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A PROFESSIONAL RESEARCH JOURNAL OF BANGLADESH ARMED FORCES

Father of The Nation

জাতির পিতা বঙ্গবন্ধু শেখ মুজিবুর রহমান (১৯২০-১৯৭৫)

"ইনশাল্লাহ্ স্বাধীন দেশে রক্ত দিয়ে স্বাধীনতা এনেছি, এই স্বাধীনতা নিশ্চয়ই ইনশাল্লাহ্ থাকবে, কেউ ধ্বংস করতে পারবে না। তবে স্বাধীনতা বৃথা হয়ে যাবে যদি বাংলার দুঃখী মানুষের মুখে হাসি ফুটাতে না পার। সেইজন্য তোমাদের কাছে আমার আবেদন রইল-সৎ পথে থেকো। খোদা নিশ্চয় তোমাদের সাহায্য করবে।"

(১৯৭৫ সালের ১১ জানুয়ারি কুমিল্লায় অবস্থিত বাংলাদেশ মিলিটারি একাডেমি (বিএমএ)-তে প্রথম প্রশিক্ষণ সমাপনী কুচকাওয়াজ অনুষ্ঠানে ক্যাডেটদের উদ্দেশ্যে প্রদত্ত ভাষণ থেকে উদ্ধৃত)

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EDITORIAL

In the history of Liberation War of Bangladesh 21st November is a RED LETTER DAY. The War of Liberation which triggered off on 26 March 1971 in response to the clarion call by the GREATEST BENGALEE OF ALL TIMES FATHER OF NATION BANGABANDHU SHEIKH MUJIBUR RAHMAN gained momentum in the subsequent months and reached its apogee when on 21st November the valiant members of Bangladesh Army, Navy, Air Force along with the freedom fighters launched their joint offensive against the adversary. This final onslaught led to the collapse and surrender of the occupation forces on 16 December 1971. A jubilant nation remembers with deep gratitude the martyrs who laid down their invaluable lives at the altar of freedom and pray for the salvation of their departed soul.

The Armed Forces Day revives the *esprit de corps* between members of the three services and cements their ties with the civil services personnel. By enhancing inter-service bondage the Day strengthen solidarity between the rank and file of three services as well as the common masses. Civil-military relations, thus, gain momentum in this process which is amply testified by the spontaneous turn up of the enthusiastic people from all walks of life in the exhibitions and displays organized by the Armed Forces Division all over the country.

On this auspicious occasion, this year, Armed Forces Division has taken the initiative to bring out two publications namely (i) *Armed Forces Journal* and (ii) *Newspaper Special Supplement*. This has generated lot of enthusiasm amongst the officers of all ranks in the three services in terms of contributing well-written articles. The contributors deserve sincere appreciation for their original and insightful writings on diverse topics encompassing burning issues of contemporary times vis-a-vis military and strategic interests. In spite of their busy commitments the contributors had carved out time in pursuit of a noble academic purpose. Inquisitive readers will find food for thought in these writings.

We are highly indebted to the Principal Staff Officer, Armed Forces Division for his dynamic leadership, constant guidance and overall patronage which were *sine qua non* for properly organizing of all programs and other commemorative events on this solemn occasion. Members of the Editorial Board put in concerted efforts and worked as a team to ensure standard quality publications as well. They deserve warm applause.

All members of the three defence services must be warmly thanked for extending wholehearted and spontaneous cooperation towards proper organizing of events on this Day. In spite of all our sincere efforts, lapses and errors may be traced. We hope and sincerely believe that the valued readers will consider such shortcomings with sympathy.

Armed Forces Day 2019 is the ripe moment for each and every patriotic member of three services to take a fresh vow for preserving what has been achieved with the firm determination to attain further skill and efficiency for realizing the Forces Goal-2030.

May ALLAH bless us all.

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Mega (Iconic) Infrastructure Development by Bangladesh Army (Corps of Engineers)

Major General Abu Syeed Md Masud, BSP (BAR), P Eng

Introduction

In recent years, the project management endeavours of Bangladesh Army, particularly the Corps of Engineers,[1] has flourished decisively, reaching new heights of sophistication to meet the challenges of contemporary economic environment. The epitome of the inspiration basks in its motto “always and everywhere.” The Corps has mastered the Art and Science in handling complex and time-constraint assignments with interdisciplinary approach, moving beyond combat sphere to contribute in nation building through civil works and development initiatives. The experience in constructing roads in hilly terrain has pushed the learning curve to continue with an upward trajectory towards attempting approach roads in Padma Multipurpose Bridge,[2] Begum Rokeya Bypass Road,[3] Marine Drive[4] and similar road projects in number of places. The projects not only connoted the highest level of quality, many of those marked the completion line well-ahead of budgeted timeframe. The Corps now relishes the buoyancy and confidence of various government echelons for fast track critical and challenging projects that require innovative project management skills and superior techniques.

A project in the economic sense directly or indirectly adds to the economy of Bangladesh. However, an introspection of the project performance indicates that the situation often is far from satisfactory. Most of the major and critical projects in public sector, particularly the crucial sectors like infrastructure are plagued by tremendous time and cost overruns. The Corps of Engineers have triumphed over those constraints by proper utilisation of all components and machineries of the government and by cross-linking those for desired outcome. Thorough analysis encompassing available alternative technologies, selection of the most appropriate technology in terms of optimum combination of project components bolstered by devotion and relentless hard work are the virtues of successful projects undertaken by the Corps. The timely implementation of mega projects like Hatirjheel[5] and Mirpur Flyover[6] bear ample testimony of the aforementioned competency. In this paper there is an attempt to have an overview of the few successful initiatives undertaken by the Corps of Engineers.

Integrated Development of Hatirjheel Area Including Begunbari Khal Project

Over the years the Hatirjheel area was encroached by illegal occupants and wetlands were filled up, reducing the storm water retention capacity. The

calamitous consequence on the adjoining areas saw inundation, waste and pollution. To resolve this appalling state, the Government initiated the project "Integrated Development of Hatirjheel area including Begunbari Khal"[7] and entrusted the Corps of Engineers, Bangladesh Army to spearhead the initiative. The major objective was to ensure protection of an area of 311 acres land for storm water retention to fight inundation and reduction of accompanying environmental hazards.

While planning for this challenging project, it was conceived that Hatirjheel project could alleviate local traffic congestions and connect an important East-West missing link between two major arterial roads through constructing a peripheral road and walkway systems. Besides, a unique water-front park and a green space for the city dwellers was appealing to consider.

But there were major hurdles to overcome such as maintaining the water quality of the low-lying areas behind the Sonargaon Hotel and the Hatirjheel areas to an acceptable level. The uncontrolled, untreated domestic sewage and industrial wastewater disposal within and around the areas, restoration of the water quality to the desired level surfaced as a major challenge. In addition to the main diversion sewers, the project also planned local diversion sewers for diversion of domestic sewage that were discharged into the project lowlands. The need for three Deep Tube Wells (DTWs) and DTW pump stations became necessary. The project also planned to lay water supply lines (mains) along the peripheral roads. A Special Sewerage Diversion Structure (SSDS) at each of the 11 major storm sewer outfall locations was on the card too.

Photo 1: Inauguration of Hatirjheel Project

Source: Author's collection

Relentless work continued and Hatirjheel dream became a reality. Hatirjheel now acts as a storm water retention basin of the surrounding area and also prevents water logging during rainy season. It has also successfully diverted both liquid and solid waste which were detrimental to the environment, reduced traffic congestion across the city and prevented illegal encroachment. The right initiative from the government followed by good team work and generous support from all quarters has made the project successful. Hatirjheel offers a rare refreshing environment to the residents of Dhaka. With the successful implementation of the project, Hatirjheel has now become the largest surface water body in Dhaka city. Once a symbol of environmental degradation, Hatirjheel now symbolizes a remarkable success in environmental restoration.

Rehabilitation of Meghna and Meghna-Gumti Bridge Superstructures

The two bridges on Meghna and Meghna-Gumti rivers on Dhaka-Chittagong highway (N1) are part of the essential road link between Dhaka and Chittagong. A two-lane undivided highway (presently being upgraded to four-lane divided highway) forms the only direct road link between the two cities. The Meghna Bridge[8] and the Meghna-Gumti Bridge[9] are two two-lane bridges some 12km apart on this important road serving more than 20,000 vehicles a day, many of which are overloaded. The bridges deteriorated significantly over the years due to a virtually non-existent maintenance program,causing a threat to the safety and serviceability. The mid-span hinge bearings of both the bridges had worn out and the deck expansion joints made of reinforced rubber had all but disappeared. In addition, for the Meghna Bridge, river bed scour occurred, exposing the pile caps and piles and increasing free length of the cantilever piers.

It was no surprise for the bridges to be visibly distressed. The deck deflected and vibrated significantly as heavy vehicles passed over the joints, the piers swayed, riding over the expansion joints became bumpy and dangerous. The Roads & Highways Department (RHD) of Government took some immediate measures which included prohibition of passage of vessels between piers affected by river bed scour and some makeshift arrangement for temporarily stabilizing the superstructures. It also included fixing of steel plates and rubber sheets over the deteriorated expansion joints, insertion of steel plate and rubber packing in gaps of the hinge bearings created by worn out pot bearings etc.

The Government has planned to construct two new bridges adjacent to the existing ones to serve the new four-lane highway. Continued performance of the bridges is essential until the new bridges are commissioned. Thereafter, a retrofitting of the existing bridges may be undertaken to strengthen them and to give them a new lease of life. The rehabilitation works included river bed correction and pier protection by sand bags and sand filled geobags for the

Meghna Bridge, replacement of expansion joints by a more permanent form of joint for both Meghna and Meghna Gumti bridges, and replacement of pot bearings in hinges inside the box girder deck and rehabilitation of the hinge bearings for both the bridges.

Photo 2: Inspection of Work Progress at Meghna-Gumti Bridge Project

Source: Author's collection

Additionally, it was planned for the bridges to have a facelift which included repair of wearing course, road markings, replacement of light fittings and electrical lines, repair of railings, painting etc. The plan of the rehabilitation works, including design of new expansion joints, and material and methods for hinge bearings were all formulated by the Corps of Engineers. The job has now been successfully completed and the bridges were reopened to traffic in March 2013.

Flyover and Overpass Project

It was conceived that a road linking between Mirpur and Airport Road through Dhaka Cantonment would facilitate greater Mirpur area to have quick and shorter connectivity with Airport Road, Gulshan, Banani, Tongi and other adjoining areas. The link road from Mirpur to Airport Road had the potential for reducing from 11 km distance to 3 km only. At Banani rail crossing more than 72 train passes and gate remain closed always for about 5 minutes. During that time heavy congestion of vehicle occurs at that point causing traffic jam and resultant loss of working hours. So, Government decided to construct overpass at this critical rail crossing and the task was assigned to Special Work Organization (SWO) of Bangladesh Army.

There were three main components of Flyover and Overpass Project:

a. **Flyover at Mirpur-Airport Road**[10]

Consisting four ramps and one trumpet interchange the four lanes flyover with four lanes ramps (two lanes in some places) measured a length of 1790 m and width of 15.52 m.

Photo 3: Inspection of Work Progress of Flyover at Mirpur-Airport Road

Source: Author's collection

b. **Overpass at Banani Rail Crossing**

Consisting four lanes with two ramps. Total length is 804 m and width is15.52 m.

c. **Link Bridge**

A part of this project which has connected the overpass with flyover at Zia Colony Military Police Check Post (MP CP) to facilitate traffic to Mirpur area from Banani. Its total length is 562 m and width is 6.7 m.

Flyover at Mirpur-Airport road and overpass at Banani rail crossing have tremendous influence in surrounding areas. The construction of link road and flyover at Mirpur resulted in re-generation of the area, developing Mirpur into a vibrant new commercial city.

Role of Bangladesh Army in the Construction of Padma Multipurpose Bridge

Padma Multipurpose Bridge Project[11] (PMBP) is the dream infrastructure project for Bangladesh. In the inaugural ceremony of Hatirjheel Project, Corps of Engineers floated the idea of supervision by own engineers and experts. The idea received further momentum when the honourable PM initiated the

formulation of a team incorporating the Corps of Engineers of Bangladesh Army, BUET, Bangabandhu Bridge Authority (BBA) and other experts. Bangladesh Army for the first time involved itself in the role of Construction Supervision Consultant.

Bangladesh Army has successfully completed the supervision consultancy of three packages of Padma Multipurpose Bridge Project (PMBP) in the format of The International Federation of Consulting Engineers (FIDIC) rules. The progress of the work and the quality of consultancy has already been praised for the devoted role of the Construction Supervision Consultant (CSC-1). Besides, Bangladesh Army is providing continuous security to man and material including local and foreign experts by Composite Brigade.

The mega structure is being constructed under 5 packages. Among those 5 packages contractor of first 3 packages is Joint Venture between Bangladesh's Abdul Monem Limited and Malaysia's HCM Engineering Sdn Bhd (AML-HCM) (JV) and consultant is CSC, Bangladesh Army in Association with BRTC and BUET. Main Bridge contractor is China Railway Major Bridge Engineering Group Co. Ltd and River Training Works contractor is Sinohydro Corporation Ltd, China.

Technical Challenges and Mitigation

During the execution phase, many problems surfaced. These have all been addressed prudently and overcome efficaciously which are briefly described below:-

a**. Bitumen Quality Control**

Bitumen is a complex hydrocarbon compound which demands optimum viscosity. The consultant initiated test for viscosity content of the Bitumen and accordingly, Penetration Grade Bitumen was sent to USA, Singapore and BUET. The viscosity test results from all the laboratories met the specification and was approved to incorporate into Asphalt Concrete works.

b. **Breaking of Pile Head Reinforcement**

During the breaking process of pile heads, some of the rebar's (32 mm) in diameter were broken at Shikderkandi Bridge (Approach Road-1). This was

Photo 4: Briefing on the Padma Bridge Site with Panel of Experts

Source: Author's collection

due to the problem of ductility of the rebar. To overcome the problem, retrofitting of rebar was planned and done accordingly by following a Jacketing method to attach a new rebar with the broken one. Besides, additional layer of reinforcement was provided by drilling inside the pile with advanced bonding material.

c. **Embankment Settlement**

Settlement was a serious problem which delayed the completion of embankment construction. However, different methods like sand compaction pile and preloading was successful in treating the soft soil. Standard Penetration Test (SPT) value before and after the treatment showed that the bearing capacity of soil has improved significantly.

d. **Corrosion of Expansion Joint**

Immediately after 3 months of installation of expansion joint, corrosion were seen in some parts of expansion joint. The matter was then further investigated by the BUET team to identify that the product of expansion joint did not follow the correct specification of ASTM A242 as claimed by the manufacturer. However, it was suggested that the expansion joint can still be used with continuous monitoring and maintenance.

The completion of PMBP will be a testimonial for Bangladesh in its capability of handling mega projects. Bangladesh Army involved itself from the beginning and completed three packages of PMBP within budgeted timeframe. Completion of the approach roads and associated facilities has reiterated that Padma Bridge is closer than a distant dream. Technical challenges faced during the process of execution was handled professionally by the CSC team. Specifications, drawings, BOQ, Terms of Reference, Contract documents etc were analysed properly in every step of works. Besides POE also provided their timely decisions when it was needed. Through concerted efforts, Bangladesh Army accomplished its responsibility with utmost sincerity and dedication.

Padma Bridge Rail Link Project (PBRLP)[12] - A Major Milestone

The Padma Multipurpose Bridge caters four lanes for road traffic on top deck and in bottom deck a Broad gauge Single Railway Track for connecting direct rail service from Dhaka to Jashore, Khulna, Benapole and Mongla. With a view to connecting Dhaka with south-west part of the country quickly, construction of a rail link between Dhaka and Jashore earned prime importance. Bangladesh Railway (BR) engaged Construction Supervision Consultant of Bangladesh Army for PBRLP, the Chinese Government funded project under G to G loan assistance program.

The scope of the project included construction of new Broad Gauge 172 km main line and 43.02 km loop and siding line (total track is 215.02 km

including loops & sidings) along with 21.86 km viaducts, 1.98km ramps, 66 major bridges, 224 minor bridges/culverts/underpasses, 1 Pedestrian underpass, 1 Road Bridge at Maowa approach, 30 Level Crossing Gates, 14 new Station Buildings and remodelling of 6 existing station buildings. The scope also included installation of Computer Based Interlocked Signalling System with colour light signal along with Digital Telecommunication System of 20(twenty) stations, acquisition of 1481 acres land, implementation of RP & EMP and supply of 100 BG Passenger Coaches.

Photo 5: Inspection of In-situ Work in Padma Bridge Rail Link Project

Source: Author's collection

The main functions of CSC entailed the supervision of construction of the rail link of all four sections of PBRLP economically and efficiently, consistent with internationally accepted standards and practices. The CSC of Corps of Engineers of Bangladesh Army in association with the experts from BRTC, BUET, national and expatriate experts are to carry out the tasks covering the pre-construction, construction and post-construction stages of the project-contracts.

Jolshiri Abashon: Vision to Commitment

Jolshiri Abashon,[13] an ambitious housing project aimed at providing housing plots to military officers, was undertaken with a balanced approach, along with comprehensive and careful planning while preserving settlements of indigenous dwellers. The overall goal for Jolshiri Abashon was to create an intelligent and sustainable 'model city' with superior planning, urban design and environmental management. Jolshiri would be the 'Smart City' to offer unrivalled comfort and security for its inhabitants. Within a short span of time, huge area of low-lying barren land was filled up with sand ensuring simultaneous pre-survey, lake-cutting, levelling and plot marking.

Photo 6: Site Visit at Jolshiri Abashon Project

Source: Author's collection

It was a record sand filling in the history of any development works in Bangladesh where Corps of Engineers were at the forefront with highest professionalism and innovations to address all challenges. Some of the major considerations were detailed surveying, hydrological assessment, detailed profiling and drainage systems etc. Jolshiri is a dream project of Bangladesh Army and it is well underway in achieving excellence in sustainability, efficiency and liveability.

Conclusion

Bangladesh Armed Forces have come a long way since the Liberation War in 1971. The Armed Forces have emerged as a well-developed asset capable of not only performing the primary role of defending the country's frontier from external aggression and internal subversion, but also increasingly and successfully helping in the task of nation-building.[14] The Corps of Engineers of Bangladesh Army has rightfully earned the confidence of the government and people as beacon of mega projects irrespective of size and magnitude. In peace and in war, at present and into the future, the Corps of Engineers remains relevant to the attainment of national goals and objectives.

Notes and References

1. For details see সম্পাদনা পর্ষদ (সম্পাদিত) *বাংলাদেশ সেনাবাহিনীর ইতিহাস*, শিক্ষা পরিদপ্তর, সেনাসদর, ঢাকা সেনানিবাস, ঢাকা, ২০১৫; also see মুহাম্মদ সাইফুর রহমান সম্পাদিত, *মুক্তিযুদ্ধে স্যাপার্স;* স্বাধীনতা যুদ্ধে কোর অব ইঞ্জিনিয়ার্স, ই-ইন সি'স ব্রাঞ্চ, ইঞ্জিনিয়ার পরিদপ্তর, সেনাসদর, ঢাকা সেনানিবাস, ঢাকা, ২০১৮
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14. To apprise the general masses about nation-building activities carried out by the Armed Forces, these are projected in the Armed Forces Day Special Supplement published in the leading national dailies every year on 21 November.

Brief Biography

Major General Abu Syeed Md Masud, BSP, (BAR), P Eng was commissioned in the Corps of Engineers with 11th BMA Long Course on 21 Dec 1984. Apart from mandatory courses, he is a graduate in Civil Engineering from Bangladesh University of Engineering & Technology (BUET) and attained Masters in Business Administration (MBA). He also achieved Professional Engineering (PEng) from Bangladesh Professional Engineers Registration Board (BPERB). He is a fellow member of Institution of Civil Engineers (ICE), UK and achieved IEB Gold Medal for his engineering excellence. For his outstanding contribution in Army, he is awarded Bishista Seba Padak (BSP). His professional career spans a period of 32 years having comprehensive technical knowledge and higher leadership skills which help to find out easy solution of complex problem. He served in various appointments as staff, coordinator and command capacities. He also served in Bangladesh Rifle (BDR) as Commanding Officer and Director (Construction). Presently he is Chief Coordinator, Construction Supervision Consultant (CSC) of Padma Multipurpose Bridge Project & Padma Bridge Rail Link Project, Chairman of Jolshiri Abashon Project and Project Director, Hatirjheel Project.

Contribution of Common People During Liberation War: An Insight to Promote Awareness from Historical Perspective for Future Preparedness

Colonel Humayun Quyum, afwc, psc

Introduction

Bangladesh has achieved independence through a nine-month long blood-spattered war under the leadership of Father of the Nation Bangabandhu Sheikh Mujibur Rahman where all patriotic people of the country along with regular forces contributed from their respective positions and capacity.[1] The Liberation War (hereinafter LW) started as a spontaneous resistance against genocide by the Pakistan Army, but soon assumed the character of an organized war of attrition. It was mostly a people's war, which was exemplified by the army of freedom fighters known as Mukti Bahini (hereinafter MB) in Bangladesh. LW forces were organized in different stages where the large section of willing youths and common people joined as guerrilla force with a common purpose of liberating the dear motherland.

Historically common people plays a vital role during peace and war for the betterment of any country. The masses have a strong linkage with the Armed Forces especially during war against any potential adversaries. The contribution of common people both with arms and without arms during the LW was significant. The common people who could not take up arms inexorably supported the MBs in the battlefield in many forms, which in many ways eased the path of liberation. Common people felt the necessity of standing beside the regular forces during LW for the greater interest of the country. Though their participation was spontaneous, finally it proved to be a much-needed one. These kind of contributions can very well be capitalized in future warfare against any potential adversaries as well as during any kind of national emergencies such as natural calamity, disaster management and peace time development work.

The contribution of common people would be a dire need in future for a country like Bangladesh. The integration has to be well thought of to ensure maximum utilization of common people for the betterment of the country. In order to have spontaneous participation during national emergencies in future, it is important for all to understand the significant role of common people.

Military alone cannot win a war without the support of common people which was proved during LW. Therefore, in today's perspective it is imperative to know the history of LW to have clear understanding about the requirement of assisting Armed Forces by the common people during any national crisis. But, in reality it has been observed that the present generation is less conversant

with the real contribution of common people during LW.[2] Armed Forces, family members, educational institutions and even local political leaders can play significant role to ensure that the next generation is well equipped with required knowledge on LW as well as their role for the country during any need.

Aim

The aim of this paper is to give an objective and critical analysis of the contribution of common people during LW and suggest ways forward to promote awareness for future preparedness capitalizing the war experiences.

Defining Common People

Common People (With Arms)

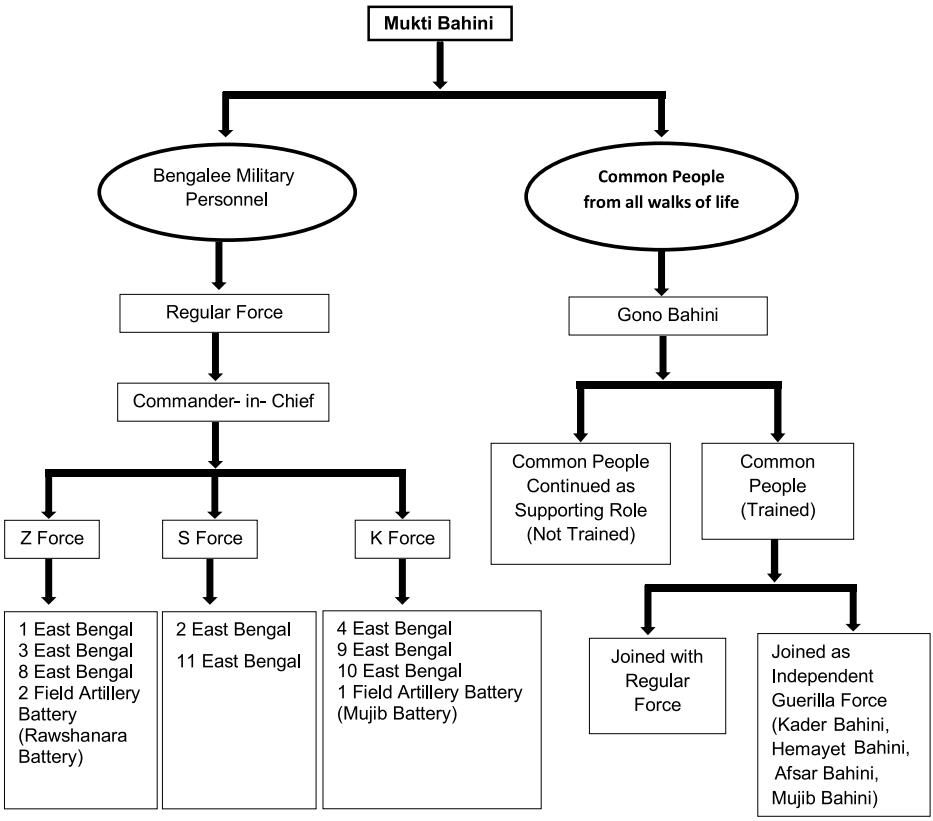
The enthusiastic section of population from non-military background organized for LW was referred to as Gono Bahini (people's forces). Gono Bahini used to be called as Freedom Fighters (FF),who fought under overall plan of the sectors.[3] It was basically formed of civilians trained on guerrilla operations. Besides, there were number of localized forces operated in different parts of Bangladesh independently.[4] All the civilians who took part in LW as part of Gono Bahini are termed as Common People (with arms).

Common People (Without Arms)

A huge number of common people from all walks of life participated in the LW along with regular forces without taking arms. They were not under any organized force structure but helped the MBs with required information, food, shelter and other logistic support.[5] All the civilians who helped the freedom fighters without arms in LW are referred as Common People (without arms).

For the sake of better understanding of the formulation of the MB a conceptual framework is given in the Figure below where common people from all walks of life participated and this will mostly be discussed in this paper.

Figure 1: Conceptual Framework of formulation of the MB



Source: Author's self-construct

At this stage it is relevant to point out that the different components of MB as shown in the Figure above will be discussed below:-

Contribution of Common People During Liberation War

Common People (With Arms)

Gono Bahini

Gono Bahini fought various battles with regular forces under the overall plan of the respective sectors. They were trained with arms to fight along regular forces against Pakistani Forces which enhanced overall strength and capability.

Localized Forces

Various localized forces operated independently in different parts of Bangladesh. Salient features of these forces are shown below in Table 1:-

Table 1: Salient features of localized forces

Name	Leader	Total Force	Operational Area	Basic Tactics
Kader Bahini	Kader Siddiki	16000	Tangail District and part of Dhaka, Mymensingh and Pabna Districts[6]	Sudden Hit, Stay and Advance [7]
Hemayet Bahini	Hemayet Uddin	5100	Part of Barisal, Faridpur and Gopalganj Districts[8]	Divided into companies, platoons and conducted operations[9]
Afsar Bahini	Major Afsar Uddin	4500	Southern Part of Mymensingh District and some portion of northern part of Dhaka [10]	Divided into companies, platoons and sections. Had mobile Hospital,[11] published Newspaper named *Jagrato Bahini* [12]

Source: Author's self-construct

Other Forces (Bahini)

Besides groups mentioned in localized forces various other forces namely Latif Mirza Bahini of Sirajganj and Rajshahi, Akbar Hossain Bahini of Jhenaidah, Quddus Molla and Gafur Bahini of Barishal, Aftab Bahini of Mymensingh, Zia Bahini of Sundarban, Siraj Sikdar Bahini, Halim Bahini, Baten Bahini et cetera also operated within respective locations with arms independently.

Common People (Without Arms)

Initial Resistance

The first protests came from the common people on 01 March 1971 when General Yahiya unilaterally suspended the sitting of the first session of the National Parliament of Pakistan. Again, on the fateful night of March 25, common people including students and political activists offered the initial resistance by putting barricades on the streets of Dhaka and Chattogram. There were also rickshaw pullers, day labourers, retired government employees and pavement dwellers who also came out to create resistance against Pakistani Forces.[13]

Providing Food, Shelter and Medicine

During the LW, the common people supported the MBs selflessly by providing shelter, food and medicine. They did not have to worry about their logistics due to the relentless support by the patriotic commoners. Injured freedom fighters were treated by most caring hands of mothers from all over the country.[14] Such support in terms of accommodation, food and medical care were no less than firing bullets to adversaries.

Offering Transportation

One of the essential support of common people to the MB members was transportation, primarily through the rivers by 'Majhis.' They helped the MB to reach undetected to the target areas and then bring them back again safely. Public bus owners and private vehicles owners also willingly gave away their wheels to shape up the battlefields as required.[15]

Providing Intelligence

Common people provided real time accurate intelligence about adversary's strength, disposition and weapon system to the MBs, even at the cost of their lives. There are many instances where minor intelligence provided by the common people helped the MB to achieve great success.[16]

Acting as Guides and Porters

Common people were ready at all times in all-weather conditions to act as guides and porters to MBs. They took them through covered routes, through less used tracks to reach their target completely undetected which produced desired results. They also offered their labour in carrying heavy weapons and ammunition for the freedom fighters.[17] However, many guides were captured and brutally killed by the Pakistan Army but such atrocities did not deter the determined peasants to show the way of the land of liberated Bangladesh to MBs.[18]

Keeping the Engagements Active

Common people of Bangladesh contributed in every possible ways to shape up the battlefield in favour of MB. These actions also kept the engagements alive and caused considerable damage to Pakistani Force. A well-equipped army with trained soldiers of more than 1,00,000 thus succumbed to defeat by an army of commoners.

Role of Women

Women played a significant role in LW. Bir Protik Taramon Bibi fought against Pakistanis in her village of Kurigram. She cooked food for MBs, collected useful information and worked as observer to give early warning to the FF.[19] Dr. Captain Sitara Begum (retired), Geeta Kar and many others also voluntarily contributed during LW.

Media Support to Mukti Bahini

During LW, media supported mass sentiments. "Swadhin Bangla Betar Kendra" aired patriotic songs and talk shows. The artists, administrators, journalists and many others worked relentlessly to keep this radio station active. This broadcasting station played a pivotal role in encouraging the Bengalee nation throughout the conflict. The 'Chorom Potro'of Swadhin Bangla

Betar Kendra anchored by Muktijoddha Sobdo Sainik M.R. Akhtar Mukul (1929-2004) eventually turned as the spokesman of the Bangladesh Government in exile. It ran the nationalist campaign throughout the war increasing the morale of MBs and also mobilizing world opinion in favour of Bangladesh.[20]

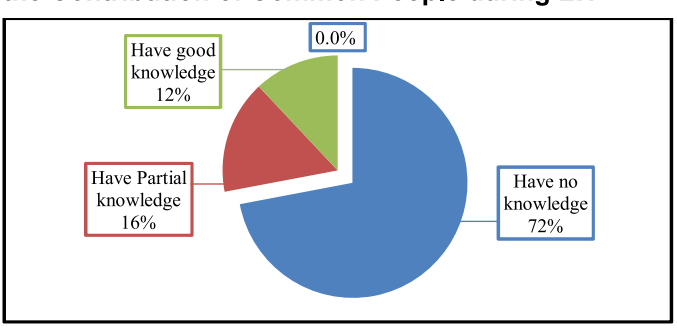
From the above discussion it can be analysed that support of common people to Armed Forces is beneficial and desirable. They can work along with the Armed Forces in building good image of the country, gaining timely public support, opinions, attitudes and confidence in peace time. In case of emergency, common people including women can also act as force multiplier in favour of the Armed Forces by understanding the requirement of time, conducting psychological warfare, sensitizing public opinion, motivating volunteers to help regular forces, enhancing morale, expediting military efforts et cetera. Should there be a requirement to fight and defend the territory, then people's participation is a must. The geographical reality dictates that the lesson of 1971 should be adopted for future wars as well, which will facilitate integration of common mass easily and smoothly. Therefore, it is strongly felt that, during peace time efforts at every tier may continue to develop general awareness, positive mindset and necessary preparation of common people to provide usual support in future as it was provided during LW.

A Reality Check – Awareness of Common People and Arrangements to Prepare Them

Young Generation Less Informed About Liberation War

The young generation is expected to be the bearer of the authentic history of LW. In reality, they are not well aware about the unbiased history particularly significant contribution of common people during LW. A survey was conducted by the author among 100 young men of age 20-30 years with different educational background to identify their knowledge on the contribution of common people during LW. The result of the survey is shown in the Pie Chart below:-

Pie Chart 1: Knowledge of Young Generation about the Contribution of Common People during LW

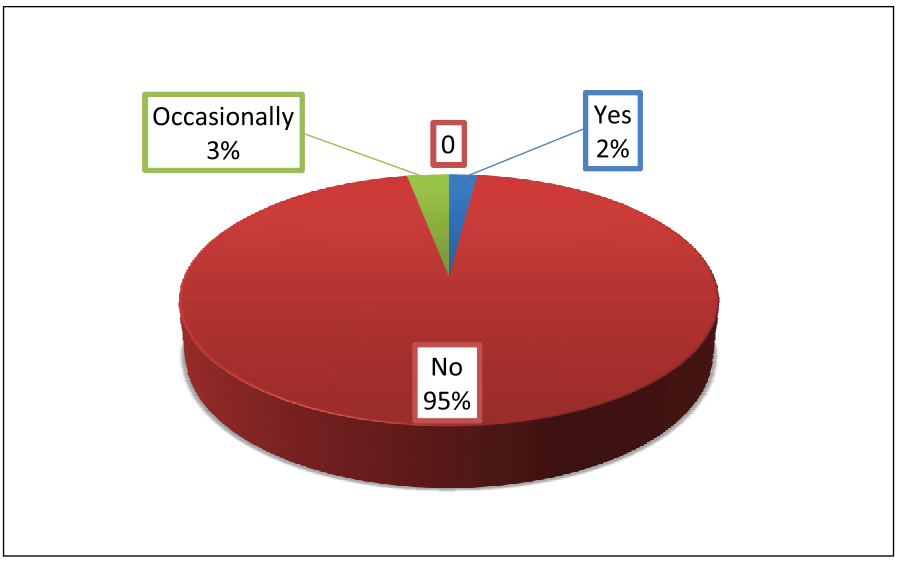


Source : Based on the survey of author

Dormant Role of Local Leaders in Motivating Locals

A survey was conducted among 100 men and women of 40-50 years of age to identify the role of local leaders to promote awareness amongst the locals in their respective localities which is shown in the Pie Chart below:-

Pie Chart 2: Discussion by Local Leaders in Public, Recognizing Common People's Contribution to LW



Source : Based on the survey of author

Materialistic Teaching in Educational Institutions

Schools are the best place to enrich tender hearted children on the appropriate history of LW and valiant contribution of their ancestors. Unfortunately, the educational institutions impart such lessons which are designed for pursuing professional career at times overlooking root level issues.

Absence of Volunteer Structure

People spontaneously participated in the LW of Bangladesh. During that time an ad hoc defence system was raised against Pakistan Army declaring local independence of different thanas. To declare independence in small areas, local common population was completely involved in the process. However, member of Armed Forces (serving/retired) acted as the prime driving force and operated in small groups. Due to the huge involvement of patriotic common population, it was possible to defeat Pakistani Forces even having a small size of Armed Forces.[21] However, in present days volunteer structures are not seen, which would contribute to organize mass people for any emergency in future. Local leaders are responsible for informing the locals

about this endeavour, motivate them to join and support it wholeheartedly. Moreover, utilization and regularization of Unconventional Warfare Forces (UCWF) with regular training by the Army is a necessity to keep them fit, alert and conscious for the future challenges.

Less Projection in Media

Media is a powerful medium to inform the people about the real history of the LW. In media, the contribution and involvement of common people in LW is never been highlighted as expected to inspire the young generation and common people to contribute for future crisis. Entertainment Media has produced limited movies and drama on LW which has a tiny effect on the society. Had that been otherwise, their role could have inspired millions to gradually prepare them for the time of need.

Ways Forward to Develop Positive Mindset to Prepare Common People for Future

Equipping Young Generation

Family and educational institutions should teach the children about the impartial and undistorted history of the LW particularly the contribution of common people in various capacity. The text books should include the contribution of common people in LW with proper approach to inspire common people for future to manage crisis. The orientation of young generation with military training in any form and scale will also contribute to develop a positive mindset for providing desired support to Armed Forces in time of need.

Motivating People for the Cause of war

Motivating common people is primarily job of political parties.[22] Extensive motivation of common mass by the political leaders, intellectuals and prominent personalities will be required. A dedicated cell up to union level may work to inspire people and infuse patriotism amongst all. Full advantage of print, electronic and social media should be taken in this campaign. Team of educated motivators may form motivational group and launch motivational campaign throughout the country.This arrangement may be coordinated under the overall responsibility of the Information Ministry.

Positive Role by Local Leaders

Local leaders can play a vital role in sharing the true history of LW to the common people by discussion, arranging meeting and various programmes organized on the important national occasions. During Winter Training (WT) and Summer Training (ST), Army can take significant effort to contact with the local leaders for integrating the common people with them.[23] Their support helps the Armed Forces to train common people during peace time lessening the gap between civil and military and improve their positive mindset.They can remind

common people's contribution during LW and motivate them to develop such mindset to continue the support whenever needed.

Organizing Volunteers

Conceptually volunteer people from all walks of life should be organized under the banner of Armed Forces during any foreseeable crisis. Interested people to fight any future conflict will be directed to a reporting centre established at every district headquarters. These reporting centres when established may be manned by regular forces with the support of volunteers. District wise data base of volunteers need to be registered and maintained as per age, education and ability. They may form volunteer battalion at district level. Overall, the Ministry of Defence and Ministry of Home Affairs should be responsible for the affair of organizing people during any emergency.

Training for Volunteers

The volunteers should be trained in different training institutions of Armed Forces, Border Guard Bangladesh (BGB) and Ansar training centers. Their basic training duration may be 2-3 weeks and syllabus should include weapon training, minor tactics and logistic aspects. The interested people will be trained in peace time and remain enlisted under some district volunteer battalions.[24]

Command and Control Mechanism

Integrating common people for future war/emergency may be coordinated through the field formations. Bangladesh Navy may be responsible for coastal areas. In some bordering areas BGB may be made responsible. In every district there could be a reporting centre manned by some selected volunteers with the assistance of regular forces. The district battalions may be named after the name of the district and under that there could be four or five companies named after the upazilas. Under company, platoons may be named after the unions.

Likely Tasks of the Volunteer Forces

The Volunteer Forces may perform the following tasks:-

a. Reconnaissance support before any operation

b. Human Courier

c. Providing logistic support to regular forces

d. Assisting in preparation of defensive position

e. Boosting morale of regular forces by cultural activities

f. Nursing and medication

g. Transportation support and

h. Casualty Evacuation

Coordination

Formation cell which coordinates the UCWF can also coordinate the activities of district volunteer battalions. The parallel coordination with Ansar and Village Defence Party (VDP) and other paramilitary forces should be maintained to avoid duplication of effort. The district volunteer battalions may be organized and trained during peace time and be maintained throughout the conflict period.

Forming Separate Volunteer Structure on Mobilization and Integration with Unconventional Warfare Forces (UCWF)

It would entail raising a volunteer structure to integrate the participation of ordinary people by the Government upon declaration of war incorporating various professional groups namely Volunteer Force, Political, Legal, Diplomatic, Media and Cultural Wing. Once formed, Volunteer forces would be imparted with necessary training under the overall responsibility of Armed Forces Division (AFD).

Enhancement of Interaction of Armed Forces

At present, Armed Forces members interact with common people through deployment in assistance to civil administration, hardware display, national day parade and awareness programmes et cetera. However, two weeks of training for the volunteers may be planned during WT and ST.

Strengthening Inter Services Public Relation (ISPR) and Media Cell of AFD

ISPR should be able to work as a dynamic public relations organization. It should acquire the ability and resources for gaining public opinion, conducting opinion research and take anticipatory action. For that, strength of its technical expertise should be increased and required modern equipment should be made authorized. Bringing ISPR under AFD and upgrading the status of the Director and added authority may work better. A vibrant media cell in AFD comprising representatives from all three services may enhance the capacity to work better. Efforts by ISPR and AFD in preparing more number of military related documentary films, programmes to telecast in the media may help common people to understand and interact more with military. Retired officers who have acquired rich experience and expertise in editing recognised research publications as well as earned good reputation in the media may also be taken on board for developing civil-military relations.

Additional Focus on Armed Forces in the Media

The editors and the management of media organizations should allow few selected correspondents to focus on defence, national security matters including common people issues with Armed Forces like CNN, BBC and Al-Jazeera. ISPR should work in conjunction with those media personnel and periodically visit related places in the services. Then after related reporting,

features may be prepared to reach to the common people easily to grow mutual trust and confidence among each other.[25] Such measures are likely to improve the mindset of common people about Armed Forces.

Conclusion

LW is a defining moment in the history of Bangladesh. It is a source of inspiration for the Bangladeshi population. Bangladesh has achieved her independence at the cost of millions of lives. During the war, there were no differences between regular and irregular forces. All were united for the independence of the motherland. Common people as part of MB fought with regular forces. They fought with arms along with regular forces against Pakistan Army without any fear for liberty. They contributed a lot without arms as well providing logistics, morale support, intelligence et cetera to MBs who were highly dependent on them. They have eased the achievement of independence by giving their best effort in many forms.

Without having sufficient knowledge about glorious past, it is not possible to have a viable present and a promising future. However, many of our present generation does not know the real history about the contribution of their predecessors during the LW. This certainly hinders the way of getting inspiration for any future crisis and idea about common people's capability. Less efforts in sharing of true history, lack of interest of family and educational institutions, lack of knowledge regarding LW and absence of structured arrangement by the authority for volunteers et cetera are few issues which hinders to develop required mindset and grow awareness by the young generation and common people to prepare accordingly .

Armed Forces and common people need concerted effort to evade any future conflict. To achieve synergy, necessary preparation and coordination has to be undertaken during peace time. As such, few selected conducive arrangement by military for young and common people to interact, imparting proper history by family and educational institutions, regular arrangement of seminars, orientation with military training for the students, introduction of volunteer structure et cetera can bring some positive results. Most importantly, common people need to have that urge to know the history of LW and being inspired from that to keep themselves prepared for any kind of national crisis.

Recommendations

The recommendations which are worthwhile to follow are given below:-

a. Ministry of Information may be assigned to undertake motivational activities through different apparatus. The Ministry may remain prepared to start functioning in this respect in any emergency.

b. Ministry of Defence and Ministry of Home Affairs should work in unison to organize and train district volunteer battalions as and when necessary.

c. Services Headquarters may direct and coordinate the effort of volunteer battalions to derive optimum output and at the same time avoid duplication of effort through Formation Headquarters.

d. AFD may integrate media in focusing the common people's contribution during the LW on a regular basis.

e. ISPR may be brought under AFD upgrading the status of the Director and media cell at AFD may be strengthened.

f. Proper execution of training for UCWF should be ensured by the respective authority.

g. Bangladesh may adopt a comprehensive policy to integrate the participation of volunteers and a further study may be carried out by AFD to find out suitable volunteer force structure to enhance the overall war effort.

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16. Interview with FF Aynul Haque who participated in LW under Sector 11 in Jamalpur area

17. Interview with FF Aynul Haque whose cousin acted as porter under Sector 11 in Jamalpur area

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23. Interview with Union Council Chairman and Ward Members

24. Interview with Undergraduates and Graduates Students

25. Interview with Journalists of print and electronic media

Brief Biography

Colonel Humayun Quyum, afwc, psc, was commissioned in the Regiment of Infantry in June 1993. He attended a good number of courses both at home and abroad. He is a graduate from the Defence Services Command and Staff College, and National Defence College Mirpur and attained Master of Defence Studies Degree from the National University. Besides serving in three infantry regiments he also served as General Staff Officer-3 (Operations), General Staff Officer-2 (Intelligence) and Brigade Major in Infantry Brigades and General Staff Officer-1 (Operations) in an Infantry Division. He served as Instructor Class B in Tactics Wing and as Instructor Class A in UCC Wing of SI&T. He served as a contingent member in United Nations Peacekeeping Mission both in Sierra Leone and DRC. He also served as Chief of Staff at Ituri Brigade in DRC. As Commanding Officer he served in Ideal Twenty One. He served as Deputy President at ISSB. He also served as 403 Battle Group Commander under ARTDOC. Presently he is serving as Chief Instructor in Wpn Wg of SI &T.

An Objective Study of the Payra Sea Port

Colonel Md Mahbubur Rahman Siddiqui, afwc, psc

Introduction

Bangladesh has a coastline of 710 km along the Bay of Bengal. Bangladesh has two large (major) sea ports namely Chattogram Port and Mongla Port[1] which are situated in the southeast and southwest part of the country respectively. But there is no port in the southern-central coastal zone of Bangladesh. The main port installations of Chattogram Port are situated along the banks of the river Karnafuli about 16 km from its outfall into the Bay of Bengal. The Mongla Port is located at the confluence of Pasur River about 131 km inland from the Bay of Bengal.

Despite the development of air, rail and road communications, shipping is still the major means for transporting goods internationally and many cities rely on their ports as a major source of revenue. The sea is also valued for the natural resources that lie beneath the sea bed.[2] Moreover, in the recent past, the International Tribunal on Law of the Sea (ITLOS) has settled the maritime boundary delimitation issue between Bangladesh and Myanmar on 14 March 2012.[3] Similarly, the maritime boundary between Bangladesh and India is also clearly delineated by the Permanent Court of Arbitration on 07 July 2014.[4] This had added a new dimension to the maritime environment of Bangladesh. Therefore, growing economy of Bangladesh demands growth of its port infrastructure - both in capacity and in number. Since independence, no new sea port has been constructed. But the number of major sea ports has become doubled in India during the same period.[5] Moreover, any possible transit facilities to the neighbouring countries - India, Nepal and Bhutan necessitate an efficient and competitive port.

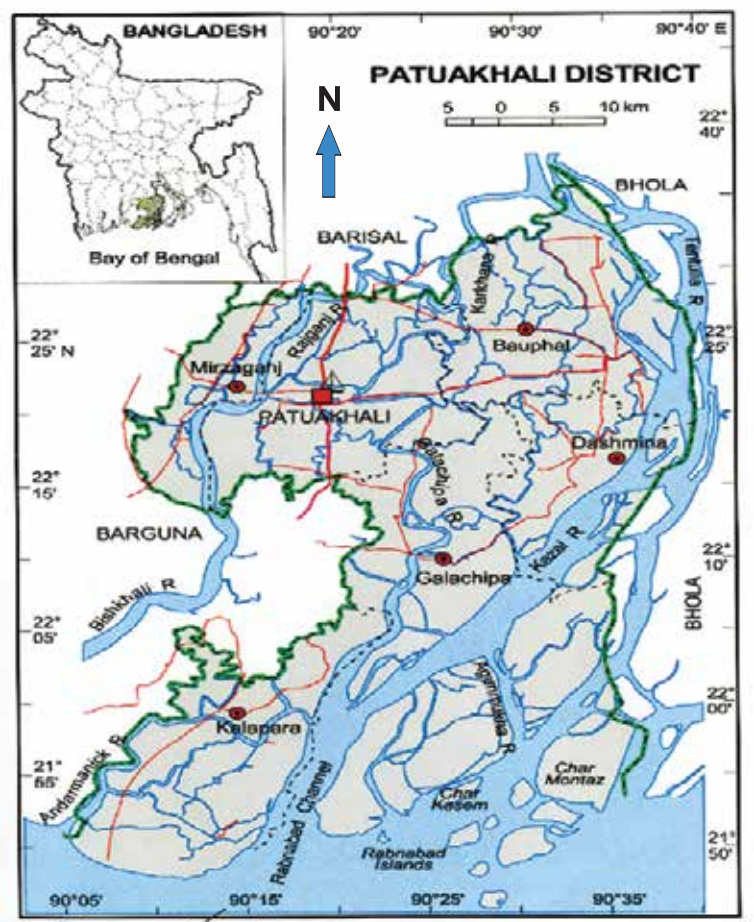
Bangladesh is situated in an important location in South-East Asia and her economic growth is increasing day by day. The main economic activities are performed in the south-east region through Chattogram and Mongla Ports. But balanced economic growth is essential for the overall development of the country. Volume of trade is growing on average at 9.2 percent per annum.[6] This trade is anticipated to continue or even accelerate in the foreseeable future. In 2020, the country's total annual sea borne trade will be in the range of 70 to 80 million tons.[7] This figure is beyond the capacity of Chattogram Port. The possible expansion of two ports will not be able to bear the future trade volumes. New sea port is expected to be operational by the end of present decade even if the Mongla and Chattogram Ports are further developed.

Barishal division of Bangladesh is well connected with rivers and canals as well as has enormous reputation for growing food grains specially rice. There has been mention-worthy development in communication system of

Barishal. Kuakata beach is the main tourist area of this division which is flourishing day by day. Rabnabad Channel under Kalapara, a sub district of Patuakali is a naturally suitable place to build a sea port. The selected location of Payra Sea Port is only 5 km inside harbour mouth. This site was selected as it has an average height of two metres above sea-level due to which it does not submerge during monsoon. Moreover, it is well connected by road and river networks.

Plenty of spaces are available to develop a sea port with modern infrastructure. In order to increase the economic activities in the southern-central zone and meet the future demand, Payra Sea Port Act 2013 was passed in Jatiyo Sangad (National Parliament) on 10 November 2013.[8] Honourable Prime Minister inaugurated country's third sea port named as "Payra Sea Port" at Rabnabad Channel[9] at Patuakhali district on 19 November 2016.[10] Payra Sea Port is in fact a minor port.[11]

Figure 1: Location of Proposed Payra Sea Port



Source: Author's self-construct

The Need for Third Sea Port in Bangladesh

Bangladesh needs to develop port services in order to keep pace with the growing volume of national and international trade system. Time is ripe to take advantage of globalization, trade liberalization and measures undertaken by the World Trade Organization (WTO) to turn Bangladesh into a regional hub for trade and transit. The main reasons to build Payra Sea Port are discussed below:-

a. **To Overcome the Limitations of Chattogram and Mongla Ports**

The most significant limitation of both the ports is the draft and length restrictions of the vessels. Even when berth space is available, vessels have to wait for a favourable draft before it is able to berth. The same is true for a departing vessel. Beside this, there is no opportunity or place to build new port either along Karnafuli or Pasur River.

b. **To Reduce Congestion of Chattogram Port**

During the year 2014-15, Chattogram Port handled over 54.78 million tonnes of cargo including 1.86 million TEUs containerised cargo,[12] which is more than 92% of total maritime trade of Bangladesh.[13] The GDP growth of Bangladesh is around 6-7% while the container traffic growth of Chattogram Port is about 12-14% which is double of GDP rate.[14] This trend is anticipated to continue or even accelerate in the foreseeable future, which indicates in 2020 the country's total annual seaborne trade will be around 70 to 80 million tons.[15] The amount is certainly beyond the capacity of Chattogram Port which handles most of the country's seaborne trade. The possible expansion of the two ports however will have no dramatic impact on the forecasted trade volumes warranting a new seaport.

Since the sedimentation problem of channel and berth is difficult to solve, ships with 20,000 Deadweight Tonnage (DWT) cannot berth at Chattogram Port. At present, 82.5% of container ships of Chattogram Port trans-ship at Singapore, 16.8% at Colombo and 0.7% at Klang, Malaysia.[16] Since the industrial and residential constructions have taken most of the land at the rear of Chattogram Port, there isn't enough space for Chattogram Port's further development.

c. **To Exploit the Geo-Strategic Location**

It is said by the experts that 21st century is the Asian century.[17] Bangladesh is suitably located in between South Asia and South-East Asia. To utilise the geographic advantage and become a regional access door there is strong reason for establishing a new sea port.[18]

d. **To Offer a Potential Suitable Location**

Barishal Division is located in the south-central part of the country. It has an area of 13,644.84 sq km and a population of about 8,147,000.[19] It is bounded by Dhaka division to the north, the Bay of Bengal to the south. Barishal was once known as the "Crop house of Bengal" for its rice production. It has acted as a trans-shipment centre for rice, hides and pulses for Bengal. It is linked by steamer with Dhaka and with Chattogram to the southeast. Road communication has improved significantly in the recent years. Recently, Kuakata beach has become an important tourist spot of the country. The proposed location at Patuakhali has enough space for the development of a modern sea port.

e. **For Socio-Economic Development of the Region**

In order to increase the economic activities in southern zone and to handle future growth of trade volume, a sea port in Rabnabad Channel is very useful and essential. The sea port will increase economic activities in this region, create job opportunity for the people, develop socio-economic condition and also create opportunity for tourism. The port will also enhance industrial development of this area. Mainly Barishal, Patuakhali, Barguna, Bhola district will be benefitted most by this sea port.[20]

Objectives of Establishing Third Sea Port

The main objectives of establishing third Sea Port are as follows:-[21]

a. Acquisition of capacity for containers and cargo handling to and from the country.

b. Relieving congestion on existing two sea ports i.e, Chattogram and Mongla Ports.

c. Support transit trade handling.

d. Economic and social development of the south central zone i.e, Barishal division of the country.

Expected Key Benefits from the Sea Port

The main benefits that GOB aims to attain from the Payra Sea Port are:- [22]

a. Mainly this is a governmental route for import and export.

b. Faster and easier export of agricultural products.

c. Enhanced fish processing and export will increase employment opportunity.

d. Boost generation of garment industries and accelerated exports.

e. Boost generation of other industrial development in the exclusive Export Processing Zone.

f. Enhanced economic network in the country and the region.

g. Decrease pressure on Chattogram Port and reduce the waiting time. Support the country's growing seaborne trade in future.

h. Levy earning by multinational use.

j. Go alongwith the global shipping trend of moving towards larger tonnage.

k. Enhanced waterways communication.

l. Utilize the geographical advantage of Bangladesh to become a regional access door to the sea.

m. Development of Exclusive Economic Zone (Maritime Sector).

n. Development of eco-tourism.

Social Impact Assessment

According to Social Impact Assessment the proposed project will have both positive as well as some negative social impacts. But the negative impacts can be avoided by proper mitigation measures such as proper compensation to the affected people, use of government Khas land, creation of employment opportunity, crop compensation, better education and health facility etc.[23]

Environmental Impact Assessment

Experts are of the opinion that there will be both negative and positive impact on environment due to the construction of sea port and other associated components such as structures, navigational route, dredging etc.

The significant negative environmental impacts of the project are cutting of trees, annual loss of crops, generation of dredged earth due to dredging of navigation channel, changes in land use, and health, hygiene and sanitation of construction workers and public. The medium impacts of the project are generation of excess materials, blocking of natural drainage, noise

and air pollution due to construction activities and operation of the project, traffic havoc and road safety, land acquisition and resettlement, tree removal and soil erosion.

The significant positive environmental impacts of the project in terms of environmental enhancements and compensation measures are the development of new plantations, establishment of a protected sanctuary with the concept of eco-tourism, regional development through connection of the centre coast with the rest of the country, development of resettlement sites with all necessary infrastructure facilities and potential for employment during construction and Operation & Maintenance stages as well as from induced economic growth and activities.[24]

Economic Analysis

The project justification was evaluated by conducting the economic and financial analysis as well as considering other potential effects upon different implications. The project impacts on economic welfare of the project stakeholders and on the economy as a whole were assessed by project evaluation along with possible different alternatives. Economic analysis shows financial and economic benefits are as follows:-[25]

i Expected Internal Rate of Return (EIRR) = 19.51%

ii Net Present Value (NPV) = (+) 8,61,799.39 BDT

iii Expected Benefit-Cost-Ratio (EBCR) = 2.07:1

Economic evaluation results and sensitivity analysis indicate that the proposed project is economically viable. The project has thus been recommended for early implementation.[26]

Present Condition of Payra Sea Port

Ministry of Shipping (MoS) has decided to unload cement clinker, food grain and fertilizer through lighterage ships keeping in mother vessel at outer anchorage.[27] Payra Sea Port is situated on the north bank of Andarmanik River, at Tiakhali union of Kalapara sub-district. 16 acres of land has been purchased by Payra Sea Port Authority (PPA).[28] Some infrastructures have been built for starting primary works including placing of pontoons for loading and unloading goods. Few other facilities essential for port operations like channel and river buoys, light house, mooring buoys, VHF tower with radio control station, tug boat, pilot boat are implemented to support the operation.

Figure 4: Present Development Work of Proposed PSP

Source: Author's self-construct

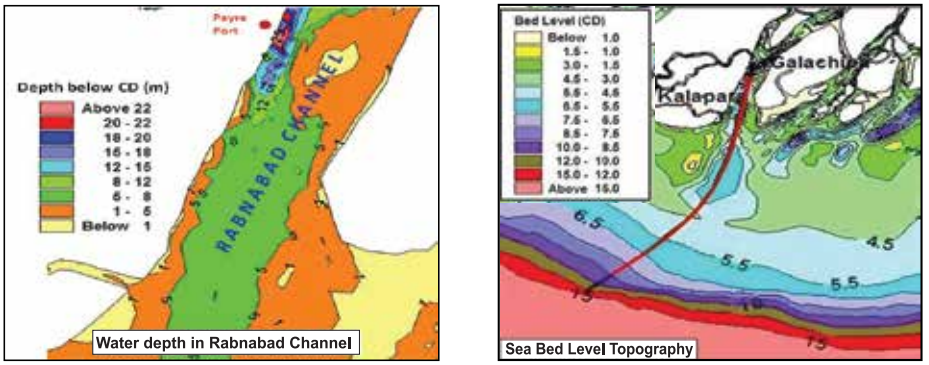
Honourable Prime Minister has laid the foundation stone on 19 November 2013 and within less than three years time, she has inaugurated the operation of the Port of Payra on 13 August 2016 through a video conference.[29] It is expected that the initial work will be completed by the year 2023 with the budget of Taka 1,144 crore.[30]

Strength of PSP

a. Suitable Draft for Higher Draft Vessel

To meet the increasing demand of 21st century, it is indeed a prime requirement for Bangladesh to develop a modern deep sea port. In the proposed location of Payra Port, from the outer anchorage to Rabnabad Channel the lowest depth of water is 4.9m at present and inside the channel there is depth of 16m. In the Channel, if 35 km dredging is done then vessels with 10m draft (maximum 9.2m in case of Chattogram Port) and 300m length[31] (186m in Chattogram Port) will be able to enter easily to Payra Sea Port. High water depths varying from 12m to 25m below CD[32] at the berthing place can be utilized as the place for inner anchorage. The berthing place possesses an area of approximately 4.55 km2 having 4 km in length and width of 1.1 km[33] (the Channel is shown in the figure below). It requires dredging of maximum 2.5 m to obtain required water depth of 8.5m below CD.[34]

Figure 5: Water Depth & Sea Bed Topography of Rabnabad Channel



Source: Author's self-construct

b. Open Spaces for Smooth Port Management

At Kalapara, Patuakhali plenty of land is available for port development and future expansion. The neighbourhood areas would provide adequate open spaces for public and private Inland Container Depot, Industrial areas, EPZs, IZ etc. Land development of port yards and other relevant purposes can be made through utilizing the dredged material of the proposed capital dredging.

c. Accessibility to Inland by Waterways

Waterway offers the cheapest means of transportation. Currently, various commodities including rice, cement and fertilizer are transported from Dhaka, Chattogram, Sylhet and Sunamganj through internal waterways. There are around 250 vessels in Barishal.[35] Inland container terminal on the Buriganga river port of Pangaon located at Keraniganj upazila, Dhaka has already been built to accommodate containers and cargo from Inland Water Transport.

d. Allow Exploration of Offshore Resources

The Bay of Bengal is reported to be highly rich in hydrocarbon resources. This has been revealed by the Indian discoveries in the Krishna Godavari Basins and also by massive oil and gas finds in Myanmar. While official sources quote a figure of 100 trillion cubic feet of gas reserves in the region, unofficial estimates the reserves at 200 trillion cubic feet of gas. Bangladesh has capacity to start drilling for oil and gas within 200 nm and beyond 200 nm out to sea. The discovery of new oil and gas will help the country to meet its domestic demands and the government could also generate capital by allocating blocks to international companies for further exploration.[36]

Challenges of PSP

Following are the challenges faced by Payra Sea Port:-

a. **Lack of Rail and Road Connectivity to Hinterland**

Lack of integrated transport network for hinterland linkage and smooth delivery of containers are going to act as a bottleneck in attaining expected level of efficiency of Chattogram port. This problem will remain as a challenge for Payra Sea Port (PSP) as the site is not connected to hinterland by rail and road. Use of inland waterways would ease the problem initially.

b. **To Establish Credibility as a Modern Deep Sea Port**

Despite having limitations, Chattogram Port secured top position in terms of efficiency among 69 ports of 17 countries in Asia.[37] The report 'Benchmarking the Efficiency of Asian Container Ports' says Chattogram Port is using existing old and new equipment at its optimum level and the study found Chattogram Port as the most efficient port. Besides, the government has taken a good number of steps to increase the efficiency of Mongla Port in the recent years.[38] In the light of above, Payra Sea Port needs to establish its credibility with all facilities of modern port to draw the attention of investors and businessmen in the overall national and regional perspective.

c. **To Meet the Cost of a Mega Infrastructure**

The third sea port of Bangladesh will be built on a Public Private Partnership (PPP) basis. The Payra Port Authority (PPA) has estimated that over Tk 17,000 crores is required to complete the infrastructural part of the construction process. Chattogram Port Authority (CPA) has already signed a MOU with PPA to provide the monetary, technical and human resources assistance. CPA has provided interest free loans for the feasibility study, land acquiring and other preparatory works on the project.[39]

Conclusion

Bangladesh economy is rapidly getting integrated with rest of the world. GDP growth of Bangladesh is around 6% in the recent years and so with increasing exports, imports and remittance the economic growth graph is on an upward trajectory. Such trend of trade has poised tremendous pressure on existing two deep sea ports. Anticipating the demand for port, GOB has already undertaken a project to construct Payra Sea Port at Rabnabad Channel of Patuakhali district. Considering the geographical location, the south-central part of the country is an under-developed region. Construction of a third sea port will enhance the economic activities and also increase the potentiality of the region. This will also release pressure on existing two deep sea ports.

In the global scenario, the South and South-East Asian countries economy can be integrated, in which Payra Deep Sea Port could emerge as an effective partner with Chattogram and Mongla Ports. Appropriate measures including computerisation of the entire port operations and implementation of an integrated transportation system with hinterland would turn Payra Port in to an effective port in this sector and a regional hub for trade and commerce. It is said that a port can change the fate of a nation. Payra Deep Sea Port could be such a port for Bangladesh.

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Brief Biography

Colonel Md Mahbubur Rahman Siddiqui, afwc, psc was commissioned with 29th BMA Long Course on 16 Dec 1993 in the Corps of Infantry. He attended a good number of courses at home and abroad. He is a graduate from Defence Services Command and Staff College, Mirpur and also National Defence College, Mirpur. He achieved Masters in Defence Studies from National University and M Phil on Strategy and Development Studies from Bangladesh University of Professionals (BUP). Besides serving in various infantry regiments, he also served in Headquarters 65 Infantry Brigade and Headquarters 24 Infantry Division. He also served as Commanding Officer of 4th East Bengal Regiment and as Deputy President in Inter Services Selection Board (ISSB). Colonel Mahbub has participated in the United Nations missions in Sierra Leone as a Military Observer (2002-2003) and in Democratic Republic of Congo as Operations Officer of a Contingent (2009-2010). Colonel Mahbub visited few countries which include China, Sierra Leone, UK, DR Congo, Indonesia, Malaysia etc. Presently, he is serving as Colonel Staff (Civil Military Relations Directorate) in Armed Forces Division.

Outcome Based Education (OBE) and its Importance in the Institutions Administered by Bangladesh Armed Forces

Lt Col Md. Awal Khan, EME, Col Md. Habibul Huq, psc and Maj Md. Faisal Kader, PhD

Introduction

Outcome Based Education (OBE) is a remarkable feature in the changing trend of modern education being imparted in 21st century schools, colleges and universities in many countries. Presently, most teachers are teaching in traditional classroom set-ups which are highly 'teacher-centered' or taught with fixed curricula. OBE is a shift towards 'students-centered' classrooms with focus on learning outcomes. Many new knowledge and skills are required in traditional teachers for teaching based on the required learning outcomes. Teachers and administrators of educational institutions will have to learn new methods and approaches to prepare themselves for world-class quality. Board of Accreditation for Engineering and Technical Education (BAETE) has embraced OBE since 2017, joining the others like the United States, the United Kingdom, Australia, South Africa, Chile and many other countries as well. Military Institute of Science and Technology (MIST) and Bangladesh Military Academy (BMA) have recently transformed and adopted OBE to run its Engineering curriculum from 2019. OBE offers a powerful and appealing way of reforming and managing engineering education[1] and outcome assessment has become the popular words of the 1990s.[2] The concept of educational accountability was one reason for the rapid spread of various forms of outcome-based education in countries such as Australia, United States and United Kingdom during the 1980s and 1990s.[3]

The OBE is not just educational approach, but a crucial part of general education particularly in teaching and learning process. OBE is an approach that focuses on outcomes, where the achievements of students are measurable, proven and can be improved.[4] OBE is being increasingly adopted by institutions of higher learning as practicable, effective and creative routes towards the acquisition of positive learning experiences. Some of the immediate effects and advantages of an OBE are viz.(i) universities are always alert and concerned about the quality of the graduates produced; (ii) development of more systematic, innovative and flexible teaching methods, for example, project based learning within an integrated learning environment, etc. will be encouraged and (iii) increase in student exposure to professional practice through industrial training, site visits and industry linked projects or assignments will be encouraged.[5] However, the process of educating and convincing academicians on the merit of OBE is a difficult one as many are quite satisfied with the current practices.[6] H. Basri reported that some of the academicians claimed that they had been employing the approach all along,

but they actually do not really understand the whole concept of OBE. In addition Basri,[7] also emphasized on the Continuous Quality Improvement (CQI) as part concept in the OBE approach. Starting from the formulation of the curriculum until the execution and implementation of the program, CQI must be in place continuously. Realization of the insufficiency of current systems and the desire for improvement is the fundamental of CQI process. The CQI included the opinion from stakeholders as they are at the receiving end of the educational process[8] and the achievement of the implementation of OBE.[9] Among the controversy raised are the attainments in implementing the OBE, its impact on students and lecturers, and its effect on the whole education system. By implementing of OBE, the students and graduates are expected to be able to take challenging tasks such as able to manage projects, analyze data, make decisions[10] and function in multi-disciplinary teamwork.[11] In view of the importance of properly implementing OBE, this study aims to investigate the prospects of OBE approach in the teaching and learning process of higher education institutions administered by Bangladesh Armed Forces. From existing research and empirical evidences on the Program Outcomes (PO) and Learning Outcomes (LO) importance of introduction of OBE in the higher educational outfits of Bangladesh Armed Forces that offer four-year Honours and Engineering curriculum can hardly be over-emphasized.

The Concept of OBE

OBE means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experience. By end of the educational experience, each student should have achieved the goal. OBE has been defined in many different ways but within the same concept that is by determining what needs to be achieved and attained the LO (Learning Outcomes). The ideas of OBE can be traced as far back in 1980s until more recently to newer models of curriculum development.[12] OBE can be described as a comprehensive learning–teaching system which focuses on the learner's action-performance and output at the end of learning experiences. In other words, OBE is a method of curriculum design and teaching that focuses on what students can actually do after they are taught.[13] The detail on explanation of the theory foundation and keystone of OBE is given by Spady, the father of OBE.[14] Considered as the world authority on OBE[15] he had been acknowledged as the person to have made a significant contribution to OBE where the ideas have had considerable influence on the approach to OBE.[16] There is no absolute agreement on defining OBE, however the definition given by various studies has one basic principle, that is, the OBE focuses on LO in preparing the students for professional practice and requires the program to be documented as the evidence of achievement.[17] The main ideas of OBE definitions come from Spady's definition. Following are nine various definitions or descriptions of OBE as shown in Table 1 below:-

Table 1: Definitions/ Descriptions of OBE

Author(s)	Definition/ Description of OBE
1. Brandt, 1992	OBE is teaching and learning targeting outcomes of knowledge, competence and orientation. Orientation is considered the affective and attitudinal dimensions of learning.
2. Spady, 1994	OBE is "… comprehensive approach to organizing and operating an education system that is focused in and defined by the successful demonstrations of learning sought from each student."
3. Willis & Kissane, 1997	Educational structures and curriculum are regarded as means not ends. If they do not do the job they are rethought.
4. Gerber, 1997	Outcomes-based education is an educational philosophy that is organized according to certain basic beliefs, principles and essential features.
5. Killen, 2000	OBE is an approach to planning, delivering and evaluating instruction that requires administrators, teachers and students to focus their attention and efforts on the desired results of education—results that are expressed in terms of individual student learning. (Main idea behind Spady's definition)
6. Lundie, 2008	OBE is "an approach in which the teachers and students focus their attention on two aspects. First is the emphasis on the desired end results of each learning process. This desired end results are called outcomes and learners must be able to demonstrate that they have achieved. Secondly, the emphasis is on the teaching and learning methods that will lead learners to achieve these outcomes."
7. Helen, 2011	OBE as "… an educational process that is focused on achieving certain specified outcomes in terms of individual student learning. Outcomes are key things students should understand and be able to do or the qualities they should develop."
8. C.Acharya, 2003	OBE is a method of curriculum design and teaching that focuses on what students can actually do after they are taught.
9. Barr et al., 2006; Mansor et al., 2008	Outcome-Based Education (OBE) is an educational approach that focuses on the graduate attributes or outcomes after completing an academic program.

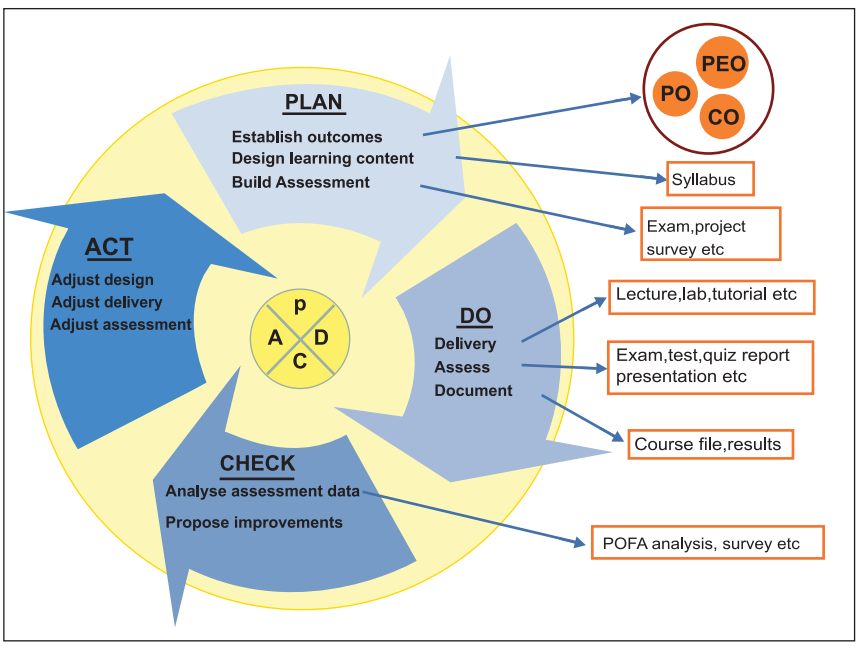
Source: Authors' self-construct

Strategy and Sequences of Achieving Academic Program Outcomes in OBE

Figure 1 shows the overall strategy in the implementation of OBE. This strategy is adopted from P-D-C-A (Plan-Do-Check-Act) quality circle commonly used in the context of Quality Management System (QMS). As mentioned previously, the OBE approach starts with defining the outcomes that are required by the stakeholders. Three types of outcomes are defined, namely the PEO (Program Educational Objective), PO (Program Outcomes) and the CO (Course Outcomes). By definition, the PEO are the skills that the graduate should have after five years working in the industry, PO are desirable graduate attributes at the time of graduation while CO are the skills learnt by the students

at the end of each course in the program. Therefore, the achievement of CO for all courses should contribute to the overall achievement of the PO and PEO. Formulation of PEO and PO are based on the attributes that are desirable and required by the stakeholders. The inputs come from various ways such as surveys from industry and other stakeholders. Having defined the outcomes, various methods are used as the delivery methods, for example by using non-traditional teaching methods such as the Cooperative Learning and the Problem-Based Learning (PBL). Next, the attainment of all outcomes (PEO, PO and CO) must be measured and utilized as a gauge for its effectiveness. The measurement methods vary from self-survey of the students, external survey, and formal assessments.[18] Following the checking stage, the results are analyzed. Any shortcomings on the level of attainment for the outcomes can be addressed and further improvements can be devised in the 'Pre-Planning' stage. The P-D-C-A circle then continues until a sufficient level of attainment is met for all outcomes.

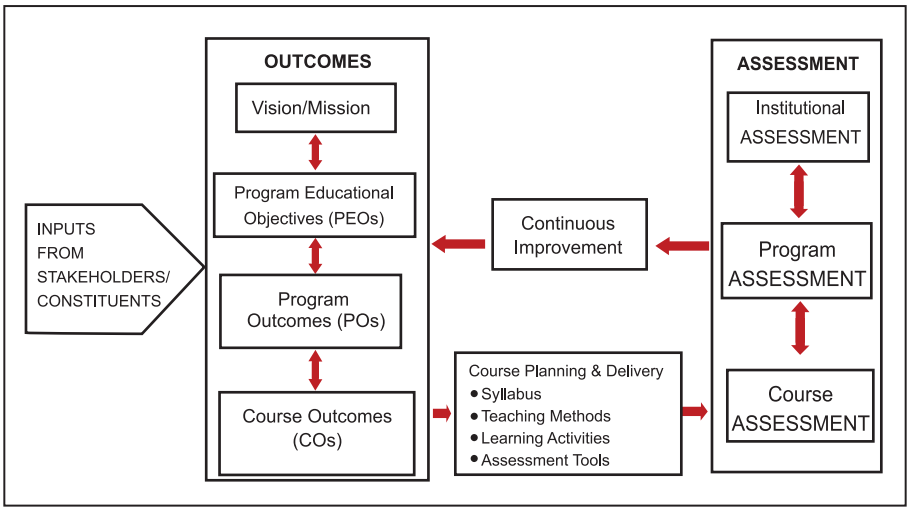
Figure 1: Overall Strategy in the Implementation of OBE



Source: Authors' self-construct

The outcome of a program may be accessed at different periods of study. But the outcomes at all levels are not mandatory. One or two levels are merged and cumulative assessment may be enough. But the assessment must give significant scale value to measure the outcome at various levels.[19] For example, program outcomes, course outcomes may be the sufficient indicator of quality of outcome at the end of graduation period and course period respectively. The OBE framework has been shown in Figure 2 below:-

Figure 2: OBE Framework



Source: Authors' self-construct

The OBE Framework is a paradigm shift from traditional education system into OBE system where there is greater focus on program and course outcomes. Also for the educational system to function effectively, OBE framework is identified. It guarantees that curriculum, teaching and learning strategies, and assessment tools are continuously enhanced through an evaluation process. OBE is implemented with the following components:-

a. Vision and Mission

b. PEO

c. POs

d. COs

Adoption of OBE at Different Parts of the World including Military Academies

Outcome-based methods have been adopted in education systems around the world, at multiple levels. Australia and South Africa adopted OBE policies in the early 1990s but have since been phased out. The United States has had an OBE program in place since 1994 that has been adapted over the years. Recently US Military Academy at West Point has introduced the OBE in the curriculum. In 2005, Hong Kong adopted an outcome-based approach for its universities. Malaysia implemented OBE in all of their public schools systems in 2008. The European Union has proposed an education shift to focus on outcomes, across the EU. In an international effort to accept OBE, the Washington Accord was signed in 1989; it is an agreement to accept undergraduate engineering degrees that were obtained using OBE methods.

Different public and private universities of Bangladesh have already started implementing OBE both in engineering curriculum as well as in the Honours curriculum. The origin and nature of OBE is briefly stated below:-

a. It is an international partnership.

b. In 1989, the six foundation signatory organizations from Australia, Canada, Ireland, New Zealand, the United Kingdom and United States observed that their individual processes, policies, criteria and requirements for granting accreditation to university level programs were substantially equivalent. They agreed to grant (or recommend to registering bodies, if different) the same rights and privileges to graduates of programs accredited by other signatories as they grant to their own accredited programs.

c. Full signatories as of 2017 are Australia, Canada, Ireland, New Zealand, United Kingdom, United States, Hong Kong, China, South Africa, Japan, Singapore, Korea, Malaysia, Turkey and Russia.

d. The following countries hold provisional status: Bangladesh, China, India, Pakistan, The Philippines and Sri-Lanka.

Importance of OBE Adoption in Institutions Administered by Bangladesh Armed Forces

Bangladesh Army is contributing remarkably to the national education through many institutions like Cadet Colleges, Cantonment Public Schools and Colleges, Bangladesh University of Professionals (BUP), Armed Forces Medical College (AFMC), and Military Institute of Science and Technology (MIST), etc. Bangladesh Army has established 'Bangladesh Army University of Science and Technology' (BAUST) in Cumilla and Sayedpur, and 'Bangladesh Army University of Engineering and Technology' (BAUET) in Kadirabad Cantonment to keep pace with the science and technological era of the 21st century. Besides, two educational institutions named Army Institute of Business Administration (AIBA) have been established at Savar and Sylhet cantonments as part of the educational entrepreneurship in business administration as well. It is to be noted that almost two lakhs of students are studying at present in different institutions of Bangladesh Armed Forces, mainly under the patronage of Bangladesh Army. Under the auspices of BUP, affiliated academic institutions of BUP that mainly run Engineering education/curriculum such as MIST and BMA (Engineering Faculty) have pioneered the OBE in the Engineering study system. It is too early to comment on its prospect, but certainly it is going to be rewarding for individual as well as for organization in the long run. Accordingly, other army/military sponsored higher academic institutions such as BAUET and BAUST may gradually switch to OBE. In fact, OBE is not only for Engineering studies, but also equally important for all undergraduate Honours curriculum. BUP may take the lead to introduce OBE in all other faculties and affiliated institutions providing 4-year Honours education.

Academic Quality Assurance (AQA) for teachers and institutions is all about setting academic standards/benchmarks for all the subjects and programs taught in schools, colleges or universities; a structure for monitoring, controlling and continuously improving the learning outcomes and ensuring that each academic standard is complying to internal and external benchmarks. Indeed, OBE helps develop AQA and this is why its acceptance in academia is on the rise since 1980s. As OBE is a student-centric learning approach, student's performance and ability is well measured gradually with the progress of the study. In fact, OBE shifts from measuring input and process to include measuring the output (outcome). The comprehensive and important benefits of OBE are:

a. More directed and coherent curriculum.

b. Graduates will be more "relevant" to industry and other stakeholders (better rounded graduates).

c. Continuous Quality Improvement (CQI) is in place.

Any new beginning is likely to have some odds and evens. In fact, there are initial set-backs to start the OBE module in MIST and BMA. With trial and error, a better foundation of OBE is going to be achieved by both in near future. Alongside, slowly and gradually all academic institutions administered by Bangladesh Armed Forces should indoctrinate and adopt OBE curriculum to facilitate academic development and strengthen the intellectual foundation of students and officers. As MIST has taken the pivotal role in implementing OBE, so it can take the pride to support and implement OBE in other army/military administered higher academic institutions.

Conclusion

The contribution of Bangladesh Armed Forces in national education sector is undeniably notable. Bangladesh Armed Forces have taken a lead role in promoting the overall educational standard of the country and preparing able citizens of the future generations by imparting quality education which will in turn help the country to materialize the vision 2041. The beginning of Bangladesh Armed Forces in the higher education is through MIST in 1998. With the passage of time, more academic institutions have been established with a view to impart undergraduate studies in Engineering and Medical subjects. Founded on 05 June, 2008 BUP has emerged as the centre of academic excellence of all higher studies at tertiary level of Bangladesh Armed Forces.[20]

According to the Education Policy 2010, minimum qualification to get an entry to government job is a four-year honours degree. In consonance with that, three-year Military and four-year Academic Program started in BMA, BNA (Bangladesh Naval Academy) and BAFA (Bangladesh Air Force Academy) in January 2015. The officer cadets are pursuing both Honours and Engineering

curriculum under the supervision of BUP and MIST respectively. In the recent years, MIST has flourished a lot in terms of inaugurating new engineering departments and established its credential as a centre for technological excellence. To further the excellence, introduction of OBE in Engineering curriculum is another milestone achievement. In addition, BMA (Engineering Faculty) under the supervision of MIST has been also introduced and implemented OBE in the overall engineering curriculum for the cadets. In fact, OBE is an educational theory that is student-centric and bases each part of an educational system around goals (outcomes). By end of the educational career, each student should have achieved the goal. Outcomes in general include knowledge, skills and attitudes. Outcome-based methods have been adopted in education systems around the world, at multiple levels because of its effectiveness and result.

Quality assurance in education particularly in the case of engineering education has become sine qua non in view of workforce mobility and international accords. The engineering education underwent a major transformation due to the requirement imposed by the Washington Accord. Thereby, it could be proposed that implementation of OBE, continuous assessment and evaluation of program outcomes (PO) should be compulsory for all engineering institutions administered by Bangladesh Armed Forces. Definitely, MIST can have a leading role in implementing OBE in other engineering institutions. Besides, an in-depth study can be done to transform all honours curriculum and shift to OBE. Adoption of OBE by MIST is steered by BUP. Thus, BUP and other educational institutions at tertiary level may plan and impart its honours curriculum according to OBE.

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Brief Biography

Lieutenant Colonel Md Awal Khan, EME was commissioned in the Corps of Electrical and Mechanical Engineers with 25th BMA Long Course in 1991. He obtained his BSc in Mechanical Engineering and MSc in Industrial and Production Engineering from BUET. Besides commanding two field workshops he has served in different instructional appointments in EMEC&S, MIST and BMA. He was the founder Head of the Department of IPE Department in MIST where he is pursuing PhD research study program in Mechanical Engineering. He has to his credit about eight publications in various International Journals like *Springer*, *American Journal of Mechanical Engineering* etc. He did various professional courses at home and abroad. He did his UN Mission in Sierra Leone and Sudan (Darfur). Presently, he is serving as Head of Mechanical Department (Engineering Faculty), BMA.

Brief Biography

Col Md Habibul Huq, psc was commissioned in the Corps of Engineers on December 16, 1993 with 29th BMA Long Course. Besides serving in Division Engineer Battalion and Riverine Engineer Battalion, he also served as an Instructor Class 'B' in the School of Military Engineering (SME), Engineer Centre and School of Military Engineering (ECSME) and GSO- 2 (Plan) at Operations and Plan Directorate at Armed Forces Division. He had his overseas assignment as Military Observer in Sierra Leone and served as an engineer contingent member in both UNMIS and UNMISS in Sudan and South Sudan respectively. He served as Commanding Officer of 5 Riverine Engineer Battalion under 14 Independent Engineer Brigade. He was also appointed as the Project Director of implementing a national level project of establishing a graveyard at Rayerbazar. He also served as GSO-1 (Trg) at Bangladesh Military Academy (BMA) and as Instructor Class 'A' at SME, ECSME and also at MIST. Presently, he is serving as Dean, Engineering Faculty of BMA. The officer is a graduate of Defence Services Command and Staff College, Mirpur and a qualified Civil Engineer with both B Sc and M Sc from Bangladesh University of Engineering & Technology (BUET).

Brief Biography

Major Md. Faisal Kader, PhD, EME was born in Khulna in 1979. He received B Sc and M Sc in Mechanical Engineering from Islamic University of Technology (IUT) in 2001 and 2003, respectively. He started his professional career as Lecturer on 23 December, 2003 in the Department of Mechanical Engineering of IUT. He was appointed as Assistant Professor in the same department on 5 July, 2006. He was awarded PhD for research study in the field of 'Heat Transfer' from Kongju National University (KNU), Republic of Korea in 2010. He was appointed as Associate Professor in the same department on 21 June, 2013. Considering his academic excellence and dedication to research, Bangladesh Army had recruited him as Major with 4 years of antedate seniority on 26 July, 2015 in the Corps of Electrical and Mechanical Engineers (EME). He has been posted to Military Institute of Science and Technology (MIST) in 2015 as Associate Professor. He has been appointed as Reviewer of *American Journal of Mechanical Engineering* (AJME). He chaired and co-chaired different technical sessions of Conferences at national and international level. He is working extensively in the area of Fluid Mechanics, Thermal Engineering and IC Engine, both in experimental and computational level. He has about twenty publications in various reputed international Journals. Currently, he is appointed as Instructor in Mechanical Engineering Department of Bangladesh Military Academy (BMA).

An Introspection into War Fighting Strategy of Bangladesh Armed Forces for Achieving Victory in the War of Liberation: Joint Operations Perspective

Lieutenant Colonel Muhammad Saifur Rahman, SUP, afwc, psc, Engineers

Introduction

The War of Liberation 1971 is the bright example of supreme sacrifice of the nation and testimony of great National Will, sound political directives, patriotism, courage, bravery and a unique military application of blending conventional and unconventional warfare. Right from the crackdown of Pakistan Forces on the night of 25 March 1971, there was valiant resistance from Bangladeshis. In due course of time the resistance turned into an organized War. Subsequently, the origin of Bangladesh Armed Forces took place in the battlefield. During the nine months (26 March – 16 December 1971) battle, Bangladesh forces were organized in 11 Sectors, 3 regular Brigades having approximately 25,000 conventional forces including elements of Naval and Air components while there was more than 80,000 Freedom Fighters under a single command structure. The Force, known as 'Mukti Bahini'(MB) followed a strategy of blending conventional and unconventional warfare. The Bangladesh Forces confronted the Pakistan Forces in length and breadth of the operational theatre and reduced them in strength, logistics and morale. At one stage Indian Forces joined Bangladesh Forces in active war. From 03 December 1971 a Bangladesh-Indian Joint Forces operation gathered momentum within short span of time and resulted in unconditional surrender of Pakistani Occupation Forces at Ramna Race Course (now Suhrawardhy Uddhyan), Dhaka on 16 December 1971.

'Joint operations' is a general term that describes military actions conducted by joint forces and those Service forces employed in specified command relationships with each other, which, of themselves, do not establish joint forces. A joint force is one composed of significant elements, assigned or attached, of two or more Military Departments operating under a single Joint Force Command (JFC). As such, joint operations involve operations in which two or more services participate with sizeable elements to achieve separate but complementary mission which contributes to the accomplishment of the overall mission of the command. No single service carrying out operation in isolation can bring success in modern warfare. The Liberation War (LW) bears the testimony of two prone examples of jointness. The demonstration of blending conventional with unconventional effort had a synchronized effect in overall

joint framework. This finds profound expression in the remark of Air Chief Marshal PC Lal, "The Bangladesh war demonstrated that the three Services working closely together were strong and decisive in their actions. Inter-Services cooperation was indeed the most important lesson of that war." On the other hand, the conduct of joint operations by the Allied Forces is the mark of classical orchestration. Most of those realities are still relevant and will remain pertinent for Bangladesh. As such, the grim experience of the war can be a great source of learning, analyzing and formulating future viable war plan to fight against the adversary. In order to analyze the contribution of jointness and conventional framework of Bangladesh Forces in winning the War of Liberation, there is a need to understand the chronological development of conventional framework and jointness of Bangladesh Forces, evaluate their strategy and operations influencing the theatre of operations and effect of joint operations in achieving victory so as to derive valuable lessons and takeaways for future war. This paper highlights the war fighting strategy and conduct of operations with the focus on gradual transformation into joint conventional operations during War of Liberation. There is also an attempt to analyze the effect/contribution of joint operations conducted by Bangladesh Defence Forces (BDF) in expediting victory during War of Liberation.

Aim

The aim of this paper is to analyze the contributing effects of joint operations of Bangladesh Armed Forces in winning the War of Liberation.

War Fighting Strategy of Bangladesh Armed Forces during War of Liberation

General

During War of Liberation, the strategy of Bangladesh Armed Forces transformed from conventional to a unique blend of conventional and unconventional warfare. The idea was to employ a large guerrilla force within the enemy so as to make the enemy fight in smaller numbers, dispersed and isolated. The operations were conducted under a single command structure that created a fluid battlefield environment. Later during joint offensive Bangladesh Armed Forces were used to out flank and attack at rear or at the flanks of the enemy. The strategy and operations were appropriate in achieving the overall objective of the war.

Initial Resistance through Conventional Effort

In the beginning, the battles were of conventional in nature, which continued till May 1971. Conventional tactics were employed so as to restrict

the enemy to the cantonments and prevent them from capturing the communication centres. Delaying tactics were implemented to create as many obstacles as possible for the enemy, preserve as many existing natural obstacles as possible, and at the same time hit from the flanks and lines of communication.

Concept of Guerrilla Warfare

By April 1971, it became clear to the commanders of BDF that it would not be possible to conduct the war through conventional means with only five battalions of troops rather there was the necessity of a large unconventional people's force. Requirement was to employ a large guerrilla force to make the enemy fight in smaller numbers and disperse and isolate its troops which would neutralize its superiority in numbers. Thus, by end of April the need for a new modus of operation became clear. Gradually a guerrilla force was created. At the beginning bases were established in different areas and by the end of June the guerrilla force went into action with the following objectives:-

a. Increasing Pakistani casualties through raids and ambush.

b. Cripple economic activities by hitting Key Point Installations (KPI) power stations, railway lines, storage depots and communication networks.

c. Destroy Pakistan army mobility by blowing up bridges/culverts, fuel depots, trains and river crafts.

d. Disperse the Pakistani Occupation Forces inside the province, so that attacks can be made on isolated Pakistani detachments.

The overall aim was – the gradual process of attrition would seriously affect enemy morale, drain away their energy and completely unnerve the Pakistani forces so that when a bloody offensive was launched with the regular forces, all enemy resistance would crumble.[1] Thus, a coordinated action plan was made.

Blending Unconventional with Conventional War Effort

The CinC, General MAG Osmany emphasized on augmenting regular force with guerrilla forces due to initial ineffectiveness of guerrilla operations. He aimed to raise a guerrilla force of minimum 60,000 – 80,000 and a regular force of about 25,000 immediately.[2] Nucleus and leadership of guerrilla operations were provided by the regular battalions in company/platoon groups inducted inside for directing and coordinating activities of the guerrillas.

In the first week of May, 300 youths with some members of the naval force were recruited for guerilla operation in second dimension. Training was arranged for them at Bhagirathi River near the historic sight of Palashi. Thereby, the guerrillas were able to increase their area of influence from the month of July 1971.

During mid-August 1971, it was decided that every month 20,000 freedom fighters would be trained who would enter inside Bangladesh to join the fight. At the end of August, the Indian Army agreed to provide more arms. In the last week of September, it was decided to issue an operation order. It was circulated in the first week of October. The circular was very important. It was planned that the brigade will be diffused into small platoons, companies and sections and despatched inside Bangladesh. These small forces would lead the large number of freedom fighters who were suffering from lack of guidance. These new tactics got the benefit immediately.[3] However, the strategy of complementing conventional effort with guerilla warfare was fruitful by the end of September 1971. This war strategy continued till the end of the War.

Directive of Joint Operations

Though the India- Bangladesh Joint Military Command was signed formally on 10 December 1971[4] but the preparation started from May 1971. The Indian plan conceived an offensive defence in the west and a lightning offensive in the eastern front. The draft Operation order was sent from Eastern Command for approval in the month of June and approval received on 16 August, 1971. By the directives of Bangladesh Field Force Commander MAG Osmany on 22 November 1971, the formations / Sectors of Bangladesh Defence Forces were put under command of Supporting Forces. Last seven months from May' 71 to November'71, operations tended to be commando type of operation by regular and guerrilla operations by Gono Bahini.

Allied Strategy

The three-fold strategy of the Allied Forces are outlined below:-

a. To capture Dhaka within three weeks before any external intervention and international pressure. To accomplish this objective Indian Army bypassed Pakistani strong points and dashed for Dhaka.

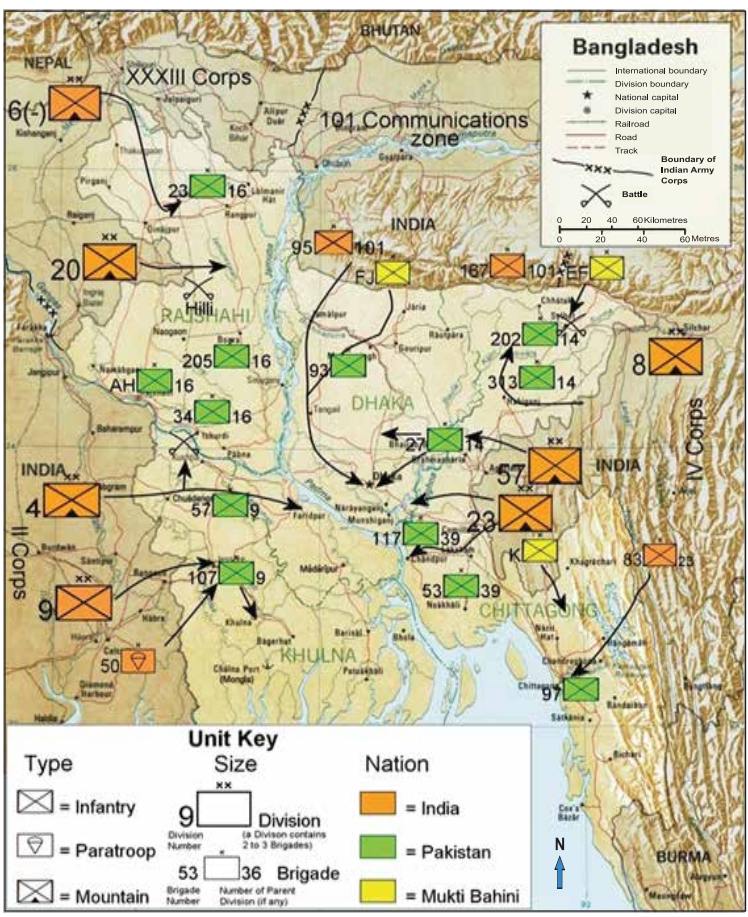
b. The capture or effective blocking of two major ports of entry to stop further build up in the region after outbreak of war. The blockade was to prevent intervention by the third party.

c. Mukti Bahini commanded by hardcore officers with communication equipment, etc. to concentrate behind the Pakistan army defence in the last week of November to carry out ambush, raids and send battle intelligence and to divide the efforts of Pakistan forces.[5]

Concept of Employing Bangladesh Armed Forces during Joint Offensive

From 03 December'71 Indian forces started the war inside Bangladesh (the then East Pakistan) which they fought for 13 days. Bangladesh Armed Forces under the command of General Osmany and Indian Armed Forces jointly known as Allied Forces formulated the concept of fighting inside East Pakistan (now Bangladesh). The role of Bangladesh Armed Forces was assigned by General M.A.G Osmany (1918-84) in his instruction -0018 G on 22 Nov 1971. As India had Air Force, artillery and tanks, they planned to attack Pakistani forces from front while Bangladeshi forces would outflank the enemy and attack at rear or at the flanks. Bangladesh Armed Forces had specific knowledge of the places as they already fought the guerrilla war in those areas.

Figure-1: India-Bangladesh Armed Forces Joint Offensive



Source: https://www.thedailystar.net/freedom-in-the-air/stories/58964

The places where the ammunition, air support and employment of tank is necessity those were planned to be engaged by supporting Indian force. The clear rule was followed whenever Pakistani strong points were cleared the other positions of the Pakistani forces were captured by Bangladesh Armed Forces. In this case, Bangladeshi forces would advance and necessary artillery fire support would be provided by supporting forces. The deployment of Allied Forces in specific areas is shown above in Figure 1:-

Effect of Bangladesh Armed Forces Operations for Achieving Victory in the War of Liberation

General

Scope for well-coordinated or conduct of the classical joint operations was not available with Bangladesh Armed Forces at the outset of Liberation War. However, gradually this coordination was quite visible in terms of command structure, planning, organization of forces and conduct of operations that finally flourished during the final joint offensive. Colonel (later General) M.A.G. Osmany, the CinC of Bangladeshi forces organized and employed forces both regular and irregular in an efficient manner. In his own words, "War will go on, may be for generations, as we are determined in our mission."[6]

Areas of Jointness in War of Liberation

Following are the Areas of Jointness in the Liberation War:-

Joint Command and Control

The Liberation War started from scattered fighting by the freedom fighters (FF) and gradually it came under well-coordinated commmand. Members of Armed Forces fought together under one unified commander. On 04 April 1971, at Teliapara, Habiganj, Sylhet, a historic conference took place at the tea estate's manager's dak bungalow where 27 military officers of three services participated.

An analysis of the Teliapara conference tends to show that the coordination started working among the forces. A well-coordinated command structure was developed and the forces started working under unified command. The Teliapara conference had created the base for conduct of coordinated operations under unified command with some specific objectives. The war strategy which was initially conventional resistance, then guerrilla tactics and afterwards blending the conventional efforts with unconventional means show the true professionalism of our patriotic Bangladesh Armed Forces. Cabinet meeting of Bangladesh government held on July 11, 1971 appointed Colonel (later General) M. A. G. Osmany as Commander in Chief with the status of Cabinet Minister, Lieutenant Colonel (later on Major General) MA Rob as Chief of Staff (COS), Group Captain A K Khandker as Deputy Chief of Staff (DCOS) and Major A R Chowdhury as Assistant Chief of Staff (ACOS). The headquarters of the Bangladesh Forces was established at 8, Theatre Road, Calcutta which started functioning from 12 April 1971. Actually after establishing the Joint Command and Control of the Bangladesh Forces, the War started turning in

favour of Bangladesh. A joint integrated plan was thus prepared for the overall war which proved very effective in the long run.

Jointness during Final Joint Offensive

Most importantly, India developed the Inter Services Joint Command system at the Eastern Command HQs during final offensive. An Allied Command was set up between the Indian Forces and the Bangladesh Armed Forces, and necessary coordination between the two forces was made at every level. The joint command control structure and operations reflect the jointness among the forces participated in final offensive.

Effects of Bangladesh Armed Forces' Operations on the Theatre

Following are the effects of Bangladesh Armed Forces' Operations on the War Theatre:-

a. **Conventional War Effort by Bangladesh Armed Forces**

An analysis of the role of the regular forces shows that it withstood the initial onslaught of the Pakistani forces. Except prosecuting the war, it was not possible for Bangladeshi forces to achieve decisive victory against Pakistani forces.[7] Besides, they were effective in causing enough casualties in the rear areas conducting guerilla activities. This also led to demoralizing effect on Pakistani forces. Hence, the direct impact of Bangladesh Defence Forces' operations on Pakistanis tied down significant Pakistani military assets.[8] By end of October, 1971, the regular forces of MB conducted a few successful operations and defeated Pakistani forces along the border. Among these operations, the Battle of Belonia Bulge in the southeastern sector and the Battle of Hilli in the northwestern sector led to the defeat of Pakistani forces in those two areas and control of two major avenues of approach towards Dhaka. Few battles took place in the northeastern and southwestern sectors. Among them Battle of Chatak and Battle of Mukundapur are worth mentioning where Bangladeshi forces achieved success. Besides, the actions of the naval commandos not only destroyed a number of coastal and ocean-going vessels, but also made the ports unsafe for merchant shipping.[9] Apart from the initial resistance and final offensive the number of important operations conducted across the country is illustrated in the following table:-

Table -1: Important Operations conducted by Bangladesh Armed Forces

Serial No	Area	Number of operations conducted	Remarks
1.	Chattogram	170	05 Naval Operation 01 Air Operation
2.	Sylhet	157	
3.	Cumilla	270	01 Naval Operation
4.	Dhaka	197	02 Naval Operation 01 Air Operation
5.	Mymensingh	126	
6.	Rangpur	97	
7.	Bogura	70	
8.	Jashore	29	
	Total	1116	

Source: Board of Editors, *Muktijuddhe Samorik Abhijan,* Volume 1-7, Dhaka, Asia Publications, 2015

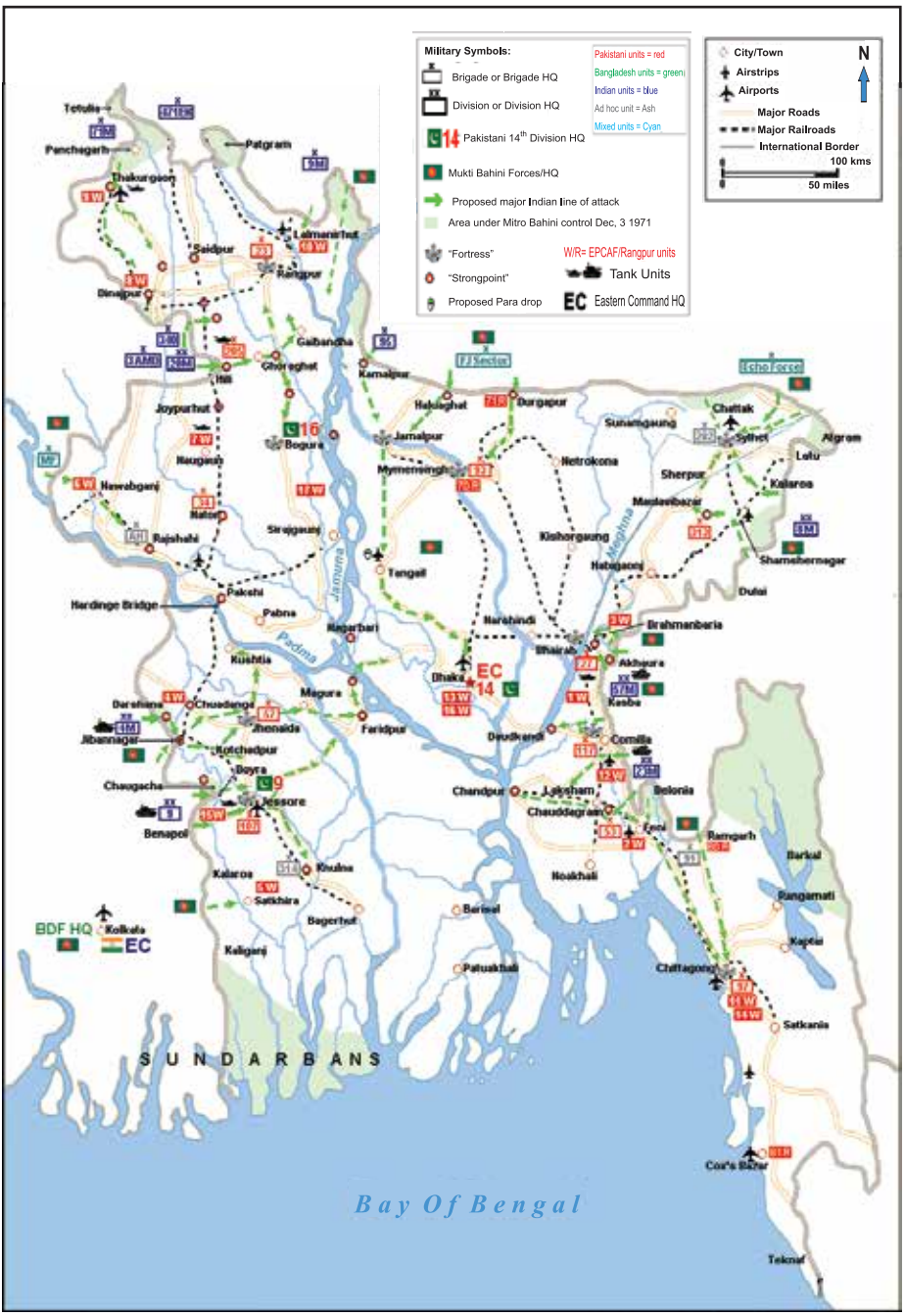
b. **Contribution of Regular Forces in Final Offensive**

(1) Land Force's Operations

Regular brigades of MB along with the sector troops took active part in the final allied offensive and contributed positively in achieving victory.[10] The troops of No. 6 and 7 Sectors were placed at the disposal of 33 Corps responsible for North Bengal. The MB under No. 8 and 9 Sectors were to operate with 2 Corps in the south-western sector. The No. 11 Sectors troops along with Kader Bahini were placed under 101 Communication Zone in Mymensingh – Jamalpur area. The total strength of the forces assembled for the Bangladesh operation including MB.[11] The 2 Corps advanced with the objective of capturing area up to west of the River Padma.[12] The 8 Sector under Maj Manzur and 9 Sector under Maj Jalil fought alongside other element of 2 Corps. It may be mentioned that, by the end of November 1971, the MB troops of 8 and 9 Sectors liberated a number of areas in south-western sector and established guerrilla bases deep in the interior. In the 33 Corps area, while allied advance halted at Rangpur and consecutive attack to capture Hilli faced with the tremendous strength of the Pakistani defense was cleared where BDF actively participated.

It is important to mention that, the battle of Chapai Nawabganj was also a significant event where Sector No. 7 troops took active part. In the northern sector, the paratrooper battalion was dropped behind the enemy lines safely due to already liberated areas by freedom fighters of Kader Siddiqui. It helped to encircle Pakistani Brigade which led to their surrender.

Figure-2: Allied Forces Order of Battle December 1971



Source: https://en.wikipedia.org/wiki/Mitro_Bahini_Order_of_Battle_December_1971

The map given above in Figure-2 illustrates the operational aspects of Allied Forces.

In the Eastern sector, apart from S Force, Z Force along with Sector No. 4 and 5 troops were operating under 8 Mountain Division, and K Force along with 1 and 2 Sector troops were operating under 23 Mountain Division. By December 5 the bordering towns were captured while by December 14, the leading elements of the 57th Mountain Division reached the outskirts of Dhaka. During the whole offensive BDF displayed their professionalism and contributed in attaining operational objectives. Like, in Battle of Ashuganj, where regular forces of 1 East Bengal Regiment neutralized Pakistani 14 Division encircling them to render operationally ineffective and completed part of operational task.

(2) Naval Force's Operations

Bangladesh Navy had significant contribution as well. The operations launched by naval commandos in different sea and river ports completely shattered the morale of Pakistanis and played a dominant role in the ultimate victory. The actions of the naval commandos not only destroyed a number of coastal and ocean-going vessels, but also made the ports unsafe for merchant shipping. "Operation Jackpot" launched by naval commandos in different sea and river ports completely shattered the morale of Pakistanis and played a dominant role in the ultimate victory. The unsung saga of these frogmen is an incredible story of admiration that inflicted damage of over 100,000 tons of shipping to Pakistani forces that remains unparalleled in the liberation history of littorals in the 'Ocean of Destiny.'[13] By the end of September, the gunboats 'Padma' and 'Palash' were equipped with 60/40 Bofors and machine guns. The task given to these boats were to lay mines in the channel to the Chalna Port and interfere with the merchant shipping in that area. The gunboats operated in the darkness of night and successfully laid a huge number of mines in the Chalna Channel. On 12th October'71 the gunboats challenged the British cargo ship 'City of Saint Albans' and escorted it to Calcutta (now Kolkata) port, thus making the ports unsafe for international shipping. Finally in December'71, with the outbreak of the final war these two ships were the first to enter Khulna which was still held by the Pakistanis. On 10th December these two ships Padma and Palash were destroyed in the Pasur River in the heart of Khulna city.

(3) Air Force's Operations

The fledgling Bangladesh Air Force also started its operations from an airfield located at Dimapur, India. Training in night supply and Attack operations took place throughout the period upto the end of November, but no offensive sorties were flown before the outbreak of the final war. By the end of November, 1971, the Bangladesh Air Force struck targets deep into occupied areas of Bangladesh and gave close-air-support to ground forces. Prior to 03 December'71, the aircraft had been used for night supply and other priority transport tasks. With the outbreak of hostilities, the Bangladesh Air Arm mounted attacks on the oil storage tanks at Chattagram and Narayanganj, and throughout the campaign provided transport and offensive support to the Mukti Bahini. The Air Arm with scarce resources demonstrated amazing bravery in degrading

the logistic sustenance capability of Pakistani forces. It caused substantial damage and created strategic effect. Ultimately the Pakistani forces ran short of oil and aviation fuel and their Air Force was almost grounded. From 03 Dec to 11 Dec the two aircrafts- Otter and Allouette-III helicopter carried out total 46 different types of mission which include interdiction, armed recce, Close Air Strip (CAS), etc.[14]

Overall Analysis

Bangladesh Armed Forces' selection of aim and corresponding strategy was clear, but it took several months to organize unconventional as well as conventional forces. However, undoubtedly operations of different forces in totality had significant effect on the overall outcome of war. The war strategy – initially conventional resistance, then guerrilla tactics and then blending the conventional efforts with unconventional means showed the true professionalism of our patriotic Bangladesh Armed Forces which resulted Pakistani forces to rapidly readjust and ultimately resort to 'Fortress Concept'. As such, operations conducted by Bangladesh Armed Forces laid the foundation of final victory. Later on, conducting combined operations with Indian Forces also shows the coordinated and well-articulated efforts of Bangladesh Armed Forces. Considering the overall perspective of LW, it can be deduced that it was not possible for Bangladesh Armed Forces to conduct joint operation alone as a belligerent in true sense due to many reasons, like:-

1. Lack of means of communications

2. Lack of assets available

3. Lack of joint training

4. Lack of organized command structure

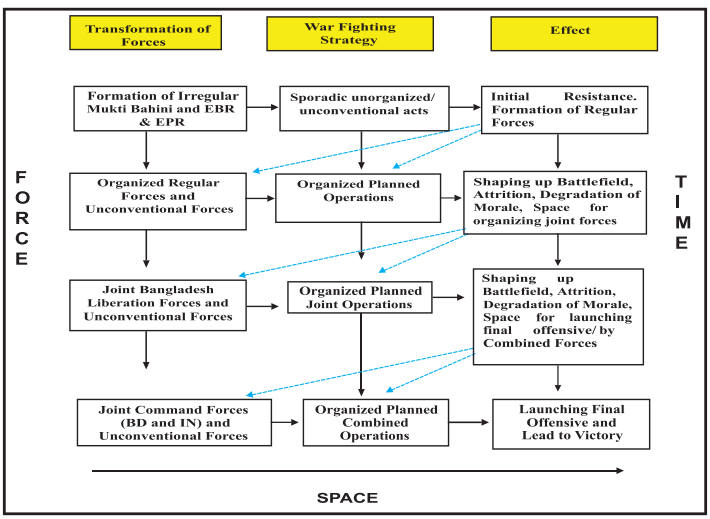
In retrospect, Liberation War of Bangladesh did not see the light of joint operation in true sense until 21 November 1971, when three Services of Bangladesh Armed Forces took part in the war to achieve synergy. Until November 21, 1971, mostly Bangladeshi regular forces along with the Mukti Bahini operated in different parts of the country. Besides, there were few naval and air assets utilized to complement the war effort. However, on November 21, 1971 all the forces – Bangladesh Army, Navy, Air Force as well as the Mukti Bahini – launched their joint offensive against Pakistani military. Regular brigades were operating mostly on the north and eastern parts of the country. Mukti Bahini was integrated with the regular units' operations; especially for launching disruption operation behind enemy lines. It was clearly evident that Bangladesh Armed Forces successfully adopted war strategy appropriate to the requirement of war and could successfully implement the strategy during conduct of their operations. The guerilla warfare cost the enemy much and shaped the battlefield, the valour of conducting regular forces operation achieved the momentum and final offensive displayed jointness. Different

elements of Bangladesh Armed Forces may not have conducted joint operations simultaneously; however, their efforts had significant effect on each other and also on achieving the overall objective of the war.

Bangladesh Navy had significant contribution as well. The operations launched by naval commandos in different sea and river ports completely shattered the morale of Pakistanis and played a dominant role in the ultimate victory. The actions of the naval commandos not only destroyed a number of coastal and ocean-going vessels, but also made the ports in the then East Pakistan (now Bangladesh) unsafe for merchant shipping. “Operation Jackpot” launched by naval commandos in different sea and river ports completely shattered the morale of Pakistanis and played a dominant role in the ultimate victory. The unsung saga of these frogmen is an incredible story of admiration that inflicted damage of over 100,000 tons of shipping to Pakistani forces that remains unparalleled in the liberation history of littorals in the ‘Ocean of Destiny’.

Bangladesh Armed Forces contribution was significant throughout the LW which created the environment and made the lightning offensive possible and successful. At the same time, combined operations conducted along with Indian Forces with a distinct operational approach expedited the means to reach the ultimate defeat of Pakistani forces and achieve victory. The war fighting strategy of BDF with gradual transformation of forces and effects on overall outcome of the war in terms of Force, Space and Time is conceptually summarized below:-

Figure -3: Effect of Conventional and Joint Operations in War of Liberation



Source: Author’s self-construct

Conclusion

Liberation War is a glaring example of Joint Warfare for Bangladesh. In this War, Bangladesh experienced a Total War initially through a formal declaration. For any campaign to be successful it is imperative that the aim or mission be spelt out loud and clear. Only when clear directives regarding the aim are given, the objectives can be achieved.[15] The directives given by Father of the Nation was very clear, which clearly defined the aim was to fight for freedom. Inspired by his unparalleled leadership, people of all walks of life in Bangladesh acted with utmost unity, highest state of jointness prevailed among them till end and thus victory was achieved.

In war grit, determination and confidence are of paramount importance. One must never waver even when things appear to be disastrous. One must have the will and confidence to see the campaign through to its ultimate end. The strong will to fight till achieving ultimate victory can be reckoned as Centre of Gravity of the poorly armed nascent armed forces of Bangladesh. Though there was not well established doctrine but the necessity of the time brought all component of forces both civilian and military to join together to achieve the objectives of defeating the enemy. The Joint Warfare provides valuable takeaways for Bangladesh Armed Forces to understand the culture, will power, fields of operations and devotion of Bengalees to the cause of the nation.

At the same time it is important to give credit to the freedom fighters for their valiant actions through guerrilla operations that isolated the Pakistanis, hampered their movements and largely degraded their morale, which enormously contributed to the final victory. As such, the glaring example justifies our doctrinal adaptation of blending conventional and unconventional warfare right from the beginning to face off any future hostilities. This also shows the necessity of coordination and well-planned jointness among the guerrilla forces and regular forces.

Bangladesh Armed Forces have demonstrated outstanding will amid resources constraint to pursue jointness in operation. The LW is a shining example of the positive impact of close cooperation between services. Leadership, Command and Staff works are important in planning of a campaign or operation. However, no campaign may be planned to the last detail to the final objective. It is important that the aim or mission to be selected and spelt out clearly and flexibility applied at all levels for adapting to changing situations. What is most important is to nurture the future leadership accordingly inspired by the spirit of the historic War of Liberation.

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Brief Biography

Lieutenant Colonel Muhammad Saifur Rahman, SUP, afwc, psc, Engineers was commissioned in the Corps of Engineers of Bangladesh Army on 29 November 1995 with 33 BMA Long Course. He is a graduate of Defence Services Command and Staff College, Mirpur. He completed his BSc in Civil Engineering (CE) from MIST. He accomplished his MSc in Military Studies from the Bangladesh University of Professionals (BUP) and achieved Masters of Business Administration degree from Southeast University, Bangladesh. He is also an AFWC alumni of NDC. During his service career, he served in a good number of units and institutions of Bangladesh Army in different capacities. He commanded an Engineer Battalion for two years and three months. He has served as the GSO-3 (Operations), Brigade Major and GSO-2 (Coordination) to the GOC, ARTDOC, as staff officer in Bangladesh Army. He also served as Instructor Class - B at Tactics Wings, SI&T.

Lt Col Saif possesses a knack of literature and music. He has to his credit some research publications mentionably the seminal work on contribution of Corps of Engineers to Liberation War of Bangladesh entitled *মুক্তিযুদ্ধে স্যাপার্স.*

He is happily married to Mrs. Afroja Khatun and blessed with two daughters. Presently he is serving at AFD as GSO-1 (Administration).

Balance between Professional and Family Life: A Female Military Officer Viewpoint

Major Ishrat Maria Mitu, psc, Artillery

Introduction

Soldiering is the oldest profession in the world. There is also a rich legacy of women soldiering in the military history. Participation of women in military can be traced back to approximately 3,000 years or so.[1] In human history, people serving in combat were overwhelmingly male. During World War I (1914-18) after February Revolution of 1917 in Soviet Union, one Female Combat Unit was deployed. In World War II (1939-45) British and German women served in combat roles in anti-aircraft units, where they shot down number of enemy aircrafts. In Soviet Armed Forces (1943-45), there was large scale use of women near the front as medical staff and political officers'. This is how step by step the number of female officers became exquisitely interwoven with defence forces. The Liberation War of Bangladesh is no exception to this universal phenomenon.[2]

History of Bangladesh Liberation War in1971 bears ample testimony to the fact that there has been women contribution alongside men. Captain Sitara Begum and Taramon Bibi were conferred with the gallantry award of 'Bir Protik' for their heroic contribution during Liberation War.[3] Begum Rokeya (09 December 1880 - 09 December 1932) is always remembered as a source of immense inspiration for any Bengalee women. A feminist thinker, educator and political activist who stood to establish the right of women even in the years when it was almost impossible for Bengalee women to think of pursuing formal education. She is widely regarded as a pioneer of women liberation in South Asia. In 1916, she founded the Anjuman-e-Khawateen-e-Islam (Islamic Women's Association), an organization that fought for women education and employment right.

In 1926 her first momentous attempt to bring together the necessary support for women's education right under the focus of the authority was indeed a bold one that reflected a significant strategic movement towards women empowerment.[4] On other hand, Bangladesh witnesses the visionary leadership by the honourable Prime Minister Her Excellency Sheikh Hasina who has emerged as a universal women leader. At present, women are in decision making process in many important capacities, there is no exception to it in the Military. Women inclusion in Armed Forces is a remarkable phenomenon in the history of Bangladesh. Honourable Prime Minister Sheikh Hasina took this bold attempt by including female officers in the Armed Forces in 1999 and broke the shackle for women who was captivated and chained for hundreds of years in

traditional Bengalee society. Her executive decision has added a new dimension of vision that reflects a huge strategic manoeuvre towards women's empowerment in Bangladesh. No doubt, Bangladeshi women will always remain grateful to these two remarkable ladies Begum Rokeya and Prime Minister Sheikh Hasina for their contribution to uphold the status of women in such a position from where a woman in Bangladesh can now think that they can also contribute towards national development.

In Bangladesh Armed Forces, intake of women in active service as officer started since 24 June 2000 by Bangladesh Air Force (BAF).[5] On other hand, the First Female Officers batch was commissioned on 21 December 2001 from Navy which was the first batch that completed traditional military long course. In Bangladesh Army, it was a year later on 31 December 2002.The momentous decision of honourable Prime Minister Shekh Hasina to recruit female soldiers in Bangladesh Army was the mark of an epoch-making era. Accordingly, the first Female soldiers completed their arduous military training on 29 January 2015.[6] Female in military are working in various capacities like their male contemporaries with only a little exception. Assignment in service/support arms, units, staff duties in Headquarters, instructional task in training institution are few examples of their active engagement. In United Nation (UN) mission they are performing as observer, Staff Officer and Contingent member. On 24 January 2019 for the first time in Bangladesh Army combatant Female officers have been promoted to the rank of Lieutenant Colonel.[7] Some of them are holding the appointment as Commanding Officer in vital military units.

Women in Bangladesh have proved their mettle in the work domain. Behind such success lies a big story of struggle and freedom in the traditional social arena. Besides, changing roles of working women, they have maintained the traditional work ethos of household. Some of their roles are vested by the nature while some of them come from the societal perspective. Conflict of interest arises when a working female has to balance between professional and family responsibility. It requires for a woman to be extremely patient to be successful in their career that demands diligence and tactfulness too.

Professional Responsibility towards Military Service

Female contribution in Military has paved the way of women empowerment in the country.[8] Nowadays, female are in Army, Navy and Air Force with multi-dimensional assignments. In many countries, female officer could achieve higher ranks in command echelons. Dr. Susane Giti from Army Medical Corps is the first female officer who was promoted to the rank of Major General in the history of Bangladesh.[9] Beside female officers, soldiers are also doing their best in the profession. They are performing as National and Army level athletes, medical assistant, office clerk, and field work assistant besides their regular activities. A quick look at the female officers' participation in the three services is as follows:-

a. **In Army**

Inclusion of Female officer in Bangladesh Army has started since 03 January 2001. After completing, two years of training from Bangladesh Military Academy (BMA), first batch got commission on 31 December 2002. Presently, Female Officers are appointed as staff officer, company commander, adjutant, quarter master, second in Command and Commanding Officer of various Units, Battalion as well as Headquarters. Irrespective of their gender the job of an officer demands the highest commitment. They have to participate in various training, like summer training, winter training, individual professional career development training. Female officers are no exception to it. Females are also employed in Special Security Force (SSF), Intelligence Organization, Military Police, Rapid Action Battalion (RAB), paratroopers and Army Aviation. On the other hand, female officers and soldiers are participating in UN mission and completing their assignments with remarkable contributions.

b. **In Navy**

Inclusion of Female Officer in Bangladesh Navy, has started in the year of 2000. First batch got commission on 21 December 2001. At present a good number of female officers are posted in Supply, Engineering, Electrical, Legal and Educational Branch. Female Navy Officers are equally performing duty on sea going vessel for long period, going for UN mission, posted to various extra regimental employments and services headquarters.

c. **In Air Force**

Bangladesh Air Force (BAF) made a significant contribution towards including Female officers since 24 June 2000. On 23 November 2000 first BAF batch of Female Officers was commissioned from short course. Whereas, inclusion of female officers in long course started since 17 January 2004. First long course batch was commissioned in 22 December 2005. At present in Bangladesh Air Force hundreds of female officer are working in General Duty Pilot (GDP), Air Defence Weapons Controller, Meteorology, Air Traffic Control, Admin, Legal, Supply, Finance and Education Branch. They all are doing excellent besides their other male colleagues.

Figure-1: Various Activities of Female in Army, Navy and Air Force

Escorting VVIP during BMA Passing out Parade

Female Soldiers during Recruit Parade

Performing Duty in Navy

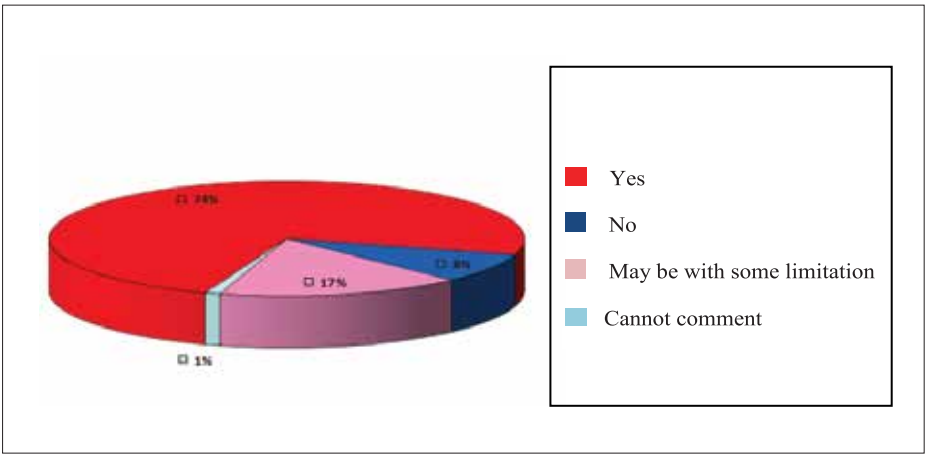
Female Pilots in Air Force

Source: Author's self-construct from pictures of Military Websites

Feedback from Senior Officer

Maximum senior officers opined that female officers are very sincere and responsible as a whole. Few limitations have been derived from their opinions, like challenges in regards to their physical barrier, inherent various types of family commitments and social prejudices prevailing in Asian countries. They also mentioned that those problems can be mitigated by making little adjustments and by adopting sustainable organizational set-up. They said that, between the ages of 38-40 years, female officers would have less family barriers when their children's are growing from infancy. It is during this period, balancing between professional and family life would be smoother and easier for them. The following Pie-Chart shows female officers ability:-

Pie Chart 1: Showing Ability of Female Officers to Perform All the Duties



Source: Author's self-construct

Responsibility towards Family Life

Women are the key to peace and prosperity along with quality of life in the family. She has to perform various roles in the family besides her natural duties; she is an administrator, manager and above all an architect who designs the happiness of the family. Her duties and engagement varies depending on her role in the family.[10] Sometime it has singular dimension but most of the times her duties are multifaceted. It is very hard to fathom her duties in the family because of its uncharacteristic nature.

a. **As a Mother**

The mother is the central personality of the home and the family circle. The whole burden of child bearing and greater part of child rearing task are performed by women in the family. As a first teacher of the child, her primarily task is to take care of the child habit on self-control, orderliness, industriousness, honesty, integrity. The most important duty for a mother is to maintain a deep rooted relationship with the child during the most formative period of their physical and mental development phase. She transmits social heritage to the child. It is from the mother that the child learns laws of the race, the manner of the men, moral code and ideals.

b. **Giving Quality Time to Spouse**

After fulfilling all professional and domestic responsibility, a female has to perform the role of a wife. She is the men's better half, helpmate, partner and comrade. She sacrifices her personal pleasure and giving time to set standard of principles, relieve stress and strain and apprehension of spouse, maintain peace and order in household.

Thereby she creates a necessary environment for her life partner to think more about the economic and societal progress of the family. She is the source of inspiration to man for better endeavour and worth achievements in life.

c. **A leader of the Household**

A well-organized and discipline household is essential for a normal family life. The women in the family assume this function. She is the chief executive of an enterprise. She assigns duties among family members according to their interest and abilities and provides resources to accomplish the job. She exhibits a key role in the preparation and serving of meals, taking care of clothing, furnishing and maintenance of the house.

d. **As an Administrator**

A female in the family performs the role of a superintendent; she organizes various social functions in the family for social development. She plans various recreational activities to meet the needs of young and other members of the family. As a family health officer, she has to look after the health related issues of the family members.

e. **A Manager and Contributor to the Family Income**

A working woman is the modest contributor of the family income. She has to remain responsible to secure maximum return from every penny spent. She remains calculative and distributes prudently the income and disburses it in different heads such as necessities, comforts and luxuries. A working woman contributes to the family income by sharing her own earning.

Challenges Faced while Performing both Responsibility

The military has a distinctive culture and a history that begins prior to the formation of the country. The military culture is exhibited through language, a chain of command, respect for service, personal sacrifice and discipline, and military laws.[11] Thereby, work life balance often becomes challenging for Military mother. Working mothers are often harsh on themselves. They have to take care of the children, run the household and meet all the demand of their family beside their professional work.[12] Many women complain that despite having opportunities for a successful professional career, they are expected to meet priorities of family social engagements. There is no alternative to have family support for a female professional. The challenges that a female military officer faced would have been much harder to overcome without the support of families as well as support from colleagues and superiors.[13] Such support are

immensely helpful for a female officer to build a successful career in the Armed Services.

a. **Professional Work Load**

Serving in military is the most honoured and prestigious profession all over the world. In military service professional excellence is highly expected from every individual who are serving. Military Job pattern/employment and engagements are different than that of other civil organizations. He/she has to remain fully committed towards profession. Thereby, to keep pace with the professional environment a female military person faces difficulties while balancing with family life in terms of supervision and management. Thus the American political satirist and journalist and H.L.Mencken Research Fellow at the libertarian Cato Institute P J O'Rourke (b.1947) aptly remarks,"A person has got to balance work and life and family in order to be a balanced person."[14]

b. **Long Term Training/ During Field Training Exercise (FTX)**

In Military, every personnel have to undergo for long term training, like winter training for one month or FTX for a week. Thereby female members need to adjust their family schedule that sometimes requires to disregard vital family engagements, like duties related to children's, spouse, in-laws, parents and other family members.

c. **Foreign Assignment**

Though foreign assignments are helpful as well as important for the career of female officer, it is also an enormous challenge for them to manage and negotiate everybody in the family before accepting foreign assignments. A married female with child faces more challenges than unmarried.

d. **Staying Away from Family Life**

Family is an inseparable part in Military. When a female officer/soldier remains away from the family, they remain concern about family issues. Thereby, many of them face difficulties to give full concentration to professional aspects while balancing family and professional life.

e. **Security of Child and Health Issues**

Security of Child and Health issues is a prime concern now a day in each and every family. Most of the married female faces these challenges irrespective of their rank and status. Challenges are more when children are in their infancy. Sometimes they remain sick, in addition getting not enough support from family members or maid for nursing their baby. These situation thereby, causes enough problems in

the life of female military person. Considering the child security few female military mothers remain in dilemma whether they should continue their service or not.

f. **Providing Quality time for Children**

Taking care of children is the prime responsibility of mother. In the family, a mother has to bear the whole burden of child and greater part of child rearing task. She has to spare quality time for child which is challenging for a working mother. It has been observed that, without giving quality time, to child, sometimes children become introverts, loses the affection/love from a mother, becomes biased on electronic gadget and do not follow normal life.

g. **Adjustment with the Spouse and Family**

Selection and choosing right life partner for a female military person is very important. If she does not remain sound in family life due to non cooperative married life, she cannot give her best to the profession. Maintaining healthy family life is one of the prerequisites to develop professionalism.

h. **Lack of Parental Support**

Parental support is needed when a female officer/soldier have children. Sometimes due to lack of parental support, many of them feel unsafe. They had to depend on maid during working hours, which is not safe in the present social context. From the survey it was found that parental support for taking care of children plays a vital role to develop professional career for female. She can provide her sincere effort to the profession when she gets help from her parents or in-laws.

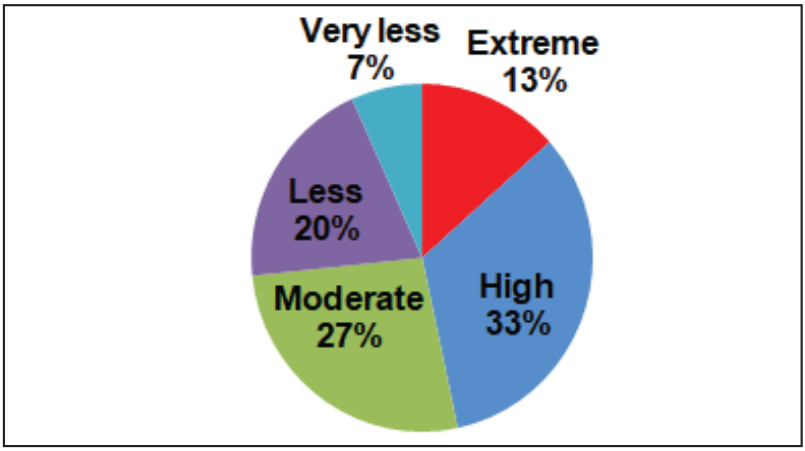
j. **Insufficient Day Care Centre in the Garrison**

At present, Day Care Center is not available in every garrison. A serving woman in military has to remain engage in duty for a long period (approximately 8 to 14 hours in a day). She has to perform all the duty, keeping the child at home. This creates mental stress for female during the work hours. A possible solution to this problem could be introducing of Day Care Centre. It is considered necessary for working women in Military.

k. **Mental Stress Burden**

A Military Mother always has to face the load of mental stress. During interview with 15 military mothers, most of them opined that their constant juggling between Family duties as mother and professional duties which causes mental stress to them. There is difference in mental stress level amongst the Military mother which is shown in Pie Chart 2.

Pie Chart 2: Showing Mental Stress Level of Military Mothers

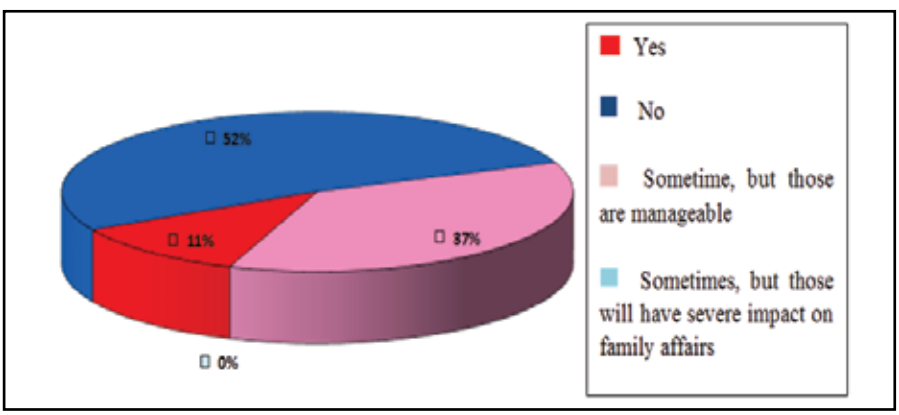


Source: Author's self construct from own survey

Survey amongst Mid-Level Officers

A survey has been carried out amongst mid-level (8 to 20 years' service in Army) male and female officers. Total, 70 officers participated voluntarily in the survey. From the survey, it is observed that, majority of them agreed on the issue of female officer's high standard of sincerity in service. Few mentioned that they can perform with few limitations and very few officers were not fully convinced in favour of female employment. Many of them opined that family or maternity issues sometimes affect their performance. At the same time majority opined that, parental support for taking care of children plays a vital role to develop professional career for female. Relevant views are shown in this Pie Chart 3 below:-

Pie Chart 3: Showing Marital and Parenting Issues Affecting Female Professionals

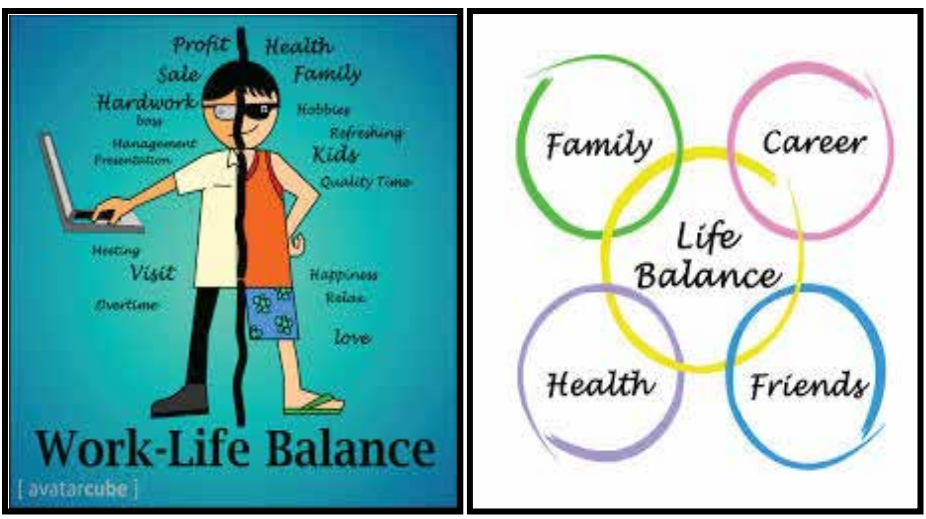


Source: Author's self construct from own survey

Balance Between Professional and Personal Family Life

A Female Member in the military is always exceptional than a civil professional. She undergoes various selection process and tough training including physical hardship. Profession and family both are important for her life. Most of the female members give their best effort to balance between professional and personal family life. Family and organizational support is an essential tool for her to facilitate her career endeavor. To overcome the challenges, child and family related issues need to be solved very meticulously. In this regards, organizational set-up will play a vital role. Most military families adjust well to the challenges that come with military life. Few of the essential ways and means are mentioned below to make professional and family life balance to reach a goal for a Female in military service in their career.

Figure-5: Balance between Professional Work and Family Life



Source: Author's self construct from websites

a. **Family Support**

There is no alternative to have family support for female professionals. Support from the family always reduces mental stress and act as a booster to elevate professional career. The challenges that they face while balancing family and career would have been much harder to overcome without the family support.[15]

b. **Be a Team player**

A Military Female has to remain as a team player towards her life partner to stand by one another no matter what the circumstances are. Both needs to respect each other's profession, sharing individual goals and remain supportive to each other's requirements.[16] One way a military wife can stand by their vows and support to their spouse's

career by being a team player, even when times are tough.

c. **Understanding with Life Partner**

Understanding between life partners is always important for working women.[17] Work can be stressful and harder in many occasion. Ups and down will remain while building a career. Positive encouragement, sharing feelings will help to achieve each other's goal.

d. **Be specific about your Goal and Future**

A Military female has to remain specific about individual professional goal and future while balancing family and career. Once she will remain clear about her goal, her counterpart will also help to provide mental support or any kind of assistance when needed.

e. **Determination, Courage and Devotion**

Balancing Career and family is not an easy task. Life has many difficulties. For Bangladeshi women even sometimes their identities become a barrier due to family, social and ethnic responsibility. But they are fully capable of braving all the challenges and uphold the country reputation in the global arena. To balance it, they need strong determination, courage and devotion with patience.[18]

f. **Support from colleagues and superiors**

Team work in military is always essential. In the battlefield military personnel needs to maintain comradeship for each other. Without sound family life a soldier will not be able to fight up to expectation. In case of family stress support from colleagues and superior is immensely needed.

g. **Child Day Care Centre**

Child Day Care Centre is very much essential in present day social context. Most of the husbands and wives are service holder. So they need somebody who can take the responsibility of their child while both of them remain at work. Adequate day care centre within the Garrison could eliminate this problem.[19] It will reduce their mental stress and can play supportive role in their effort in professional engagement.

h. **Support from the Organization**

At present, organizational support is required for every working woman. Adjustment posting with family, available accommodation, ensuring facility of Child Day Care Centre, and healthy working environment is good example of organizational support.[20] It is heartening to note, in Bangladesh Armed Forces due care is given on family issues of female members.

Conclusion

Beginning from a scratch female in the Bangladesh Armed Forces have come a long way. They took enormous risk while choosing their profession. They had to undergo vigorous selection process, tough training and a process of unfamiliar physical and psychological tests. No woman in Bangladesh has done it before. So their experience, expertise and loyalty have proven their worthiness for the Armed Services. Prudent initiative was taken by the honourable Prime Minister Sheikh Hasina to include female officers in the Bangladesh Armed Forces in the year 1999. This has navigated the course of women empowerment in the history of Bangladesh in a more praiseworthy and prevailing way. Presently women are in decision making process in many important appointments. Bangladesh Army, Navy and Air Force have made a unique step by inducting female officer in long course besides short courses. Female officers have already proven their professionalism, dedication, loyalty, intellectual ability, knowledge, adaptability in Military society. Gradually, the positive images are circulated rapidly in other organizations. Within a decade, strength of our female officers/soldiers has become more significant towards achieving Armed Forces Goal 2030.

At present female officers are Commanding Units, became aircraft pilot and paratroopers. It is also learnt that, some foreign armed services employed Female Officers in combat role. Bangladesh is also following their footsteps to keep pace with the modern world. Women are the key to enjoy quality life in the family. The various roles a woman assumes in the family gave her a unique but unparallel position to be appreciated in the society.

Work life balance often becomes challenging for military mother. They have to take care of the children, run the household and meet all the demand of their family beside professional work. Thereby, a military mother always has to face the load of mental stress. There is no alternative to have family support for female professionals. Support from colleagues, superiors and organizations is also important.

Balancing between professional and family life is not easier for a female military person when it comes to considering their family related responsibly. To meet the challenges, support is essential in terms of understanding with the life partner. Child Day Care Center, support from colleagues and organizations for women, who is working on building a career also plays a vital role to achieve their own professional goal. It is not always easy to give up the time and attention simultaneously in order to pursue career goals. A military female has to remain specific about professional goal and future while balancing family life and career. Priorities of life are multifaceted. But those priorities should be addressed by a female military person in accordance to their merit. To overcome those challenges it is essential to have strong determination, courage and devotion with patience. At the end, it requires support of families,

peers, and organizations. These are the key ingredients for a military female person to achieve her professional goal.

Recommendations

The foregoing discussion by no means is exhaustive for the host of successful efforts kept by female military officers for balancing professional and family life. Data and opinion derived from the specific military community has contributed towards determining some key factors. But the common themes that emerged in the discussion from this diverse group of military personnel is indeed encouraging which leads to believe that they are concern of the successful ventures of the female military personnel and considered other factors associated to constraints on the person, community and organization. These common themes demonstrate some of the necessary ingredients to pursue a successful career by the female military personnel, but also surfaced issues or problems that require further study. Basing on the discussion in this article the following recommendations are highlighted below:-

a. Considering present day context, developing Day Care Centre in every garrison would be very helpful for a female military person to keep their children's in safe hand and give full attention towards professional engagement.

b. As far as the service exigencies are not affected, adjustment posting for military couple could help a female military person to look after their career and family life simultaneously without much trouble. This could be regarded as great organizational support towards them.

c. Special arrangement could be taken into consideration for female military person during prolong engagement in training and exercise so that they can take care of their family, specially when they have infant.

d. Government allotted accommodation/mess facilities could be made readily available for female military person who has children.

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Brief Biography

Major Ishrat Maria Mitu, psc, Artillery was commissioned from Bangladesh Military Academy (BMA) with 49 BMA Long Course in the Corps of Artillery on 24 December 2003. She has a diverse experience of service in different units, Brigade and Division Headquarters as well as in the Military Police. In pursuance of her unit career, she has gained experience of serving twice in two different Air Defence Artillery Units. She has held all the regimental appointments under different capacities. She has also served as Staff Captain (Admin and Quartering) in Headquarter 6 Independent Air Defence Artillery Brigade and Deputy Assistant Adjutant General (DAAG) in 19 Infantry Division . She has the unique experience of serving as Operation Staff Officer of Military Police in 24 Infantry Division. She is a graduate from Defence Services Command and Staff College. She has participated in United Nations Peacekeeping Mission in South Sudan as a Detachment Commander of Force BANMP-5 in the year of November 2009 to November 2010. She is happily married with Major Mohammad Mahfuzul Islam, G+, Artillery and blessed with a son.

A Reminiscence

Captain Nurul Huq, BN (retd)

Introduction

Bangladesh Navy was not formed following any conventional or ceremonial procedure as it happened in the case of Indian and Pakistan Navy. Rather it was formed out of wartime necessity. When British rulers left this part of the world in 1947 naval assets and likewise the Army and the Air Force assets were divided between the newly formed independent states of India and Pakistan as per recommendation made by a committee. But in case of Bangladesh the scenario was totally different. In that case the ruler was supportive and helpful but in case of Bangladesh the ruler was rather oppressive and hostile. In their eyes freedom fighters were traitors and enemies of Pakistan. As a pioneer leader of Bangladesh Navy in the formative days after the independence of Bangladesh its important to share my actions and feelings in this write up.

Origin of Bangladesh Navy

Eight Bengalee sailors from the Pakistan Navy who were undergoing submarine training in Toulon, France secretly fled away and joined the glorious Liberation War of Bangladesh (26 March-16 December 1971).[1] This was indeed a daring act which if caught would have cost them their lives. The Bangladesh Government in exile thought to form a Naval Commando unit called 'Nou Commando' for carrying out guerrilla attacks on different targets stationed at the ports and harbours inside Bangladesh. But mere eight sailors were too less compared to the requirement and hence recruitment of about a few hundred patriotic, willing and physically capable youth who voluntarily opted to undergo rigorous training and participate in guerilla attack was planned. These eight sailors acted as both commandos and trainers along with other Indian Navy instructors. Commando training was organized at Plassey in Murshidabad, India.[2] Practical training in fixing limpet mines on targets, floating and endurance swimming was conducted in the nearby River Bhagirati. After a special and strenuous commando training of about 3 months the date for first commando attack was fixed on 15 August 1971 and the operation was named as Operation Jackpot. This operation was a great success and no doubt a big blow to the Pakistan Navy and Army which compelled them to rethink their whole strategy. It drew huge international media attention and was a big moral boost for the naval commandos. This success generated renewed energy and enthusiasm. Operation Jackpot was carried out simultaneously at the ports of Chittagong, Khulna, Narayanganj and Chandpur. Many Bengalee sailors posted in the then East Pakistan including those on leave who did not join the Liberation War so far started joining the Mukti Bahini. Many of these sailors also underwent

commando training with others. As they were trained sailors and having practical experience a few of them were given the responsibility of team leaders during Operation Jackpot.[3]

A plan to have some Gun Boats for carrying out attack through river and for mine operation with an aim to restrict movements of ships coming in and going out from the ports was taken. But there was no ship in possession of freedom fighters. Indian Government agreed to convert two Calcutta Port tug boats into Gun Boats. Those were fitted with Bofor gun and arrangements made for mine laying. In fact, those two ships were handed over to the Bangladesh Government in exile very secretly to avert the attention of any foreign media. But there were no Bangladeshi officers to take over the command of those two ships which were named PADMA and PALASH. As such there was no option left except giving command to two Indian Navy Officers with 49 Bengalee sailors placed on board two ships. However, there were some other Indian Navy sailors also. With another Indian Navy ship INS PANVELL these two Bangladeshi ships formed a squadron. The squadron was placed under the command of Indian Navy Commander Shri Manindranath Samanth, MVC as tactical commander. They took a decision to lay mines in the estuaries of the Pasur River near Mongla to restrict the movements of ships coming in and going out from the Mongla port. This operation was named “Operation Hotpants” which did not draw much attention at home or abroad as it was carried out at sea outside the view of the general people. But it also played a big role and demoralized the Pakistani Forces restricting their movements in riverine waters.[4]

After carrying out successful mining operation at the estuaries and in the Pasur River the three ships were proceeding on 10th December 1971 towards Khulna naval base with a view to capturing it. Declared war between India and Pakistan had already commenced on 03 December. While underway the ships came under air attack inadvertently by Indian Air Force when they were abreast Khulna Shipyard. INS PANVELL was at the rear of the formation under Indian Navy Commander SMN Samanth who was also the tactical commander. PADMA was at the front leading the convoy. A bomb dropped from one of the attacking aircrafts literally sank PADMA. ERA-I, Ruhul Amin got killed while trying to extinguish fire on board PALASH. He is the only highest gallantry award BIR SHRESTHO recipient of Bangladesh Navy. Gallant sailors Farid, Mohibullah and Daulat died instantly. So, the episode of these two PADMA and PALASH was literally finished here and Bengalee freedom fighters left with no floating platforms.[5]

Post-liberation Experiences

We won independence on the 16th December 1971 at a huge cost of millions of martyrs, colossal damage to the infrastructure of the country and the economy totally devastated. I with my wife and 6 years old son escaped from

Karachi using a "dhao" which is a traditional wooden fishing or trading vessel. We sailed from Karachi to Azman and then from Azman to Dubai by road. We flew from Dubai to Mumbai and then to Kolkata in the last week of March 1972. It was indeed a daring and risky decision for me to move with family leaving all, failure of which could even bring capital punishment for me. But, still I took that decision because of the humiliation we all faced since 26th March 1971. We realized that whatever the outcome of Liberation War, our career in Pakistan Navy had come to an end. It was clear to me that all the pacifying talks given out by the Pakistan authorities that we will soon go back to our independent Bangladesh was just for buying time. Once the logistic problems were sorted out we would be hurled in a sort of prison camp and would be used as a bargaining chip to negotiate return of 93,000 Pakistani POWs interned in India. In the pretext of personal safety when bachelor/single officers were sent to a camp in Baluchistan/North West Frontier Province of Pakistan I became convinced after the sailors were hurled in a special train that the same fate is awaiting us. I could not accept such insult so I and my wife decided to escape from Pakistan. This feeling is impossible to express in words and is beyond any comprehension.

Appointment as Naval Chief

On the day I arrived in Dhaka I was immediately summoned by the then Commander in Chief (CinC) General Ataul Gani Osmani. I was asked to take the responsibility of nascent Bangladesh Navy from the Indian Navy Officer who was in charge. It was beyond my imagination and thinking. I started a new career of my service life from 07 April 1972 as Chief of Bangladesh Navy which was beyond my wildest dream.[6] In fact, all the three services i.e., Bangladesh Army, Bangladesh Air Force and Bangladesh Navy were separated from single unified command from that day. Group Captain A K Khandakar and Colonel Shafiullah and myself were appointed on ad hoc basis as very first Chiefs of three services. At that time all the appointments were used to be on ad hoc basis and we frequently made jokes of it. May be I was the only Navy Chief in the entire naval history who took command of a navy without any ship in the inventory. It was both challenging and daunting task for me as there was no ship, no uniform, no arms, no accommodation, no training facility, no organizational set up and even no officer was available. But there were about 180 Bengalee sailors that day who selflessly and generously lent their support and enthusiasm to me in running the Navy.[7]

Momentous Initial Initiatives

Full concentration was given on some important points like getting approval of temporary TO&E, getting a land inside Dhaka Cantonment and bringing CPO/Sailors from the transit camp at Eskaton to Dhaka Cantonment. I was also trying to establish a Chain of Command inside the newly formed Navy. I recollect with gratitude the leadership and support of Bangabandhu

Sheikh Mujibur Rahman. His father like love and affection helped me in running the nascent Navy. The Establishment Division gave approval for conversion of two inspection vessels to riverine patrol craft. We plopped one 40 mm Bofor gun each on the aft deck of those crafts. The first one P101 was commissioned by the Cabinet Minister General M A G Osmani on 12 Jun 1972 and the second one P102 by me on 7 Jul 1972. Thus, I became Chief of the Navy "with two and a half gun boats"[8] at least that is how I was addressed by Prime Minister Bangabandhu Sheikh Mujibur Rahman. This mocking address was not to demean me but he sent a message to all of us in the government that we were victors in war but vanquished economically and it was time for all of us to tighten our belt for the posterity. Such was the magnanimity of Bangabandhu and his love for the people.[9] Some rare photographs in the collection of author are given below:-

Photo 1: On the 1st Independence Day President's parade held on 26 March 1973 at Suhrawardhy Uddayan Bangabandhu Sheikh Mujibur Rahman (1920-75) alongwith three Chiefs of Services awaiting arrival of the Hon'ble President Justice Abu Sayeed Chowdhury (1921-87)

Source: Author's collection

Photo 2: The Chief of Naval Staff of Bangladesh Navy being introduced to the Indian Navy officers during his first official visit to India in August 1972

Source: Author's collection

The first batch of 100 sailors was recruited in 1972 which comprised mostly of freedom fighters and commandos. There was an official visit of Bangladesh Navy Chief to India in August 1972 and I was given a VIP reception by the Indian Navy Chief Admiral Nanda. I remember with highest gratitude and honour the sign of friendly gesture and help that was offered by the Indian Naval Chief for Bangladesh Navy during my visit.

By the end of October 1973 Bengalee officers and sailors stranded in former West Pakistan started to come back home. On arrival of Captain Mosharraf Hossain Khan who was very senior to me and a professional Naval Officer I handed over the duties as Naval Chief of the Bangladesh Navy after serving with utmost devotion for one year and seven months.[10]

After relinquishing my duties as Chief of Naval Staff on 9 November 1973 I was appointed as Chairman of BIWTA and BIWTC. My career took a new turn with many ups and downs but the training and memories I carried from Navy never faded away. Even till this day as an octogenarian I recollect my old days in the three Navies (Pakistan, Royal Navy and Bangladesh) with great joy and

pride. The Navy that started its journey with no ships in 1972, is today a three dimensional Navy in 48 years. It is no doubt a great achievement and all who served during this period deserve due credit for this.

While winding up this discussion it would be befitting to convey my good wishes and prayers not only to all that serving in Navy but also in other two sister services. Serving in Bangladesh Armed Forces is not merely a service that one renders rather a lifetime of education and training and a way of life. Looking back at the phenomenal growth of three services from a humble beginning to a full-fledged force, I feel proud that in my own humble way and very selflessly I rendered a yeoman's service in my role as the first Naval Chief of independent Bangladesh. Indeed its with amazement one witnesses the fast progress of the three services within a span of 5 decades or so.

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Brief Biography

Captain Nurul Huq (retired) was born in 1936 in Dhaka and joined the then Pakistan Navy as a cadet in 1953. He underwent naval professional training in Britannia Royal Naval College Dartmouth, UK, H.M.S. TRIUMPH (Cadet Training Ship of Royal Navy Cadets) and as Midshipman on board H.M.S. EAGLE (Aircraft Carrier). As an Officer Under Instruction he completed the Engineering Studies of Royal Navy Engineering College at Plymouth, UK.

He was appointed as first Chief of the Naval Staff immediately after the independence in April 1972 and held this position till 09 November 1973. In addition to his own duties in the Navy as Chief of Naval Staff he was given additional responsibility of Chairman of BIWTA from September 1972. After relinquishing his command in the Navy in November, 1973 he became the Chairman of BIWTA and later Chairman of BIWTC on contract with the government till September 1977. He was inducted in the President's Council of Advisors in November 1977 in charge of Ministry of Ports, Shipping & IWT and later sworn in as a Cabinet Minister in charge of the same Ministry till November 1981. Captain Huq provided his expert service as Marine Consultant for some years to UN International Maritime Organization (IMO) London, UN ESCAP, the World Bank (WB).

Being an octogenarian he prefers a retired life with his wife, a son and a daughter and a number of grandchildren.

Maritime Partnership in Indian Ocean Region: Bangladesh Perspective

Rear Admiral Mohammad Nazmul Hassan, NPP, ncc, ndc, psc

Introduction

The maritime strategic culture of twenty first century has shifted towards strategic cooperation rather than confrontation or competition. The coordinated efforts by the regional countries to counter common non-traditional maritime security threats at sea, use of centralized information sharing systems, technological advancements, confidence through formation of multinational Task Force, cooperation for sustainable development through Blue Economy, coordinated patrols, etc. have increased confidence, initiative and understanding among the countries of the region. Today, most of the maritime nations have individual or interlinking network to recognize the enormous volume of the ships at sea so as to ensure their safe passage and deal with unconventional or irregular threats. Such individualistic efforts - blending with a few collaboratives, have taken regional maritime and naval cooperation level to a new height. This was obvious due to the change in maritime security environment. Under such situation, a true desire of 'Maritime Partnership' has evolved for strengthening maritime cooperation further and provide a secure regional maritime environment, where every partner nation have shared responsibilities and mutual benefits.

If the 21st century is a maritime century, the Indian Ocean (IO) is set to become a centre of gravity for many reasons. The region is rich in energy resources and minerals, and also contains abundant fishing resources. Oil and gas traversing the Indian Ocean is of great importance to the global economy. Various ports of IO handle about 30 percent of global trade and half of the world's container traffic traverses the ocean. Security of this trade is a major concern for ensuring unhindered economic activities of the Indian Ocean Region (IOR) and the world. Therefore, for security and other reasons, partnership among the maritime nations of IO is essential.

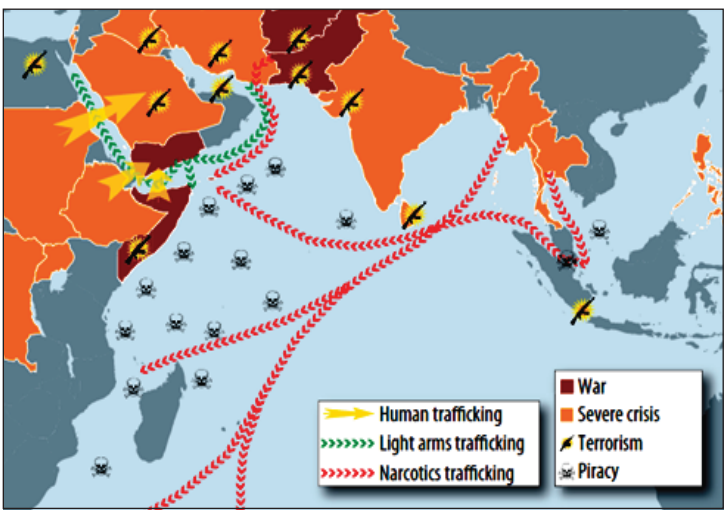
The objective of maritime partnership is to leverage interested partners to provide a secure maritime common by tackling transnational challenges such as piracy, human trafficking, illegal drug smuggling, environmental degradation, arms smuggling, illegal fishing etc. Presently, such objective is the core persuasion of IO regional countries under the banner of maritime cooperation where Bangladesh is an active participant. However, present maritime approach of the whole IOR is yet to be aligned for such partnership while there are some cooperative engagements at sub-regional and bilateral levels. The regional power dynamics and geopolitical sensitivities have made such partnership more challenging and uncertain. Under the prevailing circumstances,

Bangladesh being a firm believer of regional maritime cooperation, is strongly contributing to the regional maritime partnership initiatives through constant engagements and cooperation.

Maritime Security Environment and Maritime Threat Scenario

The Indian Ocean region has undergone significant changes in terms of regional security structure, political and economic cooperation & development. The growing economic pre-eminence coupled with complex dynamics of regional maritime security intricacies have caused certain security concerns in the region. Besides, the strategic location of the IO along with the Bay of Bengal, Malacca, Sunda and Lombok Straits- the great pathways for shipping of essential trade and energy have emphasized the energy security as the most critical issue for today's maritime nations. The rise of ocean communities and diversified non-military threats such as illegal arms smuggling, drug trafficking, armed robbery, network of human trafficking and piracy in the maritime domain have further complicated the maritime scenario. Among these, piracy and terrorism are the major threats from the non-state actors to the security of IOR. Apart from these, regional crisis and conflicts, drugs and arms smuggling, port security infrastructure and other man-made factors also pose threat to the security of IO (Figure 1).

Figure 1 : Major Security Concerns/Issues in IO



Source: Presentation by P K Ghosh in IONS Seminar Australia 2014

According to a recent analysis of global conflicts by the Heidelberg Institute for International Conflict research, 42 percent of the world's conflicts can be associated with Indian Ocean countries. Though the causes of these conflicts may vary, but majority can be connected with weak or failed states, lack of good governance, mistrust among states, lack of regional cooperation,

global war on terror and 'turbulence' in the Islamic world. These causes largely contribute to the maritime security issues also.

In non-traditional security parlance, the issue of climate change coupled with natural calamities are becoming worrisome particularly for the developing countries like Bangladesh. The unwarranted sea-level rise may pose serious threat in the availability of food, water, health & shelter. It is also a matter of great concern that a part of the Indian Ocean has been declared a dead zone covering an area of more than 23,000 square miles in the Bay of Bengal. Scientists have gathered evidence that, the area lacks in oxygen and cannot support marine life. There has also been huge degradation of mangrove and coral in the Bay of Bengal region. In regard to maritime pollution and acidification, the average concentration of nickel surpassed its some specific value and the incidence of adverse effects on biological components exceeded 16.7%. With present maritime threat scenario, it is well understood that in the near future, various maritime security threats will continue to confront maritime services and secured maritime environment in these region is going to be more challenging in future. Under such multifarious threats, the regional maritime partnership initiative may be a meaningful and effective solution to harness collective capabilities of the regional maritime services for a secure maritime environment.

Present Maritime Approach and Cooperation in the Region

To maintain stability and security in the region, nations are interested and attached to multilateral approach with cooperative engagements. Unfortunately, there has been limited progress in building a 'strong grouping around the Indian Ocean' in terms of either a collective security mechanism or strengthening regional cooperation. Security concerns generate the need for cooperative approaches for dealing with non-traditional security risks that are beyond the capability and mandate of any single nation-state to address. Therefore, the need for regional and sub-regional cooperation to deal with maritime security issues is of paramount importance. The only region-wide forum for dialogue and promoting cooperation in IOR is the Indian Ocean Rim Association (IORA), which did not include security in its charter. In recent years; IORA has been revitalized and maritime safety and security has been identified as the highest priority area. In regard to effective regional maritime cooperation and implementation of on ground strategic action plan, this organization needs to strengthen its partnership and be more effective on regional maritime issues.

The current international response to piracy off Somalia presents an example of cooperative maritime security initiative. Besides, a few small scale cooperation and initiatives such as Malacca Strait Patrol (MSP), Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) have earned laudable success especially in South East Asia. In South Asia, effective multinational cooperative engagements and

information sharing among regional countries are far behind the required level which needs serious attention. Nevertheless, small scale bilateral initiatives such as coordinated patrols (CORPAT), goodwill visits, dialogue, symposium, bilateral exercises pave the way for building partnership.

The Indian Ocean Naval Symposium (IONS), launched in 2008, involves 35 IOR littoral maritime forces. It is already making an important contribution to regional maritime security cooperation and capacity building. It is essentially an operational-level gathering of IOR maritime security force leaders which may work efficiently for IOR security issues. There are several sub-regional organizations working in the region like East African Community (EAC), Gulf Cooperation Council (GCC), South Asian Association for Regional Cooperation (SAARC), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), Association of South East Asian Nations (ASEAN), ASEAN Regional Forum (ARF) and others. However, most of these organizations are geographic oriented, land centric with limited or no maritime security charter. Apart from South East Asian countries, there are serious lacks in real time information sharing and networking among the other countries of IOR.

Challenges in Formulation of Maritime Partnership

The regional maritime partnership encompasses number of challenges in reality which are as follows:-

a. **National Maritime Awareness and Policy Lacks**

Most of the countries of the region are inclined towards land centric security and economic development that synchronizes their national goals. Priorities may differ from nation to nation, leading to the diversity of interests within the region or sub-region. This subsequently creates a lack of interest and attention in the maritime arena. In the IOR, most of the states do not possess ocean/maritime policy which impede policy level synchronization amongst nations despite having dialogues and symposiums.

b. **Maritime Governance**

A number of IOR nations are clamorous with the slogan of maritime cooperation and partnership. The evolving regional powers, as well as a few of the small states are actively contributing to the maritime security initiatives. Nevertheless, regional maritime governance become a difficult task without an agreeable, cooperative and integrated mandate or framework. Moreover, the difference in political outlook of countries makes it a challenging area for an integrated maritime governance and partnership.

c. **Capabilities and Interoperability**

Most of the countries in Indian Ocean region are emphasizing on the maritime cooperation with its immediate neighbor and in the sub-region. However, countries have imbalanced capabilities which subsequently hinders mutual contribution amongst the navies and other operators at sea. Besides, interoperability amongst the navies and other operators participating in the regional maritime cooperative engagements is essential for effective partnership at any scale.

d. **Lack of Established Procedures and Frameworks for Information Sharing** Bilateral sensitivities inhibits the cooperation between the maritime security forces of neighbouring countries in terms of information sharing regarding various maritime activities. This ultimately hinders the ground level cooperation for effective response and measures to be taken for ensuring maritime safety and security in the region.

Enhancing Regional Maritime Partnership

It is well understood that enhancing regional maritime partnership is essential to address maritime security and other related issues. Steps which may be considered in order to build and make the partnership better are as follows:-

a. **Political Will**

IO nations have to talk about and agree on various issues regarding maritime security and holistically view the matter with positive political will. In this regard, nations should take into account the interests and rights of their neighbours, as well as those of other countries. A strong political will is required to enhance the mutual support and cooperation in dealing with maritime security issues.

b. **Policy Formulation**

Some credible and pragmatic policy initiatives have to be made to enhance partnership. For example, IONS may develop some practical initiatives like Secure Trade in the Asia-Pacific Region (STAR) adopted by APEC. This will provide guidelines and innovative ideas for protection of maritime trade and commerce through better security. Some other national and regional security policies, involving interlink between all the national, regional and international agencies are to be adopted.

c. **Capacity-Building Initiatives**

Capacity-building in developing countries require cooperation between these countries. It also requires support from relevant international organizations, regional associations and developed countries.

The aim of this process is to enhance the capacities and infrastructures of developing countries in the areas of data and information sharing, scientific and technological means and human resource development. Capacity is usually included with at least three elements: human resources, institutions and enabling environment. IOR states should collaborate among themselves to make up their short falls and enhance their capabilities.

d. **Regional Cooperative Initiatives**

Several regional cooperative bodies that are working in IOR like EAC, GCC, SAARC, BIMSTEC, ASEAN and ARF also have to include maritime security issues in their agenda so that it gets priority. Organization like IONS will have to work as lead agency to address maritime safety and security issues. IONS has the potential to expand its mandate to the next level of cooperation, create maritime cooperative framework, pursue to attain a higher degree of interoperability, share information to overcome common trans-national maritime threats and natural disasters, and maintain good order at sea. It is to be remembered that cooperative framework and open regionalism are key for an enhanced maritime security . Much can be gained from a cooperative regional approach between states that promote consultation not confrontation, reassurance not deterrence, transparency not secrecy, prevention not correction, and interdependence not unilateralism. Regional cooperation can therefore be a force multiplier and is certainly desirable in the vast yet relatively less monitored Indian Ocean.

e. **Enhancing Mutual Trust**

There is a need to increase the level of trust among the IOR nations in order to enhance mutual cooperation and develop maritime partnership further. It is mentionable that, in a partnership, relations are based on reciprocity, mutual benefit and mutual respect. Absence of these will hinder the partnership building process. Selfless dedication and honest positive attitude is necessary to create bond among the states. Unless it is firmly believed that oceans are the greatest commons of mankind and therefore, everyone needs to work hand in hand, mutual trust will not be formed.

f. **Information Sharing**

Practical and open sharing of information related to common security matters is of immense importance. The willingness to share information does not come easy, as most of the stakeholders prefer to operate on a ‘need to share’ basis. States have to forget ‘need to share’ basis and form ‘open to share’ policy in this regard. If information is speedily obtained, it will result in timely situational updates to facilitate better

operational decisions. In order to have a secured environment in the IOR, regional cooperation in the maritime domain awareness through information sharing is a key area. This will immensely assist the countries to share and remain aware of the activities not only in one's own area, but of the region as a whole. Maritime security cooperation requires a major cultural change for many countries. Adopting a level of information transparency and securing a level of trust may make some nations uncomfortable. But for the greater interest of the region, all have to work for a common goal. In doing so, bureaucratic obstacles related to sharing of information at national level need to be sorted out.

Enhancing Partnership – Bangladesh Perspective

Bangladesh is a firm believer of cooperative engagement for regional maritime security and sustainable development of marine resources. With an active participation in all regional and sub-regional forums, Bangladesh has always expressed its positive intentions for maritime cooperation with regional countries. Conduct of humanitarian assistance and disaster relief operations by Bangladesh Navy in Sri Lanka and Maldives during Tsunami 2005, HADR operation for Typhoon affected people of Philippines in 2013, support to Maldives during national water crisis in 2014, introduction of coordinated patrol with India in 2018, regular participation in multinational exercises and events like 'MILAN', 'IMDEX', 'LIMA, 'FEROCIOUS FALCON', EXERCISE KOMODO' etc. reflects the clear intention of Bangladesh towards peaceful and cooperative regional maritime engagements.

Bangladesh is a vibrant member and actively participates in all the events of IONS. Bangladesh Navy organized the first ever multinational exercise of IONS named IMMSAREX in 2017 which certainly enhanced cooperation between IOR navies and prepared them for addressing the maritime security issues better. Bangladesh is also contributing to the regional geopolitical trend by manifesting cooperative culture. It actively participated in various initiatives like ARF, Western Pacific Naval Symposium (WPNS), ReCAAP, BIMSTEC etc. organized by various regional courtiers and navies. All these initiatives focus on maritime connectivity, trade, countering transnational crimes, climate change, energy security and people to people contact. In 2017, Bangladesh also hosted second international Blue Economy dialogue emphasizing on sustainable development for increasing mutual trust and common benefits to all.

A viable regional maritime partnership will entail cooperation that supports and acknowledges limitations and concerns of all nations. In today's security environment, no nation can ensure security on its own. This is a concerted effort where every nation needs to contribute through a conceptual (policies) and moral (awareness and motivation) agreement, and then put its

physical effort through available resources. So, it requires an agreeable and acceptable regional policy in one hand, and an integrated governance with mutual contribution on the other. For this, the strategic environment of the region needs to be improved where generosity of all nations will eradicate the gulf of differences, enhance mutual trust and confidence and create a strong regional organization to support regional partnership for common benefits.

Conclusion

Maritime security is an important issue in the gamut of geopolitics because of its economic importance and dominant contribution in maritime power play role. A maritime nation like Bangladesh cannot remain in oblivion ignoring this political reality of managing and protecting maritime security issues. However, it is not possible to face the maritime challenges by a country alone. The common threats in the maritime arena like piracy, drug trafficking, maritime terrorism, pollution etc. demand maritime partnership for efficient and effective action. As such, Bangladesh is also actively taking part in the regional endeavours for maritime cooperation and partnership aimed towards a sustainable and peaceful maritime security environment in the region.

The challenges in the maritime partnership spectrum encompasses the issues of policy promulgation which is hindered by national priorities as well as imbalanced capabilities of nations. Considering the said challenges, the architecture of maritime partnership starts with integrated maritime policy, information sharing and above all, activation of regional organs for integrated governance in order to achieve common maritime benefits. An effective regional partnership will not mean only the access to own maritime assets, rather to the strategic assets of whole region. As such, all maritime nations of the region should have consensus and mutual agreement to contribute in order to make the IO a zone for meaningful maritime partnership.

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Brief Biography

Rear Admiral Nazmul Hassan was commissioned in the Executive branch on 01st July 1986. A specialist in Navigation, Rear Admiral Nazmul did his long Navigation course from Cochin, India in 1993. He is a distinguished graduate of Defence Services Command and Staff College, Mirpur and Naval War College, USA. He also attended Naval Command Course at the US Naval War College. His academic qualifications include Bachelor of Science degree from Chittagong University and Masters in Defence Studies from National University, Bangladesh. He completed his NDC in Mirpur, Bangladesh in 2017. Currently he is undergoing M Phil Programme under BUP.

Rear Admiral Nazmul had a blend of Command, Staff and Instructional appointments throughout his career. He worked as Director Naval Operations and Director Naval Intelligence at NHQ. His instructional career started as the Naval DS at Bangladesh Military Academy. He later conducted JSC at BNA both as a Directing Staff and a Director. He also served as a DS in DSCSC Mirpur. In August 2013, he was appointed as the Commandant of Bangladesh Naval Academy. He is currently appointed as Commander BN Fleet of Bangladesh Navy. He was promoted to the present rank on 24 June 2019.

Marine Protected Area amidst SDG 14: Bangladesh Perspective

Captain M Nazmul Hassan, (N), NPP, psc, BN

Introduction

The ocean being the main climate regulator mitigates global warming through buffering, capturing and storing carbon in its ecosystems. Bangladesh is a part of the Bay of Bengal Large Marine Ecosystems (BOBLME) which is one of the world's large marine ecosystems. Well protected marine ecosystems can preserve carbon sinks, combat ocean acidification and thus strengthen environmental resilience through adaptation against climate change. Marine Protected Area (MPA) being the cornerstone of marine conservation can keep the ocean healthy through conservation of species, habitats, ecosystems and biodiversity. Effectively managed MPAs also safeguard habitats and ecosystems from destructive fishing practices, marine pollution and other harmful activities, and allow damaged ecosystem including habitat to recover. Besides, Sustainable Development Goal (SDG) 14 warrants coastal states to conserve at least ten per cent of their coastal and marine water including Exclusive Economic Zone (EEZ) as MPA by 2020. More than 15,000 MPAs cover roughly 7% of the world's marine environment.[1] After peaceful maritime boundary settlements through International Tribunal for Law of the Sea (ITLOS) and Permanent Court of Arbitration (PCA) with neighbouring countries in 2012 and 2014 respectively, Bangladesh focuses to achieve SDG 14 targets. By far, only 1,738 sq km had been declared as MPA in the Swatch of No Ground (SoNG) area of Bay of Bengal (BoB) in 2014. Considering the lone Marine Reserve (MR) declared in 2000 as MPA the total MPA area stands only 2.05 % of EEZ. That is to say, Bangladesh is still pledge bound to declare another 9,445 sq km i.e 7.95 % of EEZ area as MPA by 2020. However, an MPA framework has been prepared by International Union for the Conservation of Nature (IUCN) in coordination with concerned line ministries and other stakeholders in 2014 wherein 04 potential sites were proposed to be declared as MPA by the Government of Bangladesh.

Objectives of the Study

The broad objective of the study is to examine the stance of Bangladesh in regards to fulfil SDG 14 bound pledge of establishing MPA in her coastal and marine water by 2020. The specific objectives of the study are, therefore, firstly to examine as to why Bangladesh needs MPA, secondly to assess the present status of MPA in Bangladesh with a view to find out the key challenges posed by the SDG 14 in general and SDG target 14.5 in particular. Finally, the paper recommends way forward for Bangladesh to achieve SDG 14.5 targets.

Literature Review

Holdgate argued that humans have long desired to protect natural areas from their own activities. Indeed, evidence suggests that the first protected areas were established in India 2000 years ago in order to preserve natural resources.[2] According to Zacharias, while a number of states introduced protected areas in the early twentieth century, the modern application of protected areas as a biodiversity management tool began in earnest with the inaugural World Conference on National Parks in 1962.[3] Alam stated that the legal settlements of maritime boundary disputes with Myanmar and India entitled Bangladesh to secure 1, 18,813 sq km area including her territorial sea and EEZ.[4] Begum argued that the extended maritime boundary of Bangladesh is thus popularly dubbed as 'A New Bangladesh within Bangladesh.' [5] Gunter Pauli (2010) first coined the term 'Blue Economy' and subsequently UNCSD (2012) viewed it as ocean economy.[6] Convention on Biological Diversity (CBD) first warranted marine conservation through Aichi target and then SDG 2030 also mandated all UN member countries to conserve and sustainably use the oceans, seas and marine resources for sustainable development. IUCN defines an MPA as any area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment. CBD also defined MPA in the same connotations [7]

WWF argued that MPAs that effectively protect critical habitats, species and ecological functions are essential tool for recovering, protecting and enhancing biodiversity, productivity and resilience, and for securing these benefits for current and future generations. MPA may not only protect natural marine areas but can also include social, economic and cultural interests as well. MPAs can also create job for managers and researches, buffer against the impacts of climate change and a level of insurance against natural disaster.[8] Reuchlin Hugenholtz deduced that economic rate of return in expanding MPAs networks is as high as 24 percent and greater than the discount rate in every scenario considered.[9] MoFL (2017) declared that Fisheries sector contributes 3.61 percent to our national GDP while only about 15.41% of country's total fish production is contributed through industrial and artisanal marine fisheries. DoF declared a marine reserve of 698 sq km near South patch and Middle ground area. DoE (2014) also declared Bangladesh's first MPA at SoNG area of Bay of Bengal. IUCN along with MoFL and MOEF, on the other hand, carried out detailed study recently and prepared a National Framework for Establishing managing MPA in Bangladesh.

Methodology

The study is mainly a secondary qualitative research based on existing literature, documents, official records, key informant interviews and author's

personal observations as a maritime security and marine environment protection professional in the Bay of Bengal. The data used in the study were collected from various official documents and concern data base during the months between June to October 2018. Drawing on the desk review and in-depth interviews, the study also carried out thematic analysis to find out grey areas and key challenges that needed to be addressed by Bangladesh to fulfil the pledge of SDG 14 in regards to establishment of MPA in the EEZ of Bangladesh.

Marine Protected Area and Its Taxonomy

Currently there is no single or dedicated international law aimed specifically at defining or establishing MPAs in the oceans, seas or coast. However, according to World Wildlife Fund (WWF), "An area designated to protect marine ecosystems, possesses, habitats and species including the essentials of marine biodiversity and which can contribute to the restoration and replenishment of resources for social, economic and cultural enrichment."[10] The CBD and IUCN also defined MPA focusing marine conservation and protection through legislation or other effective means keeping almost similar elements of characterizations. Marine conservation across the world are being done through various protected areas namely marine reserves, fully protected marine areas, no-take zones, no-go zones, marine sanctuaries, ocean sanctuaries, marine parks, locally managed marine areas, etc. MPAs can cover large or small areas and can be established anywhere in the marine waters including high seas. Typically they restrict activities like navigation, fishing, harvesting living and non-living resource, etc within a defined marine area. The biophysical objective of a MPA ideally is to increase or maintain the species abundance, while the socio-economic objectives take care of the nutritional needs of coastal residents. However, the governance objectives focus on the effectiveness of the planning, management and protection of the MPA. The objectives of a particular MPA will vary depending on the context, the enabling policies and the lead agencies or interest groups. By and large, MPA will have different level of usage, protection, management and governance issues. However, for common understanding and development around the globe IUCN classified MPAs in following six categories:-

Table 1: Taxonomy of Marine Protected Area with Management Objectives

S/ No	Category	International Name	Management Objectives	Purposes
1.	Ia	Strict Nature Reserve	Managed mainly for scientific research	To conserve regionally, nationally or globally outstanding ecosystems, species and biodiversity features
	Ib	Wilderness Area	Managed mainly to protect wilderness qualities	To protect the long-term ecological integrity of natural areas
2.	II	National Park	Managed mainly for ecosystem protection and recreation	To protect natural ecology and biodiversity for educational and recreational opportunities
3.	III	Natural Management	Managed mainly for conservation of specific natural/cultural features	To protect specific natural features and their associated biodiversity and habitats
4.	IV	Habitat/Species Management Area	Managed mainly for conservation through management intervention	To maintain, conserve and restore species and habitats
5.	V	Protected Landscape /Seascape	Managed mainly for Landscape/seascape conservation and recreation	To protect and sustain important landscapes/ seascapes and the associated nature conservation
6.	VI	Managed Resources Protected Area	Managed mainly for the sustainable use of natural ecosystem	To protect natural ecosystems and use natural resources sustainably

Source: Author's self-construct

The Environmental Matrix of MPA

The concept of MPAs gained traction in the 1980s with the publication of the IUCN/ WWF /UNEP World Conservation Strategy (1980). Following a number of workshops on the establishment of MPAs, a 1984 IUCN Report titled *Marine and Coastal Protected Areas: A Guide for Planners and Managers* was published.[11] MPAs are managed mainly for conservation of marine environment that includes species, habitats, migration routes, places of refuge against predators, spawning grounds and nursery areas, etc. In other words,

they support the reproduction and survival of valuable fish stocks species. They also contribute towards marine ecology and biodiversity by conserving safe havens for depleted stocks of fish and other marine species. MPAs are now internationally recognized as an essential and fundamental component of marine conservation. Marine spatial planning (MSP) has been adopted by a number of national and international organizations including the EU, UN and US. They envision optimizing the economic and social uses of oceans to enable them to continue to provide ecosystem goods and services.[12] MSP and establishing MPA in particular could protect and conserve the marine environment of Bay of Bengal (BoB) from the threats and stressors like over exploitation, non-compliance of sustainable fisheries management and eco-tourism, Illegal fishing, climate change impacts and increased human interactions. It also enhances blue growth through management of sustainable fisheries, safeguarding cultural heritage, education and research, marine eco-tourism and other recreational facilities. MPAs also benefits in conserving marine environment and thus ensure sustainable development for current and future generations. Ensuring a healthy marine environment through effective conservation, management and governance of MPA might contribute directly towards sustainable blue growth and thus the socio-economic development of Bangladesh.

The Economic Matrix of MPA

The economic matrix of a marine site needs to be considered prior declaring it as MPA. No-take MPAs are marine areas where all fishing activities are permanently banned, as are all other activities that involve the removal of living and non-living resources, e.g. recreational angling, shellfish collection, sand extraction. No-take MPAs, also often referred to as marine reserves, are more strictly protected than partially protected MPAs, which provide for some activities such as recreational angling and fishing with static gears (traps, pots, set nets, etc.) and pelagic trawls (towed through the water column, not across the seabed.[13] It is a proven fact that no-go and no-take MPAs are not only successful in conserving habitats and populations but also may sustain the increase of overall yield of nearby fisheries by exporting spill over. The size, location, objectives, scale of protection and management of MPAs differ around the world. And so does the annual running costs of individual MPA. However, running costs would be higher in MPAs that are smaller, closer to coast, and located in developed countries. WWF commissioned study report concluded that MPA expansion is economically advisable and economic rate of return of MPAs range between 9 to 24 per cent. The economic rate of return in expanding MPAs networks is as high as 24 per cent and greater than discount rate in every scenario considered. In the most positive scenarios, the benefit-to-cost ratio of expanding MPAs is as high as 20:1. Under all scenarios, benefits are more than triple the costs contributing to establishment of an MPA that may provide a useful pathway towards sustainable blue economy. It is in this context presumed

that the Bangladesh government declared its first MPA in 2014 at SoNG to reap the intangible economic benefits of marine conservation and future maritime cooperation with neighbouring India.

The Key Concepts and Connotations of SDG 14

The concept of MPA was first conceived through the Aichi target 11 of CBD in 2010. Then the Sustainable Development Goal 2030 set its specific goal for life below water as SDG 14 that by and large deals with human interactions with the oceans, seas and marine resources. SDG 14 covers a wide range of issues of conservation and sustainable use of oceans and seas through seven targets and three means of implementation. However, target 14.2 of SDG 14, Bangladesh is pledge bound to manage and protect marine and coastal ecosystems sustainably to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans by 2020. Besides, target 14.5 requires Bangladesh to conserve at least 10 per cent of her coastal and marine areas, consistent with national and international law and based on the best available scientific information by 2020. That is to say the country will have to conserve approximately 11,881sq km of her coastal and marine waters as MPA by 2020. The connotation of target 14.5 also includes the provision and commitments of ensuring no-take or no-go MPA for total conservation locally or community managed MPA with effective governance. It also warrants multiple uses of MPA with partial protection, management and governance.[14]

The Rationale of Establishing MPA in Bangladesh

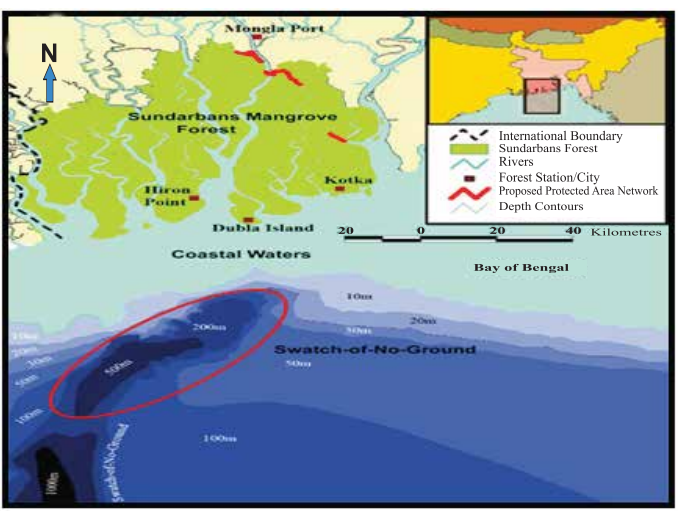
Scientific evidence shows that MPAs can produce ecological, economic, and social benefits under appropriate design and management conditions.[15] MPAs play important role in conserving marine biodiversity at different level like ecosystem, species and genetic. They offer a range of benefits for fisheries, eco-tourism, and livelihoods and for the marine environment. They protect entire marine ecosystem including habitat and ecosystem functioning by facilitating populations to regenerate. MPAs boost resilience of marine environment against global warming and ocean acidification. They also ensure food security and poverty reduction of the coastal and fisher communities. Following the historic verdict of PCA with India in 2014, the total marine water of Bangladesh stood approximately 1, 18,813 sq km. The marine resources and its conservation of such huge area are closely interlinked and often conflicts with blue economic activities like fisheries, transportation, tourism and exploration of living marine resources. Fisheries sector contributes 3.61% to our national GDP while only about 15.41% of country's total fish production is contributed through industrial and artisanal marine fisheries.[16] The population growth and repaid demand of fish in Bangladesh threaten marine biodiversity across the maritime area of our country. By contrast, effective management and governance of MPAs can

reduce marine environmental threats besides boosting up blue growth of Bangladesh through marine fisheries, eco-tourism, livelihoods and jobs. They can also support us to remain resilient against upcoming challenges of climate change by protecting our marine environment. The growing recognition of the need for MPAs must be considered in parallel with growing recognition of the need for sustainable development, as the two are inextricably intertwined.[17] Hence, Bangladesh needs to ensure a healthy marine environment through effective conservation, management and governance of MPA so as to foster sustainable blue growth and socio-economic development.

Current Status of MPA in Bangladesh

As of October 2012, there were around 10,000 MPAs, representing coverage of 2.3 per cent of the total area of global seas, including high seas, and 5.7 per cent of seas under national jurisdiction. MPA around the world may have different levels of usage, protection, governance and management perspective with different names like marine reserves, fully protected marine areas, no-take zones, no-go zones, marine sanctuaries, oceans sanctuaries, marine parks, locally managed marine areas, etc. The aims of MPAs often include ecological, social, economic, cultural, and institutional objectives.[18] In many cases, planning for multiple objectives concurrently demands trade-offs in achievement across social, economic, and ecological domains. Off late, the Swatch of No Ground (SoNG), a submarine canyon located south of Dublar Char in the Bay of Bengal is known as hotspot for cetaceans, has been declared as Bangladesh's first MPA on 27 October 2014 under the Wildlife Conservation and Security Act, 2012.[19]

Figure 1: The Swatch of No Ground (SoNG) Marine Protected Area in Bay of Bengal

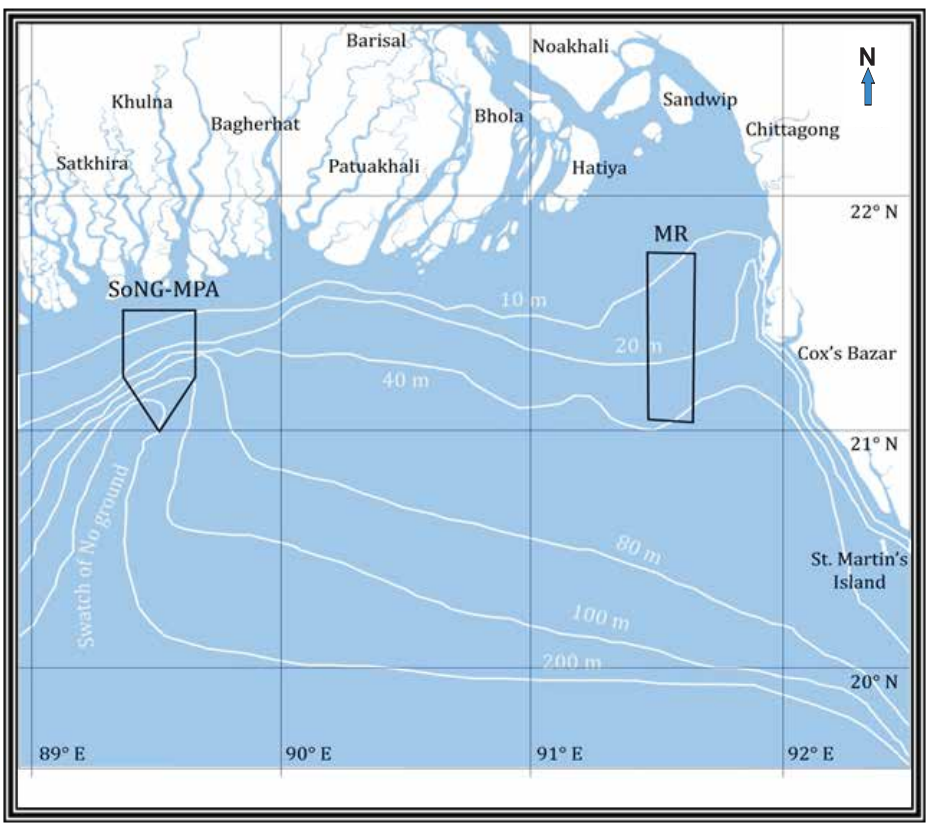


Source: http://whalesandmarinefauna.wordpress.com/2014/11/02/swatch-of-no-ground-declared-protected-zone-bangladesh

The maiden MPA with an average depth of 900 meters covering approximately 1,738 sq km of marine area has been an important habitat and a key breeding and spawning ground of whales, dolphins, sea turtles, sharks, and other endangered oceanic species. The SoNG Marine Protected Area was established for the long-term protection of cetaceans that inhabit offshore waters of Dublar Char, Bangladesh. The announcement officially restricts fishing and other offshore commercial or unauthorized activities in the area. It aimed to ensure long term protection of marine life of the SoNG area. Besides, the declared maiden MPA that borders the territorial waters of India will also facilitate maritime cooperation through establishing a potential trans-boundary MPA by both Bangladesh and its neighbouring India amidst common global challenges like over exploitation of fish and climate change.[20]

In Bangladesh, the DoF declared a Marine Reserve (may also be considered as MPA) of 698 sq km near South patch and middle ground area in the year of 2000 under section 28 of the Marine Fisheries Ordinance, 1983.

Figure 2: The SoNG MPA and Marine Reserve in the Bay of Bengal



Source: http://whalesandmarinefauna.wordpress.com/2014/11/02/swatch-of-no-ground-declared-protected-zone-bangladesh

The Ione Marine Reserve has been considered as an important habitat as well as a key breeding and spawning ground for hilsha, fin fishes and other endangered oceanic species in the Bay of Bengal.

On the other hand, the Department of Environment (DoE) also declared 13 environmentally degraded wetlands as Ecologically Critical Areas (ECA) under the section 5 of the Bangladesh Environmental Conservation Act, 1995. Out of those 13 ECA declared in 1999, only 04 sites namely St. Martins Island, Cox's Bazar-Teknaf Peninsula, Sundarban and Sonadia Island have been declared as ECA in the marine zones following such act. Meanwhile, IUCN along with MoEF carried out a detailed study named BOBLME project recently to prepare a national framework for establishing and managing MPA in Bangladesh.[21] They also recommended following 04 potential sites to be declared as MPA by the Government of Bangladesh (GoB).

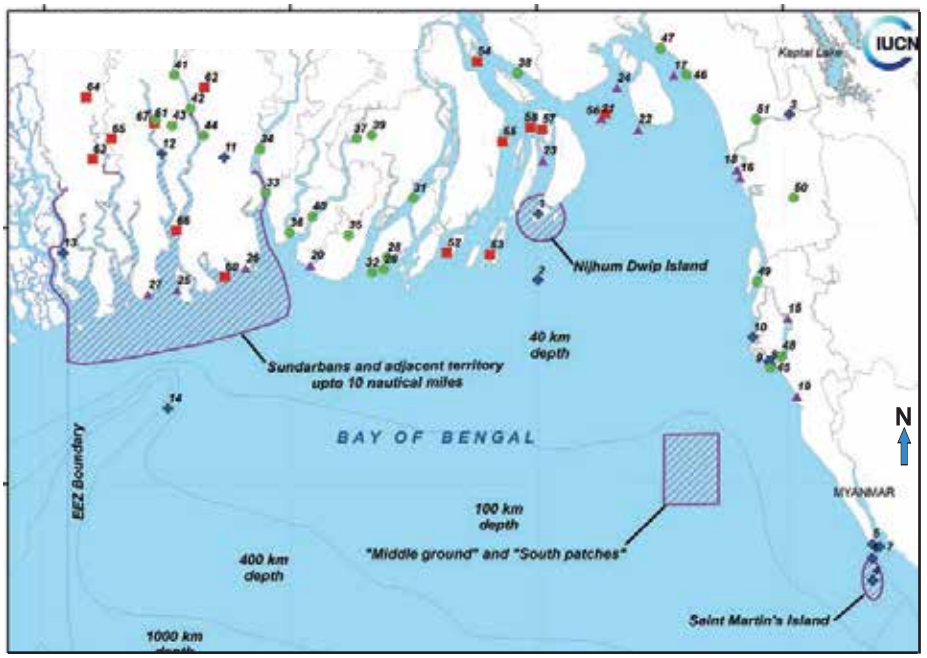
Table 2: Potential Sites to be declared as MPA by the Government of Bangladesh

S/ No	Name	Location	Area (Approx.)	Remarks
1.	St. Martin`s Island	St. Martin`s Island and its adjacent Area of Teknaf	100 sq km	DoE already declared as ECA in 1999
2.	Nijhum Dwip Island	Nijhum Dwip Island and its adjacent Area	976 sq km	
3.	South Patches and Middle Ground	South of South Patches, Bay of Bengal	698 sq km	DoE already declared as ECA in 1999 and DoF declared Marine Reserve Area in 2000
4.	Sundarban	Up to 10 km Outer periphery of Sundarban, Bagerhat, Khulna and Satkhira	2,908 sq km	
Total MPA Area (Proposed)			**4,682 sq km**	

Source: National Framework for Establishing and Managing MPA in Bangladesh, IUCN, 2015

At present, both the SoNG MPA and declared MR cover only 2,436 sq km of marine area i.e 2.05% of the EEZ. The above potential sites, if declared as MPA by the GoB, will cover approximately 4,682 sq km or 3.94% of EEZ area. So, considering the Ione MR and SoNG MPA, total marine protected area will stand approximately 6,420 sq km that is 5.40% of the total EEZ. Still, Bangladesh will have to declare another 5,461 sq km i.e 4.6% of her EEZ or marine area for conservation as MPA to fulfil the pledge of SDG 14.5 by 2020. However, the map of the potential sites to be declared as MPA by the government of Bangladesh is shown below:-

Figure 3: Map of Potential Sites to be declared as Marine Protected Area by the government of Bangladesh



Source: National Framework for Establishing and Managing MPA in Bangladesh, IUCN, 2015

Key Findings and Challenges for Bangladesh

Marine Environment Challenges for Bangladesh: Taking into account the extended area of EEZ, major river inlets and estuaries the total marine water of Bangladesh has been estimated to 121,110 sq km approximately. In the absence of required number of MPAs sustainable exploration of living and non-loving resources including marine environment protection of such huge area turns out to be a major challenge for Bangladesh. Key threats to our marine environment and its resource include unsustainable fishing practices, unplanned marine development activities and marine pollution. Establishment of MPAs and its effective governance could ensure conservation of marine environment from the offshore challenges like over fishing poaching, illegal equipment usage and destructive fishing by the Illegal Unreported and Unregulated (IUU) fishers of Bangladesh.[22]

Sea Blindness and Lack of Vision: Scientific literature often recommends that MPA goals and objectives should be clearly defined, compatible with one another, and account for inherent uncertainty. Lack of integrated planning, inappropriate knowledge and methods for coordinated development and management of blue growth appeared to be another major setback for establishing and governing MPAs in Bangladesh. No kind of MSP

has yet been conducted for sustainable exploration and management of EEZ due to sea blindness and lack of vision. A comprehensive MSP is further more necessary to avoid marine environmental development disaster in the days to come. Conservation success stories are often related to a key individual, a "leader," who made things happen. Recently, there has been a shift from the individual leader at the top, to the process of leadership, which can occur throughout an organization and is not restricted to one person or group with a formal role.[23] So, the maritime leaders of Bangladesh must have vision to conserve at least some more area of EEZ as MPA to face the challenges of SDG 14. Besides, establishing MPA with appropriate legislature formulation and effective governance of MPA cloud be the keys for sustainable fisheries and marine conservation in Bangladesh.

Limited Knowledge and Scientific Data: Limited scientific study and data on marine ecology, habitats, species, stocks, etc. are a major setback for MSP of the BoB. In Bangladesh first marine fisheries survey was carried out in 1973 and then fisheries department subsequently conducted partial studies only in the late 1970s and early 1980s with the help of foreign research vessels, scientists and experts. Research Vessel Meen Sandhani, the first Bangladeshi purpose-built survey vessel that determines marine fish stock in the BoB, was commissioned on 19 November 2016. The ship under the auspicious of FAO technical support will be able to conduct survey and determine marine fish stocks and ecosystem health of BoB. Besides, she can also contribute towards establishing MPAs for sustainable fisheries and better marine conservation by providing research/survey data. The United Nations flag carrier and specially equipped Norwegian marine research vessel Dr Fridtjof Nansen, on the other hand, conducted marine survey on the fisheries stock in upper level of the sea to determine Maximum Sustainable Yield (MSY), ecosystem, water quality and presence of polluting elements like plastics in the EEZ of Bangladesh from 02 to 17 August 2018. It is expected that the survey report will unveil new possibilities in establishing MPAs based on scientific data and thus contributing towards emerging blue economy of Bangladesh.

Comprehensive Legislature and Policies: In the absence of designated administrative authority, comprehensive legislature and clear-cut policies management and governance of MPA turned out to be further more complex with many gray areas in Bangladesh. However, the recently declared lone MPA of SoNG in the BoB needs specific policy guidelines on protection, management and governance issues so as to reap benefits out of its objectives. Thus, an MPA would be a failure if its implementation and/or management were insufficient, inappropriate or neglected. The last would be the case of the so called "paper parks." International legislatures like RAMSAR Convention (1971), World Heritage Convention (1972), UN Convention on the Law of the Sea 1982 (UNCLOS III), Convention on Biological Diversity 1992 (CBD), etc. ideally deal with various issues of marine conservation. Besides, none of the promulgated

acts, legislations, policies strategies and action plans directly deals with protection, management and governance of MPA. However, Wildlife Conservation and Security Act 2012, Environment Conservation Act 1995, Marine Fisheries Ordnance 1983 and the Coastal Zone Policy 2005 partially deals with the marine environment protection and conservation in general.

Governance Aspect of MPA: MPAs are expensive ventures absorbing much of the scarce resources allocated to marine conservation. Thus, identifying practices that ensure MPA effectiveness is a major issue. In Bangladesh, there is no such clear governance framework to ensure effective coordination among various departments and line ministries for marine conservation in general and establishing MPA in particular. No MPA authority or national committee has been formed yet for the effective governance of MPA. However, MoFL and MoEF are the concern ministries that work on marine conservation through various departments like DoE, DoF and Forest Department. However, the Coastal Zone Policy, 2005 gives credential to Bangladesh Coast Guard Force on behalf of all institutions as a common resource for enforcement of different regulations applicable to coastal zone.

SDG 14 bound Commitments and Progress: According to target 14.5 of SDG 14, Bangladesh is pledged to conserve at least 10% of her EEZ i.e approximately 11,881 sq km as MPA in the BoB by 2020 based on the best available scientific information. So far, the country declared total 2,436 sq km of EEZ as MPA including the declared Marine Reserve of 698 sq km area. The country still has to declare another 9,445 sq km i.e. 7.95% of EEZ as MPA by 2020. However, a MPA framework has recently been prepared by IUCN in coordination with MoFL, MoFE, MoFA, MoS, MoHA, MoD and other concern stakeholders wherein 04 potential sites including the declared MR were proposed to be declared as MPA by the Government of Bangladesh (GoB). If the proposal were accepted then another 3,984 sq km area of EEZ will also be added with the existing MPAs and the total declared MPA area will then be approximately 6,420 sq km i.e. 5.40% of the EEZ area. Yet, Bangladesh government will have to declare another 5,461 sq km i.e. 4.6% of her EEZ as MPA to fulfil SDG 14.5 target by 2020.

Way Forward amidst Sustainable Development Goal

According to SDG 14, Bangladesh is pledge bound to preserve 10% of her coastal and marine water as MPA so as to ensure sustainable marine conservation in the BoB. So, drawing over the findings and challenges of the study following are the recommendations in regards to MPA amidst SDG 14:-

a. The dearth of knowledge and required scientific data of huge EEZ seems to be a major setback to promulgate MSP in Bangladesh. The data on the marine environment including biodiversity, ecosystems and fisheries need to be collected from R V Meen Shandhani, R V Dr Fridtj of Nansen and other sources for analyzing and determining MSY for sustainable fisheries and conservation of marine environment. Besides, a comprehensive MSP based on scientific data on ecology, depleted species and habitat loss, fisheries stocks and biodiversity is further more necessary for establishment and effective governance of MPA.

b. The only MPA of Bangladesh covers only 1.46% of EEZ. Bangladesh needs to declare the lone Marine Reserve as MPA immediately and designate another 8.54% EEZ as MPA based on marine scientific data of the concern area with particular/specific objectives. Previously declared ECAs that fall within maritime area of Bangladesh might also be named as MPA to fulfil the pledge of SDG 14.

c. The IUCN proposed potential sites namely St Martin's Island and its adjacent area, Nijhum Dwip and its adjoining area, South patches and Middle ground area and up to 10 km outer periphery of Sundarban areas are to be declared as MPA by the GoB so as to conserve the marine environment and thus fulfilling the pledge of SDG 14 by 2020.

d. Continued political will and timely policy support is further more necessary to promulgate a comprehensive maritime policy/act harmonizing all legislatures in regards to marine conservation including establishment of MPA. Besides, a clear governance framework for establishment, protection and management of MPA has to be established so as to ensure effective coordination among various departments and line ministries of GoB.

e. An MPA Authority needs to be formed under the maritime affairs secretary where representatives from all concern departments of line ministries will cooperate and work shoulder to shoulder for marine conservation of Bangladesh. Existing coastal policy also needs to be reviewed for mandating Bangladesh Coast Guard Force to protect MPAs under MPA authority through effective Monitoring, Controlling and Surveillance in the EEZ.

Conclusion

MPAs have the advantages to facilitate marine conservation through biodiversity, ecosystem and habitat protection. It facilitates MSP, Integrated Coastal Zone Management (ICZM) and safeguards cultural heritage. It also ensure sustainable usage of living and non-living marine resources. Over exploitation of marine living resources, destructive fishing and marine pollution are the prime causes for habitat loss that subsequently destroy the marine ecosystem and biodiversity. So sustainable model of marine conservation i.e. MPA offers a range of benefits to fisheries, people and the marine environment. After the peaceful legal settlement of maritime boundaries with both the neighbouring countries Bangladesh secured 1,18,813 sq km of EEZ. The extended maritime boundary of Bangladesh is popularly dubbed as "A New Bangladesh within Bangladesh."[24] However, to protect the marine ecology, species and biodiversity, Bangladesh so far declared a lone MPA in 2014 at Swatch of No Ground (SoNG) that covered only 1.46% area of EEZ. With the emergence of sustainable development as the paradigm of choice, Bangladesh needs to establish more MPAs by 2020 to brace the challenges of SDG 14. However, limited scientific study and data on marine ecology, species, habitats, stocks, etc. are the major setbacks for MSP in Bangladesh. The proposed MPA framework of IUCN for establishing 04 potential sites as MPA needs to be approved and declared by the GoB as soon as possible. Effective management of established MPAs could be the corner stone for sustainable marine conservation in the BoB. Besides, it is imperative to formulate a comprehensive policy for effective governance of MPAs under the proposed MPA authority so as to explore marine resources sustainably and to conserve marine environment of Bangladesh.

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Brief Biography

Captain Mohammad Nazmul Hassan, (N), NPP, psc, BN joined Bangladesh Naval Academy and was commissioned in the Executive Branch in 1995.He served on board various BN ships ranging from patrol craft to Missile Frigate in the capacity of the Executive Officer. He also commanded Patrol Craft, Mine Sweeper, Off-shore Patrol Vessel of BN and at present he is commanding CGS Tajuddin. He served Special Security Force (SSF) and Directorate General Forces Intelligence (DGFI) as Deputy Director (Protection) and GSO-2 respectively. He also served Naval Headquarters as Section Commander to the Drafting Authority. He did many professional courses both at home and abroad. He is both Navigation and NBCD specialist officer. He did Maritime Operation Law Course from APCML, Australia and Advanced Security Cooperation Course from APCSS, USA. He earned his Masters of Public Administration (MPA) degree from the University of Dhaka and a Post Graduate Diploma in Human Resource Management from BIMS. He also earned MSc degree in Military Studies under the Bangladesh University of Professionals, Dhaka. He is married to Dr. Sonia and blessed with three daughters.

Implementing Blue Economy Concept for Bangladesh: Armed Forces Contribution on Sustainable Development

Commander Md Mehadi Amin Miah, (G), psc BN

Introduction

Marine fisheries department of Bangladesh imposed restriction on the fishing grounds on Bay of Bengal for 65 days from 20 April 2019. During this period of early monsoon the mother fish can lay eggs and larvae can grow from fry to fingerling. The restriction imposed for that specific period is a part of the research outcome of Bangladesh Agricultural University. Restriction of 65 days can increase the fishing volume of Bay of Bengal three times than normal, which our fishermen can not foresee. What is the plan for the sustenance of fishermen for these 65 days? Who all are allowed for fishing during that time? With the blessing of social media challenges have gone higher than predicted on the implementation part of Blue economy fishing ground conservation for sustainable development where scope of Armed Forces appeared to play a regulatory role.

In 2015, a resolution proposed by Bangladesh was adopted by the General Assembly of the UN for sustainable development, and its purpose was directed at achieving 17-point economic growth by 2030, of which 14 points were contemplated from the perspective of blue economy. Blue Economy is a broad concept that encompasses wide variety of issues relating to ocean and coastal economy. Study of numerous documents show that over 25 sectors has been listed under the Blue Economy. Scholars from a variety of background including natural science, economy, law, engineering and international relations, etc., have shared their knowledge on the issue, resulting significant variation in how the concept is perceived. However, at its core, Blue Economy is based on principles of equity, wellbeing, low carbon development, resources preservation, sustainable development and local inclusion.[1]

Following the settlement of its maritime dispute with neighboring India and Myanmar, Bangladesh has now got 118,813 sq km of territorial sea, 200 nautical mile of Exclusive Economic Zone (EEZ) and a substantial share of the extended continental shelf. Thus, Bangladesh has maritime zone almost the size of the country itself which has created huge opportunities for ocean-based economic growth and development. The Government of Bangladesh (GoB) has stated its interest to pursue the Blue Economy concept as part of country's growth strategy. Blue Economy is a concept which can significantly contribute in the socio-economic development of Bangladesh. The role of marine resources in poverty alleviation, acquiring autarky in food production, protecting environmental balance, facing adverse impacts of climate change and other economic activities is unlimited.[2] However, Bangladesh is still in the early

stages of embracing the concept and confronts a number of technological and financial constraints to realize the Blue Economy aspirations.

So, for Bangladesh, there is scope of learning from the practices of other countries in developing its Blue Economy. Against this backdrop, the paper seeks to find out the core concept of Blue Economy and its implication to Bangladesh vis-a-vis sustainable development contributed by Armed Forces.

Finally lessons learnt by Bangladesh from countries implementing Blue Economy including a policy framework with footsteps to implement have been suggested at the end of this paper.

Concept of Blue Economy

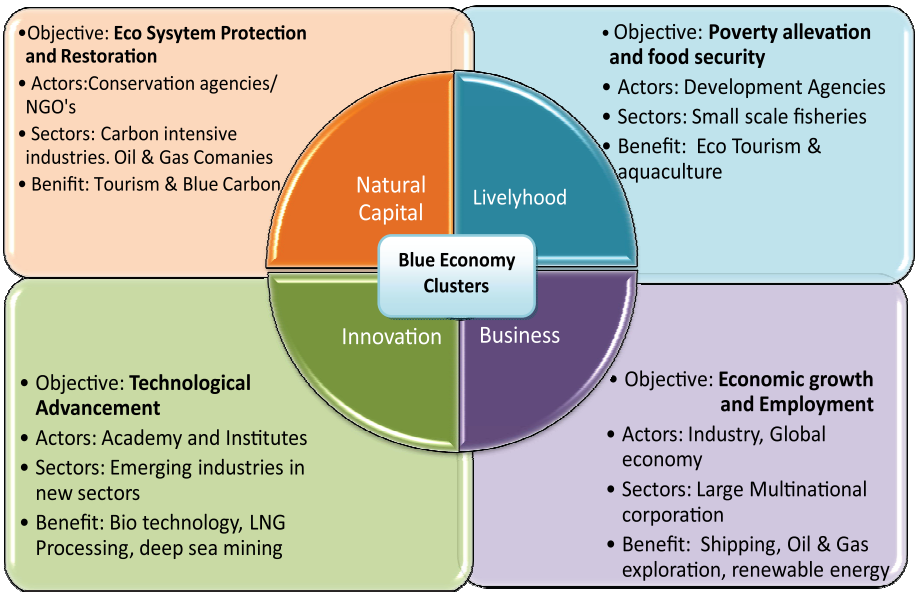
The concept of Blue Economy has emerged in response to the 2012 UN Conference on Sustainable Development or Rio 20. The concept has its roots in the earlier 1992 Rio Earth Summit, which focused on fostering the growth of a 'green economy'- an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In response to an international push to 'green' the global economy, SIDS began emphasizing the importance of the ocean and marine economy, promoting the concept of a Blue Economy. The term 'Blue Economy' itself was first introduced in 1994 by Professor Gunter Pauli.[3] The introduction of Blue Economy was part of the global transition from traditional economic path to human-centric development, which focused harmony with nature and sustainability.

Blue Economy is a marine based economy that provides social and economic benefits for current and future generations, by contributing to food security, poverty eradication, livelihoods, income, employment, health, safety, equity, and political stability. It restores, protects and maintains the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems - the natural capital upon which its prosperity depends. It is based on clean technologies, renewable energy and circular material flows to secure economic and social stability over time, while keeping within the limits of one planet. Blue Economy covers all ocean-related activities including direct and indirect supporting activities required for functioning of these economic sectors, while adjusting to the costs of environmental damage and ecological imbalance caused due to exploitation of ocean resources for consumption. Therefore, the scope of Blue Economy is much wider and inclusive.[4]

Therefore, Blue Economy can maximize the economic value of the marine environment in a sustainable manner that preserves and protects the sea's resources and ecosystems. *The Economist*, in a Report titled 'The Blue Economy: Growth, Opportunity and a Sustainable Ocean Economy,' provides a working definition as follows: ''A sustainable ocean economy emerges when economic activity is in balance with the long term capacity of ocean ecosystems

to support this activity and remain resilient and healthy." [5] The Government of Australia in its report titled 'Marine Nation 2025: Marine Science to Support Australia's Blue Economy' defines "A Blue Economy is one in which our ocean ecosystems bring economic and social benefits that are efficient, equitable and sustainable." [6]

Figure 1: Blue Economy Clusters[7]



Source: *The Blue Economy Cluster Policy*, Australia, p.20

Sustainable Development Concept

The most common international definition of sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," which was presented in the 1987 Brundtland Report.[8] Four primary characteristics of sustainable development also have been derived from the Brundtland Report which are as follows:-

(1) Safeguarding long-term ecological sustainability

(2) Satisfying basic human needs

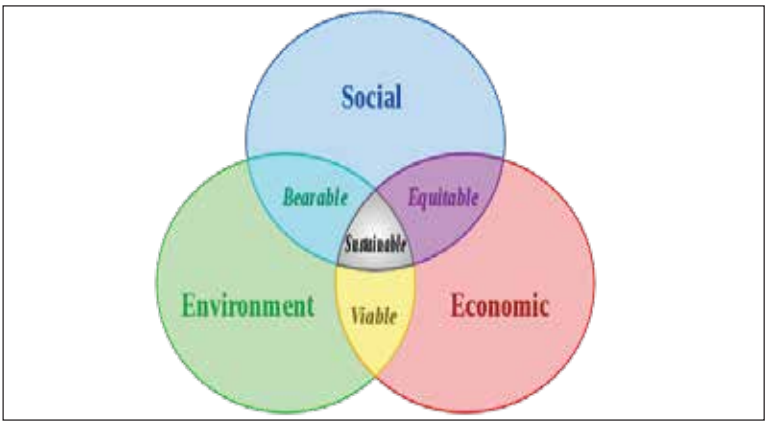
(3) Promoting intra-generational equity, and

(4) Promoting inter-generational equity.

Several secondary characteristics are also important for sustainable development, preserving nature's intrinsic value, endorsing long-term effects, promoting public participation, and satisfying aspirations for an improved quality of life. The importance of safeguarding long-term ecological

sustainability is expressed in the Brundtland report, through such statements as, “At a minimum, sustainable development must not endanger the natural systems that support life on Earth: the atmosphere, the water, the soil, and the living beings and there is still time to save species and their ecosystems. It is an indispensable prerequisite for sustainable development.” This characteristic has its origin in ecology and represents the conditions that must be present for the world’s ecosystems to sustain themselves over long periods of time.[9] Sustainable development is commonly represented as three pillars: economic, social and environmental aspect or three ‘P’ commonly known as people, profit and planet. Hence, sustainable shipping depicts marine economic transportation activities prioritizing environmental safety.

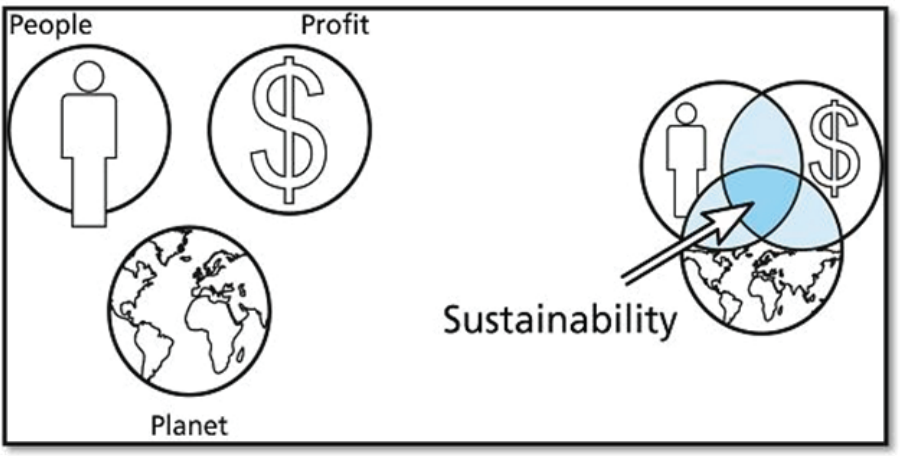
Figure 2: Environment setting limit of ecological sustainability



Source: John Rockstorn, *Planetary Boundary*, p.119

Sustainability is becoming increasingly important in every aspect of today’s society, because of exponential human population growth, enhanced technical skills, and consequently a much larger pressure on the environment.[10] Sustainable use implies that a business is economically viable, has low ecological impact, and is socially acceptable. Pro-Sea considers sustainability to be a balance between these three P’s: Profit, Planet, and People. In this world where economic value is often seen as very important, sustainable thinking requires the recognition of the value of environment and people.[11] There is no ‘fixed recipe’ for sustainable development. Balancing economic prosperity, environmental quality and social equity, can be carried out in different ways, by different choices. Thus, a practical application of ‘sustainability’ is open to many interpretations. Sustainability can be achieved by technical innovations and environmental regulations. However, the effectiveness of innovations and regulations always depend on the professionalism and competence of seafarers: the human element.[12] Therefore, increased awareness of the marine environment will contribute to sustainable use of the environment and oceans by maritime professionals.

Figure 3: Concept of 3P on Sustainability assessment



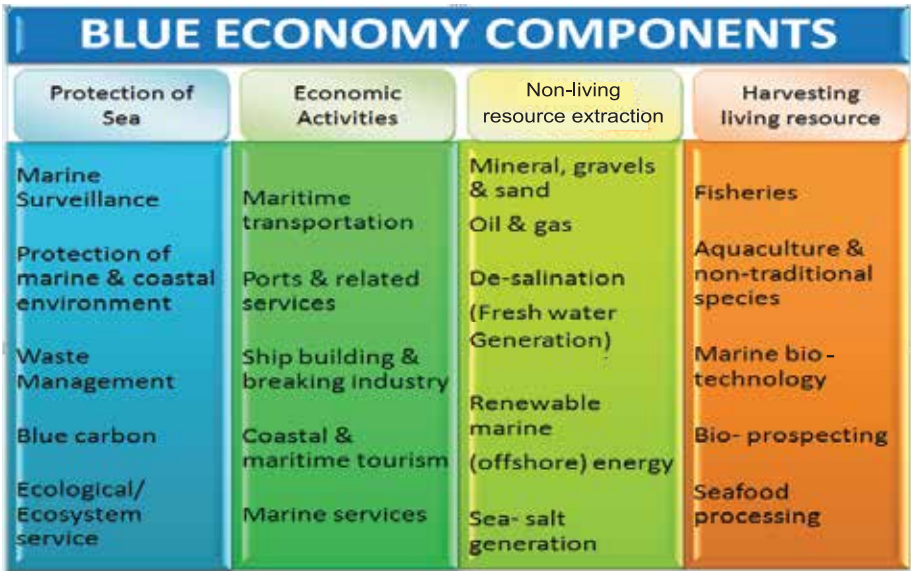
Source: Andrew Savitz, *The Triple Bottom*, p.184

Blue Economy for Bangladesh

The newly demarcated area of the Bay of Bengal has opened a new economic frontier for Bangladesh. In order to utilize its unexplored marine resources, Bangladesh is already taking initiatives to flourish its Blue Economy. Since 2015, the GoB has undertaken a number of consultations and workshops on Blue Economy. Besides, Bangladesh's Seventh Five Year Plan has called for twelve actions to be undertaken for maintaining a prosperous and sustainable Blue Economy, which include fisheries, renewable energy, human resources, transshipment, tourism and climate change among others. In 2017, the GoB has established the 'Blue Economy Cell' with the mandate to coordinate Blue Economy initiatives across sectoral ministries. According to a World Bank report, the gross value added to Bangladesh in 2014-15 from ocean economy was US$ 6,192.98 million which was around 3.33 % of the Bangladesh economy.[13] However, Blue Economy has the prospect of contributing to Bangladesh's economy on a much higher level. The Ministry of Foreign Affairs (MoFA) has identified 26 potential Blue Economy sectors.

The Government of Bangladesh defines the Blue Economy concept as a sustainable pathway forward for growth of the ocean economy. According to the Seventh Five Year Plan, "Blue Economy comprises activities that directly or indirectly take place in the seas, oceans and coasts using oceanic resources and eventually contributing to sustainable, inclusive economic growth, employment, well-being, while preserving the health of ocean." Bangladesh's approach to Blue Economy also states that Blue Economy requires a balanced approach between conservation, development and utilization of marine and coastal ecosystems, all oceanic resources and services.[14]

Figure 4: Blue Economy Components



Source: PG Patil, *Blue Economy*, p.18

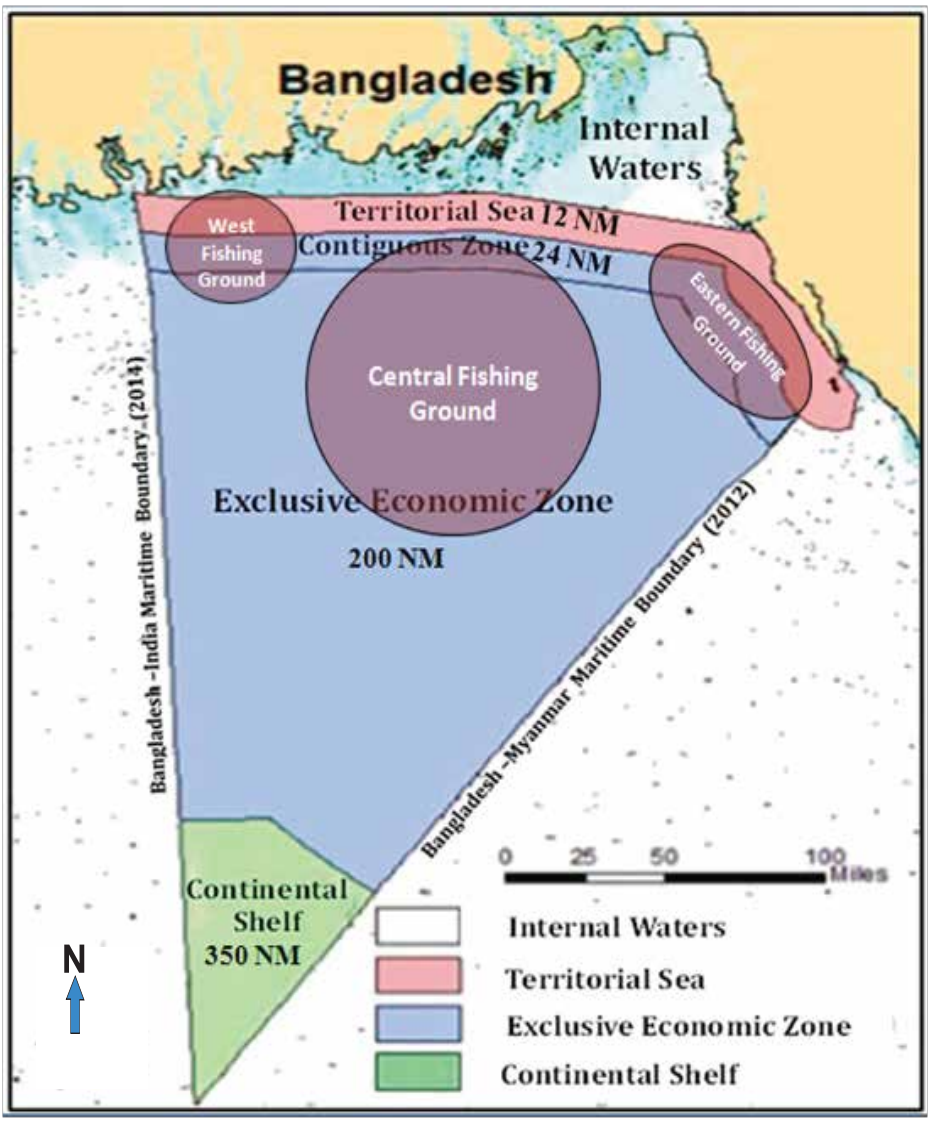
Each of the group of components has their own set of challenges. While harvesting the living resources, the concern is balancing between economic gain and ecological sustainability. There is also need to explore ways to benefit from the existing bio-diversity in the Bay of Bengal. In the extraction of the non-living resources, there is need to find ways to attract private investment and develop effective regulatory framework that allows Bangladesh to efficiently use its resources.[15] In case of other sea related economic activities, the challenge is to build large scale infrastructure necessary for port and transportation services. On the other hand, in protecting the sea the challenge lies in developing an effective monitoring and evaluation system that will be able to effectively measure the ocean health. Having a strong marine surveillance system is also included in this category, which is a requirement for all other Blue Economy activities to go unhindered.[16]

Resource Stock at Bay of Bengal

It is estimated that Bangladesh has acquired 118,813 square kilometers of the Bay of Bengal. The areas of resources include 200 nautical miles of exclusive economic zone and over 354 nautical miles of resources on seabed (continental shelf). It is estimated that the resources from the sea of Bangladesh constitute 81 percent of the resources existing in its land territory. In the sector of harvesting living resources only 15.41 % of the total fisheries come from marine sources and out of 6.37 lakh Metric Ton (MT) of marine fishery production in 2016-17, 5.29 lakh MT came from artisan fisheries. At present, mechanized boats and industrial trawlers can catch fish up to 70

kilometers from the shoreline out of the total of 660 kilometers available. Bangladesh yet to catch fish beyond the 100 meter depth of the sea and utilize the scope of marine aquaculture or mariculture. Marine fish accounted for 16 percent of the total production of 43.34 lakh tonnes in fiscal 2017-18. Bangladesh is estimated to catch only 0.70 million tons of fish every year out of the total 8 million tons of fish available in the Bay of Bengal.[17]

Figure 5: Sea Area of Bangladesh, Resource extraction limited up to Contiguous zone including fishing



Source: *UN Food and Agricultural Year Book*, 2014

It is worthwhile to mention that 15 percent of the protein is provided from sea resources for the people across the world. Natural gas and oil constitute 30 percent of the sea resources and over 50 percent of magnesium is extracted globally from the seas.[18] Even life-saving medicines could also be obtainable from these resources. According to experts, the silt on the adjacent sea area in Bangladesh contains valuable minerals such as uranium and thorium besides a large number of 'clay' which constitutes raw materials of cement. Experts believe that there exist 13 heavy mineral-rich silts in the adjacent sea areas of Bangladesh, such as ilmenite, garnet, colemanite, zircon, retile, and magnetite which, according to them, are more valuable than gold. The sale of these minerals could earn billions of dollars for Bangladesh. It is significant to note that Bangladesh's trade is carried out mainly through the sea and that a USD-45-billion trade is possible for Bangladesh.[19] It is estimated that 5 percent of the country's GDP could be acquired by 2030 from the resources of the sea. Bangladesh could be a developed country by 2041 if the resources are properly extracted and adequately used.

Armed Forces Contribution

Among the components of Blue Economy under protection of sea Bangladesh has undertaken a successful coastal green belt back in the 1990s. Recently, the government has initiated program for greening the new islands in the Bay of Bengal, which is a positive initiative. In addition, Bangladesh needs to think about marine waste management to protect its sea. Bangladesh Army engineers developed marine drive along the sea beach of Cox's Bazaar to Teknaf for coastal protection and marine tourism.[20] On the other hand, ensuring the security of the Bay is crucial for expansion of ocean-based industries. Therefore, Bangladesh needs to strengthen its maritime surveillance through strengthening Navy and Coast Guard. Eighty per cent of the US$ 78 billion annual overseas trade of Bangladesh is handled by Chattogram Sea port alone. To reduce the burden, government has already invested in several sea port facilities, like Sonadia, Matarbari and Payra (which is the third deep sea port) .[21]

In addition to upgrading the infrastructure, improving the quality of port services including security development of the entire area already been looked after by Bangladesh Army. Along with the development work, Rooppur, Rampal and Matarbari coal based power plant development supervision also monitored by Bangladesh Army. Most of Bangladesh's seaborne cargo is carried by foreign cargo ships. Bangladesh Coast Guard ensures coastal and river protection where as Bangladesh Navy assures secure sea lane at sea. Bangladesh Naval Aviation Maritime Patrol Aircraft and Bangladesh Air Force's aerial surveillance by search and rescue helicopter ensures safety of coastal and sea area. Protection of sea lane by Armed forces reduces shipping insurance cost by one third in the Bay of Bengal which ultimately increases shipping flow on the ports and directly contributed to national revenue.[22]

Figure 6: Power plant, energy platforms and Maritime surveillance by Armed Forces

Source: M Khurshed Alam, *Bangladesh Maritime Challenges in the 20th Century*, p.173

In the sector of extracting non-living resources the coastal belt from Patenga to Teknaf has been explored with the discovery of 17 deposits of potentially valuable minerals. These valuable minerals can contribute to various industries like glass, paper, etc. Bangladesh's offshore energy exploration is still far away from reaching its optimal level. According to the MoFA website 19 exploratory wells were drilled in the Bay of Bengal up until 2014 and it resulted in two gas discoveries near Sangu river mouth and the Kutubdia Island.[23] Bangladesh is said to have great potential for ocean-based technology such as wind, tidal and wave energy. Protection of such land based resource and sea extracted minerals are the nation building duty of Armed forces to ensure sustainable development.

Blue Economy Footsteps for Bangladesh

There are some common practices that Bangladesh can follow in order to explore its Blue Economy potentials. Besides, Bangladesh may take note of the innovative ideas initiated by other countries and apply them in viable context. Bangladesh needs a national plan to develop the Blue Economy. Countries considered at the forefront of Blue economy implementation, i.e., Ireland, Seychelles, South Africa and EU have devised their own Blue Economy plan. Notably, purpose of the Blue Economy plan should be to establish a framework that can guide the planning and development of maritime activities in a rational and sustainable manner for social and economic development of Bangladesh. Thus, for developing the Blue Economy plan in Bangladesh, stakeholders in all potential Blue Economy sectors and coastal communities need to be consulted. However, experts point out that Bangladesh first needs to focus on human resource development and capacity building before developing a well-articulated national maritime policy which will take time.[24]

It is necessary to formulate and strengthen legal frameworks to better integrate Blue Economy considerations. For Bangladesh, the starting point could be the ongoing efforts to design the Integrated Coastal and Ocean Management Policy as well as the various Blue Economy sectoral policies under review or design. Developing Blue Economy institutional framework which covers the gamut of administrative and operational maritime entities is required to actualize Blue Economy. However, at present, maritime affairs in Bangladesh are managed without any central coordination. There are many agencies involved, e.g., the Navy, the Coast Guard, Ministry of Fisheries and Livestock, Department of Energy and Mineral Resources, Ministry of Shipping and so on. Therefore, institutions operating independently are yet to have for proper coordination and accountability of the Blue Economy activities. For greater coordination, a central coordinating body is necessary given the increased level of activities in maritime areas. Bangladesh can follow the path of Mauritius and Seychelles by establishing a designated Ministry of Blue Economy. Experts believe that a separate department for ocean affairs should not be placed in any particular Ministry rather representatives from all other ministries relevant to ocean management should constitute such bodies. Nevertheless, the Maritime Affairs Unit at the Ministry of Foreign Affairs and the launching of a 'Blue Economy Cell' at the Ministry of Power, Energy and Mineral Resources have been a good start.[25]

Bangladesh needs to develop its resource exploration and extraction capacities. It needs to expand comprehensive technological and technical knowhow required for effectively exploring, drilling and extracting marine resources. Bangladesh needs to carry out a comprehensive and pragmatic survey of marine resources. It will unveil the vastness of marine resources. The importance of having a satellite for maritime survey and research is of utmost requirement. Bangladesh now has its own satellite which can be used for maritime survey along with other expedition in future. Besides, with the help of the satellite, ships and vessels navigating through the country's rivers and sea will be able to maintain communication with each other and prevent accidents.[26] Prioritizing higher education and better research facilities is essential in order to utilize sea resources for the economic development of the country. Bangladesh needs to have a strategic plan to prepare skillful human resources for maritime sectors. An economy can never be successfully established unless and until it is cultivated and shaped from the root level. Therefore, the government's initiative to establish a Maritime University was a significant decision. Besides, Bangladesh should try to build a sea-based scientist community following the examples of Australia and European Union (EU) which have emphasized on the significance of research and innovation in developing Blue Economy. So, the establishment of the Bangladesh Oceanographic Research Institute (BORI) and Bangladesh Institute of Maritime

Research and Development (BIMRAD) by the government are welcoming steps to the creation of marine scientific community.

It is also important to ensure that the new initiatives do not damage the ability of the natural world around us to thrive and continue to provide its critical services. The World Bank says that the changing status of ocean ecosystems may pose a significant threat to the future growth of ocean economy of Bangladesh. The three drivers of change, viz., increasing fishing capacity, coastal development and pollution may have considerable impact on these ecosystems. According to Charles S. Clogan, two policy frameworks are particularly important for resource and environmental management relevant to the Blue Economy. One is Integrated Coastal Zone Management (ICZM) and the other, more recent framework is Marine Spatial Planning (MSP). These policies are all based on the setting of limits on human activity and spatial arrangements of ecosystems. MSP is developing rapidly in many areas, i.e., the EU and Australia. Small island states like Belize also have their own integrated MSP, which prioritizes marine conservation.[27] Unfortunately, Bangladesh is yet to establish ocean governance at the centre of policymaking which is necessary to adopt MSP for sustainable ocean governance in the Bay of Bengal. Therefore, Bangladesh is required to push policies in cooperation with other countries to protect the ocean from the effects of climate change, pollution and overfishing. Thus, development of environmental policies and regulations geared towards conserving, managing, protecting and sustainable use of aquatic and marine ecosystems is necessary.

Suggested Policy Framework

Based on a range of international experiences, academics and policymakers suggest four steps to implement Blue Economy, i.e., Measure, Manage, Invest and Monitor, which are relevant for Bangladesh as well.

First, measure the status of the ocean economy and ecosystems at the national level, as well as external driving forces such as climate change. In this regard, it is necessary to develop an ocean account to maintain a snapshot of the output from the country's ocean economy. For instance, China has launched an accounting system to measure the ocean economy.

Second, manage the interaction between the ocean economy and ecosystems, and among sectors. The ultimate success of a country in achieving Blue Economy policy objectives for sustainable development of the ocean space and resources under its jurisdiction will depend upon the management decisions of public agencies charged with regulating ocean use. The essential task of these public agencies is to set and enforce rules for the ocean economy that limit resource extraction and pollution levels.

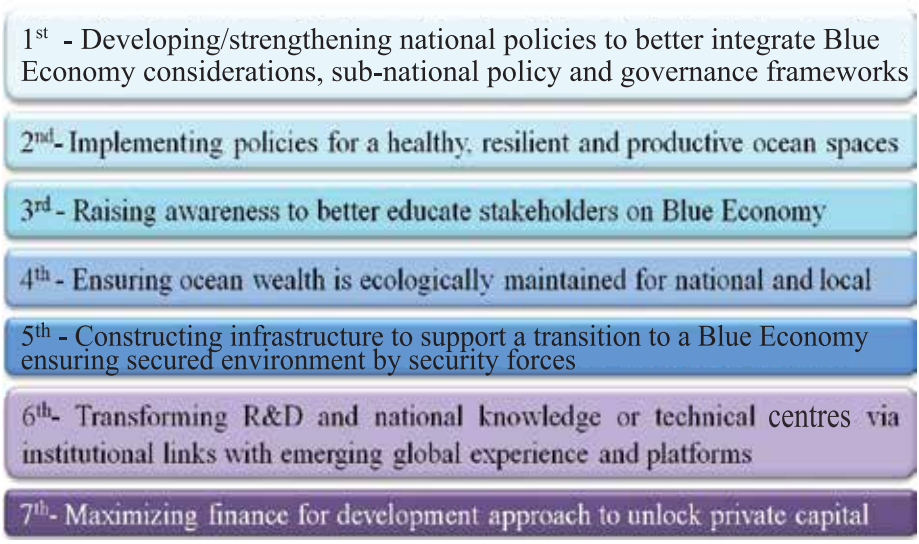
Third, invest in the transition to the Blue Economy through clear principles and processes that encourage sustainable growth in private

investment.

Fourth, monitor the progress towards agreed targets for the country's Blue Economy policy objective is important.

P.G. Patil identifies seven key elements of a Blue Economy policy direction for Bangladesh. The study provides a comprehensive list of recommendations for developing Blue Economy.[29]

Figure 7: Seven key elements of a Blue Economy policy direction for Bangladesh



Source: PG Patil, *Towards Blue Economy of Bangladesh,* p. 69

Finally, there is no alternative to pursuing Blue Diplomacy vigorously as tangible international cooperation is essential for securing meaningful progress in Bangladesh's Blue Economy. The present government has been making concerted efforts to reach out to the international community using conferences and conclave on Blue Economy. Bangladesh should actively engage with the Indian Ocean Rim Association (IORA), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), Indian Ocean Naval Symposium (IONS), etc. in the development of a regional Blue Economy shared vision and strategic priorities to guide future investment and a means to secure the development interests. More foreign investment should be forthcoming in this respect. If needed, the country can go for foreign assistance in the form of loans and grants. For instance, as mentioned earlier, Seychelles has issued one of the world's first blue bonds for fisheries management investment based on guarantees from the World Bank and Global Environment Facility.[30] However, experts argue that Bangladesh needs to be cautious with respect to over-reliance on foreign funds and donation. While dialogue and

cooperation at various multilateral fora will continue, the country's diplomacy will need to focus, in particular, on the region close to Bangladesh. Therefore, the country should take concrete steps through bilateral or multilateral engagements for information sharing, joint management, joint surveillance and joint disaster management programmers with its littoral neighbours.

Recommendation

Bangladesh is keeping interested in advancing its Blue Economy and looking at ways to utilize its vast sea territory. So far, the country has explored only a small number of Blue Economy sectors such as fisheries and aquaculture, shipbuilding, ship breaking, salt generation and port facilities. Nevertheless, most of these sectors are still operating in traditional methods and there are opportunities for introducing innovation and technology for further expansion. Moreover, there are a number of Blue Economy sectors with great economic potential, e.g., seafood processing, marine biotechnology, exploration of oil, gas and other minerals, desalination and blue carbon, where Bangladesh's exposure is limited or absent. Therefore, exploring these sectors will be beneficial for the country. Thereby the key reformations can be mentioned according to this Table below:-[31]

Table 1: Key Reformations to Blue Economy of Bangladesh

Recommended Key Reformations to Blue Economy of Bangladesh			
Sector	**Policies**	**Law and Acts**	**Responsibilities**
Coastal Protection	Bangladesh Climate Change Strategy and Action Plan (BCCSAP) National Action Plan for Adaptation (NAPA)	Climate Change Trust Act 2010	Bangladesh Armed Forces, i.e. Army, Navy and Air Force, Coast Guard, Ministry of Environment & Forests Disaster Management Information Centre (DMIC) of Ministry of Food and Disaster Management
Existence of Bio-Diversity	Coastal and Wetland Biodiversity Management Plan	Wetland Protection Act, 2000; Environment Conservation Act, 1995, 2000, 2002; Environmental Conservation Rules, 1997, 2000, 2001; National Conservation Strategy, 2005; National River Protection Commission Act, 2013; Forest Act 1927; Wildlife Protection and Security Act, 2012	Ministry of Environment and Forests The Bangladesh National Herbarium
Waste Disposal	Bangladesh Water Act	Integrated Water Resources Management (IWRM), 2005	Ministry of Water Resources
Energy	Renewable Energy Policy, 2008; National Energy Policy, 2004	Bangladesh Petroleum Act, 1974	Ministry of Power, Energy and Mineral Resources (MoPEMR); Sustainable and Renewable Energy Development Authority (SREDA); Bangladesh Power Development Board (BPDB) Blue Economy Cell

Source: Author's self - construct

Conclusion

It is now well recognized that oceans hold an incredible potential for meeting the world's ever-growing economic demand. The concept of Blue Economy is becoming popular with policy makers globally, and countries are taking various initiatives to adopt it. There is no universally accepted definition of Blue Economy, but it can be said that the Blue Economy is a way to maximize the economic value of marine resources in a manner that preserves sea's overall health. The components of Blue Economy include different ocean related industries, economic activities as well as measures to protect the marine life and environment. The Blue Economy experiences of other countries could be the guiding lessons for Bangladesh. For Bangladesh, a national plan is required that will outline the roadmap for Blue Economy initiatives across sectors. The formulation process of such policy has to be participatory and inclusive. Besides, the government needs to formulate laws that will facilitate the Blue Economy industries.

Developing Blue Economy institutional framework which covers the gamut of administrative and operational maritime entities is required to actualize Blue Economy. However, at present, maritime affairs in Bangladesh are managed without any central coordination. There are many agencies involved, e.g., the Navy, the Coast Guard, Ministry of Fisheries and Livestock, Department of Energy and Mineral Resources, Ministry of Shipping and so on. Therefore, institutions operating independently are yet to have proper coordination and accountability of the Blue Economy activities. For greater coordination, a central coordinating body is necessary to increase level of activities in maritime areas.

Given the broad nature of Blue Economy, coordination within and among the various government organs like Armed Forces, Para military and Ministries are crucial. Since the idea of Blue Economy is new in Bangladesh, capacity building across the sectors are essential. In this regard, focusing on education, research, coastal security and innovation needs to get priority. Lacking indigenous expertise and funds, Bangladesh has to seek partnership with foreign countries to develop its marine sector. Bangladesh can continue pursuing blue diplomacy and take lead in Blue Economy initiatives in the Bay of Bengal. In addition, it must be ensured that economic activities do not harm marine environment and ecosystems where Bangladesh Armed Forces can play vital role for the protection of national resources. Achieving these goals and priorities are achievable but time demanding. Nevertheless, the National goodwill and good governance paves the way towards sustainable development where Armed Forces plays vital role in assuring security and transportation of national resources for this potential developing sector of Blue Economy.

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Brief Biography

Commander Md Mehadi Amin Miah, (G), psc BN, was commissioned in Bangladesh Navy on 1st January 1999. He did his basic training from Royal Malaysian Navy. He has completed his Missile Command Course from FAC School and Maritime Warfare & Tactics course from SMWT. He completed his Gunnery specialization from BNS Issa Khan. He has qualified his staff course from Defence Services Command and Staff College, Mirpur, Dhaka. He has served onboard BNS ALI HAIDER, BNS OSMAN, BNS MADHUMATI, BNS NIRBHOY, BNS BHATIARY and commanded MISSILE BOATS, 41 PCS and Mine Sweeper BNS SUROVI. Beside seafaring tenure onboard ships, he has completed his mission in SUDAN as a member of Force Riverine Unit BANFRU-6. He has served in Armed Forces Division in Operations Directorate as G-2 (Ops) Navy and Secretary to PSO AFD for three years. At present he is serving as Deputy Director of Naval Intelligence at Naval Headquarters.

1971 Liberation War of Bangladesh: Glimpses of Multidimensional Naval Warfare

Commander Mohammad Yusuf Alam, (L), psc, BN

Introduction

The Liberation War of 1971 was fought by our valiant fighters named Muktibahini against regular armed forces of Pakistan. Independence is legal right of any nation which cannot be suppressed by power and might. As such, freedom of Bangladesh could not be restraint by Pakistani Government with military might. To fight a war in a geographical location like Bangladesh, naval operations play a vital role. Throughout the confrontation, India patronized the Muktibahini and finally involved herself on a direct confrontation with Pakistan. Special warfare at maritime domain and Indian eastern fleet operations played a very significant role on the outcome of the war and contributed immensely towards the independence of Bangladesh. This was the Liberation War where one can have glimpses of almost all sorts of naval warfare recorded in history.

Formation of Nau Commando[1] unit, their special operations expedited the independence of Bangladesh. Offensive minefield was laid down at Pasur River by Nau Commando in the code name of 'Operation Hot Pants.' Defensive minefield was laid down by Pakistani Force near Karnaphuli channel and finally post war mine clearance operation was conducted by Soviet Union. All sorts of mine warfare were seen in this war. Submarine and Anti-Submarine Warfare (ASW) was surfacing with the deployment and neutralization of Pakistani Submarine Ghazi. Indian Navy (IN) deployed aircraft carrier INS Vikrant and operated various aircraft which showcased effective Maritime Air Operation (MAO). Completely blocked Pakistani naval platforms at her harbours have taught physical example of blockade. Finally, involvement of naval platforms belonged to superpowers USA and Soviet Union influenced the outcome of the war and imparted technical knowhow relating to gunboat diplomacy.

This paper will highlight various aspects of special warfare by Nau Commandos and their impact on the outcome of the war. Both offensive and defensive form of mine warfare by the parties during the war will be discussed. There will be also discussion on submarine and ASW with the involvement of PNS Ghazi, MAO particularly from INS Vikrant. Finally, deployment of the naval assets of super powers in the form of gunboat diplomacy will be highlighted according to the history of Liberation War. At the end, analysing the naval warfare during Liberation War 1971, few lessons will be derived for future reference.

Aim

The aim of this paper is to portray vital roles played by the glimpses of multidimensional naval warfare during Liberation War 1971.

Historical Background of 1971 Liberation War

War does not wage within a day. People never get their rights unless asked for. This can be observed by a chronological sequence which led people of East Pakistan (now Bangladesh) to take up arms in 1971. A quick review of the background history of Liberation War is given below:-

a. 1947: Partition of the sub-continent and birth of India and Pakistan with freedom from British colonial power.

b. 1952: Language Movement by Bengalees for recognition of BANGLA as a State Language of Pakistan.

c. 1954: General election of Pakistan.

d. 1966: Six Point Movement by the Bengalees.

e. 1969: General mass upsurge.

f. 1970: General election and formation of National Assembly.

g. 07 March 1971: Historic speech of Bangabandhu Sheikh Mujibur Rahman at the Race Course Maidan (now Suhrawardy Uddyan) giving the clarion call for emancipation of the masses from Pakistani Colonial yoke through complete freedom struggle.

h. 25 March 1971: Pakistan forces crackdown on the common masses of Dhaka in the code name 'Operation Search Light.'

On the night of March 25, 1971 Pakistani occupation forces started carrying out genocide in this country. To survive from the massacre, the Bengalees confronted the Pakistani military and practically Liberation War started. With the intention to fight for the liberation of the country, 8 out of the 13 courageous Bengalees deserted from submarine training at France. They arrived in India seeking political asylum. With utmost honour and pride, the names of these 8 valiant sailors are mentioned below:-[2]

a. Mohammad Rahmatullah, Bir Protik

b. Syed Mosharrof Hossen

c. Aminullah Sheikh, Bir Bikram

d. Mohammad Badiul Alam, Bir Uttam

e. Abdul Wahid Chowdhury, Bir Uttam

f. Mohammad Ahsan Ullah, Bir Protik

g. Abdur Rakib Mia, Bir Bikram

h. Abidur Rahman, Bir Bikram

During the Liberation War, the then East Pakistan was divided into 11 Sectors. Each Sector had a Commander and demarcated area of responsibility except Sector 10. It is said that the area of responsibility of Sector 10 was the coastal belt but in reality its operation was spread all over the country. Due to the essence, naval operation prevailed in sea, air and land.[3]

Map showing Sectors during Bangladesh Liberation War 1971

Source: *Banglapedia*, Vol 10, Asiatic Society of Bangladesh, Dhaka, 2012, p.351

Glimpses of Multidimensional Naval Warfare

Special Warfare by Nau Commandos

a. **Formation.** The heavy dependence on sea lanes and river routes by the Pakistani forces influenced Muktibahini to form a group of Nau Commandos. The aim was to disrupt the logistic chain of Pakistani force. It can be achieved by sabotage and destroying ships and vessels in the ports. A number of sailors who had deserted from Pakistan Navy and 600 volunteer students formed Nau Commando. On May 23, a secret training camp with code name 'C2P' was established on the bank of river Bhagirathi. On 04 Aug 1971, Nau Commando force was raised with strength of 499.

b. **Operation Jackpot.** Operation Jackpot bears the testimony of effectiveness of Special Forces operation in maritime conflict. Following is a brief description of Operation Jackpot:-

(1) **Organizational Structure for Operation.** For effective naval operation, naval sector was divided into 4 task groups. Each task group was sub-divided into 4 task units. Again each task unit was further divided into 10 task elements and every task element was consisted of 3 frogmen. The targets were Chattogram, Mongla, Chalna, Narayanganj, Daudkandi and Chandpur. The first co-ordinated attack code named 'Operation Jackpot' was launched on the dark night of 15/16 August 1971 against sea port of Chattogram, Mongla and the river ports of Narayanganj, Chandpur and Barisal.

(2) **Operation.** The commandos entered into the port under the camouflage of vendor and carried out reconnaissance to identify targets. In order to launch coordinated attack final clearance was given by playing two popular Bengali songs on Akashbani radio channel on 13 and 14 August 71. The Operation was carried out simultaneously in all the ports with great success. It had serious impact on foreign shipping lines. Total 16,000 tons sunk and 14,000 tons damaged.[4]

Photo 1: Damaged Ship after Operation Jackpot, 1971

Source: http://www.marinavasca.eu/images/marinasauxiliares/Buque-hundido-por-los-guerrilleros-bengalies.jpg retrieved on 14 May 2019

(3) **Impact on Liberation War** Contribution of naval commandos occupies a special chapter in the history of the Liberation War of Bangladesh which is mentioned below:-

(a) Interrupted smooth flow of Pakistani logistics through the sea routes.

(b) Pakistani lost lots of ships and personnel.

(c) Sea ports became inactive causing to stop export-import which severely affected the economy of the country.

(d) Created food crisis all over the country thus embarrassed the Pakistan Government.

(e) Handicapped free movement of Pakistan army through the river routes.

(f) Shattered the morale of Pakistan forces.

(g) Caught the attention of the world towards the war.

(h) Shipping cost increased in a considerable amount.

Offensive Mining by Nau Commandos (Operation Hot Pants)

With the success of Operation Jackpot, it was formally decided to form Bangladesh Navy by Mujibnagar Government at the end of August 1971. The decision, thereafter, was implemented by collecting two old pilot boats from Indian Government as converted river patrol craft from Garden Reach Shipyard, Calcutta. These 105 feet long; 35 feet wide boats having a speed of 15 knots were fitted with two 40/60 Bofor gun and could carry five MK-II British

ground mines. They were named as Padma and Palash. A total of 49 Bangladeshi crew boarded the vessels and commanded by Lt Cdr Roy Chowdhury, IN as there was no Bangladeshi officer available. Padma and Palash carried out mining in the Pasur River on 09 November 1971 under code name 'Operation Hot Pants.' On 10 & 11 November, five merchant ships sunk in the channel by mines and one EPR Vessel destroyed with five officers and 35 sailors on board.

Defensive Mining Operation by Pakistani Force (Sea Denial)

Fearing a possible amphibious landing the approaches to Chattogram Channel were mined by Pakistan Navy on 07 December 1971. This minefield was laid as defensive measure to deny the movement of Indian ships towards the harbour. Same mine field was subsequently reinforced by more mines on 09 and 12 December 1971.

Mine Clearance Operation by Soviet Union

After the independence of Bangladesh, a Soviet mother ship with 4 minesweepers arrived at the invitation of the newly formed state in January 1972. Mission was to sweep the Chinese mines from the entrance to Chattogram and clear the sunken ships from Karnaphuli channel.

Submarine and Anti-Submarine Warfare

PNS Ghazi, a diesel electric submarine built in USA was given to Pakistan Navy. She was a comparatively old platform but had long range capability and had thus been deployed on patrol 1500 miles away from Karachi. After sailing from Karachi on 17 November, Ghazi came to Bay of Bengal. During her passage she was ordered, not to reach within 150 miles of Indian coast. She arrived off Vishakhapatnam on 03 December and was on process of laying mines during the night of 03/04 December. Indian destroyer INS RAJPUT left the port to locate submarine but failed. Rajput dropped some random depth charges before returning to harbour. About 15 minutes later a loud explosion was heard off Vishakhapatnam. 3 days later debris including 3 dead bodies were picked up by some local fishermen. Subsequent investigation proved that it was Pakistani submarine Ghazi.

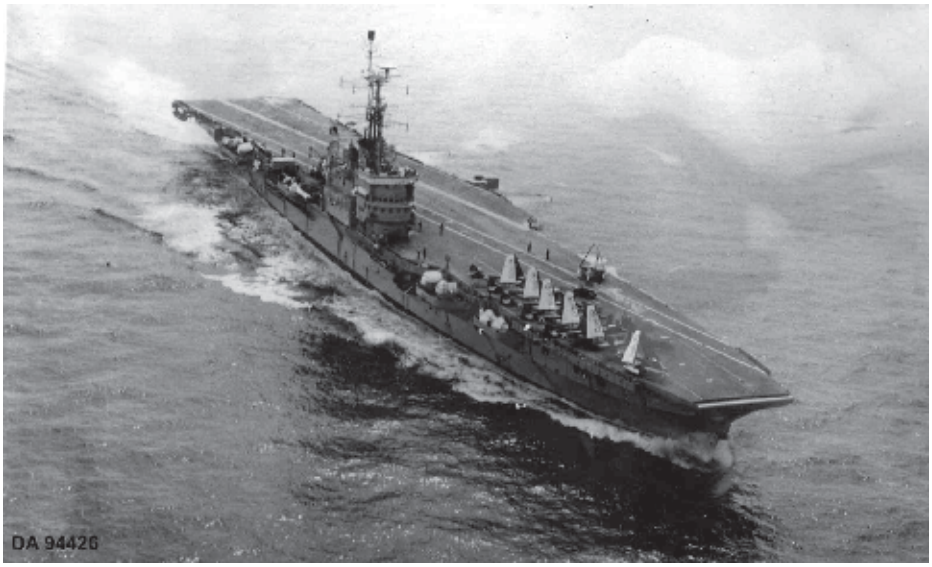
Maritime Air Operation

The Indian Air Force (IAF) carried out several sorties against Pakistan, and within a week, IAF aircraft dominated the skies of East Pakistan. The entire Pakistani air contingent in the east was grounded because of Indian airstrikes at Tejgaon, Kurmitola, Lalmonirhat and Shamsher Nagar. Sea Hawks from aircraft carrier INS Vikrant also struck Chattogram, Barisal and Cox's Bazar.[5]

Amphibious Operation

Having sea control over Bay of Bengal and air strike over Cox's Bazar Airfield, the Indians decided to carry out an amphibious landing at Cox's Bazar.

Photo 2: INS Vikrant



Source: http://storyofwars.blogspot.com/2015/02/ins-vikrant-before-1971-india-pakistan.html retrieved on 14 May 2019

A planned amphibious operation was mounted with landing ships Magar, Gharial and Guldar embarking naval clearance divers for beach reconnaissance. A battalion of Gurkhas was embarked on the merchant ship Vishwa Vijaya, which sailed from Calcutta (now Kolkata) on 12 December to rendezvous with waiting LSTs. The amphibious landings on Cox's Bazar beaches continued with nearly 150 Gurkha troops being put ashore by night of 15/16 December. INS Brahmaputra and INS Beas provided gun fire support during the landing.

Blockade

Indian Navy effectively enforced blockade to the East Pakistan ports. This ensured cutting off any escape routes for the stranded Pakistani soldiers. The nascent Bangladesh Navy (comprising officers and sailors who defected from the Pakistani Navy) aided the Indians in the marine warfare carrying out attacks.

Indian Participation in the War

The Pakistan Air Force (PAF) launched a pre-emptive strike on Indian Air Force bases on 03 December 1971. The attack was modelled on the Israeli Air Force's Operation Focus during the Six-Day War. The intention was to neutralise the IAF aircraft on the ground. The strike was seen by India as an open act of unprovoked aggression, which marked the official start of the Indo-Pakistan War. As a response to the attack, both India and Pakistan formally acknowledged the "existence of a state of war between the two

countries" even though neither government had formally issued a declaration of war. Three Indian corps was involved in the Liberation of East Pakistan. They were supported by nearly three brigades of Muktibahini and many more who were fighting irregularly. That was far superior to the Pakistani army of three divisions. The Indians quickly overran the country, selectively engaging or bypassing heavily defended strongholds. Pakistani forces were unable to counter the Indian attack, as they had been deployed in small units around the border to counter the guerrilla attacks by the Muktibahini. Occupation forces were also unable to defend Dhaka.

Gunboat Diplomacy by Super Powers

During the last phase of the war, both the United States and the Soviet Union deployed significant naval forces to the Indian Ocean. At the outbreak of war between India and Pakistan on 03 December, both super powers had only a nominal naval presence. The Soviet Union moved first by deploying Surface-to-Surface cruise missile (SSM) equipped ships from Vladivostok on 06-07 December to support the non-SSM equipped ships already in the Indian Ocean. On 10 December, the USA formed Task Force 74, consisting of the aircraft carrier Enterprise, the amphibious assault ship Tripoli, 3 guided missile escorts, 4 destroyers and a nuclear attack submarine, ordering them into the Andaman Sea shortly thereafter. In apparent response to the US Task Force the Soviet Union deployed another Task Group consisting of a 'Kresta' class cruiser, a 'Kashin' class destroyer and two submarines on 12-13 December. Finally, as the occupation force surrendered and East Pakistan was freed, the super power found no more interest to go for any conflict.[6]

Lessons Learnt

Lessons learnt from naval aspects of Liberation War are as follows:-

a. **Strategic Level**

(1) Sound maritime and naval strategy into the objectives.

(2) Allies with superpower.

(3) Good diplomatic relation with strong neighbour.

b. **Operational Level**

(1) Sea control or working sea control in own waters is essential.

(2) Use of available asset in crisis.

(3) Coordination amongst all arms is of paramount importance.

c. **Tactical Level**

(1) Protection of Sea Line of Communication (SLOC) and trade is important to sustain in war.

(2) Coastal defence is essential to protect invasion.

(3) Mine and Mine Counter Measure (MCM).

(4) Three dimensional capability is required to fight modern day war.

(5) Fleet air arm plays vital role.

(6) Protection of maritime installations.

(7) Shore based anti-air capability to defend enemy air attack.

(8) Guerrilla warfare and covert commando operations could render highest achievement in a terrain like Bangladesh.

Conclusion

To safeguard their existence and to get the taste of freedom, the Bengalees confronted the Pakistani military and practically Liberation War started. Valiant fighters formed Muktibahini to fight against Pakistani regular armed forces. The attacks sharpened and expedited the independence with the formation of Nau Commando. They conducted special warfare in the form of Guerrilla attacks. Operation Jackpot, most significantly, boosted the morale of the freedom fighters as it was a 100% success with zero casualties on the Muktibahini's end, and it put a dent in the confidence of Pakistani occupation forces. On the other hand, Pakistani regular forces lost their harmony with the loss of supply chain.

With the joining of Indian defence forces, Liberation War of Bangladesh got an accelerated momentum. Almost all sort of naval warfare was seen during the various stages of war. Mine warfare was chosen by both the parties. Defensive minefield was laid down by Pakistani Force at the harbour mouth of Chattogram channel. Offensive mine field was laid down by Nau Commandoes in the Pasur River. Pakistani submarine Ghazi was deployed 1500 miles away from Karachi. After sailing from Karachi on 17 November, Ghazi came to Bay of Bengal. She arrived off Visakhapatnam and was on process of laying mines during the night of 03/04 December. IN Destroyer Rajput left the port and dropped some random depth charges before returning to harbour. About 15 minutes later a loud explosion was heard and Ghazi was destroyed.

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Indian Navy effectively blockaded the East Pakistan ports, thereby cutting off any escape routes and restricted supply of provisions from West Pakistan. PAF launched a pre-emptive strike on IAF bases on 03 December 1971. The strike was seen by India as an open act of unprovoked aggression,

which marked the official start of the Indo-Pakistan War. Three Indian corps was involved in the 9-month War of Liberation. During the last phase of the war, both the United States and the Soviet Union deployed significant naval forces to the Indian Ocean. Since the occupation forces surrendered, the superpowers left from the scenario. Pakistani forces were unable to effectively counter the combined attacks by Indian Armed Forces and Muktibahini and thereby unable to defend Dhaka. Finally Pakistani forces surrendered on 16 December 1971 which marked the birth of Bangladesh after a bloody nine month War of Liberation beginning on 26 March.

Notes and References

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Brief Biography

Commander Mohammad Yusuf Alam, (L), psc, BN was commissioned on 01 July 2000 in Electrical Branch. He is a graduate in Electrical and Electronic Engineering from Khulna University of Engineering and Technology (KUET). In his service career, he served as Instructor at BNA in 2006 and 2008. He is an electrical specialist officer. He has completed Officers' Bomb Explosive and Improvised Explosive Device Disposal Course (OBE&IEDDC) from Engineer Centre and School of Military Engineering (ECSME) and Avionics Technology Course from Officers' Training School (OTS) of Bangladesh Air Force. He performed electrical officer's duty on board all categories of BN ships and staff duties at Coast Guard Headquarters and Sector HQ in Ivory Coast. He is pioneer Naval Aviation crew and type trained Avionics Engineer on Agusta Westland (AW109) helicopter. He is a graduate from Defence Services Command and Staff College (DSCSC), Mirpur. He also achieved Diploma from Turkish Joint Command Staff College (TJCSC), Istanbul. Presently he is appointed as Deputy Director Naval Aviation at Naval Headquarters. He is happily married and blessed with two sons.

Maritime Governance and BN Preparedness for Furthering Sustainable Maritime Economy

Commander Rezaur Rahman, (H2), psc, BN

Introduction

His Excellency Ban Ki Moon, 8th United Nations Secretary General (2007-2016) very aptly quipped, "Saving our planet, lifting people out of poverty, advancing economic growth…these are one and the same fight. We must connect the dots between climate change, water scarcity, energy shortage, global health, food security and women's empowerment. Solutions to one problem must be solutions for all." [1]

From this remark, it can be deduced that many of the problems that the earth is currently facing, are interconnected and our attempts to find isolated solutions for each of these problems were so far been ineffective. His emphasise on connecting the dots refers to the necessity of a global shift from the traditional brown economy to a sustainable economic model without any detrimental effect on the environment. Therefore, mankind needs to look for a holistic maritime governance that will advance the global economy, lift millions of people out of poverty, ensure food and energy security, ameliorate human and global health and above all, save the planet from the devastating consequences of climate change and natural calamities.

Bangladesh is a maritime nation, both geographically and historically. The Six Point Movement (1966), Territorial Waters and Maritime Zones Act (1974) testify our legacies and efforts for maritime jurisdiction and security, before and after the birth of our beloved motherland. However, the maritime perspective of this new-born country went in oblivion and Bangladesh has long been neglecting the enormous potentials that remained hidden beneath the seas.[2]

With over 167 million population increasing rapidly within a tiny land area of 1,47,570 km², the demand for food, energy and other resources have been putting much strain on her limited land-based resources.[3] Therefore, soon after the maritime dispute settlement with the neighbours, on 20 August 2014, honourable Prime Minister Sheikh Hasina presided a meeting with all maritime stakeholders and formulated a national strategic blue economy plan. All sustainable maritime economic activities were brought under one umbrella: National Blue Economy Initiative (NBEI).[4]

On 05 January 2017, National Blue Economy Cell (NBEC) was formally inaugurated at Energy and Mineral Resource Division and PetroBangla was assigned as 'Lead Organisation' to coordinate all blue activities. Since then, all concerned ministries / departments / organisations and other maritime

stakeholders quarterly update NBEC about their current activities and future planning (short, medium and long-term).[5]

At present, numerous projects are on-going in the maritime area under NBEI: coastal fishing, seismic survey, construction of floating LNG terminals at Moheskhali and Kutubdia, single point mooring with double pipeline, construction of Matarbari 1,200 MW power plant, etc. In near future, deep sea fishing, deep sea port activities, oil/gas transfer from ships at sea to Chittagong/Cox's Bazar via pipeline will start operation and special coastal economic zones will be established.[6]

However, transition to blue economy demands adoption of fundamental changes in policy, regulatory and security issues. Despite laudable efforts in reviving own maritime sector, Bangladesh is yet to reap the full benefits of NBEI due to the absence of effective maritime governance. In fact, we have a total of thirteen ministries, twelve departments and five agencies for controlling our maritime activities. The absence of maritime governance, national maritime apex body, lack of coordination among stake-holders and overlapping jurisdiction are posing serious challenges in our maritime sector.[7]

It is needless to mention that without developing effective maritime governance, Bangladesh is unlikely to achieve her desired goals in sustainable maritime economy.Therefore,the pursuance of NBEI demands better maritime governance in Bangladesh. In fact, some fundamental shift in policy is needed to undertake regulatory and governance framework to promote national maritime governance and converge towards sustainable economy.[8]

Aim

The aim of this paper is to propose measures for development of maritime governance in Bangladesh and recommend BN preparedness in organisational, technical and personnel aspects to effectively combat NBEI related security challenges.

Development of Maritime Governance in Bangladesh

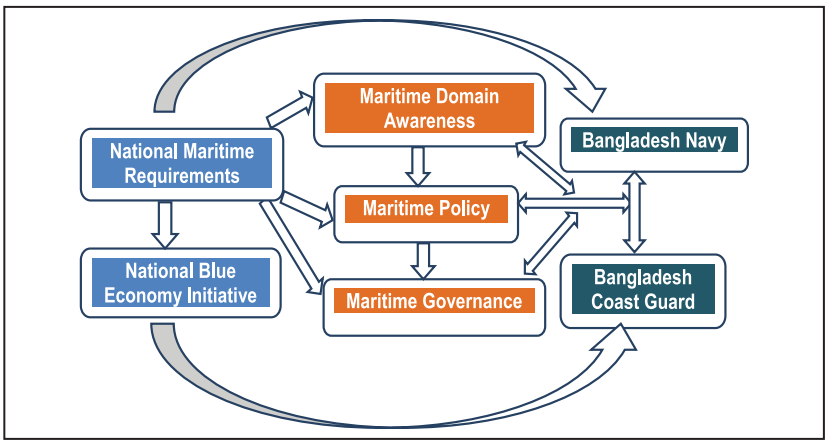
To promote maritime governance, Bangladesh should have a national maritime apex body, integrated maritime policy, one-stop maritime operations centre with representatives from concerned stakeholders, etc.[9] In the ensuing paragraphs, some propositions are put forward to promote maritime governance in Bangladesh.

a. **Maritime Affairs Division (MAD)**

For coordinated maritime management strategy, MAD may be established under PMO. The objective is to create integrated maritime governance mechanism to foster greater involvement of various stakeholders. The division may have officers from concerned

ministries, BN, BCG and maritime professionals.[10] Their activities may involve the prioritization, budgetary allocation,regional cooperation and development of ocean policy. The office may oversee maritime research and development and act as national maritime watchdog. However, formulation of MAD would require legislative endorsement in the form of Parliamentary Ocean Act.[11]

Figure 1: Maritime Governance and the role of BN, BCG

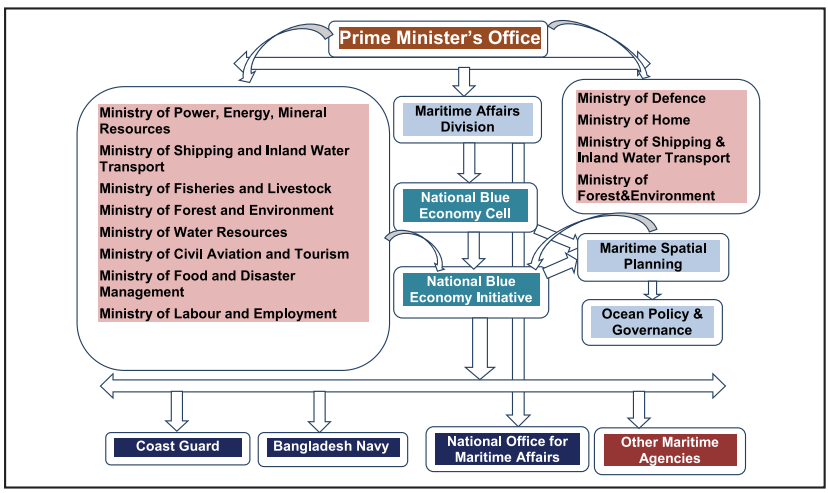


Source: Author's self-construct

b. **National Maritime Advisory Committee (NMAC)**

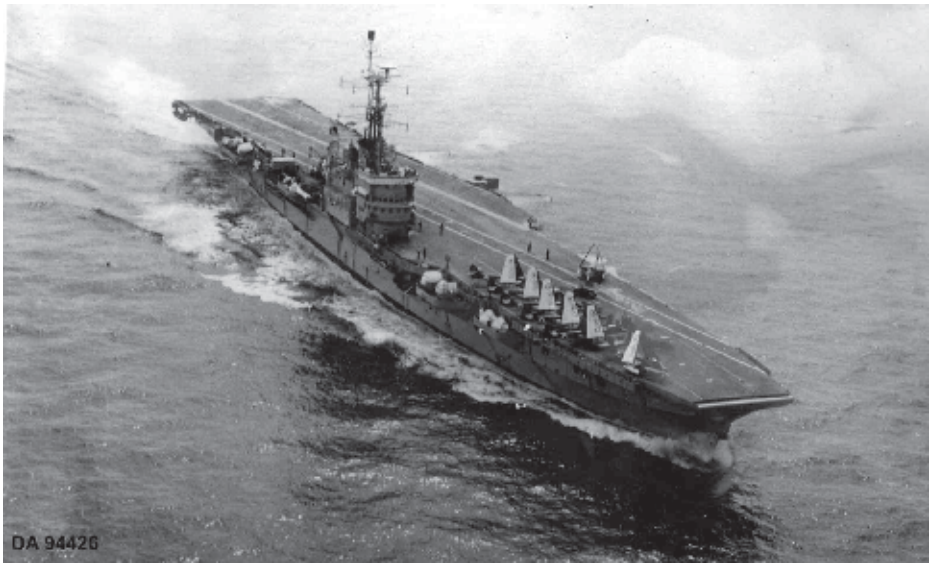
The NMAC may be established with experts of non-government interests, like industry, science, think-tank and conservation. Their main function may be to advise MAD on matters such as eco-system based marine planning, management and integration issues.[12]

Figure 2: Proposed Organisation of Maritime Governance



Source: Author's self-construct

Photo 2: INS Vikrant



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It is needless to mention that without developing effective maritime governance, Bangladesh is unlikely to achieve her desired goals in sustainable maritime economy.Therefore,the pursuance of NBEI demands better maritime governance in Bangladesh. In fact, some fundamental shift in policy is needed to undertake regulatory and governance framework to promote national maritime governance and converge towards sustainable economy.[8]

Aim

The aim of this paper is to propose measures for development of maritime governance in Bangladesh and recommend BN preparedness in organisational, technical and personnel aspects to effectively combat NBEI related security challenges.

Development of Maritime Governance in Bangladesh

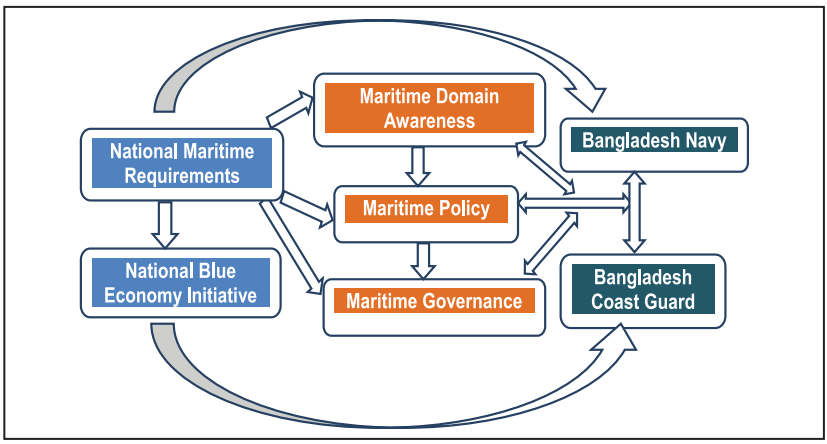
To promote maritime governance, Bangladesh should have a national maritime apex body, integrated maritime policy, one-stop maritime operations centre with representatives from concerned stakeholders, etc.[9] In the ensuing paragraphs, some propositions are put forward to promote maritime governance in Bangladesh.

a. **Maritime Affairs Division (MAD)**

For coordinated maritime management strategy, MAD may be established under PMO. The objective is to create integrated maritime governance mechanism to foster greater involvement of various stakeholders. The division may have officers from concerned

ministries, BN, BCG and maritime professionals.[10] Their activities may involve the prioritization, budgetary allocation,regional cooperation and development of ocean policy. The office may oversee maritime research and development and act as national maritime watchdog. However, formulation of MAD would require legislative endorsement in the form of Parliamentary Ocean Act.[11]

Figure 1: Maritime Governance and the role of BN, BCG

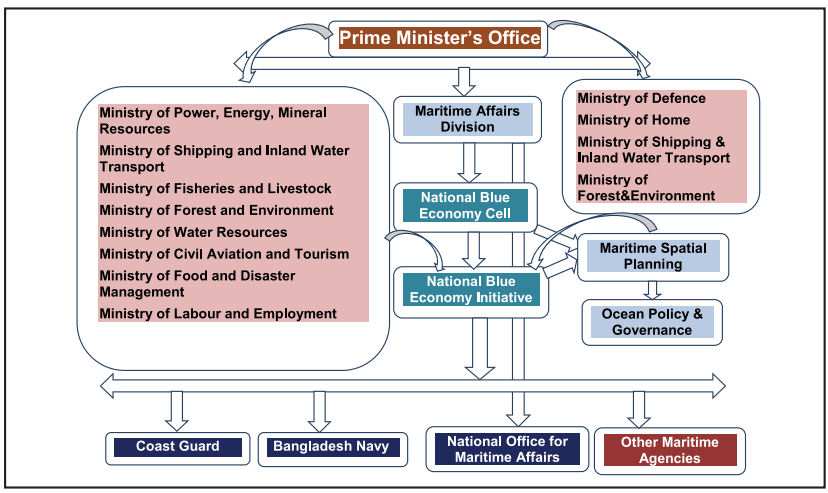


Source: Author's self-construct

b. **National Maritime Advisory Committee (NMAC)**

The NMAC may be established with experts of non-government interests, like industry, science, think-tank and conservation. Their main function may be to advise MAD on matters such as eco-system based marine planning, management and integration issues.[12]

Figure 2: Proposed Organisation of Maritime Governance



Source: Author's self-construct

milestone in achieving a coordinated and effective response, so as to minimize gaps and duplication of efforts during disaster.

In this paper, an endeavour has been made to depict the mechanism and procedure for integrating the Armed Forces during a disaster incident focusing on the importance of being resilient and developing interoperability. It has also strived to highlight the significance of AFD in building disaster resilience and promoting interoperability. In the process, the grey areas which demand more attention to improve upon have been discussed and finally, the paper has concluded with few recommendations.

Aim

The aim of this paper is to highlight the significance of AFD in building disaster resilience and suggest an approach to promote military-military and civil-military interoperability during disaster response.

Armed Forces Integration in Disaster Management

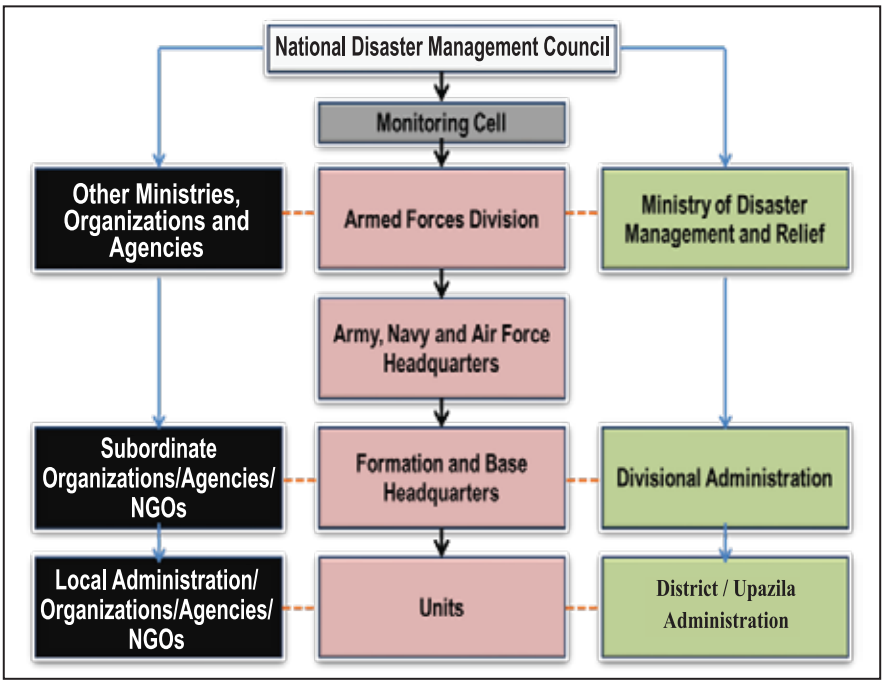
Present Approach: In the event of a disaster, it becomes imperative for the Armed Forces to respond quickly with its own management, communications and administrative machineries to assist the civil authorities. Bangladesh Army has to play a very important role in evacuation, rescue, relief and rehabilitation operations. Bangladesh Navy extends all assistance to the local administration of coastal areas during cyclone disasters according to their ability and resources. The role of Bangladesh Air Force in combating national disaster is important for search and rescue and emergency transportation of aid items. Salient features of Armed Forces Integration are as follows:-

a. **Modalities of Armed Forces' Participation**: The participation of Armed Forces is usually made under 'In Aid to Civil Power'. MoDMR is the prime government organ in this regard and it requests the assistance of Armed Forces. The prime role of AFD is to coordinate the employment of Armed Forces in disaster management and the overall relief operation. During a disaster, Army, Navy and Air Force personnel are deployed to the affected areas. To facilitate their work, AFD establishes a monitoring cell to coordinate with all concerned ministries and organizations.

b. **Integration of Armed Forces**: The apex body for the disaster is National Disaster Management Council (NDMC). The NDMC is headed by the Honorable Prime Minister. The committee consists of 33 members including three services chiefs and PSO, AFD who represents Armed Forces in the Inter Ministerial Disaster Management Coordination Committee (IMDMCC). When necessity of Armed Forces assistance becomes essential, the National Disaster Response Coordination group submits recommendation to the government for

cooperation of the Armed Forces. Government gives directives to the Armed Forces to provide necessary assistance to civil administration in pre-disaster or emergency response activities accordingly.

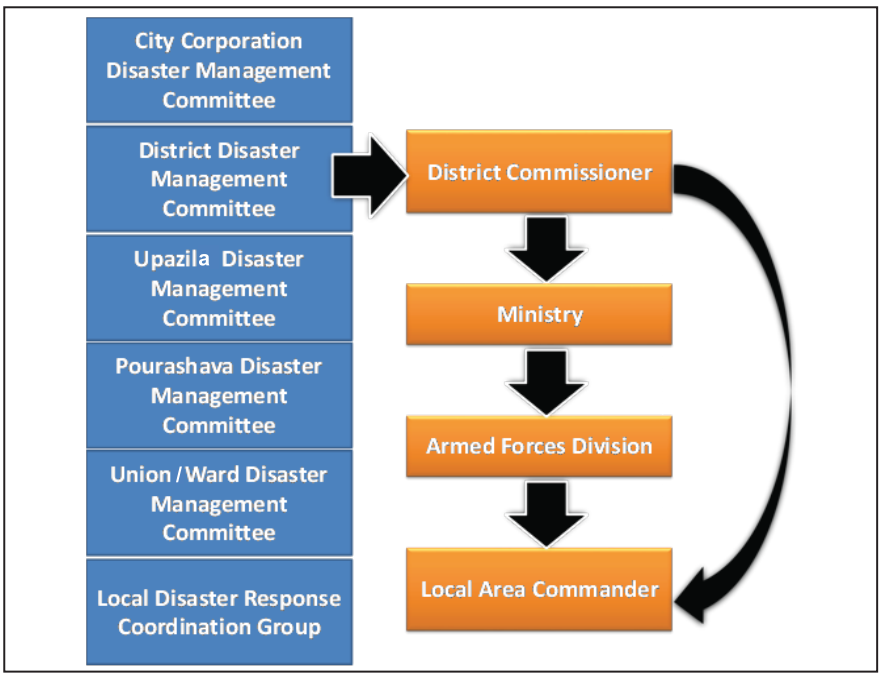
Figure-1: Procedure of Armed Forces integration during any disaster



Source: Draft Comprehensive Guideline for Armed Forces in Disaster Management[2]

c. **Procedure:** In the above figure, three procedures have been described. On right, working procedure of lead ministry, MoDMR with their division /district body, on centre, vertical and lateral coordination of AFD once involved and on left, working procedures of other ministries have been shown. AFD laterally coordinates with MoDMR and other ministries, organization and agencies involved in Disaster management. AFD guides the Service Headquarters regarding their employment, and coordinates the effort of three services. At Division level, the formation or base headquarters coordinates with the local administration and similar is done at the district level and below.

Figure-2: Response procedure during any disaster



Source: Draft Comprehensive Guideline for Armed Forces in Disaster Management [3]

d. **At a local level:** The District Disaster Response Coordination Group may submit recommendation to Deputy Commissioner to take cooperation from Armed Forces who then sends a demand note to the Armed Forces Division through MoDMR. In emergency he may seek cooperation directly from local armed forces authority informing the matter to MoDMR and Armed Forces Division as soon as possible officially.[4]

Disaster Resilience and Interoperability

Disaster Resilience: The impact of disasters on development, poverty and vulnerability have led to calls for improving disaster resilience. It generally means the capacity of households, communities and countries to cope with and adapt to the shocks and stresses associated with natural hazards. There is emerging evidence that disaster resilience has been effective in saving lives and protecting infrastructure, livelihoods, social systems and the environment. Building disaster resilience is more cost-effective and sustainable than the present combination of disaster relief and development aid.[5] It is already embedded in international policy frameworks for humanitarian action. However, the terminology of disaster resilience is relatively new and remains debated too.

Few definitions of disaster resilience are as follows:-

> i. Disaster resilience is part of the broader concept of resilience. It is the ability of individuals, communities and states and their institutions to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term changes and uncertainty.[6]
>
> ii. According to the Hyogo Framework for Action disaster resilience is the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure.[7]

In light of the above definitions, it can be determined that Disaster resilience is determined by the degree to which individuals, communities and public and private organizations are capable of organizing themselves. The key to resilience is adapting a suitable structure which will facilitate to organize and function with an integrated approach. The revised 'UN Plan of Action on Disaster Risk Reduction for Resilience: Towards a Risk Informed and Integrated Approach to Sustainable Development' also addresses the need for coherence to ensure more effective integration.[8] Thus effectively integrating with an existing team and resource is very important. However, it again seeks for a suitable structure where the additional resources and personnel will fit in and augment the entire system. AFD has significant contribution in developing such structure and effective integration procedure. Besides, AFD is also contributing in the development of policy, legislative and institutional frameworks for achieving disaster resilience.

Interoperability. Interoperability is a characteristic of a product or system, whose interfaces are completely understood, to work with other products or systems, at present or in the future, in either implementation or access, without any restrictions.[9] While the term was initially defined for information technology or systems engineering services to allow for information exchange, a broader definition takes into account social, political, and organizational factors that impact system to system performance. Interoperability refers to the ability of different military organizations to conduct joint operations. These organizations can be of different nationalities or different armed services (ground, naval and air forces) or both. Interoperability allows forces, units or systems to operate together. It requires them to share common doctrine and procedures, each other's infrastructure and bases, and to be able to communicate with each other.[10] Few pertinent definitions are as follows:

> i. Force interoperability is defined in NATO as the ability of the forces of two or more nations to train, exercise and operate effectively together in the execution of assigned missions and tasks. Additionally NATO defines interoperability more generally as the ability to act

together coherently, effectively and efficiently to achieve Allied tactical, operational and strategic objectives.[11]

ii. Interoperability is a measure of the degree to which various organizations or individuals are able to operate together to achieve a common goal. Commonly, interoperability involves parameters like standardization, integration and cooperation.[12]

From the above discussion it can be deduced that the definitions, standardization, integration and cooperation aspects appear to be very important to act together coherently and effectively. In other words to achieve interoperability the elements and resources has to be standardized which ensures a common understanding and similarity between the agencies. Lack of integration may be caused by diverse or non-interoperable training, organization and equipment. As such developing and promoting common standards, coordination methodologies and information exchange protocols between relevant stakeholders are very important. AFD through its contribution for DIMT, MNCC and INSARAG has significant endeavour in developing such structure and effective integration procedure.

Significance of AFD in Promoting Disaster Resilience and Interoperability

Disaster Response Exercise and Exchange (DREE): AFD in coordination with Ministry of Disaster Management and Relief (MoDMR) has taken number of initiatives in disaster management and risk reduction. One of such initiatives is organizing Disaster Response Exercise and Exchange (DREE) since 2010. Almost all the ministries with national and international NGO, humanitarian organizations along with foreign participants actively participated in this exercise.[13] These types of exercises help the individuals, communities and public and private organizations to organize themselves. It also helps in the formulation of a suitable structure and network which enables an *i*ntegrated approach by all the stakeholders. It helped to develop common understanding among the agencies through interactions, which will help effective coordination while working together in future.

Picture-1: Table Top Exercise during DREE 2017

Picture-2: Field Training Exercise during DREE 2017

Source: Archive of Joint Operations Section, Operations and Plan Directorate, AFD

Disaster Incident Management Team (DIMT):The effort rendered by AFD in establishing a common understanding regarding the integration of Armed Forces during disaster management is truly praiseworthy. AFD is working to put a shape to the Disaster Incident Management Team (DIMT). In order to effectively integrate with the existing team during a disaster, DIMT is one of the prime prerequisites. AFD is organizing DREE since 2010 where DIMT is practiced. It is an occasion where different stakeholders from home and abroad get the exposure to DIMT from the perspective of Bangladesh. They also get the opportunity to practice DIMT practically.

Development of Policy, Guidelines and Suitable Frameworks: AFD prepared a Earthquake Contingency Plan considering Dhaka City's vulnerability from earthquake. It includes damage assessment plan, Coordination requirement, Special Equipment and Transport, Manpower and Modality for Deployment etc. DREE is conducted in different cities of Bangladesh beside Dhaka. While doing this exercise, effort is taken to prepare complete contingency plan of different cities. So far, other than Dhaka, contingency plan of Sylhet, Chattogram and Mymensingh City are completed. AFD plans to prepare and update contingency plan of maximum possible cities during conduct of DREE in every year. Apart from the contribution in the preparation Standing Order on Disaster (SOD) in regard to the relevant portion of Armed Forces AFD is also working to produce a Comprehensive Guideline for Armed Forces in Disaster Management. Besides, AFD is also trying to introduce the international practices and structures which would ease the process of integrating the foreign assistance while needed. The Multinational Coordination Center (MNCC) SOP is one of such efforts which is also practiced during DREE.

Exercise Coordinated Response (COORES): Bangladesh has co-organized 'Coordinated Response' Exercise (COORES) from 02 to 04 Apr 19. AFD and MoDMR of Bangladesh jointly organized the exercise with Regional Humanitarian Assistance and Disaster Response Coordination Centre (RHCC). A total of 25 countries and 15 international non-government organizations (NGOs) took part in the exercise.[14] Country specific Multinational Coordination Center(MNCC) SOP of Bangladesh was prepared by AFD prior to COORES and was tested during exercise. Principal Staff Officer (PSO), AFD was present during the opening ceremony. Chief of Bangladesh Army (CAS) visited the concluding activities of joint disaster management exercise 'COORES 2019' in Singapore. Director General of Operations and Plan Directorate along with the Joint Operations Section of AFD was closely involved in the exercise, since the initial planning conference till the conduct of the exercise.

Picture-3: PSO, AFD during the Opening Ceremony of COORES 2019

Picture-4: Honourable State Minister, MoDMR and CAS observing the activities

Source: Archive of Joint Operations Section, Operations and Plan Directorate, AFD

Regional Consultative Group (RCG): Building upon the outcomes of the Asia-Pacific series of Conferences and related Guidelines, a multi-stakeholder Regional Consultative Group (RCG) on Humanitarian Civil-Military Coordination for Asia and the Pacific was formed in 2014 to act as a regional forum that brings together the humanitarian, civilian and military actors involved in disaster response preparedness planning and disaster response in the region.[15] RCG plays a significant role and renders sincere efforts for Humanitarian Civil-Military Coordination for Asia and the Pacific to enhance disaster preparedness and ensure effective operational readiness. Bangladesh as one of the five priority countries is surely given special attention by RCG. The chairmanship of the RCG is rotated among Member States on an annual basis. Bangladesh was the chair during the 4th session of the Regional Consultative Group (RCG) on Humanitarian Civil-Military Coordination for Asia and the Pacific in Dhaka from 24-26 January, 2019. A total of 150 representatives from 26 RCG member countries participated in the conference.[16] AFD had significant participation during the session as the military counterpart.

Picture-5: Honourable Prime Minister in the Inaugural Ceremony

Picture-6: Participants of the 4th Session of the RCG

Source:https://www.rsis.edu.sg/research/nts-centre/centre-resourcescnts/centre-activities

Specialized Equipment and Training: Armed Forces need to play a major role in carrying out rescue, relief and rehabilitation activities during disaster. This needs a coordinated planning, concerted effort, specialized training and appropriate equipment to able to respond quickly and efficiently. Dedicated Light, Medium and Heavy Urban Search and Rescue (USAR) team are there in every military formation to manage the disaster. There are a few ongoing initiatives for Specialized Equipment and Training. By the persuasion of AFD, Bangladesh Armed Forces is going to receive the third phase of the Disaster Management Equipment. Besides, regular Sub-unit level training during Military Operations Other Than War (MOOTW) training cycle is arranged. In addition, combined exercise with Fire Service and Civil Defence is also conducted regularly.

International Search and Rescue Advisory Group (INSARAG): INSARAG is a global network of more than 90 countries and organizations under the United Nations umbrella. INSARAG deals with urban search and rescue (USAR) related issues, aiming to establish minimum international standards for USAR teams and methodology for international coordination in earthquake response.[17] INSARAG Membership is open to all UN Member States, NGOs and organizations involved in USAR activities, and upon recommendation and approval by their respective governments. AFD acknowledges the effectiveness of INSARAG Guidelines and methodology for USAR operations to ensure standardized training and structures of international USAR teams. As such a separate chapter is also incorporated in the draft Comprehensive Guideline for Armed Forces in Disaster Management.

Urban Resilience Project: With the help of the World Bank, Department of Disaster Management (DDM) is running a project titled “Urban Resilience project”. The project aims at capacity building of the people, establishing a formal training institute for capacity building on Disaster Management, having a dedicated Disaster response force of INSARAG standard and so on. Armed Forces Division is a member of the implementation committee at this stage. To address the complex range of issues head-on, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank worked over three years with a group of national government authorities and technical experts to develop this comprehensive, multi-sectoral disaster risk reduction program.[18]

Ongoing Initiatives: Armed Forces Division has also prepared a web based database for Disaster Management related issues. Besides, we are working with MoDMR for a sustainable communication system during disaster named “Disaster Response Emergency Communication System (DRECS).” Armed Forces Division has prepared a web based database for Disaster Management related data. Following the exodus of forcibly displaced Myanmar Nationals in Bangladesh AFD had conducted proactive demonstrations on land slide in Cox’s Bazar area in 2018 and 2019.

Challenges of Military-Military and Civil-Military Interoperability

Despite remarkable achievement in managing disaster and promoting disaster resilience, few challenges need to be addressed to ensure the interoperability. These are as follows:-

a. Various international frameworks need to be practiced to facilitate an effective integration.

b. Effective communication system between various organisations and agencies needs to be developed.

c. A reliable information system as well as an effective database of all existing resources need to be developed for the timely planning and responses.

d. Shortage of specialized equipments for disaster and appropriate training for their operation and maintenance along with joint training and exercise with other organization for effective integration.

Conclusion

Bangladesh is geographically located at the world's largest river delta at close to sea level. It is vulnerable for facing both the risk posed by a quake and secondary risks of tsunamis and flooding. Because of unplanned urbanization and huge population, the devastation is likely to be enormous. This calls for building disaster resilience and interoperability between various stakeholders. Armed Forces will play a major role during any disaster in Bangladesh. Thus, it needs a coordinated planning, integrated approach, specialized training and appropriate equipment to able to respond quickly and efficiently. There is an important requirement of Military-Military and Civil-Military interoperability and coordination to successfully address the issue. In this context Sir Winston Churchill (1874-1965) very aptly avers, "In order to fight effectively together as members of an armed forces, services must strive for interoperability."[19]

AFD has significant contribution in building disaster resilience through its various endeavors. It is an increasingly important component of a holistic approach to reducing the impact of disasters on the most vulnerable. Introducing required structure, setting essential communication network and coordination mechanism will reduce the gap and increase efficiency while working with multiple partners to achieve common objectives. Success of this mission can be achieved by synergy of actions among the stakeholders.

By establishing a definite and approved structure of DIMT, MNCC and other workable similar structures Armed Forces can provide required assistance effectively. It will also promote the military-military and civil-military interoperability. It will also minimize the gaps and duplication of efforts during disaster. Standardization, integration and cooperation aspects are also to be looked after to act together coherently and effectively. To achieve interoperability the elements and resources has to be standardized which ensures a common understanding and similarity between the agencies. Besides, Promoting common coordination methodologies and information exchange protocols between relevant stakeholders will also assist to establish effective integration procedure.

Recommendations

This paper tried to identify the key requirements for disaster resilience and Military-Military and Civil-Military Interoperability in Bangladesh perspective. Following are few recommendations:

i. Efforts may be taken to establish an approved structure and coordination mechanism (DIMT, MNCC,and other international frameworks) to facilitate effective functioning and integrated approach by all stakeholders.

ii. A reliable and accessible information systems with correct sharing process can be promoted for a competent preparedness system as well as timely and effective response.

iii. A workable communication network (with consideration for HF and VHF radio net) between various stakeholders (policy makers, operational and tactical level leaders) may be established along with an effective database.

iv. Sufficient number of standardized specialized equipments may be procured and necessary joint training with various agencies may be arranged for effective integration with special consideration for USAR team and INSARAG guidelines.

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Brief Biography

Lieutenant Commander M Shariful Islam, (ND), BN was commissioned in Bangladesh Navy on 01 December 2009 as an Executive Branch officer. The Officer obtained outstanding results in various courses that he has undergone both at home and abroad. He completed Junior Staff Course in Bangladesh Naval Academy, Chattogram as well as Navigation and direction Specialization Course in BNS ISSA KHAN, Chattogram securing the top position in both courses. Besides, he also did Basic Intelligence Course from School of Military Intelligence, Cumilla Cantonment, Exclusive Economic Zone Protection Officer's Course in UK, Defence against Terrorism Course in Turkey, Humanitarian Supply Chain and Emergency Logistics Training by World Food Program in Dhaka etc. His academic qualifications includes Bachelor of Science from Bangladesh University of Professionals. The officer served in various Staff and Instructional appointments. He was appointed on board various ships of BN as Navigating Officer and Executive Officer. He served at Bangladesh Naval Academy, Chattogram and School of Military Intelligence, Cumilla as Instructor. The officer visited United Kingdom, Australia, Turkey, Qatar, India and Sri Lanka. His write ups are published in *Indian Ocean Naval Symposium Newspaper* and *BNA Journals*. He enjoys playing tennis and likes to travel. Presently he is serving as General Staff Officer Grade-2 in Joint Operations Section of Operations and Plans Directorate in Armed Forces Division. He is happly married and blessed with two daughters.

Secure Cyber Network : Standards for Common Users

Air Commodore Md Shafiqul Alam, BPP, ndc, psc, GD (N)

Introduction

The development trend of Bangladesh and transformation into digitalization system have been the core issue in the contemporary times. In keeping pace with the present trend Bangladesh Armed Forces is also addressing the issue to keep pace with the framework of transformation and attaining digitization in its activities. Modernization and Digitalization have started since early 2000. The regular flow of new electronic gadgets in the life style and involvement of personnel into various social media through these gadgets have made life in one way more advanced and on the other way complicated. Indulging into digitalization to remain comfortable in life, few complex issues are intruding which are creating complicacy in every steps. All must be aware of these complicacies and remain guarded in order to remain safe and secure in day to day activities.

Nowadays, the electronic gadgets – computers, tabs, smart phones etc. are part and parcel of life style. By the beneficial effects of these gadgets all information, be it private or official, are very handy and remains with us all the time. As a result, there is a high risk of information breach and in defence it can create security hazards even for the Nation. So as a sensitive and responsible member of the Armed Forces one must be aware of using all these electronic gadgets so as to prevent any information leakage. This paper would give some basic ideas how to remain secure in Cyber domain in order to prevent information leakage and remain with fewer complexities.

Cyber Security and Its Importance

Cyber security or information technology security are the techniques (technologies, processes, and practices) of protecting devices, networks, programs and data from unauthorized access or attacks or damage that are aimed for exploitation. Cyber security is important because government, military, corporate, financial, and medical organizations collect, process, and store unprecedented amounts of data on computers and other devices. A significant portion of that data can be sensitive information, whether that be intellectual property, financial data, personal information or other types of data for which unauthorized access or exposure could have negative consequences. Organizations transmit sensitive data across networks and to other devices in the course of doing businesses, and cyber security describes

the discipline dedicated to protecting that information and the systems used to process or store it. As the volume and sophistication of cyber-attacks grow, companies and organizations, especially those that are tasked with safeguarding information relating to national security, healths, or financial records, need to take steps to protect their sensitive business and personnel information.[1]

Major Areas of Cyber Security

Major areas covered in cyber security are:

Application Security: Application security encompasses measures or counter-measures that are taken during the development of life-cycle to protect applications from threats that can come through flaws in the application design, development, deployment, upgrade or maintenance. Some basic techniques used for application security are - Input parameter validation, User/Role Authentication & Authorization, Session management, parameter manipulation & exception management, and Auditing & logging.

Information Security: Information security protects information from unauthorized access to avoid identity theft and to protect privacy. Major techniques used to cover this are - Identification, authentication & authorization and Cryptography.

Disaster Recovery: Disaster recovery planning is a process that includes performing risk assessment, establishing priorities, developing recovery strategies in case of a disaster. Any business should have a concrete plan for disaster recovery to resume normal business operations as quickly as possible after a disaster.

Network Security: Network security includes activities to protect the usability, reliability, integrity and safety of the network. Effective network security targets a variety of threats and stops them from entering or spreading on the network. Network security components include - Anti-virus and anti-spyware, Firewall, Intrusion Prevention Systems (IPS), Virtual Private Networks (VPNs) etc.[2]

Common Threats

Some of the common threats for cyber domain are:

a. Cyber Terrorism: Cyber Terrorism is the disruptive use of information technology by terrorist groups to further their ideological or political agenda. This takes the form of attacks on networks, computer systems and telecommunication infrastructures.

b. Cyber Warfare: Cyber Warfare involves nation-states using information technology to penetrate another nation's networks to cause damage or disruption. In many nations, Cyber Warfare has been acknowledged as the fifth domain of warfare (following land, sea, air and space). Cyber Warfare attacks are primarily executed by hackers who are well-trained in exploiting the intricacies of computer networks and operate under the auspices and support of nation-states. A Cyber Warfare attack may intrude into networks to compromise valuable data, degrade communications, impair infrastructural services or interrupt commerce.

c. Cyber Espionage: Cyber Espionage is the practice of using information technology to obtain secret information without permission from its owners or holders. Cyber espionage is most often used to gain strategic, economic, political or military advantage, and is conducted using cracking techniques and malware.

d. White Hackers: White Hackers or 'white hat' in Internet slang refers to an ethical computer hacker, or a computer security expert, who specializes in penetration testing and in other testing methodologies that ensures the security of an organization's information systems. White hat or hackers use their skills to improve security by exposing vulnerabilities before malicious hackers can detect and exploit them.[3]

Network Attack

Network attack is usually defined as an intrusion on network infrastructure that will first analyze the environment and collect information in order to exploit the existing open ports or vulnerabilities - this may include as well unauthorized access to your resources. In such cases where the purpose of attack is only to learn and get some information from system but resources are not altered or disabled in any way is called a passive attack. Active attack occurs where the perpetrator accesses and either alters, disables or destroys your resources or data. Attack can also be performed either from outside of the organization by unauthorized entity (Outside Attack) or from within the company by an 'insider' that already has certain access to the network (Inside Attack). Very often the network attack itself is combined with an introduction of malware components to the targeted systems. Attacks can be classified in following way:-

Social Engineering: Social Engineering refers to a psychological manipulation of people (employees) to perform actions that potentially leads to leak of proprietary or confidential information or otherwise can cause damage to resources, personnel or image. One of the very common technique used by social engineers is to pretend to be someone else - IT professional, member of the management team, co-worker, insurance investigator or even member of governmental authorities.

Phishing Attack: This type of attack use social engineering techniques to steal confidential information - the most common purpose of such attack targets victim's banking account details and credentials. Phishing attacks tend to use schemes involving spoofed emails send to users that lead them to malware infected websites designed to appear as real on-line banking websites. Emails received by users in most cases will look authentic sent from sources known to the user. The request will be accompanied by a threat that the account may become disabled or suspended if the mentioned details are not being verified by the user. Phishing attack can be as follows:-

(1) Social Phishing: Social Phishing is attacking through social media like Facebook or Tweeter. The purpose remains the same - to obtain confidential information and gain access to personal files.

(2) Spear Phishing Attack: This is a type of Phishing attack targeted at specific individuals, groups of individuals or companies.

(3) Watering Hole Attack: Watering Hole Attack is a complex type of a Phishing attack where attackers use multiple-staged approach to gain access to the targeted information.

(4) Whaling: This type of Phishing attack specifically targeted at senior executives or other high-profile targets within a company.

(5) Vishing (Voice Phishing or VoIP Phishing): Vishing is the use of social engineering techniques over telephone system to gain access to confidential information from users.

Port Scanning: Port Scanning is an attack type where the attacker sends several requests to a range of ports to a targeted host in order to find out what ports are active and open - which allows him them to exploit known service vulnerabilities related to specific ports. Port scanning can be used by the malicious attackers to compromise the security as well by the IT Professionals to verify the network security.

Spoofing: This technique is used to masquerade a person, program or an address as another by falsifying the data with purpose of unauthorized access. Few of the common spoofing types are mentioned below:-

(1) IP Address Spoofing: process of creating IP packets with forged source IP address to impersonate legitimate system.

(2) ARP Spoofing (ARP Poisoning): process of sending faked ARP messages in the network. The purpose of this spoofing is to associate the MAC address with the IP address of another legitimate host causing traffic redirection to the attacker host.

(3) DNS Spoofing (DNS Cache Poisoning): attack where the wrong data is inserted into DNS Server cache, causing the DNS server to divert the traffic by returning wrong IP addresses as results for client queries.

(4) Email Spoofing: process of faking the email's sender "From" field in order to hide real origin of the email. This type of spoofing is often used in spam mail or during Phishing attack.

(5) Search Engine Poisoning: in this attacker take advantage of high profile news items or popular events that may be of specific interest for certain group of people to spread malware and viruses.

Network Sniffing (Packet Sniffing): process of capturing the data packets travelling in the network. Network sniffing can be used both by IT Professionals to analyze and monitor the traffic for example in order to find unexpected suspicious traffic, but as well by perpetrators to collect data send over clear text that is easily readable with use of network sniffers (protocol analyzers). Best countermeasure against sniffing is the use of encrypted communication between the hosts.

Denial of Service Attack (DoS Attack) and Distributed Denial of Service Attack (DDoS Attack): attack designed to cause an interruption or suspension of services of a specific host/server by flooding it with large quantities of useless traffic or external communication requests. When the DoS attack succeeds the server is not able to answer even to legitimate requests any more - this can be observed in numbers of ways: slow response of the server, slow network performance, unavailability of software or web page, inability to access data, website or other resources. Distributed Denial of Service Attack (DDoS) occurs where multiple compromised or infected systems (botnet) flood a particular host with traffic simultaneously.

Sequel (SQL) Injection Attack: 'SQL'stands for structured query language; it's a programming language used to communicate with databases. Many of the servers that store critical data for websites and services use SQL to manage the data in their databases. A SQL injection attack specifically targets this kind of server, using malicious code to get the server to divulge

information it normally wouldn't. This is especially problematic if the server stores private customer information from the website, such as credit card numbers, usernames and passwords (credentials), or other personally identifiable information, which are tempting and lucrative targets for an attacker.

Cross-Site Scripting (XSS): In an SQL injection attack, an attacker goes after a vulnerable website to target its stored data, such as user credentials or sensitive financial data. But if the attacker would rather directly target a website's users, they may opt for a cross-site scripting attack. This attack also involves injecting malicious code into a website, but in this case the website itself is not being attacked. Instead, the malicious code the attacker has injected only runs in the user's browser when they visit the attacked website, and it goes after the visitor directly, not the website. One of the most common ways an attacker can deploy a cross-site scripting attack is by injecting malicious code into a comment or a script that could automatically run. Cross-site scripting attacks can significantly damage a website's reputation by placing the users' information at risk without any indication that anything malicious even occurred. Any sensitive information a user sends to the site—such as their credentials, credit card information, or other private data—can be hijacked via cross-site scripting without the website owners realizing there was even a problem in the first place.

Session Hijacking and Man-in-the-Middle Attacks: When you are on the internet, your computer has a lot of small back-and-forth transactions with servers around the world letting them know who you are and requesting specific websites or services. In return, if everything goes as it should, the web servers should respond to your request by giving you the information you're accessing. This process, or session, happens whether you are simply browsing or when you are logging into a website with your username and password. The session between your computer and the remote web server is given a unique session ID, which should stay private between the two parties; however, an attacker can hijack the session by capturing the session ID and posing as the computer making a request, allowing them to log in as an unsuspecting user and gain access to unauthorized information on the web server. An attacker can also opt to hijack the session to insert themselves between the requesting computer and the remote server, pretending to be the other party in the session. This allows them to intercept information in both directions and is commonly called a man-in-the-middle attack.

Malware: It refers to various forms of harmful software, such as viruses and ransom ware. Once malware is in your computer, it can wreak all sorts of havoc, from taking control of your machine, to monitor your actions and keystrokes, to silently send all sorts of confidential data from your computer or network to the attacker's home base. Attackers will use a variety of methods to get malware into your computer, but at some stage it often requires the user to take an action to install the malware. This can include clicking a link to download a file or opening an attachment that may look harmless (like a Word document or PDF attachment), but actually has a malware installer hidden within.[4]

Credential Reuse

Users today have so many logins and passwords to remember that it's tempting to reuse credentials here or there to make life a little easier. Even though security best practices universally recommend that you have unique passwords for all your applications and websites, many people still reuse their passwords—a fact attackers rely on. Once attackers have a collection of usernames and passwords from a breached website or service, they know that if they use these same credentials on other websites there's a chance they will be able to log in. No matter how tempting it may be to reuse credentials for your email, bank account, and your favorite sports forum, it's possible that one day the forum will get hacked, giving an attacker easy access to your email and bank account. When it comes to credentials, variety is essential. Password managers are available and can be helpful when it comes to managing the various credentials you use.

Secure Networking Life Cycle

Providing a secure network is not a one-time event, but rather a life cycle that must be continually reviewed, updated and communicated. There are three distinct stages to be considered:

How can Security Breaches be Prevented? Along with hardening of operating systems and antivirus software, prevention includes processes to regularly review the network's security posture, which is particularly important as new convergence and mobility solutions or new technologies and platforms are added to the network.

How can Security Breaches be Detected? Although some breaches are obvious, others are much subtler. Detection techniques include product-level and network wide intrusion-detection systems, system checks and logs for misconfigurations or other suspicious activity.

What is the Appropriate Response to a Security Breach? A range of preparations must be made to respond to a successful breach, some of which may include the removal of infected devices or large-scale disaster recovery.

Standards for Secure Cyber Networking

For Networking Professionals: To ensure a consistent set of requirements, lower training costs and to speed the introduction of new security capabilities, IT managers should use these 10 security techniques across their networks.

Use a Layered Defence: Employ multiple complementary approaches to security enforcement at various points in the network, therefore removing single points of security failure.

Incorporate People and Processes in Network Security Planning: Employing effective processes, such as security policies, security awareness training and policy enforcement, makes your program stronger. Having the people who use the network (employees, partners and even customers) understand and adhere to these security policies is critical.

Clearly Define Security Zones and User Roles: Use firewall, filter and access control capabilities to enforce network access policies between these zones using the least privileged concept. Require strong passwords to prevent guessing and/or machine cracking attacks, as well as other strong forms of authentication.

Maintain the Integrity of your Network, Servers and Clients: The operating system of every network device and element management system should be hardened against attack by disabling unused services. Patches should be applied as soon as they become available, and system software should be regularly tested for viruses, worms and spyware.

Control Device Network Admission through Endpoint Compliance: Consider compliances for all user device types-wired and wireless. One should not forget devices such as smart phones and handhelds, which can store significant intellectual property and are easier for employees to misplace or have stolen.

Protect the Network Management Information: Ensure that only authorized personnel have access to virtual LANs (VLAN) and other security mechanisms (IPsec, SNMPv3, SSH, TLS) those are used to protect network devices and element management systems. Establish

a backup process for device configurations and implement a change management process for tracking.

Protect User Information: WLAN/Wi-Fi or Wireless Mesh communications should use Key Integrity Protocol for security purposes. VLANs should separate traffic between departments within the same network and separate regular users from guests.

Gain Awareness: Awareness is must fornetwork traffic, threats and vulnerabilities for each security zone, presuming both internal and external threats. Use anti-spoofing, blocking and denial-of-service prevention capabilities at security zone perimeters to block invalid traffic.

Use Security Tools: To protect from threats and guarantee performance of critical applications ensure firewalls support new multimedia applications and protocols, including SIP.

Log, Correlate and Manage Security and Audit Event Information: Aggregate and standardize security event information to provide a high-level consolidated view of security events on your network. This allows correlation of distributed attacks and a network wide awareness of security status and threat activity.[5]

For Common Users: In order to protect as a common user one must adhere to the organizational cyber integrity against any time of intrusion which are as follows:-

a. Never open or download a file from an unsolicited email, even from someone you know (Call or email the person to double check that it really came from them).

b. Keep the operating system updated.

c. Use a reputable anti-virus program.

d. Enable two factor authentications whenever available.

e. Confirm the authenticity of a website prior to entering login credentials by looking for a reputable security trust mark.

f. Look for HTTPS in the address bar when entering to any sensitive personal information on a website to make sure of encryption data.

g. Update/change the password regularly and make own strategy to remember it.

h. Trust and use the government issued network system, and government issued mails.

Conclusion

With the passage of time, people from all walks of life are becoming more dependent on the digitalization and computerizations. On the process compromising the integrity of the information both in personal arena and official environment is being compromised. But that cannot stop the speed up in digitalization. To make a sustainable balance between these two one has to adapt conditional posture to remain safe and comfortable in all activities in the days to come. As a citizen of globalised world it is important to keep updated with new challenges. So It is important to remain updated and keep prepared for the next day. This is a never-ending process. Such challenges would continue to rise up in manifold. For Armed Forces it is even critical as it deals with confidential information. However, to keep pace with the modern digitized world Armed Forces have to keep itself abreast with cyber information up-to-date and act professionally to meet future challenges.

Notes and References

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Brief Biography

Air Commodore Md Shafiqul Alam, BPP, ndc, psc, GD (N) was commissioned in Bangladesh Air Force on 30 December 1985. He has served in different Command, Staff and Instructional appointments in BAF and other Inter-Service organizations. He was Air Officer Commanding of BAF Base Cox's Bazar and Officer Commanding of Command and Staff Training Institute (CSTI) BAF. At the Air Headquarters, he served as Director of Administrative Coordination, Director of Welfare and Ceremony, Director of Cyber Warfare and IT, Deputy Director Plans, Deputy Air Secretary and Assistant Director of Air Intelligence. He served as Director General (Welfare) at Sena Kalyan Sangstha, Deputy President at ISSB and GSO-2 (Air) at Armed Forces Division. He has also served as Senior Instructor (Air) and Directing Staff (Air) at DSCSC, Mirpur. He served in the UN mission twice at DR Congo and once as Contingent Commander in Mali. Apart from all mandatory courses, Air Cdre Shafiq is a graduate of Defence Services Command and Staff College, Mirpur and Royal Malaysian Armed Forces Staff College. He has also obtained Masters of Defence Studies degree from the National University and Masters in Business Administration from Royal University of Dhaka. He has obtained diploma in Strategic Studies from University Malaya of Kuala Lumpur. He has done National Defence College course in India. He obtained 1st class with distinction in Master of Philosophy from Madras University, India. Presently, he is serving as Director of Air Training at Air HQ.

Rare Experience of UN Peacekeeping Mission in Mali

Wing Commander Mohammad Rabiul Islam, psc

Introduction

Mali, officially the Republic of Mali (French: République du Mali), is a landlocked country in West Africa, a region geologically identified with the West African nation. Mali is the eighth-largest country in Africa, with an area of just over 1,240,000 square km (480,000 sq miles). The population of Mali is 18 million. Its capital is Bamako. The sovereign state of Mali consists of eight regions and its borders on the north reach deep into the middle of the Sahara Desert, while the country's southern part, where the majority of inhabitants live, features the Niger and Senegal rivers. The country's economy thrives on agriculture and mining. Some of Mali's prominent natural resources include gold (being the third largest producer of gold in the African continent) and salt.[1]

Present-day Mali was once part of three West African empires that controlled trans-Saharan trade: the Ghana Empire, the Mali Empire (for which Mali is named), and the Songhai Empire. During its golden age, there was a flourishing of mathematics, astronomy, literature and art. At its peak in 1300 CE, the Mali Empire covered an area about twice the size of modern-day France and stretched to the west coast of Africa. In the late 19th century, during the Scramble for Africa, France seized control of Mali, making it a part of French Sudan. French Sudan (then known as the Sudanese Republic) joined with Senegal in 1959, achieving independence in 1960 as the Mali Federation. Shortly thereafter, following Senegal's withdrawal from the Federation, the Sudanese Republic declared itself the independent Republic of Mali. After a long period of one-party rule, a coup in 1991 led to the writing of a new constitution and the establishment of Mali as a democratic, multi-party state.[2]

In January 2012, an armed conflict broke out in northern Mali, in which Tuareg rebels took control of a territory in the north, and in April declared the secession of a new state, Azawad. The conflict was complicated by a military coup that took place in March and later fighting between Tuareg and rebels. In response to territorial gains, the French military launched Opération Serval in January 2013. A month later, Malian and French forces recaptured most of the north. Presidential elections were held on 28 July 2013, with a second-round run-off held on 11 August, and legislative elections were held on 24 November and 15 December 2013 respectively.[3]

Aim

The aim of this writing is to share the rare experience gained while serving in UN Peacekeeping Mission in Mali (called MINUSMA) in 2015-2016 as contingent member of BANAIR-2.

For the sake of better understanding this writing, it is necessary to provide basic information about Mali which is given below:-

Mali at a Glance:[4]

SL No.	Information	Description	Remark
a.	Capital and largest city	Bamako	
b.	Official languages	French	
c.	Lingua Franca	Bambara	
d.	National Languages	Bambara,Bomu,Tieyaxo Bozo,Toro So Dogon,Maasina,Fulfulde,Arabic,Mamara Senoufo,Kita Maninkakan,Soninke, Koyraboro Senni,Syenara Senoufo,Tamasheq,Xaasongaxango	
e.	Ethnic Groups	50% Mande,16% Fula,13% Voltaic (Senufo /Bwa),10% Tuareg / Moor,6% Songhai,4% other	
f.	Demonym(s)	Malian	
g.	Government	Unitary semi-presidential republic	
h.	President	Ibrahim Boubacar Keïta	
j.	Independence	20 June 1960	
k.	Area	1,240,192 km^2 (478,841 sq mi)	
l.	Population	19,329,841[2] 2018 census	
m.	GDP	Per capita $891[3]	
n.	Currency	West African CFA franc (XOF)	
p.	Time zone	UTC+0 (GMT)	
q.	Calling code	+223	
r.	Internet TLD	.ml	

Short History of Mali

Mali has an interesting historical heritage founded along the Niger River that cradled many civilizations in the past. After its fall in the 13th century, the Mali Empire took hold of the land making it the centre of Muslim scholarship until its collapse in the 17th century. In particular, Malian history is characterized by a distinctive past even before it became a French colony. No doubt, time is the most credible testament to the splendid old times of the country.

Even before colonization, Mali has established civilizations characterized by the series of majestic empires that ruled the territory. The Empire of Ghana which dates back as early as 5th century A.D. nested on the southwestern portion of the territory. After its fall in the 13th century, the Mali Empire took hold of the land making it the centre of Muslim scholarship until its collapse in the 17th century. Going to the East, the Songhai Empire established its rule until the Moroccan occupied and overpowered the former's reign.[5]

Starting 1591 CE, another sequence of Kingdoms reigned across the land. These include Kingdom of Segou (centralized state based on the south); Kingdom of Kaarta (descendant of Segou which settled in the west); Kingdom of Kenedougou (defensive state situated in lands bordering Mali and Burkina Faso bordering); Maasina Kingdom (an ally state of Segou);and Wassoulou Kingdom (short-lived state). All of these kingdoms though fell under the control of Toucouleur Kingdom later on.[6]

French colonization commenced in 1892 when the land was named as Sudanese Republic administered by a French governor commissioned to oversee the colony on behalf of the French Empire. Later on, the territory eventually became part of the Federation of Mali along with Senegal upon its independence on 20 June 1960. In August thereafter Senegal Federation withdrew from the party leaving the Sudanese Republic as an independent entity which later on embraced full statehood as the Republic of Mali.[7]

Northern Mali Conflict

In January 2012 a Tuareg rebellion began in Northern Mali, led by the National Movement for the Liberation of Azawad (MNLA). In March, military officer Amadou Sanogo seized power in a coup d'état, citing Touré's failures in quelling the rebellion, and leading to sanctions and an embargo by the Economic Community of West African States. The MNLA quickly took control of the north, declaring independence as Azawad. However, Islamist groups including Ansar Dine and Al-Qaeda in the Islamic Maghreb (AQIM), who had helped the MNLA defeat the government, turned on the Tuareg and took control of the North with the goal of implementing sharia in Mali.[8]

On 11 January 2013, the French Armed Forces intervened at the request of the interim government. On 30 January, the coordinated advance of the French and Malian troops claimed to have retaken the last remaining Islamist stronghold of Kidal, which was also the last of three northern provincial capitals. On 2 February, the French President, François Hollande, joined Mali's interim President, Dioncounda Traoré, in a public appearance in recently recaptured Timbuktu.[9]

UN Peacekeeping Mission in Mali

The United Nations Multidimensional Integrated Stabilization Mission in Mali (French: Mission multidimensionnelle intégrée des Nations unies pour la stabilization au Mali, MINUSMA) is a United Nations Peacekeeping Mission in Mali. MINUSMA was established on 25 April 2013 by United Nations Security Council Resolution 2100 to stabilize the country after the Tuareg rebellion of 2012. It was officially deployed on 01 July, and has become the UN's most dangerous peacekeeping mission, with 177 peacekeepers killed out of a force of about 15,000. Next to MINUSMA, there are current further peace operations in Mali.These are the European Union missions EUCAP Sahel Mali and EUTM Mali.[10]

Mission History

In 2012, Tuareg and other peoples in northern Mali's Azawad region started an insurgency in the north under the banner of the National Movement for the Liberation of Azawad. After some initial successes and complaints from the Malian Army that it was ill-equipped to fight the insurgents, who had benefited from an influx of heavy weaponry from the 2011 Libyan civil war as well as other sources, elements of the army staged a military coup d'état on 21 March 2012. Following the coup, the rebels made further advances to capture the three biggest cities in the north: Gao, Timbuktu and Kidal. Following economic sanctions and a blockade by the Economic Community of West African States (ECOWAS) on the country, a deal, brokered in Burkina Faso by President Blaise Compaoré under the auspices of ECOWAS, was signed that would see Amadou Sanogo cede power to Dioncounda Traoré to assume the presidency in an interim capacity until an election is held.[11]

On 01 July 2013, 6,000 of a future total of 12,600 UN peacekeeping troops officially took over responsibility for patrolling the country's north from France and the ECOWAS' International Support Mission to Mali (AFISMA). The group was expected to play a role in the 2013 Malian presidential election. The force is the third largest UN peacekeeping force in operation in the world.[12]

Organization and Forces

Headquarters of AFISMA are in the Malian capital, Bamako. Military intelligence evaluation is responsibility of Force Headquarters U2- Intelligence Section. The force was led by Belgian Major General Jean-Paul Deconinck until 02 October 2018, after which he was succeeded by Lieutenant General Dennis Gyllensporre of Sweden.

Current contributors are shown below:-[13]


Algeria


Bangladesh:2XAirfield Services Units (1X Utility Aviation Helicopter Unit was deployed with 3XHelicopters)


Belgium


Benin


Bosnia and Herzegovina


Burkina Faso


Canada – 2X CH-147F Chinook and 4 XCH-146 Griffon helicopters


Chad


China


Ivory Coast


Czech Republic


Denmark


Dominican Republic


Egypt


El Salvador


Estonia


Finland


France


Gambia


Germany - Intelligence duties from July 2016. IAI Heron UAV deployed from November 2016


Ghana


Guinea


Guinea-Bissau


Italy


Jordan


Kenya


Latvia


Liberia


Lithuania


Mauritania


Nepal


Netherlands


Niger


Nigeria


Norway


Oman


Portugal - 47 military personnel

 Rwanda

 Senegal

 Seychelles

 Sierra Leone

 Sri Lanka

 Sweden

 Switzerland

 Togo

 Tunisia - 75 TAF officers - 750 QRF troops - 120 Military Police regiment 1 C-130J-30 Super Hercules. Officers and administrative personnel

 United Kingdom

 United States

 Yemen

Experience in MINUSMA as Contingent Member

Towards end of December 2015, to be exact, on 27 December, contingent's journey started for UN Peacekeeping Mission in Mali as BANAIR-2 or BANASMU-2 to replace the BANAIR-1 who were deployed there in Mali with effect from 15 December, 2014 from Bangladesh Air Force. An UN Chartered Flight (basically which was hired from Ethiopian Airlines) & reached Bamako, the capital city of Mali early in the morning on 28 December, 2015. When we landed after almost 11 hours journey the sun was rising & almost all the people around was still sleeping except the Airport people. Without delay, we were told to board on a UN CASA 295 (contributed by Chadian Air Force) for the next leg to Gao, another township of Mali. We had helicopter-support from Gao to our final destination, Kidal, a place we had to stay for a year. Our total strength was 123 but with luggage & troops, all the personnel could not go to Kidal on the same day. We had to stay at Gao, UN transit camp for a night with almost 35 personnel. When we went to Gao UN/MINUSMA camp, we got surprised to see the accommodation with 'Bunker' around. I had the experience to work with the peacekeeping operation twice in DR Congo, where bunker concept is not there. We passed one night in Transit Camp. Our BANBAT/BANSIG brothers in Arms were there for peacekeeping mission in Mali. We got good help from them. Seeing brothers in Arms we felt so good in the middle of the Sahara Desert. Next day we went to our destination Kidal.

Peacekeepers and civilian UN staff, by fun, refer it as Kidal Paradise. Every mission is unique in terms of its mandate, Rules of Engagement (ROE), weather and environment. MINSUMA was no exception to that. It was unique in terms of its

threat peculiarities, environment and above all its extreme weather. Mali's Kidal lies in the middle of mighty desert, SAHARA where temperature goes sometimes beyond 53^0 Celsius. You may feel like to have blisters in your body during summer days. During night, in winter or during other than summer you may have to use two blankets. When we landed Kidal, from helicopter, it was sandy desert and could see some hills around the camp. I felt like two different world comparing two peacekeeping missions in DR Congo & Mali. In the process of progression of stay, we took over the noble duties from our previous contingent. Once we took over fully, we had to face challenges of extreme hot weather, dust storm and threat from the rebel group. But we could cope up with all odds. It was like acid test for us to survive against many odds but we are trusted soldiers of the soil of Bangladesh who could adjust within short period of time. The greatest challenge was to operate an airfield by us which was 3-5 km away from our camp. We had to go in a convoy every morning after getting clearance from mine sweeping team of NEP EOD contingents with BP & Helmet on during very hot summer days.

MINUSMA, Mali's UN mission's challenges are met up by the various professionals (mil/civ) despite having many limitations. Water supply in the desert environment is one of the most challenging issues in mission areas in Mali. But it is addressed nicely to lead a comfortable life for the peacekeepers. Day to day necessary commodities for contingent members need to be well planned. Otherwise it would be time consuming to get those during real time requirement.

BANAIR-1 from whom we took over, did wonderful job for us by taking one of the best located areas in the camp for us.BANAIR-1 logistic plan was so good that we did not have any problem to set up planned accommodation with many basic installations for rest of the BANAIR people subsequently served. In majority cases it was tent based accommodation and we had to make them well protected one for our better survival. For BANAIR-2, we had to prepare our accommodation with all types of protection in order to sleep well at night. Internet facilities were arranged by the Air Force authority there, which must be appreciated despite having many challenges. Necessary steps were taken for entertainment of the contingent personnel during leisure time specially by providing Cable TV/Dish TV facilities and internet facilities with minimum cost or no cost.

It was also very challenging job to set up 'Forward Base' at Tessalit, another location, almost 395 km (by road) away from Kidal by BANAIR-2. It was done successfully within very short time despite many odds. Now-a-days, BANASMU Tessalit has been providing excellent Airport related all services to all UN & Non-UN flights to and from Tessalit Region in collaboration with UN Civilian Staff. The good relationship between other units in camp area works like 'Force-Multiplier.' All the peacekepers who participated in the BANAIR-2

expressed gratitude to the Almighty for successful completion of the one year mission without major incidents/accidents.

After completing the mission for about a year we returned to our sweet home. We had our return flight well in time from Bamako. We had to come little early from Kidal and Tessalit leaving behind small amount of manpower to continue the operation during handing and taking-over period. It was a matter of solace to finish such a challenging mission in Mali without any casualty or mishap by the utmost mercy of Almighty Allah. Returning sweet home from Mission Area is always a great feeling for all the peacekeepers.

Lesson Learnt From Mission Experience

Rare experience of Mali Mission has taught some lessons which may be considered for the newly detailed peacekeepers who want to get some guideline for this MINUSMA mission:-

a. Training for survival in adverse weather and terrain condition is paramount.

b. Building strong bonding with the colleagues around can be Force Multiplier.

c. Casual attitude should be avoided in all aspects in the mission area.

d. Readiness in terms of facing all odds can be life saving factors.

e. There is no shortcut in maintaining procedures, SOP, Rules & regulations for own safety as well as the safety of the contingent.

f. Overall discipline of the troops is very important issue.

g. Leading from the front should be the commander's philosophy in mission area.

h. Eyes and ears should be kept open in the mission area.

j. Mission area means troubled area. No outsider should be believed in terms of security issues.

k. Smart Phone with location 'ON' may make someone more vulnerable to attack. Face book and other social media should be used judicially in order to stop jeopardizing safety and security of the troops.

l. Self confidence is important to face the odds.

m. Trying to remain in good mood in the mission area can keep the personnel's morale high.

n. Regular communication with the family members at home can boost the troops' morale.

p. Overall, good attitude to complete the mission is key to mission's success.

Conclusion

Within the ambit of Bangladesh Armed Forces, more particularly that of Bangladesh Defence Forces and as well as Police Forces' contribution in maintaining world peace is praiseworthy worldwide. Many a times, Bangladesh was one of the highest Troops Contributing Counties (TCC) in the world. Each of the man in uniform can be considerd as one of the Ambassadors for Bangladesh beyond our border serving for world peacekeeping leaving behind hearth and home, near and dear ones thousand miles away from their sweet home.

António Guterres, UN Secretary-General (former Prime Minister of Portugal) very justifiably remarked at the Dag Hammarskjöld[14] Medal Ceremony on 24 May 2017:

> UN peacekeeping is one of the international community's most effective investments to support peace, security and prosperity. It has a positive impact on the lives of millions of people around the world. While peacekeeping carries a tragically high price in lives lost, it brings enormous returns in lives saved. There are risks when deploying peacekeepers to a crisis area, but inaction may carry even greater risks. We are still learning hard lessons from the Rwanda genocide. We must continue to invest in the safety of our peacekeepers. The peacekeeping family – Peacekeeping Operations and Field Support, the UN Secretariat and the Member States -- must work together to make peacekeeping as safe as possible using modern technology and equipment and better intelligence gathering. We owe this to the women and men who risk their lives every day to fulfill our mandates. I offer my deepest condolences to the families of those we honour today. Your sons and daughters, wives and husbands gave more than we can even ever repay. Our thoughts are with them and with you. And if there is something that makes the United Nations known all over the world are Blue Helmets. In the modern times in which people talk about the word branding, peacekeeping is the most important element of UN branding. Peacekeeping is the most important aspect of the UN image. Our debt in relation to peacekeepers is something that we will never be able repay.[15]

It is important to uphold the honour and prestige of our motherland, Bangladesh by continuing to contribute towards world peace.The supreme sacrifices of the brothers and sisters in arms for preserving world peace since 1988 till date for preserving global peace will never be forgotten by the nation.

Notes and References

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14. Dag Hammarskjöld, in full Dag Hjalmar Agne Carl Hammarskjöld, (born July 29, 1905, Jönköping, Sweden—died September 18, 1961, near Ndola, Northern Rhodesia [now Zambia]), Swedish economist and statesman who, as the second Secretary-General (1953–61) of the United Nations (UN), enhanced the prestige and effectiveness of that organization. He was posthumously awarded the Nobel Prize for Peace in 1961.

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Brief Biography

Wing Commander Mohammad Rabiul Islam, psc was commissioned in BAF on 10 June 1996 in ATC Branch. He has attended various professional courses both at home and abroad which include Instructional Technique, Disaster Management, International Air Cargo Interdiction, Airport Management, Airfield Operation Officer's Course, Aviation Security Management, AVSEC Crisis Management and UN related 23 online Courses. He is a graduate of Defence Services Command and Staff College, Mirpur. He has achieved the degree of BSc (Aeronautics) and MSc (Military Studies) from National University and Bangladesh University of Professionals and MBA from University of Information Technology and Science. During his service career, he has served at all the BAF Bases as ATCO, GSO-II in DGFI, Airport Manager, Shah Amanat International Airport (CAAB). He contributed in UN Peacekeeping Missions in DR Congo and Mali in 2007-08, 2013-2014 and in 2015-2016. He has travelled Sweden, Denmark, USA, UAE, DR Congo, Uganda, Rwanda, Burundi, India, KSA, Malaysia, Singapore, Turkey, Hong Kong, South Korea and Kenya. He is happily married and blessed with two daughters. At present, he is serving as Officer Commanding at Information and Selection Centre of BAF.

From Roads to Runway

Flight Lieutenant Saad Mohammad Reefat, GD (P)

Introduction

Aircrafts are independent platforms. There goes a very common saying in flying business, “For a pilot every take off is optional, but landing is mandatory.” A major part of aviation safety is concerned about the landing, because a large percentage of aviation accidents were associated with it. But imagine a situation where this independent platform loses its landing place (runway destroyed) or may be it loses the ability to reach one. Thus the need came for an alternate landing option. From this the idea of turning roads to runway or Highway Strips came in the 1940s. Now this is a very widely used concept throughout the world.

Aim

The aim of this paper is to apprise about Highway Strips and specifically focus on their use in Bangladesh as emergency landing field.

Highway Strips

A highway strip, Road Runway or Road Base is a section of a highway, motorway or other form of public road that is specially built to act as a runway for (mostly) military aircraft. These runways allow military aircraft to continue operating even if their regular air bases, some of the most vulnerable targets in any war, are degraded or destroyed or even in case of any emergency.[1]

History

The first highway strips that were constructed near the end of World War II (1939-45) in Nazi Germany, where the well-developed Reich Autobahn system allowed aircraft to use the motorways.

Figure 1: A44 autobahn in central Germany

Source: Author’s collection

During the Cold War era (1945-90) highway strips were systematically built on both sides of the Iron Curtain. In many cases this was done in response to the Six Day War, between the Arabs and Israel, and Operation Focus in 1967, where the Israeli Air Force in a surprise air strike destroyed the majority of its opponent's aircrafts on the ground and also disabled many of their air bases in just a few hours. This depicted the requirement of the Highway Strips.[2]

In 1984, NATO forces commandeered an entire autobahn, near Ahlborn in North West Germany, for 48 hours. A mobile air traffic control tower was wheeled in as Hercules transporters and Tornado jets practiced their landing skills just metres from an overpass.

Existing Highway Strips

Though the Germans were the first to build Highway Strips, a number of countries around the world utilize the strategy of highways constructed to double as auxiliary airbases or runways. Finland annually tests out the runway parts of its freeways. In 2016, it even invited the Swedes to land some of their planes on a main road north of Helsinki. The Finns haven't just modified their highways for planes; their planes have modifications that suit highways. The aircrafts' folding wings have turned out as a useful feature during taxi on narrow roads. The countries around the world with existing Highway Strips are:-

a. Australia

b. China

c. Cyprus

d. Estonia

e. Finland

f. Germany

g. India

h. Japan

j. North Korea

k. Pakistan

l. Poland

m. Singapore

n. South Korea

o. Sri Lanka

p. Sweden

q. Switzerland

r. Taiwan

s. USA

t. Russia

Neighbours with Highway Strips

Initially it was only the European and western countries but now Third World countries are also going towards this step of converting roads into emergency or military runways. Most of the South Asian countries have also implemented the concept of Highway Strips. So this is not only the rich countries only who is having this as luxury. The idea of road runways has become a necessity in aviation business. At this point it is relevant to have a quick look at Highway Strips in the South Asian neighbours of Bangladesh.[3]

Pakistan: In Pakistan, The M-1 Motorway (Peshawar-Islamabad) and the M-2 Motorway (Islamabad-Lahore) each include two emergency runway sections of 2,700 m (9,000 ft) length each. The four emergency runway sections become operational by removing removable concrete medians using forklifts. The Pakistan Air Force (PAF) has used the M2 motorway as a runway on two occasions: for the first time in 2000 when it landed an F-7P fighter, a Super Mushak trainer and a C-130 and, again, in 2010. On another occasion, the PAF used a runway section on the M2 motorway on 2 April 2010 to land, refuel and take-off two jet fighters, a Mirage III and an F-7P, during its Highmark 2010 exercise.

India: India has successfully tested its runway strip on a stretch of the Yamuna Expressway in Uttar Pradesh on 21 May 2015. It was built at a cost of Rs 13,000 Cr for its combat jets of the IAF, a first for military aviation in the country. In June 2016, the then Minister for Road Transport and Highways, Nitin Gadkari announced that the government was considering developing 'Road Runways' for commercial operations as well. He observed, "We can close road traffic when a plane lands and open once the plane has taken off. Airport investment costs would come down as the road will also be used as an airstrip." In order to ensure timely relief work in the event of natural disasters and in emergency situations, the Ministry of Road Transport and Highways is planning to set up 11 emergency landing air strips on National Highways across seven states.

Sri Lanka: Tamil separatist group LTTE operated in northern Sri Lanka prior to their elimination in 2009, used highways as landing strips.

Figure 2: Indian Air Force Mirage 2000 fighter landed on the road connecting Delhi with Agra

Source: Author's collection

China: In 1989 China conducted its first highway strip drills. They have since been conducted at later dates and in different areas of the country. In 2014 Chinese forces landed warplanes on a highway strip in Henan province for the first time.

Construction of a Highway Strip

The highway strips are usually 2 to 3.5 KM long (1.2 to 2.2 mi) straight sections of the highway. Other features of an airbase (taxiways, airport ramps) can be also kept. The specialized equipment of a typical airfield are stored somewhere nearby and only carried there when airfield operations start. The highway strips can be converted from motorways to airbases typically at a very short notice. But for emergency landings it can be transformed within a very short time.

In November 2008, 110 airman and women of RSAF converted the 2.5km and just 24m wide Lim Chu Kang Road into an emergency runway. They also included a mobile air traffic control tower, runway lights, distance markers and arrestor gear for fighter planes to hook and stop in time. It took them 48 hours. But this task was not as easy as it seems. There are, however, few criteria that has to be met during the construction of a road runway which are given below:-

a. The road will need a thicker than normal surface and a solid concrete base.

b. There should be no divider in order to allow airplanes to use the whole width of the road. However central reservation can be made of crash barriers that can be removed quickly.

c. The runway portion of the road needs to be without bends.

d. There must be no objects nearby more than 45 metres above the ground (lamp posts, traffic lights, bus stops, road signs and guard rails etc).

e. The road would need to be swept to remove all debris regularly, especially before operating as an emergency base.

f. Provision for an Air Traffic Control (ATC) tower with minimal service capabilities.

g. Runway markings (may be discrete).

h. Public awareness programs must be kept to let them know how the operations will happen. They must know that any time an aircraft is coming for emergency landing the road is to be closed. Awareness must also be created to reduce the amount of Foreign Object and Debris (FOD).

j. Highway police has to be made aware to reduce the time to convert road into runway. Even special traffic lights and barriers maybe installed to make the process faster.[4]

Another important factor for the construction of a highway strips is the width. It will depend upon the aircrafts that are meant to be op here. And for obvious reasons it is easier to convert when the road is already straight and wider.

Highway Strips for Bangladesh

Requirement in Peacetime

In USA Interstates are intended to serve only traffic going from State to State. But one in five miles of the Interstate System is straight so airplanes can land in emergencies. This helps us understand that even if full-fledged highway strips are not there, this kind of roads can help during any emergency. And it is known to all that emergencies can happen anywhere.

With the progression of Bangladesh Army, Bangladesh Navy and Bangladesh Air Force flight operators are operating all over the country through different bases. Highway strips can help any aircraft falling in an emergency away from the base. This can help save human life as well as the million dollar aircraft. These highway strips can be built between airfields at a feasible distance so in case of a dire emergency it can also act as a diversion airfield or force landing field.

Even in the case of an emergency near the airfield in the takeoff direction a highway strips can serve as a force landing field. But feasibility check is also to be done as busy roads can cause casualties on ground.[5]

Requirement in Wartime

It is a common tactic in air warfare to destroy the operating bases. This way the air assets can be damaged or destroyed without actively destroying the aircrafts. The main reason the highway strips were invented was to be used as temporary operating base when the main operating base is destroyed. Many of

the air forces throughout the world carry out exercises to even practice and evaluate their capabilities to operate through these alternate operating bases in case of on enemy attack.

Consider an aircraft going to an attack only to return to see the operating base destroyed and no nearby runways to land with its endurance available. With the inclusion of highway strips aviations, the Armed Forces can enhance their wartime capability as well as ensure the safety of its assets involved in war.[6]

Prospective Highway Strips

There are few prospective highway strips location that can be of use for the Armed Forces for their position or the build or both. However highway strips can also be quite small - the short runways built in the Swedish Bas 90 system are commonly only 800 meters (0.5 miles) in length. The STOL-capability of the Viggen and Gripen allowed for such short runways. Also in case of smaller aircrafts like PT-6, K-8W, L-39 ZA the highway strips can be a smaller one. Briefly these prospective Highway Strips are as follows:-

a. **Jashore-Jhenaidah Highway**: This road is located near the Jashore Airfield where BAF is having most of its training flights conducted. Added with it the fact that more of the older aircrafts are operating there the requirement of a highway strip can be considered. But the current condition of it depicts that it will involve more modification.

b. **Jashore-Khulna Highway**: This one is eligible for similar reasons. But this highway is in a better shape but none the less will involve much modification.

c. **Dhaka-Sylhet Highway**: Located between three major airports HSIA, Tejgaon Airfield and SOIA it has both the potentials and the location. Both BAF and Bangladesh Army will be benefited.

d. **Dhaka-Mymensingh Highway**: The newest and the most eligible potential highway strip in terms of its position and the current condition. More eligible as a alternate emergency base than an emergency landing strip because of the proximity to HSIA and Tejgaon Airfield.

e. **Dhaka-Chattogram Highway**: This one is also amongst the most eligible ones on both the considerations. And the amount of traffic overflying is the largest as all the aviation elements of the Armed Forces overfly it time and again. Also all of them have operational bases close by.

It is very contextual to mention that Bangladesh Army is having an existing example of highway strip at their 10 Div in Ramu Cantonment with a dimension of 5000 ft x 44 ft which was built in 2015. It may not be used regularly but the concept is the same as of a highway strip. This road was under Roads

and Highways. But 16 ECB renovated it and included two helipads.[7]

Recommendations

Following are the recommendations pertaining to the vital concept of Highway Strips:-

a. Coordination with the government is required to develop the existing roads under Roads and Highways as Highway Strips.

b. CAAB and BAF may carry out joint workshops to assess the compatibility which will enhance the usage and requirements of both the civil and military operators. This will in turn help distribution of effort and sanctioning of budget.

c. Bangladesh Army, Bangladesh Navy and BAF may carry out practice of approach and if possible landings in the existing broad roads like Dhaka-Mymensingh Highway and Ramu Cantonment after necessary coordination.

d. A committee may be formed jointly by Bangladesh Army, Bangladesh Navy, BAF, CAAB, Roads and Highways Authority and other appropriate authorities for the consideration of using any new highways as a highway strip during all future construction, taking into account its compatibility.

Conclusion

From the above discussion it can be justifiably deduced that roads can be transformed into runways and even air force bases. But this process is neither easy nor cheap. First, thorough surveys and feasibility checks are needed to be done about the requirement and location of the highway strip. Because it will not be logical to build a wide and long one near Jashore airfield where most aircrafts operating are small ones and building a narrow and short one near Dhaka or Chattogram. But it cannot be denied that for a progressive and advanced air force highway strips are a requirement.

If these highway strips are built only the Armed Forces will not be the gainer, Civil Aviation will also be benefited. Roads will also be more developed for day to day uses. But again it is easy for the Air Force from a Third World country like Bangladesh to suddenly initiate highway strips projects. In this aspect the contribution and co-ordination from both Civil Aviation and Roads and Highway authority is required. So planning and motivation of and from the government part will be required. May be a poor country of the Third World like Bangladesh cannot afford to build one like Lim Chu Kang in Singapore or even that within 48 hours. But there should be optimum utilization of limited resources to fulfill this requirement.

Notes and References

1. https://commons.wikimedia.org/wiki/Category:Highway_strips

2. *Ibid.*

3. *Ibid.*

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Brief Biography

Flight Lieutenant Saad Mohammad Reefat was commissioned on 31 December 2015 in GD (P) Branch from Bangladesh Air Force Academy. He completed a number of professional courses at home and abroad. The officer pursued Flight Safety Officers' Course organized by Flight Safety Institute, BAF and also Physiological Indoctrination Course held under the auspices of Aero Medical Institution, BAF. He served in 11 Squadron BAF, 15 Squadron BAF and 21 Squadron BAF respectively. He flew PT-6 and K-8W aircraft. Presently the officer is serving in 105 AJTU BAF flying Yak-130 aircraft. He has an aptitude for writing and likes to read books.

স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম ঃ আধুনিক সীমান্ত ব্যবস্থাপনা পদ্ধতি

লেফটেন্যান্ট কর্নেল মোহাম্মদ শহীদুল ইসলাম, পিএসসি, ইঞ্জিনিয়ার্স

ভূমিকা

স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম বর্তমান সময়ের বহুল আলোচিত একটি বিষয়। আধুনিক তথ্য প্রযুক্তি ব্যবহার করে সীমান্ত ব্যবস্থাপনা কার্যক্রমকে আরো গতিশীল এবং নিরাপদ করাই এর মূল উদ্দেশ্য। সীমান্তরক্ষী বাহিনীর জনবল বৃদ্ধি করা ছাড়াই এটি কোন দেশকে বাড়তি ভ্রমণকারীদের চাপ মোকাবেলায় সহায়তা করে। স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম এর মূল প্রতিপাদ্য বিষয় হলো দুটি দেশের মধ্যে জনসাধারণের নিরাপদ চলাচল নিশ্চিত করা এবং একই সঙ্গে চোরাচালান, মাদক পাচার, মানব পাচার ও অন্যান্য সীমান্ত বিষয়ক অপরাধ দক্ষতার সাথে নিয়ন্ত্রণ করা। স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম একটি অত্যন্ত কার্যকরী, যুগোপযোগী এবং দক্ষ সীমান্ত ব্যবস্থাপনাকে নির্দেশ করে। এটি সীমান্তকে অধিকতর নিরাপদ করে তোলে, সীমান্ত বিষয়ক তথ্য প্রবাহ গতিশীল করে এবং তথ্য প্রযুক্তির সমন্বয়ে সীমান্তে যে কোন প্রকার হুমকি মোকাবেলায় অত্যন্ত কার্যকরী ভূমিকা পালন করে।

সীমান্ত ব্যবস্থাপনা একটি অত্যন্ত গুরুত্বপূর্ণ বিষয়, যেখানে দেশের সংশ্লিষ্ট সংস্থা সমূহের সমন্বিত উদ্যোগ এবং কার্যক্রম গ্রহণ একান্ত প্রয়োজন। আধুনিক সীমান্ত ব্যবস্থাপনার মাধ্যমে সীমান্ত এলাকা সমূহকে নিরাপদ করা এবং একটি দেশ হতে প্রতিবেশী দেশে মালামাল কিংবা জনসাধারণ এর গমনাগমন সকল প্রকার ঝুঁকিমুক্ত করা সম্ভব। সীমান্ত ব্যবস্থাপনা শুধুমাত্র অবৈধ গমনাগমন রোধ, চোরাচালান প্রতিরোধ কিংবা নারী ও শিশু পাচার রোধের মত বিষয় সমূহের মধ্যেই সীমাবদ্ধ নয়। এর কর্মপরিধি আরও বিস্তৃত এবং প্রসারিত।

ভারত এবং মায়ানমার-এর সঙ্গে বাংলাদেশের মোট ৪,৪২৭ কিঃ মিঃ দীর্ঘ সীমান্ত রয়েছে। ভারত তাদের সীমান্তে বেশীরভাগ অংশে কাঁটাতারের বেড়া নির্মাণ করেছে। বাংলাদেশের সীমান্ত রক্ষী বাহিনী সীমান্তকে সুরক্ষিত করার লক্ষ্যে দিন রাত ২৪ ঘন্টা নিরলসভাবে কাজ করে চলেছে। বাংলাদেশের সীমান্তে বিভিন্ন অংশের চিত্র বিভিন্ন রকমের। সীমান্ত অপরাধ সমূহও এলাকাভেদে বিভিন্ন রকমের হয়ে থাকে। কাজেই সংশ্লিষ্ট সীমান্তে অবস্থা পর্যালোচনার পর সীমান্ত ব্যবস্থাপনা পদ্ধতি নির্ধারণ করা আবশ্যক। পৃথিবীর বেশির ভাগ উন্নত দেশই আধুনিক তথ্য প্রযুক্তির সমন্বয়ে স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম প্রচলন করেছে। এটি একটি দেশের সীমান্ত ব্যবস্থাপনাকে আধুনিক, গতিশীল, প্রযুক্তি নির্ভর এবং অত্যন্ত কার্যোপযোগী করে গড়ে তোলে। পৃথিবীর অন্যান্য দেশের ন্যায় বাংলাদেশেও স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম সীমিত আকারে গড়ে তোলার কাজ ইতিমধ্যেই শুরু হয়েছে। ডিজিটাল বাংলাদেশ এর স্বপ্ন বাস্তবায়নের লক্ষ্যে সীমান্ত ব্যবস্থাপনায় আধুনিক যন্ত্রপাতির ব্যবহার এখন সময়ের দাবী। দেশের অন্য সকল সেক্টর এর ন্যায় সীমান্ত ব্যবস্থাপনায় আধুনিক প্রযুক্তি সংযোজন করার এখনই উপযুক্ত সময়।

উদ্দেশ্য

স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম সম্পর্কে আলোকপাত করা এবং বাংলাদেশের সীমান্তের জন্য আধুনিক তথ্য প্রযুক্তি ব্যবহার এর বিষয়ে সুপারিশ করা বক্ষ্যমাণ নিবন্ধের উদ্দেশ্য।

স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম এর মৌলিক বৈশিষ্ট্য

স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম এর চারটি মৌলিক বৈশিষ্ট্য রয়েছে। বিষয়গুলো নিম্নে সংক্ষেপে আলোচনা করা হলো:-[১]

ক) তথ্য প্রযুক্তি অবকাঠামো:

সীমান্তে ঘটনাবলী পর্যবেক্ষণ, বিশ্লেষণ, রিপোর্ট এবং সে বিষয়ে কার্যকরী ব্যবস্থা গ্রহণের লক্ষ্যে একটি সমন্বিত তথ্য প্রযুক্তি অবকাঠামো প্রয়োজন। বর্তমানে পৃথিবীতে নানাবিধ তথ্য প্রযুক্তি রয়েছে। সীমান্তে চাহিদা এবং অন্যান্য পারিপার্শ্বিকতার উপর ভিত্তি করে আমাদের তথ্য প্রযুক্তি ব্যবহার-এর বিষয়ে সিদ্ধান্ত গ্রহণ করতে হবে। সীমান্ত ব্যবস্থাপনার ক্ষেত্রে অত্যাধুনিক তথ্য প্রযুক্তি ব্যবহার দ্বারা অধিক কার্যকর এবং ত্রুটিমুক্ত সীমান্ত গড়ে তোলা সম্ভব। এজন্য প্রথমেই তথ্য প্রযুক্তি অবকাঠামো গড়ে তোলা অত্যন্ত জরুরী।

খ) সমন্বিত সীমান্ত ব্যবস্থাপনা:

একটি দেশের সীমান্ত ব্যবস্থাপনার সঙ্গে অনেকগুলো সংস্থা জড়িত থাকে। সমন্বিত সীমান্ত ব্যবস্থাপনার মূল উদ্দেশ্য হচ্ছে সংশ্লিষ্ট সকল সংস্থার মধ্যে অধিকতর সমন্বয়ের মাধ্যমে ব্যবসা-বানিজ্য, নিরাপত্তা, সীমান্ত পারাপার ও অন্যান্য সকল বিষয়ে সক্ষমতা বৃদ্ধি করা। এর মাধ্যমে সীমান্তরক্ষী বাহিনী এবং অন্যান্য সংশ্লিষ্ট সকলকে একত্র করে একটি পদ্ধতির মধ্যে নিয়ে আসা যাতে করে বৈধ মালামাল এবং যাত্রীদের গমনাগমন অনেক সহজতর ও দ্রুত কার্যকর করা সম্ভব হয়। এটা একই সঙ্গে প্রতিবেশী দেশের যে কোন প্রকার হুমকি মোকাবেলায় সমন্বিত পদক্ষেপ গ্রহণে সহায়তা করে।

গ) তথ্য প্রযুক্তির হালনাগাদ ধারণা:

চোরাকারবারী এবং সীমান্ত অপরাধের সঙ্গে সম্পৃক্ত ব্যক্তি এবং সংস্থাসমূহ অত্যন্ত ধূর্ত প্রকৃতির হয়ে থাকেন এবং তারা তথ্য প্রযুক্তি বিষয়েও অনেক খোঁজ খবর রাখেন। অনেক ক্ষেত্রে তারা অবৈধ মালামাল পাচারকালে আধুনিক প্রযুক্তির ব্যবহার করে থাকেন। কাজেই সীমান্তরক্ষী বাহিনীকে এ বিষয়ে অবশ্যই সজাগ থাকতে হবে এবং চোরাকারবারীদের ব্যবহৃত বিভিন্ন প্রযুক্তি সম্পর্কে হালনাগাদ ধারণা রাখতে হবে। সীমান্তরক্ষী বাহিনীর সদস্যদের নতুন নতুন প্রযুক্তি সম্পর্কে ওয়াকিবহাল থাকতে হবে। এটা সীমান্ত অপরাধের সঙ্গে সম্পৃক্ত সকলকে সফলভাবে মোকাবিলা করতে সহায়তা করবে।

ঘ) দক্ষ জনবল তৈরি:

সীমান্ত ব্যবস্থাপনার সঙ্গে সম্পৃক্ত সকলকে সর্বদা স্বতঃস্ফুর্ততা, সততা ও আন্তরিকতার সঙ্গে কাজ করতে হবে। এ সকল কাজ অনেক সময় অত্যন্ত ঝুঁকিপূর্ণ হয়ে থাকে। সঠিক সময়ে সঠিক সিদ্ধান্ত গ্রহণের সক্ষমতা থাকতে হবে। আধুনিক তথ্য প্রযুক্তি ব্যবহার করার জন্য দক্ষ জনবল গড়ে তুলতে হবে এবং তাদের প্রশিক্ষণ এর ব্যবস্থা করতে হবে। পৃথিবীর বিভিন্ন দেশ নতুন প্রযুক্তি সরবরাহের সময় ব্যবহারকারীদের প্রশিক্ষণ দিয়ে থাকে। শুধুমাত্র উন্নত প্রযুক্তি সংযোজন করলেই হবে না সেগুলোকে সঠিকভাবে ব্যবহার এর জন্য দক্ষ জনবল তৈরি অত্যন্ত গুরুত্বপূর্ণ একটি বিষয়।

বাংলাদেশ সীমান্ত পর্যালোচনা

বাংলাদেশ সীমান্তে মোট দৈর্ঘ্য ৪,৪২৭ কিঃ মিঃ যার মধ্যে ৪,১৫৬ কিঃ মিঃ ভারতের সঙ্গে এবং ২৭১ কিঃ মিঃ সীমান্ত মায়ানমার-এর সঙ্গে। বাংলাদেশের বিভিন্ন এলাকায় সীমান্তে ভৌগলিক অবস্থা বিভিন্ন রকমের। কাজেই ভূমির প্রকৃতি, জনসাধারণ এর জীবনযাত্রা এবং অন্যান্য পারিপার্শ্বিক অবস্থার উপর ভিত্তি করে সীমান্তে বিভিন্ন অংশে বিভিন্ন রকম প্রযুক্তি ব্যবহার এর প্রয়োজন হবে। বাংলাদেশ সীমান্তকে চারটি বৃহৎ অঞ্চলে ভাগ করা যায়। এ অঞ্চল সমূহ নিম্নে আলোচনা করা হলো:-[২]

ক) দক্ষিণ-পশ্চিম অঞ্চল:

এই অঞ্চল দক্ষিণে তালপট্টি হতে উত্তরে কুষ্টিয়া জেলা পর্যন্ত বিস্তৃত। এই সীমান্তে দৈর্ঘ্য প্রায় ৬০০ কিঃ মিঃ যার মধ্যে ৩৪০ কিঃ মিঃ ভূমি এবং বাকী ২৬০ কিঃ মিঃ নদী। সীমান্তে দক্ষিণাংশ জুড়ে রয়েছে সুন্দরবন তাছাড়া এখানে রয়েছে ইছামতি এবং পদ্মা নদী যার প্রস্থ ক্ষেত্র বিশেষে ১ কিঃ মিঃ থেকে ১০ কিঃ মিঃ পর্যন্ত হয়ে থাকে। বিল, ঝিল, হ্যাচারী এবং অন্যান্য জলাশয়ও এ অঞ্চলে দেখা যায়। বাকী এলাকা সমূহে চাষী জমি এবং জনসাধারণ এর বসবাস রয়েছে। সীমান্তে উভয় পার্শ্বে একই ধরণের ধর্মীয় বিশ্বাসের জনসাধারণ এর বসবাস রয়েছে। হিন্দু, মুসলমান এবং অন্য ধর্মের জনসাধারণ এর বসবাসও এখানে দেখা যায়। অনেক ক্ষেত্রে একই পরিবার বা বংশের লোকদের সীমান্তে দুই পার্শ্বে বসবাস করতে দেখা যায়। এখানে বসবাসরত জনসাধারণ এর আর্থ-সামাজিক অবস্থা তেমন একটা ভালো না। এদের অনেকেই কৃষি কাজ, দিন মজুর, রিক্সা চালক এবং ছোট ব্যবসা করে জীবন যাপন করে। অনেকেই চোরাচালানী মালামাল পাচার এর সঙ্গে জড়িত থাকে বলে অভিযোগ রয়েছে।

খ) উত্তর-পশ্চিম অঞ্চল:

এই অঞ্চল রাজশাহী জেলা থেকে শুরু হয়ে কুড়িগ্রাম পর্যন্ত বিস্তৃত। সীমান্তে দৈর্ঘ্য প্রায় ১,৭০০ কিঃ মিঃ যার মধ্যে ১,৫৫০ কিঃ মিঃ ভূমি এবং বাকী ১৫০ কিঃ মিঃ নদী। পদ্মা, মহানন্দা এবং পুনর্ভবা নদী এই অঞ্চলে প্রবাহিত হয়। আন্তর্জাতিক সীমান্ত জুড়ে ঘন বসতি দেখা যায়। এই অঞ্চলে প্রচুর জলাশয় রয়েছে। জনসাধারণ এর আর্থ-সামাজিক অবস্থা বেশী ভালো না। এদের অনেকেই গবাদিপশু পাচার এর সঙ্গে জড়িত থাকে বলে অভিযোগ আছে। মাদক, তৈরি পোশাক, সার, বীজ এবং অন্যান্য জিনিসপত্র সীমান্তে চোরাচালান হয়ে থাকে।

গ) উত্তর-পূর্ব অঞ্চল:

এই অঞ্চল কুড়িগ্রাম হতে চট্টগ্রাম পর্যন্ত বিস্তৃত। সীমান্তে দৈর্ঘ্য প্রায় ১,২০০ কিঃ মিঃ যার মধ্যে ১০০ কিঃ মিঃ নদী। ভারতের মেঘালয় রাজ্যের গারো পার্বত্য এলাকা এই অঞ্চলে রয়েছে। এই অঞ্চলে নদী, পাহাড়, জলাশয় বনাঞ্চলসহ সব ধরণের ভূ-প্রাকৃতিক বৈচিত্র রয়েছে। এখানে মেঘালয়, আসাম এবং ত্রিপুরা রাজ্যের সঙ্গে সীমান্ত রয়েছে যেখানে গাড়োদের বসবাস আছে। এখানকার জনসাধারণ মূলতঃ চাষাবাদ এবং ক্ষুদ্র ব্যবসা বানিজ্য করে জীবন ধারণ করে। তৈরি পোষাক, মাদক, যন্ত্রাংশসহ অন্যান্য বিভিন্ন ধরণের মালামাল সীমান্ত এলাকা দিয়ে পাচার হয়ে থাকে বলে অভিযোগ আছে।

ঘ) দক্ষিণ-পূর্ব অঞ্চল:

এই অঞ্চল চট্টগ্রাম হতে টেকনাফ পর্যন্ত বিস্তৃত। সীমান্তে দৈর্ঘ্য প্রায় ৮১০ কিঃ মিঃ যার মধ্যে ভারতের সঙ্গে ৫৩৯ কিঃ মিঃ এবং মায়ানমার এর সঙ্গে ২৭১ কিঃ মিঃ। সীমান্তে বেশির ভাগ এলাকা জুড়ে রয়েছে পাহাড় এবং কিছু অংশে রয়েছে নদী। এখানে সীমান্ত অঞ্চলে বিভিন্ন উপজাতীয়

জনসাধারণ বসবাস করে। জনসংখ্যার ঘনত্ব খুবই কম। উপজাতীয়রা মূলতঃ জুমচাষ করে জীবিকা নির্বাহ করে। পার্বত্য অঞ্চলে চোরাচালান নেই বললেই চলে। তবে মায়ানমার সীমান্ত দিয়ে ইয়াবাসহ বিভিন্ন দ্রব্য সামগ্রী চোরাচালান হয়ে থাকে বলে অভিযোগ আছে।

পৃথিবীর বিভিন্ন দেশের সীমান্ত ব্যবস্থাপনা পদ্ধতি

সীমান্ত নিরাপত্তার জন্য পৃথিবীর বিভিন্ন দেশের নিজস্ব সীমান্ত ব্যবস্থাপনা পদ্ধতি রয়েছে। সীমান্ত নিরাপত্তা পদ্ধতি মূলতঃ সীমান্ত অপরাধ, সীমান্তে বসবাসরত জনসাধারণের আর্থ-সামাজিক অবস্থা, অবৈধভাবে সীমান্ত অতিক্রম, চোরাচালান ইত্যাদি বিষয় সমূহের উপর নির্ভর করে। বিভিন্ন দেশের সীমান্ত সমস্যা ভিন্ন ভিন্ন রকমের হয়ে থাকে। একই দেশের ভিতরও সীমান্তে বিভিন্ন এলাকায় বিভিন্ন রকম সমস্যা থাকতে পারে। সীমান্ত সমস্যার ধরণের উপর ভিত্তি করে সীমান্ত ব্যবস্থাপনা পদ্ধতিও বিভিন্ন রকমের হয়ে থাকে। পৃথিবীর কয়েকটি দেশের সীমান্তের ব্যবস্থাপনা সম্পর্কে নিম্নে আলোকপাত করা হলো ঃ-

ক) ইসরাইল সীমান্তঃ

ইসরাইল এর উত্তরে লেবানন, উত্তর-পূর্বে গোলান হাইট ও সিরিয়া, পূর্বে পশ্চিমতীর ও জর্ডান, পশ্চিমে গাজা উপত্যকা এবং দক্ষিণ-পশ্চিমে মিশর এর সঙ্গে সীমান্ত রয়েছে। সিরিয়া ও ফিলিস্তিন এর সঙ্গে ইসরাইলের বিরোধপূর্ণ সীমান্ত রয়েছে। আরব এবং ইহুদীদের মধ্যে ধর্মীয় মত পার্থক্যই এখানে সীমান্তে মূল সমস্যা। বিশেষজ্ঞদের মতে ইসরাইলের সীমান্ত ব্যবস্থাপনা পদ্ধতি পৃথিবীর অত্যন্ত উন্নত ও আধুনিক সীমান্ত ব্যবস্থাপনা সমূহের মধ্যে অন্যতম। তারা সীমান্তে স্মার্ট ফেন্স ব্যবহার করে থাকে যার মাধ্যমে যে কোন অনুপ্রবেশ তৎক্ষণাত সনাক্ত করা সম্ভব হয়। এছাড়াও তারা সীমান্তে রাডার, মোশন সেন্সর, সিসি টিভি ক্যামেরা, কার্গো স্ক্যানিং, রিমোট কন্ট্রোল বোম্ব ডিটেক্টর, লেজার ওয়াল ইত্যাদি ব্যবহার করে থাকে। পৃথিবীর অত্যাধুনিক তথ্য প্রযুক্তি ব্যবহার করে তারা সীমান্তকে সুরক্ষিত করে থাকে।[৩]

ছবি ১: ইসরাইল সীমান্ত

সূত্র: ইন্টারনেট হতে সংগৃহীত

খ) আমেরিকা-মেক্সিকো সীমান্তঃ

এই সীমান্ত পশ্চিমে প্রশান্ত মহাসাগর থেকে পূর্বে মেক্সিকো সাগর পর্যন্ত বিস্তৃত। এটাকে পৃথিবীর ব্যস্ততম সীমান্ত বলা যায় যেখানে প্রতি বছর প্রায় ৩৫০ মিলিয়ন লোক বৈধভাবে সীমান্ত পারাপার করে থাকে। অবৈধভাবে সীমান্ত অতিক্রম, মাদক ব্যবসা ইত্যাদি এ সীমান্তে মূল সমস্যা। এই সীমান্তকে সুরক্ষিত করার জন্য আমেরিকা অনেক ধরণের উন্নত প্রযুক্তি ব্যবহার করে

যার মধ্যে রাডার, সিসি টিভি ক্যামেরা, অবজারভেশন টাওয়ার, গ্রাউন্ড সেন্সর, ফেন্স সেন্সর, বর্ডার সিকিউরিটি ভেহিক্যাল ইত্যাদি উল্লেখযোগ্য।[৪]

ছবি ২: আমেরিকা-মেক্সিকো সীমান্ত

সূত্র: ইন্টারনেট হতে সংগৃহীত

গ) ভারত-পাকিস্তান সীমান্ত:

ভারত ও পাকিস্তান সীমান্ত প্রায় ২,৯০০ কিঃ মিঃ দীর্ঘ এবং এটি একটি অত্যন্ত উত্তেজনাপূর্ণ সীমান্ত। এই সীমান্ত জুড়ে ভারত ফ্লাড লাইট স্থাপন করেছে। এই সীমান্তে প্রায়ই সীমান্তরক্ষীদের মাঝে গুলি বিনিময়ের ঘটনা ঘটে থাকে। এটা পৃথিবীর উত্তেজনাপূর্ণ সীমান্তমূহের মধ্যে অন্যতম একটি সীমান্ত। ভারত সরকার সীমান্তে প্রায় পুরোটা জুড়ে কাঁটা তারের বেড়া দিয়েছে। ব্যবহৃত প্রযুক্তি সমূহের মধ্যে লেজার ওয়াল, ফ্লাড লাইট, ইনফ্রারেড ডিভাইস ইত্যাদি অন্যতম। [৫]

ছবি ৩: ভারত-পাকিস্তান সীমান্ত

সূত্রঃ ইন্টারনেট হতে সংগৃহীত

ঘ) বাংলাদেশ-ভারত সীমান্ত:

বাংলাদেশ-ভারত সীমান্ত পৃথিবীর ৫ম বৃহত্তম সীমান্ত যা ৪,১৫৬ কিঃ মিঃ দীর্ঘ। এখানে সীমান্ত চিহ্নিত করার জন্য সীমান্ত পিলার রয়েছে। সীমান্তে বেশীরভাগ এলাকা জুড়ে ভারত কাঁটা

তারের বেড়া নির্মাণ করেছে। সীমান্তে বিভিন্ন অংশে মাদক, গবাদিপশু, পোষাক, ঔষধ ও খাদ্যদ্রব্য চোরাচালান হয়ে থাকে বলে অভিযোগ রয়েছে। তাছাড়া অবৈধভাবে সীমান্ত অতিক্রমও একটা বড় সমস্যা। ভারত যে সব প্রযুক্তি ব্যবহার করে তার মধ্যে ফ্লাড লাইট, নাইট ভিশন ডিভাইস, ড্রোন, রাডার অন্যতম। বাংলাদেশও সীমিত আকারে সীমান্তে বিভিন্ন অংশে সিসি টিভি ক্যামেরা, হিউম্যান সেন্সর ও অন্যান্য প্রযুক্তি ব্যবহার শুরু করেছে।[৬]

ছবি ৪: বাংলাদেশ-ভারত সীমান্ত

সূত্র: ইন্টারনেট হতে সংগৃহীত

ঙ) বাংলাদেশ-মায়ানমার সীমান্ত:

এই সীমান্ত দৈর্ঘ্য প্রায় ২৭১ কিঃ মিঃ যার মধ্যে প্রায় ৫৪ কিঃ মিঃ নদী। স্থলভাগের বেশীর ভাগ অংশে পাহাড়-পর্বত ও বন-জঙ্গল রয়েছে। মায়ানমার থেকে রোহিঙ্গা জনগোষ্ঠীর অবৈধভাবে সীমান্ত অতিক্রম করে বাংলাদেশে আসা এবং ইয়াবা পাচার মূলত এই সীমান্তে প্রধান দুটি সমস্যা। মায়ানমার প্রায় ৭০ কিঃ মিঃ কাঁটা তারের বেড়া নির্মাণ করেছে। সীমান্তে বেশীর ভাগ জুড়ে পাহাড় ও গহীন অরণ্য থাকায় এখানে জনবসতি খুবই কম। কোন দেশেই সীমান্তে তেমন কোন প্রযুক্তি ব্যবহার করছে না। উভয় দেশের সীমান্তরক্ষী বাহিনী সার্বক্ষণিকভাবে সীমান্ত পাহারা দিয়ে থাকে। তবে ইদানিং বাংলাদেশ তাদের সীমান্তে বিভিন্ন প্রযুক্তি স্থাপনের কার্যক্রম শুরু করেছে।[৭]

ছবি ৫: বাংলাদেশ-মায়ানমার সীমান্ত

সূত্রঃ ইন্টারনেট হতে সংগৃহীত

বাংলাদেশের প্রেক্ষাপটে স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম

বাংলাদেশের বিভিন্ন সীমান্তে সীমিত আকারে আধুনিক তথ্য প্রযুক্তি ব্যবহার শুরু হয়েছে। বিজিবি'র বিভিন্ন কর্মকান্ড আধুনিকায়নের ফলে সীমান্ত ব্যবস্থাপনা পূর্বের তুলনায় আধুনিক, দ্রুততর এবং যথাযথ হচ্ছে। চোরাচালান প্রবণ সীমান্তে পর্যায়ক্রমে সার্চ লাইট স্থাপন করা হচ্ছে। বিজিবি'র জনবলের স্বল্পতা এবং সীমান্তে অপরাধের ধরণ বিবেচনায় নিয়ে সীমান্ত সুরক্ষার লক্ষ্যে আধুনিক প্রযুক্তি ও যানবাহন সমৃদ্ধ "বর্ডার সার্ভেইল্যান্স এন্ড রেসপন্স সিস্টেম" স্থাপনের প্রক্রিয়া চলছে। নিম্নে কিছু আধুনিক যন্ত্রপাতির বর্ণনা করা হলো যা বাংলাদেশের সীমান্তকে সুরক্ষা করার জন্য ব্যবহার করা যেতে পারে। [৮]

ক) **সিসি টিভি ক্যামেরা:**

ঘনবসতিপূর্ণ এলাকায় এবং যে সব সীমান্তে লোক চলাচল বেশী হয় সে সব অঞ্চলে সিসি টিভি ক্যামেরা ব্যবহার করা যেতে পারে। পর্যবেক্ষণ চৌকির সঙ্গেও এটি ব্যবহার করা যায়। এর ব্যবহার সীমান্তরক্ষী বাহিনীর সদস্যদের দায়িত্ব অনেক সহজ এবং গতিশীল করতে পারে। বেশ কিছু সিসি টিভি ক্যামেরার মনিটর এক জায়গায় স্থাপনের মাধ্যমে তা এক স্থান থেকে পর্যবেক্ষণ করা যেতে পারে। এটা পৃথিবীর প্রায় বেশীরভাগ সীমান্তে ব্যবহৃত একটি ব্যবস্থাপনা পদ্ধতি। এ পদ্ধতি অত্যন্ত কার্যকর এবং তা সীমান্ত এলাকাকে সফলভাবে নজরদারিতে সহায়তা করে। পার্বত্য অঞ্চল এবং নদী অঞ্চল ছাড়া বাংলাদেশ সীমান্তে বেশীর ভাগ অংশে সিসি টিভি ক্যামেরা ব্যবহার করা যেতে পারে।

ছবি ৬: সিসি টিভি ক্যামেরা-১

সূত্র: ইন্টারনেট হতে সংগৃহীত

ছবি ৭: সিসি টিভি ক্যামেরা-২

সূত্র: ইন্টারনেট হতে সংগৃহীত

খ) **ফ্লাড লাইট ও নাইট ভিশন ডিভাইস:**

ঘনবসতিপূর্ণ এলাকায় সিসি টিভি ক্যামেরার পাশাপাশি ফ্লাড লাইট ও নাইট ভিশন ডিভাইস ব্যবহার করা যেতে পারে। বাংলাদেশ সীমান্তে রিং রোড নির্মাণ হলে সেখানে ফ্লাড লাইট ব্যবহার অত্যন্ত কার্যকরী হবে। অবৈধ চলাচল মূলত রাতের আধারেই হয়ে থাকে। সীমান্ত এলাকা আলোকিত হলে আন্তঃ সীমান্ত অবৈধ গমনাগমন বহুলাংশে কমে আসবে। রাতের বেলা যে কোন চলাচল সনাক্তকরনে নাইট ভিশন ডিভাইস অত্যন্ত কার্যকরী হয়ে থাকে। বাংলাদেশ সীমান্তের জন্য এগুলো খুবই উপযোগী হবে।

ছবি ৮: নাইট ভিশন ডিভাইস

সূত্রঃ ইন্টারনেট হতে সংগৃহীত

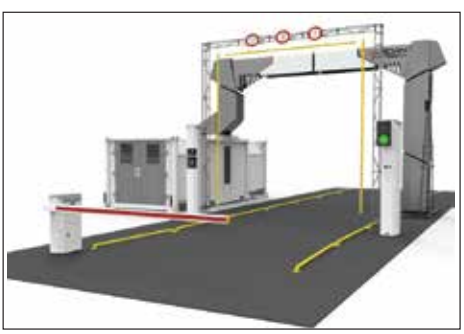
ছবি ৯: নাইট ভিশন ডিভাইস

সূত্রঃ ইন্টারনেট হতে সংগৃহীত

গ) আধুনিক ভেহিক্যাল ও কার্গো স্ক্যানার:

সীমান্তে ইমিগ্রেশন চেকপোস্ট (আইসিপি) সমূহে এ সকল সরঞ্জামাদি অত্যন্ত কার্যোপযোগী। বর্তমানে যানবাহন ও কার্গো সমূহ তল্লাশী করা হয় যা সময় সাপেক্ষ এবং খুব বেশী কার্যকরী হয় না। আধুনিক ভেহিক্যাল ও কার্গো স্ক্যানার দ্বারা অতি দ্রুত এবং নিখুঁতভাবে যানবাহন তল্লাশী কার্যক্রম সম্পন্ন করা সম্ভব। এ সকল যন্ত্রের ব্যবহার এর মাধ্যমে সীমান্তে যানবাহন পারাপার গতিশীল করা সম্ভব। পৃথিবীর বেশীরভাগ দেশে আইসিপি সমূহে এগুলো ব্যবহৃত হচ্ছে। বাংলাদেশের সীমান্তে এ সকল যন্ত্রপাতির ব্যবহার আমাদের সীমান্ত পারাপারে গতিশীলতা আনবে এবং একই সাথে তল্লাশী কার্যক্রমও নিখুঁতভাবে করা সম্ভব হবে।

ছবি ১০: আধুনিক ভেহিক্যাল ও কার্গো স্ক্যানার-১



সূত্র: ইন্টারনেট হতে সংগৃহীত

ছবি ১১: আধুনিক ভেহিক্যাল ও কার্গো স্ক্যানার-২

সূত্র: ইন্টারনেট হতে সংগৃহীত

ঘ) থার্মাল ইমেজার, গ্রাউন্ড রাডার, লং রেঞ্জ রাডার, মুভমেন্ট সেন্সর:

গ্রাউন্ড ও মোশন সেন্সর সমূহ শহর এলাকা এবং হাট বাজার এলাকার জন্য খুব একটা কার্যকরী হবে না। তবে এ সকল ডিভাইস সমূহ চরাঞ্চল এবং নদী অঞ্চল সমূহের জন্য অত্যন্ত কার্যকরী হবে। লং রেঞ্জ রাডার ও থার্মাল ইমেজার সমূহ টাওয়ার এ স্থাপনের মাধ্যমে নদী অঞ্চল ও পার্বত্য এলাকায় অবৈধ চলাচল সনাক্ত করা যেতে পারে। কাজেই বাংলাদেশের সংশ্লিষ্ট সীমান্ত অঞ্চল সমূহে এ সকল ডিভাইস অত্যন্ত কার্যকরভাবে ব্যবহার করা যেতে পারে।

ছবি ১২: মুভমেন্ট সেন্সর

সূত্র: ইন্টারনেট হতে সংগৃহীত

ছবি ১৩: থার্মাল ইমেজার

সূত্র: ইন্টারনেট হতে সংগৃহীত

ঙ) আধুনিক যানবাহন ও নৌযান:

ভূমির অবস্থার উপর নির্ভর করে বিভিন্ন ধরণের আধুনিক যানবাহন ব্যবহার করা যেতে পারে। দ্রুত গতি সম্পন্ন নৌযান বা স্পীড বোট নদী অঞ্চলে ব্যবহার করা যেতে পারে। দ্রুততম সময়ের মধ্যে সীমান্তে "রেসপন্স টীম" পৌঁছানোর লক্ষ্যে সব ধরণের ভূমিতে চলাচল উপযোগী "অল টেরাইন ভেহিক্যাল", ট্রাক্টর এবং নদী পরিবেষ্টিত সীমান্তের জন্য এয়ারবোট, হাই স্পীড বোট এবং ফাস্ট ক্র্যাফ্ট ইত্যাদি যানবাহন ব্যবহার করা যেতে পারে।

ছবি ১৪: অল টেরাইন ভেহিক্যাল

সূত্র: ইন্টারনেট হতে সংগৃহীত

ছবি ১৫: হাই স্পীড বোট

সূত্র: ইন্টারনেট হতে সংগৃহীত

চ) ড্রোন:

ড্রোন ব্যবহার করে সীমান্ত এলাকাকে আরো কার্যকরভাবে নিয়ন্ত্রণ করা সম্ভব। এটা পৃথিবীর প্রায় সকল সীমান্তে ব্যবহৃত একটি প্রযুক্তি। ইহা বাস্তব সম্মত ও সঠিক তথ্য দিতে সক্ষম। ইহা সীমান্তরক্ষী বাহিনীর সদস্যের দায়িত্ব অনেকাংশে কমিয়ে আনতে সক্ষম। ড্রোনের সঙ্গে নাইট ভিশন ক্যামেরা সংযুক্ত করে তাকে রাত্রিতে এমনকি পার্বত্য অঞ্চলেও ব্যবহার করা যেতে পারে। বাংলাদেশের বিভিন্ন সীমান্তে এটিকে অত্যন্ত কার্যকরভাবে ব্যবহার করা যেতে পারে। ড্রোন এর সঙ্গে ক্যামেরা সংযুক্ত করে অনেক দূর থেকেই যে কোন এলাকার ছবি তুলে আনা সম্ভব।

ছবি ১৬: ড্রোন

সূত্র: ইন্টারনেট হতে সংগৃহীত

ছবি ১৭: ড্রোন উইথ নাইট ভিশন

সূত্র: ইন্টারনেট হতে সংগৃহীত

ছ) পর্যবেক্ষণ টাওয়ার, রিং রোড, কাঁটা তারের বেড়া নির্মাণ:

ঝুঁকিপূর্ণ সীমান্তসমূহে কাঁটা তারের বেড়া নির্মাণ করা যেতে পারে। তাছাড়া প্রায় সমস্ত সীমান্ত জুড়ে রিং রোড নির্মাণ সীমান্তরক্ষী বাহিনীর চলাচলে গতিশীলতা আনবে। সীমান্তে বিভিন্ন গুরুত্বপূর্ণ অংশ সমূহে পর্যবেক্ষণ টাওয়ার নির্মাণ সকল প্রকার অবৈধ চলাচল সনাক্তকরনে অত্যন্ত কার্যকরী ভূমিকা রাখবে। বাংলাদেশের পার্বত্য অঞ্চলে এবং উচু নীচু যে সকল জায়গায় নজরদারিতে অসুবিধা হয় সেখানে পর্যবেক্ষণ টাওয়ার স্থাপন করা যেতে পারে।

ছবি ১৮: পর্যবেক্ষণ টাওয়ার

সূত্র: ইন্টারনেট হতে সংগৃহীত

ছবি ১৯: কাঁটা তারের বেড়া

সূত্র: ইন্টারনেট হতে সংগৃহীত

উপসংহার

একটি রাষ্ট্রের সীমান্ত নিরাপত্তা নিশ্চিন্তকরণের লক্ষ্যে স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম বর্তমান সময়ের একটি বহুল আলোচিত বিষয়। আধুনিক তথ্য প্রযুক্তি ব্যবহার এর মাধ্যমে সীমান্ত ব্যবস্থাপনা পদ্ধতিকে আরো নিরাপদ, ঝুঁকিমুক্ত এবং গতিশীল করা সম্ভব। পৃথিবীর অন্যান্য দেশের ন্যায় বাংলাদেশেও সীমিত আকারে স্মার্ট বর্ডার ম্যানেজমেন্ট সিস্টেম নিয়ে কার্যক্রম শুরু হয়েছে। একটি কার্যোপযোগী সীমান্ত ব্যবস্থাপনার জন্য তথ্য প্রযুক্তি এবং অবকাঠামো অত্যন্ত জরুরী। সীমান্তে ক্রমবর্ধমান চ্যালেঞ্জ সমূহ সফলভাবে মোকাবেলার জন্য অবশ্যই নতুন পদ্ধতি অবলম্বন করতে হবে। সীমান্তে বিভিন্ন সংস্থা সমূহের মধ্যে সমন্বয় থাকাটা অত্যন্ত জরুরী। চোরাকারবারীরা অনেক ক্ষেত্রেই বিভিন্ন তথ্য প্রযুক্তি ব্যবহার করে অবৈধ মালামাল পাচার করে থাকে। সীমান্তরক্ষী বাহিনীর সদস্যদের অবশ্যই নতুন নতুন প্রযুক্তির বিষয়ে ধারণা থাকতে হবে।

বাংলাদেশের বিভিন্ন সীমান্তে ভৌগলিক অবস্থা বিভিন্ন রকমের। ভূমির বিন্যাস, জনসাধারণ এর জীবনযাত্রা, চোরাচালানের ধরণ, সীমান্ত অপরাধের প্রকৃতি ইত্যাদি বিষয় সমূহকে বিবেচনা এনে তথ্য প্রযুক্তি ব্যবহার এর চিন্তা ভাবনা করতে হবে। সীমান্ত এলাকায় বসবাসরত বেশীরভাগ জনসাধারণ এর আর্থ-সামাজিক অবস্থা ভালো নয়। তারা মূলতঃ কৃষিকাজ, ক্ষুদ্র ব্যবসা, দিন মজুর, রিক্সা চালক কিংবা চোরাকারবারী করে জীবনযাপন করে থাকে। বাংলাদেশের সীমান্ত এলাকা দিয়ে পাচার হওয়া দ্রব্য সামগ্রীর মধ্যে মাদক দ্রব্য, কাপড়, সার, বিভিন্ন যন্ত্রাংশ, ঔষধ, গবাদিপশু ইত্যাদি অন্যতম।

সীমান্ত নিরাপত্তার জন্য পৃথিবীর বিভিন্ন দেশের নিজস্ব সীমান্ত ব্যবস্থাপনা পদ্ধতি রয়েছে। সীমান্ত সমস্যার ধরণের উপর ভিত্তি করে সীমান্ত ব্যবস্থাপনা পদ্ধতি নির্ধারণ করা হয়ে থাকে। ইসরাইলের সীমান্ত ব্যবস্থাপনা পদ্ধতি পৃথিবীর অত্যন্ত উন্নত এবং আধুনিক সীমান্ত ব্যবস্থাপনা সমূহের মধ্যে অন্যতম।[৯] আমেরিকা-মেক্সিকো সীমান্ত পৃথিবীর ব্যস্ততম একটি সীমান্ত।[১০] ভারত-পাকিস্তান সীমান্ত অত্যন্ত উত্তেজনাপূর্ণ একটি সীমান্ত।[১১] বাংলাদেশ-ভারত সীমান্তে বেশীরভাগ অংশেই কাটা তারের বেড়া রয়েছে।[১২] ইয়াবা পাচার এবং রোহিঙ্গা জনগোষ্ঠীর অবৈধ সীমান্ত অতিক্রম বাংলাদেশ-মায়ানমার সীমান্তের প্রধান দুটি সমস্যা।[১৩]

বাংলাদেশের বিভিন্ন সীমান্তে সীমিত আকারে আধুনিক তথ্য প্রযুক্তি ব্যবহার শুরু হয়েছে। চোরাচালান-প্রবণ সীমান্তে সার্চ লাইট স্থাপন করা হচ্ছে। "বর্ডার সার্ভেইল্যান্স এন্ড রেসপন্স সিস্টেম" স্থাপনের প্রক্রিয়া চলছে। সিসি টিভি ক্যামেরা, ফ্লাড লাইট, নাইট ভিশন ডিভাইস ভেহিক্যাল ও কার্গো স্ক্যানার, থার্মাল ইমেজার, রাডার, ড্রোন, আধুনিক হাই স্পীড বোট ইত্যাদি বাংলাদেশ সীমান্তে ব্যবহার করা যেতে পারে। এতে আমাদের সীমান্তরক্ষী বাহিনীর কাজে গতিশীলতা আসবে এবং সীমান্ত নিরাপত্তা নিশ্চিত করা সম্ভব হবে। ভবিষ্যতে তথ্য প্রযুক্তির ব্যবহার এর মাধ্যমে বাংলাদেশ সীমান্ত একটি অত্যাধুনিক সীমান্তে পরিণত হতে পারে।

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সংক্ষিপ্ত লেখক পরিচিতি

লেঃ কর্নেল মোহাম্মদ শহীদুল ইসলাম, পিএসসি, ইঞ্জিনিয়ার্স ১৯ ডিসেম্বর ১৯৯৪ সালে ৩১ বিএমএ লং কোর্সের সাথে বাংলাদেশ সেনাবাহিনীতে কমিশন লাভ করেন। তিনি বাংলাদেশ সেনাবাহিনীর বিভিন্ন ইউনিট ও প্রতিষ্ঠানে কমান্ড, স্টাফ ও প্রশিক্ষক হিসাবে চাকুরী করেন। এছাড়াও তিনি ডিজিএফআই এ জিএসও-২ হিসাবে দায়িত্ব পালন করেন। তিনি ডিফেন্স সার্ভিসেস কমান্ড এন্ড স্টাফ কলেজ মিরপুর থেকে গ্র্যাজুয়েশন ডিগ্রী লাভ করেন এবং এমআইএসটি হতে বিএসসি ইঞ্জিনিয়ারিং (সিভিল) পাস করেন। তিনি ব্যানইঞ্জিনিয়ার-৪ (কন্‌সট্রাকশন) লাইবেরিয়াতে জাতিসংঘ মিশনে অংশগ্রহণ করেন এবং ওকেপি-১ (কুয়েত) এ ইওডি অফিসার হিসাবে ডেপুটেশন এ নিয়োজিত ছিলেন। তিনি পৃথিবীর অনেক দেশ ভ্রমণ করেছেন তার মধ্যে ভারত, কুয়েত, সৌদি আরব, যুক্তরাজ্য, ফ্রান্স, বেলজিয়াম, নেদারল্যান্ড, লুক্সেমবার্গ, জার্মানী, সুইজারল্যান্ড, ইটালী এবং লাইবেরিয়া অন্যতম। তিনি খেলাধুলা, বইপড়া ও ভ্রমণ করতে পছন্দ করেন।

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II. Example:

A. Book Referencing:

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