensure efficient and appropriate delivery of solid waste collection and disposal

Services to the entire City. Kalabagan area was the first started their own informal waste collection services for keeping their localities clean, thereafter Dhanmondi, Banani, Gulshan, Baridhara and Uttara. 'Waste Concern', a local NGO, has been first in Dhaka to start with community-based door to door waste collection, awareness building and composting. Since 2003, After 'Waste Concern' Community Based Organizations (CBOs), NGOs and the entrepreneurs have already come forward with their innovative programme and working with DCC (Rafia et al, Firoz Reza). Private organizations are encouraging people's participation as community responsibility. They take 30 to 50 Taka per household and residents are willing to pay (Rafia et al 2009 Willingness).

PRISM Bangladesh, a national NGO, is working for medical waste management with the DCC. Japan International Cooperation Agency has been implementing the Project for Strengthening of Solid Waste Management in Dhaka City (Clean Dhaka Master Plan 2010).

Opinion sought from city people on participation of private organization for solid waste management. They want efficient performance of DCC. 70% of common residents from lower middle and lower income group they apprehend that if total primary collection responsibility is given to private organization ultimately monthly charge will be more. In different cities of neighbouring countries or in London or New York City mainly primary collecton responsibility are given to private organization (Aye Aye 2001/2002, H Tay Lwin YCDC and Sunil Edward 2009). In DCC the Waste Concern a private organization are doing composting in Matuail Landfill (Rafia et.al.2010).

RECOMMENDATIONS

The following recommendations are:

a. To strengthen Ward Based Approach to decentralize solid waste management up to ward level.
b. Improvement of DCC cleaners working environment by ensuring safety gears, first aid medical at different level.
c. To impart training to the cleaners and staffs on sanitation and hygienic handling of solid waste.
d. To Promote Community Participation in SWM through a community committee in all wards up to each Mahalla to improve primary and secondary solid waste collection.
e. Strong Public Awareness raising through media, social and cultural activities/ campaigning.
f. Improving Secondary Waste Collection Services by increasing number of tri cycle and compactor vehicle and increasing number of collection points.
g. DCC budget allotment against SWMs to be increased to 40 to 60% of total budget

h. To enforce laws and regulations relevant to medical waste management.
j. External marginal cost to be assessed against industries, hospitals/ diagnostics/ clinics on health and environmental hazardous effect and must be recovered from them.
k. Rail and water way could be utilized to transport solid waste to distant landfills.
l. To introduce waste management lessons in school, college and University syllabus.

CONCLUSION

To protect human health and environment conducive to comfortable living and to conserve resources, effective solid waste management play important role. Developed countries identified and eliminate the effect of wastes on humans and environment, they emphasize now on recycling strategies and pre-treatment technologies for final disposal. In Dhaka city most important is the efficient primary door to door collection services, which can effectively protect human health. Practices of throwing waste to backyard, road, road side, ditches, not into the dustbin is still in vogue.

DCC need to increase its budget allocation correlating internationally. Manpower involved in solid waste management was found lacking in skill and responsibility. They need systemic training and education. Encouraging events in the waste management are recycling economically valued materials. City peoples need to be aware more.

Medical waste though less in volume but without being disinfected mixing with main stream of solid waste polluting the whole waste, playing its stubborn disease spreading. Until recently, the management of medical wastes has received little attention despite their potential health and environmental risks.

Public private partnership can be encouraged to work with DCC. Ward based approach by DCC seems to be effective especially in awareness building. Matuail and Amin Bazar landfills need to develop more scientifically covering medical waste. So, better collection, segregation and disposal of waste will have sustained impact on reducing health and environmental effect of solid waste.

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NIGERIAN AIR FORCE AND ASYMETRIC WARFARE: ISSUES AND PROSPECTS

Group Captain Ik Abdul, ndc, psc, DSS, PGDPA

INTRODUCTION

The post-Cold War era marked the end of bi-polar rivalry and the emergence of a welter of nationalist, ethnic, religious, tribal and criminal conflicts.[1] These conflicts involve state and non-state actors. This development was exemplified by the 11 September 2001 terrorist attacks on the World Trade Centre buildings and the Department of Defence (Pentagon) building in the United States of America (USA). The September 11 attacks were attacks on a state by a non-state actor; an act of terror rather than a conventional use of force.[2] Similarly, heavily armed Russian Forces were forced to withdraw from Afghanistan by tribal irregulars while the United States pulled out of Somalia because insurgents won the information war.[3] The recent development in the Middle East and North Africa in March 2011 has dramatically changed the strategic environment. It, therefore, seems that these increasing tendencies for non-state actors to exploit the weaknesses of conventional forces by adopting unconventional strategies will likely dictate the nature of future conflicts. Indeed, these acts of violence have been referred to as Fourth Generation War (4GW) or Asymmetric Warfare (AW).[4] It would be right to conclude as Clausewitz has noted, that "every age has its own kind of war, its own limiting conditions, and its own peculiar preconceptions".[5] The nature of today's warfare is clearly asymmetric and the preoccupation of many nations is how to fight such wars.

AW though an old method of warfare has drawn a lot of attention recently because of the widespread involvement of non-state actors which has been accompanied with new security concerns and threats. Therefore, countries around the world today included USA have now reassessed their threat to be primarily non-state terrorism and have configured its armed forces for a more efficacious countering of AW. Sun Tzu recognised this when he noted that, "one engages in

1. "The Evolution of Warfare, the 3 Element Approach". http://www.richard.karoo.net/articles/concepts_evolution.html accessed on 21 February 2011.
2. Christopher Coker, "Asymmetric Warfare: Ends or Means?" in John Andreas Olsen (ed) Asymmetric Warfare, (The Royal Norwegian Air Force Academy, P. 319.
3. "The Evolution of Warfare", Op. Cit.
4. Carl Von Clausewitz, quoted in Dan Daley, "Asymmetric Warfare: The Only Thing New is the Tactics", USA National Defence University, National War College (Class of 2000).
5. A Ogunedo, "Asymmetric Warfare and National Security Strategy: Options for Nigeria" (Unpublished) P. 14.

battle with the orthodox and gains victory through the unorthodox".[6] Today, 'asymmetry' is widely considered as the norm in a number of conflicts.[7] AW manifests in many forms ranging from terrorism to organised crime, religious indoctrination and psychological operations.[8]

Nigeria has witnessed several threats of AW. Which included the *Egbesu Boys* (a Niger Delta militant group), in September 2004, and, the Asari Dokubo-led Niger Delta Volunteer Force (NDVF) both threatened to cause wide-spread destruction of Key Points (KPs) and Vital Points (VPs) across the Niger Delta. Consequently, across Nigeria, there have been seizures of strategic installations, kidnappings, attacks on security agencies, and religion-based uprising. This has impeded oil production with its attendant socio-political and economic consequences. The AW environment in Nigeria could be said to be evolving, the size and sophistication of these threats in the future is uncertain. They could pose more serious threat to national security than they currently do. Hence, the nation must be prepared to combat these threats.

The Nigerian Air Force (NAF) alongside other security agencies have participated in combating the threats of AW as witnessed in the Kano Maitasine Riot of 1980, the Sharia Conflict of 2000 in Kaduna, and the ongoing Operation RESTORE HOPE in the Niger Delta, among others. In containing these conflicts, the role of the NAF was restricted to close air support, visual reconnaissance and air transport. Therefore, due to limited number of words the paper will be restricted to Concept of Asymetric Warfare [AW], Assessment of the NAF Capability in AW, Strategies to enhance NAF Effectiveness in AW and finally recommend ways to enhance NAF capability in AW.

CONCEPT OF ASYMMETRIC WARFARE

AW brings together many previous and specific ideas of guerrilla warfare, espionage, atrocity, violent resistance, sabotage, non-violent resistance and terrorism.[9] It is a broad and inclusive term coined to recognise the fact that opposing sides in a conflict may have great disparity in strengths and weaknesses such that one may resort to drastic tactics to achieve relative advantage.

The official United States (US) working definition of asymmetric warfare is:

6. Sun Tzu, The Art of War, translation by Samuel B. Griffith (Oxford: Oxford University Press, 1983) P. 34.
7. Frans Osinga, "Asymmetric Warfare: Rediscovering the Essence of Strategy," in John Andreas Olsen (ed) Asymmetric Warfare, (The Royal Norwegian Air Force Academy, P. 270.
8. Ibid.
9. Robert Allen, "Asymmetric Warfare Is the Army Ready?" http://www.asmc.belvoir.army.mil/asymmetric_warfare.htm accessed on 10 May 2011.

Attempts to circumvent or undermine US strengths while exploiting US weaknesses using methods that differ significantly from the US expected method of operations. [Asymmetric approaches] Generally, seeks a major psychological impact, such as shock or confusion that affects an opponent's initiative, freedom of action, or will. Asymmetric methods require an appreciation of an opponent's vulnerabilities. Asymmetric approaches often employ innovative, non-traditional tactics, weapons, or technologies, and can be applied at all levels of warfare– strategic, operational, tactical and across the spectrum of military operation.

Though this definition brings out most of the aspects of AW but it sees AW from the view of the Americans. AW entails more than circumventing or undermining US strengths while exploiting US weaknesses. Every nation has its own set of AW challenges. Hence, AW should be viewed from a broader perspective.

Metz and Johnson posit that AW

Is acting, organising, and thinking differently than opponents in order to maximize one's own advantages, exploit an opponent's weaknesses, attain the initiative, or gain greater freedom of action. It can be political-strategic, military-strategic, operational, or a combination of these. It can entail different methods, technologies, values, organisations, time perspectives, or some combination of these. It can be short-term or long-term. It can be deliberate or by default. It can be discrete or pursued in conjunction with symmetric approaches. It can have both psychological and physical dimensions.[10]

This definition offers an insight into the fundamental dialectic nature of AW. It is an activity that states or non-state actors may engage in and it avoids the trap of thinking only in terms of threats or weapons or a certain form of war.

Hence, in AW there are no boundaries and they come in a number of unknown forms. They could be internally or externally generated and threaten the fabric upon which societies are built. In this study, AW refers to attacks or threats in which a vast mismatch exists between the resources and philosophies of the combatants, and in which emphasis is on bypassing an opposing military force and striking directly at economic, cultural, political or population targets. AW includes terrorism in all its ramifications, violent civil unrest and the activities of organised crime gangs.

10. US Joint Chiefs of Staff, Joint Strategic Review (Washington, D.C, 1999) P. 2.

ASSESSMENT OF THE NIGERIAN AIR FORCE CAPABILITY IN ASYMMETRIC WARFARE

AW threats in Nigeria, as in most of sub-Saharan Africa, emanate from conflicts over material resources and access to political leadership often waged on the basis of ethnic and religious differences.[11] Nigeria's AW threats have manifested in the forms of civil unrest, sabotages, politically motivated assassinations, hostage taking, and hijacking. Cross border banditry and activities of warlords in some West African countries that threaten regional security have also constituted AW threats to Nigeria. Some of these threats are examined briefly below and the roles of the NAF in the containment of the identified AW threats will be considered.

Civil Unrest. Civil unrest connotes a wide variety of civil disturbances including inter-communal or inter-group clashes, religious disturbances, protest marches or violent demonstrations.[12] Nigeria has witnessed several violent civil unrests. For example, the Tiv-Jukun conflict of 2002 resulted in the death of 160 civilians and 19 soldiers as well as the destruction of 125 farmlands, 5 villages and 580 houses.[13] Similarly, in 31 July 2009, Islamic fundamentalists or extremist of the Boko Haram attacked Maiduguri the state capital in Borno State. This resulted in the dead of at least 700 people and thousands were displaced. The movement torched police stations, seized assault rifles and attempted to storm the state capital.[14] Across Nigeria, there are several militant vigilante and separatists groups that employ the methods and approaches of AW. These groups include the Oodua Peoples Congress (OPC), the Bakassi Boys, Ijaw National Congress and the Arewa Peoples Congress, among others. Between May 1999 and July 2009, about 2000 people were killed due to the activities of militia groups.[15] Hence, civil unrest constitutes a primary source of AW threat to Nigeria.

Sabotage. Sabotage is the deliberate destruction of property or equipment by resistance fighters, enemy agents, or disgruntled workers.[16] In Nigeria, sabotage comes in the form of vandalisation of public facilities by militant groups and criminal gangs. Facilities vandalized include oil pipelines, electric power transmission cables and pylons, and telecommunications assets. In 1998, a criminal gang vandalized pipelines in Jesse, a village in Delta State that resulted in the death of 750 villagers who had come to scoop fuel gushing out of the broken pipes.[17] The perpetuators of sabotages are usually well armed and attack the nation's vulnerable

11. Timothy L. Thomas, "Air Operations in Low Intensity Conflict: The Case of Chechnya", http://www.airpower.maxwell.af.mil/airchronicles/apj/apj97/win97/thomas.doc accessed on 13 June 2011.
12. Ibid.
13. Ibid.
14. Ibid.
15. Ibid.
16. Ibid.
17. Ibid.

points. In recent years Nigeria has witnessed incidents of hijacking, hostage taking and politically motivated assassinations. In 2006, youths in the Niger delta attacked an oil barge and seized 9 hostages.[18] Similarly, on 9 September 2008, the "Mends Boys" hijacked a Vessel and took 27 hostages, including 2 British citizens and other nationals.[19] Therefore, they pose AW threats to the nation.

Activities of Warlords and Rebel Groups in West Africa. West Africa is rife with activities of warlords or rebel groups that pose AW threats not only to their countries but also to the whole sub-region. These threats have manifested in Liberia, Sierra Leone and Cote d'Ivoire among others. There have been warlords and rebel leaders such as Charles Taylor of Liberia and Foday Sankoh of Sierra Leone. The activities of these warlords have had serious security implications in the region.

THE ROLES OF THE NAF IN AW

Air power bestows upon a military force great mobility through air-landed and parachute operations, strategic, operational and tactical battlefield support; the ability to provide firepower in a variety of location within a short time span; and the ability to execute surveillance, reconnaissance and patrol operations over a large area.[20] It also provides flexibility and adaptability in changing between missions rapidly; from offence to defence. For example, an aircraft that drops paratroopers can be used to re-supply them, to extract them, to evacuate casualties, or to transport peace negotiators.[21] To determine the roles of the NAF in AW, it is these characteristics that must be optimised. The NAF's contributions to combating AW threats can be grouped into three broad categories: prevention and deterrence, fighting AW opponents, and mitigating the effects of AW.

The roles of the NAF in combating AW threats will be discussed by matching the various roles with the operational aircraft in the NAF that can meet the requirements. This will enable the determination of the areas of NAF strengths and deficiencies. NAF aircraft order of battle (ORBAT) as detailed at table 1.

18. Ibid.
19. Ibid.
20. Ibid.
21. Ibid.

TABLE 1 : ORBAT OF NAF AIRCRAFT			
Serial	**Aircraft Type**	**Country of Origin**	**Remarks**
(a)	**(b)**	**(c)**	**(d)**
1.	Alpha Jet	Germany	-
2.	Air Beetle (ABT-18)	Nigeria	-
3.	ART-42 MPA	France/Italy	-
4.	Augusta 109	Italy	-
5.	Bulldog	United Kingdom	Decommissioned
6.	BO 105	France	Decommissioned
7.	C-130H	America	-
8.	DO 128-6	Germany	Decommissioned
9.	DO 228	Germany	-
10.	F7	China	-
11.	F-27MPA	Dutch	Decommissioned
12.	G-222	Italy	-
13.	Hughes	America	Decommissioned
14	Jaguar	United Kingdom	Decommissioned
15.	L-39ZA	Czechoslovakia	-
16.	MB-339	Italy	-
17.	Mi-34S	Russia	-
18.	Mi-35P	Russia	-
19.	MiG-21Bis/MF	Russia	-
20.	Super Puma	France	-
Source: HQ NAF March 2010.			

The assessment of the NAF in AW reveals that the NAF has a vital role to play in combating AW threats. Although, the NAF has performed satisfactorily in the AW environments to which it has been deployed, it would have performed much better if it was not constrained by some operational and logistics problems. These problems included the lack of credible air power capability in recce, maritime air operations, search and rescue, and psychological air operations. Therefore, for the NAF to be effective in combating threats of AW, these impediments need to be addressed.

STRATEGIES TO ENHANCE NIGERIAN AIR FORCE EFFECTIVENESS IN ASYMMETRIC WARFARE

The NAF has capabilities that should ensure it's effectiveness in the event of AW. However, some constraints hamper its optimal performance. The ineffectiveness of the NAF is attributable to several challenges and impediments.

The lack of capabilities in some air power roles, inadequate funding, lack of aircraft and inappropriate technology has militated against NAF effectiveness in combating AW threats. Additionally, low state of readiness and inability to sustain operations also negates NAF effectiveness in AW scenarios. The NAF would still be unable to perform efficiently in AW scenarios unless these challenges and impediments are addressed. Hence, this articles wills prefer ways to enhance NAF effectiveness in combating AW threats.

Acquiring the Appropriate Air Power Capabilities

For the NAF to enhance its effectiveness in combating AW threats it is essential that it acquires the appropriate air power capabilities. Presently, with the introduction of the ATR Air craft into the NAF, the service has a moderate capability in maritime air operations and search and rescue air operations.

Maritime Air Operations. Nigeria has 84,000 square nautical miles of maritime space to explore, exploit and monitor.[22] This maritime space is rich in oil, gas, shrimps, fish, manganese nodules and cobalt among others.[23] Hence, the need to protect these offshore resources from threats of AW. In the protection of these resources, the NAF would operate in conjunction with the NN. The air power capabilities the NAF would require include surveillance, air defence, offensive air support for naval forces and SAR. While air defence and offensive air support operations can be undertaken by the MiG-21 and F7, to a lesser extent the Alpha Jet. The ATR-42 Maritime Patrol Aircraft (MPA) is capable of being used as an air borne command post. The aircraft has onboard modern communication equipment that is compatible with those of the other security services particularly the NN.

Search and Rescue Air Operations (SAR). SAR is a key function of the NAF in alleviating the effects of AW. Helicopter aircraft constitutes the main assets in SAR. Hence, an effective SAR outfit depends largely on the availability of helicopters. SAR helicopters should have the capability to perform the various roles associated with SAR such as winching, medical evacuation, and airborne medical care among others. They should also have the appropriate instrumentation for locating and communicating.

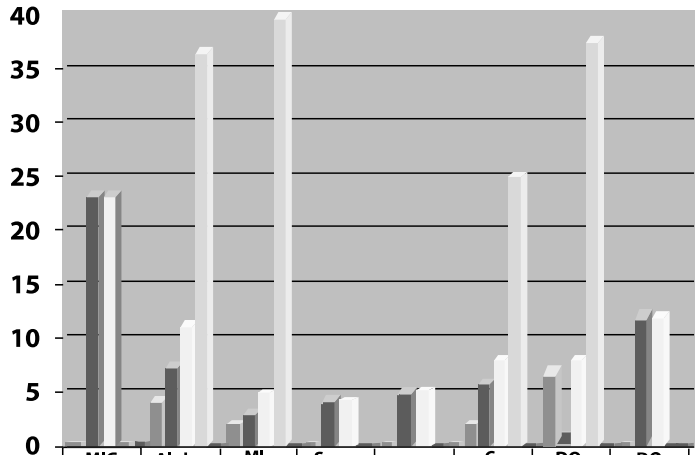
Acquiring the Appropriate Platform

To enhance NAF operations in AW scenarios the NAF must of necessity be equipped with the appropriate aircraft types. The attack and transport helicopters

22. Ibid.
23. Ibid.

have proven to be versatile in AW environments. The attack helicopter (Mi-35P) strength in the NAF is five with an average serviceability of two (Annex C). NAF attack helicopter operations to be effective in AW, the NAF would need to boost her holding to at least two squadrons (12 helicopters). This would require the induction of seven more Mi-35Ps or the acquisition of a new attack helicopter type.

Table 2 : NAF operational Aircraft Serviceability Status as at December 2008



	MIG-21	Alpha Jet	MI-35p	Super Puma	G222	C-130H	DO-228	DO 128-6
Serviceable	0	4	2	0	0	2	7	0
Un-serviceable	23	7	3	4	5	6	1	12
Total	23	11	5	4	5	8	8	12
% Serviceability	0	36.4	40	0	0	25	37.5	0

Source: HQ NAF.

For medium helicopter lift the NAF has the Super Puma and the Mi-35P. There are 4 Super Puma in the NAF inventory (Table 2). A Super Puma is capable of airlifting 12 infantry soldiers while the Mi-35P can airlift 8 infantry soldiers. Hence, the NAF current induction of the Augusta 109, light attack/utility helicopter, into service. The Augusta 109 will be capable of meeting NAF attack helicopter needs but with a capacity to carry only 4 infantry soldiers the aircraft will not be able to meet the airlift requirements of one fighting infantry company. The NAF will, therefore, need to acquire six additional medium lift helicopters to meet its helicopter airlift requirements.

TYPE OF PLATFORMS/ WEAPONS AND UNMANNED AERIAL VECHICLE

One of the impediments of air power is its dependence on technology. Hence, it is essential for the NAF to possess the appropriate technology, platform/weapons and unmanned aerial vehicle [UAVs], their induction could increase the capability to operate in all weather conditions.

Precision Guided Munitions (PGM) and Unmanned Aerial Vehicle [UAV]. PGM and UAV refer to the class of munition and platform when armed with bombs and missiles has single-shot kill capabilities from ten to hundred times greater than unguided munitions.[24] Given that proponents of AW often operate within population centres, the use of precision weapons assumes greater importance because of the need to avoid collateral damage. Hence, there is the need for the NAF to acquire air-to-ground PGM and UAV. These weapons should be capable of being employed in combat by both NAF fixed and rotary attack aircraft and operated singly for the UAV.

Low Aircraft Serviceability

Crucial to NAF ability to combat AW threats is the availability of serviceable aircraft. However, the NAF is plagued by low aircraft serviceability as indicated in Table 2 (serviceability status of NAF operational aircraft). The poor aircraft serviceability is attributable to inadequate funding.

To be effective in combating AW threats NAF aircraft maintenance activities must be adequately funded by the Federal Government. In the fiscal year 2003, the Federal Government made no appropriation to the NAF for aircraft maintenance while for 2006 the sum of N1 billion was appropriated.[25] The inadequate funding of the NAF has resulted in the non-availability of aircraft spares and poorly equipped workshops. Due to high average age of its aircraft the NAF requires to carry out PDM on most of its fleet. Hence, an appropriation equivalent to the sum of the cost of 2 PDM for each aircraft type in the NAF should be appropriated yearly for NAF aircraft maintenance. The authorities at the Ministry of Defence should prevail on Government on the need to increase appropriation to the NAF for aircraft maintenance.

Readiness and Sustainability

In addition to the aforementioned, the NAF would need to develop its human resources and build capacity to meet the challenges of AW threats. This will entail maintaining a high state of readiness and ability to sustain operations.

24. Ibid.
25. Ibid.

Readiness. Readiness is the ability of forces or units to deliver the output for which they were designed…to deploy and employ without unacceptable delay.[26] Readiness entails the possession of the required manpower, the right equipment and training, and the time taken for such a force to undertake its assigned task A high state of readiness enhances effectiveness. The NAF does not have a defined readiness state to respond to AW threats. Hence, crew and equipment need to be able to deploy at short notice. Following an order to deploy, a time frame of within 24 hours should be set for the deployment of the first elements. The first element should not be less than a third of the force to be deployed. The deployment should be completed within 72 hours for internal operations and 7 days for external operations subject to the availability of a secured FOB.

Sustainability. Sustainability is the ability of a force to maintain the necessary level of combat power for the duration required to achieve the goal.[27] Every air operation must of necessity commence and end. Hence, the NAF must concern itself with the substance of the force from generation through deployment and operations to recovery and recuperation. In other to sustain operations, tasked units holding should be able to sustain operations at intensive level for the first 7 days in terms of aircraft, weapons, personnel and other stores while NAF reserve holding should be able to sustain operations for 30 days.

Training. The most suitable force to combat AW threats is a compact, highly mobile and well equipped force that is trained along the line of Special Forces. The force should be able to perform anti-terrorist, anti-sabotage and anti-insurgent tasks as well as support the regular forces in all types of military operations. The Special Force should be drawn from the Armed Forces and other relevant security agencies.

The typical role of the NAF in the Special force will be following a successful recce to use fixed or rotary wing aircraft/UAV to provide pre-assault attacks to soften the area. This would be followed by airborne helicopter assault by highly trained and well equipped troops. These activities require specialized training and coordination. Hence, there will be the need for joint training. This should be done by the simulation of all possible AW scenarios.

RECOMMENDATIONS

To enhance NAF effectiveness in combating AW threats, the following are recommended:

a. The NAF should acquire a credible SAR capability. This can be done by providing SAR kits as optional fittings for the helicopter.

26. Ibid.
27. Ibid.

b. To enhance NAF combat helicopter airlift capability, the NAF should acquire six medium lift helicopters.

c. The Ministry of Defence should prevail on the Federal Government to increase funding to the NAF for aircraft maintenance.

CONCLUSION

The nature of future wars will likely be asymmetric. States and non-state actors will be involved in the conduct of these wars. In conducting the war, irregular forces will aim at exploiting unconventional means to gain victory over regular forces. These wars are referred to as asymmetric warfare (AW). AW is propagated by terrorists, rebel movements and ethnic militias among others. In Africa, AW is often the result of instability stemming from ethnic, religious and cultural differences, and access to economic resources. Nigeria has witnessed some AW threats to National security.

The NAF has performed satisfactorily in the AW environments it has conducted operations. However, it would have done better if it was not constrained by some operational and equipment problems. The challenges and impediments to NAF effectiveness in AW included lack of credible capability in maritime air operations, search and rescue, and psychological air operations. Inadequate weapons platform, poor aircraft quality and low aircraft serviceability are also contributory factors to NAF ineffectiveness in combating AW threats. Other mitigating factors are low state of readiness and inability to sustain operations.

To enhance NAF effectiveness in combating AW threats, the NAF will need to acquire a credible maritime air operations and SAR capability. Government will also be required to provide adequate funding for aircraft maintenance. NAF effectiveness will further be enhanced by the replacement of obsolete aircraft with more capable ones. Furthermore, the NAF will need to set readiness states for deployment. A time frame of within 24 hours for deployment is considered adequate. Additionally, NAF ability to sustain operations needs to be enhanced. A suitable sustainability target is for tasked units holding to sustain operations for the first 7 days, NAF reserves for 30 days and beyond that request will be made to the Government. Finally, the NAF will need to develop its human resources. This should be done through realistic joint training with other security agencies. Training should include field exercises and war game simulations of all possible AW scenarios. If the remedies identified above are addressed the NAF will be better prepared to effectively combat AW threats.

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His hobbies include, reading current affairs, watching documentary film. He is married and have five children.

DIGITIZATION OF LAND MANAGEMENT SYSTEM IN BANGLADESH: PROCESS, PROGRESS AND PROSPECTS

Joint Secretary Md Nurul Alam Miah, ndc

INTRODUCTION

Land is one of the scarcest resources in Bangladesh. It has a landmass of 144,000 sq km, which is more or less static over time (despites hopes of gaining land from coastal siltation). As the number of the people is rising (1.8% growth rate) and our per capita income is also growing, the demands on the fixed landmasses is escalating faster and faster making this scarce resource all the more scarce. Rapidly declining land-man ratio (14 decimal per person) is becoming economically unsustainable. Because of diversion of agricultural land to multiple uses and river erosion, the per capita availability of land is declining and the loss of agricultural land is going on at the rate of about 1.2 percent per year (220 ha per day). (MoL, 2011)

Unplanned urbanization, industrialization and development of various infrastructures will create high risk for the food security and hamper the sustainability of the development efforts. Deforestation is causing huge threat to the ecological balance. One of the most critical side-effects is the astronomical increase in land prices.

Identification and Illustration of the Research Problem

As a matter of fact, Records of Rights (RoR) in land and its regularly updated information are legal documents of every land owner authority and citizens of the country for ascertaining the boundary, ownership, possession and transfer of the ownership as well as the changes in use pattern of the land. The preparation of RoR, revisions thereof, and registration and mutation of land transfer are to be completed promptly. But these are rarely achieved. The record sources are almost never contemporaneously updated or accurately maintained. The lack of accuracy, together with the diversity of the record sources and the absence of a statutory provision of conclusiveness of any one of the record sources, make the different sources practically irreconcilable. Further, the recent increase in the number of land related transaction has proved that the current system is not capable of supplying up-to-date, correct, authoritative land documents. The ownership and possession rights in land are not therefore secure and safe under these circumstances.

To address the above mentioned problems and needs for modernizing the land administration system of Bangladesh, the government has been exploring different strategies and options since 1990s. During 1995-2001, Asian Development Bank Implemented three Technical Assistance projects to review and analyze the whole problem. They came up with some reform proposals for adopting computerization of the land records and land administration.

The Public Administration Reforms Commission (2000), Regulatory Reforms Commission (2007-08) and CPD Task Force Report on Land also made a series of recommendations for reforms in the land administration system. They emphasized for computerized preservation of all previous data of CS, SA and RS operation and Mouza maps, all registration deeds of Sub-Registry office and so on by scanning. They also suggested to develop database for mutated Khatians reconciled with survey records.

This research has attempted to study the concept of digitization of land records and land survey program. The components and implementation strategy has been analyzed in the context of recent experiences through the implementation of several pilot projects. Prospects and constraints of digitization have also been tried to identify.

Historical Evolution of Land Management and Legislation in Bangladesh

Bangladesh has a very complex pattern of land ownership. Feudalism in its worst form took its deepest roots under the British colonial rule. A chain of struggle by peasants spread over a century gave them their stable rights to tenancy through Bengal Tenancy Act 1885. The act provided for abolition of 'Permanent Settlement' created by the then British rulers. Feudalism was legally abolished through the implementation of State Acquisition and Tenancy Act 1950 by which direct relationship between the government and tenants has been established. Then the question came to update and maintain record of rights of land. Proper maintenance of record-of-rights requires preparation/revision of land records including maps on periodical basis and continuous updating of these records. The updating of land records is required because of continuous changes in land ownership by way of transfer, purchase, sale, gift, mortgage, inheritance and partition deeds.

During the British rule, a Board of Revenue was set up in 1792 to control and supervise the work of the collectors. Later it was reconstituted, first under the Bengal Board of Revenue Act 1850, and then amendment of same Act 1913. The Board of Revenue supervised settlement operations under the Director of Land Records and Surveys. After the emergence of Bangladesh the Revenue Department was reconstituted into Land Administration and Land Reforms Division under the Ministry of Law and Land Reforms. Subsequently, this division was given the status of a full-fledged ministry and later renamed as the Ministry of Land in 1987.

In 1984, Land Reforms Board and Land Appeal Board were created - one for strengthening the district land management and the other for speedy disposal of appeal of land dispute. The Survey and Settlement Operation are conducted based on The Bengal Survey Act 1875, The Bengal Tenancy Act 1885 (now repealed), The Survey and Settlement Manual 1935, The East Bengal State Acquisition and Tenancy Act 1950, and The East Bengal Tenancy Rules 1954.

In the case of private freehold or leasehold, the legal framework for accessing land, protecting title and setting out the rights and obligations of the parties to any particular transactions is contained in the Transfer of Property Act 1882 and the Registration Act of 1908. Both these acts have become obsolete.

Land Use Planning

The issue of strategic land use plan and land reform is very important in the overall socio-economic reality in Bangladesh. There had been much talked about distribution of Khas land, implementation of settlement act, acquisition of ceiling-excess land, recovering absentee ownership land, improving land management but in the past little significant has really been materialized. However, Land Reform Ordinance 1984 was the first legislation about land use approach to force big agricultural families to surrender surplus land beyond the approved ceiling to the government. The Non-Agricultural Tenancy Act of 1949 deals with use of government owned land for urban use. Again in urban areas land use is regulated by the Pourashava Ordinance 1977 and the Town Improvement Act 1953. Under the laws Urban Development Department is supposed to prepare master plans for urban areas in consultation with the relevant stakeholders but the office is virtually not in a position to enforce its planning efforts. Large cities have their own organizations for their land use planning like RAZUK. National Housing Authority follows its own plan. A National Housing policy has been formed in 1993 which has some guidelines to serve the urban poor. The Ministry of Land formulated a National Land Use Policy in 2001 (MoL, 2001) to ensure its best utilization. Thus it is evident that there is little co-ordination among the land use planners and stakeholders.

Present Structure of the Land Administration in Bangladesh

The present day administration of land splits into four different functions (DLRS, 2010a) -

a. The Directorate of Land Records and Surveys (DLRS) in the Ministry of Land (MOL) conducts Cadastral surveys, from which it produces Mouza (revenue village) maps showing individual plots of land and Khatians (Individual land record information).

b. The Land Reform Board (LRB), also in the MOL, has a number of functions that it discharges through Upazila Land offices and Union Tahsil offices. It administers Khas (public) land and manages abandoned and vested property. It updates maps and land records between surveys and sets and collects the Land Development Tax (LDT).

c. The Land Appeal Board under MOL is the highest revenue court in the land, serving as the final arbiter in matters of khas land, changes in records, plot demarcation, and taxation which cannot be resolved at lower levels.

d. The Department of Land Registration in the Ministry of Law, Justice and Parliamentary Affairs records land transfer arising through sale, inheritance or other forms of transfer, reports to the Ministry of Land and collects the Immovable Property Transfer Tax.

The Divisional Commissioners act as appellate authority against decision taken at the district level on matters of land administration. In fact, the collector i.e. Deputy Commissioner is responsible for entire land revenue administration in his/ her district. He also accords approval for settlement of government land, changes in classification of land according to their usage and acquisition of land for development or other requirements. He is assisted by Additional Deputy Commissioner in charge of revenue. Upazila Nirbahi Officer (UNO) supervises the revenue administration at Upazila level. Assistant Commissioner (Land) is in charge of Upazila Land Office. There are several 'Tahsil' offices in each Upazilla, which are local field units for collecting land revenue.

Up-to-date Land Records and Subjects of Up-to-date Information

There are three core components of up-to-date land records :

a. The physical form of the land ownership record i.e. record of rights (RoR).
b. The institutional and physical method of record-keeping
c. The method of up-dating ownership information including updating the Mouza maps

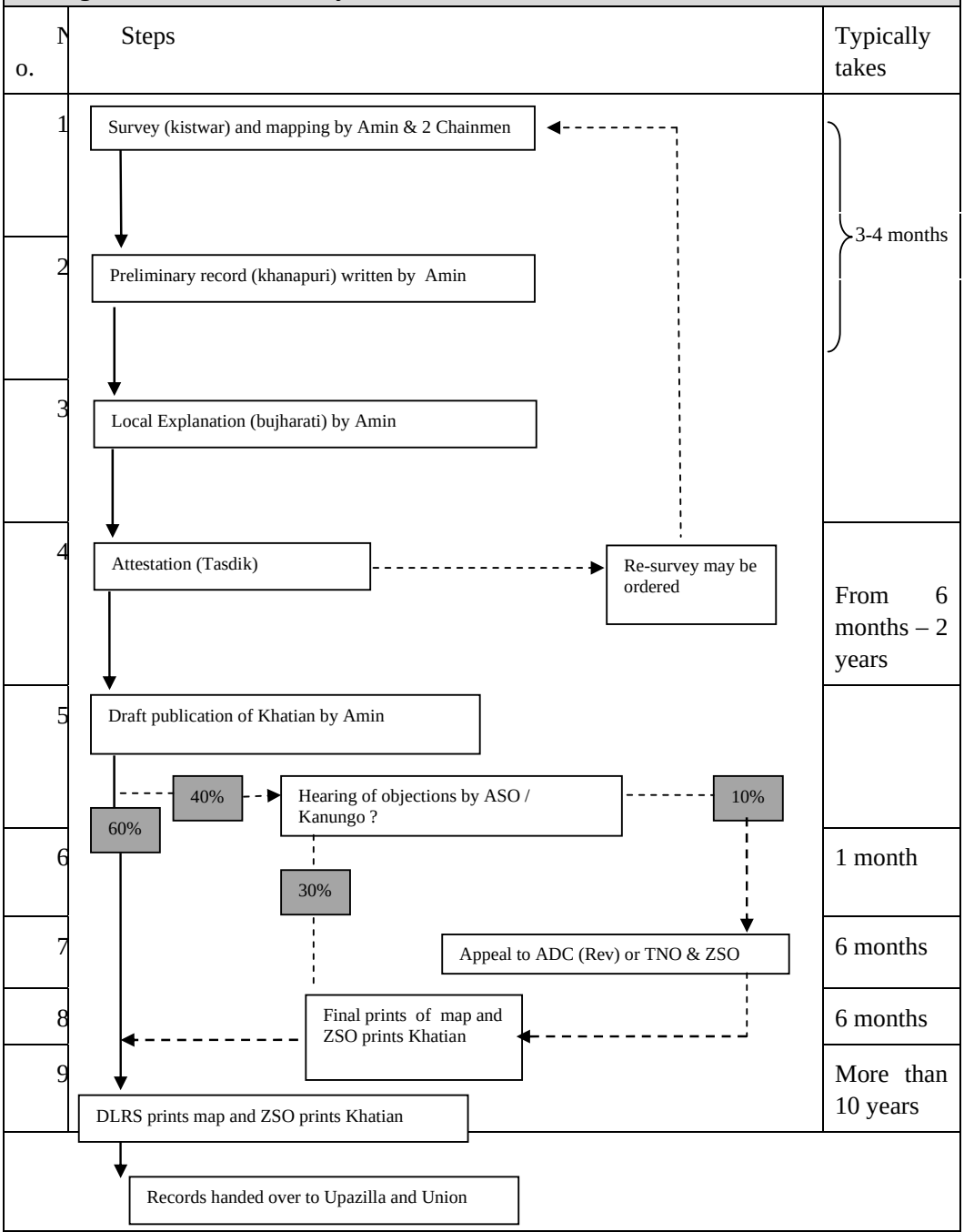
The Record of Rights (ROR) consists of two parts viz. Mouza map and Khatian. Mapping of holdings and preparation of up-to-date Record of rights is a pre-condition for efficient land management, ensuring security of tenants and land reforms. These are legal documents for ascertaining the boundary, ownership and possession of every parcel of land. In fact, ROR is the basis of land ownership certificate.

It is the responsibility of Directorate of Land Records and Surveys (DLRS) under the Ministry of Land to prepare and publish the record of rights and of the district officers to maintain and keep them corrected and updated by incorporating changes due to transfer or inheritance and so on. The cadastral survey contains the following components :

a. Mapping of every parcel of land with geographical location and identification numbers.
b. Information about ownership, quantum of lands and rents payable.
c. Preparation and publication of records as a proof of occupancy rights of the tenants.

So far, two nationwide Survey and Settlement operations have been completed. The first one is known as CS (Cadastral Survey) operation (1888-1940) and the second one is SA operation (1956-1963). The third one is RS operation, still in progress since 1965. In order to ensure the revision of the record of rights at a much shorter interval than before and to introduce an integrated land management system at the lowest level, a permanent settlement office has been set up at Upazilla and zone level since 1985. The Preparation process of RoR is enumerated in the SA&T Act 1950.

Figure 1: The Land Survey Process



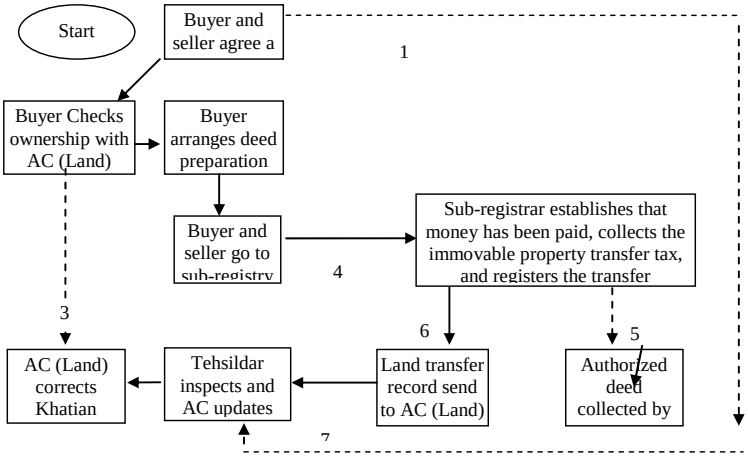
Source : Extrapolated from CARE SDU Reports and Studies, 2003

Figure 1 above shows that the existing survey process takes more than 10 years time for completion its different stages. It clearly demonstrates that the ongoing survey cannot fulfill the need of the land owners or users as the output of such lengthy process becomes again outdated by the time it comes out as an official document.

Land Registration

Registration of land transfers lies with the Ministry of Law and Justice. There are office of Sub-Registrar in each Upazila where Sub-Registrars register the written Deed of Agreement and the terms and conditions of sale and purchase between the vendor and the purchaser of the land. The deed contains the agreed price of the land, its schedule description in terms of parcel numbers and other identifiers contains in the record of rights, its boundary and other conditions. This registered deed is the primary proof of ownership of a property. Government collects transfer tax. It is difficult and almost impossible to retrieve a systematic list of properties and their owners from this office. No updating done here. Simply a new document is added when the same property changes hand again. The Sub-Registrar however sends a land transfer notice (LT notice) to the AC (Land) office that maintains and updates the record of rights after necessary verification. The land transfer process is explained below by a flow chart in Figure 2.

Figure 2: The Land Transfer Process



Source : Ministry of Law, Justice and Parliamentary Affairs

Subjects of up-to-date information are mainly three categories

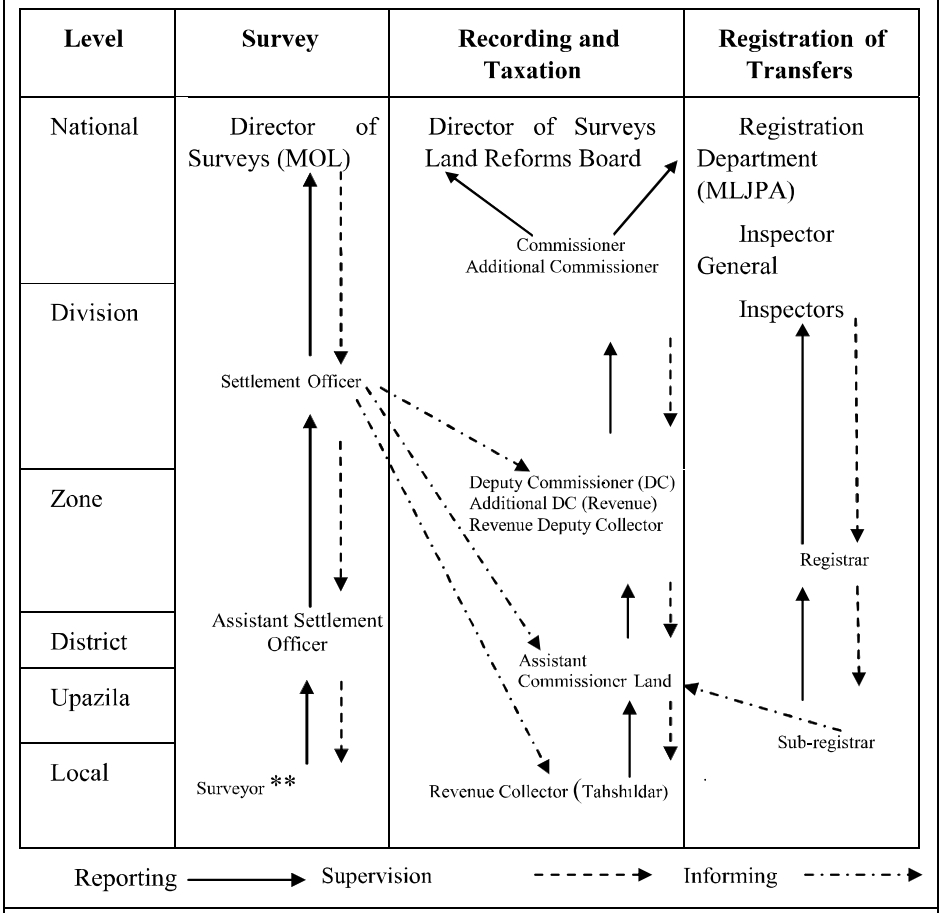
a. Information about ROR, Certificate of land ownership, ROR centric dispute resolution
b. Information about land price, registration process and fees, transfer, mutation, etc.

c. Information about land tax, land classification, land acquisition, compensation, resettlement issues, khas land, and so on.

Existing Information System and Its Weaknesses

Following Figure 3 explains the flow of information for land records preparation, preservation and updating. Lower level surveyors are assigned to prepare survey documents and forward to those to Upazila Settlement and Zonal Settlement Office. Zonal Settlement Office is supposed to provide survey records to the District, Upazila and Union Land Offices. Sub-Registrar is supposed to provide transfer information to the AC (Land) Office. AC (Land) is authorized to update the records on the basis of the survey Document, and LT (Land Transfer) notices from Sub-Registry Office. AC (Land) is also assigned to execute mutation to update the records and provide information to the service seekers.

Figure 3: Creating and Maintaining Land Records: Roles, Reporting and Supervision



Source: Ministry of Land

Identification and Analysis of the Problems

It has been shown in Figure 3 that the preparation of records of rights for any jurisdiction takes decades, starting from cadastral survey, recording of rights up to publishing the final ROR. Moreover, even after such a long period, sometimes the expected integrity and accuracy of the ROR cannot be achieved. Distorted information creates dispute, conflict, collusion and litigation. From the service users view the features of problems are as follows:

1. During Transfer of Land, buyers are in great trouble with non-reliability of the land ownership of the seller. Registration deed and Khatians are not enforceable legal document. If a piece of land be sold several times by any person no strong and effective action can be enforced. Land offices cannot certify the authenticity of the document properly. The delivery of transfer registration deed takes six months to one year or even more.
2. During Mutation AC (Land) office is dependent upon LT notices from sub-registry office which are not sent regularly from the same and documentation of those is also very poor. Sub-registrar is not accountable to the Land Administration as he/she is under the supervision of Ministry of Law & Justice. Again, mutation seekers face highest forms of harassment from the Tahsil and AC (Land) office.
3. Collection of Land Records i.e. Mouza maps and Khatians are also difficult. Most of the Upazila Offices have no Record Room and Proper documentation system. Records room at District level and DLRS Records room maintain all historical cadastral maps (CS, SA, and RS). But, decade old paper maps are getting harder to maintain and preserve. In many cases, D.C. office's record room submits its vulnerability because of misplacement of documents or damaged situation.

According to an UNDP report (Morshed, 2010) at present 2.35 million acres i.e. 25% of all land is disputed, 1.3 million acres of public land have been grabbed illegally and about 3.2 million litigation are pending with the civil courts. Thus it can be derived that the existing land management process is extremely inefficient and ineffective. A vigorous reform is the need of the time.

Experiences of other Countries

Karnatoka State Experience

The Government of India has started implementation of National Land Records Modernisation Program (NLRMP) since 1975. The program has three components – Automation of Land records, Regular updating of Survey and Settlement of Records by using latest technology and computerization of Registration. As for example, In Karnatoka state with the technical assistance of National Informatics Centre a BHOOMI system has been adopted. The major activities are :

a. 20 million records for 6.7 million farmers have been computerized.
b. Mutation applications are being processed online and solved first-come- first basis.
c. Copies of RTC are available at Taluk offices where clients can search through Name and Plot number on computerized Land Kioski by payment of fees.
d. An applicant can collect the up-to-date information by using Touch Screen Kiosk.
e. The operators of the system are made accountable through thumbprint by bio-login process.
f. The next step is to make the information of land records available by uploading the web-enabled database from Village level Kiosk to be implemented under a Public-Private Partnership Program.

Himachal State Experience

In Himachal Province a program called 'Him Bhoomi' is being implemented to introduce computerized land management system. Mentionable features of the program are:

a. There is a unique code for each and every land owner which is a user ID.
b. Mutations are done automatically with the change of land ownerships. Clients can get the copy of ROR from the information centre against a fixed payment.
c. The software is capable to cater the all information regarding the area of the land, ceiling status and so on.
d. It is a complete MIS where Minor Irrigation Census, and Agriculture Census data is available and related offices are entitled to collect required information.

Components of Digital Land Management

It is fundamental to bring effective changes and to make significant improvement in the current land administration system that all the main three functions or processes of land management system must be modernized. The three functions are:

a. Survey (mapping, zoning, building records).
b. Management - Maintenance of records and dissemination of information.
c. Registration of land transfer deeds and mutation thereof.

A workshop jointly conducted by UNDP and MOL, Bangladesh described the elements of digitization of land records and management as follows (Morshed, 2010) –

a. Searchable database of land records which would be able to offer easy access to search and verification facilities.
b. Digital GIS maps which can facilitate easy updating.
c. Revenue Management System based on GIS maps and digital ROR to enable accurate and transparent tax management.
d. Automation of land related transactions processing system to improve transparency and efficiency.
e. Automated land use planning and monitoring leveraging GIS and remote sensing to ensure best possible use of land resources.

It is to be mentioned that digitization of a huge stock of information with regular updating is a gigantic task. The program requires a transition process to reach an update version of digitization. Ministry of Land (MOL) sources informed that consensus have been evolved through a number of studies, pilot research and technical level exchange of ideas done in last two decades. The transition process can be designed as follows (DLRS 2010b):

A Digital Land Management System (DLMS) will be established based on the latest land records and mutated Khatian held in the AC (Land) Office. This would provide quick access to the digital land records, continuously updating database of RORs, and tracking the progress of mutation cases and documents. The required updates in the Mouza maps corresponding to the mutated Khatian will be undertaken using the available mutation case information in the AC (Land) office, description of land transfers contained in the registered deed or LT notices from the Sub-Registrar and subsequent field verification and surveys. At the end of the transition process an integrated database of land ownership records and land plots (Mouza map) will be created covering 100% of lands of an Upazila.

A Digital Archive (scanned images) of historical land records (CS, SA, and RS Khatian and Mouza maps) can be established under a Digital Land Information System (DLIS). A linkage between different versions of land records would be created. This would enable a very fast and easy searching, retrieval and issuance of certified copies of land records. The archive would also instantaneously add an image of any new Khatian to be created under DLMS-based land transaction process. Through this process the DLIS archive would be dynamically updated and be made available to the public.

A fresh digital survey and settlement operation (DSSO) would be an improved Survey and Settlement (S&S) process, where the cadastral survey would be carried out using modern surveying techniques (aerial photography, satellite imagery, GPS, and electronic total station, etc) in combination with field computer and digital data capturing instruments. Since the whole operation will be carried out using electronic and digital equipment and ICT, the overall field operation would require shorter time and would be more transparent with less opportunity for corruption.

Mutation and Updating of Land Records

Once the DLMS is successfully transitioned in an Upazila, any future changes (updates) both Khatian and Mouza map will be digitally updated whenever a land transaction take place. For example, if the ownership of a portion of land plot is transferred, it will require two transactions, first, subdivision of the land plot by assigning new plot numbers and second, mutation of owners and creation of new Khatians by assigning new Khatian numbers. This approach will ensure updating of both the land plots on Mouza map and the Khatians on the land record database.

Registration of Land Transfer Deeds

To ensure an error-free registration process the transferor's legal rights on the land has to be validated prior to commit the transfer registration. This can be achieved if there is an un-interrupted access to both sets of information i.e. the deed register and the land records by both offices. It is expected that under a parallel modernization program of Sub-Registry offices, a digital link between the two processes i.e. registration and mutation would be established. This will provide Sub-registrar an access to latest land records to verify the transferor's ownership rights before committing the registration of transfer deeds. On the other hand, AC (Land) will access and obtain deed registration information for a mutation case.

Co-ordination Mechanism

AC (Land) is in charge of mutation, correction and updating of records as well as management of land can be given the supervisory responsibility of settlement activities of the Upazila level. This would lead to the coordination of the two offices dealing with the preparation and maintenance of land records in an Upazila. The Directorate of Registration should also be brought under the administrative control of the Land Ministry to remove inconsistency in land records management and also for immediate updating of land title. To eliminate fraudulent documents and conflict in land ownership Certificate of Land Ownership (CLO) should be introduced through valid registration system.

Accessing the Land Information

A secure and fast computer network between the DLMS and DLIS setup should be established for continuous transferring updated data and land records between the two systems. Finally, an internet-based access to land records will be established where, users would have uninterrupted and unrestricted access to the current as well as historical land records. The land owners can be provided a user ID by which they would be able to enter into the relevant information as and when required. A central repository of all digital records can be established under DLIS and DLMS and be maintained at the Digital Archive and training Centre of DLRS.

Security and Reliability of Digital Land Records

To make the digital land records highly secured and to ensure its integrity and uninterrupted update, every access to land record databases for viewing, printing, editing should be tracked in access log files. The safety and security of the land records would be ensured by maintaining both on-site and off-site backup of all datasets and by installing necessary fire-fighting and access control technologies. Moreover, all necessary latest security technologies to be installed to keep the digital land record hacking-proof.

Recent Experiences of Digitization of Land Records and Administration in Bangladesh

Following are a few noteworthy ICT related pilot projects that have been undertaken by the land ministry over the last decade, which have produced mixed results based on which useful lessons have been learnt.

Modernization of Land Administration Project

During 1995, The Ministry of Lands and the Asian Development Bank (ADB) agreed to implement a Technical Assistance (TA) project entitled the "Modernization of Land Administration". The objective of that TA project was to assist MOL in studying the existing land administration system, to pinpoint critical short-term interventions, and to design long-term pilot-scale interventions based on technical, procedural, legal and administrative reforms. The recommendations were branded as Land Administrative System (LAS) and subsequently an investment project was considered. But for an unknown reason the comprehensive program concept was dropped and some pilot project was initiated.

Nationwide Program to Introduce Plot-based Certificate of Land Ownership (CLO) : (2001-2006)

The basic requirements of the reform are enabling legislation for CLO system, a comprehensive Institutional framework, a Land Information System strategy, a targeted resource mobilization plan and a continuous public awareness campaign. Article 144 of the SA&T Act, 1950 is to be amended to facilitate the proposed

change in the Khatian concept. Settlement Office is to merge with Upazila Land Office and the authority of land registration should be attached to the same Upazila Land Office. The volume of the work can be estimated from the following table. Data shows that at least 150 million Khatians are to be brought under CLO program. The program was suspended for unknown reason.

Figure 4: Estimations Derived from Revised Revisional Settlement Operation Data	
Area of land to be brought under CLO	120, 000 square kilometers
Estimated number of Mouza	59, 500 (rounded)
Average number of Mouza per Upazila	120
Average area of a Mouza	2.3 square kilometers
Average area of an Upazila	275 square kilometers
Average number of plots per Upazila	300, 000 (rounded)
Estimated number of plots in Bangladesh	150, 000, 000 (rounded)
Source: DLRS, December 2000.	

Computer Based Khatian and Map Printing System Modernization

DLRS has two printing press. Settlement press is used for printing the Khatians and the Map printing press is used for printing the Maps. Khatians and Maps were printed by manual press where 80 to 90 thousand Khatians and 4 to 5 thousand Mouza Maps were possible to print in a year. In recent years, computer based printing system have been adopted and capacity of printing has been enhanced. But still the system is not able to meet up the demand of printed Khatians and Maps.

Computerized Land Management System (CLMS) piloted for Demra City Circle

The Demra Circle of the Dhaka City was taken as a pilot area for CLMS in 2004 to develop as a standalone GIS based software using database. It was expected that successful implementation of Demra CLMS would be able to render services to the land owners within a very few hours. The services are - providing land record verification report, certified copy of mutation, Khatian with Map, corresponding SA plots of RS, report on determination of land development tax and its collection, report on land transfer and so on.

The digital land record was successfully established by converting all existing RS records and mutated Khatian, but the CLMS did not go for operation within the stipulated time.

Ten private sector firms under the leadership of Teraa Tech were deployed to provide the technological support. Unfortunately, the program could not be implemented properly. MOL could not install the initial work done by private sector firms because of its lack of decision. It has been told unofficially that public sector officials did not find accuracy and reliability of the digitized output produced by the firms and that is why they were not in a position to accept those documents for public use. In this circumstance private firms could not complete their assignment. Both the mindset of public sector manpower and the lack of experience and competency of contractor firms are the cause of this unfortunate failure.

Digital Survey in 5 Mouza under Savar Upazila : 2004-2009

The Department of Land Records and Surveys (DLRS) has been implementing a pilot program on "Preparation of Mouza Map and Khatian in five Mouzas of the Savar Upazila of the Dhaka District through digital survey using modern equipment. This digital survey was supposed to cover an area of 9.40 sq km and the whole process was supposed to be completed in twelve months and final printing of the records of right i.e. Khatian and Mouza maps and the records be handed over to the owners.

So far, the ground survey has been completed and draft Mouza Maps for all 5 Mouza have been prepared. The digital cadastral survey was found to be very successful, requiring less time, achieving higher accuracy and instantly producing draft maps based on digital map data. However, the next stage, the record writing and subsequent adjudication processes has been completed in two Mouza only.

This model could be a good example of developing Upazila centric digital land management approach but because of lack of commitment, professional efficiency and technological limitations the pilot program could not come into focus.

Coastal Land Zoning in 19 Coastal Districts and 2 Districts of Plain Land: 2006- 2011

The main objectives of the project was to prepare Upazila-wise Land Zoning Maps and to develop database and Land Zoning Information System (LZIS) and to formulate and implement Land Zoning Law and Village Improvement Act. So far, Upazila-wise digital land zoning Maps for 120 Upazilas and Draft 'Land Use & Management Law' have been prepared only. Until the law is enacted the outcome of the zoning preparation cannot be demonstrated.

Modernization of Land Records and Maps for Sustainable Environment Management Program (SEMP): 2009-2013

The sustainable environment management program included a component to assist DLRS in improving and building capacity for providing easy access to land record and maps through modernizing existing records and maps and capacity building. Another main objective was to research for expanding land records with a

few additional information that is essential for regulating, controlling, and promoting sustainable land use and environment. The research was piloted in Palash Upazila and part of Sonargaon Upazila under Narsingdi and Narayanganj Districts. A large number of DLRS surveyors and technicians were trained on GIS, GPS survey, map geo-referencing and land use survey techniques through the process.

Land Records Management System (LRMS) for Khas Land Settlement in 6 Upazilas under Noakhali and Chittagong Districts : 2002-2006

The LRMS software was developed including both Map (spatial) and record (textual) data components. The software included all functions for establishing digital land record and computer based maintenance of the land records including undertaking all functions of AC(Land) digitally under LRMS.

Key outputs of LRMS were :

a. the latest land records and Mouza Maps were digitalized and a linkage between the plot boundary and Khatian record were established;

b. all other registers of AC (Land) offices were converted to LRMS database and providing functions for future entry and generation of the registers directly from LRMS;

c. case management module of LRMS included functions for recording all type of cases, their scheduling, progress and disposal status and generating a number of case- related reports;

d. entry of khas land settlement data; case chronicles including the decision and approval information;

e. entry of mutation data and validating & updating of existing land record and creating & printing new (mutated) Khatians;

f. a function for updating the land plots and assigning new and unique plot numbers for subdivision or amalgamation of land plots.

The effectiveness and success of LRMS has prompted the MOL to consider replicating it into other Upazilas.

Risks and Challenges of Digitization

Some risks and challenges of digitization in context of Bangladesh may be summarized as follows :

a. Modernization of land administration and computerization of land records involve procurement and operation of large and costly ICT infrastructure and software systems. In all instances, the absence of ICT resources, the modernized systems couldn’t be sustained.

b. The magnitude and complexity of the program and far-reaching impact on whole population will require strong political and high-level bureaucratic support.

c. There could be significant resistance from the participating institutions and vested interest groups for change. This could create inter-agency rivalry.

d. Lack of the management capacity and adequate number of trained manpower within the executive agencies is another major challenge.

The important challenge in whether the public institutions would lead the process of digitalization mostly by themselves or private sector needs play a key role in data collection/ survey and even data validation. The major disagreement between the groups is around the question of accountability. The first group believes that a public sector led solution is more transparent and accountable, while the second group believes otherwise.

The above context, one of the first priorities to make a comprehensive review of the pilot experiences, take into considerations the latest technological advances and tools available today as well as potential complexities/risks of such initiatives. Additionally, it is important to take into consideration that utilizing of the ICT resources available including the voter/ national ID database in such a review and how such important resources can be leveraged by a modern land management system.

The review also needs to consider additional legal and policy response which may be required including in financial legal and policy framework, and how the stakeholders of those policy and legal framework may be brought on board.

Public Land Management

Various public agencies like Bangladesh Railway, Power Development Board, Department of Forest, etc. own a vast amount of land. Ground-level experiences show that most of these agencies lack both tools and capacity to properly manage these lands. As a result not only are these agencies losing valuable assets every year to unscrupulous land grabbers. A 'public land management' system can be developed to maintain a database that contains scanned copy of all the land records of all plots that a particular agency owns including scans of relevant Maps.

Analysis of the Findings

Answer to the Question No 1

The question raised the points of basic problems of the existing land records system and management :

1. Century old surveying and mapping process is itself outdated. It is not only lengthy but also lacks integrity and accuracy.

2. Decade old paper maps and records are getting harder to maintain and preserve. Many papers are already damaged or misplaced and very hard to locate.
3. Corruption has become institutionalized.
4. Lack of land experienced professionals and trained manpower with land issues as well as modern technology is a major impediment. Officials from BCS (administration) work in the land offices with deputation.
5. Lack of coordination among land transfer record with registration office, ownerships records with settlement office and Upazila land office and taxation records with Tahsil office.
6. Land ownership disputes have grown exponentially
7. Registration deed is not a complete legal Certificate of Land Ownership. Khatian numbers are also not legally enforceable ownership document.

Answer to the Question No 2

The analysis identified the areas and prospects of digitization of land records and land administration. The various aspects of the digitization are :

1. Searchable database of land records which can offer easy access, search and verification facilities.
2. Digital GIS maps can facilitate easy updating.
3. Revenue management system combined with GIS maps and digital RoR enables accurate and transparent tax management.
4. Automated land related transactions processing system can improve transparency and efficiency.
5. Land zoning with GIS and remote sensing can be a useful tool for land use planning for ensuring best possible use of land resources.
6. Digital information system can ensure quick and easy access or service for land owners and users.

Answer to the Question No 3

The third question attempts to explore the constraints of digitization of land records and land administration. The major constraints of implementation of digitization or reform of land administration are :

1. The magnitude of the problem is large that without vibrant political commitment it is not possible to make any significant breakthrough. Unfortunately complexity in the land administration did not get any policy level priority to address the issues.

2. Existing manpower are not capable and eager to acquire the IT knowledge and expertise. Private sector companies are yet to develop their knowledge and need of the sector.

Answer to the Question No 4

About the fourth and final question, the core message is a comprehensive reform with change management support. The reform should be aimed at :

1. Adopting Integrated Land Management approach.
2. Ensuring one stop, quick and user friendly service to the user.

RECOMMENDATIONS

The operational recommendations are :

1. Separate land service to ensure stability, continuity and professional ownership is required.
2. Unification of Settlement office with Land office and make the Upazila office an information hub with a competent and need-based staff and officers.
3. Place the land registration authority under MoL and ensure good operational cooperation among registration and mutation.
4. Utilize the expertise of Survey of Bangladesh to ensure quick digital survey.
5. Accommodate private sector under Public-Private Partnership (PPP) to prepare automated RoR, Khatian and digital maps.
6. Prepare and enact appropriate law for introducing plot based Certificate of Land Ownership (CLO) instead of existing family based Khatian.
7. Develop human resources for managing the sector with proper skill and expertise.
8. Prepare and enact 'Land use and management law' with details rules and replace the existing outdated acts and rules.
9. Establish a 'speedy land tribunal' to dispose of land related litigations.
10. Empowering the Local Government representatives and community leaders to resolve land related litigations in the first place.
11. Update the Land Use Policy and prepare a national land use plan to reduce the use of agricultural land for industry and other infrastructure.
12. Review the land tax rates and simplify the collection system involving banks to receive tax payment
13. Enact law in favor of land and property rights to all citizens of Bangladesh.
14. Review the pilot experiences comprehensively.

15. Consider the prospect of utilizing the Voter/ National ID database.

CONCLUSION

In fact, the land administration systems are over-regulated, under enforced and failed to accommodate the changing needs. Government initiatives were not comprehensive at all. It has been observed that project have been initiated but required enabling legislation have not been looked into. Another major prevailing constraint is lack of political will and commitment. Mere bureaucratic initiatives have not been able to bring any reliable success and acceptable to replicate.

Issuance of certificate of land ownership, enough development of human resources for the sector, mobilization of adequate resources, are key issues to be looked into with deep sense of logic.

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TOWARD AN EFFICIENT AND SUSTAINABLE MICROFINANCE OPERATION IN BANGLADESH: THE REGULATORY PERSPECTIVE

Lieutenant Colonel Syed Riyadh Mehmood, afwc, psc

"I believe that we can create a poverty free world because poverty is not created by poor people. It has been created and sustained by the economic and social system that we have designed for ourselves; the institutions and concepts that make up that system; the policies that we pursue[1]*.*

Dr. Muhammad Yunus, Winner of the Nobel Peace Prize

INTRODUCTION

At present in Bangladesh, there are four main types of institutions involved in microfinance activities[2]. These are: Grameen Bank, more than thousand NGOs, out of which about 598 are, licensed MFIs, commercial and specialized banks, and Government sponsored microfinance programs (e.g., Bangladesh Rural Development Board (BRDB) and other government programs under different ministries)[3]. Since these NGO-MFIs are generally registered under different laws under different ministries and government organs as voluntary organizations or societies or non-profit companies, separate regulatory requirements were not felt at initial stage of development. There are several factors which triggered the process of new regulation for NGO-MFI sector. In this circumstances, the government formed a Committee of seven members[4] with the Chairmanship of the Governor of Bangladesh Bank (BB) in October 1999 to recommend an effective credit and savings policy. On the basis of the recommendations a Unit namely "Microfinance Research and Reference Unit (MRRU)"[5] was established in BB under the supervision of a National Steering Committee formed in June 2000 to formulate policy guidelines. As a part of their major tasks the Act namely "Micro Credit Regulatory Authority Act (MRAA) 2006" was passed by the Parliament in July 2006[6]. Accordingly, the Micro Credit Regulatory Authority (MRA) has been established in August 2006[7] which is the regulatory and supervisory body of MFIs in Bangladesh.

The task MRA has taken on its shoulder is a real challenge. There are lots of arguments regarding taking this huge responsibility by a new organization like MRA.

1. Dr. Muhammad Yunus, Creating a World without Poverty-Social business and the Future of capitalism, 2008, Subarna, Dhaka, p. 246.
2. www.mra.gov.bd visited on 01 October 2011.
3. ibid.
4. ibid.
5. ibid.
6. ibid.
7. ibid.

MRA has started its function of regulating but there are many rooms to improve for their effectiveness. MRAA 2006 is a new regulatory act for the NGO-MFIs. It will still take some time for all stakeholders to adapt to the new act and its implications and to identify limitations or weaknesses of the system.

The paper will at first give an overview of economic condition of the country highlighting the present State of microfinance sector. Secondly it will highlight definition of regulation and supervision and conventional way of regulation and supervision of MFIs, describe regulatory systems for MFIs in Bangladesh with the history of regulatory attempt and birth of MRA and MRAA 2006. Finally it will try to critically examine the capability of MRA and the MRAA 2006 and recommend measures for efficient and sustainable operation of MFIs in the country.

FINANCIAL MARKET AND PRESENT STATE OF MICROFINANCE SECTOR

Present State of Microfinance and Relationship with Formal Financial Sector

a. At present, the formal financial sector consists of the central bank, BB, 4 state owned commercial banks, 5 government-owned specialized (development) banks, 30 domestic private commercial banks, 9 foreign-owned commercial banks, 29 Non-Bank Financial Institutions and Grameen Bank the specialized microfinance bank[8]. In terms of both assets and deposits, private commercial banks command the greatest market share. Additionally, over 500 Microfinance Institutions are licensed by the MRA. Insurance companies, stock exchanges, and cooperative banks comprise a smaller part of the financial system.

b. Microcredit programs in Bangladesh is implemented by NGOs, Grameen Bank, state-owned commercial banks, private commercial banks, and specialized programs of some ministries of Bangladesh government. In the microfinance sector total loan outstanding is around TK 200 billion (including Grameen Bank TK 62 billion) and savings TK140 billion that have been rendering among 30 million (including 8 million clients from Grameen Bank) poor people which help them to be self-employed that accelerates overall economic development process of the country[9]. Through the financial services of microcredit, these poor people are engaging themselves in various income generating activities and around 30 million poor people are directly benefited from microcredit programs. MFIs have generated direct employment for over 0.1million people also. Table-1 shows some basic statistics of NGO-MFIs of Bangladesh.

8. Bangladesh: Microfinance and Financial Sector, Diagnostic Study Final Report, International Finance Corporation, March 2009, P. viii.
9. www.mra.gov.bd, visited on 01 October 2011.

TABLE 1- BASIC STATISTICS OF NGO MFIS AS OF 30 JUNE 2009	
PARTICULARS	**VALUES**
Number of Licensed NGO-MFIs	598 (till 19 September 2011)
Number of Branch Network	16,222
Number of Employees	124,380
Number of Clients	30.16 million
Number of Borrowers	24.48 million
Amount of Loan Outstanding	Tk 152,334 million
Balance of Savings	Tk 47,680 million
Source: www.mra.gov.bd visited on 01 October 2011.	

c. Previously donor driven NGOs are now increasingly trying to become more dependent on local fund with the decline of foreign fund.Table-2 shows sources of fund of the microfinance sector for the year 2008 and 2009. Palli Karma sahayak Foundation (PKSF), the government owned wholesale funding agency, provides a large portion of loan fund at a subsidized rate.

TABLE-2- SOURCES OF FUND OF NGO-MFIS				
Source of Fund	**June 2008**		**June 2009**	
	(Million Tk.)	**(%)**	**(Million Tk.)**	**(%)**
Clients' Savings	36,397.32	29.65	38,799.02	30.62
Loan from PKSF	22,708.58	18.50	19,792.62	15.62
Loan from Govt.	288.87	0.24	290.89	0.23
Loan from Other MFIs	868.13	0.71	407.81	0.32
Loan from Commercial Banks	23,487.03	19.13	23,893.32	18.86
Other loans	2,176.65	1.77	1,862.04	1.47
Donors' Fund	4,549.07	3.71	3,916.60	3.10
Cumulative Surplus	31,170.02	25.39	35,492.12	28.01
Other Fund	1,101.84	0.90	2,245.16	1.77
Total	**122,747.53**	**100.00**	**126,699.58**	**100.00**
Source: www.mra.gov.bd visited on 01 October 2011.				

REGULATORY PROCESS IN BANGLADESH

History of Regulatory Attempts in Bangladesh[10].

a. The initial legal requirement to open and operate an NGO in Bangladesh is that it has to be registered under an appropriate law. At present, there are several laws under which NGOs may be registered, namely, (a) Societies Registration Act, 1860, as societies, (b) Trust Act, 1982, as Trust, (c) The Voluntary Social Welfare Agencies (Registration and Control) Ordinance, 1961, as voluntary organizations, and (d) Companies Act, 1994 as non-profit companies. Creation of NGO Affairs Bureau in 1990 was the initial attempt to monitor and supervise NGOs. In the same year PKSF was created as an apex organization for microcredit wholesale funding and capacity building of its Partner NGOs. Though it has no regulatory power, it could exert some desirable influences on the MFIs as it has subsidized funds available for the sector.

b. Since these NGO- MFIs are generally registered under different laws under different ministries and government organs as voluntary organizations or societies or non-profit companies, separate regulatory requirements were not felt at initial stage of development. Grameen Bank as a full fledged bank established under a separate Act (Grameen Bank Ordinance, 1983) remains under separate regulatory system of the government.

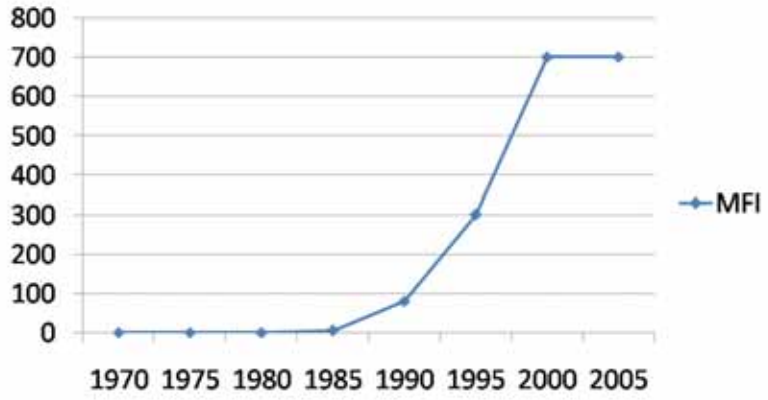
Factors of Processing New Regulation for NGO- MFI. There are several factors which triggered the process of new regulation for NGO- microfinance sector. Some triggering factors are as follows:

a. Foreign donation for this NGO sector declined from almost 100% to 50% at the beginning of 1990,[11] at the face of gradual dwindling foreign funds NGOs needed new avenues of fund for their survival. Savings from their clients and surplus income from microcredit operations appeared as two major sources of fund during this period.

b. History shows that before 1990, there were very few NGOs who had microfinance operation, as one of their development activities. A notable growth in terms of number of Institutions was observed after that period. Both old institutions with new product of microcredit and new microcredit institutions emerged in the market with a significance which caught attention from the policy makers.

10. Lila Rashid, Director, Microcredit Regulatory Authority (MRA), Microfinance Regulations in Bangladesh: Development & Experiences, Microcredit Regulatory Authority, Bangladesh Pp.8-9.
11. Ibid, Pp.10-11.

Graph 2 : Significance Increase of MFIS after 90



Source: International Conference on "Microfinance Regulation: Who Benefits?" arranged by the Micro Credit Regulatory Authority of Bangladesh, 15—17th. March, 2010, Dhaka

c. Creation of wholesale funding agency like PKSF in 1990 by the government had important contribution for massive expansion of this sector with its diversified products. PKSF has been playing the role of a quasi regulator for the NGO-MFIs who have been receiving its funds; its non-prudential guidelines for its Partner Organizations (PO) are treated as the first set of rules for the sector.

d. Sometime in mid nineties microcredit organizations were found with different savings products in addition to their regular compulsory savings tied with the credit, this includes voluntary savings of flexible amount from clients which are not tied with the credit, different kinds of term deposits like DPS, pension scheme etcetera. Financial product like micro insurance was introduced by NGO-MFIs during the end of last decades, and the generic name of this sector has been changed from "microcredit" to "microfinance". As MFIs had been accepting deposits whether compulsory/voluntary and the amount had gone up considerably, the concerned authorities like Ministry of Finance and central bank have assumed legal obligations to safe guard people's deposits – the situation has provided the trigger point for prudential regulation and supervision.

A Way Forward for Regulation. In the above context, the BB, the central bank commissioned a study in December 1997[12] to examine "the Regulatory Aspects of MFIs and Linking it with the Formal Financial Sector". The study was completed in 1998 and the two important findings and recommendations were as follows:[13]

12. www.mra.gov.bd visited on 01 October 2011.
13. ibid.

a. The regulation available in the form of statutory requirement under the existing banking and financial laws will not cater to the special needs of this sector,

b. Legal recognition of MFIs through enactment of law is required to access formal sources of funds, so that they can operate under an agreed "Code of norms/ Conducts" under the form of special licensing arrangements.

Subsequently in the light of the above recommendations BB and other stakeholders also raised the issue of regulation for this sector to the government. In this circumstances, the government formed a Committee of seven members with the chairmanship of the Governor of Bangladesh Bank in October 1999[14] to recommend an effective credit and savings policy for this sector, ensure transparency and accountability into their activities and make some recommendations regarding a regulatory framework and to propose a body to regulate and supervise these institutions.

Birth of MRA and MRAA-2006

Creation of MRA. MRA was established by the Government of Peoples' Republic of Bangladesh under "MRAA 2006" to bring NGO-MFIs into a regulatory framework, with a view to ensuring transparency and accountability of microcredit activities in the country. The act basically covered licensing prerequisites, rights, responsibilities, operational requirements and governance of MFIs. It also covers specifications on illegal activities and penalty. MRA is empowered and responsible to implement the act. Its vision is to create a conducive and healthy environment for microfinance sector in the country which will ultimately foster sustainable development of the country. MRA is now the central body to monitor and supervise microfinance operation of Non-government organizations of Bangladesh. License from the authority is mandatory to operate microfinance operation in Bangladesh as an NGO. There are 598 licensed MFIs under MRA as of 19 September 2011[15]. The organogram of MRA including its vision, mission is attached as Annex A.

MRAA-2006. "MRAA 2006" was passed by the Parliament in July 2006[16], based on the draft submitted by the above National Steering Committee to the Government. According to the provision of the Act, license from the MRA is mandatory for operating microfinance activities in Bangladesh. However, Grameen Bank, as a bank, remains out of the supervisory system of the MRA. Following are the important areas which have been covered in the law[17]:

14. Ibid.
15. ibid.
16. ibid.
17. Bangladesh Gazette, Extra Issue (English version), published on 16 July 2006.

a. Formation of the Authority.

b. Duties of the Authority.

c. Prerequisites of license for MFIs.

d. Rights and responsibilities of MFIs.

e. Deposit insurance fund.

f. Governance of MFIs.

g. Reserve requirement.

h. Profit distribution.

j. Operational requirement.

k. Illegal activities and punishment.

Basic Contents of MRAA 2006. The basic contents of the MRAA 2006 are the following[18]:

a. No NGO-MFI may act as microfinance institution without the license of the MRA (including credit-only MFIs).

b. MFIs may not collect deposits from persons other than their members, i.e. they may not collect deposits from the general public.

c. All institutions with microcredit operations must separate their financial operations from other development works and keep their accounts separate.

d. The Authority also has the power to prepare detailed rules (rules are already published as MRA Rules 2010) related to the operations of microcredit including conditions for spending any income, area of operations, guideline of internal and external audit and accounts, collection of deposits, and use of earned profit, governance structure of MFIs, reporting requirements etc.

e. Only MFIs who meet the threshold of either a minimum of 1000 borrowers or minimum loan outstanding of Tk 4‘000‘000 (approximately $58‘000) may apply for a license by the MRA.

f. In May, 2009, the MRA announced that MFIs will have to limit interest rates ceiling of 27%.

g. According to current regulations, NGO-MFIs can offer three kinds of savings: compulsory, voluntary and time deposits. The NGO-MFIs can mobilize compulsory savings of up to a maximum of 80% of their loans outstanding. If an

18. ibid.

NGO-MFI exceeds this limit, the surplus savings have to be kept in a bank as fixed deposits. MRA's permission will be required to withdraw the fixed deposit.

h. The MRA will take punitive measures if any institution does not comply with these rules. Persons who are convicted are punishable with imprisonment of not more than one year, or a fine of not more than Tk. 500'000 (approx. $7'300), or both.

REGULATING MFIs- IN SOME OF THE DEVELOPING COUNTRIES

India[19]. India is a relatively unique case when it comes to microfinance regulation and supervision. National Bank for Agriculture and Rural Development (NABARD) is a Government of India owned apex refinance (wholesale loan) institution with a combination of promotional, supervisory, and refinance functions for retail institutions like rural branches of commercial banks, regional rural banks, and cooperative banks. Considering that microfinance is practiced differently from the conventional banking system, in 2005, the Government of India recognized the need for a Microfinance Act for India. The Bill was introduced in the parliament as the Micro Financial Sector (Development and Regulation) Bill, 2007 on 20 March 2007. The draft Microfinance Bill would empower NABARD to regulate the microfinance sector in India. NABARD may grant approval to MFIs to collect deposits if it has been in existence for at least 3 years, has net own funds of at least Rs. 5 *lakhs* and if NABARD is satisfied about the 'general character' of the management of the MFIs.

Pakistan[20]. Regulation of the microfinance sector is a relatively new phenomenon in Pakistan. MFIs registered as Microfinance Banks (MFBs) are regulated by the central bank, State Bank of Pakistan (SBP). The nonbank MFIs largely remain unregulated and consequently, are prohibited from providing a full range of financial services. The Microfinance Institutions Ordinance 2001 provides the regulatory framework for the microfinance sector in Pakistan. The 2001 Ordinance allows for setting up of four types of MFBs. Those are District Level MFB: licensed to operate only within the prescribed district; Regional Level MFB: licensed to operate within five adjacent districts within the same province; Provincial Level MFB: licensed to operate only within the prescribed province and National Level MFB: licensed to operate anywhere in the country. An apex funding body, the Pakistan Poverty Alleviation Fund (PPAF) was established in 2000. The role of PPAF is to act as a wholesaler and intermediary of funds.

19. Rashid Faruqee, Microfinance in SAARC Countries Overview Report, Institute of Microfinance (InM)Dhaka, Bangladesh, 2009, Pp.51-53.
20. Ibid, P.56.

EXPERIENCES, IMPACT AND EVALUATION OF MRA AND MRAA 2006

Experiences of the MRA

Present Situation of MFIs. According to the provision of the law, more than 4000 active NGO-MFIs have applied for license to the authority, over 60%[21] of them are very small organizations that had less than 1000 borrower or US$ 58,000 outstanding loan that was considered initially as the minimum operating portfolio of a single branched MFI to be sustainable. Among these applicants, 598 licenses have been issued by September 2011[22].

Sustainability and Out Reach- Impact of Introduction of Licensing System. MRA opines licensing helps sustainability and increasing outreach of MFIs. MRA has conducted a research on the impact of introduction of licensing system. The findings of that research show that licensing MFIs has two-fold impacts, first on Beneficiaries of MFIs and second on MFI itself.[23]

a. **Impact on Beneficiaries of MFIs**.

(1) Licensing exerts positive influence on beneficiaries in building their confidence on MFIs.

(2) Savings of the beneficiaries of the licensed-MFIs increased at a higher rate than that of unlicensed ones.

b. **Impact on Microfinance Institutions**.

(1) Licensed MFIs could increase their coverage at a higher pace.

(2) Annual income of the licensed-MFIs became significantly higher than that of unlicensed-MFIs.

(3) Small licensed-MFIs' capital growth rate are higher than that of small non licensed MFIs during 2005-2009. The average capital of licensed MFIs became 5 to 10 times higher than the non-licensed MFIs.

(4) Positive profits during the period were received by licensed-MFIs. However, among the licensed-MFIs, operating profits of medium and small organizations recorded increases while the big organizations faced declines.

Evaluation of MRA and MRAA-2006

Evaluation of MRA. The task MRA has taken on its shoulder is a real challenge. There are lots of arguments regarding taking this huge responsibility by a new organization like MRA. Following analysis on MRA are drawn based on the interviews and literature reviews.

21. Online interview with Dir 1, MRA on 03 October 2011 (through e-mail).
22. www.mra.gov.bd visited on 01 October 2011.
23. Online interview with Director 1, MRA on 03 October 2011. (through e-mail).

a. In Bangladesh, the rapid growth of MFI began since 1990. The requirement of regulating these MFIs came up when these MFIs started growing like mushrooms and government felt to protect the clients from some of the evil hands concerning the savings or deposits of the clients. MRA is trying to regulate these MFI who all are matured in the field for last 20 years. It is easier to regulate any new institution/institutions but in case of our country MFIs bloomed up to a stage and later MRA is trying to regulate those MFIs. There is a feeling that MRA is trying to control the MFIs instead of supervising and monitoring.[24] So both MRA and NGO-MFIs need to be flexible in accepting each other.

b. In the context of present state and role of MFIs in the country, MRA should assist further thriving of the MFIs for easy access of poor segment of people of our country. So the orientation of the members of MRA should be focused keeping that in mind. MRA needs expertise to play their role who has the orientation of positive mind set to flourish the operation of MFIs. Presently there are allegation that on sight supervision personals lacks in expertise and more importantly the proper orientation of positive mind set is absent from them.[25]

c. Every organisation works on its values and ethos. If the values of the organisation degrade, the organisation tends to deviate from its vision, mission and roles. In Bangladesh corruption has erupt in every spheres of life (proved several times by Transparency International). Already there are complains of corruption in the violation of criterion set for getting license. MRA must guard against those complains otherwise the very core issue behind regulating these MFIs will be jeopardized.

d. MRA is a government organisation. There are questions of being politicized as any other government organisation of the country. In 1990 Government created PKSF who has earned its credibility not only as an apex organisation of providing funds but also in monitoring and supervising those NGO-MFIs those who all are funded by PKSF. At present PKSF is an independent body free from politicization and claims to be an effective role player in providing funds to the MFIs after Grameen. So to make MRA effective it should have been an autonomous body free from politicization. More importantly the report of MRRU also suggested for an independent body which was not executed.

e. The MRA is the regulator of such a vast segment of financial market of the country. Therefore this organizations overall strength and capacity need to be enhanced significantly in terms of manpower, resource base and rule making authority in order to make it capable of meeting all of its operational targets.

25. Interview with DMD operation PKSF, Dir 2x NGO-MFIs.
26. Ibid.

As far as the research findings is concerned it is impossible for MRA to regulate and supervise this huge number of organizations by MRA when institutions are so diversified in terms of size, operations and performance. MRA has to be expanded at least up to zilla/ upa-zilla level to regulate the operation. So necessary organisational setup, recruitment of expertise with positive orientation is a prime requirement. Incentives have to be provided to the field worker. At present MRA is providing Tk 80 as daily allowance for onsite verification where as PKSF pays Tk 250.[26]

f. Presently MRA has asked for manpower from government. To regulate these huge numbers of institutions MRA needs huge manpower which may not be economically viable for our country. So some alternative has to be found out by the government. In India NABARD is a government organisation who is the apex funding organisation and also proposed to be a regulator of all MFIs in the Draft Bill of 2007. PKSF who had been in the monitoring role of their MFIs and an apex organisation created by government to provide funds can be utilized in this aspect. PKSF has the expertise to monitor and supervise what they need is delegation of authority to regulate all the MFIs. More over almost 250 plus MFIs out of 598 MFIs those who all are licensed by MRA is under direct funding of PKSF.[27] Presently, PKSF is monitoring their activities. Question arise that PKSF is also a player among the MFIs, but PKSF is the funding body which can be termed as second tier of MFI like BB for all other banking sectors and also for MFIs.

Evaluation of MRAA-2006. How should this new regulatory act be judged? Since it has only been in effect since August 2006 and MFIs were given time to fulfill minimum licensing criteria until the July 2011, it is difficult to draw any conclusions right now. Yet, we can take a closer look at the existing facts:

a. The Act allows that cooperative societies registered under the Cooperative law can also offer microcredit and in principle receive license from MRA. But there are too many cooperative societies (more than 200,000), which do some kind of savings/lending business. MRA will be simply overwhelmed to do the gigantic job. MRA has proposed to amend the Act and leave cooperative societies outside the scope of the Act. So MRA/MRAA cannot ensure safety of the clients of these huge cooperative societies.

b. As per MRAA 2006, MFIs who meet the threshold of either a minimum of 1000 borrowers or minimum loan outstanding of Tk 4‘000‘000 (approximately $58‘000) may apply for a license by the MRA. This has restricted any new MFI to be born and operate. Though over 4000 has applied for license but

26. Ibid.
27. Ibid.

only 598 got permission. What will happen to the rest of the MFIs? If they stop operating what will happen to their staffs and clients? There is a feeling that the requirement is very high. If we take the examples of India or Pakistan the requirement is quite lower then our country. At present no one is thinking on that. If we follow the system like Pakistan of setting criterion of operating only within the unions/Upazilla or only within a District and a Division the requirement could have lighter to heavier as per the operation areas. Furthermore the regulating would also become easier.

c. MRA announced that it will impose an interest rate ceiling of 27%[28] effective interest rate on its MFIs. There is a general consensus within the literature which opposes such rate ceilings and this is not in line with the Guiding Principles on Regulation and Supervision of Microfinance issued by the Consultative Group to Assist the Poor (CGAP). As per CGAP, interest rate caps, where they are enforced, almost always hurt the poor as the MFIs limit their services/products in order to help the poor. As they limit the services to avoid the cost so they rather deprive the poor from getting service of verities of products.

d. Bottom line of interest rate is kept 27% flat rate. What was the justification behind calculation of this rate? Was it a simple cap without having any intrinsic justification? Or it was a certain increase between interest offered on savings and rate announced on credit? Or it was based on MFI's real cost? If cost is the base line then the next question would be which cost should be considered? MFIs have cost of fund, administrative cost, and other operational cost to manage risks. Debates around these questions may help to find out better solution.

e. In May 2009, the MRA announced that MFIs are not going to be allowed to collect deposits that exceed 80% of their total outstanding loan portfolio. It is not clear if this restriction is conducive to commercialization of the microfinance market, being that clients‘deposits contribute increasingly to the loan portfolio of MFIs and therefore provide a cheap source of funds for them to refinance their operations.

f. Whether credit or savings should be promoted more? Present policy encourages institutions to provide more credit to the people to promote informal business activities and minimize public risk. However, amount of savings collected by MFIs including Grameen Bank indicates that poor people can save money from their tiny income if right kinds of saving

28. Guidelines on Interest Rate / Service Charge of Microcredit and relevant issues, MRA/Circular Letter No. Regu-05, Date: 10 November, 2010.

services are available to them.[29] Instead of a comprehensive order to stop and return the savings a more pragmatic step would have been to allow selected MFIs to offer long-term savings.

g. The MRA Act does not provide a regulatory corridor for MFIs to transform into fully commercial banks (Act no 32 of 2006) as there is a fear of possible financial mismanagement.

h. Micro-insurance became a very popular issue over the past decade. Insurance as a specialized product is treated neither by the Central Bank nor by the MRA (Act no 32 of 2006). At present, micro insurance products offered by both insurance providers and MFIs are inadequate to meet the needs of microfinance customers.[30]

RECOMMENDATIONS

Based on the research findings and the evaluation of MRA and MRAA 2006 following recommendations may help Government to take immediate measures for further study and analysis to make an efficient and sustainable microfinance operation in Bangladesh. Followings are the recommendations:

a. To be effective MRA needs a complete restructuring. MRA should be an independent body to regulate the MFIs. More so the organization's overall strength and capacity need to be enhanced significantly in terms of manpower, resource base and rule making authority in order to make it capable of meeting all of its operational targets. MRA has to be expanded at least up to zilla/ upa-zilla level to regulate the operation. Networking can be viable options among all the MFIs with the MRA which will ease the job of regulating. This can be one of the role model of digital Bangladesh if all the MFIs can come within a network. For on sight verification and supervision incentives have to be provided to the persons assigned with the task.

b. If Government is unable to increase such huge number of expertise PKSF can be given the authority to regulate the MFIs. PKSF being the apex organisation created by government to provide funds can be utilized as they have the expertise to monitor and supervise the MFIs with immediate effect.

c. Options may be created for MFIs to operate only within a Upazilla or a District or a Division. The basic criterion of having number of borrowers or outstanding loans will vary as per the operational area one MFI wants to

29. Ibid.
30. Microfinance Industry Report, 2009, P.16.

operate. The bigger the area one MFI wants to operate he has to fulfill the heavier requirements.

d. The core issue of efficient and sustainable operation of NGO-MFIs is to make it accessible to the poor segment of people of our country. For efficient and sustainable microfinance operation in Bangladesh more flexible approach is necessary in MRAA 2006 on interest rate, saving modalities, transforming to microfinance bank and micro insurance guideline.

CONCLUSION

Microfinance sector has a vital role in financial deepening. Increase in financial deepening is one of the targets of the monetary policy pursued by the BB as it helps poverty reduction through availability of money in the informal sector, especially in the rural sector. MRA was established by the Government of Peoples' Republic of Bangladesh under "MRAA 2006" to bring NGO-MFIs into a regulatory framework, with a view to ensuring transparency and accountability of microcredit activities in the country. The act basically covered licensing prerequisites, rights, responsibilities, operational requirements and governance of MFIs.

MRA is now the central body to monitor and supervise microfinance operation of Non-government organizations of Bangladesh. The task MRA has taken on its shoulder is a real challenge. There are lots of arguments regarding taking this huge responsibility by a new organization like MRA. To be effective MRA needs a complete restructuring. Organization's overall strength and capacity need to be enhanced significantly in terms of manpower, resource base and rule making authority in order to make it capable of meeting all of its operational targets.

The core issue of efficient and sustainable operation of NGO-MFIs is to make it accessible to the poor segment of people of our country. For efficient and sustainable microfinance operation in Bangladesh more flexible approach is necessary in MRAA 2006 and by MRA.

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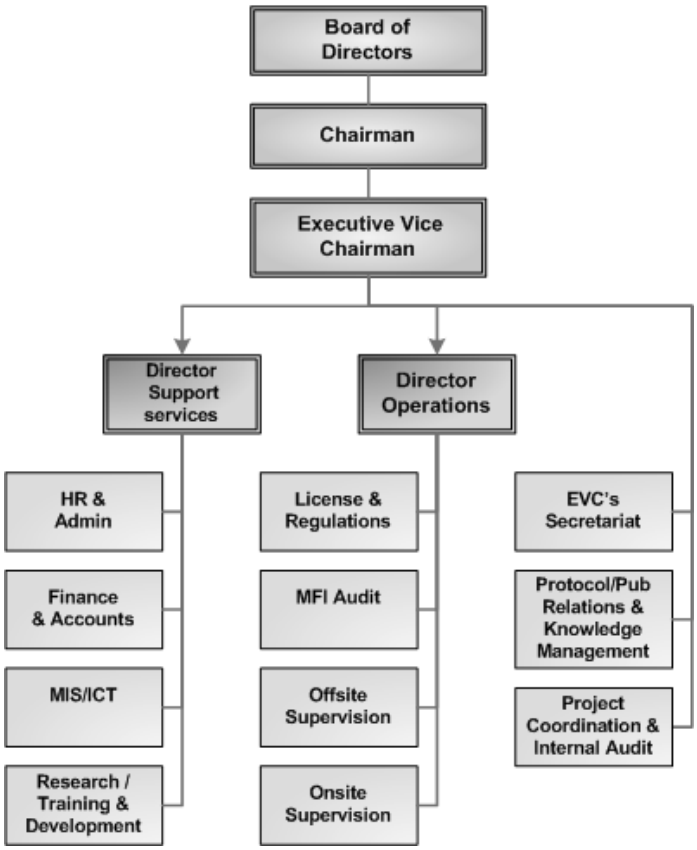
ANNEX A

ORGANOGRAM OF MRA



Vision

1. The Microcredit Regulatory Authority (MRA) will create a conducive and healthy environment in the microfinance sector which will ultimately eradicate poverty and contribute to achieve Millennium Development Goals (MDG) as well as foster sustainable development of the country.

Mission

2. To uphold the vision and in pursuant with the "Microcredit Regulatory Authority Act 2006", MRA's mission is to ensure transparency and accountability of microfinance operations of NGO-MFIs as well as foster sustainable growth of

this sector. In order to achieve its mission, MRA has set itself the task to attain the following goals:

a. To formulate as well as implementing the policies to ensure good governance and transparent financial systems of MFIs.

b. To conduct in-depth research on critical microfinance issues and provide policy inputs to the government consistent with the national strategy for poverty eradication.

c. To provide training of NGO-MFIs and linking them with the broader financial market to facilitate sustainable resources and efficient management.

d. To assist the government to build up an inclusive financial market for economic development of the country.

e. To identify the priority issues of microfinance sector for policy guidance and dissemination of information to attain the MRA's social responsibility.

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Notes for Contributors

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The submitted manuscripts should contain: name(s) of the author(s) including complete mailing address, an abstract of approximate 150-200 words and acknowledgements (if any) should appear after the abstract.

Once a manuscript is accepted for publication, the author (s) should submit a copy of the manuscript on a CD labelled with the title of the article, the name(s) of the author(s) and the word processing software used. The preferred word processing software is Microsoft Word 2007.

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