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NOVEMBER 2022

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

21st November is observed every year in Bangladesh as the ‘Armed Forces Day’ with due fervour and enthusiasm. History bears ample testimony to the fact that on this day in 1971, the patriotic members of Bangladesh Army, Navy and Air Force along with the ‘Mukti Bahini’ launched the final onslaught against the occupation Pakistani forces which led to their collapse and surrender in the Ramna Race Course Maidan (now Suhrawardhy Udyan) on 16 December 1971. On this solemn occasion a grateful nation remembers with profound reverence those intrepid sentinels of the soil who made supreme sacrifices at the altar of freedom. People from all walks of life pray for the salvation of the departed souls and express solidarity with those who have survived after suffering grievous injuries.

To observe this significant milestone of the Liberation War befittingly, the Armed Forces Division (AFD) organizes elaborate events, programs, exhibitions and displays. AFD also takes the initiative to publish two publications viz. (i) *Armed Forces Journal* (ii) *Newspaper Special Supplements*. The insightful articles of the defence services officers encompass broad spectrum of national, international and professional topics which essentially reflect their academic acumen and research aptitude. The authors deserve warm appreciation for their innovative and thought-provoking writings despite their busy commitments.

Sincere gratitude must be expressed to the Principal Staff Officer, AFD for displaying sheer dynamism to lead from the front the rank and file of the sister services for properly organizing numerous events and programs on this historic day as well as the dedicated team of Board of Editors who have put in relentless efforts to ensure the timely publishing of the two publications which have seen the light of the day.

Last but not the least, in spite of all sincere efforts, shortcomings in the events and errors may be traced in the publications. We sincerely hope the enthusiastic visitors to these events and valued keen readers of the writings will consider such lapses with sympathy.

May the Almighty ALLAH bless us all.

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Chronicles of Overseas Contribution during Liberation War- Charting the Future

Brigadier General Humayun Quyum, afwc, psc

Introduction

In the annals of the history of this region as well as the world the Liberation War (LW) of Bangladesh is a glorious and remarkable event. The independence of Bangladesh was achieved at the cost of many sacrifices of people from all walks of life. To the inspiring call for freedom by the Father of the Nation Bangabandhu Sheikh Mujibur Rahman, people responded from all spheres of life. Besides the freedom fighters (FF), there was both direct and indirect global turn up from many peace-loving citizens. Many overseas good souls did not hesitate to contribute to the independence of Bangladesh in various forms with the same spirit of sacrifice and courage of the FF.

Overseas friends extended their wholehearted support to the just struggle of Bangladeshi people in terms of moral, spiritual, material, political, diplomatic, logistic as well as military aspects. Support came from the neighbourhood, from the region, from distant countries and different societies. News of the indiscriminate killings, torment and one-sided war against the ever peace-loving Bangladeshis were reflected through their pens, by the camera, through the poems and songs to inform the world community of the atrocities. Support was extended from people and institutions, regardless of their socio-economic standing, political divide, origin, religion, creeds and culture. Efforts and hands of such friendship contributed to expediting the movement for achieving the glorious victory.¹

The contribution of foreign friends during the LW is humbly and generously acknowledged in the history of Bangladesh. Bangladeshis are ever grateful for their valuable contribution. Bangabandhu Sheikh Mujibur Rahman adopted a very prudently formulated foreign policy for Bangladesh: 'Friendship to all, malice to none.' Harnessing such policy, honourable Prime Minister Sheikh Hasina has further elevated the overseas contributions by acknowledging them admirably.²

In this write-up there is a comprehensive study and objective analysis pertaining to the glorious contributions of overseas friends, who significantly contributed to the LW. Initially, the great contributions of overseas friends will be touched upon. Thereafter, recognition by the government of the noble friends from overseas countries will be illustrated. Finally, some ways forward will be suggested to promote and enhance the bilateral relations of Bangladesh for a better future.

Recalling the Footsteps

Bangladesh received unflinching support from many foreign organizations and nations during LW. Beside these important organizations and nations, some

of the brave foreigners joined the war directly alongside FF; some raised voices against the heinous act of Pakistani oppressors through global media, many more provided moral support, munificent ones raised money for financial aid.³ However, their contributions can be broadly divided into following:

- a. Contributions by overseas organizations and nations.
- b. Heroes from overseas.

Contributions from Overseas Organization and Nations

United Nations: The unforgettable generosity of the United Nations (UN) by providing a massive sum of financial aid for the Bengalee refugees was a milestone event. The then UN Secretary General Kurt Waldheim (1918-2007) rendered a yeoman's service in this regard. Its role mostly encompassed the relief and refugee management process in India. The UNHCR played the pivotal role in providing humanitarian assistance to 10 million Bengalee refugees in coordination with the Indian government. The roles of UNICEF, WFP, FAO, WHO and the League of Red Cross Societies are also worth mentionable. UN agencies also actively assisted in the rehabilitation of the Bengalee war refugees after the war. The UN provided approximately 9,80,00,000 USD to the Indian Government to manage the refugee crisis. The UN and its agencies provided food, vehicles, medicine, and shelter ingredients to refugees. The aid to Bangladeshi refugees during the war was one of the largest aid programs in the history of the UN. WHO, UNICEF and WFP participated in this program. The first Bangladeshi official delegate Abu Sayeed Chowdhury (1921-87) attended the UN Special Assembly on 04 December 1971.⁴

Photo-1: UN Secretary General Kurt Waldheim



Source: Internet

Photo-2: Abu Sayeed Chowdhury



Source: Internet

India: The immense contribution of India during LW in terms of words, arms, and refugee harbouring is unforgettable. It assisted both politically and militarily. Right after the crackdown of 25 March, 1971, Mrs. Indira Gandhi, the then Prime Minister of India, conveyed all-out support for Bangladesh's struggle for independence from her government. India opened her border for the safe shelter of Bangladeshi refugees. Camps were established along the border by the provincial governments of West Bengal, Bihar, Assam, Meghalaya and Tripura for the refugees. Approximately one million refugees took shelter in India during the LW of Bangladesh. Indian government provided necessary support including their food, accommodation and medical assistance to the refugees. These camps were also used by the exiled Bangladeshi Army officers and volunteers from India for the recruitment and training of Mukti Bahini. India helped the FF of Bangladesh to prepare for the LW by imparting training and providing them with arms and ammunition. Indira Gandhi visited Moscow to get support from the then Soviet Union in the UN Security Council (UNSC). The then Soviet Union used its veto power when UNSC was trying to impose a ceasefire under the influence of other actors, so that, India could go for offensive operation against the Pakistan Army. Finally, the allied offensive comprising of Mukti Bahini and the Indian Armed Forces started on 03 December 1971 and ultimately achieved the goal on 16 December 1971. India was one of the very first to recognise Bangladesh as an independent country on 06 December 1971.⁵

Russia: The then Soviet Union's (presently Russia) indispensable help and cooperation was a prolific contribution during the LW. Russia was in support of Bangladesh and used her veto power thrice in UNSC, which created favourable conditions for Bangladesh on the road to independence. Russia even declared the LW of Bangladesh as their "NATIONAL WAR." During the war, Russian Foreign Minister Andrei Gromyko communicated to the Foreign Secretary of the USA Mr Rogers, "The matter of East Pakistan is not an internal matter of Pakistan anymore. It has become a global issue." Russia even had sent their Naval fleet to the Indian Ocean when the US Navy Seventh Fleet came to help Pakistan. The diplomatic initiatives taken by Russia played a very important role in gathering support and international recognition for the struggle for independence of the Bangladeshi people.⁶

USA: The United States had some positive role too during the LW. USA provided financial assistance to India for managing the war refugees. US President Richard Nixon donated \$250 million to people who had taken shelter in the West Bengal, Meghalaya, Assam, and Tripura regions during the war.⁷

Heroes from Overseas

Photo-3: Indira Gandhi



Source: Internet

Indira Gandhi(1917-84): During the LW, the then Indian government under the leadership of Indira Gandhi, the then Prime Minister of India extended all kinds of assistance to the Bangladeshi people against military occupation in East Pakistan, providing military, economic and political support. She travelled to the friendly countries to advocate for the beleaguered Bangladeshis. She also tried to convince the world leaders to intervene and compel Pakistan to stop its unprecedented atrocities in East Pakistan.⁸

Photo-4: Lt Gen J F R Jacob



Source: Internet

Lieutenant General Jack Farj Rafael Jacob (1921-2016): India's Lieutenant General J F R Jacob played a very significant role during the LW. As the then Chief of Staff at the Eastern Command of the Indian Army, he outstandingly contributed from his experience of the 2nd World War and the Pakistan-India War of 1965. During the LW, he established camps for the FF, provided training, arms, and logistics. His experience of LW was later shared in his book *Surrender at Dacca: Birth of a Nation*.⁹

Photo-5: Glimpses of William A.S. Ouderland during LW



Source: Internet

William A.S. Ouderland (1917-2001): He was a Dutch Australian and World War II veteran. Ouderland came to the then East Pakistan, to work at the Bata shoe manufacturing company at Tongi in 1970. In the initial days of the war, he used to ferry information about the movement and activities of Pakistani forces to the Bangladeshi FFs. Later, he started training the guerrillas using his experience of World War II. Eventually, he was introduced to Major Haider and other guerrilla leaders of Sector 2 during the LW. In addition to his active participation in the war, Ouderland used to gather information on atrocities and genocide conducted by the Pakistani forces on Bengalee people. Ouderland had also collected photographs of the brutalities of the Pakistani military. He used to send the collected information and pictures to the world news media to gather empathy and public support in favour of the LW. His outstanding contribution became known to the people of Bangladesh after the LW and they recognized him as a special hero. He was the only foreigner in the history of independence to be honoured with the state insignia of Bir Pratik.¹⁰

Photo-6: Edward Kennedy at a procession during LW



Source: Internet

Edward Kennedy (1932-2009): US Senator Edward Moore Ted Kennedy had been quite vocal against the atrocities and genocide by Pakistan on Bangladesh. He was a senator from the USA state of Massachusetts for 47 years from 1962 until his death. He had also been the Chairman of the US Senate Judiciary Subcommittee on Refugees. During the LW, Kennedy came to India in the refugee camp on the Khulna border and visited a field hospital at Kolkata. He witnessed the misery of the common Bengalees through his own eyes. He tried to convince the USA government to compel Pakistan to allow the representatives of Red Cross to meet Bangabandhu Sheikh Mujibur Rahman, considering the ongoing genocide in East Pakistan by the Pakistani Forces. Senator Kennedy raised his voice on multiple occasions in different forums. Eventually, it earned the enormous attention of the world community. He visited Bangladesh after independence in 1972.

During his visit in Bangladesh, he replanted a banyan tree that was destroyed by Pakistani forces during the war at the University of Dhaka. After returning to USA, he advocated for international assistance for the rapid repatriation of Bangladeshi war refugees and the implementation of the food aid program. This extraordinary friend of Bangladesh was honoured with the prestigious “LW Award.”¹¹

Photo-7: Simon Dring

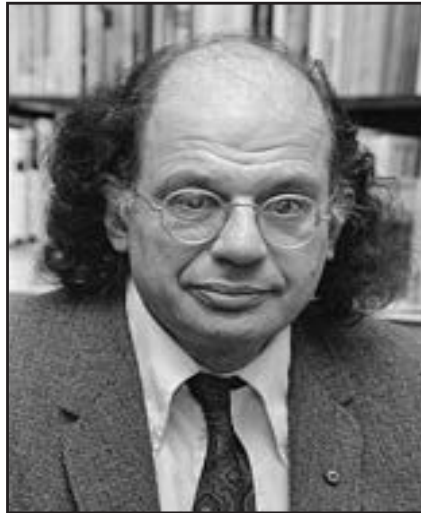


Source: Internet

Simon Dring (1945-2021) : During the LW, Simon Dring was a journalist for the British daily newspaper *The Telegraph* and was working in Cambodia. He was instructed by the London office Headquarters to report on the tension growing in East Pakistan. Despite having no background knowledge on the issue, he agreed to prepare a report and came to East Pakistan. Here, he was introduced to a number of Bangladeshi leaders including Bangabandhu Sheikh Mujibur Rahman. He started to collect information on the latest political developments and kept on sending reports to London regularly. Just before the bloodthirsty ‘Operation Searchlight’ on the night of 25 March 1971, approximately 200 journalists of international media were locked up at the Hotel Intercontinental so that the atrociousness of the Pakistani Army could not be published to international media. Because of safety concerns, journalists could not gather any evidence of the mass killing conducted by Pakistani forces on the night of 25 March 1971. But Dring hid for long 32 hours in the kitchen, and the rooftop of Hotel Intercontinental and witnessed the crackdown. Later, on 27 March, once the curfew was lifted, he travelled in a baker's van to collect evidence of the genocide, which remains as one of the most horrendous and ruthless acts committed by any military. Simon Dring described the aftermath of Operation Searchlight to the daily newspaper, which still provides harrowing images: “I found the bodies of students who had been shot to death in their

dormitories and outside on the campus grounds; the rickshaw pullers, bullet-ridden and bloodied lying by the roadside; whole families burnt alive in their homes when their street had been sealed off and the houses torched; bazaars in the old city burnt to the ground.” Dring could manage to evade the Pakistani military and went to Bangkok. There he compiled his experience of Operation Searchlight in his report ‘Tanks Crush Revolt in Pakistan.’ The report was published in *The Daily Telegraph* on 30 March 1971. ‘Tanks Crush Revolt in Pakistan’ was one of the first internationally recognized accounts of the brutal genocide conducted by the Pakistani forces in Bangladesh. Pakistani authorities exiled him from Pakistan after the publication of the report. In November 1971, he came to India to gather information about the LW and kept on publishing reports at the international forum. He came to Bangladesh again on the day of independence on 16 December 1971.¹²

Photo-8: Allen Ginsberg



Source: Internet

Allen Ginsberg (1926-97): The American poet Allen Ginsberg visited Bangladesh refugee camps in Jashore in September 1971. After observing the violence and realizing the people’s misery, he wrote a time-honoured poem, ‘September on Jashore Road,’ highlighting the brutality of the Pakistani rulers against the oppressed Bengalees to draw the world’s attention. During LW, the USA government had sent their 7th fleet to the Indian Ocean to prevent India from interfering with the atrocities in East Pakistan. In opposition to the government, the peace-loving people of the USA formed a forum named ‘Americans for Bangladesh’ and organized a poetry recitation event on 20 November 1971 at Saint George Church in New York. Poets like Ed Sanders, Allen Ginsberg, and Peter Orlovsky took part in that event. Ginsberg recited his legendary 152 lines poem in that event to inform the world about the brutality of the Pakistani military in East Pakistan during that period.¹³

Photo-9: Pandit Ravi Shankar



Source: Internet

Photo-10: George Harrison



Source: Internet

Pandit Ravi Sankar (1920-2012) and George Harrison (1943-2001):

Two great musicians of modern times named Pandit Ravi Shankar of India and George Harrison of the USA shed tears for the millions of homeless people and Martyrs of Bangladesh during LW. Their hearts urged them to help the oppressed Bangladeshis. Accordingly, they organized a 'Concert for Bangladesh' at Madison Square Garden in New York City on 01 August 1971 to draw international attention and to raise funds for refugees from East Pakistan. The impact of the 'Concert for Bangladesh' was unmatched by any other charity concert in the world. The event featured a super group of performers like George Harrison, Ringo Starr, Billy Preston, Bob Dylan, Leon Russell, Eric Clapton, and the band Badfinger. Approximately, a total of forty thousand people attended the concert, and the donations by attendees summed up to an astonishing amount of US \$250,000, which was administered by UNICEF.¹⁴

Photo-11: André Malraux with Bangabandhu



Source: Internet

André Malraux (1901-76): He was a French veteran fighter and writer who lashed out against the Pakistani occupation forces at an interview in the French media in the third week of September 1971. In that, he also intimated his intentions to join directly with the FF on the battlefield in Bangladesh. Eventually he formed a group of 150 French warriors. However, he did not have to come as India got involved in the LW of Bangladesh. But Malraux's announcement drew worldwide attention. After the independence, Bangabandhu Sheikh Mujibur Rahman invited Andre Malraux and gave him a warm reception on 21 April 1973 at Dhaka. In 2012, Bangladesh government awarded him the 'LW honour.'¹⁵

Photo-12: Sydney H Schanberg



Source: Internet

Sydney H Schanberg (1934-2016): He was one of the very first American journalists to publish to the world the news of the genocide in East Pakistan in 1971. During the LW, he was a reporter of *The New York Times* in South Asia. He visited Bangladesh, the then East Pakistan, number of times despite his expulsion order by the Pakistani government. He was astounded to witness the brutalities and atrocities of the Pakistani forces. He tried to create international awareness by publishing shocking stories of the genocide of 25 March 1971. Schanberg collected and submitted several eyewitness testimonies from Bangladesh to *The New York Times* in June 1971. As a result, Pakistani authorities forced him out of East Pakistan on 30 June 1971.¹⁶

Besides the above mentioned heroes, the other unsung heroes are Anthony Mascarenhas (1928-86),¹⁷ a Pakistani journalist who reported first about the genocide carried out by Pakistani occupation forces in the then East Pakistan, Sir William Mark Tully (b.1935), BBC's India correspondent in 1971 who raised his voice in favour of Bangladesh during LW. Like them, a good number of people around the globe supported and voiced for Bangladesh during the LW selflessly for instance Jean Kay (1943-2012).¹⁸

Analysis

The struggle for liberation is the most critical part of the history of an emerging nation. International support is one of the key factors to accelerate this journey. Bangladesh is one of those fortunate nations that received global support in all dimensions during LW. The flowchart below briefly explains the major support that the nation has received from foreign friends.

Figure-1: Flowchart showing the overseas support



Source : Author's self-construct

The charismatic leadership of Bangabandhu Sheikh Mujibur Rahman and his way of influencing people are noteworthy amongst all. People were moved by his inspiring voice in the Ramna Racecourse Maidan (now Suhrawardhy Udyan) on 07 March 1971.¹⁹ The atrocities, oppression, and mass genocide that occurred at the hands of the Pakistani Military junta shook millions of hearts all across the globe. Thereby, many of them stood by the side of the helpless Bengalee nationals in times of need. The mass people of Bangladesh are ever grateful to them. They will always be remembered with great honour and dignity.

Acknowledging the Overseas Contribution

Bangladesh government has taken the appreciable initiative to institute the Bangladesh Freedom Honour to pay homage to friends from abroad who actively supported the cause in 1971. The country had compiled a list of 650 overseas friends and institutions considering their contributions to the independence. Some of the institutions listed are the BBC, International Red Cross, Indian radio, Oxfam, Indian army, and the entire population of India. Many individuals were also awarded including the heads of states and governments like Pierre Trudeau (Canada), Willy Brandt (West Germany), and other state leaders of the Soviet Union. Out of that list, 338 heroes from 21 different countries were awarded in phases. Among them, 225 are Indians, 29 Americans, 17 Pakistanis, 13 British, 11 Russians, 9 Nepalese, 8 Japanese, 2 French, and 6 are from different organizations. All the individuals and organizations were awarded in three categories: Bangladesh Freedom Honour, Bangladesh LW Honour, and Friends of LW Honour.²⁰

Bangladesh LW Honour: Following were awarded with the “Bangladesh LW Honour:-”²¹

a. Soviet Union:

(1) Leonid Ilyich Brezhnev (1906-82), former honourable Chairman of the Presidium of Supreme Soviet.

(2) Andrei Andrevich Gromyko (1909-89), served as Minister of Foreign Affairs (1957–85) and as Chairman of the Presidium of the Supreme Soviet (1985–88).

(3) Nikolai Viktorovich Podgorny (1903-83), former honourable Chairman of the Presidium of Supreme Soviet.

(4) Alexei Nikolaevich Kosygin (1904-80), former honourable Chairman of the Council of the Ministers.

b. India:

(1). Pranab Mukherjee (1935-2020), former honourable President.

(2) Inder Kumar Gujral (1919-2012), former honourable Prime Minister.

(3) Atal Bihari Vajpayee (1924-2018), former honourable Prime Minister.

c. Nepal:

(1) Dr. Ram Baran Yadav (b.1948), former honourable President.

(2) Bishweshwar Prasad Koirala (1914-82), former honourable Prime Minister.

d. Other Countries:

(1). Jigme Dorji Wangchuck (1928-72), the Third King of Bhutan.

(2). Marshal Josip Broz Tito (1892-1980), former honourable Prime Minister and President of Yugoslavia.

(3). Sir Edward Richard George Heath, former honourable Prime Minister of the United Kingdom.

(4). Fidel Castro, former honourable Prime Minister of Cuba.

Heroes of LW Honour: Heroes of LW Honour have been conferred to 6 organizations, individuals and Mitra Bahini. The list includes 257 Indians, 88 Americans, 41 Pakistanis, 39 Britons, 9 Russians, 18 Nepalese, 16 French and 18 Japanese. ²²

The Reflection

This humble gesture displayed by the government of Bangladesh to show due respect, honour and dignity to the LW foreign heroes is highly praised and appreciated all around the globe. In reciprocation, India celebrates victory day

on 16 December every year. In 2020, a Bangladeshi delegation team with 58 FF and many serving Army Officers were invited by the Eastern Command of the Indian Army in Kolkata. They exchanged their joys and expressed heartfelt gratitude for their long-lasting friendship. Keeping this type of congenial relationship with all the foreign friends across the globe will lead towards lasting peace.²³

Charting the Future: Nation Perspective

Giving due recognition and honour to the friendly foreign countries and overseas friends LW will have significant implications in the long run on the following aspects:-²⁴

a. Educating the Youth by LW Spirit : The spirit of the LW must be upheld for the advancement of Bangladesh. The more is known, the stronger will be feelings for the country. New generation must know in details about the background of LW, contribution of Bangabandhu, FF, other leaders and foreign friends during LW. It will help young generation to develop right feelings for the country and take necessary steps while contributing as a responsible citizen of Bangladesh.

b. Continuation of Recognising the Valour of the Contributors: The global recognition of the foreign friends by the honourable Prime Minister has earned a lot of good reputation. This noble gesture of recognizing the contribution of overseas friends should be continued. However, there can be few whose names are still unknown to us. But they silently stood beside us during the war. Therefore, Bangladesh should try to identify those and continue recognizing and paying due tributes to them. If the foreign friends cannot come to Bangladesh, then it may be arranged at their country. For posthumous awards, the reward would be handed over to the families or relatives of the heroes.

c. Strengthening Bilateral Relationship with Major Powers: Policymakers need to conduct foreign relations vis-a-vis other states. It should be in terms of such independent variables conceptualized as policy inputs or the flow of actions coming from the community, which specifically emphasizes major powers. Bangladesh should thus focus on maintaining a congenial relationship with all the major powers as they are the helmsman of international politics.

d. Maintaining Good Relation with Regional Powers: Bangladesh's geo-strategic location puts it in the neighbourhood of two regional powers viz. India and China and landlocked countries like; Bhutan and Nepal. With one deep-sea port, two operational seaports, and several land ports, Bangladesh can easily reap a myriad of benefits by turning itself into a regional and trading hub. If Bangladesh can exploit her geopolitical advantage and bring the regional powers close to her, then it would be a lot beneficial for the country for future adversities.

e. **Maintaining Amity with Neighbours:** The provisional government formed on 10 April 1971 during LW outlined the foreign policy of Bangladesh even before the country became an independent state. According to this outline, Bangladesh declared the principles of peaceful coexistence, non-alignment, and opposition to colonialism, imperialism, and racialism as the fundamentals of its foreign policy. The present policy makers should be able to maintain this sort of amity with the neighbouring countries such as India and Myanmar so that they can come in help when necessary.

f. **Rapport with Important Personnel of the World:** Countries cooperate if they believe it to be in their best interests, both politically and economically. There are always important personnel in every state who used to control the spool of politics and economy of the country. Therefore, maintaining a good rapport with these kinds of people might be helpful in times of need. The bonding created in LW can be utilized as a cornerstone of this relationship-building process.

g. **Enhancing Military Relation with Friendly Countries:** During the LW, Bangladesh received military assistance from friendly countries. Bangladesh Armed Forces still maintain that relationship with those countries in terms of exchanging courses and training, procuring military armament and gadgets, and various knowledge sharing visits. A remarkable number of foreign military personnel visit various training institutions of Bangladesh every year. Bangladesh Armed Forces can take an endeavour to design the visit and training curriculum keeping in mind those personnel as an ambassador for the future relationship between the two countries. It ultimately will assist Bangladesh to foster well.

h. **Reputation Building Approach:** Every year Bangladesh celebrates its Independence Day on 26 March and Victory Day on 16 December with due fervour and enthusiasm. Various endeavors to invite key leaders of all the nations, organizations and personalities who immensely contributed to LW on those occasions are already there. It should continue and enhance so that bilateral and interpersonal relationships are further fostered. Recognizing their invaluable support on those occasions in front of the world media will certainly uphold the reputation of Bangladesh and aid our strategic issues. Besides, government patronized publications highlighting the foreign contributions to LW would express national gratitude to foreign friends of Bangladesh. This would create a phenomenal impact in upholding the national image.

i. **Visual Recognition Endeavors:** Steps should be taken to display the glimpses of contribution of foreign nations, organizations and persons to the LW in the National Museum of Bangladesh. Government patronized books, movies and documentaries can be published highlighting their significant contributions. During the visits of various foreign dignitaries and delegation teams to Bangladesh these exhibits and artefacts which are on display should be shown

to them. Such endeavour will further cement the ties and enhance friendly relations.

Conclusion

The spirited slogan and the charismatic leadership of Bangabandhu Sheikh Mujibur Rahman inspired the people from all walks of life to fight for the independence of the country. A million fathers, mothers, brothers, and sisters gave their blood to achieve this desired independence. It is noteworthy that not only Bengalees but also different overseas organizations, countries, and individuals extended their support for the right cause of Bangladesh. Their valuable inspiration and support gave impetus for achieving victory.

The contribution and sacrifice of the overseas friends during LW can hardly be overestimated. Thus it would be wise to consider that honour conferred to one as honour conferred to all. So, Bangladesh has conferred this honour to all those who stood with us in the most critical time of the history of the Bengalee nation. The demonstrated recognition will surely testify our friendship to all across the globe, avoiding malice. At the same time, good relationship with overseas friends to strengthen the sovereignty and long lasting friendship should be maintained in this era of globalization.

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Dr. Katherine, daughter Dr. Kiley, son Teddy Kennedy, niece Grace Kennedy and nephew Max Allen. During this visit on 31 October 2022 Sheikh Hasina, honourable PM of Bangladesh handed over the 'Friend of Bangladesh' medal to Edward Kennedy Jr in memory of the contribution of his late father to the LW of Bangladesh.

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Brief Biography



Brigadier General Humayun Quayum, 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, Dhaka. 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, as Instructor Class A in UCSC Wing and as Chief Instructor in Weapon Wing of SI&T. He was a contingent member in United Nations Peacekeeping Mission in Sierra Leone as well as Chief of Staff at Ituri Brigade in DRC. As Commanding Officer he served in Ideal Twenty One and also served as Deputy President at ISSB, 403 Battle Group Commander under ARTDOC. He is incumbent Dy Comdt of SI&T.

Ballistic Missile Early Warning System: A Requirement of Time for Bangladesh

Air Commodore Md. Mamunur Rashid, BUP, ndc, afwc, psc, MPhil

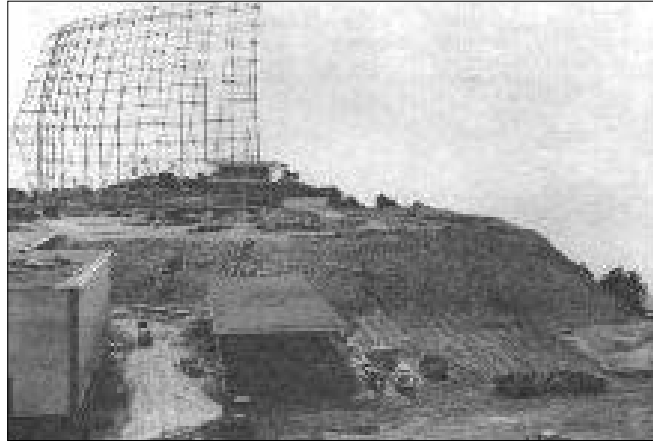
Introduction

During Cold War (1946-90), both USA and USSR had started unwritten competition to gain control of space. In the post-Cold War era, second economic giant of the world, China entered into space with huge investment. Space has been used by all super powers for commercial and military purposes since 1960s. Production of ballistic missiles by all superpowers and rogue states using space has become a great concern for all. Ballistic Missile Early Warning System (BMEWS) is responsible to detect family of ballistic missiles such as Inter-continental Ballistic Missile (ICBM), Intermediate Range Ballistic Missile (IRBM), Medium Range Ballistic Missile (MRBM) and Short Range Ballistic Missiles (SRBM). Long range radars are used for this purpose. The Pave Paws system of USA is most famous in detecting missiles from long distance. This system has three stations deployed in five different locations to detect missiles coming from different direction at variable height in different phase. China, UK and Russia are also having such kind of system to detect missiles if it is launched against them.

Bangladesh (BD) is one of the developing countries of the world having a sizeable armed forces. The air defence system of Bangladesh is composed of sensors (air defence radars) and shooters comprise of Fighter Interceptors and Ground Based Air Defence System (Surface to Air Missile and Anti-Aircraft Artillery). BMEWS is a new concept for BD and it needs to be given due importance in the near future. Bangladesh has launched satellite in space for communication purpose. Gradually with the development of science and technology, substantial use of space for commercial and military purposes has to be made. The number of countries having ballistic missiles launching capability is increasing day by day which includes rogue states as well. Few countries of Asia are also having ballistic missiles and surface to surface missiles (SSM) which have reach to BD. To protect BD from such kind of threat, it is important to have BMEWS to safeguard the Key Point Installations (KPI) and population. For this purpose it is imperative to think from now and start developing BMEWS in phases in future. As BMEWS is a costly affair, Bangladesh needs to plan future architecture of BMEWS meticulously using present infrastructure.

The aim of this paper is to introduce BMEWS, highlight the threat of missiles on BD and propose necessary measures to counter those in future by establishing BMEWS.

Figure-1: Trinidad radar

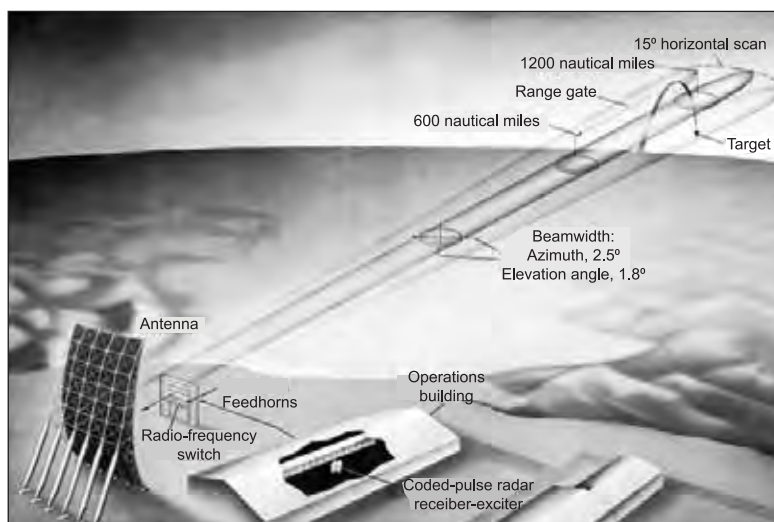


Source: Internet

Definition

BMEWS is an electronic system for providing detection and early warning of attack by enemy's intercontinental ballistic missile.¹ The BMEWS would provide long-range, immediate warning of a missile attack over any region utilizing ground stations. It also includes satellite surveillance and tracking functions. Many western countries including few eastern ones of the world have this system.

Figure-2: Artist's conception of the AN/FPS-17 radar facility in Turkey²



Source: Internet

Figure-3: Ballistic Missile Early Warning System (BMEWS), AN/FPS-50 surveillance radars at Clear, Alaska³



Source: Internet

History of BMEWS

The BMEWS became the first operational missile detection radar system since its inception in 1959. By 1958, a prototype of the BMEWS was established at the Trinidad, British West Indies and site provided surveillance and tracking of ballistic missiles as an overall step in the BMEWS development. In February 1962 the Radio Corporation of America (RCA) assumed responsibility for the operation of the Trinidad Radar. In late 1959, the US Defense Advanced Research Projects Agency (ARPA) opened the 474L System Program Office (SPO), which was tasked to develop techniques and equipment for tracking space objects and detecting incoming Soviet ICBMs. By mid-1960s, the 474L SPO had activated three BMEWS radars located at Thule Air Force Base (AFB), Greenland (1960), Clear Air Force Station (AFS), Alaska (1961), and RAF Fylingdales, England (1963). These radars provided the capability to detect an incoming ICBM attack with 15 minutes warning. They also provided tracking data on most orbiting satellites. It operates three AN/FPS-50 detection radars that cover 120 degrees in azimuth and approximately 3,000 nautical miles in range. It also has one AN/FPS-92 tracking radar.⁴

PAVE PAWS (Precision Acquisition Vehicle Entry Phased Array Warning System) is a Cold War early warning radar and computer system developed in 1980 to detect and characterize a sea-launched ballistic missile attack against the United States.⁵ With the first solid-state phased array deployed, the system at the perimeter of the contiguous United States, used a pair of Raytheon

AN/FPS-115 radar sets at each site as part of the United States Space Surveillance Network.⁶

Figure-4: BMEWS radar at Thule in Greenland



Source: Internet

Figure-5: BMEWS radar at Fylingdales in Great Britain



Source: Internet

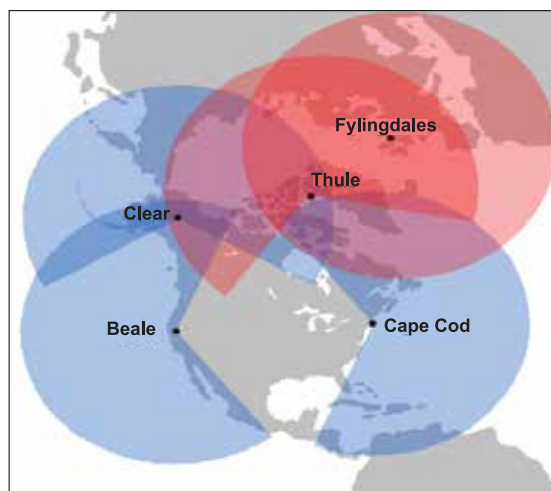
BMEW System in Other Countries

USA, UK and Russia are the pioneer in BMEWS. The early warning radars planned for the National Missile Defence (NMD) system of USA include the three PAVE PAWS radars at Cape Cod, Massachusetts; Clear, Alaska; and Beale, California; and the two BMEWS radars at Thule, Greenland (Denmark) and Fylingdales, U.K. As of now, the USA, Russia, Taiwan, India, France, Israel, Italy, UK, Japan, South Korea and China have developed Missile Defence System (MDS). Saudi Arabia is the only country in the world that has both Russian and American Anti-Missile System.⁷

Anti-Ballistic Missile Treaty

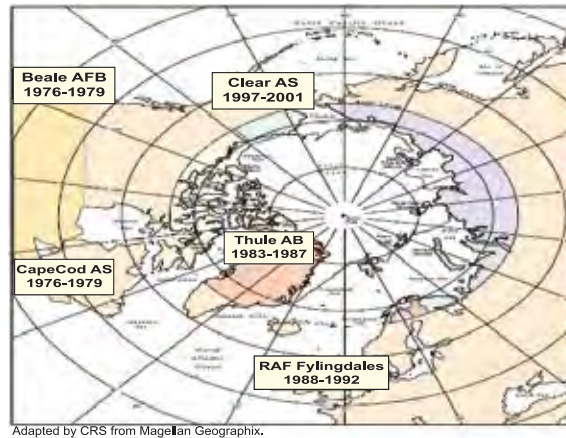
The Anti-Ballistic Missile Treaty (ABMT) was signed between the USA and the USSR on the restriction on producing, storing and using of the ABM systems for defending areas against missile-delivered nuclear weapons. On 26 May 1972, the President of the USA, Richard Nixon and the General Secretary of the Communist Party of the USSR, Leonid Brezhnev signed the first ABMT. The treaty was in force for thirty years, from 1972 until 2002.⁸ The treaty limited each side to have only one ABM deployment area (i.e., missile-launching site) and 100 interceptor missiles. These limitations prevented either party from defending more than a small fraction of its entire territory, and thus kept both sides subject to the deterrent effect of the other's strategic forces.⁹ On June 13, 2002 six months after giving the required notice of intent, the US withdrew from the treaty.¹⁰ USA's withdrawal from ABMT has made the world the most dangerous place to live in keeping everyone in apprehension of probable nuclear attack where people of Bangladesh are also included.

Figure-6: Deployment site and coverage of five radars of NORAD



Source: Internet

Figure-7: The Five radar sites and installation/modification dates



Source: Internet

ABMT or Strategic Arms Limitation Talks (SALT), were negotiations between the USA and the USSR that were aimed at curtailing the manufacture of strategic missiles capable of carrying nuclear weapons. The first agreements, known as SALT I and SALT II, were signed to restrain the arms race in strategic (long-range or intercontinental) ballistic missiles armed with nuclear weapons. SALT was first suggested by U.S. President Lyndon B. Johnson in 1967.¹¹ Bush and Putin signed the new Strategic Offensive Reductions Treaty (SORT) on 24 May 2002. The treaty would require each side to reduce its “strategic nuclear warheads” within the range of 1,700 to 2,200 by the year 2012.¹² Meanwhile, the renewed negotiations that opened between the two superpowers in Geneva in 1982 took the name of Strategic Arms Reduction Talks (START).¹³

Figure-8: SALT I, U.S. President Richard Nixon seated left and Soviet General Secretary Leonid Brezhnev seated right signing the Treaty in Moscow on May 26, 1972



Source: Internet

Figure-9: SALT II, U.S. President Jimmy Carter seated left and Soviet General Secretary Leonid Brezhnev seated right signing the Treaty in Washington D.C. on June 18, 1979



Source: Internet

Star Wars

The term 'Missile Defence System' (MDS) broadly means a system that provides any defence against any missile type (conventional or nuclear) by any country. Any mechanism which can detect and then destroy a missile before it can cause any harm is called a MDS.¹⁴ On 23 March 1983 President Reagan announced a new National Missile Defense (NMD) program formally called the Strategic Defense Initiative (SDI) but soon nicknamed "Star Wars" by detractors. President Reagan's stated goal was not just to protect the U.S. and its allies, but also to provide the completed system to the USSR, thus ending the threat of nuclear war for all parties. SDI program was technically very ambitious and economically very expensive. It would have included many space-based laser battle stations and nuclear-pumped X-ray laser satellites designed to intercept hostile ICBMs in space, along with very sophisticated command and control systems. Unlike the previous Sentinel program, the goal was to build a total defence system against a robust, all out nuclear attack by the USSR.

At the same time, the USSR reached strategic parity with the US in terms of ICBM forces. A nuclear war would no longer be a favourable exchange for US, but both countries would be devastated. This led in the West to the concept

of mutually assured destruction (MAD), in which any changes to the strategic balance had to be carefully weighed. ABMs, now ready for use after over a decade of development, seemed to be far too risky, it was better to have no defence than one that might trigger a war. Figure below shows the Overview of Missile Defence.

Figure-10: Overview of Missile Defence¹⁵



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

Technical Aspects: BMEWS of NORAD

The current mission of five radars of BMEWS is to provide the North American Aerospace Defense Command (NORAD) with early warning and assessment of incoming ICBMs and SLBMs.¹⁶ USA plays leading role in NATO which is working in Europe for safeguarding the European countries from any air attack, and it has become the responsibility of NATO to protect them from missile attack. The BMEWS at Thule and all three PAVE PAWS radars of USA have two array faces. Each array face provides 120 degrees of azimuth coverage, and from 3 to 85 degrees elevation coverage in search and track modes. The BMEWS at Fylingdales has three array faces and provides 360 degrees of azimuth coverage.¹⁷ All the radars operate at the ultra-high frequency (UHF) band. In view of these radar technical characteristics (the UHF operating frequency, in particular), the upgraded radars could only provide

accurate tracking information for a few warheads accompanied by simple decoys. Thus, the US Administration argues that these radar upgrades are for limited defence against limited attacks, not total defence against large scale attacks. Table 1 shown below is a summary of the characteristics and measurement capabilities of the current and upgraded radars of BMEWS.¹⁸

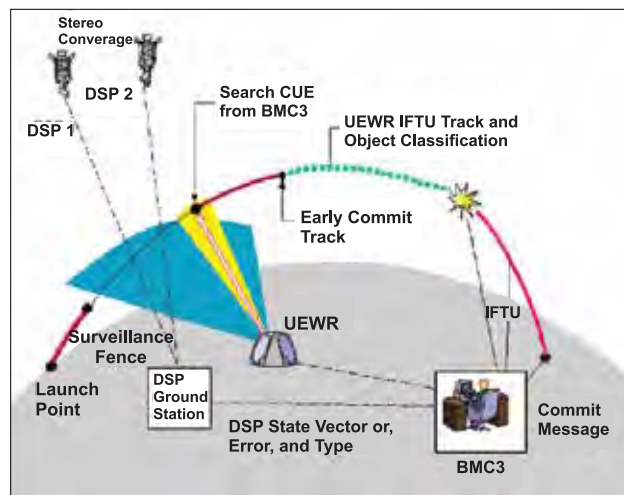
Table-1: The characteristics and measurement capabilities of current and upgraded radars

	Current Pave Paws (In Alaska, California and Massachusetts)	Current BMEWS (In Greenland and Britain)	Upgraded Early Warning Radars
Frequency	420-450 MHz	420-450 MHz	Unchanged
Antenna Diameter	22.1 m	25.5 m	Unchanged
Average Power (Per face)	150 kW	255 kW	Unchanged
Detection Range	5,000 Km in search mode	5,000+ km in search mode	Unchanged
Band Width	100 kHz (search mode); 1 MHz (track mode)	300-600 kHz (search mode); 5-10 MHz (track mode)	<30 MHz
Range Resolution	1500 m (search mode); 150 m (track mode)	250-500 m (search mode); 15-30 m (track mode)	>5m
Angular Beam width	0 Unchanged.038 radius =2.2°	2.0°	Unchanged
Cross- Range Resolution (for object at a range of 2,000 kilometer)	75 km	70 km	Unchanged
Number of T/Rs/face	1,792	2,560	
Elements/Face	2,677	3,584	
Number Manufactured	4	2	
Diameter	72 ft	84 ft	
Manufacturer	Raytheon	Raytheon	

Source: Author's self-construct

Space-based assets with infrared sensors are utilized to detect hot plumes from ballistic missiles, and other heat sources. The first U.S. missile early warning system, Missile Defence Alarm System (MIDAS) was launched in the early 1960s and followed by Defense Support Program (DSP) satellites in the early 1970s. DSP satellites use infrared telescopes, backed by an optical component, in a geosynchronous orbit to maintain constant surveillance.¹⁹ At present, USA has deployed more than 900 GPS Navigation, Communication and Military Satellites in Circular Orbits used for BMEWS and other purposes.²⁰ The former Soviet space-based early warning system, completed in 1982, used a constellation of satellites in highly elliptical Molniya orbits to the same effect.²¹

Figure-11: UEWR as an NMD system element



Source: https://en.wikipedia.org/wiki/Nonsense-mediated_decay

In addition to about 150 satellites which include GLONASS navigation, communication and military satellites, Russia launches 4 Tundra Satellites for tracking the launching of ballistic missiles and space rockets from the territory of the USA with high precisions against the background of the Earth's Surface.²² China has about 300 satellites in orbit and Ballistic Missile Warning Infrared Satellites dedicated for BMEWS.²³ Figure above shows the Upgraded Early Warning Radar (UEWR) as an NMD System Element of USA.

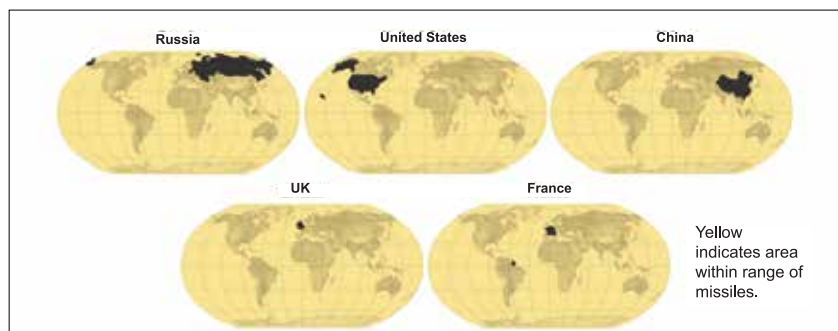
Missile Threat over Bangladesh

Only five nations can hit any place on earth with a missile. World's five superpowers- USA, Russia, China, France and UK have that capability of producing family of ballistic missiles having the range of reaching any countries of the world located in any parts of the globe.²⁴ Fundamental changes have taken place in the past 38 years. In 1972, only 9 states (including the U.S.) possessed ballistic missiles. In 2004, already 25 states were among the missile

possessors, some among them with a low level of trustworthiness. Later on, North Korea, Israel, India, Saudi Arabia, Iran, Pakistan, South Korea and Taiwan have gained the capability to produce ballistic missiles of limited range. North Korea has developed ballistic missile called Taepodong-2 which has the longest reach of 6,200 miles.²⁵ Egypt, Syria, Vietnam, Yemen and Myanmar have developed SRBM called Scud- 'C' Missiles which can attack targets at short distance. Myanmar bought Scud-'C' version named Hwasong-6 manufactured by North Korea with an operational range of 500km (310 miles).²⁶ Myanmar also procured Chinese made SY-400 Short Range Precision Attack Ballistic Missile System which can pierce through 8 targets at a time with a maximum cruising range of 650 km.²⁷

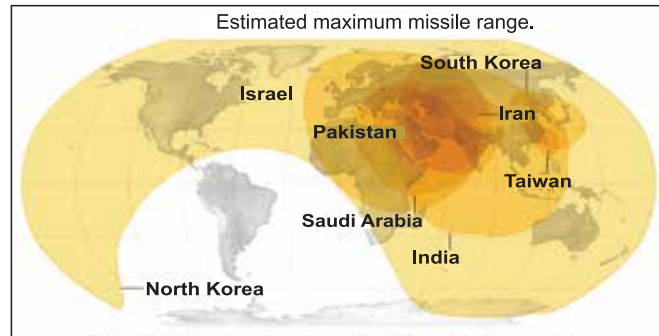
BD has border with India in the north, west and eastern side except a small portion in the south-east where she is having border with Myanmar. India has dispute with Pakistan in many issues including border and both the countries are involved in territorial disputes over the Kashmir region which sparked three major Indo-Pakistan Wars in 1947, 1965 and 1971 as well as a limited war in 1999. Both the countries are observing fragile cease-fire since 2003. They regularly exchange fire across the contested border, known as Line of Control.²⁸ India has border dispute with China and both countries were involved in war in 1962 for taking over control of Aksai Chin, North-East Frontier, Assam.²⁹ Launching ballistic missile against each other will put BD in great risk. BD has been trying for the Rohingya repatriation diplomatically, but Myanmar is unenthusiastic in solving the issue till today.³⁰ As many states of South Asia are possessing ballistic missiles, it has become indispensable for BD to have BMEWS with neutralizing system like MDS. Figures below show maps which include ranges of land and submarine launched missiles of 5 super powers and maximum missile range of Asia and Middle East Countries all around the globe.

Figure-12: Ranges of land and submarine launched missiles of 5 superpowers



Source: https://en.wikipedia.org/wiki/Submarine-launched_ballistic_missile

Figure-13: Maximum missile range of Asia and Middle East countries all around the globe³¹



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

Why BD Needs BMEWS

BD needs BMEWS for many reasons and those are mentioned below:-

a. Geographically and strategically, BD is located in a vulnerable place where the country shares border with India and Myanmar. India has many issues including border dispute with Pakistan. India has border dispute with China as well and all three countries are capable of launching ballistic missiles. If India involves in war with Pakistan or China, this will increase missile attack threat over BD as BD is surrounded by India in all sides except a narrow portion of southeast. BD along with International Agencies has been negotiating continuously in resolving Rohingya repatriation issue with Myanmar, but Myanmar State Authority is showing reluctant attitude and not solving the issue.³² Myanmar has Scud-‘C’ and SY-400 missile. Due to the position in the world map, BD is in indirect and direct threat of missile attack.

b. BD has limited geographical depth in comparison to other countries of the world. Due to less geographical depth, BD will get less reaction time to act against any missile threat. BMEWS will increase early warning and detection capability of BD against missile attack.

c. Speed of missile is much higher than Unmanned Aerial System (UAS) or jet aircraft. As many countries of Asia including our neighbouring states are possessing ballistic missile and SSM, attack by missile over BD cannot be ruled out. BMEWS would help in detecting relatively faster intruder from long distance and increase more reaction time for defensive measures.

d. Radar Cross Section (RCS) of ballistic missile and SSM is very less. As such these missiles are very hard to detect by conventional radars. BMEWS would help in detecting attacker with less RCS from far away.³³

Figure-14: Falcon 9 Rocket launched with Bangabandhu-1 Satellite



Source: shorturl.at/hiwR7

Figure-15: Bangabandhu Satellite-1 in orbit



Source: <https://en.wikipedia.org/wiki/Bangabandhu-1>

Planning Consideration for BMEWS In BD

Out of 193 countries in the world, only 11 countries could establish BMEWS. BMEWS and MDS are ambitious projects for countries having poor economy. According to the estimate of US Administration, for the development, testing and deployment of Upgraded Early Warning Radar System would cost \$1.2 Billion, NMD would cost \$30.2 Billion and total cost would be \$31.4 Billion.³⁴ With the launch of Bangabandhu-1 Satellite, BD became the 57th country in the world and fourth in South Asia after India, Pakistan and Sri Lanka to have its own satellite in space. Bangabandhu Satellite-1 is the first Bangladeshi geostationary communications and broadcasting satellite manufactured by Thales Alenia Space (France). It was launched on 12 May

2018 from Kennedy Space Center Launch Complex 39 (NASA, Florida, USA) with a cost of 19.51 Billion BDT. BD Telecommunication Regulatory Commission (BTRC) works hand in hand with France and USA for manufacturing, transporting, launching, operating and maintaining Bangabandhu Satellite-1. BD can launch military satellite with the help of friendly nations and utilize those for BMEWS.

BD is the 32nd country in the world which gained the capability of establishing nuclear power reactors at Rooppur for producing electricity.³⁵ Bangladesh Atomic Energy Commission established Rooppur Nuclear Power Plant (RNPP) at Iswardi, Pabna with a capacity of producing 2.4 GW electricity from two units with construction cost of USD 12.65 Billion.³⁶ Construction of RNPP started on 30 November 2017 and electricity production will start by December 2023. BD has the capability to take mega project like RNPP to meet the energy deficiency with high cost. BD can also take the project of establishing BMEWS for the survival of the country from all kinds of ballistic missile attack.³⁷

Bangladesh Air Defence Ground Environment (BADGE) started its work in 1974 with the help of Russia. Russia provided P-35 and P-15 Surveillance Radar and PRV-11 Height Finder and those radars were placed in three different locations of BD.³⁸ When the life of those radars expired, they were replaced by American made AN/TPS-70 and AN/TPS-63 Radars under 'Eagle Eye' Project in 1988 and 1989.³⁹ BAF also placed Russian made IL-117 Radars in two new locations under 'Falcon Eye' Project in 2004-5.⁴⁰ Now BADGE has different types of radars made in Russia, China and EU countries.⁴¹ Over the period, BAF Air Defence Weapon Controllers, Engineers, Radar Operators and Technicians have gained the experience of operating and maintaining Western and Eastern radars. Bangladesh Air Force (BAF) may take the BMEWS and MDS Project under Research and Development and make a thorough study on the subject. Researchers and Professors of Bangabandhu Aeronautical and Aerospace University who have good knowledge on the aerospace and radar technology, may be included in all phases of implementing BMEWS in BD. BAF needs to take the initiative and render pivotal role in establishing BMEWS in BD by incorporating it in Forces Goal-2030. Following points need to be considered for establishing BMEWS in BD:-

a. BMEWS is an expensive project which needs strong economy for funding. BD has to establish BMEWS in phases using present infrastructures of BADGE facilities to minimize the expenditure.

b. When the life of Air Defence Radars will expire, at that time radars used for BMEWS may be incorporated in BADGE replacing the old one. This will increase the detection capability of any kind of flying objects with less RCS.

c. Disused runway of BD not used for any purpose may be considered for fixing antenna for transmitting, receiving and tracking including fixing of Satellite Ground Stations.

d. Fighter aircraft like F-15 aircraft which can engage missiles in space may be considered in future procurement. Weapon like Directed- Energy Weapon (DEW) may be developed under Research and Development (R & D) for countering ballistic missiles, SSM and military satellites.

e. Separate Aerospace Command has to be developed for establishing command and control over aerospace to deal with BMEWS and MDS.

f. BTRC needs to coordinate with Thales Alenia Space, France and NASA, USA for manufacturing, transporting, launching, operating and maintaining new satellite which will be responsible for the surveillance of flying objects with less RCS including ballistic missiles.

Conclusion

BMEWS and MDS were projects developed by USA during Cold War to detect and neutralize all kinds of ballistic missiles launched from USSR. Though it was a very costly project, USA went ahead and completed the project successfully to protect mass population from WMD. Subsequently, BMEWS was developed in three locations in mainland USA known as PAVE PAWS and other two BMEWSs were established in UK and Greenland. The systems were upgraded in between to make it robust, fool-proof and effective. Long Range Radars fixed in five locations can detect any small flying object 5000 km away from the station. Military satellites are also used to track ballistic missiles once it is launched. USA and USSR signed ABMT known as SALT-I & II, SORT, and START to reduce the number of warhead, platforms and other facilities related of WMD.

At present many countries have grown the capability of launching ballistic missile which include few Asian countries as well. Neighboring countries of BD have already acquired the technology of producing family of ballistic missiles. If they get involved in war and start launching missiles against each other, BD will be in great threat at that time. Considering the vulnerability of ballistic missile attack, BD needs to prepare and gradually start establishing BMEWS in the first place and MDS subsequently with the help of fighter aircraft, DEW, etc. The infrastructure for BADGE and disused airfields unutilised may be used for establishing ground stations. Military satellite may be launched in future for surveillance from space and tracking all kinds of missiles heading towards BD from long distance. As BMEWS is a costly affair, expenditure may be shared from other concerned ministries.

Way Forward

Following way forward may be considered:-

a. BAF may take the initiative of replacing old radars with those radars used for BMEWS. This will increase detection range and height of flying object with very less RCS.

b. Present infrastructure and few disused airfields may be earmarked for BMEWS so that those airfields are not used for other purposes. Satellite ground stations may be planned in disused airfields as well.

c. BTCL may be coordinated to launch military satellite to monitor and track ballistic missiles and other flying objects with less RCS from long distance in space with the help of France and USA the way Bangabandhu Communication Satellite-1 was launched.

d. BAF may take the initiative in establishing BMEWS which will work for the survival of the nation during any missile attack especially over RNPP Project.

e. BAF may take the initiative to develop National Airspace Command to establish command and control over air and space, the new domain where BD has already entered by launching Bangabandhu-1 Satellite.

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Brief Biography



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A Quest for the Instruments of National Power for Bangladesh in Retrospect of War of Liberation

Brigadier General Muhammad Saifur Rahman, SUP, afwc, psc

Introduction

The Liberation War (LW) of Bangladesh is a singular wonderful event in the history of Liberation War of any nation in the world for achieving independence by fighting only nine months war spanning from 26 March to 16 December 1971. It was made possible because the entire nation driven by Bengalee nationalist movement and patriotism as well as was united and contributed from their respective stand. Thus, the LW in 1971 marks as the most glorious episode in the history of Bangladesh where all elements of national power were brought together for an overarching national goal. It was essentially a total war which was epitomized by the synergistic and coordinated efforts of all resources of the nation.¹ As such, the blazing experience of the role and contribution of different instruments or constituents of national power during the LW can be a great source of learning and analyzing the strength of Bangladesh as a nation for formulating future viable war efforts to fight against any adversary.

Political scientists and security experts have defined national power as a complex concept which denotes the combination of total resources that a nation possesses for fulfilment of national objectives. There are various constituents vis-à-vis instruments of national power. On the basis of applicability and origin these instruments can be grouped into 'national' and 'social.' While 'national' includes geography, resources, and population; 'social' includes economic, political, military, psychological and informational. All these elements are complementary and supplementary to each other. Padelford and Lincon observes, "National power is that combination of power and capacity of a state which the state uses for fulfilling its national interests and goals."² History bears ample testimony to the fact that military strength forms the main corner stone of national power. However, military has to act in unison with other factors for making an effective strategy power. It is the combination of factors commonly known as constituents or instruments of national power which determine state power.³

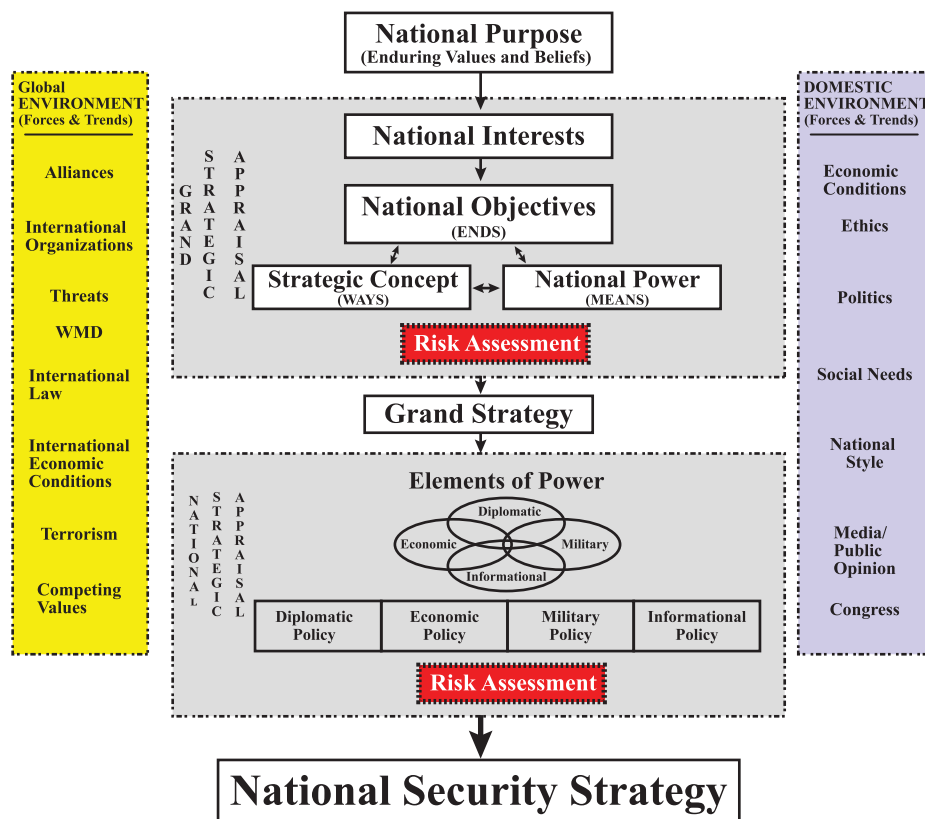
This paper aims to highlight the effective role and mutually contributing different instruments of national power of Bangladesh which brought the success for the nation in LW and the lesson learnt for the nation for future grand strategy. In doing so, the paper will be initially unfolded with conceptual framework of National Security Strategy and associated relationship of various instruments of national power. Then the main focus will be drawn to explore the relevant

constituents which have an effect on the main goal i.e. independence of Bangladesh. Lastly, an effort will be taken to bring out a comprehension about true national powers of Bangladesh in formulating National Security Strategy to address any national crisis in future.

Conceptual Framework of National Security Strategy and Instruments of National Power

This is the sum of national policies, plans and programme designed to support national interests. It is an aggregate of all the elements of national power both during peace and war which achieve national goals. According to Upeka Premaratne, "Safeguarding the sovereignty, territorial integrity, citizenry and socio-economic functionality of a nation from an aggressor intent on undermining a particular valued aspect of a nation through violent or unjust means."⁴ A theoretical framework of National Security Strategy is appended below:-

Figure-1: Strategy Formulation Model



Source: <https://www.google.com/search?source=univ&tbm=isch&q=Strategy+Formulation+Model&hl>

Constituents of National Power

Social scientists and analysts have identified the constituents as various groups which are (i) natural (geography, resources, and population); (ii) social (economic, political, military, psychological, informational, etc.);⁵ (iii) relatively stable (geography and natural resources); (iv) constant change (industrial capacity, military preparedness, population, national character, national morale, quality of diplomacy, quality of government);⁶ (v) tangible (agricultural capacity, military strength and mobility); (vi) intangible (leadership and personality, bureaucratic-organizational efficiency, type of government, societal cohesiveness, reputation, foreign support and diplomacy, accidents) terms.⁷ Kautilya's concept indicates that power stems three elements viz. knowledge, military might and relations with other states in particular the neighbours.⁸

Different Instruments of National power⁹

These are briefly discussed below:-

a. **Diplomatic:** This is constantly used during peace and war. The success of diplomacy depends to a great extent on the ability of the state actors to negotiate and enter into treaties thus furthering relationship among friendly countries. A switch to economic or military pressure signifies its partial or total failure. It is thus essential to have a mix of reputation and integrity for exercising fruitful diplomacy.

b. **Economic:** Economic policy has to be framed properly and implemented with care. 'Maximum benefit for the maximum number' has to be ensured to attain sustainable economic growth. Foreign investment, bilateral and multilateral trade and commerce with other countries provide lifeline of economy in this aspect. Military force can come into play for the purpose of enforcing embargo and economic sanctions.

c. **Military:** This instrument is applied in conjunction with other ones as situation demands like preventing conflicts, relief operations, disaster management, measures to maintain peace and stability. For smooth and effective resolution of critical issues integration of military element at the primary stage is essential.

d. **Information:** The information instrument will be focused on countering adversarial information and information systems, while defending own, and is therefore largely coordinated by Information Operations (Info Ops). Information is an embedded enabler to the three instruments mentioned above to work effectively.

The instruments of national power in accordance with US Armed Forces are shown below:-

Figure-2: Strategy Formulation Design



Source: <https://www.google.com/search?q=elements+of+national+power&tbm>

The Role and Contribution of Different Elements of National Power in War of Liberation of Bangladesh

a. **Transformation into People's War:** People from all walks of life participated wholeheartedly and kept their contribution in different capacities during the nine months period of Liberation War (LW). The historic speech of Bangabandhu Sheikh Mujibur Rahman delivered in the then Ramna Race Course (now Suhrawardy Udyan) provided the final directive and an indomitable inspiration to fight for the Liberation War against the Pakistan junta. The directives were the basic elements of the national unity. The brutal genocide carried out by the Pakistani occupation forces on innocent and unarmed Bengalee people at midnight of 25 March 1971, followed by the declaration of independence on 26 March led to stiff resistance by the people. Popular uprising, which began as a political process in the form of non-violent, non-cooperation movement culminated into a prolonged-armed struggle.¹⁰

b. **Guerilla Fighting of Freedom Fighters:** The freedom fighters who were popularly called 'Mukti Bahini' comprised of the 'Niomito Bahini' or 'regular forces' and the 'Gonnobahini' or 'people's forces.' The paramilitary, military and police forces of East Pakistan, who took up arms to resist and carry out direct operations made up the 'Niomito Bahini.' The 'Gonnobahini' was formed by the intellectuals, professionals, teachers, students, peasants, workers and other civilians. 'Mukti Bahini' applied the 'hit and run' tactics of guerrilla fighting, blew up bridges, culverts, destroyed fuel depots and ships to inactivate the Pakistani

forces. Consequently, maximum villages came under the control of the freedom fighters.¹¹

c. Actions by the Bangladeshi Diasporas in Overseas Countries:

During the nine months period of war, the Bengalee people became unified and raised the voice of protest. The Bangladeshi Diasporas mainly worked in New Delhi, Kolkata, Washington DC, New York and London. They directed their energies to mould public opinion, protest against genocide and raise funds. Their main agenda was as follows:-¹²

- (i) Build international public opinion in favour of the cause of Bangladesh and ensure international assistance to the people who had taken shelter across the border.
- (ii) Isolate the Pakistani regime by projecting the atrocities and crimes against humanity which they were committing in Bangladesh with a view to cutting off all foreign economic and military assistance to the Yahya regime.
- (iii) Create the necessary condition so that the friendly countries who were supporting the cause of Bangladesh could take a more firm and decisive action to expedite the independence of Bangladesh and to advance recognition of Bangladesh as an independent and sovereign state.

d. Contribution of Bangladeshi Women: A unique aspect of the Liberation War was that women rendered important role in various capacities. Some of them were guerillas and combatants while others were nurses, volunteers, motivators in the refugee camps. Women also provided food, shelter, clothing, medicines and other necessary items to the freedom fighters who visited the main cities to launch operations based on the information given by women.¹³

Diplomacy

a. Diplomatic Line of Operation: Diplomatic line of operation is always a prerequisite of any war. The LW of Bangladesh was a bright example of this dictum.¹⁴ The then exile state of Bangladesh did not have any diplomatic mission/office in any country during the war. The Bengalee diplomats who swore loyalty to the provisional government of Bangladesh formed on 10 April 1971 rendered a yeoman's role to mobilize public opinion in the foreign countries, wrote letters to world leaders for supporting the independence struggle of the Bengalee, raised funds for the refugees who were languishing in a pitiable condition in the refugee camps set up by India. They also appealed to the foreign countries for taking a more firm and decisive action to expedite the independence of Bangladesh and to give advance recognition of Bangladesh as an independent and sovereign state.¹⁵

b. Recognition of Bangladesh: The Diasporas, patriotic diplomats all around the world played a vital role for the recognition of Bangladesh in pursuing her independence. Involvement of foreign nations, organizations and individuals by Bangladeshis working abroad, abdicated officers at the then Pakistan Missions, Mujibnagar Government and India's covert mission were instrumental in drawing the world opinion and establishing the legitimate claim of an Independent country on the world map.

Military

Operational Construct of Bangladesh Forces: After the military crackdown by the Pakistani army nicknamed 'OPERATION SEARCHLIGHT' on the midnight of 25 March 1971 there was valiant resistance in various parts of the country. With the passage of the time this turned into an organised warfare. Subsequently, Bangladesh Armed Forces was created in the battlefield. During the long nine months battle, Bangladesh forces were organized in 11 Sectors, 3 regular Brigades having approximately 25000 conventional force including elements of Naval and Air components while more than 80000 Freedom Fighters under a single command structure. The Mukti Bahini 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 3 December 1971 a Bangladesh-Indian Joint Forces operation took valiant shape within short span of time and resulted in unconditional surrender of Pakistan Forces at Dhaka on 16 December 1971. The Operational Construct of Bangladesh Forces in Liberation War is shown below:-

Figure-3: The Operational Construct of Bangladesh Forces in Liberation War



Source: <https://www.google.com/search?q=operational+construct+of+bangladeshi+forces&tbn>

Informational

Informational Line of Operation : LW in 1971 involved both pre-planned and coordinated strategy by the armed and unarmed Bengalees. It also infused a new lease of life in to the people and sustained their determination. Various elements of informational constituent are briefly discussed below:-

a. **Shaping the Public Opinion**: Public opinion was the main source of LW. This was focused to create a contest between Bengalees and pro Pakistanis. During Liberation War, public opinion helped in two ways; firstly, to undermine support of the Rajakars and Pakistanis and secondly, to solidify support for Mukti Bahinis and cause of Liberation War. The media influenced and shaped the peoples' opinion against the political decisions taken by the then Pakistan.

b. **Shaping World Opinion:** World opinion also had tremendous effect in the outcome of Liberation War. Enormous efforts were taken to shape up the world opinion in favour of Bangladesh. News coverage and photographs published in *Newsweek* and other international print media shaped the national and international public opinion against the then Pakistan.

c. **Growing Hatred:** There was unfathomable hatred for Pakistanis. This hatred was accumulation of countless incidents and humiliation towards the general mass of Bangladesh by them. The popular programme 'Jallader Darbar' portraying the heinous acts of Pakistan military created a sense of hatred against the occupation forces among the general mass and international community.

d. **Influence for Struggle:** Repeated broadcast of 7th March Speech of Bangabandhu and LW declaration from Kalurghat Betar Kendra had an inspirational effect on people and the Mukti Bahini in particular news and other programs of BBC and Swadhin Bangla Betar Kendra through patriotic songs and motivating dialogues could successfully infuse the people to organize, take up arms and fight collectively.

e. **Degrading Enemy's Morale:** The broadcast of atrocities of Pakistani soldiers by BBC and Swadhin Bangla Betar Kendra committed against the people shattered the morale of occupation forces. It is relevant to mention here that the higher command of Bangladesh Forces issued a directive on Psychological Warfare which aimed at the following:-¹⁶

(i) To destroy the enemy's will to fight and to reinforce and sustain the determination of our people to destroy the enemy and liberate Bangladesh.

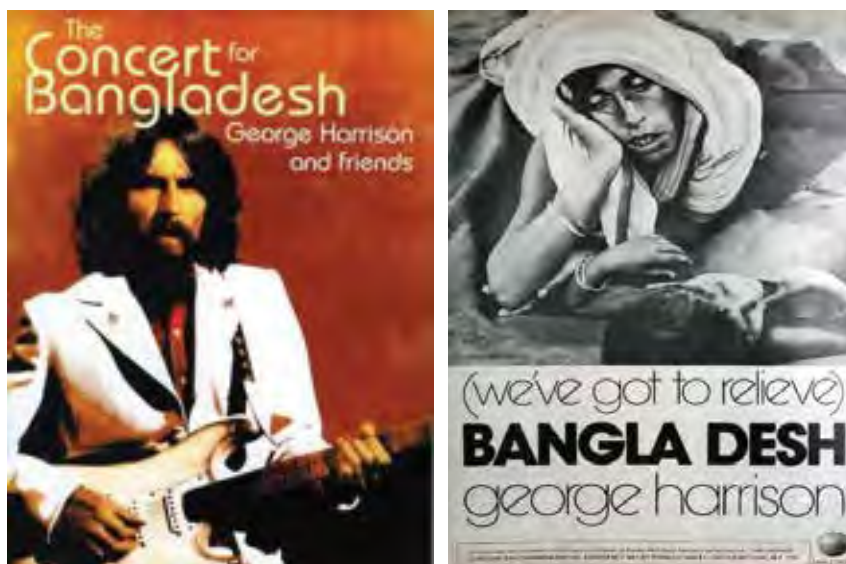
(ii) A connected aim, which had a vital impact on own will, was to create in the minds of the people of other countries a deep sympathy for and firm belief in righteousness of our cause, to the extent of, mobilising world opinion against the enemy.

f. **Role of Media (Print and Electronic):** Media played a vital role in shaping the world opinion and raising the morale of domestic people during War of Liberation in 1971. The contribution of media; own, local and international during LW was remarkable. Swadhin Bangla Betar Kendra created tremendous sensation and effect amongst the people of various walks of life. It played a vital role in the psychological war against the occupation forces and at the same time significantly contributed in boosting up morale of the Freedom Fighters.

Economy

It is no denying fact that economic condition of Bangladesh was not in a favour of waging war against Pakistan. India was the first nation to stand beside Bangladesh in the road of freedom of Bengalee people. Besides, the contribution of other foreign friends like USSR, Warsaw Pact and other Asian, European and Latin American countries played significant role in funding of the Liberation War. Bengalee Diasporas and Sympathizers all over the world contributed by raising fund and building public opinions. The “Concert for Bangladesh” is the classical example of fund-raising efforts which created a strong opinion across the globe against the atrocities carried out by Pakistani forces and justified the cause of LW.¹⁷

Photo-1: Types of uses of social media



Source: <https://www.google.com/search?q=concert+for+bangladesh&tbm>

Takeaways in Formulating National Security Strategy for Bangladesh

Constituents of National Power for Bangladesh

From the foregoing discussion, it may be deduced that People, Diplomacy, Military, Informational and Economy are the most important and effective Constituents of National Power for Bangladesh. These elements of national power are mutually contributing to each other. In any national crisis, all these elements should be brought together to fulfill the national interest. National Security Strategy should be formulated taking into cognizance of perfect blending of all five instruments of national power. The focus should be on taking a logical, holistic and all inclusive approach best suited to protect national interests and threats.

Diplomatic Efforts

Diplomatic efforts in 1971 greatly stimulated our victory against the Pakistani forces. As such, gaining diplomatic edge over threat by carrying out extensive diplomatic effort and drawing the support of international community especially with reckonable world powers in favour of Bangladesh is of prime importance. Since after independence Bangladesh has also pursued for better relations with global and regional actors and joined all possible international organizations to create friends and extend diplomatic reach.

Defence Policy

Defence diplomacy, deterrence and defending hostile design form three pillars of country's defence policy. Keeping in view Bangladesh's national interests and commitment to global peace and stability, the defence policy aims at ensuring that Bangladesh enjoys peace and stability for the wellbeing of the people. In order to protect the country and promote peace and harmony in the world there is need to review the *War Book of 1977* to harmonize and synchronize the role of different Ministries and government organizations with total war efforts of Bangladesh.

Credible and Deterrent Bangladesh Armed Forces

Bangladesh Armed Forces today stand as the most responsive organization of the country that stands by the people in times of need in peace or in war like scenario. Its role in the United Nations peace support operations also bears the testimony of its professionalism and readiness to duty regardless of the distance and political or environmental condition. To achieve national aim and defence objectives, Bangladesh Armed Forces consistently focus on three following competences:-

- a. Establishing a firm posture convertible to offensive according to dictated situations.
- b. Continuously implementing national defence reforms and self-substance.
- c. Establishing a pro-people Armed Forces.

Political Efforts to Unify the Nation

In LW, the single most factor that influenced and tied up all elements of national power was unity of the Bengalee nation which was made possible by the dynamic leadership of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman. Public opinion in favour of the war is a big winning factor. As such, efforts to be made by the political leaders to shape up the public opinion during any future war scenario or national crisis.

Integration of Bangladeshi Diasporas and International Forums

In 1971, Bengalee Diasporas played a significant role in shaping the international opinion in favour of Bangladesh. Presently, a good number of Bangladeshi citizens are permanently residing in many countries of the world. As such, these Diasporas may be integrated in Information Warfare system by preparing a Shelf-Plan and maintaining a Coordinating Cell in various countries especially the global and regional powers. This cell should have communication and coordination with Ministry of Foreign Affairs and be activated in the time of crisis or war and act as per the direction of the ministry. The influence of various international community of the world is surely a major player in any future war.

Economic Sustenance of War

Diasporas acted during the LW as key elements for providing economic help directly and by influencing international forums to provide economic help to Bangladesh. Diasporas can also integrate all forums like World Bank, IMF, JICA and other economic organizations so that these organizations can help economically supporting war effort in Bangladesh.

Information Warfare Strategy

Taking lessons from LW, Information Warfare Strategy may be formulated in congruent with Diplomacy and Defence policy by utilizing the potential of cultural wings of Bangladesh operating abroad. The media (print and electronic) will remain as the principal means to conduct Information Warfare. As such, efforts must be taken by the lead role of Ministry of Information and Broadcasting to fully strengthen the media and its associates to derive maximum benefit out of it. Integrating power of such platform worldwide can be harnessed by the Diasporas in the moral support of the citizens directly participating in the war in Bangladesh. Diasporas may use influential media like BBC, CNN, AL-JAZEERA, etc. to develop public support against any possible war in future.

Infusing Patriotism and Spirit of Nationalism

Patriotism was a great motivational tool for the Bangladeshi forces against the occupied Pakistani forces in 1971. The freedom fighters including the whole nation were ready to sacrifice their lives for the independence of the country. As such, political leadership should stimulate nationalism and infuse patriotism by highlighting national heritage, socio-cultural homogeneity, cohesion and peaceful co-existence of all the people irrespective of culture and religion.

Conclusion

The LW was a momentous episode for the people of Bangladesh in achieving independence within shortest possible time. It was made possible by the contributions of people from all walks of life including the international

community. The support from friendly countries was instrumental in drawing the world opinion and established the legitimate claim of an independent country on the world map. Since the commencement of Liberation War, regular forces and Mukti Bahini engaged themselves in guerilla warfare with Pakistani forces in various sectors. The efforts and successes of the Mukti Bahini had caused tremendous mental strain on Pakistani forces and sapped their morale and confidence to all time low. Besides, formulation of provisional Government of Bangladesh, international pressure, diplomatic pursuance, media and hostile environment etc. created a huge psychological pressure on Pakistani forces and also on the Pakistani leadership. As a result, the Pakistani Forces were brought to their knees and forced to accept an unconditional surrender.

There are many theories about the elements of national power. What is important is to highlight on contribution of people, diplomacy, military, economy and Informational efforts in the LW which are still valid for today and in any future war. The unprecedented lessons of orchestration of different instruments of national power in the great LW will help to conceptualize future war strategy in safeguarding territorial integrity and sovereignty of Bangladesh.

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Brief Biography



Brigadier General Muhammad Saifur Rahman, SUP, afwc, psc 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 B.Sc in Civil Engineering (CE) from MIST. He accomplished his M.Sc 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 alumnus of NDC. During his service career, he served in a good number of units and institutions of Bangladesh Army in different capacities. He has commanded 10 Riverine Engineer Battalion. He has served as the GSO-3 (Operations) in HQs 101 Infantry Brigade, Brigade Major in HQs 14 Independent Engineer Brigade and GSO-2 (Coordination) to the GOC, ARTDOC and GSO-1 (Administration) in AFD as staff officer and at HQs 34 Engineer Construction Brigade as Additional Director General. He also served as Instructor Class - B at Tactics Wings, SI&T. Possessing a flair for literature, music and writing in particular, he has to his credit some research publications mentionably the seminal work on Role and Contribution of Corps of Engineers in Liberation War of Bangladesh entitled *মুক্তিযুদ্ধে স্যাপার্স* and also number of publications in *Armed Forces Journal*, *Army Journal* and *ECSME Journal*. Presently he is serving in Padma Bridge Rail Link Project (PBRLP) under Construction Supervision Consultant (CSC).

The Mega Padma Multipurpose Bridge Project and its Associated Schemes: Challenges and Lessons Learnt

Major General F M Zahid Hossain, afwc, psc (retired)

Colonel Faruque Ahmed, afwc, psc

Introduction

Since the beginning of last decade, several infrastructure projects have been initiated in Bangladesh. Considering the size, budget, and economic impact, some of these projects have been termed as mega projects. The government has undertaken these mega projects for guaranteeing the sustainable development of the country. To this end, a good number of projects like the Padma Multipurpose Bridge, Padma Bridge Rail Link project, Bangladesh's first metro rail project MRT Line-6, and the Karnafuli Tunnel, the first and longest underwater road tunnel in South Asia etc. have been put under the Fast-Track scheme.¹ This scheme is envisioned, introduced and supervised by the Hon'ble Prime Minister herself, resulting in full swing progress being accomplished in a space of years. As a far-reaching impact, lives in long-deprived regions have started to change, horizons for businesses are opening up, employment opportunities are being created, the influx of international investment is rising, and adding further impetus to the national growth of Bangladesh.

The Padma Multipurpose Bridge project is the most challenging construction project in the history of Bangladesh. This longest bridge in the country, having 41 spans on 42 pillars and a length of 6.15 km, marks an important milestone, as it is a symbol not just of Bangladesh's steadfastness but of its growing economic capacity and development. The Padma Bridge's biggest contribution will be to Bangladesh's economic growth. Economists say that it will provide a 1.3 to 2 percent boost per annum to the country's GDP. When the railway component of the bridge is completed, the project will contribute another 1 percent to the GDP. The bridge project's contribution to Bangladesh's GDP is expected to rise to 5 percent by 2055. The bridge will cut travel distance by 100 km for around 27 percent of Bangladesh's population to boost business and agriculture, thereby impacting the country's GDP.²

A Brief History of Padma Multipurpose Bridge Project (PMBP)

To alleviate the sufferings of the people in the southwestern region and for the overall development of the country, an easy means to cross the 120 km long Padma River was essential. In fact, the bridge over the rampant Padma River was a long-cherished dream of the people of Bangladesh. A self-financed pre-feasibility study was conducted in 1998-99, and further, it was recommended to carry out a full feasibility study. With the financial support of

the Government of Japan, the Japan International Cooperation Agency (JICA) started the full-fledged feasibility study of the bridge in 2003 and suggested Mawa-Zajira point as a suitable site for the construction of the Padma Bridge. The detailed design of the Padma Multipurpose Bridge was prepared by a team of international and national consultants headed by AECOM (Architecture, Engineering, Construction, Operations and Management). The team comprises AECOM, SMEC (Snowy Mountains Engineering Corporation) International, Northwest Hydraulic Consultants and ACE Consultants, with additional assistance from AAS-Jakobsen and HR Wallingford. A dedicated project office was set up in Dhaka in March 2009. Detailed design of the main bridge was carried out in AECOM's Hong Kong office. In March 2009, the Government of Bangladesh requested AECOM to accelerate the design aiming to complete the construction before the end of 2013. Bangladesh Bridge Authority (BBA) established an internationally recognized Panel of Experts comprising five national and five international experts to review the design at regular intervals. In addition, an Independent Checking Engineer, Flint & Neill, was engaged to review the design.³

From the beginning, monetary management remained a great challenge. The World Bank and other financial institutions refused to finance the project but Prime Minister Sheikh Hasina was much firm and bravely declared on 31 January 2013 that, the bridge would be constructed with own finance and accordingly instructed the concerned authorities to go ahead. This was a historic bold decision that eventually paved the way to commencing the work on the Padma Bridge.

During the conference of the Asian Development Bank on 25 January 2013, the Hon'ble Prime Minister expressed her views on the involvement of the Bangladesh Army in the construction of Padma Bridge and related projects while discussing with the late National Professor, an eminent engineer and Chairman, the Panel of Experts for Padma Multipurpose Bridge Project, Dr Jamilur Reza Chowdhury. Bangladesh Army has always stood by the people in any need of the nation. Committed to the dream of the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman to be the "People's Army", Bangladesh Army has never shied away from taking up any challenging responsibility for the country and its people. The Engineering Corps of the Bangladesh Army has successfully completed numerous projects in the Chittagong Hill Tracts, long marine drive in Cox's Bazar, Mirpur-Airport Road flyover, Hatirjheel Mega project and other infrastructure projects in the different places of Bangladesh. All these successes, trustworthy images, well-disciplined activities as well as wide acceptance by the nation have instilled confidence in the head of the government to involve the Army in such a challenging project.

Salient Features of Padma Multipurpose Bridge Project (PMBP)

The Padma Bridge is a multipurpose road-rail bridge across the Padma River. It connects Mawa of Munshiganj district and Zajira of Shariatpur district, linking the southwest region of the country to the northern and eastern regions. The two-level steel truss bridge carries a four-lane highway on the upper level and a single-track broad-gauge railway on the lower level. With 6,150 m in length and 18.10 m in width, it is the longest bridge in Bangladesh over the Padma-Brahmaputra-Meghna River basins. The table below shows the major components of PMBP:-

Table-1: Major components of Padma Multipurpose Bridge Project

Major Project component	Size or Dimension	
	Mawa side	Zajira side
Main Bridge	6.15km long bridge of 18.10 m width	
River Training Works	2km long	12.53 km long
Approach Roads	2.3km long	12.8km long
Bridge-end Facilities		
Service area	27.03 ha	63.7 ha
Construction Yard	81 ha (acquisition)	78 ha (requisition)
Railway		
Railway Provision	On the main bridge 6.15km	
Railway viaducts	2.59 km	4.03 km

Source: Bangladesh Bridge Authority and Bangladesh Railway Official website

The Padma Bridge provides a vital missing link in the transport network of Bangladesh. The bridge yields significant travel time savings, particularly between Dhaka Division to the south and southwest regions of Bangladesh and also onto India as part of the Trans-Asian Highway (Map 1).⁴



Source: Prarthana Sen and Sohini Bose, *Padma Multipurpose Bridge Project: Promise of a Rising Bangladesh*, Observer Research Foundation, Delhi, India, 25 June 2022.

The operation of the Padma Bridge, with its large step change in transport costs, has resulted in significant economic changes in the south-west region. The engineering designs for the main bridge and river training works have been developed to address the complex and challenging site constraints and the tight construction programme schedule outlined by the government of Bangladesh. In parallel with the engineering issues, the project team has addressed the important social and environmental impacts arising from the project.

The PMBP offers huge benefits, few mentionable are as follows:-

- a. In the Traffic Model, road users' benefits are estimated based on the savings on Vehicle Operation Cost (VOC) and savings in travel time cost (TTC). Table 2 below shows the road users' benefit from the PMB for a period of 12 years:

Table-2 : Road users' benefit from the Traffic Model of PMB

Year End June	VOC	TTC	Sub-total
2022	131	145	276
2023	153	168	321
2024	176	193	369
2025	202	221	423
2026	231	243	473
2027	260	266	526
2028	290	291	581
2029	322	316	637
2030	354	342	696
2031	370	351	721
2032	386	360	746
2033	401	370	771

Source: Design Consultants estimated traffic benefits (revised by the World Bank team)

- b. The Padma Bridge leads to the greater integration of regional markets within the national economy.
- c. Lengthy and expensive ferry operations and maintenance cost savings.
- d. Benefits from provisioning of utility facilities (such as gas pipelines, electric cables and telecommunication cables).
- e. It improves the living standard of people of the southern part.
- f. Likely industrial revolution in the southern part of the country (Faridpur, Gopalganj, Madaripur, Shariatpur, Khulna, etc.).
- g. Environment friendly.
- h. The Padma Bridge undoubtedly will increase urbanization.
- i. Likely establishment of multi projects in the close proximity of Padma Bridge.

Contribution of Bangladesh Army in PMBP and its Associated Schemes

Construction Supervision Consultant-1 (CSC-1) and Construction Supervision Consultant-2 (CSC-2) were formed to construct the Padma Bridge and its associated schemes. Furthermore, Engineering Support & Safety Team (ESST) was established for ensuring the safety and security of such a huge mega project. Bangladesh Army was the core component of CSC-1 and ESST. The entire project includes the following elements:-⁵

- a. Main Bridge.
- b. River Training Works (RTW).
- c. Zajira Approach Road & Selected Bridge End Facilities.
- d. Mawa Approach Road & Selected Bridge End Facilities.
- e. Service Area- 02.
- f. Management Support Consultant (MSC) Service.
- g. Construction Supervision Consultant- 02 (for Main Bridge & RTW).
- h. Construction Supervision Consultant- 01 (for Approach Roads & Service Area- 02).
- i. Engineering Support & Safety Team (ESST).
- j. Resettlement.
- k. Environment, and
- l. Land Acquisition.

Bangladesh Army was made responsible for three schemes, namely, Zajira Approach Road and Selected Bridge End Facilities, Mawa Approach Road and Selected Bridge End Facilities and Service Area- 02 of the project.⁶ Besides, the Army was also the consultant and implementing agency of Bangabandhu Sheikh Mujibur Rahman Expressway (N8) and Padma Bridge Rail Link Project (PBRLP) which are very closely linked with PMB.

Just before the commencement of the works under different packages, a huge erosion along the proposed alignment for the bridge caused great concern to local and foreign consultants, engineers and experts involved in the construction of the bridge. The Army came forward at the request of the Bangladesh Bridge Authority (BBA) to mitigate this emerging challenge. To prevent this catastrophic erosion of the Padma, emergency river training along a length of 1,300 meters in the Mawa-Kandipara-Josholdia area was carried out by the Army. Eventually, it protected the main alignment of the Bridge from any such risk.

Subsequently, under the overall supervision of BBA, the groundwork of the Padma Multipurpose Bridge Project started at field level on 08 October 2013 with the launching of the Zajira Approach Road by Bangladesh Army. For three packages (Zajira Approach Road, Mawa Approach Road and Service Area-2), Abdul Monem Limited-Highway Construction Management was the contractor and CSC, Bangladesh Army was appointed as consultant. Subsequently, in December 2014, China Railway Major Bridge Engineering Group Company Limited (MBEC) and Sinohydro Corporation Limited were hired as contractors for the main bridge and river training work respectively, and

Korea Expressway Corporation Ltd. was selected as the consultant. In this way, the government directly involved Bangladesh Army in the most important mega project in Bangladesh. Various activities carried out by Bangladesh Army before the commencement of the work on the Padma Bridge served as the main basis for the construction of the bridge and instilled courage and confidence in the hearts of all.

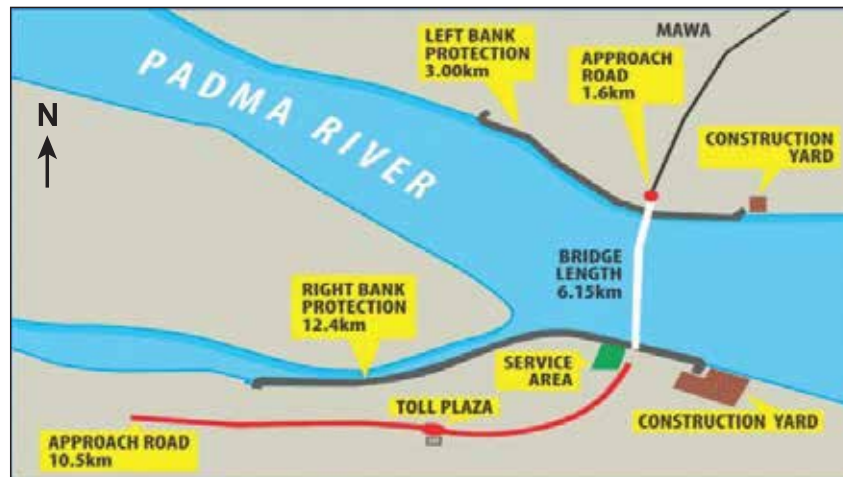
Along with this, comes the issue of safety of thousands of local and foreign consultants, engineers and workers and huge valuable construction material. In order to ensure the overall security of this strategic bridge during and after construction, the Government of Bangladesh formed a separate brigade called 99 Composite Brigade under CSC-1 on 19 September 2013, which started operations on 12 March 2014.

The involvement of the Bangladesh Army in the Padma Bridge as a consultant will undoubtedly be considered a milestone event. A huge team consisting of army personnel, local and foreign engineers, an experienced panel of Bangladesh University of Engineering and Technology and local contractors has been working incessantly from the beginning while maintaining international standards. The works performed by Bangladesh Army on the Padma Multipurpose Bridge and other associated projects are given below:-

a. Zajira Approach Road: Zajira Approach Road starts from the Zajira end of Padma Bridge and connects with the main road (N8) of the Madaripur district in the Pachchar area. This road has a 10.57 km long 4-lane main road, 12 km long 2-lane service road, 5 bridges, 6 underpasses, 20 culverts, one service area (SA-3), Zajira end Toll Plaza, Police Station Building and Fire Station Building. The work of the described package started in 2013 and ended in 2016. The Zajira Approach Road was opened to the public in 2016.

b. Mawa Approach Road: Mawa Approach Road starts from the Padma Bridge and connects with the main road (N8) of Munshiganj district in the Dogachi area. This approach road has a 1.6 km long 4-lane main road, 1.69 km long 2-lane service road, one culvert, Service Area (SA-1), Toll Plaza at Mawa side, Police Station Building and Fire Station Building. In this package, Service Area (SA-1) has been constructed at Mawa for the accommodation of the main bridge and river training consultants and BBA officials. The described work started in 2014 and ended in 2016. At present, this Approach Road is open to the public.

Map-2: Padma Multipurpose Bridge and associated schemes



Source: Bangladesh Bridge Authority Official Website

c. **Service Area-2:** Service Area-2 has been constructed at Zajira for the accommodation of consultants and engineers of the Padma Multipurpose Bridge Project and River Training Package including officers and employees of BBA. All the modern living facilities are available under this package; 30 beautiful three-bed cottages, a resort reception building, supervision office, conference room, swimming pool, tennis ground and motel mess have been constructed. Work on this package started in 2014 and was completed in 2017.

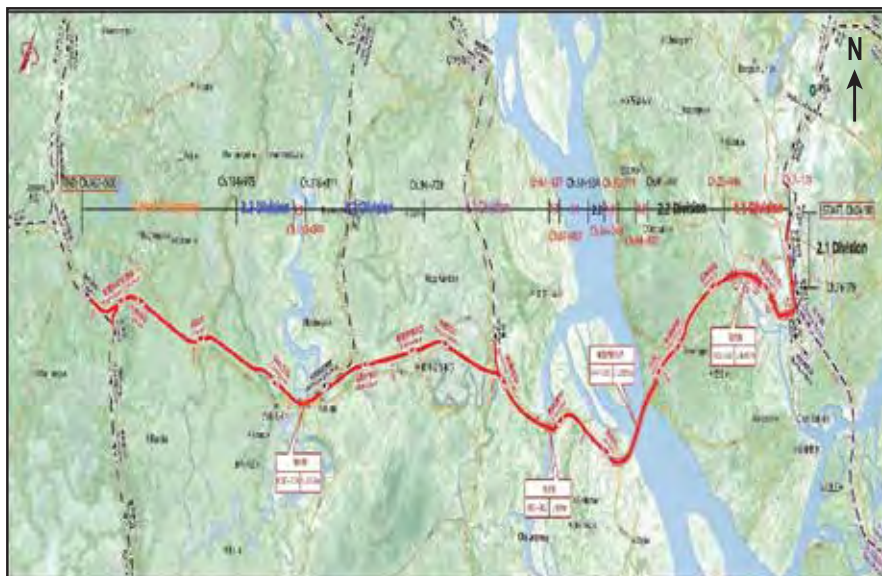
d. **Rehabilitation of Affected People:** Bangladesh Army carried out an arduous task of rehabilitation of displaced people. 24 Engineer Construction Brigade constructed a good number of roads, culverts, mosques, school buildings, etc. on both sides of Padma Bridge. It has also carried out various public welfare activities, such as land development, repair of health centres etc. in the rehabilitation zone of the Padma Multipurpose Bridge Project.

Padma Bridge Rail Link Project (PBRLP)

Considering the convenience of transporting huge amounts of passengers and goods at an affordable cost, a broad-gauge railway line had been included in the design of Padma Bridge at the lower deck. The Padma Bridge Rail Link Project (PBRLP) is undoubtedly a timely and far-sighted decision. Under the Government to Government (G2G) framework, the Bangladesh Government and the Government of China signed an agreement to implement this project. Bangladesh Railway engaged China Railway Group Limited (CREC) as a contractor to implement this project. And Construction Supervision Consultant (CSC), Bangladesh Army has been assigned with the responsibility of consultancy for design, review, quality assurance and supervision. It has also conducted land acquisition, site clearance and

resettlement and rehabilitation activities. The Padma Bridge Rail Link Project is one of the largest projects in financial terms (Tk. 39,248 crore). This gigantic project started with the inauguration by the Hon'ble Prime Minister on 14 October 2016. Through this project, 21 districts in the southwestern region will be connected with the capital Dhaka. The total length of this rail project is 172 km, and it includes a 23.29 km long viaduct (rail flyover), 59 long bridges, 142 culverts and 135 underpasses. For the convenience of the people, 16 stations with modern facilities are being constructed in this project and modernization activities of 4 old stations are also underway.

Map-3: Padma Bridge Rail Link Project (PBRLP) route plan

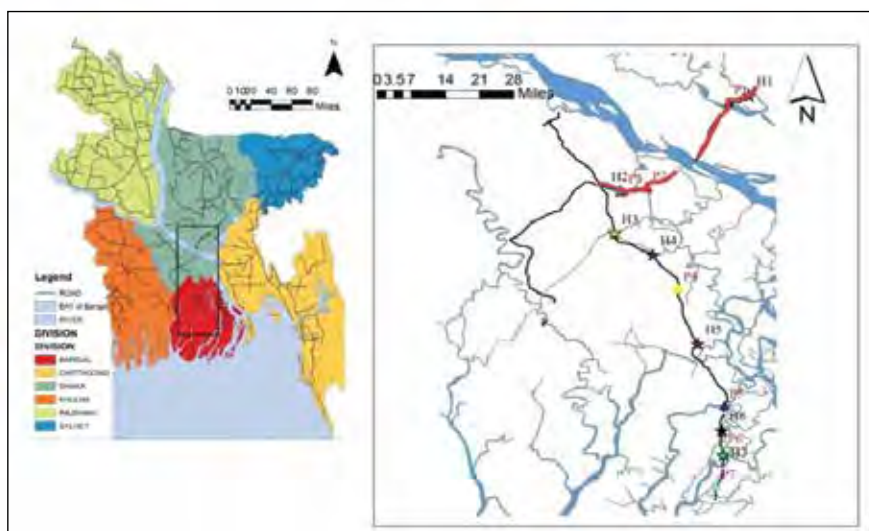


Source: PBRLP Official Website

Bangabandhu Sheikh Mujibur Rahman Expressway (N8)

The first access-controlled expressway of the country Bangabandhu Sheikh Mujibur Rahman Expressway (N8) connects the Padma Bridge with the capital in the north and Faridpur in the south. This expressway has been constructed under the overall supervision of 24 Engineer Construction Brigade of Bangladesh Army. The Hon'ble Prime Minister inaugurated the work of this highway on 16 August 2016 and the work was magnificently completed on 12 March 2020. The work of the N8 expressway has been executed in 11 packages with the relentless endeavour of Army officers and other members along with local and foreign contractors. The total length of the highway is 54 km, and it has 4 lanes for high-speed vehicles and 2 service lanes for low-speed small and local vehicles.

Map-4: Bangabandhu Sheikh Mujibur Rahman Expressway (N8) route plan



Source: Farzana Rahman and Fayaz Uddin, *Identification of Hazardous Road Locations and Black Spots on Dhaka-Barisal National Highway*, Dhaka, 2018

The expressway also includes 5 flyovers, 2 interchanges, 4 railway overpasses, 4 major bridges, 25 minor bridges, 54 culverts and 19 underpasses. An important aspect of this highway is its impeccably beautiful aesthetic design. Each installation is built in an extraordinary construction style. The drainage system, highway ornamental infrastructures etc. have enriched the expressway into a good look like a brightly lit runway.

Safety and Security of the National Strategic Infrastructure

Padma Bridge is undoubtedly one of the most important strategic installations in Bangladesh. The bridge plays a vital role in determining the state's war strategy, the country's socio-economic development, GDP growth, and improving the living standards of the people. For all these reasons, ensuring the safety and security of this bridge has been considered an adjunct to the Padma Multipurpose Bridge Project from its very inception. Initiated with the motto "Protector of Padma Bridge," 99 Composite Brigade has been professionally and efficiently performing its duty of ensuring safety on both sides of the Padma River under the overall supervision of CSC, Bangladesh Army since 2013. Bangladesh Army has been ensuring safety during construction and security of all local and international personnel as well as government officials through coordination with other security agencies and forces. At present, the Army carries out operations in responsible areas by

patrolling important places and access routes and deploying Quick Reaction Forces.

Challenges and Mitigation

Since independence, the most challenging construction work in Bangladesh is the Padma Multipurpose Bridge Project. Every work of the Padma Bridge and Padma Bridge Rail link and associated construction projects has been carried out with international standards so that the life span of the bridge and other associated infrastructures remain at least 100 years. A few mentionable challenges are stated below:-

a. **River Morphology:** For decades, the Padma River has meandered twisted and weaved in different shapes through central Bangladesh (Figure 1). Each zigzag and turn has a geologic story of the region. These events have led to intense erosion along the banks of the river, displacing farms, homes, and even lives. Every year, hundreds and thousands of hectares of land erodes by the mighty Padma River. Making a bridge in such a “treacherous and unpredictable” river has been a great challenge. Appropriate pre-feasibility and feasibility tests, apposite planning and methodical implementation could mitigate this barrier.

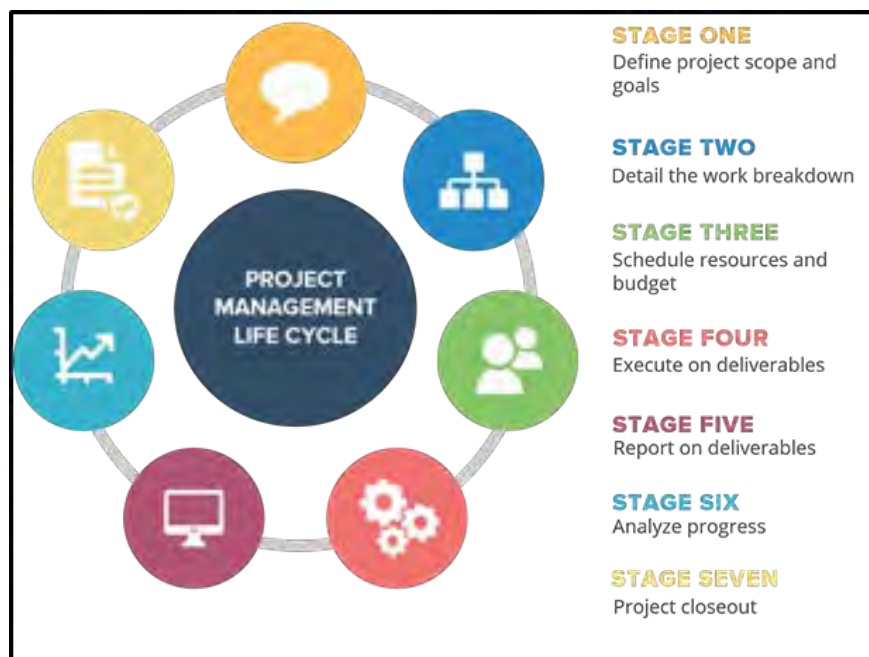
Figure-1: Transformation of Padma river at PMB site



Source: NASA Satellite Images of the Padma River's Transformation over Three Decades (1988 to 2018) in Bangladesh

b. **Project Management:** Project management is the process of leading the work of a team to achieve all project goals within the given constraints. The primary constraints are scope, time, and budget. The secondary challenge is to optimize the allocation of necessary inputs and apply them to meet pre-defined objectives.⁷ It has seven different stages (Figure 2). Project management in developing countries is not similar to that in western countries. Numerous critical issues, such as people unrest, corruption, inter-organizational disharmony, extortion, political unrest etc. heavily affect the progress, smooth functioning and timely completion of the project. More so, a mega project like the Padma Multipurpose Bridge Project has never been implemented by our country's consultants/engineers have not been done before. However, the well-disciplined, trustworthy and fully devoted Bangladesh Army was a part in the project management of the Padma Bridge and associated projects and earned good reputation. Bangladesh Bridge Authority did a splendid job in organizing and managing the consultants, contractors and all stake holders related to construction works all through.

Figure-2: Project management life cycle



Source: <https://project-management.com/what-is-project-management>

c. Geotechnical Aspects-Soft Soil Layer in the River and Approach

Roads: The river banks of Padma sit on a large sand bed that can be eroded quickly. Approach roads of Padma Bridge were eroded number of times and protective measures were needed to mitigate this. Besides, soft soil layer in the river bed is a common phenomenon for Padma River. While the pilling was being worked on, the location of the soft soil beneath a few piers was suddenly determined, which was unexpected. Then to find out how many such piers have soft soil in their position and accordingly, adjusting the depth of the pile appeared to be an enormous challenge. It was found that no bridge in the world has such soft soil where the bridge was built by the pile foundation. Such a crisis was intelligently and technically handled by CSC-1, Bangladesh Army and CSC-2 with their courage and valour.

d. Covid Pandemic: Just when the pace of work was at its peak in the PMBP, PBRLP, and other related projects, the whole world was hit by the Covid pandemic. There were horrific death processions and extreme panic in every country. The bridge construction work could have been hampered severely, but the work was not stopped even for a single day. Even when the government decided to lock down all activities, PMBP, PBRLP and other associated projects ran in full swing under special management and with great precaution. Under the auspices of government Bangladesh Army launched Operation COVID SHIELD to protect and safeguard people of all walks. With the same pace, CSC, Bangladesh Army deployed special medical teams and supplied medicines, protective masks etc. for all construction-related personnel and could overcome the worse situation successfully.

e. Coordination and Synchronization: Coordination amongst various government and non-government organizations for the implementation of such a huge project was a great challenge. At times harmonization of technical and non-technical activities also became very tricky. Government correctly formed an apex body under the Cabinet Secretary to synchronize all discords and resolve all contentious issues and let the project move on in the right direction till the end.

Lessons Learnt from the Implemented Mega Projects

The whole world stared in wonder as each pillar and span raised from the rampant Padma. Today, the Padma Bridge and other related infrastructures adjacent to the bridge are proudly standing tall. Bangladesh Army is very proud and grateful to the Government of Bangladesh for being involved in such a challenging, modern, gigantic, aesthetic and noble work. CSC, Bangladesh Army is fully committed to the supervision of PBRLP, another mega project that is linked with PMBP. A few of the takeaways from the experience of working in PMBP and its associated projects are as follows:-

a. Unity of Command in the Mega Project Management: Bangladesh Army has played a vital role in the consultancy and project management of the Padma Bridge and related infrastructures. Under the umbrella of the Construction Supervision Consultant of Bangladesh Army, a number of international and national consultants have been working to supervise, monitor and implement the infrastructural works. Being well-disciplined and having sufficient expertise in organizational management and operational management, Bangladesh Army personnel led these consultants and engineers to accomplish their technical supervision in a prescribed and efficient manner. CSC, Bangladesh Army is always keen on project supervision and consultancy with the highest standards.

b. Necessity of Proper Human Resource: Multifarious personnel that include international and national consultants, designers, engineers, experts, managers, labours etc. have been involved in the PMBP and other associated projects. Recruitment of appropriate personnel was a great challenge. However, in-depth studies of the vision of the government and requirements of the mega projects by the CSC have paved the way for proper recruitment. Subsequently, the works have gradually attained the desired shape.

c. Humanitarian Programme as a Stimulator in the Project: Rehabilitation, infrastructural development, health care, environmental development, etc. undertaken by CSC played a significant role in the attainment of overall progress. These works were aimed to take the population on board and thereby uninterrupted work progress could be ensured.

d. Coordination between Government, Non-government, National and International Parties: Implementation of these projects demonstrates the requirement of coordination amongst multifarious organizations, institutions and personnel. Hundreds and thousands of meetings, inspections, joint visits etc. have been conducted for the smooth functioning of the projects.

e. Enrichment of Professional Knowledge: The PMBP and other mega projects have given enormous scope to all local and national personnel involved in the construction to enrich professional knowledge. Through this process, a giant and competent workforce has been formed that can be employed in any future project of such magnitude or even larger.

f. Flexibility in Implementation: In the project implementation, each party enjoyed the flexibility. Government's vision has been communicated to the employer (Bangladesh Railway) and it has been further translated into mission and execution by the CSC. Each of the parties was under a well-knitted network but provided with enough flexibility to carry out individual tasks. The flexibility of planning and execution has accelerated the progress of the work. The skilled supervision and disciplined guidance by senior engineer officers of Bangladesh Army have been proved to be a role model and this model is well accepted by the nation.

Conclusion

Padma Multipurpose Bridge Project, Padma Bridge Rail Link Project, Bangabandhu Sheikh Mujibur Rahman Expressway (N8), Approach Roads, Service Area, Land Acquisition, Security etc. carried out by Bangladesh Army around the Padma Bridge are all in the same thread. These different challenging projects have been undertaken mainly for establishing smooth communication between the southwest region and the capital conquering the turbulent Padma River.

The golden opportunity to participate directly in the construction, security and ancillary works of the Padma Multipurpose Bridge Project and other associated schemes has given confidence to Bangladesh Army and enhanced its efficiency. The involvement of the Army in various packages and structures of such large mega projects as local consultants and supervisors will undoubtedly give the Army the courage to undertake even bigger or more challenging projects in the future. Bangladesh Army is always ready for the needs of the country and the people.

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Brief Biography



Major General F M Zahid Hossain, afwc, psc, (retired) was commissioned in Bangladesh Army on 27 June 1986 with the 14th BMA Long Course. He obtained both BSc and MSc in Civil Engineering from the Bangladesh University of Engineering and Technology (BUET) in 1997 and 2005. General Zahid completed Staff Course and Armed Forces War Course from Defence Services Command and Staff College and National Defence College, Mirpur. He participated in Peacekeeping Missions in East Timor (2001) and Liberia (2008). He is currently pursuing PhD in Structural Engineering at the University of British Columbia (Canada). He was actively involved in the historic inauguration ceremony of Padma Bridge on 25 June 2022 and supervised the overall safety and security aspects of PMB construction. He served as Chief Consultant General of Adhoc Construction Supervision Consultant (CSC) and Chief Coordinator of Padma Bridge Rail Link Project.

Brief Biography



Colonel Faruque Ahmed, afwc, psc, was commissioned in Bangladesh Army on 12 June 1997 with the 36th BMA Long Course. He obtained his BSc in Civil Engineering from Military Institute of Science and Technology. Colonel Faruque completed Staff Course from Defence Services Command and Staff College, Mirpur in 2011 and Armed Forces War Course from National Defence College, Mirpur in 2021. He participated in UN Peacekeeping Mission in South Sudan in 2007 and Operation Kuwait Punargathan (OKP) in 2014-2017. He was involved in the historic inauguration ceremony of Padma Bridge on 25 June 2022. At present he is serving as Project Consultant at Adhoc Construction Supervision Consultant (CSC).

The Future of Unmanned Aerial Vehicle (UAV): Indigenous Development of UAV for Foreseeable Future of BAF

Air Commodore Md Moinul Hasnain, BUP, afwc, psc, Engg

Introduction

It is difficult to imagine how any future operation would be conducted without commanders, both in the front line and rear headquarters, having their situational awareness enhanced by 24/7 near real time video feeds. In the past decade UAVs have progressed from minor players in the Intelligence and Situational Awareness (ISA). ISA played a key role to the allied air campaigns over Iraq and Afghanistan, with single platforms now capable of achieving the entire Find, Fix, Track, Target, Engage and Assess kill chain. Their development from providing surveillance capability to a system providing Armed ISA, follows a similar path to the evolution of manned aviation over the trenches of World War I (1914-18), where aircraft operating over enemy lines providing artillery observation soon began carrying rudimentary bombs to attack positions directly. Early indications are that the parallels between the development of manned and unmanned aircraft will not end there; that the capabilities of UAVs will continue to develop and increasingly play a part in all air power roles. Air power is not the sole domain of an Air Force, it is also delivered by the organic air assets of the other services, assisted by other nations, supported by national and international civilian and commercial resources; it influences and is influenced by all the operational environments including Space and Cyber Space.

The focus of this article is what makes unmanned aircraft such an attractive proposition; how unmanned air capabilities may develop in the future; what might limit their utility, which is a key element of understanding, why a mix of manned and unmanned capabilities may be required for the foreseeable future; and why the introduction of UAVs may require organizational adjustment within the BAF. Foreseeable future implies looking towards 2050 when the question of the right mix of manned and unmanned aircraft from service to meet the Air Domain Capability requirement will be key.

Future of UAV: A Case Study from Royal Air Force (RAF) and United States Air Force (USAF)

The delivery of capabilities from 'unmanned' aircraft systems is in fact, a misnomer as the evidence shows operating unmanned system which is currently a manpower intensive endeavour. In the confines of a UK Reaper Mobile Ground Control System, 3 personnel conduct the mission; the pilot, weapon sensor operator, and mission coordinator, whilst more personnel at locations in the UK analyze information collected.¹ 39 Squadron has manpower to aircraft ratio greater than that of a traditional fast jet squadron and includes

aircrew, engineers, image analysts, intelligence and operations support personnel drawn from all 3 services. Consequently, Unmanned Aircraft System as a description is now losing popularity and increasingly seen as unhelpful. NATO did not adopt it, electing to refer to Unmanned Air Vehicle Systems, and the United States Air Force is now increasingly reverting back to referring to their 'unmanned' air capabilities as Remotely Piloted Aircraft. For the purpose of this article, the full capability of UAVs requires a considerable number of resources besides the platform itself, in both infrastructure and personnel.

Whilst unmanned system terminology may be unclear, the Royal Air Force's mission is not. It is to be "an agile, adaptable and capable Air Force that makes a decisive air power contribution in support of the UK Defence Mission". By what platform that air power is delivered, whether it is manned or unmanned, is not relevant. The Future Air and Space Operational Concept warns, "There must be no preconceptions about the capability of unmanned systems based on legacy or platform-specific thinking..."² Air Publication 3000 identifies air power strengths as: Speed, Reach, Height, Ubiquity, Agility and Concentration. These are attributes that can be exploited by UAVs in a similar way to manned aircraft. Equally important, however, are the current weaknesses of Air Power: Impermanence because aircraft cannot stay airborne indefinitely; Limited payload when compared with a ship or land vehicle; Fragility of structure making them susceptible to battle damage; Cost in procuring and sustaining aircraft capabilities reliant on cutting edge technology in order to defeat the equally technologically advanced counter air capabilities of opponents; and basing required to operate from within a practical range of the theatre of operations.

To start with impermanence, UAVs today provide a persistent presence over the theatre of operation. By the end of 2010 the United States Air Force intended to have 50 Predator or Reaper orbits being maintained 24/7 over Iraq and Afghanistan. Such saturation is required due to the area being covered and to mitigate for the relatively limited speed of the current generation of UAVs when compared to a fast jet. However, UAVs currently undergoing flight testing, such as Predator C Avenger, can already operate at speeds in the region of 400 knots and aim to match or better Reaper payloads and endurance. A single sustainable 24/7 Reaper orbit currently requires 3 air vehicles and 2 ground control stations, but platforms such as Global Hawk can already exceed 36 hrs endurance and other High Altitude Long Endurance, or HALE, platforms under development such as the Global Observer look to expand this endurance to a week. Indeed, the US Defence Advanced Research Project Agency's VULTURE program is a competition for a HALE platform able to remain over a theatre of operations for 5 years. Such systems offer the possibility in the future of 'near Space' capabilities with greater flexibility than that offered by satellites at a reduced cost.³

With persistence, however, comes the increased burden of analyzing the truly vast amount of collected product. In order to benefit from the manpower savings highly automated UAVs promise in operating personnel, similar advances in automated analysis, prioritization and distribution of the product are required to prevent an increased manpower demand overall. Payload limitations are generally described in terms of weight, size and number of expendables, such as weapons, that can be carried. Once the payload has been accommodated on board, non-kinetic capabilities such as collection and distribution of digital imagery, signals intelligence and communications relay are only limited by the systems' capability and platform performance. It is the weapon carriage limitation that has the greatest impact on UAVs performing in the Attack role as they can expend all their weapons long before they are required to come off task. With the development of directed energy weaponry becoming an ever more likely reality, however, the combination of a weapon with an 'inexhaustible magazine' coupled with the persistence of UAVs that are survivable in a contested battle space, is expected to transform war fighting by around 2030. Thereafter, UAVs are likely to begin to predominate in the force mix and the traditional air power roles of Intelligence, Situational Awareness and Attack (ISA) will merge as the same system becomes capable of delivering both roles simultaneously. Another limitation of payloads is their ability to withstand aerodynamic forces such as airspeed and 'g'. Whilst UAVs offer the potential to create airframes that can maneuver at 'g' loadings that no human could endure, to build an aircraft and associated payloads also capable of withstanding such forces would undoubtedly increase costs considerably. Due consideration is, therefore, required to determine if the degree of survivability attained is necessary or might be achieved through more cost-effective means.

As Air Power roles merge, the current structure of the Royal Air Force (RAF) will almost certainly be required to adapt as well. If platforms, as they are expected to, become less role specific but increasingly capable of being configured to conduct multiple roles and missions, such as ISA or Attack, or both, the current Group structure of Air Command, that delineates between Combat Air and Operational Support functions may become less useful. Looking wider, across Defence, how the multitude of assets capable of contributing to the ISA role should be better managed is subject to much debate; a debate made more complex when multi-role capabilities are involved.⁴

Whilst a future where UAVs dominate the roles of ISA and attack, the subsequent merging of those roles appear inevitable, the complexity and variety of missions required in the role of Control of the Air in the context of an anticipated future battle space that is congested, cluttered and contested arguably makes it the most difficult to envisage unmanned aircraft being able to provide the whole solution for some considerable time. The United States Air Force (USAF) in recognition of this is pursuing a concept where unmanned

aircraft work cooperatively with manned ones in this role, describing such UAVs as 'smart wingmen.' Indeed, they proved the concept in 2006 in a trial of a jet airliner controlled from a Tornado fighter jet.⁵ As a result, whilst much work is required to determine where the balance might lie, a force mix of manned and unmanned combat aircraft in this role appears likely for the foreseeable future, which is considered to be up to around 2050.

UAV development in the role of Mobility and Lift will almost certainly be accelerated when international civilian aviation regulatory bodies agree the standards to be met to allow UAVs to be integrated into national non segregated airspace. Regulations governing airworthiness, software requirements, human factors, control frequency agreements, and technological solutions for 'Sense and Avoid' to name a few are required to pave the way for wide spread civilian use of UAVs. Current strategic planning by the civilian aviation sector clearly demonstrates an interest in moving toward unmanned aircraft solutions that can utilize high levels of automation due to the predictable nature of their task and so generate savings in operating costs.⁶ UAVs also offer potential to meet other national security needs and are attracting interest from other Government Departments. In the United States they have demonstrably enabled more efficient use of resources in patrolling the national borders and tackling wildfires in the western states, and full integration into national airspaces will almost certainly expand the possibilities considerably. In current theatres, however, the demand to get 'trucks off the roads' to minimize the exposure of personnel to the IED threat has already seen that the US Marine Corps declares an immediate requirement for a 'Cargo Unmanned Aircraft System (UAS)' and submits a request for tender to industry for a capability demonstrator. Two contenders are the Hummingbird and K-max rotary wing UAVs. However, whilst the 'convoy' of airborne 'trucks' concept may reduce the threat to personnel on the ground, in the lower contested airspace within which these UAVs would operate other risks such as vulnerability to anti-aircraft weapons will need to be addressed.

Perspective of Bangladesh Air Force (BAF): Mission for Indigenous Development of UAV

UAVs will not be less fragile than manned aircraft and, if considered as a whole system being operated over global distances, it can be argued that there is an increased number of points of weakness that could be exploited or subject to failure that increase UAV systems fragility. Industry will, however, aim to mitigate these weaknesses, not only through improved performance in terms of height, speed and maneuverability, but also by increasing levels of automation, equipping platforms with defensive aids, protecting up and down links, and incorporating low observable technology and characteristics that are not compromised by the platform design limitations imposed by the life support and needs of carrying a human being. If platform unit costs can be kept low, higher

attrition rates may also be acceptable as the affordability of replacing any losses is increased. There is, however, a trade-off to be made as efforts to increase survivability are likely to adversely impact the unit cost and induce a weight and payload penalty, resulting in reduced performance, endurance and capability. UAVs, therefore, are unlikely to overcome this particular weakness of airpower, but they may make it more bearable.

Reduced cost is an attractive element of UAV solutions. As with any new technology, initial development costs are likely to be high, but studies indicate that unit costs and through life costs across all Defence Lines of Development, should prove to be greatly reduced. It is envisaged that unit costs can be kept lower than conventional aircraft as, whilst they will still be required to meet airworthiness standards, they can be relatively simple aircraft when compared to traditional platforms, are not required to provide life support to a human and the flight profile for an ISA asset does not usually demand high structural load capability. As ISA and Attack roles merge, however, more aerodynamic performance may be desirable and the potential for cost savings can be reduced. Besides unit cost, the financial benefits appear to be focused in 2 areas; personnel, in terms of numbers and operator training, and a reduced peacetime 'live' flying requirement. If the amount of training and the resources required to achieve it can be reduced, considerable savings can be achieved. Considering these aspects a R&D team headed by the author was activated in 2008. BAF started her indigenous project in developing a UAV through 4 stages by conceptual design, development & production by learning the theoretical aerodynamic behavior of subsonic aircraft, manufacturing of scaled down fly-worthy model to adopt remote controlling capability of the operators, developing on-board real-time data acquisition and delivery sys for surveillance, air reconnaissance, auto-piloting for cruise flight, landing of the platform by parachute in case of remote-controlled landing failure, suitable weapon delivery system, etc. and finally construction of a full UAV/UCAV was customized for BAF need.⁷

The UAV project started with huge momentum in 2008 as one of the leading engineering R&D projects. It showed huge success in fulfilling the development of initial scaled down model and fly worthiness under limited remote controllability at Bogura airfield within the specified timeline. With the group of enthusiasts BAF engineering officers, the project saw a remarkable journey by completing 2 stages but the project stalled due to other operational involvement of those key resource personnel. Off late, the project resumed again to carry on with the further development of the project. The ultimate of this project would be to develop remote controllability skill at a Ground Control Station, development of UAV platform for real-time data transfer, a wide ranged platform with automated system having limited weapon dispensing capability etc. While pursuing with the UAV project, it is envisaged that the debate

regarding how much training the operating crew need to fly their UAV is quite rightly an active one and the answer is dependent on many issues. It is also acknowledged that the operation of UAVs requires a different skill set and training needs. Throughout the world, UAVs are developed with increasing levels of automation which reduce the requirement for operator training in the more traditional piloting skills of flying the aircraft, such as landing and takeoff, and focus the training more towards operating the payload. Ultimately, in some cases, a single operator may only be required to monitor multiple platforms. Operators will, however, still need to be 'air aware' or 'air minded' and able to demonstrate good 'airmanship' when making decisions that affect the operation of the UAV. To what degree these skills are required and how they can be taught and learnt in the environment of a UAV Ground Control Station as opposed to the cockpit of an aircraft is yet to be fully understood.

A UAS includes ground stations and other elements besides the actual aircraft. The term was first officially used by the FAA in early 2005 and subsequently adopted by DoD that same year in their Unmanned Aircraft System Roadmap 2005–2030.⁸ Many people have mistakenly used the term Unmanned Aerial System or Unmanned Air Vehicle System, as these designations were in provisional use at one time or another. The inclusion of the term aircraft emphasizes that regardless of the location of the pilot and flight crew, the operations must comply with the same regulations and procedures as do those aircraft with the pilot and flight crew on board. The official acronym UAS is also used by the International Civil Aviation Organization (ICAO) and other government aviation regulatory organizations. As such, BAF requires setting up her operational doctrine and maintenance procedures of UAS as per ICAO regulations.

Automation brings with it other issues. It is important to decide the level of automation which is comfortable. When considering air delivered weaponry, how comfortable are the highly automated systems, unable to apply judgment and pragmatism to a situation, taking actions which could result in loss of human life without 'man in the loop' intervention being possible? These are legal and ethical questions which need careful consideration and may bound how UAVs are employed long before they reach their technological limit. With UAV payload control done wirelessly and in response to digital imagery or commands, there seems little argument against a high proportion of any future UAV training being achievable through simulation, meaning that some portion of platforms procured may remain 'boxed rounds', and only used in the event of real operations. Whilst this has cost benefits, what impact does this have on engineering and operational support training and manpower requirements? How do you 'man the force' in war-time when the peacetime manpower requirements could be very different? Multi-skilling across platforms may offer a solution, but only if we can be sure that we won't need those personnel to

fulfill their multiple roles simultaneously. How these challenges are to be overcome requires careful thought and planning if we are to make the most efficient use of our available manpower resources, but with the least operational risk.

Cost-Benefit Analysis for Future UAV Operation

Operating aircraft remotely introduces additional operational benefits linked to training and costs. Where a UAV is lost for any reason over enemy held territory, there is no possibility of captured aircrew being exploited by an opposition for political leverage and, with no loss of trained personnel, sustaining the capability reverts to being a matter of equipment availability and the rate attrition spares can be brought on line. Where friendly forces are not engaged on the ground, the loss of a UAV does not require resource intensive Joint Personnel Recovery capabilities. At worst another platform may need to locate and destroy any downed air vehicle to prevent enemy exploitation; sometimes referred to as Combat Search and Destruction.

Manpower considerations also introduce the moral component of a fighting force. The old joke of the 1990's was that the Army would 'dig in' on operations, whilst the Air Force would 'check in' - to their hotels. Current operations have thankfully changed this view, but if it is taken to conduct air operations at no personal risk from potentially thousands of miles from the theatre, how do we preserve the BAF ethos and war fighter mentality? How will the international community view military forces able to wage war whilst not putting them at risk? Will doing so simply force any adversary to greater asymmetry and widen their theatre of operations to include locations supporting the remotely operated air power being used against them, including the homeland, and thus potentially undermine policies aimed at keeping threats at range? It is as important to understand these potential second order effects of introducing UAVs as it is to develop the technology to enable UAVs to operate.

Despite the proven ability to conduct global operations with UAVs such as Global Hawk, to achieve the desired persistence over a given area it will remain desirable, if not essential, to launch the platform from as close to the theatre of operations as possible. This also overcomes the need to negotiate permissions for the over flight of other nations during transit which can be a lengthy process and impact response time. Where long range missions are required, however, the advantage of the UAV over a manned aircraft such as the B2, is the ability to manage the operator's fatigue by swapping operators out as many times as necessary and so extend the art of the possible.⁹

Conclusion

Last but not the least, it appears that UAVs do offer solutions to many of the traditional airpower weaknesses, and indeed offer further advantages over manned aircraft solutions. As such, there is likely to be an ever increasing and compelling argument to introduce UAVs into the force mix to the greatest extent possible. Despite the financial pressures on defence, from Bangladesh Air Force perspective, the future is bright and the future lies in UAVs. To gain the maximum benefit from UAVs, resources must also be applied to provide the necessary enabling capabilities and not just the manufacturing of platforms themselves. The secondary effects of their introduction and how they are used, on the services, our people, their training and even policy must be considered. Agreement needs to be reached on what is an acceptable level of automation; morally, ethically and legally; as a service, nation and internationally. Whilst the outcomes of these philosophical debates remain unresolved, manned aircraft will continue to be required to some degree to mitigate the limitations UAVs may be subject to. Being on the threshold of an era in aviation comparable with, is as exciting as, the introduction of the jet engine. It is noteworthy, however, that whilst the MiG-21 entered BAF service in 1971, the Avro Shackleton did not go out of service until 1991. This implies that the introduction of the first UAVs does not mean the age of Bangladesh Air Force of entirely unmanned aircraft is here yet, but over and as time progresses UAVs will become more predominant in the force mix as this latest evolution in Air Power is embraced.

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Brief Biography



Air Commodore Md Moinul Hasnain, BUP, afwc, psc, Engg was commissioned in Bangladesh Air Force on 29 December 1991 in Engineering branch. He obtained his Bachelor of Engineering degree in Aerospace with honours from NED University of Engg & Technology, Pakistan. A graduate of Defence Services Command and Staff College, Mirpur, Dhaka and Malaysian Armed Forces Staff College, Malaysia, he also obtained Post Graduation Diploma in Strategic Studies & International Relations from University of Malaya, Kuala Lumpur; Masters in Defence Studies from the National University, Dhaka; Masters in Business Administration (Human Resource Management) from Royal Roads University, Canada. He has also completed Armed Forces War Course from National Defence College, Dhaka. Presently, he is a PhD researcher under BUP. He served in different capacities in various aircraft maintenance engineering squadrons, wings of all BAF bases and performed staff duties at Air HQ and AFD, performed instructional duties at BAFA, FSI, FIS, ATI BAF and commanded OTS BAF and BAF Shaheen College Jashore and 214 MROU BAF in his tour of duties. He served twice in the UN Missions at DR Congo as contingent member. His hobbies include travelling and reading books. Presently, he is serving as Officer Commanding of 214 MROU BAF.

A Probe into Governance Status of Marine Protected Areas: Bangladesh and Beyond

Commodore M Nazmul Hassan, (N), NPP, BCGM, afwc, psc, BN

Introduction

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.¹ Sustainable Development Goal (SDG) 14 warrants coastal states to conserve at least ten percent of their Exclusive Economic Zone (EEZ) as MPA by 2020. By far, Bangladesh declared its first MPA in the Swatch of No Ground (SoNG) area in 2014 and other two in the Nijhum Dwip area of the Bay of Bengal (BoB) in 2019 and at the St Martin's Island in 2022 respectively. Considering the first Marine Reserve (MR) declared in 2000 in the South patch and middle ground area of BoB as MPA, Bangladesh currently has got four declared MPAs to fulfill the pledge bounded by SDG 14. These MPAs hardly have got effective governance mechanism for ensuring healthy marine environment and thus fulfilling the objectives of marine conservations in the Bay of Bengal (BoB). MPA if managed and governed effectively can keep the ocean healthy and contributes through blue growth including sustainable fisheries. On the contrary, MPA may turn into paper parks in absence of effective governance. At present these declared MPAs warrant effective governance mechanism for ensuring healthy marine environment in the Bay of Bengal (BoB). Ensuring healthy marine environment through effective management and governance of MPAs contribute directly towards sustainable blue growth and thus the socio-economic development of Bangladesh. As such, it is imperative to have MPA governance policies and framework so as to effectively manage and govern all the MPAs in Bangladesh.

Objectives of the Study

The broad objective of the study is to explore current governance status of MPAs in Bangladesh after reviewing governance status of MPAs of neighbouring countries with a view to finding out the key challenges and opportunities of MPA governance in Bangladesh. The specific objectives of the study are therefore firstly to examine the current governance status of MPAs in Bangladesh and secondly to assess the MPA governance status of neighbouring India, Myanmar and Sri Lanka. Finally, the study will evaluate challenges and opportunities of MPA governance in Bangladesh while recommending measures based on key findings of the thematic analysis.

Review of Literature

The population growth and rapid demand of fish in Bangladesh threaten marine biodiversity across the maritime area of the country.² 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. According to Holdgate, humans have long desired to protect natural areas from their own activities.³ Jones argued that 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.⁴ Zacharia opined that 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 1962.⁵ He further argued that MPAs are now internationally recognized as an essential and fundamental component of marine conservation. 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.⁶ It is also argued that MPA may not only protect natural marine areas but can also include social, economic and cultural interests as well.

Juda argued that the concept of governance conceived of as “the formal and informal arrangements, institutions, and mores which determine how resources or an environment is utilized; how problems and opportunities are evaluated and analyzed, what behavior is deemed acceptable or forbidden, and what rules and sanctions are applied to affect the pattern of resource and environmental use.”⁷ Garmestani and Benson stated that adaptive governance has been referred to as a vehicle for putting resilience theory into practice with the aim to reduce uncertainty through iterative and continual learning.⁸ Partelow et al. on the other hand argued that theoretically, adaptive governance hypothesizes that the more adaptive a governance system is to social-ecological system functioning and change, the more resilient that governance system is, making it more likely to achieve normative goals, e.g., sustainability.⁹ The Coastal Zone Policy, 2005 gives Bangladesh Coast Guard due credential, on behalf of all concern institutions, to be used as a common resource for concern legislations enforcement.

Methodology

The study is mainly a secondary qualitative research based on existing literatures, documents, official records and author’s personal observations as a marine environment protection professional in the Bay of Bengal. Various data used in the study were collected during the months between February to May 2022 from available secondary literatures and official documents. Thematic

analyses were then carried out to explore the opportunities and challenges of MPA governance in Bangladesh. The key findings and observations of the study were considered in the concluding remarks towards effective governance of MPAs in Bangladesh.

MPA and its Significance

International Union for Conservation of Nature (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.¹⁰ 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 (2015). CBD also defined MPA in the same connotations. Marine conservation across the world is 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. Thus it can be seen that there is no internationally agreed single definition. But each of the above characterizations includes almost similar elements. For example, there is no necessity for formal recognition or legal declaration of a marine area for it to be considered an MPA.

MPAs play important role in conserving marine biodiversity at different levels like ecosystem, species and genetic. They offer a range of benefits for fisheries, eco-tourism, and livelihoods and for the marine environment. MPAs are now internationally recognized as an essential and fundamental component of marine conservation.¹¹ MPA enhances blue growth through sustainable fisheries, safeguarding cultural heritage, education and research activities, marine eco-tourism and other marine recreational facilities. 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.¹² Scientific evidence shows that MPAs can produce ecological, economic, and social benefits under appropriate design and management conditions.¹³ MPAs boost resilience of marine environment against global warming and ocean acidification. MPAs also benefit in conserving marine environment and thus ensure sustainable development for current and future generations.¹⁴ 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.

WWF commissioned study report concluded that MPA expansion is economically advisable and economic rate of return of MPAs range is between 9 to 24 percent. 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.¹⁵ 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.¹⁶ Effectively managed and governed MPAs can support livelihood for families and communities of the coastal areas.

General Objectives of MPA

An important challenge is how to assess success or failure when multiple objectives are involved. The aims of MPAs often include ecological, social, economic, cultural, and institutional objectives. The biophysical objectives of an MPA ideally 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. Beger et al. argued that in many cases, planning for multiple objectives concurrently demands trade-offs in achievement across social, economic, and ecological domains.¹⁷ The objectives of a particular MPA will vary depending on the context, the enabling policies and the lead agencies or interest groups. However, the objectives of any MPA ideally tend to fall into the inter-related categories shown below:-

- a. Restore marine ecosystems.
- b. Protect rare and vulnerable habitats and species.
- c. Restore marine fish stocks.
- d. Contribute to marine spatial planning.
- e. Contribute to an MPA network.
- f. Promote research and education.
- g. Control the impacts of tourism and recreation.
- h. Maintain traditional uses, and
- i. Recognize the cultural symbolic value of set-aside areas.

Current Status of MPAs midst SDG 14 in Bangladesh

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. The lone 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. Bangladesh declared Swatch of No Ground (SoNG), a submarine canyon located south of Dublar Char in the Bay of Bengal which is known as hotspot for cetaceans, as its first MPA on 27 October 2014 under the Wildlife Conservation and Security Act, 2012. The MPA with an average depth of 900 meters covering approximately 1,836 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 MPA 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. The Ministry of Fisheries and Livestock declared the Nijhum Dwip and its adjacent area covering 3,188 sq km of estuarine waters at the mouth of the Padma- Jamuna- Meghna river system as second Marine Reserve/ MPA through S.R.O. No. 211-Law/2019 dated 23 June 2019 under the provision of clause 28 of Marine Fisheries Ordinance, 1983. According to recent survey conducted by WCS, the waters of Nijhum Dwip are a biodiversity hotspot and habitat for at least 15 threatened marine species, including the endangered Irrawaddy Dolphin, porpoises, rays Olive Ridley turtle and Scalloped Hammerhead shark.

The Ministry of Environment, Forest and Climate Change (MoEFCC) declared St Martin's Island including its adjacent 1,743 sq km of sea area as Marine Protected Area under sections 13(1) and 13(2) of the Wildlife Act 2012 on 12 January 2022 in order to protect its rich biodiversity and ecosystem. Effective management and governance of the declared St Martin's MPA will conserve ecosystem and biodiversity, preserve habitats and foster spawning of endangered species of its adjacent area of the Bay of Bengal. Such MPA declaration will also tap the potentials of marine conservation, sustainable fisheries and socio-economic development of fishers of the St Martin's Island. The summary of declared MRs and MPAs are depicted in the table below:-

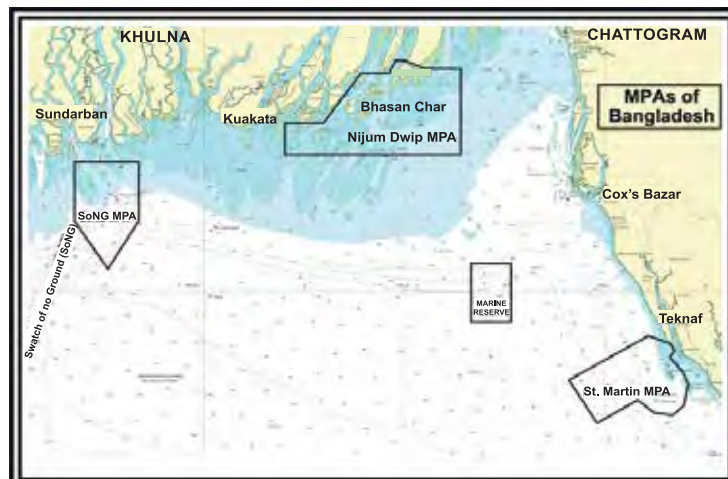
Table-1: Declared Marine Reserves and Marine Protected Areas of Bangladesh

Ser No	Name	Location	Year /Area (Sq km)	Type and Authority
1.	Marine Reserve	South patch of BoB	2000 (698 Sq km)	MR by DoF, under section 28 of the Marine Fisheries Ordinance, 1983
2.	SoNG	South of Dublar Char	2014 (1,836 Sq km)	MPA by DoF, under Wildlife Conservation and Security Act, 2012
3.	Nijhum Diwp	Hatia	2019 (3,188 Sq km)	MR by MoFL, under section 28 of the Marine Fisheries Ordinance, 1983
4.	St Martin's Island	Teknaf	2022 (1,743 Sq km)	MPA by MoEFCC, under section 13 of the Wildlife Act 2012
Total Area			7,465 Sq km (6.28% of EEZ)	

Source: Author's self-construct

By far, the government of Bangladesh declared two Marine Reserves and two MPAs that equaled a total of 7,465 sq km of sea area for marine conservation in the BoB. That is to say, the government of Bangladesh declared 6.28% of its sea area as MPA against SDG target 14.5 pledged 10% sea area. So, Bangladesh still needs to declare another 4,416 sq km i.e. 3.72% of its EEZ or marine area as MPA so as to fulfill marine conservation pledge of SDG 14. However, the declared MPAs and Marine Reserves of Bangladesh are depicted in the map below:-

Map-1: Marine Reserves and Marine Protected Areas of Bangladesh



Source: <https://mpafund.wcs.org/Countries/Bangladesh>

Status of MPA Governance in India

India has a coastline of 8,118 km, of which 4,645 km is part of the Bay of Bengal Large Marine Ecosystem.¹⁸ The government first began formally setting aside marine areas for conservation purposes in the 1960s, despite the lack of clear legislation. It began by declaring the Point Calimere Wildlife Sanctuary in 1967, which is an intertidal mudflat area in the Bay of Bengal that was set aside to protect waterfowl birds.¹⁹ According to the national government, there are 31 MPAs in the country, of which 16 are within the Bay of Bengal LME. The total area covered by all MPAs is 104,879 ha approximately. In India, at the national level, the Ministry of Environment and Forests (MoEF) is the primary agency responsible for the conservation of India's biodiversity. It is responsible for implementing the Environmental Protection Act and works through the Department of Forests (DoF) at the state level. The DoF is in turn directly charged with managing protected areas. The Indian Coast Guard, under the Department of Defence, enforces many of the regulations in marine parks and sanctuaries. The Department of Fisheries (DoF) also plays a tangential role in MPA management by managing fisheries resources through the enactment of legislation and regulations. Other government agencies involved in MPAs include the Ministry of Science and Technology and the Ministry of Agriculture through conducting research on coastal and marine ecosystems. The 2002 and 2006 amendments to the WLPA triggered a series of changes in MPA governance in India. The amendments paved the way for the creation of the National Board of Wildlife and the State Board of Wildlife, whose mission is to collaborate with other government agencies, local government representatives, local self-governing institutions and NGOs on protected area management. The amendments also called for the establishment of "advisory committees" for protected areas. These committees are comprised of local government officials, who are responsible for recommending methods to improve the conservation and management of sanctuaries.²⁰ However, community and NGO participations in MPA governance are also on the rise.

Status of MPA Governance in Myanmar

Myanmar has a coastline of 2,832 km, which is characterized by estuaries, deltas, coral reefs, sea grass beds, sandy beaches, mudflats and mangroves. Though much of its marine life has not been surveyed, the country is likely endowed with extensive marine resources.²¹ The first official marine conservation efforts were taken in 1927, when the government established the Moscos Wildlife Sanctuary in south eastern Myanmar in order to protect coastal flora and fauna. The data of MPAs in Myanmar are quite scanty; reportedly there are 06 MPAs covering 34,154 ha of areas. In Myanmar, there are numerous government agencies that share responsibility in regards to MPA governance. While the Ministry of Forestry is mandated to govern all protected areas of both marine and terrestrial environments, the Fishery Department of

Ministry of Livestock and Fisheries and Defence Ministry also share responsibilities over the governance of non-forest and marine resources. Within the Ministry of Forestry, the Nature and Wildlife Conservation Division (NWCD) is charged with Protected Areas management. Nevertheless, the number of parks in the marine environment remains limited, and the coastal habitat is considered under represented in the overall park system.²²

Status of MPA Governance in Sri Lanka

The Republic of Sri Lanka has a coastline of 1,620 km. Sri Lanka is known for being one of the world's first island nations to take an integrated approach to coastal management.²³ Sri Lanka's first marine protected areas were declared in the 1970s. There are total 30 MPAs covering 82,534 ha of area approximately. MPAs in Sri Lanka face numerous challenges, and most of the country's MPAs can be classified as "paper parks" that are not meeting their management objectives. In Sri Lanka, the Coastal Conservation Department (CCD) under the Ministry of Environment has primary authority over all coastal areas in Sri Lanka. It is responsible for developing national management plans, as well as overseeing current management and research. Other agencies central to the management of marine resources include the DFAR (part of the Ministry of Fisheries), which has the power to regulate gear type, declare fisheries reserves and implement licensing systems for fishing operations.²⁴ The Department of Wildlife Conservation (DWLC) also has control over certain activities in the marine zone and its mandate which includes protecting certain categories of endangered animals and plants. The DWLC can also declare national reserves, marine reserves and marine sanctuaries. In addition to these three key agencies, there are many other government, local, district and federal government agencies that manage activities in the coastal zone. The sectoral approach to management poses significant challenges in Sri Lanka.²⁵

MPA Governance in Bangladesh: Challenges and Opportunities

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. "Governance" in the context of Marine Protected Area includes laws and policies, institutions and stakeholders through which all components of a society exercise powers and responsibilities to make and implement decisions affecting the social, cultural, natural, technical, financial and other economic resources. There are many issues related to the governance of MPA in Bangladesh. Most of the stakeholders are not quite sure about the goals, objectives and their commitments towards effective governance of respective MPA. 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. In the absence of objective oriented policies and

competent administrative authorities, the governance of MPAs has turned out to be very challenging in Bangladesh. In the absence of designated administrative authority, comprehensive legislation and state of art policies, management and governance of MPA have become challenging in Bangladesh. However, the recently declared MPAs in the BoB need 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 governance and management were insufficient, inappropriate or neglected. The last would be the case of the so called “paper parks.”²⁶ No MPA authority or national committee has been formed yet for the effective governance of MPA.

On the other hand, Bangladesh is party to many international conventions that deal with marine conservation. International legislations 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. Unfortunately, in Bangladesh none of the promulgated acts, legislations, policies strategies and action plans directly deal with protection, management and governance of MPA. However, Wildlife Conservation and Security Act 2012, Environment conservation Act 1995, Marine Fisheries Ordinance 1983 and the Coastal Zone Policy 2005 partially deal with the marine environment protection and conservation in general. But the Coastal Zone Policy, 2005 gives credential to Bangladesh Coast Guard on behalf of all institutions as a common resource for enforcement of different regulations applicable to coastal zone. Besides, MoFL, MoEFCC and other ministries promulgated Act, legislation, policies, strategies and action plans that are enforced in Bangladesh for nature conservations are as follows:-

- a. The National Conservation Strategy (NCS).
- b. The National Environment Management Action Plan (NEMAP).
- c. The National Biodiversity Strategy and Action Plan (NBSAP).
- d. Coastal Zone Strategy, 2006.
- e. Bangladesh Climate Change Strategic Action Plan, 2008.
- f. National Fisheries Policy, 1998.
- g. Fisheries Strategy, 2006.
- h. National Water Policy, 1999, and
- i. National Tourism Policy, 1992.

Conclusion

MPA being a sustainable model of marine conservation offers a range of benefits to fisheries, people and the marine environment. 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. 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 appear to be another major setback for establishing and governing MPAs in Bangladesh. MPA if governed effectively can keep the ocean healthy and contributes through blue growth including sustainable fisheries. On the contrary, MPA may turn into paper parks in absence of effective governance. Effective management of declared four Marine Reserves and MPAs of Bangladesh could be the corner stone for sustainable marine conservation in the BoB. These MPAs hardly have got effective governance mechanism for ensuring healthy marine environment and thus fulfilling the objectives of marine conservations in the Bay of Bengal (BoB). At present these declared MPAs warrant effective governance mechanism for ensuring healthy marine environment in the Bay of Bengal (BoB). Governance of these MPAs has turned out to be challenging in Bangladesh due to the absence of designated administrative authority, comprehensive legislature and clear-cut policies. However, the declared MPAs warrant specific policy guidelines on protection, management and governance in reaping benefits out of its objectives.

Continued political will and timely policy support would also boost up promulgating a comprehensive maritime policy harmonizing all legislatures in regards to marine conservation. A clear governance framework for protection and management of MPAs could facilitate effective coordination among various departments and line ministries of government of Bangladesh. No MPA authority or national committee has been formed yet for the effective governance of MPAs. As such, a National MPA Authority may be formed where representatives from all concern departments of line ministries will cooperate and work for the conservation and governance of MPAs mandating Bangladesh coast Guard for effective Monitoring, Controlling and Surveillance. Besides, existing coastal policy should also be reviewed for effective MPA governance under MPA authority. Finally, an in-depth research should be carried out to address the opportunities and challenges of MPA governance in Bangladesh taking lessons from the global best practices.

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Brief Biography



Commodore Mohammad Nazmul Hassan, (N), NPP, BCGM, afwc, psc, BN was commissioned in the Executive Branch of Bangladesh Navy in 1995. During the last 27 years of his Naval career, he served on board various BN ships ranging from patrol craft to Missile Frigate in different capacities including Executive Officer and was the Deputy Commandant of the largest training base of Bangladesh Coast Guard. The officer served SSF of Prime Minister's

Office as Deputy Director (Protection). He also served at DGFI Headquarters as GSO-2 and served at Naval Headquarters as Section Commander to the Drafting Authority and Coast Guard Headquarters as the Director of IT & Communications. He also served in the United Nations as the team leader of Military Observer Team Site-104 in the DR CONGO. He successfully completed professional courses both at home and abroad particularly Defence Services Command and Staff College and the National Defence College, Mirpur. Due to significant achievement and bravery in peacetime operations, he was awarded with *Nou Parodoshita Padak (NPP)* in Bangladesh Navy. He was also awarded with *Bangladesh Coast Guard Medal (BCGM)* – the highest gallantry award for peacetime operation in BCG. Having attained Masters of Public Administration 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. Presently he is pursuing PhD research study program in Marine Environmental Governance under the Bangladesh University of Professionals, Dhaka. The author is an alumnus of DKI Asia-Pacific Center for Security Studies, USA and has to his credit a number of articles published in professional journals. Presently, he is serving in BNS SHEIKH MUJIB as the Commanding Officer.

Surface Water Availability of Future Water Demand for Dhaka City

Brigadier General Md Ehsanul Haque, SUP (BAR), afwc, psc, PhD

Introduction

Water constitutes two-thirds of the surface of the earth. Water is an indispensable constituent of all organisms and usually a good solvent for a large variety of ingredients. Water resources have infinite importance in human survival, socio-economic stability and environmental sustainability. Though water covers 71 percent of the earth's surface, but only three percent is fresh water out of which 69 percent is "trapped" as ice, mainly in the two Polar Regions. The remaining freshwater occurs in rivers, lakes, rain and aquifers which human being, plants and other animal species can use. The distribution must be carefully managed to avoid irreversible depletion of the resource.¹ United Nations proclaimed that water acts as a dynamic force for a continued development and a strategic tool to fight against poverty as per concept of sustainable development goals. 3 billion people have gained access to improved drinking water sources since 1990, but 771 million people are still without safe water.

Bangladesh being a riverine country has been facing manifold challenges from safe drinking water, say for example, unlimited flood water during wet season, increasing scarcity during dry season and management of all resources under serious threat. Water experiences socio-ecological resource management at which decisions are made for water scheming does not match with its requirement. The urban water management requires a systematic process that includes planning, research, prelude design, engineering, regulation, and administration. Under this circumstance, the current study has attempted to comprehend the present and future trend and extent of water demand and supply. This study will be carried out through analyzing status of surface and groundwater and options for surface water availability sources based upon future demand and supply projection. Particular attention has been given to elucidate the quantity, quality and cost effectiveness to achieve safe water to meet the future demand of Dhaka city. Moreover, this study also focuses implementation towards Sustainable Development Goal (SDG- 6) prescribed by United Nations.

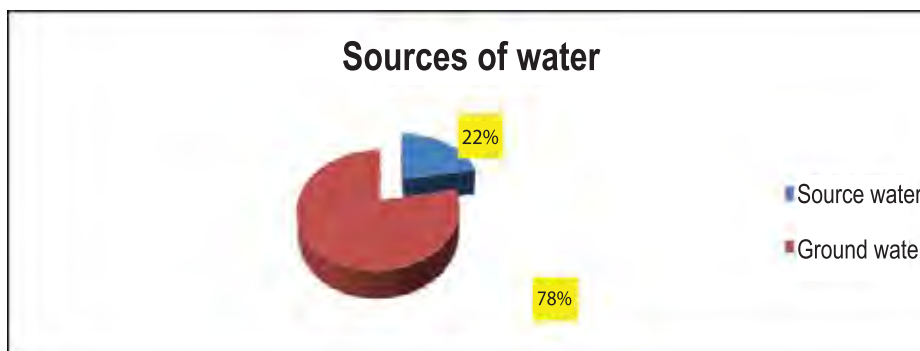
A rapid increase in the pace of rural-urban migration has been very explicit in the recent decades in Bangladesh. The urbanization coupled with pressure from fast-rising population has been exposing the city authorities to a growing demand for increased quality and quantum of urban-specific services.² Now challenges due to rapid urbanization are multidimensional. Dhaka city has been increasing in its volume with an annual rate of 3.5 percent following an

unsystematic approach to accommodate huge population influx of more than seven million people.³ Such urban sprawl exerts immense pressure on the infrastructures of the city. The city inhabitants, therefore, are deprived of basic amenities of urban life where water supply has appeared as the most critical issue. At present, water demand has surpassed the water supply where 25 percent of the total population of Dhaka city has no direct access to potable water.⁴ Dhaka Water Supply and Sewerage Authority (DWASA) is the stakeholder and responsible for water supply throughout the city, which has revised its area of responsibility over the years. Dhaka Statistical Metropolitan Area (DSMA) covers an area of 1353 km², out of which Dhaka Metropolitan Area (DMA) constitutes 27 percent (360 km²). Until 1989, Dhaka Water Supply and Sewerage Authority (DWASA) operation was limited to DMA. In 1990 DWASA extended operating area to adjacent Narayanganj metropolitan area. In recent times, Dhaka city is facing more difficulties in maintaining adequate water supply mainly due to the following reasons:-

1. Rapidly growing population and demand.
2. Declining of ground water level.
3. Inadequate surface water to cope with the future demand.
4. Poor raw water quality.
5. Leakages in the system network, and.
6. Existing inadequate pipe network design.

Dhaka city water supply is mostly dependent on groundwater. As of December, 2021, 78% is from groundwater sources tapping through Deep Tube Wells (DTW); the remaining 22% of the water is supplied from the water treatment plants situated at Saidabad, Chadnighat and two smaller units at Narayanganj shown in Figure 1 below :-

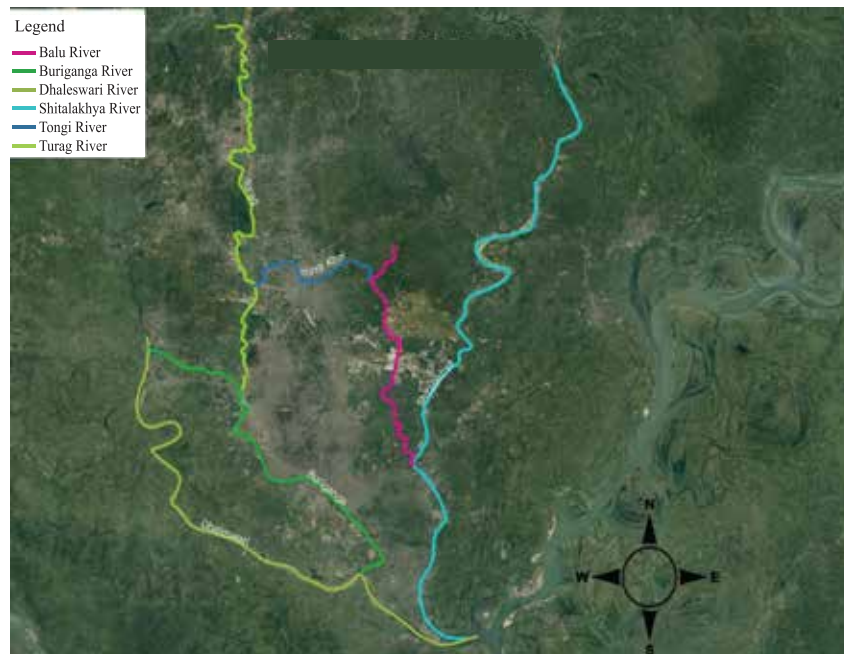
Figure-1: Water supply sources of Dhaka city (DWASA, 2020)



Source : Author's self-construct

With a population of over 20 million Dhaka is one of the most congested cities of the world. This rapidly growing city is located on the northern bank of the river Buriganga and surrounded by other rivers, namely, the Turag to the west, the Tongi Khal to the north and the Balu to the east. The rivers surrounding Dhaka are an advantage to it and essential for the survival of the mega city as these provide drainage system, drinking water, different kinds of fishes and also waterways for traveling.⁵ In order to meet the growing demand, DWASA is installing high capacity water wells tapping the upper dupitila aquifers. This upper aquifer is in stressed condition. In most part of the city area, the groundwater recharge in upper aquifer is much less compared to the abstraction, causing groundwater depletion. The average groundwater depletion in most of the areas in the city is around 2-3 m/year.⁶ The present rate of depletion is alarming and may cause devastating events like land subsidence and other environmental degradation. This gives an alarming indication that there is an urgent need to alleviate pressure on the upper aquifer being exploited and explore for more suitable and sustainable sources to supplement the present water supply. To some extent, Dhaka city has number of peripheral rivers as shown in Figure 2 as the nearest source of surface water and these can be utilized for future water supply. This idea of using surface water as future source is taken seriously by the concerned authority of Dhaka city water supply.

Figure-2: Peripheral rivers around Dhaka city



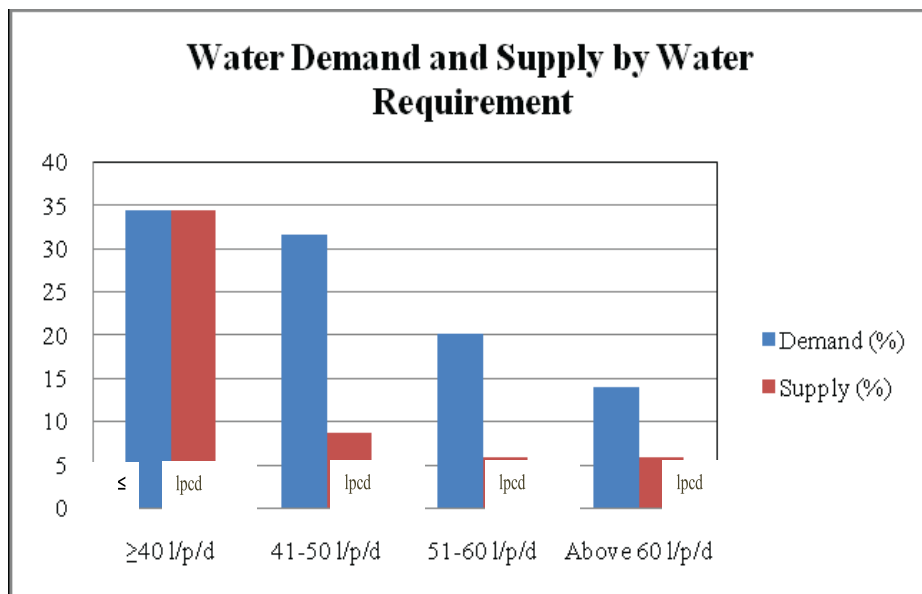
Source: Internet

Rationale of this Study

Dhaka city is experiencing groundwater recharge deficit every year. Moreover, increased rate of urbanization, illegal occupation, and encroachment reduce the amount and volume of surface water bodies around the city that deteriorate the present situation.

It is experienced that projected water demand is required 150 litres per person per day (lpcd). Empirical evidence shows that one-third of the city dwellers receive only 40 lpcd and they have to manage their daily activities with this little amount of water. Only 5.1 percent of total population of Dhaka city receives more than 60 lpcd. On an average, 42.8 percent of the respondents can receive basic requirement of 50 lpcd and the rest (57.8 percent) are suffering from water scarcity despite piped connection. A field survey of demand and supply has been shown in Figure 3.

Figure-3: Field survey for demand and supply (DWASA, 2021)

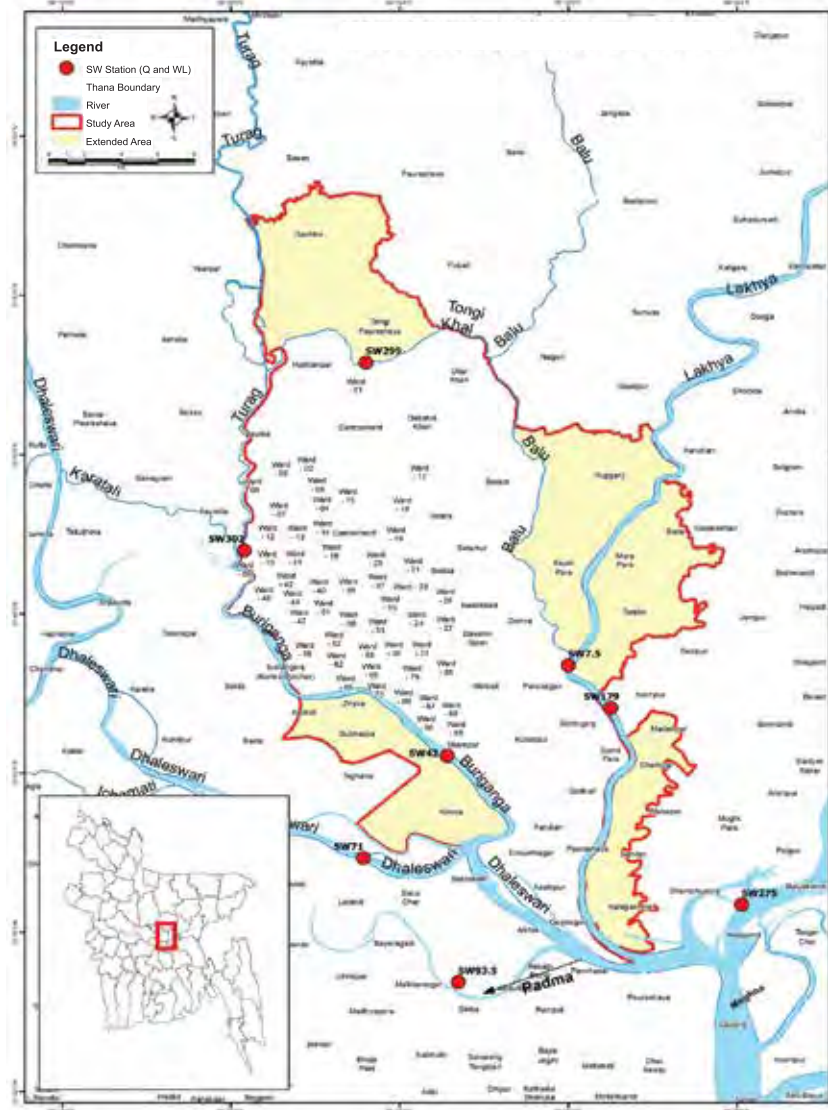


Source: Water Supply Plan for Dhaka City: Draft Final Report, Dhaka Water Supply and Sewerage Authority, 2021

Study Area

The study area is located onward 23° N latitude to 90°18' E longitude. There are six rivers flowing along its periphery, notable of which are Buriganga, Shitalakhya, Balu, Dhaleshwari, Turag and Tongikhal. It sprawls over an area about 617 sq km of Dhaka city as shown in Figure 4 below:-

Figure-4: Map showing study area, Dhaka



Source: Internet

Figure 4 above shows the study area with future extension in yellow shaded area beyond the red boundary. The existing Dhaka city service area covers approximately 497 sq km and includes some localities that are not mentioned in DWASA 1996 Act (parts Bandar Thana). The service area would expand to cover not only all of the existing jurisdiction area but also some neighbouring locations in Madanpur and Dhamghar area as per Table 1 given below:-

Table-1: Study area coverage

Serial	Region	Area Coverage (km ²)
1.	Main Dhaka City	303
2.	Tongi and Gachcha	61
3	Rupganj(Purbachal)	97
4.	Bandar	36
5.	Keraniganj and Kalagachia	Approx 120
Total		617

Source : Author's self-construct

Brief Description of the Peripheral Rivers System

Dhaka City is surrounded by rivers in its periphery as shown above in Figure 2. Buriganga, Turag, Balu, Shitalakhya, Dhaleswari and Tongi Khal engulf the city. The river Buriganga takes its name from the end of Turag at Ameen bazar union of Savar upazilla, flows through the southern part of Dhaka city and meets Dhaleswari River at Konda union of Keraniganj upazilla. The main flow of the Buriganga comes from the Turag only. The present head of the Buriganga near Chaglakandi has silted up and opens only during flood, but the lower part is still open throughout the year. Water pollution in the river Buriganga is at its highest. The most significant source of pollution appears to be from tanneries in the Savar area. In the dry season, the dissolved oxygen level becomes very low or non-existent and the river becomes toxic.⁷ It may be mentioned here that the tanneries have been relocated to Savar. Shitalakhya River having a length of 113 km flows through Monohordi Upazilla of Norshingdi district and then east of the city of Narayanganj in central Bangladesh until it merges with the Dhaleswari near Kalagachhiya. The river joins the river Balu at Demra, a small tributary flowing from the north of greater Dhaka. About 20 km downstream of Demra, the Sitalakhya River joins the Dhaleswari River at the Bandar upazilla of Narayanganj district.⁸

There are several different types of industries like textiles and dyeing, paper and pulp, jute, pharmaceuticals, fertilizers, etc. of moderate to big size and several urban developments along the entire stretch of the river.⁹ These establishments contributed to the pollution load to the Sitalakhya River directly or through a number of wastewater canals like DND drainage canal Killarpul khal, Kalibazar khal, Tanbazar khal etc. Domestic and industrial wastewater from Dhaka city through Norai khal and from the Tongi industrial area through Tongi khal is disposed of in the river Balu. This also contributed to the pollution load to the river Sitalakhya. The water quality of this river is of particular importance for both the ecological and commercial reasons and for concerns regarding safe drinking water supply to the city. The largest surface water treatment plant in Bangladesh located at Saidabad draws water from it through

the intake at Sarulia about 400m downstream of its confluence with the Balu river which is a tributary of the Sitalakhya river runs mainly through the extensive swamps of Beel Belai located at the east of Dhaka, joining the Shitalakhya near Demra. It has a narrow connection with the Shitalakhya through the Suti River near Kapasia and with the Turag River by way of the Tongi Khal. There is also a link with the Sitalakhya near Kaliganj. Although it carries flood water from the Sitalakhya and the Turag during the flood season, the Balu is of importance mainly for local drainage and access by small boats.¹⁰ Tejgaon metropolitan area is an industrial area which disposes about 12000 m3 untreated waste per day¹¹ consisting of residue of soap, dyeing, pharmaceuticals, metals industries, etc. Effluent of this industrial area is directly discharged into Begunbari and Narai canal which carries the waste through Balu River and ultimately flows on Sitalakhya River which is used in Saidabad water treatment plant for meeting water consumption demand of Dhaka city dwellers. A summary of the peripheral rivers has been shown in Table 2 below:-

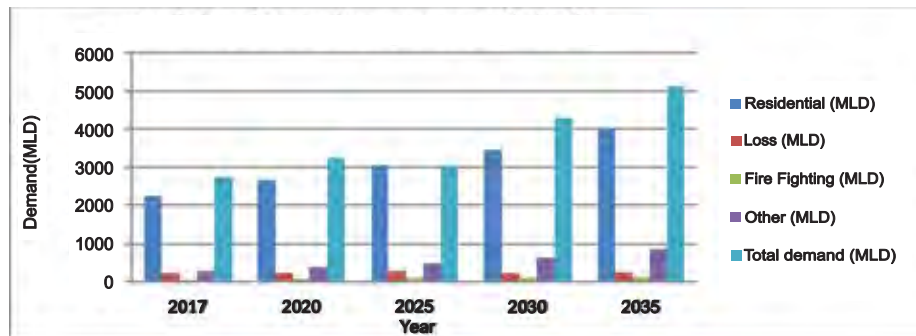
Table-2: Summary of peripheral rivers

River Name	Length(km)	Width(m)	Origin	Outfall
Turag	21	218	Bansi River(Kaliakair)	Buriganga(Mirpur)
Tongi	14.4	60	Branch of Turag	Balu River (Trimohoni)
Balu	110	300	Turag(Amin Bazar)	Shtilakhya (Demra)
Buriganga	45	265	Dhaleswari(North)	Turag
Shitalakhya	110	113	Distributary of old Brahmaputra	Dhaleswari(Kalagachhiya)
Dhaleswari	160	300	Jamuna(Tangail)	Upper Meghna
Karnatali	40	55	Spill of Dhaleswari and Bansi River	Buriganga river (Gabtoli)

Source: Author's self-construct

Evaluation of Surface Water Sources

Demand of the water is continuously increasing but the availability of the water sources needs to be ensured. In order to fulfill our demands it is absolutely essential to maintain, conserve and use water resources very carefully. Water supply in Dhaka faces numerous challenges such as acute water shortage, inadequate sanitation, polluted river water, unplanned urban development, and the existence of large slums where more than one third of its population lives. In this study, detailed analysis is being carried out in order to find out the suitable sources to provide the effective solution of water supply problem. Figure 5 given below shows the demand components upto the period of 2035.

Figure-5: Prediction of demand components of Dhaka city

*MLD=Minimal Liquid Discharge

Source : Author's self-construct

Study reveals that the present area will increase from 404 km² to 617 km² in 2035, covering its entire jurisdiction of Dhaka city and some additional areas with future extension. As a result of increase in domestic, industrial, commercial and other uses in the total area of 617 sq km, the total demand will rise to 5105 MLD in 2035. Considering that leakage from the system would be reduced from the present level, the total required production capacity would increase in 2035. This is an increase of 2.5 times instead of 2 times. However, during the same period, population increase will be 3.2 times and service area increase will be 1.5 times. Estimated production capacity for meeting the demand shows that by the year 2035 the total demand is expected to rise to 5105MLD in the 617 sq km of Dhaka city area. To meet the requirement, peripheral rivers are the best sources. More options are limited to harnessing the water resources of Meghna and Padma rivers. It was found that sufficient water of adequate quality is available in these two rivers throughout the year. If proper measures are taken to prevent pollution, dependency on large rivers will be reduced.

The net water availability of the peripheral rivers are gradually decreasing due to encroachment of the river banks, disturbing the courses of rivers, fewer intakes from the upstream rivers, filling up the rivers for urbanization, sludge and solid waste disposal in the river bed etc. As a result, small water treatment plants (SWTPs) do not receive adequate raw water for optimum production. This situation aggravates more during dry season when the water level of the rivers is minimum. The availability of water in the peripheral rivers and major rivers has been found at minimum level in dry period.

Evaluation Criteria

The evaluation criteria are water availability, water quality and cost effectiveness. These criteria have been determined by the availability of sources by data analysis. Quality has been determined by various analyses

and weighted against their results. More so cost effectiveness was analysed by different capital and maintenance cost including pipe installation cost.

Considering all the evaluation criteria, assessment has been made to find out the suitability of the sources. In this study, index is a term that indicates the ranking of similar items to assess the suitability among the items under evaluation. For instance, index value one (1) means highest and eight (8) means lowest ranking. The index as per the availability data is shown in Table 3 below :-

Table-3: Water availability index

Name of the River	Allowable Abstraction for June (MLD)	Operational Period (Months)	Index
Turag	2208	6	4
Tongi Khal	180	6	5
Balu	574	6	4
Buriganga	8339	6	3
Sitalakhya	11223	10	2
Dhaleshwari	43118	12	1
Padma	2868220	12	1
Meghna	174152	12	1

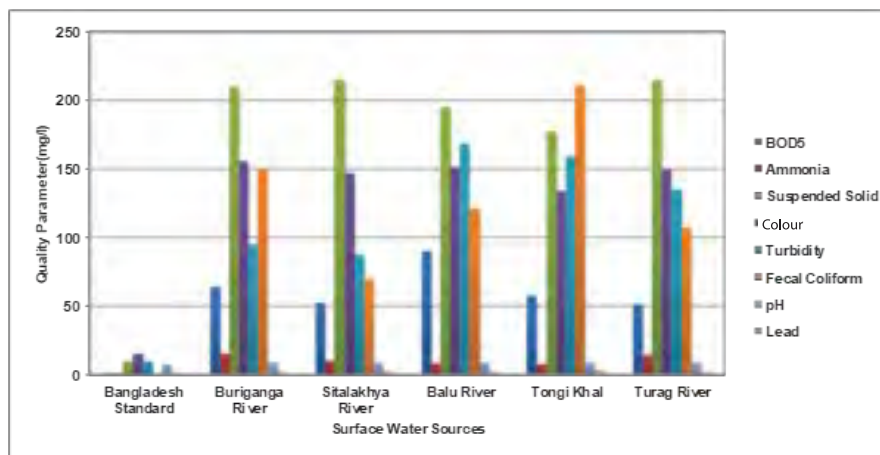
Source: Author's self-construct

In this Table index value has been given based on excess available water on the river sources during operational period. It is seen that all the river sources have the available water for the given operational periods as indexed between 1 and 4.

Water Quality of Peripheral Rivers

It was examined that water quality of the peripheral rivers has been deteriorated severely due to increase pressure of urbanization and industrialization. Rivers receive discharges of domestic, industrial, agricultural waste and sewage. Few important water quality parameters of these rivers have been shown at Figure 6. From this Figure it is clear that, present state of pollution of these rivers is much higher than the limits set by WHO and DOE, Bangladesh.

Figure-6: Important water quality parameters of peripheral rivers

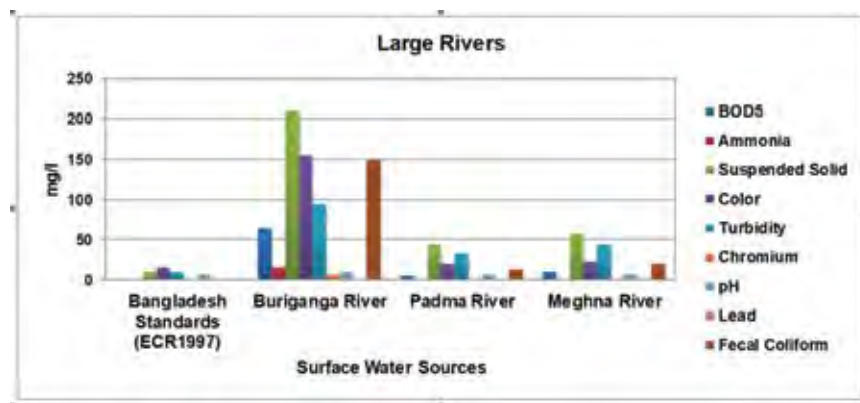


Source: Author's self-construct

Water Quality of Large Rivers

Water quality of River Padma and Meghna is much better than that of the peripheral rivers. Figure 7 given below shows the comparison of some water quality parameters between these two large rivers and one of the peripheral rivers i.e. Buriganga.

Figure-7: Comparison of water quality parameters between two large rivers (Padma and Meghna) and one of the peripheral rivers (Buriganga)



Source : Author's self-construct

In Table 4 given below Water Quality Index is shown as per the quality parameter.

Table-4: Dry period water quality index

Name of the River	Weightage/Index
Turag	7
Tongi Khal	8
Balu	6
Buriganga	5
Sitalakhya	3
Dhaleshwari	4
Padma	1
Meghna	2

Source : Author's self-construct

Overall Index of the Surface Water Sources

Considering all the index of the surface water sources (rivers) the weighted average index value of the rivers is obtained as shown in Table 5. It is seen that the Tongi Khal has the value of 5 which is not recommended for use as surface water source whereas the Sitalakhya river has got the value 1 which is considered as the most suitable surface water sources as per present overall analysis.¹²

Table-5: Overall index of all the rivers

Rivers	Availability Index	Quality Index	Cost Effectiveness Index	Mean
Turag	4	7	1	3
Tongi Khal	5	8	1	5
Balu	4	5	3	3
Buriganga	3	5	5	4
Sitalakhya	2	3	2	1
Dhaleshwari	1	4	4	2
Padma	1	1	7	2
Meghna	1	2	6	2

Source : Author's self-construct

Utilization of Large Rivers

The Padma and Meghna Rivers should be incorporated into the water supply system after making optimum use of peripheral rivers. River Padma should get priority among these two rivers due to better quality and more availability of water. Water extraction from these two sources should be augmented gradually with increase of overall demand. Suggested utilization plan of large rivers including time by which SWTPs should be operational is given at Table 6.

Table-6: Ongoing water utilization plan of large rivers

Year	2022	2025	2030	2035
Padma SWTP Phase I	500	500	500	500
Meghna SWTP Phase I	500	500	500	500
Padma SWTP Phase II	-	-	500	500
Meghna SWTP Phase II	-	-	500	500
Total (MLD)	1000	1000	2000	2000

Source : Author's self-construct

Water demand and future requirement have been estimated 5105 MLD as Table 7 shows an estimation of suggested withdrawal plan upto 2035. After assessment, it was found that 5402 MLD would be available to support the total requirement.

Table-7: Suggested plan for future water production

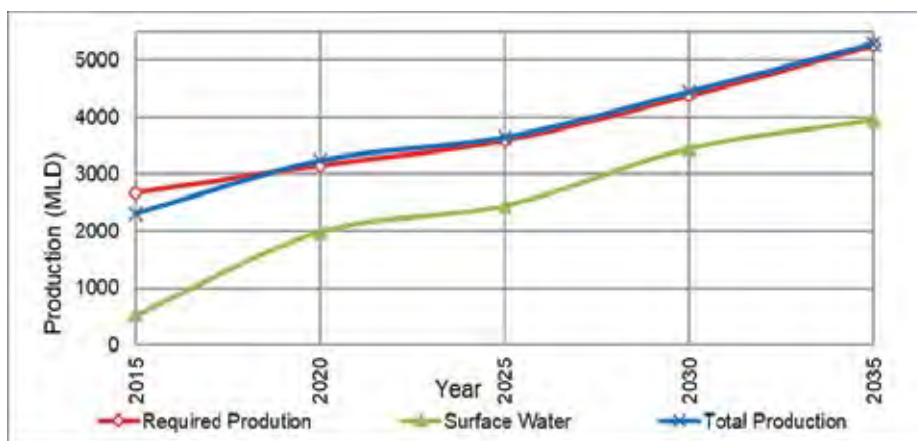
Source	Year Wise Production (MLD)				Suggested Plan Remarks	Oper. (months)
	2022	2025	2030	2035		
Saidabad SWTP Phase I	225	225	225	225	Existing	12
Saidabad SWTP Phase II	225	225	225	225	Existing	12
SWTP III from Sitalakhya	450	450	450	450	Ongoing	10
SWTP IV from Buriganga	39	450	1000	1000	Suggested (present study)	6
SWTP V from Balu			450	450	Suggested (present study)	6
SWTP VI from Dhaleswari			1000	1000	Suggested (present study)	12
Narayanganj SWTP	40	40	40	40	Existing	6
Sonakanda SWTP	12	12	12	12	Existing	6
Padma SWTP Phase I	500	500	500	500	Ongoing	12
Meghna SWTP Phase I	500	500	500	500	Ongoing	12
Padma SWTP Phase II	-	-	500	500	Ongoing	12
Meghna SWTP Phase II	-	-	500	500	Ongoing	12
Total Surface Water Sources (MLD)	2402	2402	5402	5402	SW sources only from 2030	12
Total Ground Water Sources (MLD)	1250	1200	0	0	No GW abstraction from 2030	
Total (MLD)	3652	3602	4902	5402		12

Source : Author's self-construct

Paradigm Shifting towards Surface Water Sources

The production of surface water is increasing and dependency on ground water is considered zero with the timeline upto the year 2035. Therefore, a paradigm shift towards surface water sources can be seen in Figure 8 below:-

Figure-8: Shift towards surface water from ground water



Source : Author's self-construct

Conclusion

The Dhaka city has expanded from the present area 404 sq km to about 617 sq km and continues to expand. Future population and associated water demand are found that, every year the demand of fresh water is increasing by 5% approximately and water demand of 2020 will be doubled by 2035. The population trend was determined based on the BBS census data from 1975 to 2010 and prediction equation was formulated. During this period, the total population in the 617 sq km area is expected to increase 29 million by 2035. Water consumption in Dhaka city is showing an increasing trend. The total demand is expected to increase from about 1500 MLD in 2011 to 5100 MLD in 2035. Beyond 2035, there is likely to be around 50% increase in total demand by the year 2060.

Dhaka City is surrounded by six peripheral rivers including large rivers Padma and Meghna. Peripheral rivers system around Dhaka City includes Buriganga, Sitalakhya, Dhaleswari, Balu, Turag and Tongi Khal. Water quality of peripheral rivers around Dhaka city was analysed with respect to pH, turbidity, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, ammonium, nitrate, phosphate, chromium, mercury, lead, Zinc etc. During the dry period (November to April) the water quality situation of the rivers Balu, Buriganga, Turag and Tongi Khal becomes severely bad. Therefore, water cannot be abstracted in dry season for Tongi, Turag, Balu and Buriganga from peripheral rivers. However, the water quality parameters of these rivers appear to be better during the wet season. Water can only be abstracted from Dhaleswari and Sitalakhya throughout the year. The water of Buriganga, Balu, Tongi khal and Turag remains beyond the standard limit in dry season. Water of these rivers remains unusable if such situation cannot be improved through

treatment. The quality of Padma and Meghna remains good throughout the year. Thus the water from Padma, Meghna, Sitalakhya and Dhaleswari can be considered natural surface water source for Dhaka city water supply.

Hydrodynamic analyses have been carried out to determine the water availability of selected said rivers. The flow and water level hydrography for the year 2010 to 2022 have been used. From the hydrography, it can be seen that the lowest flow occurred in the dry season for peripheral rivers specially Turag and Tongi, but other rivers have sufficient water. In addition, detailed hydrodynamic analysis has been carried out using mathematical model for the river network of the peripheral rivers. The model result reveals that the water can be easily abstracted in the monsoon and post monsoon season for other rivers except Turag and Tongi Khal.

The overall evaluation was made using mean average of all the four index values. Based on the evaluation index value, peripheral water sources scored more than the large rivers. The peripheral rivers are more cost effective than the large rivers as these are relatively nearer to Dhaka city. Thus it is quite clear that peripheral rivers should be given more importance than large rivers for future sources of supply perhaps proper restoration measures can be implemented. Restoration and rehabilitation of peripheral river system, protection of surface water from pollution, environmental conservation and river protection acts, relocation of tannery, including effluent treatment plants for all industries should be considered with due importance.

Recommendations for Future Study

This research study has the following recommendations:-

- a. To reduce the existing pollutants loads on the peripheral rivers, a comprehensive water quality modelling study can be undertaken.
- b. Further study in this aspect can be made with the newer set of data after 10 years with the change of situation.
- c. In order to fulfil the suggested water requirement, further study can be undertaken for restoration and rehabilitation of peripheral river system. Social awareness and public participation could be major component of the study.

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Brief Biography



Brigadier General Md Ehsanul Haque, SUP (BAR), afwc, psc, PhD was commissioned on 13 December 1996 with the 35th Bangladesh Military Academy Long course as the Second best all-rounder Cadet receiving two gold medals. Officer completed Staff Course and War Course (AFWC) from DSCSC and NDC respectively. He is awarded twice with Sena Utkorso Podak (Army Medal of Excellence) and the Chief of Army Staff Commendation (Non-Operational).

Besides serving in various Engineers Regiments, he also served as an Instructor in the School of Infantry and Tactics, twice as Grade 2 Staff Officer in MIST & Engineer in Chief Branch, at AHQ. He was the Assistant Military Secretary in Military Secretary Branch at AHQ, a Faculty member at National Defence College and Colonel Staff at AFD. He has participated in the UN as Operations Officer in Ivory Coast and Staff Officer in UNAMID, Sudan. He commanded the 6 Engineer Battalion. He completed his Master and PhD from BUET and was awarded President's Medal for being the Best student. He has a keen interest in sports and reading. Presently he is Deputy Chair PCC, P-5, UNITAMS, Sudan.

Flight Information Region: Challenges and Opportunities for Bangladesh

Air Commodore A K M Ziaul Haque, BUP, afwc, psc, ATC

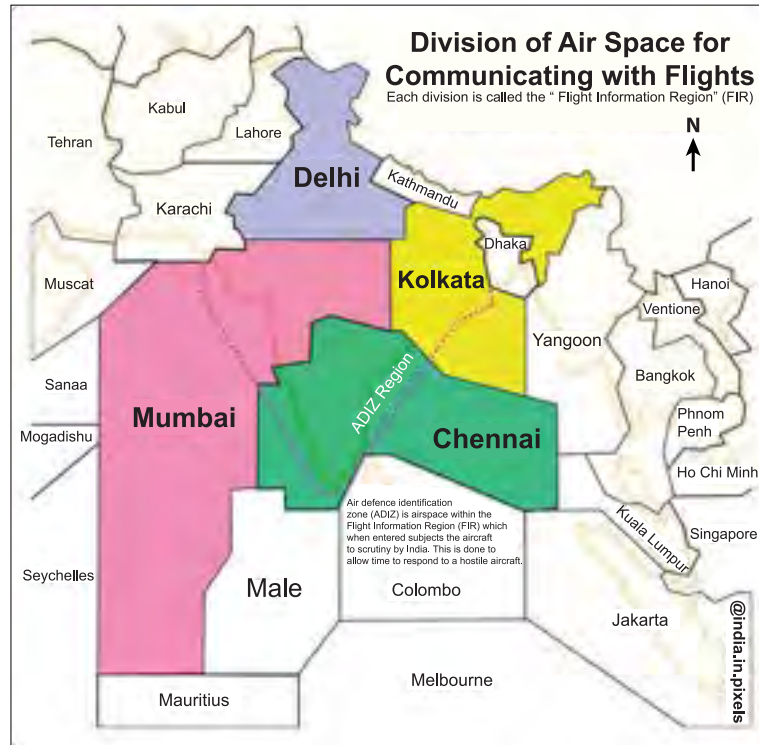
Introduction

Flight Information Region (FIR) is an aviation related aspect, which is not only silently contributing to the growth of national economy but also a symbol of pride and dignity. An endeavour has been made in this paper to share some glimpses on the huge world of aviation with particular focus on the FIR of Bangladesh, its limitations and the way forward to overcome these limitations. In this study examples in the form of case study will be highlighted and at the end few recommendations are made to enhance the existing situation. Thus, the main objective of this paper is to inform and highlight few aspects of aviation sector which should be addressed in order to enhance the economy and also to uphold pride.

What is FIR ?

According to the definition part of ICAO Annex 2 and ICAO Doc 4444, the definition of FIR is "An airspace of defined dimensions within which flight information service and alerting service are provided."¹ A close look at definition reveals that there are two distinct parts in the definition viz firstly 'An airspace of defined dimension', which means the airspace which is not unlimited, which has got a boundary or dimension both lateral and vertical limits. To be very honest, there can be a defined dimension, generally this defined or specific dimension of a FIR merges with the geographical boundary of a country. Though, there is an ICAO recommendation in Annex 11 that 'the delineation of airspace, wherein air traffic services are to be provided, should be related to the nature of the route structure, and the need for efficient service rather than to national boundaries.' But in most cases the national boundaries coincide with FIR boundaries. On the other hand, airspace over the ocean is termed as Oceanic airspace, which is termed as oceanic information region and delegated to a controlling authority bordering that region. The division among authorities is done by international agreement through ICAO. Normally geographically small countries have one or single FIR whereas big countries like India, USA have multiple FIRs. For example, India has four FIRs named Delhi, Mumbai, Chennai and Kolkata, additionally there is a sub-FIR at Guwahati, as shown in Figure-1.

Figure-1: Map of India and regional FIRs



The second part of the definition states that two services will be provided viz Flight Information Service and Alerting Service. As per ICAO Annex-11, 'Flight Information service is a service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights', such as weather information, information on unserviceability of any equipment of any airport, unserviceability of any navigational aid useful for the aircraft, etc. As per ICAO Annex 11 Alerting service is "a service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required," which means to promptly notify the appropriate organizations or Search and Rescue (SAR) units about the emergency situation and provide relevant information about the aircraft in distress. So, these are the two services which are provided in a FIR. There are few other services also provided in FIR like Air Traffic Control Service, Advisory Service. As per ICAO Doc 4444, Air Traffic Control service is a generic term meaning area control service, approach control service, or aerodrome control service, including flight information, alerting, and advisory services. The main aspect of this service is Air Traffic Control service which is mandatory for all aircraft to follow, whereas flight information service and advisory service are not mandatory to follow by the Captain of the aircraft.²

Usually the authority or organization which is made responsible by the state remains responsible to provide these Air Navigation Services to all aircraft. In the case of Bangladesh, it is the Civil Aviation Authority (CAAB), however, due to acute shortage of manpower (air traffic controller) in CAAB; officers of the Air Traffic Control branch of Bangladesh Air Force provide this support to CAAB. As BAF air traffic controllers also undergo the same ICAO recognized training system like CAAB controllers, thus in terms of competency and capability BAF controllers are also equally competent and capable to perform the duty. It may also be mentioned that, there is a Memorandum of Understanding (MOU) between BAF and CAAB for such mutual cooperation and support. Here it is worth mentioning that from the day of recruitment it takes approximately 3-4 years training (both classroom and on the Job Training) for any air traffic controllers to start working independently in control towers. Thus, regular recruitment of manpower in CAAB is essentially required, unfortunately which is not taking place. Mutual cooperation with BAF (air traffic controllers) is also a prime requirement for maintaining smooth and safe operation.

Normally FIR encompasses several control airspaces like control area, control zone, terminal control area, aerodrome traffic zone, etc. The main purpose to establish all these controlled airspaces is to give protection to aircraft flying within the area. In addition to these controlled airspaces there are specialized airspaces like Restricted area where normally military flying training takes place, Danger area where firing practice takes place and Prohibited area where entering without prior permission from a competent authority by any aircraft is prohibited. Moreover, different air routes over any country are also accommodated in the FIR. Normally all international or domestic flights fly through these air routes, it's just like highways in the sky where instead of bus, truck or cars aircraft flies. Each and every type of controlled or specialized airspace, has its own speciality.

FIR of Bangladesh

Like every country Bangladesh also has an FIR, which has been inherited from the then East Pakistan. The name of our FIR is "Dhaka FIR." It runs along the national boundary except towards the southeastern side (Figure-2A) and borders of neighbouring countries FIR along with FIR of Bangladesh are shown below (Figure- 2B). As seen in the map Figure-2A some portion of land area towards the southeastern side has fallen under Yangon FIR whereas on southwestern side a corridor of airspace within Dhaka FIR is delegated to Kolkata FIR for providing Air Traffic Services.

Figure -2A: Map of Dhaka FIR

Flight Information Region. TMA, Control Zones
Aerodrome Traffic Zones and Aerodromes



Source: AIP Bangladesh

Figure-2B: Map of Dhaka, Kolkata and Yangon FIR



Source: Presentation by M 4TM of CAAB
at MOCAT on 24 January'20

The prime query is 'why the corridor of airspace within Bangladesh FIR is controlled by the neighbouring country?' It is because there is an air route (L-507) towards southwestern part of the country, which is from Kolkata to Bangkok, the responsibility for the provision of Air Traffic Services within the route L-507, between 28,000ft to 46,000ft is delegated to Kolkata Control (India). However, for the purpose of smooth arrival and departure of aircraft to and from Kolkata International Airport, both Bangladesh and India have mutually agreed regarding the aircraft controlling from 13,000ft up to 46,000ft through a Letter of Assist (LOA). Ideally every air route should have 10 NM width for the purpose of providing protection to the aircraft flying through this route. For safety and smooth conduct of aircraft operation and most importantly due to close proximity of Kolkata International Airport and also due to lack of our capability, the then aviation experts of India and Pakistan thought that this portion or corridor of airspace should be delegated to Kolkata control. The map of Dhaka FIR including different international and domestic routes is shown in Figure-3, highlighting the location of the L-507 route.³

Figure-3: Map of Dhaka FIR including international & domestic routes



Source: AIP Bangladesh

On the other hand, a portion of airspace towards the southeastern corner is not included inside Dhaka FIR (Figure 2 & 3) which has also been inherited. Unlike the L-507 air route, no neighbouring countries' air route passing here, all the air routes are passing to and from Chattogram, and still some portion of airspace over Bandarban and Cox's Bazar district was not included in Dhaka FIR. Consequently, it is known that St. Martin's Island is a strategically very important landmass for Bangladesh, even airspace over this island and surrounding area (as shown in map, Figure-4) is not included in Dhaka FIR.⁴

Figure 4: Map of southeastern part of Bangladesh, highlighted and checkered part is not included in Dhaka FIR



Source: Presentation by M 4TM of CAAB
at MOCAT on 24 January'20

Consequence

The effect of this FIR boundary (it can be also termed as a limitation) is huge. Firstly, considering the southeastern portion, it can be said that it is putting a question on the pride and dignity. As the airspace belongs to Yangon, so whenever any Bangladesh aircraft plans to fly over Teknaf or St. Martin's area prior permission from Yangon is needed. This means to fly over some portion of own territory permission from neighbouring country is to be sought. On the other hand, towards the southwestern portion, it can be termed as lack of capability in the Air Traffic Management System, which raised lack of confidence on the system by other stake holders and ICAO as well. Alternatively, it can be said that there is no confidence on the airmen to control that portion of corridor. Using modern technology this capability or capacity should have been augmented long back. This also has an economic effect as well because whenever any aircraft enters airspace, it has to pay a certain amount of charges, even if the aircraft is not landing in Bangladesh. Just for making an overfly, the aircraft company still has to pay charges, and it is always in foreign currency (US dollar). So, the more airspace and air routes will be included in an FIR, the more foreign currency will be earned by that country.⁵

Maritime Boundary

In March 2012, the International Tribunal for the Law of the Sea (ITLOS) in the long-standing maritime border dispute between Bangladesh and Myanmar gave a decision. Again, on 07 July 2014, the tribunal established under Annex VII of the United Nations Convention on the Law of the Sea (UNCLOS) delivered its award in the dispute concerning the Maritime Boundary between Bangladesh and India. The decisions of both arbitral tribunals opened up a new horizon of opportunities and possibilities for Bangladesh. The concept of Blue Economy has developed, through which up to 200NM, own Exclusive Economic Zone (EEZ) opportunities have opened for this country. But what about the airspace over this EEZ? The map below (Figure-5) shows the air routes passing through the 200NM EEZ.⁶

Figure-5: Map of Dhaka FIR including international & domestic routes



Source: Presentation by M 4TM of CAAB
at MOCAT on 24 January'20

All these air routes are jointly controlled by both Kolkata and Yangon Control. Thus, Bangladesh is being deprived of a huge amount of foreign currency which is approximately Tk 100 crore per year. This is the data of only one route. There are additional 5 air routes as shown in (Figure-5), which are going to and from a different city of India to Thailand/Malaysia and other cities of that region. If there was control of all these routes, then it would be able to contribute around Tk 500 crore annually (considering same frequency of aircraft movement) to the national economy, which at present the country is being deprived of.

It is important to mention here that from 01 February 2018, Bangladesh has established Air Defence Identification Zone (ADIZ) upto own EEZ

boundary; excluding different air routes passing through this area. ADIZ is a zone where prior permission from competent authority is required before entering the airspace. This is normally done to prevent unauthorized entry of any aircraft from different countries. All the neighbouring countries of Bangladesh established ADIZ over their respective airspace well before. Better late than never, establishing ADIZ for Bangladesh is a huge step forward towards getting control of the airspace over our EEZ.⁷

Case Study-1: FIR of Singapore

A common concern by different aviation experts is that Bangladesh is a very small country and due to different limitations she is not able to control the aircraft following air routes over own EEZ. A case study of Singapore which is a few times smaller than Bangladesh reveals that being such a small country and despite having big neighbours like Malaysia, Thailand and Indonesia, Singapore is controlling huge airspace. The map of Singapore FIR is given below in Figure-6. As the regulator of Singapore's airspace, the Civil Aviation Authority of Singapore (CAAS) provides air traffic control and aeronautical information services to aircraft operating in Singapore's airspace, enabling the safe and efficient use of airspace. Singapore has adopted efficient air navigation procedures, and also provides aeronautical information to airlines and pilots. The secret of their success is in two things, firstly is professionalism and secondly is using state of the art equipment in the Air Traffic Management System. On this second issue, Bangladesh is falling behind as quite old and manual equipment and system are still being used. This puts an enormous pressure on our air traffic controllers. Thus, the main requirement for Bangladesh is to attain technological development in terms of equipment, system, and associated training for the air traffic controllers.

Figure-6: FIR of Singapore and neighbouring countries



Source: www.caas.gov.sg

Case Study-2: People may say that Singapore is a technologically and economically developed country, thus comparison with Singapore is not logical. Here is second case study with Sri Lanka, which is a geographically small country like Bangladesh, has similar socio-economic condition and enjoys equal status. The Colombo FIR as shown in Figure-7 is a mostly oceanic air space encompassing Sri Lanka and extending mostly to the south and east covering approximately 900,000 square kilometers. A close study of Colombo FIR shows that there is common boundary even towards north and western side with India. The only thing is that they have developed their capability to control such a big airspace, and Bangladesh could not develop this capability even after 50 years of independence.⁸

Figure-7: FIR of Colombo

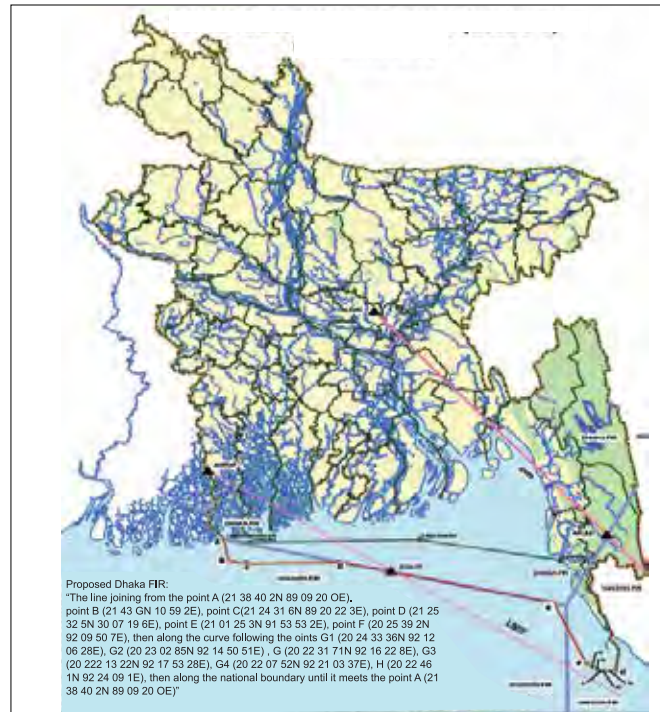


Source: vacssrm.comuv.com

Latest Development

The Government of Bangladesh has taken up the issue of gaining air space with both International Civil Aviation Organization and at the same time with the neighbours. In February 2019, after a detailed study and with the able directives from hierarchy of the Civil Aviation Authority of Bangladesh and Bangladesh Air Force, 'Realignment of Dhaka FIR boundary' to the ICAO Regional office in Bangkok has been forwarded. Diplomatically, from Ministry of Foreign Affairs (MOFA) the proposal was also sent to the neighbouring countries in March 2019. After addressing their different opinions again, in March 2020, MOFA has forwarded the proposal. Now it is a matter of negotiation and persuasion. The proposal of realignment of the Dhaka FIR boundary from CAAB is shown in the map given below:-

Figure-8: Map of the proposal for new Dhaka FIR boundary



Source: Presentation by M 4TM of CAAB
at MOCAT on 24 January'20

In the map above it is seen that the southwestern side has included the territorial water portion of airspace (the point A, B, C & D of Figure 8) and towards the southeastern side, the proposal is that FIR boundary should run along the national boundary up to the south of St. Martin's Island (the point H, G, G1, G2, G3 & G4 as shown in Figure 8). It can be said now that claim has been initiated. But as it was said before, the aim should be to attain the FIR boundary to merge with EEZ boundary, which means FIR of Bangladesh boundary should extend 200NM towards the south and include additional 5 air routes. This will not only enhance self-esteem and pride but at the same time will boost our economy as well.

In the last regional meeting comprising Bangladesh, India, Myanmar, and Thailand (BIMT) on different air traffic management issues in 2019, it is known that Myanmar has already realigned her FIR boundary along with her international boundary, which means the airspace as mentioned in Figure-4 is no more included in Yangon FIR, but Bangladesh is yet to gain that amount of airspace left by Myanmar. Presently it is a "No Man's Land." Having such No Man's Land in aviation world is very risky and not wanted. Because who will provide Alerting service to any aircraft in emergency or any other services and assistance to any aircraft in that area is not clear. In March 2021, Bangladesh

Government received a response from India and Myanmar in respect to the proposal of “Realignment of Dhaka FIR boundary” and respective offices and agencies are working on it for an appropriate reply.⁹

Roadmap to Success

Success in this aspect implies attaining the FIR boundary up to own EEZ boundary and at the same time retaining the airspace with utmost professionalism. Firstly, it is important to develop the capability to communicate with the aircraft following these oceanic air routes. To do this it is required to have a sound Very High Frequency (VHF) communication network, which is used for air to ground communication. The existing system of communication which is based on “Line of Sight (LOS)” principle is not going to work for such long distance, thus Controller Pilot Data Link System (CPDLC) or Remote-Control Air to Ground Communication (RCAG) can solve the communication issue. CPDLC is a two-way data-link system by which air traffic controllers can transmit messages to an aircraft as an alternative to voice communications. The message is displayed on an aircraft cockpit as visual display. The CPDLC application provides air-ground data communication for the ATC service. Remote Control Air to Ground Communication (RCAG) is a facility for air to ground communications controlled remotely by an air traffic controller. This allows direct communications between a control tower and aircraft in a remote area, from where existing LOS based communication system cannot work. A study was carried out on cost benefit analysis in CAAB, which showed that the total cost of establishing the ATC Automation along with all these necessary modern system/equipment including training for the air traffic controllers will be reimbursed by maximum 5 years. Thus after 5 years Bangladesh government will enjoy the economic benefit only. Despite knowing this, it is very surprising and unfortunate that we could not acquire these system and equipment even in 50 years.

Secondly, it is important to have the capability to carry out search and rescue missions when needed. BAF already has specialized search and rescue aircraft with trained crew. Thirdly, the Air Traffic Management System needs to be modernized both by acquiring modern and sophisticated equipment and by training personnel to use such system professionally. However, the manpower of CAAB is very less to undertake this task. Though BAF controllers are always extending their all-out support to CAAB, CAAB still needs to recruit on regular basis new manpower to undertake such responsibility. Though surveillance capability over the entire FIR is not a mandatory requirement, it is always desirable to attain such capability, and CAAB can attain that partially by making the Chattogram Radar operational. At the same time, we should start a dialogue with the Airport Authority of India (AAI) to get control of the corridor of airspace towards the southwestern part of Bangladesh (13,000ft to 46,000ft within Dhaka FIR of L-507 air route) which is delegated to Kolkata control to provide

air traffic services. The next most important issue is to keep pursuing with both the neighbours through Ministry of Foreign Affairs (MOFA) and Ministry of Civil Aviation & Tourism (MOCAT) and also simultaneously with ICAO regional office through CAAB.

It has been already mentioned that for successful implementation of all these tasks two-way radio communications between pilots and air traffic controllers have to be ensured. As keeping single FIR and one Area Control Centre (presently located in HSIA, Dhaka) is responsible for all aircraft, operating in Bangladesh is very difficult and hazardous also. Thus, an option of splitting the existing FIR into two by making one additional FIR for southern part of the country centering Chattogram may be considered. This additional Area Control Centre in Shah Amanat International Airport (SAIA), Chattogram can control/handle the aircraft operating towards the southern part of the country including upto EEZ boundary (as per the proposal of FIR boundary). It is worth mentioning here that the required infrastructure already exists in SAIA to start the area control centre. Even Air Traffic Services (ATS) radar service (Approach control office) can also be started in SAIA with the new radar which is yet to come to operation even after 4 years of its installation. This will reduce the congestion of air traffic in one frequency, ensure minimum delay, enhance flight safety and finally reduce the huge workload of air traffic controllers. This will improve and enhance the overall air traffic management of Bangladesh, which will ultimately improve our capability and capacity. This will develop the confidence on own system and claim to extend FIR also will be justified, logical and above all professional.¹⁰

Recommendation

To improve the existing situation and provide additional economic support to the country, following are recommended:-

- a. The Air Traffic Management System needs to be automated and upgraded to enhance its capacity.
- b. The state-of-the-art ATS radar at SAIA may be calibrated and bring into operation as soon as possible.
- c. VHF coverage may be augmented by acquiring modern equipment and system like Controller Pilot Data Link (CPDLC) network or Remote-Control Air to Ground (RCAG) communication.
- d. Ministry of Civil Aviation & Tourism (MOCAT) and Ministry of Foreign Affairs (MOFA) may continue perusing diplomatically for the extension of FIR boundary upto EEZ boundary; at the same time CAAB may also continue perusing to ICAO regional office.
- e. The existing FIR may be divided into two; an additional FIR may be

established for southern part of the country with an Area Control Centre and Approach Control Office located at SAIA, which may control the aircraft operating in southern part of the country upto the proposed FIR boundary (EEZ boundary).

f. CAAB may recruit more manpower on regular basis; by training them properly to undertake such tasks.

g. CAAB should start negotiating with the Airport Authority of India regarding taking over the control of the corridor of airspace (L-507), which falls within Dhaka FIR.

Conclusion

The aviation sector of Bangladesh needs to be modernized at par with global standards in order to contribute more effectively to the national economy. This process has been initiated from 2019. The prime requirements to extend or establish an FIR are to gain the capability to communicate with aircraft and mutual agreement among all concerned countries. It is thus of urgent need to step up and modernize the air traffic management system as soon as possible. Two-way radio communication is also one of the prime requirements for safe flight, hence immediate steps need to be taken to enhance VHF coverage. Once such capability is attainable then demand can be raised more strongly to extend FIR upto the EEZ boundary. Diplomatic efforts with neighbours also need to be continued. It is imperative that Bangladesh control own airspace.

It is hoped that in near future Bangladesh will also have a formidable FIR which would assure that every take-off ends with a safe landing, and this will be done in a safe, expeditious, orderly, and most importantly in a professional manner.

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Brief Biography



Air Commodore A K M Ziaul Haque, BUP, afwc, psc, ATC was commissioned in ATC branch on 03 January 1991. His professional training includes Basic ATC course in BAF Base Bir Sreshto Matiur Rahman, Civil Aviation Training Center, Dhaka and in Turkey. He did his ATS Radar Course in BAF Base Bashar and advanced ATC course on Approach Control (Procedural and Radar) in Italy. He has completed Air Staff Course at Defence Services Command and Staff College and Armed Forces War Course from National Defence College, Dhaka. He served in all ATC Sqn of BAF both as ATCO and also as SATCO. Beside professional duties, he served as Deputy Director Plans, Assistant Chief Inspector, Director BA/BSS Programme, BUP and Director ATS at Air HQ. He also has served in United Nations in DR Congo both as ATCO and as SATCO. At present he is serving as Provost Marshal at Air HQ.

Russia-Ukraine Conflict - A Global Issue Having Ripple Effect on Economy across Europe and Beyond: Preparedness for Bangladesh

Colonel Mohammad Nawroz Nichoshier, psc, G

Introduction

Russia began a "Special Military Operation" in Ukraine on February 24, 2022, escalating the Russo-Ukrainian confrontation. The United Nations General Assembly condemned the conflict and demanded a complete Russian withdrawal.¹ The Council of Europe expelled Russia after the International Court of Justice ordered it to halt military operations. Many countries imposed sanctions on Russia, affecting the Russian and global economies.

European nations are facing an energy crisis as European countries are dependent on Russia for energy supplies to a large extent. Russian gas flows made up as much as 40 percent of Europe's supplies before the conflict.² Gas prices in Europe have soared in the last year after Russia squeezed supplies ahead of the crisis. Russia has begun cutting off countries from supplies in an apparent move to hinder their efforts to fill their gas storage before the winter. Gazprom has cut supplies running through Europe's major natural gas pipeline, Nord Stream 1 by 60%.³ As fears of supply disruptions grew, inflation and cost of living have skyrocketed in many countries.

Since Ukraine is a major exporter of food grains and oilseeds to the global market, the conflict has caused a sharp hike in global food prices. As Russia is the world's third-largest oil producer, the second-largest natural gas producer, and among the top five global producers of steel, nickel, aluminium and food grains, any significant reduction in export is highly likely to soar global prices for these commodities. The sharp fall of financial markets around the globe and the surge in the prices of oil, natural gas, metals and food commodities (especially grains) on the day of the beginning of the conflict have proved the assumption to be true. The resulting ripple effects threaten the supply of key food items like wheat and raise the possibility of a global food crisis. Simultaneously, economic sanctions on trade with Russia and banning Russian banks from the world financial market have seriously impeded global trade.

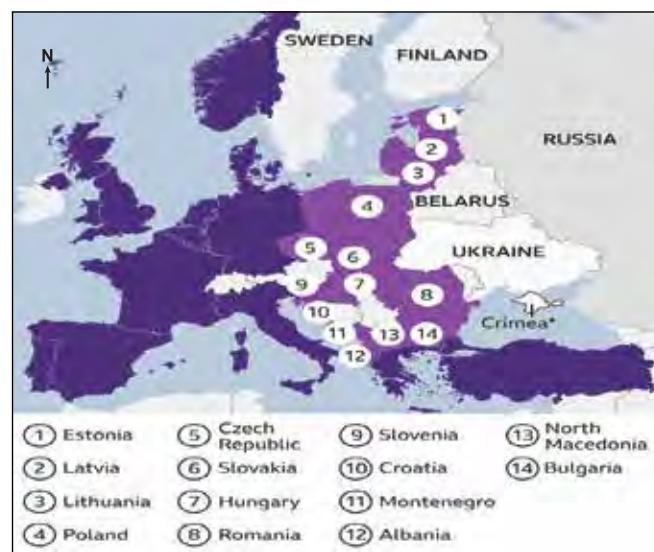
Bangladesh is already feeling the heat of the Russia-Ukraine conflict in many ways. If the conflict continues for a more extended period, the impact will intensify. The impact is felt through a reduction in exports and a rise in import bills. As international oil prices have risen since the outbreak of the Russia-Ukraine conflict, Bangladesh Petroleum Corporation is now losing around Tk 934 million per day.⁴ When oil prices rise, the chain reaction causes increases in gas, fertiliser, and other essentials. Other imported products, such as wheat, have seen significant price increases in addition to fuel.

This paper has attempted to trace back the root of the ongoing Russo-Ukraine conflict. Subsequently, the effects of this conflict on the EU and the world economy in general and Bangladesh, in particular, have been critically analysed. Finally, ways forward for Bangladesh to embrace the new normal economic situation to sustain the ongoing turbulence of the world economy have been advocated.

Background of the Conflict

Russia and Ukraine have been part of the USSR since its formation. But various factors, like Gorbachev's policies and the internal conflicts due to diversity in culture, led to the disintegration of the USSR in 1991.⁵ Hence, Ukraine and Russia broke apart in this dissolution of the USSR. However, both countries had a stable and flourishing relationship even after disintegration. Russia helped Ukraine to flourish, especially in economic and military terms. Russia manufactured all fighter aeroplanes like the MIG-21 and military tanks and equipment in Ukraine. After signing the Non-Proliferation Treaty, Ukraine gave all its nuclear arsenals to Russia.

Map-1: NATO's expansion since 1997



Source: BBC

Many of the members of the earlier USSR joined NATO (Map-1)⁶ over the years intimidating Russia. Ukraine has been an official aspirant country of NATO since 2014. Yet, chances of membership had been slim from the start as Russia has threatened retaliation should the country join NATO. But Volodymyr Zelenskyy was strongly in favour of getting Ukraine membership in the EU and NATO. This aspiration of Zelenskyy antagonised Russia. As a result, Russia

annexed Crimea in 2014, which helped Russia to increase its influence in the Black Sea region. In 2017, Ukraine pressed a policy decision stating its willingness to join NATO. Article 5 of the NATO Treaty⁷ allows collective defence, which meant that the US army could enter Ukraine. It would have posed threat to a great deal to the national security of Russia.

On February 21, 2022, Russia recognised two breakaway rebel regions – Donetsk and Luhansk—in eastern Ukraine as independent States. The provisions in the UN charter⁸ allows the neighbouring states to intervene if an independent state faces some oppression from its enemy and if the oppressed nation asks for such help. Under legal cover of the UN charter and with the plea of help from Donetsk and Luhansk, Russia has intervened in Ukraine.

Actions against Russia by the US and Allies

Economic Sanction Imposed by the US: The US has imposed sanctions on oil and gas imports from Russia. The US has removed some Russian banks from the SWIFT financial messaging system, essentially banning them from international transactions. They also imposed restrictions on Russia's central bank to prevent it from using its large international reserves to undermine sanctions. The US Treasury Department has clarified that transactions involving Russia's \$130 billion of gold reserves were also subject to US sanctions. The US has also imposed asset freezes and travel ban on many Oligarchs⁹ and the business entities owned by them.

Economic Sanction Imposed by EU: EU has announced a total closure of their airspace to all Russian aircraft and a ban on transactions with the Russian central bank. In addition, in a joint move with the United States and other Group of 7 countries, the EU said that it would strip Russia of normal trade relations. EU sanction prohibits the purchase, import or transfer of crude oil and petroleum products from Russia to the EU.¹⁰

Economic Sanction Imposed by UK: The British government slapped targeted economic sanctions on five Russian banks and three wealthy individuals with close ties to President Vladimir Putin. Their British assets were frozen, and they were barred from travelling to the country. In addition, the British government banned its country's financial institutions from conducting transactions with the Russian central bank, its foreign ministry and sovereign wealth fund. Furthermore, it would phase out imports of Russian oil by the end of the year, a move coordinated with the United States.

Sanctions Imposed by Other Allies: Switzerland has restricted the export of certain goods, banned transactions with the Russian central bank, and cut the country off from the SWIFT payment system. It has also announced the freezing of Russian financial assets setting aside a deeply rooted tradition of neutrality. Australia announced the prohibition of the import of oil, natural gas, coal and other energy products from Russia. Australia has brought 11 Russian

banks under sanction, including Sberbank, VTK Bank, VEB, and several government entities. All Canadian financial institutions would be banned from engaging in transactions with the Russian central bank. Canadian and Japanese governments said that they would strip Russia of normal trade relations.

US and EU Military Support to Ukraine

The United States has been Ukraine's leading security assistance provider. It has committed approximately \$8 billion in security assistance to Ukraine since the beginning of the Biden Administration.¹¹ US's security assistance committed to Ukraine includes over 1,400 Stinger anti-aircraft systems, over 6,500 Javelin anti-armour systems, 126 155mm Howitzers, 20 Mi-17 helicopters, 200 M113 Armored Personnel Carriers and a wide range of other weapon systems and ammunitions. Furthermore, the EU has set aside 2 billion euros to supply military equipment to the Ukrainian Armed Forces.¹² The British government has supplied a wide range of weapons systems to Ukraine. All these state-of-the-art weapons have increased the combat capability of Ukraine to fight against Russia. They have succeeded in slowing down the Russian onslaught to a great extent.

Russia's Allies' Stand

Against western and US sanctions and condemnation, several countries have backed Moscow over its actions. After the conflict, China called for restraint amidst its endeavour to strike a delicate balance between its partnership with Russia and its relationship with the West from deteriorating.¹³ India's Prime Minister Narendra Modi called for an immediate cessation of violence. In addition, he demanded unified efforts from all parties. The Indian leader reaffirmed his long-held belief that the differences between Russia and the NATO group can only be resolved via dialogue.¹⁴

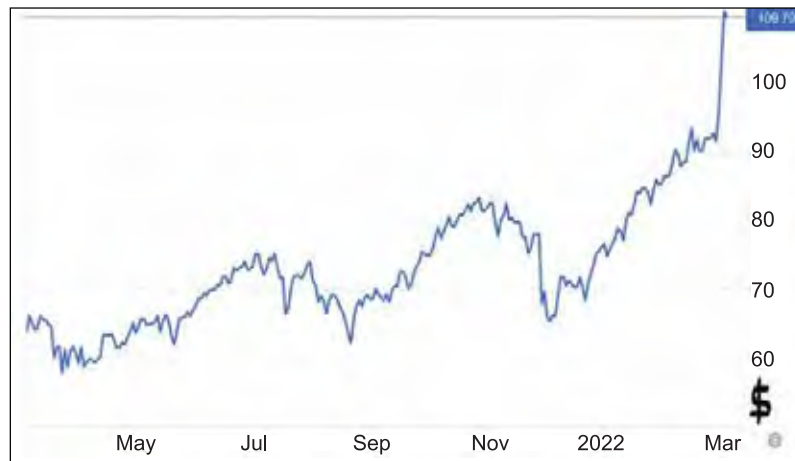
Myanmar's military government said the Russian conflict with Ukraine was "justified" and demonstrated Moscow's position as a world power. Syria quickly recognised the two breakaway regions in eastern Ukraine, the Luhansk People's Republic and Donetsk People's Republic, as independent states. Venezuelan President Nicolas Maduro has expressed support for Russia's actions in Ukraine. Iran called for restraint but blamed the US and NATO for the escalation of the situation in Ukraine. North Korean leader Kim Jong-un demanded that the United States end its "hostile policy of isolating and weakening" Russia.¹⁵

All-encompassing Effect of Russia-Ukraine Conflict on International Economy

The sanctions imposed by the US, EU and Great Britain and subsequent breach of production and logistics chains led to a massive setback in global

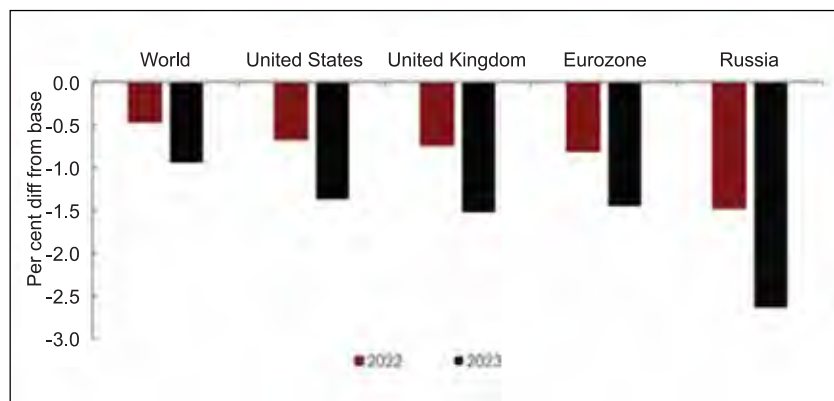
trade. The global economy has entered uncharted territory since the beginning of the Russia-Ukraine conflict on February 24, 2022. The induced challenges have surfaced on various fronts. Oil and gas prices have risen to their highest levels in nearly a decade due to the turmoil in the energy markets and geopolitics caused by the conflict between Russia and Ukraine. Oil accounts for approximately 3% of the GDP of world. Russia has a major impact on international energy markets. Competing with Saudi Arabia and the United States, it is one of the world's top three crude producers. Russia produced 10.5 million BPD (14% of the global supply) of oil and condensate in 2021.

Figure-1: Spike in oil prices amid Russia-Ukraine conflict



Source: tradingeconomics.com

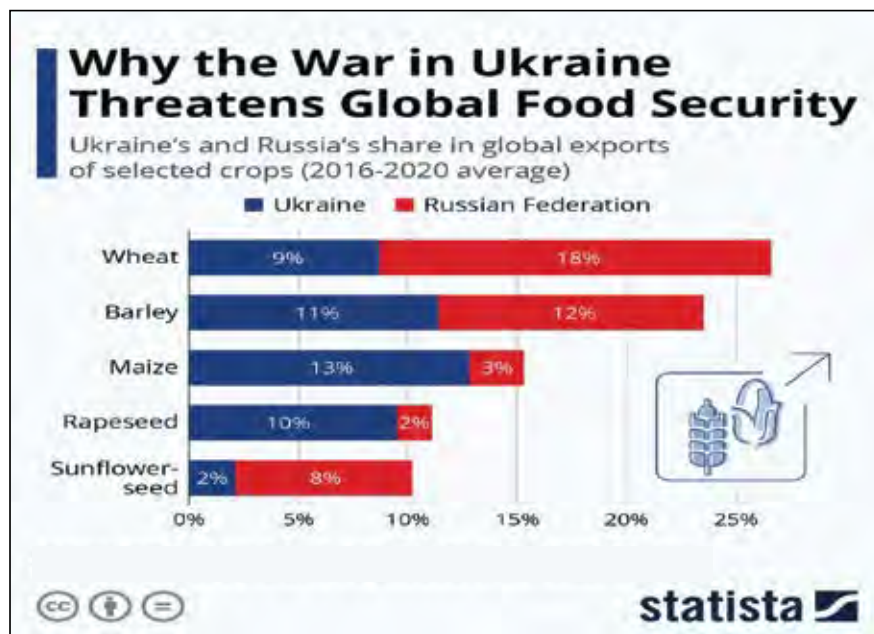
Figure-2: The GDP cost of the conflict for the global economy



Source: National Institute of Global Econometric Model, NIGEM

Ukraine and Russia, known as “the breadbasket of Europe”, are the major exporters of the world’s basic foods. The conflict has caused food price inflation since its inception on February 24, 2022. Disruption in international trade has mainly affected the import-oriented countries in Asia, the Middle East and Africa. The conflict will have a ripple effect, which leads to a “cascading risk” of the global food crisis.¹⁶ Depending on the duration of the conflict, its impact at the country level will depend on the economic links with Russia and Ukraine and their exposure to the global economy.

Figure-3: Ukraine - Russia’s share in global exports of selected crops (2016-2020 average)



Source: Food and Agriculture Organization of the United Nations

Effect of Russia-Ukraine Conflict on EU

In 2021, the EU imported roughly 40% of its natural gas, more than a quarter of its oil, and roughly half of its coal from Russia.¹⁷ Despite bold pledges to cut ties with Russia, European countries have opted for cheap energy. Since Ukraine’s conflict began, the amount of Russian oil and gas entering Europe has increased. According to Bruegel,¹⁸ Europe sent Russia around €22 billion for oil and gas in March 2022 alone.

Map-2: The most important gas lines in Europe

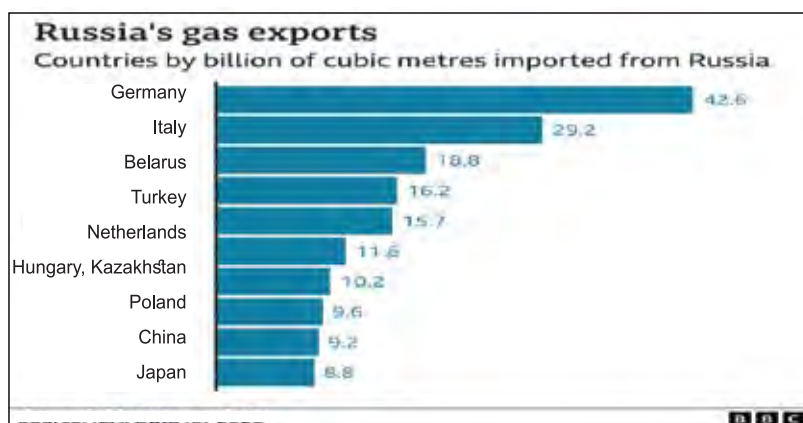


Source: European Network of Transmission System Operators for Gas

The specific after effects are briefly discussed below:-

a. **Delicate Energy Security Off-Balance:** By 2022, the European Commission hopes to have found a replacement for Russia's 101.5 billion cubic meters of gas. According to the plan, increasing imports to Europe from other countries could account for nearly 60% of the reduction, with another 33% coming from new renewable energy generation and conservation measures. Germany is particularly vulnerable because it imports almost a third of its oil and half of its natural gas and coal from Russia.

Figure-4: EU countries gas import from Russia by billions of cubic meters

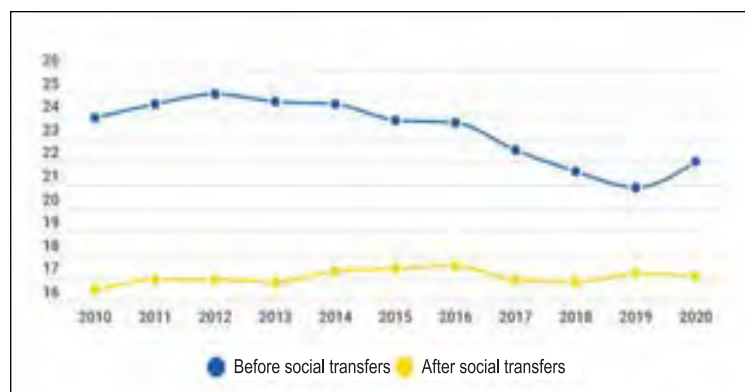


Source: International Energy Agency, data for 2020

b. **Growth Stagnation:** The conflict in Ukraine risks upending Europe's economic recovery. The fighting triggered a tremendous humanitarian crisis which made nearly seven million Ukrainians leave their home country. Because metals, food, oil, and gas exports from the region have been hampered, inflation has risen to an unprecedented level due to the fighting and the sanctions that followed. Real economic growth in the EU is anticipated to dip below 3% in 2022, down from 4% before the conflict. Trade disruptions or economic sanctions might drive Europe into recession.¹⁹

c. **Inflation Exacerbates Poverty:** Ukraine and Russia are important energy and agricultural product suppliers. However, as conflict damages manufacturing facilities, the cost of many essential goods will continue to climb, especially those that are difficult to replace, such as wheat, fertilisers, and gas. As a result, it is now anticipated that inflation in the euro area will exceed 6% in 2022, an increase of 2.5 percentage points over forecasts made a some months earlier.²⁰ These increased costs may inhibit demand. Conflict-induced price hikes of approximately 2 to 2.5 percentage points might reduce real private consumption in the European Union by 1.1%. Moreover, rising food and energy prices would severely impact low-income households.

Figure-5: Share of the population at risk of poverty (in %)



Source: European Investment Bank

d. **Credit Desiccation:** The conflict has forced some European banks, like Raiffeisen, to consider pulling out of Russia. By the end of 2021, the exposure of European banks to Russia was €76 billion, while exposure to Ukraine was €11 billion.²¹ The biggest threat to the EU economy is that credit is drying up. Credit standards in Central and Southern Eastern Europe have begun to rise. The stress placed on EU firms may also cause loan quality to deteriorate, making banks hesitant to lend. The swift structure is a highly complex network. The impact of banning Russian banks from SWIFT led to a lot of self-sanctioning, which was very harmful.

e. **Growth Downgrades:** The Latest Regional Economic Outlook of the International Monetary Fund (IMF) has lowered the growth forecasts for Europe. For advanced economies, projected growth was cut by one percentage point to 3 percent in 2022. With Ukraine and Russia excluded, the predicted growth rate for emerging economies has been lowered to 2.7 percent by 1.5 percentage points. It is anticipated that some significant economies, including those in France, Germany, Italy, and the United Kingdom may barely grow or even decrease for two consecutive quarters this year.

Figure-6: Economic forecast of Europe (real GDP growth, percentage)

Economic forecasts: Europe (real GDP growth, percent)			
	2021	PROJECTIONS	
		2022	2023
Europe	5.9	1.6	1.9
Advanced European economies	5.6	3.0	3.2
Euro Area	5.3	2.8	2.3
France	7.0	2.9	1.4
Germany	2.8	2.1	2.7
Italy	6.6	2.3	1.7
United Kingdom	7.4	3.7	1.2
Emerging European economies	6.7	-1.7	1.0
Russia	4.7	-8.5	-2.3
Ukraine	3.4	-35.0	-

Source: IMF World Economic Outlook database, April 2022

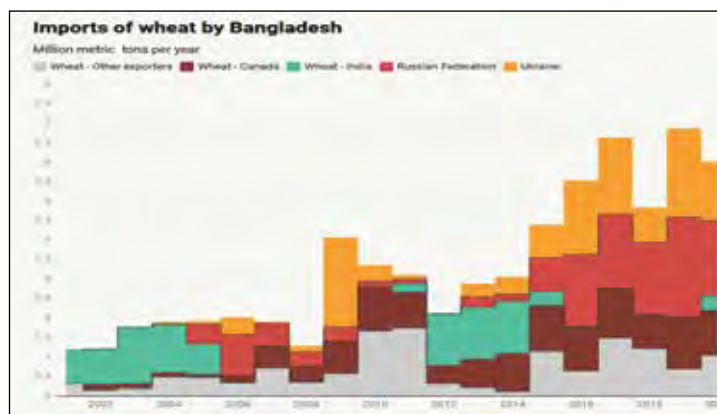
It is anticipated that activity will decline in Russia by 8.5% and in Ukraine by 35%.²²

Effects On Bangladesh's Economy

Bangladesh is already feeling the heat of the Russia-Ukraine conflict in many ways. If the conflict continues for a more extended period, the impact will intensify. The import bill has exceeded the export earnings. Being an oil-importing country, Bangladesh had to adjust the fuel price with the price of the international market. High oil prices have a domino effect that rises the cost of practically all necessities. The major sectors where the impacts of the conflict have pronounced their presence are as follows:-

a. **Rise in Staples Price:** The impact of the Russia-Ukraine crisis on the international trade of essential supplies, like wheat and vegetable oils, is disproportionately felt in Bangladesh. Bangladesh has previously relied heavily on rice. But since 2000, wheat consumption has increased threefold. As a result, more than 80% of Bangladesh's wheat needs are imported. Since 2005, the proportion of such imports from Russia and Ukraine has increased, reaching more than half of the total (Figure 7). As a result of the disruption of those sources, Bangladesh will need to find a low-cost replacement.

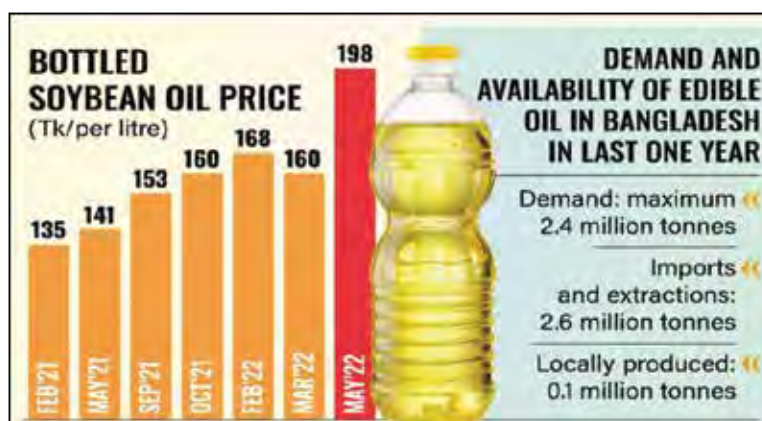
Figure-7: Import of wheat by Bangladesh (in a million metric tons per year)



Source: COMTRADE²³

b. **Upsurge in Edible Oil Price:** A little over 75% of the world's exports of sunflower oil come from Ukraine and Russia. The war has increased the cost of sunflower oil and other vegetable oils. Bangladesh's vulnerability has worsened due to trade restrictions put in place by significant vegetable oil suppliers. Bangladesh imports 80% of its palm oil from Indonesia. About two-thirds of Bangladesh's soybean imports come from Argentina. However, implementing an export levy on palm oil by Indonesia and rising of export tax on soybean by Argentina may limit the total supply of these items in the global market. These reasons have kept the price of vegetable oil at record highs and raised import expenses for countries like Bangladesh.

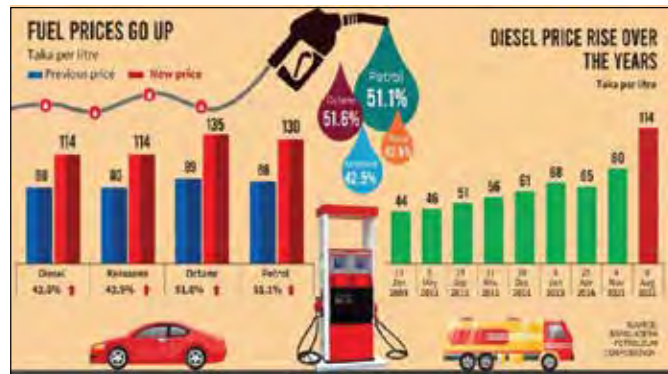
Figure-8: Price hike of edible oil amidst Russia-Ukraine conflict



Source: Trading Corporation of Bangladesh (TCB)

c. **Higher Fuel Price** : Due to sanctions on Russian oil, the world energy market is experiencing frenzy. Bangladesh is already under pressure due to hefty import fees. Since the Russia-Ukraine crisis first broke out, Bangladesh Petroleum Corporation (BPC) has reported a staggering loss of about Tk 93 crore per day due to rising oil prices internationally. BPC has almost doubled the price of fuels on August 6, 2022 to survive and continue the import. The chain impact of rising oil prices is felt by an increase in the cost of other necessities.

Figure-9: Recent price hike of the fuel oil



d. **Russian Investment in Bangladesh:** The Rooppur Nuclear Power Plant (RNPP) is a large project being implemented by Rosatom State Nuclear Energy Corporation, Russia. The project is scheduled to be fully operational by 2024. It's a USD 12.65 billion project which is scheduled to be completed by 2025. However, Russia's Bank for Development and Foreign Economic Affairs (VEB) has ordered halting payments for Bangladesh's Rooppur Nuclear Power Plant project as SWIFT has put sanctions on the bank.²⁴ Russia is sending money for machinery through brokers rather than directly to Bangladesh, which may offset the project cost and schedule.

Photo-1: Russia financed Rooppur Nuclear power plant in the offing



Source: Rosatom State Nuclear Energy Corporation

e. Rising Fertilizer Cost: The Russia-Ukraine conflict has exacerbated price hikes for all types of chemical fertilisers. Bangladesh's agriculture, particularly rice production, relies heavily on using fertilisers. Over 1.2 million tons of fertiliser is imported annually by Bangladesh. Nearly 75% of Bangladesh's potash requirements are imported from Belarus (41%) and Russia (34%).²⁵ Due to US-slapped sanctions on Belarus' state-owned potash producer, Belarus Potassium Corporation, importers from Bangladesh are now facing trouble. As a result, Bangladesh will likely have to source these ingredients from other countries and pay higher prices. The government got a price quotation for potash at \$1200 a ton – fourfold higher than last year's price of \$300 - against a recent import tender.²⁶

Table-1: Production and imports of major chemical fertilizers in Bangladesh (000' MT)

Year	Production				Import			
	Urea	TSP	DAP	MOP	Urea	TSP	DAP	MOP
2018/19	783	97	24	0	2045	584	803	793
2019/20	797	104	73	0	1699	566	813	789
2020/21	1034	91	102	0	1308	386	1426	686
2021/22*	798	71	102	0	1566	675	1630	903

Source: Ministry of Agriculture; Department of Agriculture Extension; Bangladesh Agriculture Development Corporation

f. Feed Cost : Bangladesh imports almost half of its corn and soybean cakes – the main ingredients of feed. These are seeing rising global prices as supplies are uncertain from two major producers- Russia and Ukraine. The scarcity of animal and poultry feed products in the coming months could compound the food security impacts from disruptions of feed ingredient supply. It may hurt the flourishing livestock sector of Bangladesh.

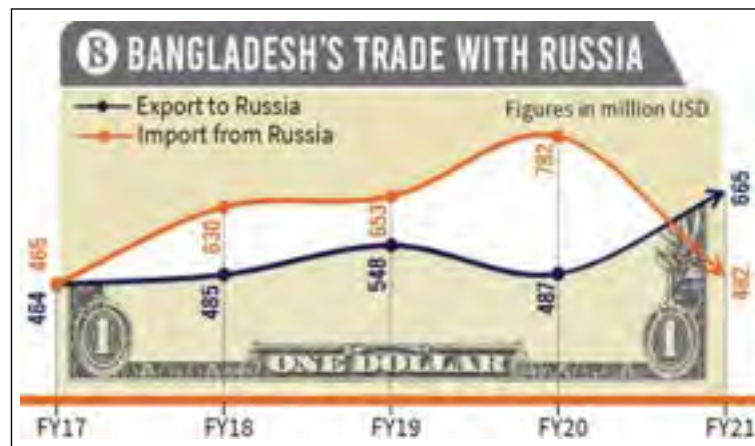
Figure-10: Raw material of feed import state of Bangladesh



Source: FAOSTAT Food balance sheet 2022

g. **Export Earning:** Bangladesh's commerce with Russia will be impacted by global sanctions imposed on Russia. Russia is a market for ready-made garment (RMG) items from Bangladesh. In FY 2021, Bangladesh exported USD 665 million to Russia and imported USD 475 million from Russia.²⁷ In the last seven (July-January) months of FY 2022, Bangladesh's exports to Russia amounted to \$459 million, which was 43.28% higher than in FY 2021.²⁸ Sanctions mean Bangladesh will have to find alternative markets to export these items.²⁹

Figure-11: Bangladesh's trade with Russia



Source: Bangladesh Bank

Ways Forward to Cushion the Impact of the Conflict

Even once it is finished, the Russia-Ukraine confrontation will endure for a while. Bangladesh is likely to face the effects of the crisis for longer and should be ready for that because it will take time for the economy to recover from the damages.³⁰ However, the following measures may act as a cushion to absorb the negative impacts of the conflict on the economy of Bangladesh:-

a. **Reining the Rogue Import Bill:** As import payments continue to climb in an uncertain conflict phase and beyond, the government should employ its foreign currency with care. In eleven months of the most in the recent fiscal year 2021-2022, import payments reached a record high of \$75.4 billion and are projected to surpass \$80 billion when the annual number is released. The government and the central bank have already taken several measures to safeguard the reserves by controlling the soaring imports. Hefty taxes on certain non-essential commodities, enforcement of a high margin on the opening of letters of credit for the import of expensive and non-essential items, and restrictions on government personnel's international travel are a few examples of practical measures.³¹

b. Finding Alternative Measures to Trade with Russia: Russia is a big market Bangladesh cannot afford to lose. The prohibition of certain of its banks from the Swift payment system, which is essential for international money transfers, has complicated bilateral trade. Bangladesh would have to take alternative measures through currency swap if it was unable to pay Russia due to the Swift ban. Barter system can be an excellent option to continue the trade between Bangladesh and Russia.

c. Finding Substitute Source to Import Wheat and Fertilizer: Bangladesh imports almost 40% of its wheat need from Russia and Ukraine. New deal has to be inked in time to import it from other potential exporters like Canada, USA and India to ensure food security. Most of the Muriate of Potash (MOP) fertiliser – one of the critical factors behind good grain production is imported from Russia and Belarus. Due to the sanction and supply line breakage from those two countries, supply of MOP has to be ensured from Canada or other MOP producer countries to keep the yield high.

d. Maintaining Austerity to Save Energy: 33.51% of the total electricity is produced in Bangladesh by Diesel and Furnace oil-fuelled power plants.³² To save high priced fuel, load shedding may be planned, keeping in mind not to hamper export-oriented production. It will save foreign currency and reduce import bills as well.

e. Expansion of Social Safety Net: Government should allocate adequate resources for social safety net programmes for poor and low-income families on a larger scale. In this respect, subsidies for critical daily commodities must continue until the crisis ends and normalcy returns regarding price hikes.

f. Re-Evaluation of Development Projects: The timely completion of mega projects vital to economic growth should be completed in time so that their dividend can be tapped. Efforts should be made to expedite projects which are near completion rather than initiate new ones. To reduce public expenditure, C category projects in Annual Development Plan may be kept in suspended animation.

g. Extending Viable Farm Subsidy: Bangladesh's economy is highly dependent on agriculture. Hence, a poor yield will adversely affect the Gross Domestic Production (GDP), challenging the overall economic well-being. According to the provisional calculation of BBS, the contribution of agriculture to the GDP in the Financial Year 2021-22 is about 11.50 percent.³³ To ensure seamless agricultural production, the supply of fertiliser and diesel for irrigation is of utmost importance. To control the hike in the domestic market, the government has announced BDT 300 billion to subsidise fertilisers in FY 2022-23.³⁴

Conclusion

The eminent French philosopher Jean-Paul Sartre (1905-80) aptly remarks, "When the rich wage conflict, it's the poor who die." The war in Ukraine risks upending the world's economic recovery. Increased economic sanctions could plunge Europe's economy into stagnation. Countries like Poland and Hungary, located near Ukraine and hosting vast numbers of Ukrainian migrants, are particularly experiencing steep economic growth declines. In addition, Italy and Germany, heavily dependent on Russian oil and gas, are likely to be affected by high energy prices imported from alternative sources.

The conflict between Russia and Ukraine erupted just as the world was beginning to recover from the effects of more than two years of the COVID-19 pandemic. Though EU countries are sourcing their requirements from other oil-producing countries, small and developing countries are having trouble because of their limited financial resources. Bangladesh is no exception. Cutting the import bill, maintaining austerity in using energy, finding alternative sources for oil, food grain and fertiliser, ensuring much-needed subsidies to agriculture, expanding the social safety net and pausing low-income generating projects to halt may cushion the economic hardship to an endurable extent.

To alleviate the economic hardships caused by the COVID-19 pandemic, most countries provided generous financial assistance to their citizens through direct payments and food subsidies. As a result, inflation rates are rising worldwide, and the most advanced economies have reached levels not seen since the early 1980s. As these countries tighten the money supply, fears of recession loom large. Moreover, the Russia-Ukraine conflict has made the prospects of post-pandemic economic recovery for the countries like Bangladesh more challenging. The moment has come for collective global action to address these concerns. The sooner the conflict ceases, the better it is for the world.

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Brief Biography



Colonel Mohammad Nawroz Nichoshier, psc, G was commissioned on 16 Jun 1995 with 32 BMA Long Course. His parent unit is 24 Field Regiment Artillery. Besides serving in his parent unit, he also served in Headquarters Logistics Area, Border Guard Bangladesh, 33 Artillery Brigade and Army Headquarters in different capacity. Besides two masters from BUP, he also achieved a third one from Dhaka University in Criminology and Criminal Justice. He has served the United Nations twice, as a contingent member in Liberia and as a Military Observer in Democratic Republic of Congo. He has commanded an artillery regiment in Chattogram Hill Tracts. Presently he is serving as Colonel Administration at Area Headquarters, Cumilla. He evinces interest in philosophy.

Padma Bridge and Its Potential Effects on International Trade

Colonel Ahmed Sharrif Manee, BSP, afwc, psc

Introduction

The Padma River¹ has always been an integral part of Bangladesh's socio-economic life but is seen as a mammoth obstacle to the development of Southern and Southwestern part of the country. This geographical barrier was negotiated with the inauguration of the Padma Bridge on 25th June 2022. The self-financed 6.15 kilometers long two-decker road-rail bridge is indeed an engineering marvel as well as the most significant communication structure in the history of Bangladesh. The road section of the bridge is completed and in use since the bridge's inauguration. Construction of the rail section of the bridge is ongoing under the name "Padma Bridge Rail Link Project" which is scheduled to finish by 2024. The rail link will create connectivity between Dhaka and the South and South-western part of the country namely Jashore, Khulna and Payra Port.²

Asian Development Bank (ADB) estimates in its Project Completion Report that the bridge will increase Bangladesh's national gross domestic product growth by 1.2% and the gross product in the south-western region by 35%.³ The road network through the bridge is supposed to connect with the A-1 line of the Asian Highway which can make South-western part of Bangladesh an international hub for trade.

Geographically Bangladesh is in a blessed location with the Bay of Bengal's easy-lying slope having natural options for seaports. Bangladesh already has two functional seaports at Chattogram and Mongla, Khulna. In addition, the Government of Bangladesh has constructed a seaport in Payra, Patuakhali. With the improved communication network with the entire country coupled with Padma Bridge will surely have a positive impact on the country's economy.

Padma Bridge and the Padma Bridge Rail Link Project have created further opportunity for Bangladesh to become an international hub of trade. If the true potential is unlocked the South-western part of Bangladesh can also go through rapid industrialization and tourism boost. The objective of this paper is to assess the potential impacts of Padma Bridge in improving international trade for Bangladesh.

Transportation Efficiency Increased by Padma Bridge

Before construction of Padma Bridge, the only way of crossing the river was by ferry services through Mawa-Bhanga or Daulatdia-Paturia route. The

project inception report by Asian Development Bank (ADB) indicates that both time and money can be effectively managed by Padma Bridge's operation. From Dhaka to Khulna using the Padma Bridge journey time has decreased almost 9 hours and 15 minutes compared to crossing Mawa by ferry. For Jashore, it saves approximately 9 hours and 35 minutes.

Table-1: Transportation benefit projection of Padma Bridge

Year End (June)	Project Benefit (USD Million)						Total Benefit
	Road User Benefits			Non-Road User Benefit			
	VOC	TTC	Subtotal	Ferry	Land	Utilities	
2023	213	234	447	51	0	0	499
2024	234	256	490	54	0	0	545
2025	255	279	534	58	0	0	592
2026	284	299	583	61	0	0	644
2027	312	320	632	64	0	0	697
2028	340	341	681	68	0	0	749
2029	368	361	729	72	0	0	801
2030	395	382	777	76	0	0	853
2031	424	402	826	81	0	0	907
2032	453	423	876	85	0	0	961
2033	482	444	926	90	0	0	1016
2034	511	464	975	96	0	0	1071
2035	539	485	1024	101	0	0	1126
2036	568	505	1073	107	0	0	1181
2037	597	526	1123	113	0	0	1237
2038	626	547	1173	120	0	0	1293
2039	655	567	1222	127	0	0	1349
2040	684	588	1272	134	0	0	1406
2041	713	609	1322	142	0	0	1463
2042	742	629	1371	150	0	0	1521
2043	770	650	1420	159	0	0	1579
2044	799	670	1469	168	0	0	1638

* O&M = operation and maintenance, TTC = travel time cost, VOC = vehicle operating cost.

Source: Project Administration Manual of Padma Multipurpose Bridge Project ⁴

Statistics shown in US\$ Table 1 indicates that by the end of FY 2023 Padma Bridge will gain almost 499 million worth of transportation cost benefit by road. The amount will gradually rise up to US\$ 1.6 billion within 2044. Logically it is assumed that the transportation operation through the bridge will be far more efficient and beneficial when the Padma Bridge Rail Link project is inaugurated.

Trade Opportunity between Bangladesh and India

Bangladesh and India share 4,096 kilometers of borders, which is the longest for each nation. Also, there is a historical deep relationship between the two friendly countries. Annual trade between Bangladesh and India has

increased substantially. The potential trade has reached \$16 billion and has scope to increase further. Moreover, Bangladesh, at present is not dependent on few products rather more options have come up.⁵

Figure-1: Trade with India



Source: *The Daily Star*, 30 August 2021

In 2020 India and Bangladesh traded US\$ 8.92 billion worth of products with each other. India's export to Bangladesh was US\$ 7.91 billion while Bangladesh's export to India was US dollar 1.01 billion.⁶ With the overall trade growth, gradually the trade deficit between the two countries is also increasing by a bigger margin. Experts observed that the large and persistent deficit in formal trade between the two countries is augmented by additional trade deficit of similar magnitude from informal trade, which seeks definite attention.

Exports and imports through Benapole land port will have a great impact because of Padma Bridge. Ready Made Garments (RMG) sector is much dependent on raw materials-which comes from India. Around 80% of the raw materials including the RMG sectors are coming from our neighboring countries. Padma Bridge will increase the trade furthermore. Currently, the government collects around 6,000 crore as revenue from Benapole Customs. The amount will further increase to 10,000 crore due to Padma Bridge and its existing road networks.

Table-2: Major imports from India in 2021

Serial	Major Imported Items from India to Bangladesh	In Billions USD
1.	Crude Oil	170.4
2.	Gems, precious metals	88.3
3.	Electrical Machinery	56.7
4.	Machinery including computers	48.4
5.	Organic chemicals	27.2
6.	Plastics, plastic articles	19.3
7.	Animal/vegetable fats, oils, waxes	17.5
8.	Iron, Steel	11.7
9.	Optical, technical, and medical apparatus	11.3
10.	Inorganic chemicals	9.6

Source: Government of India, Department of Commerce, 2021⁷

Having solved the connectivity issue through Padma Bridge and Rail Link, now it is time to focus on our production sector. Until now southwestern Bangladesh does not have much footprint of the heavy industry mainly due to transportation and logistical concerns that persisted before. But now through Padma Bridge and the rail link it offers a unique opportunity to take policies to incentivize heavy industries that can create a market for northern part of Bangladesh. Increasing production by developing industries in both government and private sectors coupled with efficient connectivity will ultimately assist in decreasing trade deficit with India, and it will help Bangladesh's gross production at large.

Trade with Nepal and Bhutan Under BBIN Framework

Nepal and Bhutan are two geographically landlocked countries in the North of Bangladesh. Although the two countries do not share any direct borders with Bangladesh but there are larger trade opportunities under the subregional framework of BBIN (Bangladesh, Bhutan, India, Nepal) and SAARC (South Asian Association for Regional Cooperation) associated countries. A Motor Vehicles Agreement (MVA) was signed by the BBIN members. The agreement would allow member states to ply their vehicles in each other's territory for transportation of cargo and passengers, including third country transport and personal vehicles. Cargo vehicles have permission to enter any of the four nations without the necessity for trans-shipment of goods from one country's truck to another at the border with an electronically given permit.⁸ The agreement suffered a small setback after the Upper House of Bhutan's parliament failed to ratify it. Bhutan's trade with only Bangladesh and Nepal is hampered as it has a bilateral agreement with India about free access to motor vehicles.⁹

Map-1: BBIN Trade



Source: Internet

Table-3: Bangladesh's trade with Nepal (USD Million)

Year	Export	Import	Total Trade
2015-16	17.88	9.43	27.31
2016-17	47.4	9.75	57.15
2017-18	45.3	10.11	55.41
2018-19	38.04	9.80	47.84
2019-20	46.00	9.48	55.48
2020-21	68.66	4.81	73.47

Source: Dhaka Chamber of Commerce and Industry, 2021¹⁰

Table 3 indicates that the growth percentage of trade between Bangladesh and Nepal has stayed almost stable, although there is a considerable hike in Bangladeshi export to Nepal in 2020-21. Iron/Steel, Pharmaceuticals, and Plastic or Plastic articles are on Nepal's top imported product list, while Bangladesh has existing industries of these products already. India is Nepal's largest trading partner by distance, with 69.9% of export and 71.4% of imports share.¹¹ But the Government of Bangladesh and private industries can use cost reduction by Padma Bridge to convince the Nepalese market for cheaper import options. In an exclusive interview given to *the Daily Observer*, Professor Mustafiz Rahman said that the multipurpose Padma Bridge will play an important role for the passenger carriers and private cars and freight carrying vehicles on the roads as it would be used for the four-nation cooperation initiatives of Bangladesh, Bhutan, India and Nepal (BBIN).¹²

Bangladesh, Bhutan, and Nepal are also part of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). The organization has seven members (India, Sri Lanka, Thailand, Myanmar, Bangladesh, Bhutan, and Nepal) with a combined gross domestic product of 4.4 trillion US Dollars. The organization is negotiating a free trade agreement amongst the member nations to create a regional trade zone.¹³ Concurring this agreement Nepal and Bhutan have exciting opportunities for trading by using Mongla and the Payra port in Bangladesh. With the Padma bridge in a reality now, both countries have the shortest access to seaports in Mongla and Payra. Bangladesh should immediately have a comprehensive trade and industrial policy in the form of bilateral, BBIN, and BIMSTEC in consideration to maximize the usage of the potential connectivity created by the Padma Bridge.

Table-4: Bangladesh's trade with Bhutan (USD Million)

Year	Export	Import	Total Trade
2015-16	4.74	21.6	26.34
2016-17	3.21	33.13	36.34
2017-18	4.38	32.28	36.66
2018-19	7.56	49.91	57.47
2019-20	4.36	40.88	45.24
2020-21	6.89	38.83	45.72

Source: Dhaka Chamber of Commerce and Industry, 2021

Trade Opportunity with Padma Bridge's Inclusion with Asian Highway Network and Trans Asian Railway

Asian Land Transport Infrastructure Development project under United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) has initiated the Asian Highway Network (AHN) and Trans Asian Railway (TAR) as an international transport network.¹⁴ The concept of the Asian Highway Network commenced in 1959. An intergovernmental agreement on the Asian Highway Network was adopted in 2003 among 32 countries and came into effect on 4 July 2005. AHN at present encompasses 1, 45,000 kilometers of roads.¹⁵

Bangladesh is one of the thirty-two signatory members of AHN. The AHN is segmented into Continent-Wide Routes, South-east Asian Routes, ASEAN South-east Asian Routes, East Asia and Northeast Asian Routes, South Asian Routes, and North Asia, Central Asian and South-west Asian Routes. Bangladesh is directly connected through the Continent-Wide Route and the South Asian Route.¹⁶

Map-2: AHN and TAR in Bangladesh and the Padma Bridge



Source: Internet

Additionally, the Trans Asian Railway has twenty-eight countries in the agreement to share approximately 1,25,000 kilometers of railway lines. The concept of TAR was initiated by UNESCAP in 1960, and after a long negotiation process, an intergovernmental agreement was signed in April 2006. The agreement came into effect on 11 June 2009.¹⁷ Bangladesh signed the treaty in 2007 and ratified it in 2010.

The Padma Bridge has created a more efficient route for both AHN and TAR. The AH1 Continent Route is already being used in bilateral trade between Bangladesh and India in the Petropole-Benapole crossing. AH1 will create an unprecedented trade opportunity between thirty-five countries through which it passes. Moreover, connectivity between Mongla port and Teknaf can also be realized by AH41 route with the help of Padma Bridge. The full potential of the Padma Bridge will be achieved when the Rail Link project is completed. It will make Bangladesh's inclusion in TAR a reality. The exciting multinational trade opportunities will complement the transportation efficiency of Padma Bridge and help Bangladesh trade at a significantly lower cost and greater volume.

Conclusion

The impact of the Padma Bridge in terms of time and cost is significantly efficient. The impact assessment by ADB indicates that the Padma Bridge can save almost nine hours and fifteen minutes in time and has cost benefit of up to 1.6 billion US dollars per year by 2044. Therefore, traders can now prefer to use the Mongla Port and proposed Payra port more efficiently for both domestic and international trade.

In 2020, there was a trade deficit of over 7 billion US dollars against Bangladeshi Export to India. The Padma Bridge creates a direct and shorter connectivity from Mongla to India. The Government of Bangladesh should take important policy and practical decisions to facilitate trades in India. Additionally, Bangladesh has a new opportunity to grow industries in underutilized Southern and Southwestern areas keeping Indian market in view. In this regard India's growing demand of plastic products, vegetable or animal fats, and iron or steels can remain in focus for both government and private sectors. The cost benefit from Padma Bridge will help Bangladesh to keep the price lower and achieve competitive advantage.

Bangladeshi Ports, including the already built Payra Port, offers shortest sea routes for the two landlocked countries Nepal and Bhutan. The BBIN initiative has created the necessary legal framework to increase trade amongst the signatory countries. Nepal has always been forward about using Bangladeshi ports. The BBIN Motor Vehicle Agreement made that a legal plausibility but the emergence of the Padma Bridge has made it a logistical reality. Although Nepal and Bhutan are significantly smaller markets compared to India, they are full of potential. The combination of the Padma Bridge's connectivity benefit, BBIN MVA and Nepal's eagerness to trade with Bangladesh shows bright future for Bangladesh-Nepal bilateral trades. On the other hand, Bhutan-Bangladesh trade suffers for Bhutan's inability to ratify the BBIN MVA. The government of Bangladesh should take active diplomatic steps to identify and negotiate the issues that are opposing a positive conclusion. By addressing those issues Bangladesh will have another country with an open road to trade with.

The Asian Highway Network and the Trans-Asian Railway Network open new doors to trading opportunities with nations that Bangladesh did not have any direct access to before. The AHN has thirty-one and TAR has twenty-seven other signatories beside Bangladesh. These two initiatives bring back the pre-colonial era routes of Grand Trunk Road and the Silk Road at the west of Bangladesh into a reality again. This time it also connects Bangladesh at her East, with India's Seven Sisters and South-east Asian countries. AHN1 connects to Bulgarian Border in Turkey at the West, which can even give Bangladesh access to European routes if the government can negotiate or even initiate a framework. The Padma Bridge will help Bangladesh to grow its domestic production significantly. This will also accelerate the economic growth and create a sustainable socio-economic development pattern.

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Brief Biography



Colonel Ahmed Sharrif Manee, BSP, afwc, psc was commissioned with 33rd BMA Long course on 29 Nov 1995 in the Corps of Engineers. He is a graduate from Military Institute of Science and Technology, Defence Services Command and Staff College and National Defence College. He commanded various units both at home and abroad. Besides, he also served as staff and instructor at Armed Forces Division, Army Headquarters and Bangladesh Military Academy. Under the blue helmet he served thrice in UNAMEE, Eritrea, UNAMID, Darfur and MINUSMA, Mali. Currently he is serving as Colonel Staff of 11 Infantry Division.

New World Order-Challenges and Recommendations for Future Regional Cooperation

Colonel Sahidur Rahman Osmani, OSP, psc

Introduction

The origin and genesis of the New World Order can be traced to the nine eleven Twin Tower destruction in New York which triggered the US-led 'War against Terror' by attacking Afghanistan and ousted Taliban Government. Coalition forces left Afghanistan when the Taliban took control over Kabul on 15 August 2021. About 2,43,000 people have been killed in the Afghanistan/Pakistan warzone since 2001. More than 70,000 of those killed have been civilians.¹ Simultaneously USA's sanction on Afghanistan has stopped using its reserve. In order to ensure domination over fuel coalition forces led invasion in Iraq and Libya that has destabilized the national economy of those countries and also political Government could not be yet settled due to internal clashes by the different tribes. All those resulted in the massive destruction leaving millions dead and thus created a humanitarian crisis in those countries. On the other hand, Israel has aggravated its occupation in Gaza and Palestine causing frequent killing of many civilians. In these cases condemnation was very reserved.

Syrian civil war resulted in huge casualties of government and anti-government forces. Russia and China provided significant support in United Nations Security Council and Russia directly provided military support for the sustenance of the Syrian Government. In 2014 annexation of Crimea by Russia was aimed at keeping the EU forces out of its dangerous approach in Europe and in turn economic sanction was imposed on Russia. In February 2022 Russian military started its special operations in Ukraine on the plea to stop latter from joining EU, which has caused lots of death and put the whole world under financial pressure. European Union has enforced sanctions on trade and commerce. G7 countries meeting at Madrid on 26 and 27 June 2022, declared Russia and China as a challenge for the security of Europe and United States. Brazil, Russia, India, China and South Africa (BRICS) met in China and they are preparing to play a significant role in global market. On the other hand, European Union and United States of America have enforced economic embargo on Russia which has accelerated worldwide inflation higher and energy sector has been affected globally. It is clearly exposing that economic, political and military order at present context is not functional at its optimum level. No nation is clearly confident on their financial condition and also cannot predict future economic and stable world order. Every nation is now striving to curve the inflation and be self reliant on energy sector.

Present war inside Ukraine, economic embargo and sanction on Russia have accelerated the inflation worldwide including the price of crude oil and Liquefied Natural Gas (LNG) has risen significantly. Energy sector has been affected globally, which in turn fueled the price hike. Energy sector inside

Europe is undergoing a tremendous shortage of supplied gas from Russia. As energy sector influences the world economy, it has a negative impact on the world economy. At present contemporary world order is at challenge which will have paradigm shift into new world order situation.

At the same time, China has increased its antics in Taiwan Strait after the visit of United States House Speaker Nancy Pelosi to the self-governed Island in mid-August 2022. China demonstrated a military exercise around Taiwan Island to expose on 'One China Policy.' BRICS nations remained neutral on the Russia-Ukraine crisis.

What are the likely countries which are grouped together for sustenance of energy requirements and play vital role for inflation? It is important to know how the sanction on Russia has enforced the whole world to accept financial inflation. At this present situation military powers are exposed by the super powers to show the overwhelmed superiority. Energy crisis has grouped many nations to exchange the value of oil in different currencies which has facilitated many countries to tie each other to rescue from this economic recessions. Energy dependency will influence to create new world order. This will give scope to the different countries to get advantages and to utilize their own efforts for sustenance. This has allowed the largest economy to be in a single group to get the advantages out of each other. The secondary resources will be utilized to get the different data to complete this research. The aim of this paper is to identify effects of Russia-Ukraine war, China-United States dominance on Taiwan issues which have made super powers to cooperate in different form to counter recession on financial sector in relation to energy and will look for the probable recommendations to counter future challenges. This study will also analyze how the world order has been affected by present situation and has adversely affected the whole world to bear the financial inflation and scarcity of energy supply.

Background Study

The Gulf War of 1991 is regarded as the first test of the new world order, which was not accepted over last 32 years. Russia launched special operations inside Ukraine on 24 February 2022 to free Ukraine from Arms and new Nazism with the plea that Ukraine may not be allowed to join EU. On 01 October 2022, Russia annexed Donetsk, Kherson, Luhansk and Zaporizhzhia. Presently Russia is fighting to capture Eastern Ukraine. Russia has also intensified attack on Southern Ukraine, Odessa and Mykolaiv. United States of America and European Union have provided all types of support to Ukraine and enforced economic sanction on Russia. Ukraine launched small attack on Russian key installations. European Union approves the process of application of Ukraine to be a member. According to United Nations report on Ukraine total 5597 civilians were killed leaving 7890 injured and 972 children dead upto August 2022. Commander in Chief of Ukraine General Zelenskyy declared nine thousand soldiers were killed. Russian General expressed on 25 March 2022 that only 1351 soldiers died. The actual figure of casualty is not clear till now. United Nations has published that from Ukraine one crore ten lac civilians have become refugee in different countries.

According to United Nations Development Program, seven crore ten lac people in the world have become poor due to price hike. United States of America and European Union provide financial and military equipment support to Ukraine to fight against Russia. Similarly due to sanction on Russia exchange of trade has become difficult and imbalance of global market on financial transactions becomes acute. Trade between the state and region has increased to avoid sanctions as Russia, India and China trade among the states with their currencies

Over last 25 years Russia warned that expansion of NATO closer to Russia would be taken seriously and that's what happened. Following map shows the Russian Special Operations inside Ukraine.

Map-1: A map showing two alleged Russian plans



Source: BILD and Center for Strategic and International Studies.

Russia has been offended over a blatantly broken promise made to Mikhail Gorbachev and Boris Yeltsin in the early 1990s by German Chancellor Helmut Kohl, US President H. W. Bush and Bill Clinton that the NATO would not expand east of Germany.² Russia being observer for long time launched special operations inside Ukraine which resulted in the change of military, financial and energy sectors globally.

Military Exercise Near Taiwan Island by China

United States Speaker Nancy Pelosi's visit on 02 August 2022 to Taiwan has fueled the relationship between United States and China.

Beijing is strict on the One China Policy and conducted Military Exercise near Taiwan Island. Seventeen Chinese aircraft and five ships were operating around Taiwan. Tensions were further inflamed on 18 August 2022. China has also put sanctions on Lithuania's deputy transport minister Agne Vaciukeviciute. Frequent conduct of Military Exercise near Taiwan clearly exposes future ambition of China to be more aggressive surrounding this Island. Cooperation between Taiwan and other states resulted in catastrophic situation in Asia. In this case trade supply chain with Europe and United States, consisting 30-35% shipping will be challenging. Ambition to stop Chinese trade and export will put more pressure on recession also. Again, regional based trade will reduce dependency on international market.

European Union, G7 and Rule Based International Order

G7 group of countries held meeting in Germany from 26-28 June 2022. At the same time European Union summit was held in Brussels. G7 countries have populations of 987 million with a Gross Domestic Product (GDP) of US\$ 33.93 trillion.³ These meetings have significant influence to work together on security and strategies to counter Russian and Chinese dominance. The G7 led by United States determined to continue with the existing rule based international order. In the context of the competing views on the international order, it is important to understand what the rule based international order is. The rule based international order emerged in the 1990s under the shadow of the liberal international order, a term widely used during the Cold War period to describe the order that liberal democratic states created among them. These two terms are often used interchangeably.⁴ Therefore the term "rule based international order" is the post-Cold War world order. Western countries led by the United States have taken it for granted that they are the world's norms setters, influencing other countries' policies, specially countries of the global south through Washington (a consensus reached among the World Bank, The International Monetary Fund and the United States Department of Treasury which refer to market based economic policies and diminished role of the state.⁵ However, this type of world order did not sustain for Iraq, Afghanistan and Libya.

United States and North Atlantic Treaty Organization (NATO) consider China and Russia as challenge which has been clearly exposed by the NATO Secretary General Jens Stoltenberg who said that "for the first time, we will address China and challenge it poses to our interest, security and values."⁶ In fact, the United States led rule based international order which was conceived in far more ambitious terms to enable the United States to remain the only

super power in the world or more precisely a unipolar world.⁷ War against Afghanistan, Iraq and Libya could not bring peace and stability. On the other hand, policy on killing of the people of Palestine and illegal occupation of Israel has created disparity of International policy. Afghanistan's reserve was frozen by super powers due to which the people of Afghanistan are facing tremendous inflation and living under poverty. This type of situation will facilitate to change the present world order. This expresses regional cooperation among the states for future challenge. As the European Union and NATO declared two super powers as challenge for the security, so in this back drop, will it be feasible for Europe to keep away from Russian energy resources? Forthcoming winter in 2022 will change the economic situation and higher inflation will change the course of world order. China has become an important stakeholder among economic super powers. As the fastest growing economy in future which will dominate other super powers and the center of economy will be shifted in future towards Asia.

From above discussion it is vivid that Europe and Russia are interdependent on energy resources. Again China has trade balance regarding oil with Russia. Russia, India, Iran and few smaller states are also engaged with the trade of oil which clearly links to regional based trade to sustain against recession.

Brazil, Russia, India, China and South Africa (BRICS)

Brazil, Russia, India, China and South Africa (BRICS) have three billion population with a Gross Domestic Product of 23.5 trillion. Leaders of BRICS nations met in China on 23 and 24 June 2022. "On the other hand, under the auspices of the United Nations (UN), a body of international law has been developed which is central to promoting economic and social development as well as advancing international peace and security. BRICS countries and countries in the Global South are committed to international law and the UN, cause international law is enriched in conventions, treaties, and standards. China and Russia had significant role in Syria and Iran to counter the western influences. Russia gave direct military support to defend Bashar Al Asad and exposed to retain its global impact in Middle East, which reflected its dominance in the region."⁸

Energy Resources of Russia

The economy of Russia has gradually transformed from a planned economy into a market-oriented economy. As the fifth-largest economy in Europe; it has enormous oil and natural gas. As an energy super power it has the world's largest natural gas reserve, the second-largest coal reserve, the eighth-largest oil reserve, and the largest oil shale reserve in Europe. It is the world's leading natural gas exporter, the second-largest natural gas producer, and the second-largest oil exporter and producer. The most vulnerable region to such energy-based pressure is Europe, particularly the Central and Eastern European states like the Czech Republic, Hungary, Bulgaria and Greece,

because of their high dependence on Russia for natural gas.⁹ Russia has demonstrated its willingness to use energy as a political tool, cutting off natural gas supplies to European consumers several times over the years-in 2006, 2009 and more recently in 2014-15, when Gazprom halved supplies through the Nord Stream to maximize Moscow's political influence.¹⁰ Despite attempts by the EU to lessen their dependence on Russian gas through diversifying sources of supply, they have met with only moderate success so far. Therefore, the shale gas revolution in the US has led to the expansion of US LNG exports to Europe which could help these countries reduce Russian influence.¹¹ Presently Nord Stream 1 gas line has got leaked and suffering from maintenance problem. Europe is in need of gas energy which has fueled higher inflation. The leaders of EU are planning for alternative energy resources.

Challenges and Effects of Russia-Ukraine War

The significant effects of Russia-Ukraine war are as follows :-

- a. United States and European Union sanctions on energy supply of Russia.
- b. The world is facing tremendous price hike of essentials, energy resources and worldwide recessions. The synthetic effect of recession is yet to destabilize the economy.
- c. Russian SWIFT was deactivated to interrupt international transactions.
- d. International transactions have changed its way of dealing by passing the sanctions.
- e. Regional transactions will get priority on trade and export.
- f. Arms business by super powers to destabilize the regional security and cohesion.
- g. Energy Security is at danger for the developing and also for developed countries.
- h. Russia and China have participated in a series of military exercises from 17 August, a sign of Moscow's deepening ties with Beijing and of the Kremlin's desire to project a counter role image despite the mounting costs of its war in Ukraine. The Vostok war games commenced on 17 August 2022, in Russia's Far East. Total three hundred thousand troops from China, India and Mongolia participated in this manoeuvres to expose to be united for any further escalation, symbolism by fighting in Ukraine, which is now into its ninth month. Western officials and defence analysts say they illustrate the "friendship without limits" that was pledged just before war broke out by Presidents Vladimir Putin and Xi Jinping.¹¹ Another symbol of exposing threat to any actions taken in the region will be dealt seriously or this may be the power play of future missions.

i. Following the Russian invasion of Ukraine on 24 February 2022, the country has faced several sanctions and boycotts from the Western world and its allies, a move described as an “all-out economic and financial war” to isolate the Russian economy from the global financial system. The European Bank for Reconstruction and Development has estimated the damage done by the sanctions “triggered the greatest supply shock since early 1970s” which will retract Russia’s economy by 10% in 2022.¹² Each state is trying to group each other to boost each country’s economic performances. Regional based food and energy cooperations will mitigate the fueled crisis. To counter sanctions China, Russia and India have arranged to trade among themselves in different currencies.

Challenge in Energy and Economic Sector

a. **United States of America:** The United States is the largest contributor of gas which has significant contribution for changes in the energy markets. As energy superpower it rivals Saudi Arabia and Russia in the oil and gas markets. For example, in 2012, while US gas price stood at \$3 per million Btu (mmBtu), Germans used to pay \$11/mmBtu and the Japanese paid \$17/mmBtu. Presently this rate has become \$40 per million Btu (MMbtu). Gas customers in various parts of the world will now have the advantage of negotiation better terms with traditional suppliers, and loosen the geopolitical grip of these producers from Russia to West Asia.¹³ With the West Asian region holding the largest oil reserves, it was natural that the region was a major focus of its foreign policy. Hence, during the Cold War, “An even greater benefit accruing from the addition of US LNG to global markets than providing new supplies to its allies would be hastening the decline of the oil-indexed pricing formula. The gas market being regional in nature, LNG suppliers are able to dictate prices. As a result, consumers in Europe and Asia pay a huge premium for oil-indexed gas. However, with the influx of more LNG into the market, the market is becoming more liquid, putting pressure on oil indexed prices as more and more consumers are turning to the spot.”¹⁴

US strategy was primarily aimed at ensuring that the vast oil reserves of the Persian Gulf states did not fall into Soviet hands. Its policy was geared towards preventing these countries from threatening the US’s oil-rich Arab allies. When sanctioned Iraq tried to sell its oil in Euros, threatening the dollar hold over the oil market, Saddam Hussein was removed.¹⁵ With respect to its Asian allies, particularly Japan, which is the top importer of LNG, the post-Fukushima incident led to a steep rise in LNG demand to replace nuclear energy, thereby pushing up prices and impacting the Japanese economy. This could be capitalized by Russia, which is considering building LNG export terminals in the Far East to service Japan. South Korea, the second largest LNG importer after Japan, is also in a similar situation. Hence, US LNG exports would serve to create a more liquid Asian market for LNG and lower prices.¹⁶

b. **Russia:** The economy of Russia has gradually transformed from a planned economy to a market-oriented economy. As of 2021, it was the fifth-largest economy in Europe. Around 70 percent of the world's known conventional gas resources are found in a region which stretches from Russia, Central Asia and West Asia. "Its natural gas reserves are perceived to be the backbone of the energy sector, and more importantly, a powerful tool of the country's domestic and foreign policy. With around 1688 trillion cubic feet (tcf) 47.7 trillion cubic (metres) of natural gas reserves as of January 1, 2013, Russia accounts for about a quarter of the world's total proven reserves. At present, 76 percent of its natural gas is exported to Western Europe through a vast network of pipelines controlled by state-owned Gazprom and transiting through Ukraine and Belarus."¹⁷

Russia's most effective weapon is its gas network, and it has assiduously prevented rival network route to come up. Whenever any former Soviet state has shown an interest in integrating more closely with the West or NATO, Russia has used pricing deutes to terminate gas exports. Some cases in point at Belarus and Ukraine, both of which are important transit states through which Russia's oil and gas exports are sent to Europe.

c. **China:** China is also trying to develop its own vast shale resources, given that it has the world's largest reserve of shale gas. The US EIA estimates that China has total reserves of 1,211 tcf (34.3 tcm) of shale gas, almost 50 percent more than the 862 tcf (24.4 tcm) in US.¹⁸ At present China and Russia emphasize trade of energy. On the other hand, Europe is in need of Russian energy.

OPEC Plus Countries

In Austria on 05 October 2022, OPEC plus nations agreed on major production cuts. Top oil producer agreed to produce 2 million barrels per day. This will again increase the oil price and in turn it will cause higher inflation.

Challenges for Europe Due to Dependency on Russian Oil and Gas

Russia is the third largest oil producer in the world after USA and Saudi Arabia is larger producer of oil than Russia which exports 50 lac barrel each day. More than 50% of this production goes to Europe. UK receives more than 8% of its demand from Russia. USA is not much dependent on Russian fuel. However It was revealed that during war USA has received more fuel than other EU countries. In 2020 USA used to receive 3% of its fuel from Russia. Due to war, USA has requested KSA for increasing oil productions. Though KSA has refused previously to reduce the price of fuel, however presently KSA has

agreed to increase the oil production.¹⁹ Oil alternatives in the world can be mitigated by shipping, however gas alternatives are not available in the world due to the pipeline and its less transportation facilities except Russia. Oil alternatives supplier and country are available in the world. European Union is largely dependent on Russia for gas. It was estimated that 40% of European Union gas import depends on Russia. Russia exports gas 42.6% to Germany, 29.2% to Italy, 18.2% to Belarus, 16.2% to Turkey, 15.7% to Netherlands, 11.6% to Hungary, 10.2% to Kazakhstan and 9.6% to Poland.²⁰

Germany clearly depends on Russian gas. Germany's oil embargo will assure its high inflation. Europe's maximum dependency on Russian energy is another reason of high inflation and economic disorder. Russian Nord Stream 1, the pipeline linking Russia directly to Europe via the Baltic Sea-Gazprom, Russia's state controlled gas giant, reduced capacity by 60 percent in June 2022. Presently it is shut down due to maintenance. In Europe gas prices have soared in manifolds over the past eighteen months, rising from €20 a megawatt hour to €160 a megawatt hour. Presently Russia imposes to trade in Russian currency with the west to pay the pipeline bill to counter the United States Dollar. Hungary raised voice in European Union against sanction on Russian gas and pipelines. Recently Russia has declared to stop supply of gas to Europe through Nord Stream-1 unless economic sanction and arms embargo are lifted. Russia and Turkey blame Europe for economic sanction on Russian energy. Russia started cooperation with India and China by exporting oil by ruble, which made ruble stronger than before.

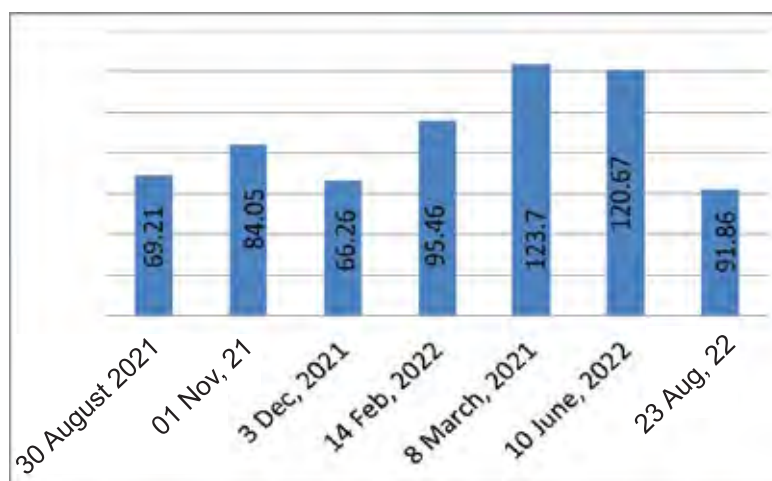
Challenges on Rising Inflation World-Wide Including Bangladesh

Europe is fully dependant on the energy of Russian oil and gas. This will be more acute during winter when the cold wave starts. Due to the increase of price of fuel and gas, overall food and goods price has increased worldwide. Different countries are facing pressure on debt, unemployment problem and inflation. According to *Guardian* published on 24 August, Britain's inflation rate has crossed 10%, about one lac families have become poor. Moreover, in October 2022 inflation rate in Britain has crossed 13%, even in January 2023 inflation rate may go upto 19%. According to July 2022 inflation rate in Germany is 7.5%, Mexico 8.15%, Europe 8.9%, United States of America 8.15%, Netherlands 10.3%, Argentina 71%, and Turkey 79.6%.²¹ It looks Europe could now face gas shortage for several winters as a result of Russian gas supply cut. Annual inflation jumped to 9.6% in the EU in June and 8.6% for the Eurozone. GDP grew by 0.6% for the European Union and 0.7% for the Europe during the second quarter of 2022. It is the energy prices that are fueling inflation. Energy inflation was estimated 42% in June and food and beverage price went up to 9.8%. This price surges do not reflect excess aggregate demand (AD) in the European Union. In fact, the European Union like the United States is moving from deficient aggregate demand to deficient aggregate supply

(AS).²² The shortage of energy supply in Europe will bring to a economic recession from winter 2022, which is visualized by the present situation of inflation. At the same time Russia has also stopped gas supply to Europe.

The inflation rate in Bangladesh jumped to 7.42 percent in May last from 6.29 percent in April according to Bangladesh Bureau of Statistics. Import of oil was reduced due to high price of energy in international market. If the refinery system can be enhanced inside the country, Bangladesh also will be capable to counter present international recession. Actually energy supply and stocks boost the economic condition of a country.

Chart-1: Last one year price difference of crude oil²³



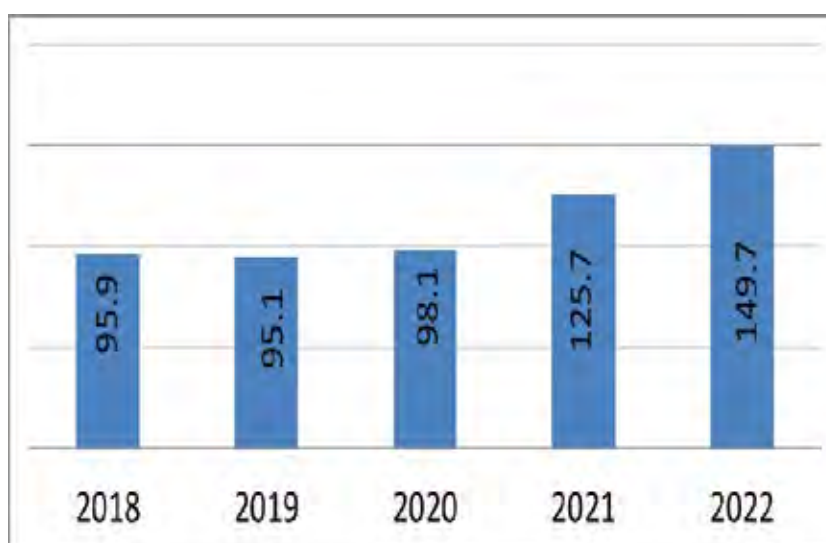
Source: *Prothom Alo*, 10 March 2022, p.7

Russia and Ukraine produce 30% of world wheat and 20% of maize. Due to war export of wheat, maize and other food product has disrupted. The food index of Food and Agriculture Organization of United Nations was 125.7 in 2021 and increased up to 149.7 in August 2022. In last eight months food price index has increased by 20%. Though the price of maize, soybeans, sugar and wheat has decreased due to food corridor organised by Turkey and International community and likely to increase again.

On 19 August 2022 in international market one bushel/36.4 litre in Britain and 35.2 litre in America of wheat price was \$775.75, which was \$758 USD in January. Again due to war in March the same price was \$1294. According to Food and Agriculture Organization main food prices have decreased by 11.5%. Especially price of wheat has decreased by 14.5% due to food corridor agreement between Russia and Ukraine and increase of production in Canada and United States. Many people of developing and developed countries have become poor and standard of living has decreased.

According to Trading Corporation of Bangladesh prices of rice, dal, wheat of flour, sugar and milk powder have increased in many phases. In Bangladesh price of rice has increased from 2.5 taka to 10 taka per kilogram. On 24 February, 2022 price of wheat was 34-36 taka per kilogram, which increased by 16 taka and presently 50-52 taka. Price of lentil has increased by 10-20 taka, price of sugar by 10-13 taka and price of powder milk by 90-120 taka. Prices of all essential goods have increased in manifolds. Moreover recent price hike in fuel has increased the daily expenditure of everyone.

Chart-2: Increases in world food index²⁴



Source: Prothom Alo, 10 March 2022, p.7

Conclusion

In last three decades war efforts by EU, United States, Russia in the Middle East and Asia have been engaged with their own strategy, security and state owned interest. Refugees are moving street to street. On the other hand, disputed countries' political, economic and military powers are broken. This war effort did not bring any good outcome to the affected countries. Only super powers were the main beneficiary of the war outcome. Russian interest is to keep its neighbours free from the sphere of other powers. Equally United States and EU strategic interest is to enhance its defence against Russia. Approval for the application of European Union membership for Ukraine escalated the war. Russia took opportunity for the special operations. Embargo on energy supply of Russia has weakened Europe, where inflation is very high. Presently Europe is facing higher inflation than before. In recent future winter without energy supply from Russia may create difficulties. If the war is prolonged, energy and food supply in the whole world will face higher inflation. Economic

sanctions and energy supply embargo have influenced Russia, China and India to find out the alternative means of transactions in the international market. Bangladesh is also planning to find out the alternative means to trade with Russia and India.

Russia has already imposed bar on trade with Europe in ruble otherwise they would be shrinking the energy supply. Nord Stream 1 was facing mechanical fault and gas supply was off for that. Again it was focused not to trade with Europe without ruble. Russia, Iran, Syria, China are linked within the countries together to balance of trade. Higher energy prices have influenced inflation and price hike in Britain, United States, Europe and all over the world. Sanctions on other nations are influencing many super powers to exchange in different currencies according to choices. No war has given proper dividend to any countries. Thereby all are affected humanly, financially, economically and politically. Human sufferings are also creating imbalance in socio-economic condition of the world. Displaced refugees are spreading and increasing all over the world, which inflict human disorder. All this will create a new world order. With the changing situation of present world order, regional based food and energy security has to be ensured to get away of sanctions. Influence of International currencies and direct dependencies have to be reduced and trade exchange may be done in alternative means within regional cooperations. Regional based uninterrupted production and refinery of energy will facilitate for sustenance of energy. Energy imbalance and higher inflation will force the nation state to make new world order.

Recommendations

From the above discussion, following recommendations may be applicable for regional cooperation:-

- a. Region based food and energy cooperation to mitigate crisis within the region.
- b. Regional based trade exchange by regional currency or scope of transactions on multiple currencies like pounds, Yen, Euro, Ruble or common currencies will reduce the dependency on single currency.
- c. Uninterrupted production and refinery of energy inside the country/region to ensure smooth energy supplies for self-sustenance in energy sector will facilitate to counter any kind of challenges.

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Brief Biography



Colonel Sahidur Rahman Osmani, OSP, psc was commissioned on June 07, 1996. He is a graduate from Defence Services Command and Staff College, Mirpur and attained Masters of Science in Defence Studies from Bangladesh University of Professionals. He has completed Masters of Business Administration. He commanded 30 East Bengal and also served in 34 and 11 East Bengal regiment. He was Instructor of Weapon Wing at School of Infantry and Tactics and at Non Commissioned Officers Academy. He also served as General Staff Officer 2 (Intelligence and Monitoring) at Prime Ministers Office, Armed Forces Division and General Staff Officer 1 (Administration) at Defence Services Command and Staff College. He served in RAB Forces Headquarters. He also served as Sector Commander of Rangamati Sector and Deputy Commandant of Border Guard Training Center and College. He has served in the United Nations peacekeeping mission in Ivory Coast and as Observer in South Sudan (UNMISS) and Syria (UNSMISS). He has the experience of serving in Chattogram Hill Tracts thrice. The officer has attended number of courses, seminar and Defence Show at home and abroad. Presently, he is serving as Principal of Dhaka Cantonment Girls School and College.

Work-Life Balance: A Linchpin for Bangladesh Army

Lieutenant Colonel Muhammad Nurul Amin, BSP, afwc, psc, Arty

Introduction

Today's fast-moving world has made it more challenging than ever to bring balance into the highly imbalanced lifestyles of millions of people from all around the globe. But what if it was possible to stop the unwanted cycle of stress, fatigue and frustration and bring balance back into our life. Now, it's a matter of argument whether work-life balance is genuinely possible or it is just a cruel and heartless myth. Work-life balance difficulties are part of today's society. More and more people are leading hectic lives, attempting to support careers and complex personal life. That is why many books, talk shows, and articles have been produced on the issue of our everyday lives. Reputed organisations have also come up with some solutions in the workplace to reduce the burden on their employees.

The phrase "work-life balance" generally means spending enough quality time with family besides a smooth career. People with a balanced lifestyle prioritise 'work' (which includes career, education and ambitions) and 'life' (which combines personal interests, family and social or leisure activities). In all circumstances, certain areas in life are essential for everyone. These are mainly social and family relationships, career and educational aspirations, money and health, leisure, recreation and inner well-being. The importance that people place on their living areas will always differ. However, those who can maintain focus in all the living areas are more likely to achieve a healthy life balance. This is the reason behind the increasing interest in, and demand for, work-life balance.

Soldiering is not a job; it is widely known as a way of life. Military personnel, including their family members, are accustomed to militarily cultured norms and activities. They form their community and live their lifestyle, which is very distinct in society. They create their own society within a society known as a 'military society'. So far, the term work-life balance has been neglected in the Bangladesh Army. Nevertheless, dynamic leaders now recognize it as a driving force for the organization. Here comes the importance of understanding the requirement of work-life balance from the Bangladesh Army's perspective. Within the scope of this paper, the work-life balance of 'officers' will be discussed.

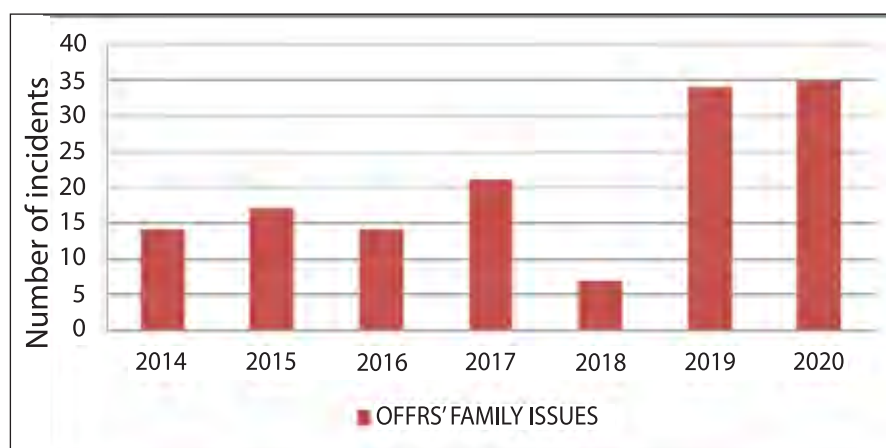
Factors Affecting Work-Life Balance

Several factors ultimately lead to the 'work-life balance' or, in other words, 'work-life imbalance'. All the factors may not apply to every individual. However, identifying these factors and having workable knowledge of them; will enhance

an officer of the Bangladesh Army to focus in the right direction. Here, some factors are gender-sensitive, and some may be societal status. Whatever may be the case, each factor again correlates or is interconnected to each other as a whole. Thus a holistic approach is essential to balance an individual's work and life.

Military Family Life: The family life in Bangladesh Army is different from civil societies. Because of the very nature of service, many officers cannot give enough time to their families and thereby fail to undertake many family responsibilities. Besides, officers' family life is affected due to frequent posting, spousal employment or underemployment and deployment in mission or isolated areas. This ultimately impacts grooming the offspring and their education. If officers refrain from serving spouses, the complexity multiplies. The graph shown in Figure-1 represents the growing concern about family-related problems in the Bangladesh Army.

Figure-1: Officers' family related issues



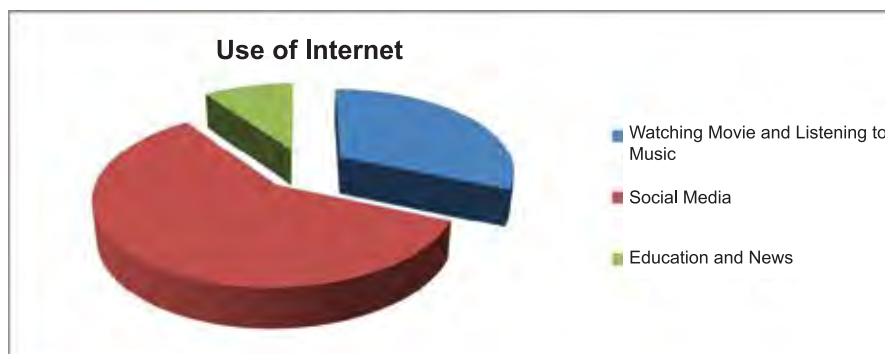
Source: PS Directorate, AHQ

Professionalism vs Careerism: Professionalism and careerism are two very commonly used terms in the Bangladesh Army. Some might use it correctly, but many of us use it indiscreetly. According to military terms, professionalism is an individual's attitude, belief in military culture, customs, and loyalty to service. In this aspect, attaining the highest professional competence, skills in handling new weapon systems, comprehension of tactical concepts and clarity of thought are the hallmark of professionalism.¹ Put simply, a professional officer is motivated by driving passion and a sense of responsibility toward his profession. In contrast, careerist is motivated by the lure of personal advancement only. If an officer 'x' puts in his best and tries to lift his unit/subunit towards the assigned goal, he is considered a 'professional' provided he is motivated by his dedication and desire to contribute to the unit

uplift. But if the motive was to earn a good 'Officer Performance Report' (OPR), he is a careerist. Careerism is a primary foe of professionalism. In this syndrome, one's career is placed above all the values. A careerist officer compromises with ethical and human values to make his movements smooth and uninterrupted up the ladder. This makes the officer selfish and opportunist. Careerism also creates a tendency to make false front. This ultimately affects an officer's professional as well as personal life. Many officers are pursuing their profession with a negative mindset and becoming careerists. Notably, the young officers are not free from this. They tend to become careerists from the early days of their service.² Both professionalism and careerism profoundly influence maintaining a healthy work-life balance in the Bangladesh Army.

Modern Technology: The recent changes in the workplace are due to changes in technology.³ Greater technological advancements such as cell phones, portable computers and e-mail have made it possible for officers to work beyond the confinement of their physical office space. This allows officers to answer e-mails and work on deadlines after-hours while not officially 'on the job.' These technological resources increase the likelihood of officers spending their 'free time' doing office-related tasks. As a result, communication technologies in the temporal and structural aspects of work have changed, defining a 'new workplace' in which officers are more connected to the jobs beyond traditional office time and space boundaries. The more this boundary is blurred, the higher the work-to-life conflict is self-reported by officers. Excessive use of social media harms healthy family life. The Covid-19 pandemic has multiplied the complexity because now, the social media platform is more frequently used than before. Many officers remain engaged on social media platforms or phone calls even after returning home. Most find their pleasure and/or leisure in such a domain, ignoring family time with spouse and offspring. This ultimately hampers the officers' family life in manifolds. The statistics of internet users by the officers are shown in Figure-2 below:-

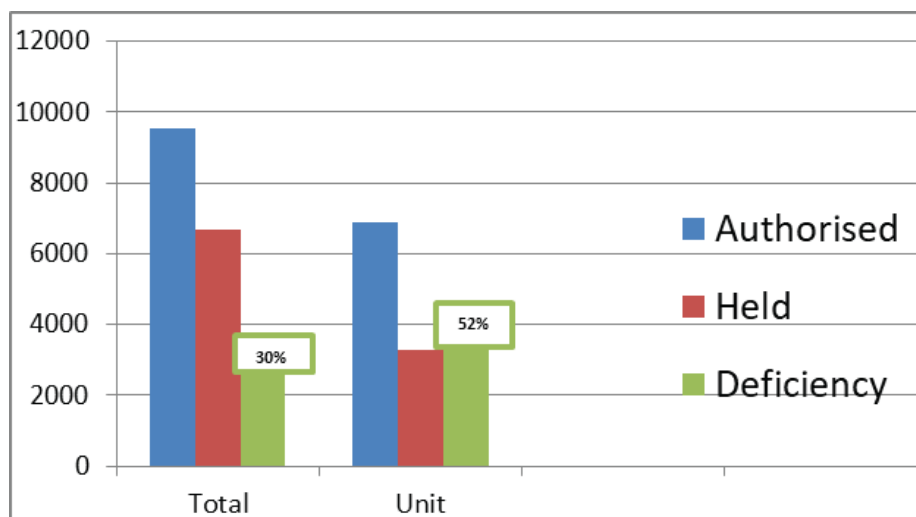
Figure-2: Use of the internet by Army officers



Source: Survey conducted by the author

Organizational Culture: Organizational culture plays a vital role in maintaining a work-life balance. There are many cultures, traditions and policies in any organization that debar an employee from enjoying a balanced life. Bangladesh Army is no exception to it. Among those, zero error syndrome is a frequently heard phrase in the Bangladesh Army. This phenomenon unnecessarily creates excessive pressure on the under commands and hampers the work-life balance. It puts psychological pressure on the officers and affects their personal life. Acceptance of error provides flexibility to the junior leaders and encourages them to work with more initiative and vigour.⁴ Besides family, quality service is derived from a healthy atmosphere that is difficult to attain due to zero error syndromes. In a survey, almost 100% of officers agreed that the shortage of officers is a significant issue of work-life imbalance in the Bangladesh Army. However, a detailed analysis has been carried out on this issue to determine where it affects most. The data shown in Figure-3 give an idea about the present state of officers in the Bangladesh Army. At present, units are facing an average 52% shortage of officers. This shortage of officers increases the cumulative workload for every officer in the unit, thus hampering the work-life balance. During the current survey, almost 100% of officers strongly opined that unit service is very stressful due to the shortage of officers. Due to its reputation and heritage, there is no denying fact that Bangladesh Army is overcommitted. Hence, many officers have to work, sacrificing family and/or personal life. A study found that 67% of the total death cases in the Combined Military Hospitals are patients with heart diseases, and one of the prime reasons for heart disease is over-commitment.⁵

Figure-3: State of officers in Bangladesh Army

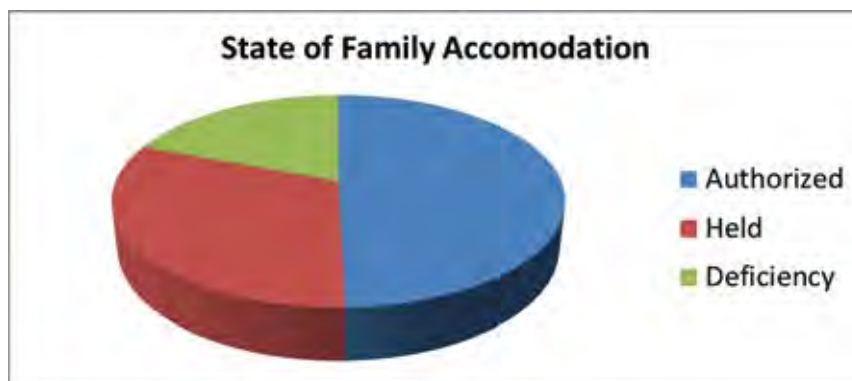


Source: MS Br, AHQ

Frequent Posting: The current study reveals that 72% of officers are not satisfied with the existing frequency of posting. Often posting order is published in the middle of the year, which affects family life tremendously. Moreover, unexpected, undesirable and frequent posting also invites imbalance in an officer's life. A case study shows that there has been fifteen times the change of accommodation in fourteen years of conjugal life. One may imagine the sufferings of a married officer and his family when such frequent movements occur there. The problem is acute in the case of officers with serving spouses. Officers' frequent posting disturbs their family life and hampers children's education. Another case study focuses that, up to class three, a child studied in nine different schools due to frequent posting of the concerned officer. Today officers have to sacrifice either their family life or compromise with children's education. Both ways, it creates a work-life imbalance.⁶

Shortage of Accommodation and Leave: An acute shortage of accommodation persists in all the cantonments of the Bangladesh Army, is shown in Figure-4. In many instances, officers have to wait more than six months to get suitable and appropriate accommodation in many instances. Officers have to lead an incomplete life for that duration which keeps them preoccupied with family issues. Such circumstances often lead to a stressful life and create a work-life imbalance. There is a particular organizational culture prevailing in Bangladesh Army regarding leave. No doubt, the organization has been doing a great job since independence. As of now, this is one of the most prestigious organization in the country. Despite the acute shortage of officers, enjoying holidays and vacations at regular intervals is possible. Someone needs a positive mentality, nothing else.

Figure-4: Family accommodation of Bangladesh Army



Source: Data obtained by the author from Movement and Quartering Directorate, AHQ

Time Management: Time management is a broad subject covering many different areas of our life, ranging from daily activities to our long-term mission and goals. Task management is a part of time management. It helps someone to decide what to do next based on a clear understanding of all the tasks that could be done. Time management is not really time management but self-management-officers' willingness to stop misusing time in ways that limit their productivity.⁷ In the Bangladesh Army, some officers spoil their time either consciously or unconsciously. For instance, working hours are spent doing meetings. Meetings are an essential tool for sound decision-making. But many meetings are not well managed due to lack of clear roles or objectives. Besides, late-night log-in on social media adversely affects overall time management, especially by junior officers. A healthy person requires at least 5-6 hours of sound sleep daily. The regular late-night log-in and staying awake up to 2-3 o'clock reduce efficiency from the medical point of view. During the survey, 38% of respondents strongly agreed, and 52% agreed that they seriously suffer from improper time management and face difficulty in balancing time.

Community Factor: Army officers' families are very much interdependent and close to each other. Formally and informally, they interact very frequently. Together they constitute a very formidable and well-organized community. In army society, family plays a very significant role. As soldiering is not a time-bounded job, Army officers have to remain busy with their professional dealings most of the time. Therefore, spouses of military personnel are to look after most of the external and internal affairs of a family. Thus, they play a vital role in family decision-making. To signify the importance of the role of a military spouse in a family, former President Barack Obama observed, "spouses are part of the force behind the force." They, too, are the reason that the US has got the finest military in the world, he added.⁸ The role of a spouse is well described in this simple statement. On the other hand, the discipline of military family members is considered to be part of the discipline of the military community. It also directly relates to the reputation of military society.

Women's Perspective: Work-life balance affects both men and women. However, some research shows that it affects women more than men. The Bangladesh Army currently has a good percentage of women on active duty. Although being a soldier is not a traditional role for a woman, the Bangladesh Army is still actively recruiting women to eradicate the gender imbalance in the service. However, women continue to bear the primary responsibilities for child care and household work in our society. Because of this, women tend to be under more pressure to perform both roles - professional and mother. They feel more stress balancing both work and home to succeed. For this pressure, the work-life balance affects the attrition rate for women more than for men. According to various literature reviews, women who are mothers or part of

dual-career couples apt to have more incredible difficulty in balancing their work and family lives than men, single persons, or those who are married to full-time homemakers. Our society still looks toward the woman as the primary caregiver, taking care of both the family and home. In most dual-income families, the wife has primary responsibility for housework. A study has shown that 82% of spouses (women) bewail that the increasing demands of early morning and night familial duties are affecting their lives.⁹ Besides, women often find it more challenging to maintain balance due to the competing pressures at work and demands at home.

How to Make a Balance

Maintaining a good balance between work and life is not an easy task. It requires mental clarity, emotional stability and creativity. These traits make up the most outstanding leaders and most successful people. Some may think that working 24/7 is good for a career. But it is not. A balanced person needs time to think, relax and give himself a break. Otherwise, productivity will decrease. Officers need to draw boundaries to balance personal and professional lives. Many experts opine that balance is not about building an impenetrable wall between personal and professional lives but finding ways to connect and integrate the two. However, some of the plausible options for the officers of the Bangladesh Army are appended below:-

a. **Focusing Attention:** An officer must have a flawless focus on his life and career. One should have a clear idea of where he would like to see himself after a certain period. The focus keeps someone stable under the storm and stress of life. Officers should determine which activities waste time and make rules to control them. Enforce those rules effectively, especially guarding against procrastinating, perfectionism, negative self-talk, socializing and multitasking.

b. **Capacity vs Expectation:** An individual is successful not because he is more capable than an ordinary but because he can balance his expectations versus capacity. If an officer is less capable in one area, he should concentrate on other areas of interest. Again if someone is overall weak, he should not expect much from himself at the end of the day. However, if someone is weak but expects more, he should sacrifice his comfort and utilize it in weaker areas.

c. **Individual Responsibility:** In Bangladesh Army, officers themselves are the principal architects of their careers. Military Secretary Branch (MS Br) is responsible for finding out and putting the right officer in the right place. But, every sensible officer is primarily liable for their well-being. To maintain a healthy balance between work and life, one needs to be careful in a few aspects, like savings for financial independence. It is going to give you peace of mind. When the career is at the fag end, or there is a family crisis, an officer

would not be crippled by debt. Another important aspect is to add exercise to the daily routine. This will keep the body fit, which is otherwise a prerequisite of a sound life. Frequent posting is one of the prime causes of imbalanced family life. Instead, one should take advantage of temporary locations with family day trips. In other words, it is an opportunity for a pleasure trip. Like when some officer is posted at Chattogram Hill Tracts (CHT) or Cox's Bazar area, he/she should enjoy the natural beauty of those areas. It does not take much time and effort but pays a lot. A famous saying is that the military is a marathon here; if someone runs too fast for too long, they will not make the finishing line. It must be remembered that the uniform is removable. Someone does not have to entirely sacrifice his well-being or family for little progression in the career.

d. **Managing Time:** Time management is primarily an individual style and it is being done every day by us at every moment. Now, the question is how best we manage it. There are several techniques to manage time comprehensively. But military management of time is a bit different. An officer needs to make fusion into systems to suit the organizational requirement. In the military, officers need to face new challenges every day, so they need to prioritize their commitment almost every day. The focus is frequently changed to address new tasks to accommodate new challenges. Management of time is an essential aspect for a military officer. There are huge commitments an officer needs to face throughout the year. Since we do not follow a methodical time management approach, we always fall short of time. But if an officer can follow a system of time management, then they can organize the job efficiently and address all the commitments squarely.¹⁰

e. **Working from Home:** Working from home is an initiative that arose from improving the work-life balance. Also known as 'telecommuting,' it is a widely used term in modern corporate culture. Though in the military, work from home is rarely practised. However, the deadly Covid-19 has proved that it is possible to work from home, even in the Bangladesh Army. Particularly for a few female officers or officers who work desk-based jobs can work from home in peacetime. More so, technology has also provided the opportunity to work from home. A quarter of Britain's workforce does office work from home, In 2017, it was reported that 8 million people in the US are working from home, which is 5% of the entire US workforce.¹¹ This increase has been in response to the demand for more balance between work and life. Due to apparent reasons, having all the good intentions, the MS branch cannot post all the officers at their desired place. But allowing 'work from home' can solve a lot of problems.

f. **Dynamic 'To Do List':** Completing all the planned tasks is essential for a balanced life. An officer should spend fifteen minutes a day assigning the tasks on a 'To-do List'. Doing it the night before or early morning is preferred. While doing so, short, mid and long-term expectations from a career and family should be kept in mind. Again, doing everything in one day will bring dissatisfaction in the end.

g. Dealing with the Destruction: In Bangladesh Army, officers waste much time either due to system hazards or personal negligence, both consciously and subconsciously. As a consequence of these time wasters, officers fail to dedicate enough time to their families. For example, many of the meetings are too long, unfocused and unnecessary. Concerned officers must establish clear objectives and determine the length of the meeting well before. Besides, if the purpose can be served through virtual meetings, physical appearance may be avoided.

h. Discover the Art of Happiness: Officers need to plan on a few aspects to maintain a healthy balance between work and life. Like regular exercise, handsome savings and five times prayer give peace of mind and boost sound life. Officers must discover the art of happiness remaining in their domain, i.e. whatever is available at a specific time and place. For example, when posted in remote locations, one must enjoy the tranquility to the fullest along with family.

i. Delegating Authority: Delegation plays a vital role in balancing work and life. As such, the delegation has been included in the 'Command Leadership and Management' pamphlet of the Bangladesh Army.¹² Most officers believe that only they can do things right, keeping themselves busy in every detail of professional affairs. But in reality, an officer should be in charge of the overall direction of the task. He/she is the one looking ahead, keeping steering in his hand, and making the necessary correction to avoid getting off track. Instead, by keeping himself/herself busy with small details, an officer will make his life imbalanced. Prudent delegation saves time and allows for leading a good family life. There are specific delegation rules; adherence to those will undoubtedly lead to success. Firstly, decide what to delegate. Selecting the right man for the right task at the right moment is the crux of the art of delegation. And then allow freedom of work. Once a task is delegated, it implies that the commander is placing his trust on his under command. Constantly jumping back in to check on how things are going will show under commands that the commander does not trust them. Finally, create a sense of pride among delegatee. As commander, when delegating a task, tell the delegate why he/she has been chosen, i.e. why you think his particular talents are well-suited for the accomplishment of the mission.

j. Leading a Healthy Conjugal Life: Leading a happy conjugal life solves thousands of issues in life.¹³ A happy couple together can handle more stress. Interestingly, becoming happy with a life partner is unique to each individual. There is no mathematical formula or scientific theory, and it is an art that an individual needs to discover and maintain. Thus, an officer must identify his chemistry to have a happy conjugal life. This is the ultimate secret of work-life balance.

Conclusion

The work-life balance is an effective strategy in modern corporate culture. Due to the nature of service Bangladesh Army is yet to harness its full benefit. The zero error syndrome and shortage of officers are the primary hindrances. Officers' misunderstanding of professionalism versus careerism and addiction to social media are significant contributors to an imbalanced life. However, focusing the attention on deciding the capability versus expectation with a dynamic 'to-do list' can enhance maintaining a balance. Regular prayers, exercise and fore-planning are vital. Officers must guard against unnecessary involvement and practice delegation of authority or responsibility. Above all, leading a healthy conjugal life is key to balancing work and life.

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Brief Biography



Lieutenant Colonel Muhammad Nurul Amin, BSP, afwc, psc, Arty was commissioned on 08 June 1999 when he landed in the 1 Fd Regt Arty as a proud Gunner. He served in many diversified and coveted appointment's in his career. These include five years of service in CHT under operation UTTARAN & DABANAL and two times service in RAB as Operations Officer and Company Commander. He was the Zone Comd of Laxmichari Zone while Commanding a Field Regiment. In staff appointments, he had an opportunity to serve as BM 66 Arty Bde, GSO-2 (Fmn Trg & Eval) ARTDOC and Deputy President, ISSB. He is privileged to be a proud member of the 'Blue Helmet Family' once in Cote d'Ivoire in 2007 & Liberia in 2014 as Military Observer. Besides all mandatory courses, he did CSRT course in the USA, and Staff Course from DSCSC. He achieved the Gallantry Award BSP by leading a successful operation at CHT. The author completed the Armed Forces War Course, and at present, he is serving as GSO-1, Trg Div at ARTDOC.

Arduous Experiences of Operation Covid Shield: How Best Bangladesh Armed Forces Can Utilize It

Lieutenant Colonel Shaikh Ferdous Ahmed, afwc, psc, Arty

Introduction

The world came to a halt due to the outbreak of severe acute respiratory syndrome since December 2019. A novel strain of coronavirus SARS-CoV-2 was first detected in December 2019 in Wuhan, a city in China's Hubei province with a population of 11 million, after an outbreak of pneumonia without an obvious cause.¹ The virus has now spread across the globe and was characterized as a pandemic by the World Health Organization (WHO) on 11 March 2020. This pandemic has led to a dramatic loss of human life worldwide and presents an unprecedented challenge to all aspects of life especially public health, food systems and the world of work. Bangladesh (BD) confirmed first three COVID-19 positive cases on 8th March 2020. Soon, BD declared the enforcement of lockdown and deployed military forces in aid to civil power to enforce lockdown. With the enforcement of this lockdown, travelling by waterways, rail, and air routes was temporarily barred and road-transportation declared suspended. All non-essential organizations, businesses, and educational institutions were closed for time being, except for pharmacies, groceries, and other unavoidable necessities.

During the very outset, COVID-19 patients were experiencing different health issues like heart failure, major organs failures, acute respiratory distress syndrome (ARDS), high fever, huge headache, muscle pain and numerous other symptoms. During this time offices, markets, business places, factories, communication centers, educational institutions were closed. Bangladesh Armed Forces (BDAF) and entire health care machinery learned a huge lesson from this pandemic situation. The COVID-19 environment, sufferings of the people, total halt in daily life and economy were much similar to that of a bio hazardous environment (BHE). Previously there was no experience of working in any real bio hazardous environment (BHE) or situation. It was said, "If anything kills over 10 million people in the next few decades, it's most likely to be a highly infectious virus rather than a war, not missiles, but microbes." As per government instruction, BDAF launched the Operation (Op) COVID SHIELD in order to aid the civil administration in March 2020. From the very outset, BDAF undertook numerous initiatives to fight against Corona pandemic. BDAF worked relentlessly to apprehend the situation considering both operational and humanitarian aspects of it.

Like many other countries, the operational and security milieu of BD is substantially complex, dynamic, and adaptive in a geo-political environment

perspective. BD is the highest troops contributing country in United Nations Missions. Due to the danger of terrorism, the risk posed by various microorganisms as biological weapons remains at the first place. Biological weapons and warfare agents have the potential to outperform chemical and conventional weapons. Over the last century, advances in biotechnology and biochemistry have made the invention and production of such weapons much easier. In addition, biological weapons are often referred to as “poor man’s nuclear weapons.” The last time a nuclear weapon exploded in the world, between 129,000 and 226,000 people died. But what if a more lethal and less expensive weapon is available? Biological weapons are far less expensive than nuclear weapons. It is tough to track down bio-weapons users.² Throughout history, there have been several instances of covert bio weapons being used. It is needless to mention that BHE has its own fundamentals and challenges. Hence, it always merits separate look from operational point of view. In Op Covid Shield, BDAF have gathered unique sets of experience by working in a pandemic situation which has similarity to BHE. BDAF may stockpile these hard-earned experiences for better performance in similar BHE in future, if any.³

Bangladesh Armed Forces in OP COVID SHIELD

Patrolling & Social Distancing in Supporting Local Administration:

From the outset of deployment patrols were conducted in the area of responsibility in supporting the civilian counterparts to restrain the general people to roam around unnecessarily, encourage them to put on mask, maintain cleanliness, and safety distance etc.

Quarantine Center and Encouraging Home Quarantine: As per the government instructions, BDAF established and maintained number of quarantine centers all around the country. BDAF also undertook numerous steps to encourage home quarantine. Patrols worked day and night to ensure strict compliance to the later.

Pandemic related Training: A week-long different training package related to COVID -19 and Corona Patients were conducted in Bangladesh Army on the basis of training the trainers. Bangladesh Navy (BN) and Bangladesh Air Force (BAF) also conducted training appropriate for their role and tasks.⁴

Operational Activities of BAF, Army Aviation & Medical Team:

Dedicated “Medical Teams” were formed to prevent the Corona spread. BAF and Army Aviation were engaged in carrying lifesaving medical equipment, PPE and other emergency materials for supporting this operation all over the country.

Humanitarian Activities: During Op Covid Shield BDAF, besides operational activities, carried out humanitarian activities simultaneously. Country wide distribution of medical equipment, medical campaign, disinfection

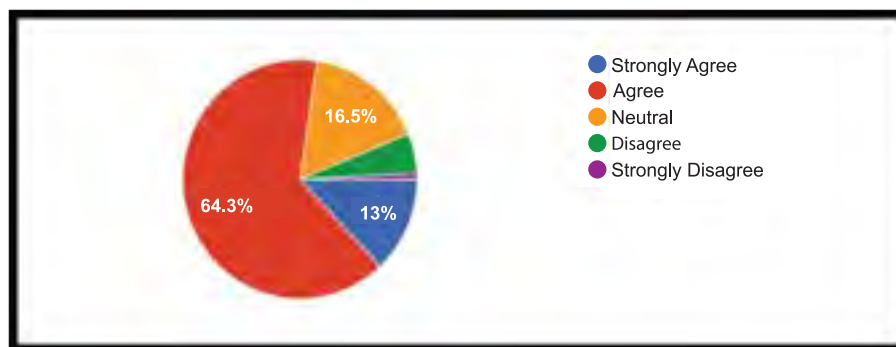
drive in cities and communication centers, supporting agricultural activities, food distribution in remote areas and needy people, raising basic awareness and facilitating social distancing in every day life, one minute bazar etc. were significant.

The Covid-19 pandemic was a new environment for BDAF to work with. Experienced based trial and error test were run for initial few days. However, besides the above-mentioned activities, helping the vegetables farmers and campaigning “One Minute Bazar” countrywide, by Bangladesh Army were remarkable steps for the laymen. BN had played excellent role to support the national effort in coastal districts. The goodwill shipment to Maldives by the BN had attracted the international media and marked as excellent effort. Transportation of medical aid from China, goodwill transportation support to Maldives and disinfecting Hazrat Shahjalal International Airport were the remarkable accomplishment by BAF. Fighting an invisible enemy like coronavirus SARS-CoV-2 was not easy for BDAF. It was risky and life threatening from the beginning. But, BDAF, at the end successfully accomplished the mission. They returned to their respective garrisons with unique sets of accomplishment and experiences.

Operational Environment (OE) of OP COVID SHIELD

Similarity of OE of OP COVID SHIELD: During the Op, BDAF started the work without having any similar experience. The environment was new. The challenges were dynamic in nature. Although the Op was more of humanitarian kind, each member of BDAF was also susceptible to the situation and outbreak. The individual vulnerability, lack of experience on pandemic, lacking in appropriate gears and PPE, health hazards, uncertainty, presence of invisible enemy, not having any idea about the center of gravity and end state made the operational environment highly complex and volatile. More than 77% responders opined that OE of Covid pandemic was similar to a BHE.⁵

Figure-1: Similarity of OE of Covid pandemic with Bio Hazardous Environment



Source : Survey conducted by the author

Price and Anxiety of Unknown: During the Op no leave without emergency was granted for members of BDAF. New practices like quarantine, social distance, introduction of new practices and instructions likely made high level of personal anxiety among the members of BDAF like the rest of the countrymen. However, due to military training and continuous motivation the challenges were reduced significantly.

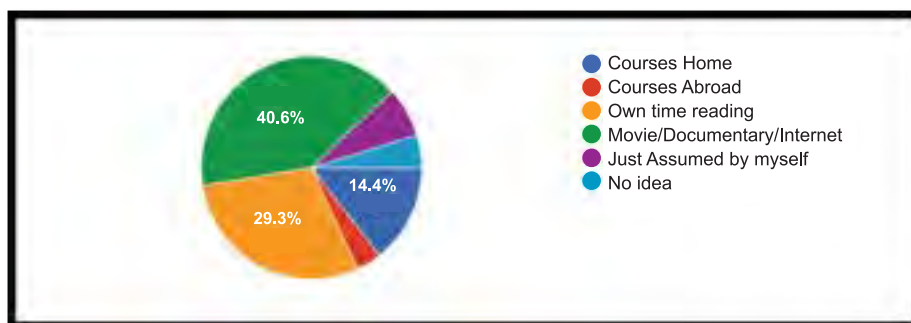
Domain of an Unknown Environment: Common mass was mostly confined in their houses for long time. They could not meet their friends and relatives. They felt a sense of isolation in themselves. It seemed that they were only connected through virtual means but physically they were disconnected from the whole world. As such, gradually public was reluctant in following the instructions. In places the picture was mostly like 'hide and seek.' This posed extra challenge for BDAF deployed on ground. Controlling the unruly public, being deployed to help and assist them in the first place, added additional challenge in the domain of an unknown environment.⁶

The New Normal & Economic Upshot: Due to the pandemic, people went unemployed all over the world. Govt. undertook number of initiatives to help the distressed people with relief, card system and monthly payment system etc. Educational institutions were closed. The accepted new normal in life was demanding. It was envisaged that the upshot would have a long-term effect on our life and economy. Hence, the new normal and economic upshot in life affected the morale of the members of BDAF like the other walks of life.⁷

Analysis

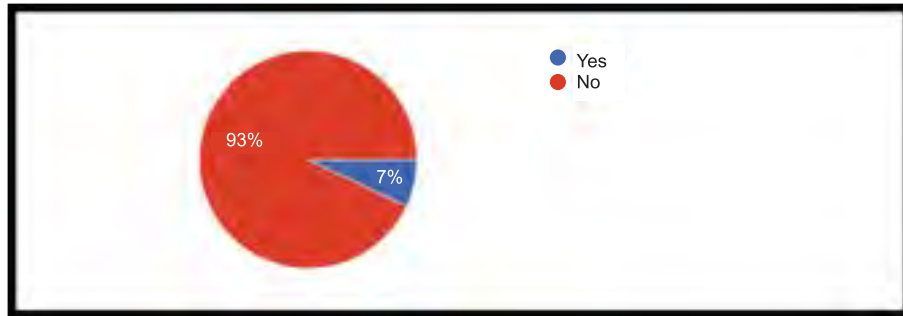
After performing the duty, most of the responders of BDAF opined that the environment of the Corona pandemic was similar to that of BHE. At this point, a question was asked about the source of knowledge on BHE to the responders. As per the response, 40% of responders acquired the knowledge from documentary or internet sources.

Figure-2: Source of knowledge on Bio Hazardous Environment



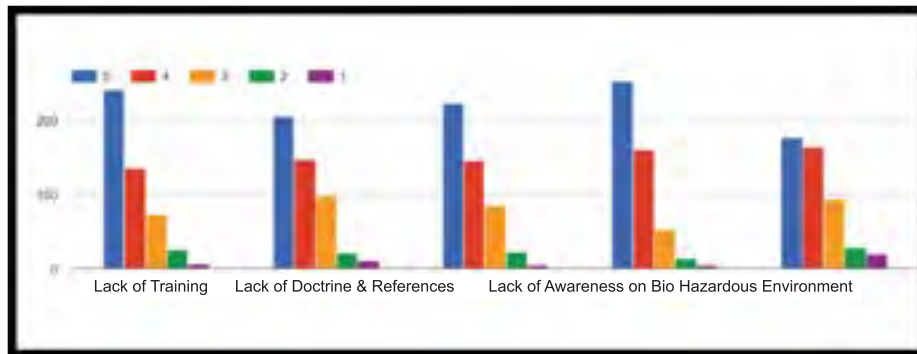
Source : Survey conducted by the author

Figure-3: Formal training on Bio Hazardous Environment



Source : Author's self-construct

Figure-4: Weaknesses observed in fighting Covid



Source : Author's self-construct

More than 90% of responders opined that they did not have any formal training on BHE before Op Covid Shield. Even after that, members of BDAF successfully conducted the Op and earned a lot of glory and respect from the common mass. During survey and Focus Group Discussion (FGD), lack of awareness on BHE, training, doctrine and references, protective gears, etc. were being highlighted.⁸

Increasing Operational Readiness of BDAF on BHE

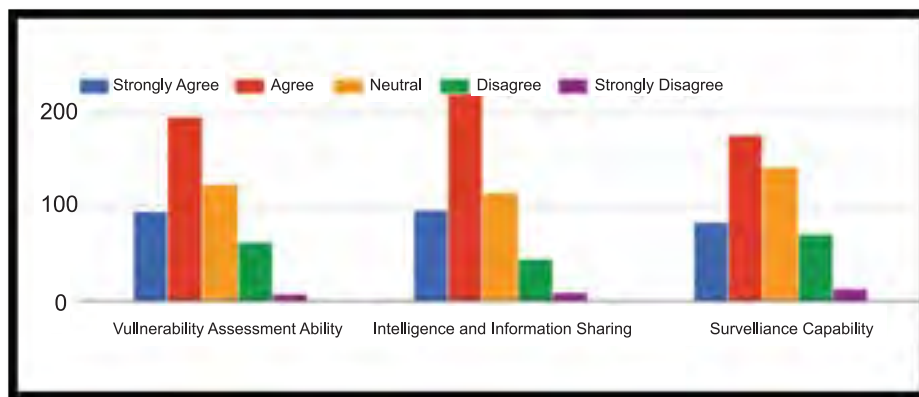
In order to minimize the loss of human life and resources from bio hazardous threats, Armed Forces around the world have prepared some kind of defence against it. Related doctrine should describe details of threat, preparedness, training and other issues related to it. Deterrence, identification, intelligence and prevention should be core of it. The experiences gathered from OP COVID SHIELD will be instrumental for BDAF in devising future plan for handling similar calamities.

Ways to Increase Operational Readiness through Doctrine: The enemy and accessible bio-defence sources should be defined in bio hazardous related doctrine. Deterrence, intelligence, and prevention are three

areas where strategies derived from a counter-bioterrorism philosophy. Types of bio risks, their structure and feasibility, as well as levels and methods of prevention, should all be defined in a plan. The theory and strategy of biodefence provide a scientific foundation for effective investments, ideally in the scientific community, followed by public health infrastructure, diagnostic technologies, and ultimately vaccines and medications.

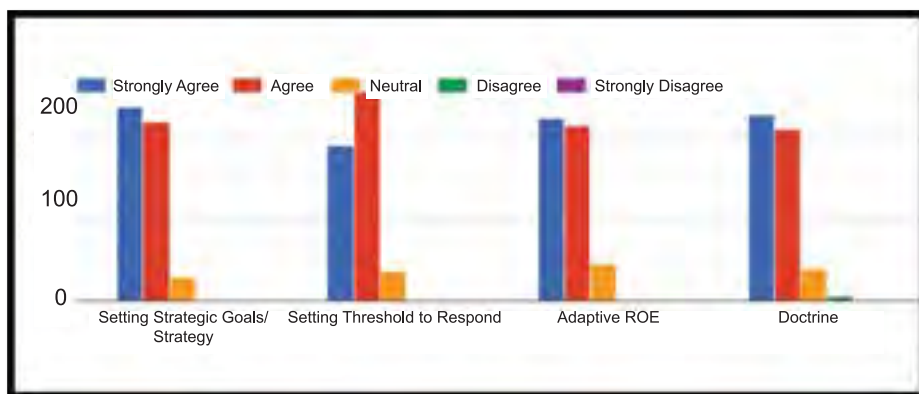
Strategy of Deterrence and Intelligence: The first step in combating true BHE is to create practical models for detecting and identifying it. Databases containing prospective bio agents, as well as quick and accurate networks for matching them to samples from the focus, are required.⁹

Figure-5: Detect components of Bio Hazardous Environment



Source : Author's self-construct

Figure-6: Key essentials in countering Bio Hazardous threats



Source : Author's self-construct

Strategy of Prevention: An epidemic reaction that is well-planned, well-rehearsed, and implemented quickly can significantly reduce the consequences of bio hazardous situation. Timely proper medical treatment can greatly lessen the consequences of such pandemic. That medical response should be provided by CMHs as it was during Op Covid Shield.¹⁰

Comprehensive Approach for BDAF

BDAF may ensure that efforts to combat BHE and bioterrorism do not divert attention away from vital scientific research and public health measures. The scientific basis for good strategies to defend BHE and bioterrorism must come from the biomedical and public health communities.

Recognizing the fallibility of deterrent tactics, significant efforts should be made to bolster BDAFs' defence against BHE, including the CMH's preparation to respond to any terrorist attack employing biological weapons. To reduce the consequences of a BHE situation, these measures include training programs for first responders as well as storing antidotes, antimicrobials, and vaccinations.

Improved detection technologies and epidemiological capabilities to detect atypical illness outbreaks are also important components of the CMH infrastructure required to defend biological weapons. Given the potential of catastrophic terrorism, assistance to the greater public health community is required. Its preparation is critical in preventing bioterrorism-related mass fatalities. All necessary precautions to safeguard BD against BHE situation or strikes have to be taken.¹¹

Provision of Cells at Services Headquarters: Considering the existing lacunae at the level of execution, appropriate cell could be established at Services Headquarters (HQ) to coordinate the efforts of the formations/bases/fleets to prepare against the bio hazard threats. This cell could play a greater role in maintaining links among AFD, services HQ and formations/bases/fleets with a view to ensuring the flawless execution of policies and directives at tactical level. Besides, this cell could play an important role in ensuring appropriate MOOTW training relating BHE situation for all. Moreover, this will keep the operational leaders updated on the contemporary BHE issues and likely upcoming challenges.

Inclusion of Training Modules in Existing Training Institutions: The present trend of BDAF's training to fight against BHE merits attention. During the research 90% of the respondents opined that they did not receive any formal training from any training institutions. As such, some basic knowledge gathered from the Op Covid Shield may be imparted to the officers, soldiers, and recruits in different training institutions.

Focus of Formation/Bases/Fleets on Specific Bio Hazardous Threats:

Formation/Bases/Fleets should focus on specific threat-based training. However, while developing the outfits to fight against bio hazardous threats, formation/bases/fleets should be appropriately equipped to perform their assigned tasks.

Developing Subject Matter Experts/Specialist: The participants in FGD have suggested for developing a small part of each formation/bases/fleets as subject matter expert/specialist to fight against specific threats. While doing so, the HQs may determine the specific subjects on which the formation/bases/fleets should be trained.

Modification and Training in Collaboration: Training of officers and men abroad, and joint exercises with other Armed Forces may be arranged to develop BDAF's own expertise in this fields. In addition, BDAF may conduct joint training and joint exercises in collaboration with other paramilitary forces and stake holders. In this regard, BDAF may develop its expertise in tackling various bio hazardous threats by training its members under the organizations like CMHs, Fire Brigade etc. Although the training on MOOTW seems to be very effective, the duration and syllabus need to be constantly updated considering the likely bio hazardous threat.

Capability Building in the Domain of Media: Media plays a greater complementary role in the overall fighting strategy of BHE. Although the ISPR has significant contribution in interacting with media, it may be deliberately revamped to enhance its capabilities to fulfil the modern days' requirements.

Capacity Building of CMHs: Required capability and capacity build up for CMHs including AFIP may be done in manifolds. A group of special doctors are to be trained on biological agents and bio hazardous situations. CMHs may also maintain knowledge bank on bio hazardous elements.¹²

Proposed Roadmap to Achieve the Desired Level of Preparedness

Immediate Measures (within Two Years): BDAF members may provide adequate attention on bio hazardous situation and threats. This needs focus on training on BHE and biological threats at different training institutions.

Mid-Term Measures (within Three Years): Modification in training considering specific vulnerabilities to different biological threats needs further studies and analysis. Besides, joint training with friendly foreign countries and with paramilitary forces may need time to develop mutual exchange and exercise. Concerned doctrinal upgradation may be completed within this time.

Long Term Measures (within Six Years): BDAF need a considerable period for provisioning the equipment, gears and acquiring the corresponding technological expertise to handle those. In addition to that, developing specialist on biological threats, provisioning Cell at services HQ, developing own capabilities in media interactions etc. may be emphasized.¹³

Conclusion

BD confirmed first three COVID-19 positive cases on 8 March 2020. On March 25, BD imposed a 10-days lockdown. BDAF were deployed to assist civil administration in enforcing the lockdown and containing the turmoil. Travel on sea, rail, and airlines was prohibited, and road traffic was halted as a result of the lockdown. Only pharmacies, food, and other essential services were functioning. All non-essential organizations, companies, and educational institutions were closed. The overwhelming fear of unknown shattered the established view of socio-economic progress and pointed out the doctrinal lacking of fighting in BHE by BDAF.¹⁴

BDAF took part in Op Covid Shield from the onset and had demonstrated outstanding professionalism, dedication and effectiveness. The majority of the members were unaware of the OE. However, after accomplishment of the mission, the majority of the responders concluded that the Corona pandemic's atmosphere was comparable to that of BHE. BDAF successfully executed the Op, earning a great deal of honour and esteem from the general public. To continue effectivity in future bio hazardous OE, challenges in training, doctrine, lack of NBC equipment, lack of collaborative effort, and lack of exercises need to be addressed.

It is needless to mention that BHE has its own fundamentals and challenges. Hence, it always merits separate look from operational point of view. In Op Covid Shield, BDAF have gathered unique sets of experiences by working in a pandemic situation which had similarity to BHE. Researching on these experiences, BDAF may ensure similar commendable performance in similar or different bio hazardous situations in future.

Recommendations

This study has the following recommendations:-

- a. Training on MOOTW keeping BHE and NBC warfare in focus, may be customized according to the vulnerabilities of formations/bases/fleets' Area of Responsibility.
- b. Several training packages on BHE threats may be incorporated with the existing syllabus of courses conducted by various training institutions of BDAF.
- c. The existing doctrines may be upgraded focusing BHE taking the experiences of Op Covid Shield in cognizance.
- d. Dedicated cells may be established at services HQs and capacity enhancement of CMHs may be done taking the experience on account. The operational readiness of BDAF in regards to BHE may be enhanced by necessary training, joint exercises and purchasing special protective gears and

equipment. Further research may be conducted to study the feasibility of capacity building of CMHs considering BHE and for the incorporation of joint capabilities of BDAF in similar environment.

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Brief Biography



Lietenant Colonel Shaikh Ferdous Ahamed, afwc, psc was commissioned on 02 December 1999 with 41st Bangladesh Military Academy Long Course. The officer completed his Staff Course and War Course (AFWC) from Defence Services Command and Staff College (DSCSC) and NDC respectively. Besides serving in various regimental appointments, he has served in various Command, Staff and Instructional appointments in Bangladesh Army. He was a Platoon Commander in Bangladesh Military Academy. In addition to that, he also served as a Brigade Major in an Independent Brigade HQ. He has Commanded two units. Being a Commanding Officer he achieved the prestigious Chief of Army Staff Commendation (Non-Operational). The officer has attained Master of Science in Military Studies, Master of Development Studies (MDS) and MSS in Security & Development from Bangladesh University of Professionals (BUP). He has also completed Post Graduate Diploma in International Relations (PGDIR) from Dhaka University. Presently the officer is serving as GSO 1 (Military & Special Operation) in Armed Forces Division.

Recent Trends of Asymmetric Warfare: Options for Armed Forces of Bangladesh

Lieutenant Colonel Byzid Mohammad Tareq Junaed, psc, G, Arty

Introduction

Asymmetric warfare (AW) can be termed as a conflict among belligerents whose comparative military supremacy or tactics vary considerably and resources are uneven. The weaker force uses strategy and tactics to balance her shortages in regards to forces and equipment. This kind of strategy and tactics may not be limited to the military only; rather, whole nation is likely to be involved. This is different to symmetric warfare, where two forces have comparable military strength and resources. Both of them depend on strategies and tactics which are comparable overall, differing only in execution.¹

Topography is the most dominant factor in the defence strategy of the small states. Bangladesh is a smaller state with limited geographical depth. Historically, smaller states have suffered from the violation of their big neighbours. Neighbours of Bangladesh have stronger military might. At the same time Bangladesh cannot afford to maintain large standing army. On the other hand, the prevailing geo-strategic situation demands a strong army for Bangladesh. To make a balance, Bangladesh Army adopted a new fighting strategy - the concurrent prosecution of Conventional Warfare (CW) and Unconventional Warfare (UCW) by UCW forces (UCWF) from the beginning of hostility.² But, there is no doctrine to fight simultaneously CW and AW by conventional forces. Therefore, concept of AW needs to be incorporated with the overall war effort to sustain CW.

In future conflict scenario in Bangladesh, it is evident that the potential enemy will have edge over own forces in size, technology and capabilities. Therefore, Bangladesh needs to prepare itself adequately to face CW from asymmetric point of view. Therefore, it is paramount importance for the armed forces members to understand the various forms of AW to fight against belligerents. Therefore, an effort is taken in this paper to provide an overview of AW with historical perspective. Then, few challenges are discussed. Finally, few options for Bangladesh Armed Forces are suggested.

Definition of AW

The term 'asymmetrical' implies two sides that are not same i.e., not symmetrical.³ AW is defined as warfare between two opposite forces which differ significantly in military power and that involves the use of innovative weapons and tactics.⁴ Tactics of AW are implemented by a force; once the military capabilities of belligerent powers are not only unequal but also

significantly so dissimilar that they are unable to make similar kinds of attack over one another.⁵

Simply, AW denotes to a situation where a weaker force, being grossly overpowered by a stronger one, adopts unorthodox approach and tries to defeat enemy with innovation. AW may have following characteristics (i) disparity in assets, (ii) use of unorthodox tactics, and (iii) exploiting vulnerabilities to retain/ regain initiative with innovation.

Historical Perspective of AW

The techniques of AW were followed historically by many nations. Liberation War of Bangladesh in 1971, Israel-Lebanon conflict in 2006, Vietnam War from 1955-1975, Iraq War in 2003, etc. remain as classic examples in the military history as to how a weaker force could defeat the most sophisticated army of the world by using mostly asymmetric means. Conflict in Sri Lanka from 1983 to 2009 is also another example of AW. These are discussed briefly below:-

a. **War of Liberation of Bangladesh:** Bangladesh has its glorious history of fighting AW in the Great War of Liberation in 1971. Initially, few operations of AW nature were carried out by the regular forces. Later both regular and unconventional forces conducted number of such operations to cause substantial damage to the Pakistani forces. These operations finally aided the joint forces to shape the battlefield according to their choice, which ultimately led to the victory of allied forces.

b. **Liberation Tigers of Tamil Eelam (LTTE):** Conflict between Sri Lankan Armed Forces and the LTTE is a glowing example of AW. The civil war started on 23 July 1983 and ended on 19 May 2009. The LTTE started the war in the form of guerrilla warfare. They conducted suicidal bombing with male/female suicide bombers. However, Tamils started to adopt conventional tactics after gaining control over the northern part of the country. LTTE took conventional defence supported by conventional artillery, navy and air power. At this time, Sri Lankan military started to adopt techniques of AW through small group operations. Small sections conducted infiltration operation behind the LTTE's front lines. They disrupted the line of communication of LTTE by attacking depth objective. Finally, the LTTE forces were defeated in detail.⁶

c. **Israel-Hezbollah Conflict:** A glaring example of AW is the Israel-Lebanon conflict in 2006. Although Hezbollah didn't possess regular forces, but this belligerent organization was well prepared with well-motivated fighters and could resist advance of Israel Defence Forces. Their rocket campaign and self-sustained small group operations had deterrent effect. They could preserve strength till the seize fire. However, Israel had a strong, modern regular military with state of art

technology and weapon systems. Asymmetric tactics followed by Hezbollah prevented Israel from responding with conventional tactics.⁷

Use of Innovative Drones and Modern Technology in Recent wars

Drones are playing vital role in the AW between weaker forces and stronger Armies. Both Turkish-made Bayraktar TB-2 and commercial drones are being used now extensively. Commercial octocopter drones attached with thermal imagers and anti-tank grenades can discover and attack tanks hiding behind buildings or villages at night. Recently, drones were used successfully in Syria, Western Libya Campaign of 2019, Azerbaijan-Armenia conflict of 2020, etc.⁸

Historically, it is found that innovations have always given dividend to any forces in the battlefield. Japanese Forces moved through bicycle in Burma (now Myanmar). They attained success in Second World War. Because, bicycles have no logistics burden and it can be stealthily used in any terrain. As the technology is advanced, nowadays electric bikes for transporting drones, anti-tank and anti-aircraft missiles are being used. The electric bikes are fast and agile. They are much quieter than gasoline motorcycles. These electric bikes can reach 50 miles (80 kilometres) per hour, allowing soldiers with drones, anti-tank and anti-aircraft missiles to move into position, fire at a target, and flee within moments. The silent and quick electric bikes are also good for performing various patrols without alerting enemy forces.⁹

Analysis of the Wars

It is evident from the above discussion that, AW conducted by weaker forces is quite successful. Bangladesh Armed Forces definitely have many lessons to learn from the history. Firstly, the determination and patriotism to protect the motherland is a very important factor. Secondly, present innovative use of drone and anti-tank weapon to destroy armour vehicles is praiseworthy. Uses of electric motorcycles to transport drones, anti-tank and anti-aircraft missiles stealthily are a good concept.

It can be said that wars are becoming gradually asymmetric. The weaker side may put up a strong fight. The US forces have experienced this in Iraq where Iraqi people used improvised explosive devices triggered with cellphones. Presently, it is found that use of homemade weapons, commercial drones, improvised explosive devices, etc. are very effective. Weaker forces need to use technology to its advantage. Historically, weaker forces got success by adopting various techniques of AW.

Likely Challenges to Be Faced by Armed Forces of Bangladesh

The geo-political situation of other Armies and Bangladesh is not similar. Every nation has got uniqueness in this regard. However, few of the battle winning factors remain universal. As per the analysis of the war, those are

determination, patriotism, use of technology innovatively, paralysing the command structure, etc. In the present context, any Armed Forces need to adopt these factors to win any battle. Armed Forces of Bangladesh are not an exception in this regard. As it is felt, few of the challenges to conduct AW by Armed Forces of Bangladesh are primarily prevailing mind-set, lack of organisational structure, lack of doctrine, lack of training, lack of tri-service coordination, etc. These are discussed briefly below:-

a. **Prevailing Mind-set:** Bangladesh's strategic context suggests that her adversary could be quite larger to her in terms of conventional military strength (size, technology and capability). Opponent's multi-dimensional, non-linear operations characterized by movement, manoeuvre and high lethality will impose on Bangladesh to conserve its resources and employ those for maximum effect with minimum cost. The reality of dealing with overwhelmingly superior adversary warrants Bangladesh for resorting to AW from the beginning of the war. Preparation in this regard seems to be inadequate. The perception prevails in our armed forces to fight the war conventionally. Besides CW, we need to develop our mind-set to fight the war asymmetrically also.

b. **Lack of Organisational Structure:** The U.S. forces have AW Group to deal with AW. The group provides a link between Training and Doctrine Command (TRADOC) and Armed Forces. The group consists of active military, civilian, and contractor who remain ready to be deployed globally. The U.S. AW Groups provide advisory support to military commanders to deal with present and future threat.¹⁰ The neighbouring countries of Bangladesh like India and Pakistan are in the process of developing the concept of AW in their war ethos. Armed Forces of Bangladesh do not have any organisational structure to deal with AW.

c. **Lack of Doctrine:** The present concept as outlined in the draft General Services Training Pamphlet (GSTP) titled 'Blending Unconventional Warfare with Conventional Warfare' suggests that as an important element of defence strategy, unconventional efforts should be used to multiply conventional efforts in order to bring favorable decision in the war. It says that when conventional forces will engage enemy forces, unconventional forces will strike at the decision cycle of the enemy and his logistics to create fluidity in battlefield through non-linear engagements with whatever weapons and means available.¹¹ Generally, these unconventional forces do not have any earmarked effective equipment, weapon, efficient training, structure, etc. Lack of logistic support and communication means will also make the operation difficult for them. Thereby, engagement of regular conventional forces for these kinds of task is very important. So, concept of AW should be clearly adopted in the doctrine of Bangladesh.

d. **Lack of Training:** The concept of "Blending Unconventional Warfare with Conventional Warfare" was developed in 2004. As per the concept, personnel from Ansar join the training during winter training and summer training with the army units. Beside many good points, experience shows that there are rooms of improvement. The Ansar, Village Defence Party (VDP) and volunteers are the nucleus of Unconventional Warfare Forces (UWF). They are not as motivated as army personnel. Moreover, many of them will not be able to perform independent task due to age factor. They also lack realistic training that is required to perform minor operations to cause damage to enemy's logistic chain. However, they receive primary level training from district Ansar authority which seems to be inadequate. Thereby, UWF are not capable enough to cause desired effect to the enemy as prescribed by the doctrine.

Possible Options for Bangladesh Armed Forces

Analysis of the recent wars from the historical perspective and perceived challenges, it can be said that, neither the conventional nor asymmetric method can individually satisfy our defence requirements. However, the combination can mitigate various challenges. Few of the possible options are discussed in the subsequent paragraphs:-

a. **Doctrinal and Organisational Modification:** Apart from the present conventional and UCW forces, a separate "Asymmetric Force" may be formed by drawing personnel from the main conventional forces. For example, the weaker force can easily destroy a bridge operating in small group, but stronger force cannot guard all the bridges and remain vulnerable throughout the battle space. Asymmetric Warfare Team (platoon/section size) may be organized to fight small group actions. Led by junior leaders, they should be proficient in deciding and innovating without any supervision. The team should be self-sustained and capable of sustaining independently. Some of the formations are already practicing this concept as Operation Behind Enemy Line (OBEL). This OBEL forces continue to conduct minor operations directly under formation HQ. However, this concept needs to be clearly mentioned in the doctrine. Therefore, draft 'Blending Unconventional Warfare with Conventional Warfare' may be reviewed by Army Training and Doctrine Command (ARTDOC) and related topics of AW need to be included. Armed Forces Division (AFD) may also formulate a joint AW doctrine.

b. **Induction of New Equipment:** AW team may include special weapons like sniper, 3rd generation Anti-Tank Guided Missile (ATGM)/ weapon, shoulder launched anti-aircraft missile, portable grenade launchers, small drones, etc. They may be given electric motorcycle, which will be fast, small and light capable of extreme cross-country mobility along with night vision and required communications gears. They can be self-sufficient in terms of logistics. They

can stealthily engage enemy, destroy specific target and withdraw rapidly. Therefore, electric motorcycle, drones, 3rd generation ATGM, etc. may be inducted in the Armed Forces.

c. **Capacity Development:** In future war scenario drones are likely to play vital role. Explosive filled drones are likely to be very effective against armour, ships, logistics vehicle, etc. There will be huge necessity of drones. Electric Motorcycles also seem to be very effective in the terrain of Bangladesh. Since technologies of these two items are not that complicated, this equipment may be produced in Bangladesh.

b. **Modification in Tactics:** Warfare may be conducted by both asymmetric and conventional means. Both the conventional and UCWF will have synchronized actions. The actions against the enemy will be conducted all over the battle space in physical, psychological and information/vcyber domain simultaneously. The cyberspace will be utilised to cause continuous damages to enemy's network based on military and state machineries. All these combined actions will shake her mental equilibrium and bring her to a physical and mental culminating point where she will find it no longer viable to continue with the war effort.

e. **Riverine Asymmetric Forces:** Small speed boats may be fitted with Rocket Launchers, Anti-Tank Guided Missiles (ATGMs), Automatic Grenade Launchers or other suitable hand-held shoulder-controlled weapons. They may utilize river networks to hide themselves and conduct hit and run actions against the enemy, while her heavy echelons are under-taking assault river crossings, negotiating an obstacle or concentrating at a place.

f. **Integration of Armed Forces and Other Para Military Forces:** Bangladesh Army (BA), Navy (BN) and Air Force (BAF) need to be well integrated in the overall AW plan. Other Para military forces like, BGB, Coast Guard, Police, Ansar, VDP and BNCC may also be integrated with the overall AW plan. Proper coordination between Army, BN and Coast Guard will be required while engaging any target in the coastal area. Similarly, proper coordination will be necessary between Army and BAF while engaging any target in the air.

g. **Proposed Training Modalities:** Mastering asymmetric technique will require individual, group and collective training at different levels. Various concept of AW may be practised during collective training conducted by the Armed Forces. Proper integration and coordination in this regard will be necessary between Armed Forces and Para military forces. Sponsoring the new thoughts and ideas of the junior leaders are likely to pay great dividend in capacity building and orientation of any forces. Innovations are the most important aspect of AW. So, training should be focused to develop the capacity of individuals, groups and forces.

Conclusion

AW changes its form with the invention of new technique, tactics and technology. So, the definition of AW is also changing with time and space. However, simply it can be said that, AW denotes to a situation where a weaker force, being grossly overpowered by a stronger one, adopts unorthodox approach and tries to defeat enemy with innovation. The aim of AW is to defeat stronger enemy at relatively low cost. Historically, Bangladesh Armed Forces adopted and implemented the techniques of AW in the glorious Liberation War of 1971. Similarly, many other forces across the world also conducted AW and defeated the stronger opponent.

The determination and patriotism of weaker forces to protect their motherland always works as a very important factor. Present use of drone and anti-tank weapon to destroy armour vehicles is a classic example of innovation. Use of electric motorcycles to transport drones, anti-tank and anti-aircraft missiles stealthily has also opened new arena in the AW environment.

The context of other Armies and Bangladesh in terms of technological advancement and geo-political situation is not similar. However, few of the battle winning factors like determination, patriotism, use of technology innovatively, etc. remain universal. In the present context, Armed Forces of Bangladesh need to learn lesson from various war and revise their training and doctrinal aspect.

Analysis of the recent wars from the historical perspective and perceived challenges, it can be said that, neither the conventional nor asymmetric method can individually satisfy our defence requirements. However, the combination can mitigate various challenges. ARTDOC and AFD may publish necessary doctrine to address various aspects of AW. Considering present context, electric motorcycle, drones, 3rd generation ATGM, etc. may be inducted in the Armed Forces. To increase the capacity BMTF may produce Electric Bikes and Drones commercially. Few other steps like river based asymmetric actions, integration of Armed Forces and other Para military forces, some modification in the tactics and training, etc. are likely to enhance the capability of Armed Forces of Bangladesh.

Recommendations

Based on the findings and discussion done above recommendations are as follows:-

- a. Draft GSTP on 'Blending Unconventional Warfare with Conventional Warfare' may be reviewed by ARTDOC where related topics of AW may be included.
- b. AFD may formulate a joint AW doctrine.
- c. AHQ may task BMTF to study the feasibility of producing Electric Motorcycles and Drones for both commercial and military purposes to enhance the capacity of Armed Forces in terms of AW.

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Brief Biography



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Confidence and Security Building Measures: Bangladesh and Regional Perspective

Lieutenant Colonel Muhammad Tauhid Ali, psc, G, Arty

Introduction

Nexus between regional development and peace-security-stability has been termed as the cornerstone policy dogma for almost all states of the world. After the end of Cold War (1946-90), the “Economic Boom” led the countries from polarization to the regionalization; aspiration to stronger co-operation for sustainable development. These phenomenal habits of co-operations were initiated to avoid any military escalation through regional Confidence and Security Building Measures (CSBMs) including Track II to Track I diplomacy providing channels of communication, dialogue and summits.¹

From the cave men to the present world, symbolic gestures have been sought to dispel mistrust and pave the way for confidence building. Conceptually, CSBMs seek to reduce or eliminate the causes of mistrust, fear, tension and hostility amongst nation states. CSBMs increase openness and transparency in military activities, thus increasing the predictability of other states’ actions and behavior. Regular military activities are not mistakenly perceived as threatening under a successful CSBMs arrangement. Most importantly, CSBMs paved the way for identifying graveness of military activities, providing a means to a state looking for explanation or counter militarily if essential.

The regional and international security dynamics have been changed dramatically over the years due to the increased challenges both in scale and complexity. The South Asian Region which is geographically and economically one of the most prosperous and volatile play grounds is of no exception. In the midst of present complex security dynamics, the South Asian Region, while stepping towards steady developments, is being confronted by myriad challenges. Historic bilateral territorial hostilities, nuclear weapon issues, water sharing issues, border skirmishes, energy security, insurgencies, violent extremisms, etc. are the examples and factors to be counted. Besides, external factors like the interest of USA, China and present Russia-Ukraine war are making the dynamics more complex in nature.

Bangladesh, the youngest nation of the region is the torchbearer of peace and solidarity – having foreign policy dictum “Friendship to all, Malice to none.” Despite relentless pursuance for peace and prosperity, Bangladesh is also facing challenges in regional co-operation due to regional complexities. Scope of future cooperation among the neighboring states in many aspects, relation with Myanmar triggered by Rohingya crises, having no effective Regional

Co-operative body and “The External” catalyst questioned about not having CSBMs in the region; resulting in existing complex security environment.

With these complex security dynamics in the South Asian Region, this paper will first explore the novel concept of CSBMs. Later, regional threat, relations and challenges will be discussed to correlate Bangladesh's perspective. Finally, the article will briefly discuss plausible CSBMs pathways for the region and Bangladesh perspective.

Confidence and Security Building Measures (CSBMs): An Overview

CSBMs in international relations, an action that reflects goodwill toward or a willingness to exchange information with an adversary.² The main aim of such measures is to minimize or regulate the mistrust among the countries on military or other issues by having proactive Diplomacy.³ The main essence of CSBMs is exchange of information on agreement basis to prevent use of military deadly forces.

Principal Factors in Designing CSBMs

CSBMs need to be tailored to the specific situations and characters. It should also be adaptive to the changing situational development. However, following factors may be taken into account while designing CSBMs policies:-

- a. Success of this process only depends on the good will of the conflicting states.
- b. When the negotiating states are rigid in negotiation, methods are quite difficult to apply. In these situations CSBMs on non-controversial issues can facilitate first contacts and pre-negotiations. Existing channel of communication may help to melt the ice.⁴
- c. Pathways are non-common for all, rather situation specific; may be regional-multilateral or bilateral.
- d. The roadmaps need to be part of consistent policy; multiple CSBMs may be effective in holistic approach.⁵
- e. More so, to enhance mutual understanding, periodical revision is essential in execution mechanism.

Approaches of CSBMs

There are different approaches of CSBMs. These are as follows:-

a. **Military Approach:** The establishment of hotlines between the State heads of super power in Cold War era is the origin of this approach. Information sharing on major troops movement, exchange of military training by belligerents, demilitarized the conflicting zones, etc. are few of the tools of military CSBMs.⁶ Hotlines between North and South Korea were established

in 1991 to inform early notification of military maneuvers. Recent Hotline culture between India-China Army commanders definitely helped deescalate situations.⁷

b. **Diplomatic Approach:** Bilateral or universal Diplomatic efforts are the nuclei of this approach. From 1975-1990, The Helsinki Final Act reduces escalation between East –West as part of CSBMs.⁸

c. **Cultural and Political Approach:** In case of Intrastate conflict or mass civil war, cultural and political CSBMs act as a catalyst to reduce escalations of conflict.

d. **Gradual Reduction in Tension (GRIT):** “Strategies whereby mutual tension and fear can be interrupted and the de-escalation process begun through conciliatory moves”- Charles Osgood timely stated about GRIT which is a gradual and continuous process by series of initiatives among the parties. Camp David Accord is the outcome of Egyptian Sadat’s visit to Jerusalem in 1977.⁹

Threats, Relations and Challenges: Bangladesh and Regional Perspective

Regionalism has its great effect on security and progressive development. There are instances where bilateral issues have been effectively dealt with by the larger concept of win win situation generated by regionalism and multilateralism.¹⁰ Blessed with enormous “natural resources and geographic diversity”, South Asian Region consists of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. These enormous “potential for prosperity” may jeopardize due to the growing security concern in the region. Unfortunately, even being the regional boundary sharer and major catalyst in security dynamics, China and Myanmar are kept out of the regional Forum. All these missing links in interconnectivity among the regional states systematically increase the risk to stability, and order in the region.¹¹

Figure-1: Map of South Asian Region



Source: <https://www.researchgate.net>

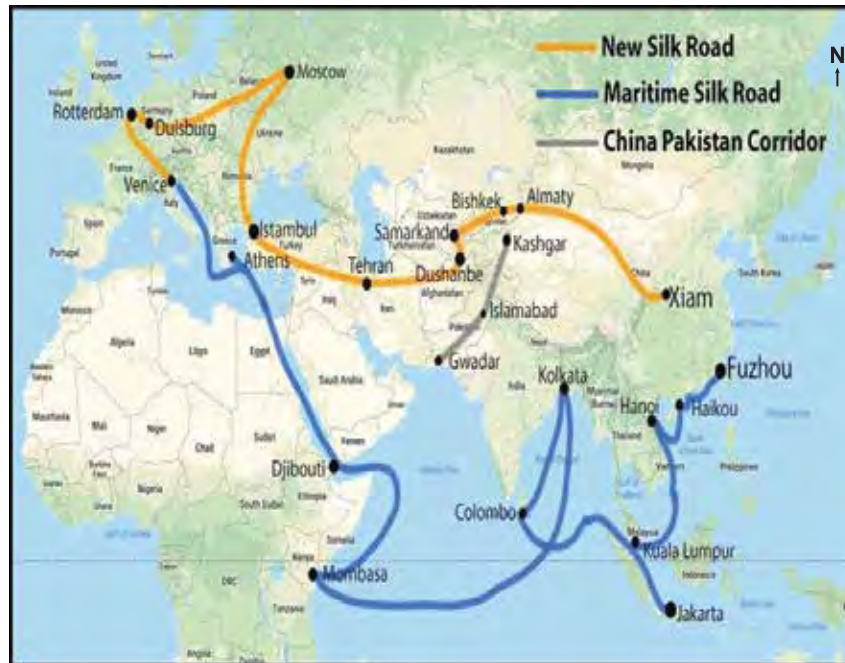
Bangladesh, geographically located at a nuclei point of voltaic South Asian Region faces multi dimensional security dynamics. Scope of cooperation within neighbours, unreliable ties with Myanmar, international choke point, Indo-Pak equation tangled with few other regional challenges made the security environment challenging.

Regional Threat Perception

Security threats reflect military, economic, political and broader strategic trends of a country or a region. CSBMs combine all the tools of statecraft to be brought together in such a way as to link economic realities, political issues and strategic challenges. To do so, possible regional CSBMs threats are:-

- a. Non-traditional security threats like cyber security, rise of religious fundamentalism, violent extremism, etc. are likely to become more potent.
- b. Traditional nuclear race, border killing-skirmishes, increase of arms race and the escalation of tensions around territorial disputes.
- c. Trans-border river water sharing disputes, energy security, imbalance trade deficiencies, mistrust between the political and diplomatic channel hinder any positive cooperation process.
- d. The conspiracy theory of “String of Pearls” and “Belt and Road initiative” will definitely have major impacts. More so, “Blue Ocean Economy” may act as a catalyst.
- e. Climate change induced IDP and Refugee, food and social security will have a detrimental effect.
- f. The 20 years war in Afghanistan has been termed as a linchpin for South Asian security. The killing of Al-Qaeda leader Ayman al Jawahiri on 31 July 2022 escalated potential risk of violent extremism threatening overall security situation of the region.¹²
- g. Forcibly Displaced Myanmar Nationals (FDMNs) or the Rohingya crisis is no longer only a humanitarian calamity but a potential threat to Bangladesh's internal stability.¹³ The security threats and challenges are posing on the full spectrum of regional security dynamics. The challenges will range from human or non-traditional security, transnational security, internal security, militancy and terrorism, border security, etc. It is further escalated by coercive diplomacy by Myanmar.¹⁴

Figure-2: Map of Belt and Road Initiatives

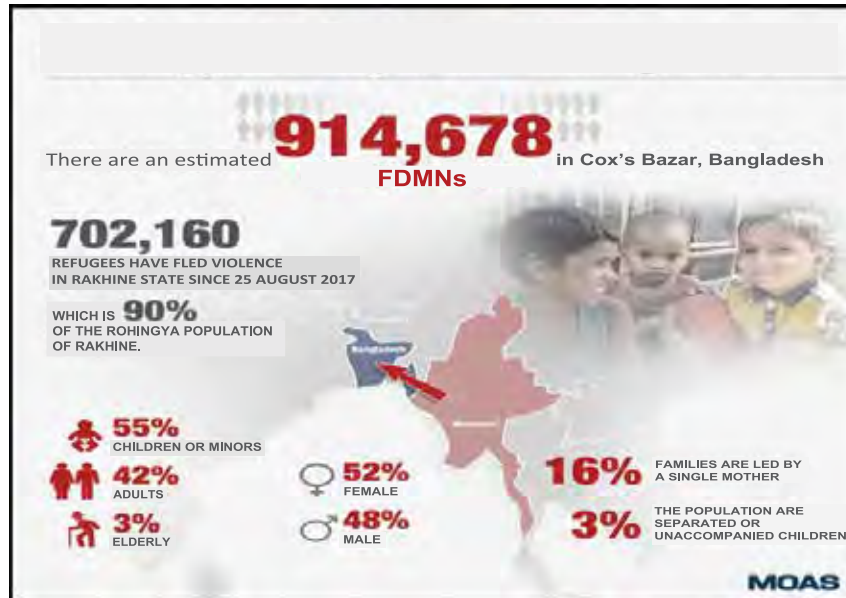


Source: <https://www.researchgate.net>

Bilateral De-facto Relation

Bangladesh-India Relation: The very geographic location of Bangladesh and India demands security cooperation from each other. Bangladesh's location on the northern edge of India is important for India's security. Sensitivity of Siliguri corridor and stability of "7 Sisters" largely depend on regional cooperation.

Bangladesh-Myanmar Relation and Rohingya Crisis: Myanmar is one of the first countries in the world to recognize Bangladesh on 13 January 1972.¹⁵ However, the relation could not be accelerated further. The current political context in Myanmar is extremely complex with unstable foundation for effective governance.¹⁶ In response to the coordinated attacks on 24 police outposts launched by ARSA in August 2017, Myanmar's Tatmadaw carried out a systematic and planned "Textbook example of Ethnic cleansing operation" resulting in the exodus of over 700,000 FDMNs to Bangladesh.¹⁷

Figure-3: FDMNs in Bangladesh

Source: <https://www.researchgate.net>

Humanitarian and other socio-economical uncertainties are growing in different dimensions due to longer stay of FDMNs in South Eastern Sector of Bangladesh. A sense of insecurity and uncertainty may escalate multidimensional asymmetric threats causing instability in the sector or region. China has age old and historical relation with Myanmar; vis-a-vis influence over Myanmar's geo-political and geo-economic issues. Moreover, recent billions of dollar investment in Rakhine may cause dilemma for major stakeholder's interests. More so, negative diplomacy of Myanmar added by "slow move" of international actors is making the issue more complex in nature.

Non Effectiveness of SAARC on Regional Security Dynamics

Regional institutions commit the allies to security, democracy, individual liberty and the rule of law, ensuring peaceful resolution of disputes among the member states. In comparison to the European Union (EU), Association of South East Asian Nations (ASEAN) and the North American Free Trade Agreement (NAFTA); SAARC has a low level of regional cooperation and interdependence. Economic complementarities are the catalyst for regional natural economic partners. Despite having shared economic realities, the eight South Asian countries could not form an economic grouping due to the self-centric and coercive diplomacy of big actors. SAARC remains highly unsuccessful in realizing regional security objectives as well. Bilateral summits have also been used for this purpose, but could not minimize the security dilemmas between India and Pakistan or disputes on trans-boundary rivers water sharing issues.¹⁸

CSBMs: Is it a Game Changer for Bangladesh and South Asian Region?

Regional security cooperation does not guarantee disappearance of bilateral or regional disputes. In fact, it facilitates in managing disagreements through positive diplomacy or shows the path of amiable solutions. CSBMs facilitate mitigating the rivalry embodied in disputes by procedural methods. CSBMs are institutions in their own right, in the sense that institutions are rules that guide behavior. Because of the number of outstanding inter-state disputes in the Western Hemisphere and the domestic instabilities confronting many countries in the region, efforts to increase confidence and build security in the region have attracted much attention in Europe.¹⁹ Thus, Bangladesh and South Asian countries may also enhance CSBMs initiatives for regional stability.

Case study-1: Rohingya Crisis

Due to the crisis, bilateral relation between Bangladesh and Myanmar went down and mistrust ignited by provocative military activities. Later, bilateral dialogues, visit of CAS of Bangladesh Army, trans-border meeting and international initiatives like genocide trial at ICJ are few examples of CSBMs that temporarily ceased the escalation. However, non-compliance and diplomatic hindrance of major actors due to their economic interest in Myanmar accelerated regional uncertainty.

Case Study-2: Crisis on PANDONG Lake

The border disputes between China and India brought two military face to face and threatened bilateral relation. However, repeated dialogues and phone calls by political leaders, local and higher level military co-ordination and information sharing, military tactical level dialogues and non-adherence to rumor and provocative actions scaled down the tensions. Russia's "Quiet Diplomacy" played a vital role in reducing India-China border tensions. Moscow's efforts have helped in the release of ten Indian army soldiers that were captured by the People's Liberation Army (PLA) ahead of the Russia-India-China (RIC) foreign ministers' meet on 23 June 2020.²⁰ Subsequently via virtual conference with the foreign ministers, both the team agreed to maintain peace in disputed area.

In both the cases it is evident that, conflict escalated due to lack of security cooperation which has been normalized through the means of CSBMs. However, in both the cases external actors had to intervene due to the lack of authoritative Regional Security Forum. China, being the "Neo strategic giant" has substantial influence over South Asian Region.

Suggested CSBMs Pathways

Regionalization of CSBMs: It is evident, that security dynamics are unique, thus priorities may differ across the regions resulting in neighboring states finding it easier to cooperate on particular security issues. Bilateral,

Sub-regional and Regional initiatives may be effective for specific crisis oriented issues. Rohingya Crisis may be mediated by a forum of Bangladesh, Myanmar, China and India. As a whole, CSBMs should be an integrated part of a broader settlement and reconciliation strategy.

Effective Regional Forum for Integrated Security: Regardless of SAARC's weaknesses, this is the only platform where South Asian leaders gather to talk over local problems with 1.6 billion residents. A holistic approach, integrating all stake holders (internal and external) would definitely pave the way for strengthening the SAARC confidence building capabilities. The member states should come to a consensus and delegate some substantial security authority like NATO or AU.²¹

Integrating China: Integrating China in regional dialogues, whether trilateral or multilateral, would have distinct benefits beyond mitigating its fears of containment. Like Afghanistan, Myanmar needs to be integrated in SAARC, bounding him mutual cooperation for the regional stability and enhancing regional CSBMs. Bilateral or sub regional CSBMs trio among Bangladesh-India-Myanmar may also be explored.

Non-traditional Security Agendas: Like climate change induced security threats, cyberspace security, food-water-health and broader resource security etc. provide opportunities for cooperative action. A regional task force for Humanitarian Assistance and Disaster Response provides an arena to build relationships, trust, joint capabilities and understanding towards a common goal.

Cooperation in Defence Policy Papers and Arms Register: Regional cooperation in synergic acceptance for defense policy white papers, arms registries, statements of defense expenditures and other transparency measures would enhance military transparency efforts as a means of effective CSBMs.

Regional Joint River Commission: Since management of trans-boundary water resources is one of the biggest challenges for riparian states, proactive CSBMs may help them to form joint river commission. For example, effective regional water regulating body may share necessary information, regulation on hydroelectric project and arrangement for periodical joint commission meeting; assuring trans-border river security in the region.

Regional Cooperation in Traditional Military CSBMs: Following traditional means of CSBMs can be introduced:-

- a. Adequate line of communications for information sharing and dialogue on security perceptions.
- b. Arrangements of annual top defence leadership meetings to discuss mutual cooperation.

- c. Symbolic and non-controversial military approaches like unilateral gestures of Good will visit, cultural exchange or joint sporting events.
- d. Enhanced high-level defence contacts, and exchanges among Defense Staff Colleges and training.
- e. Exchange of relief, information and medical support in natural calamities. Besides, cooperation in disaster management training would definitely help each other.
- g. Voluntary exchange of information on armament and equipment test, military exercises and any major military activities in and around bordering areas.

Regional/Joint Border Monitoring Cell: As a CSBMs mechanism, concept of regional joint border monitoring cell can be formed under SAARC or as an independent body. Member states will file up their disputed arguments and share border forces information. Joint patrolling, border meeting, information sharing, non military cooperation and maintaining standard military norms could be the CSBMs tools. Besides, Legal body has to bind the security forces to observe and maintain IHL and Geneva convention protocols.

Cooperation in the Blue Ocean: Blue ocean cooperation may be of two tiers; establishing communication channels among the navy commanders of the participating states and blue economy information sharing by the coastal nations like Bangladesh, India, Pakistan and Myanmar etc. The tools for CSBMs could be promoting cooperation to combat terrorism, exploring cooperation in search-and-rescue operations, conducting educational activities and exchanging various types of information like navigational, hydrological, meteorological and ecological.

Spoilers and Pitfalls: No peace or settlement process goes unhindered. As such, spoilers would work against reconciliation and settlement process for any CSBMs initiatives. Motivated by specific ideology, vested interest or a third party goal, spoilers may try to jeopardize CSBMs process through wrong messages, provocations or by blocking positive decisions. Besides, a variety of pitfalls may also arise in designing and implementation process.

International Actors and Reassurance Policy: Overall international security situation may have substantial effect on regional security dynamics. As such, major powers will always try to infuse its strategic goal on regional interests. "First do, no harm" would only be the principle for non-regional actors. Taking all these into account, guarantee and reassurance policy may include:-

- a. Provision for (regional) annual security review conference where all regional and friendly actors can have constructive discussion.

b. Key reminding choke points to ensure lateral progression of the ongoing CSBMs. To ensure conducive security and economic cooperation, participation from both military and civilian authorities would definitely strengthen the purpose.

c. CSBMs are a time consuming process. Success will largely depend on the implementations of the respective declarations, agendas or agreed negotiable goals. It should also conduct follow up measures to prevent immature setbacks. Thus, a step-by-step approach is suggested, beginning with easier, less contention, or less sensitive issues.

It is proved that, there is no “one size fits all” road maps in CSBMs. Thus, it has to be dealt by situation specific. The CSBMs actions can soften potential hostilities and evade likely escalation, seeking to influence the perceptions of one state over the intentions of the other. The basic premise is the idea that armed conflict can arise from a false perception of national military policies or from the difficulty of distinguishing between offensive and defensive military preparations. Last but not the least, CSBMs try to transfer stability to relationships, bridging for relying on future commitments.

Conclusion

Security landscapes in the current world are ever changing and getting complex day by day. More so, correlation between regional stability and sustainable development cannot be ignored. Traced back from Cold War era, CSBMs aim to clarify inaccurate perceptions of motives, to avoid misunderstandings about military actions and even encourage joint initiative on shared security needs. CSBMs initiatives are now extensively used in managing conflict and bilateral issues. However, limitations of CSBMs initiatives i.e. failure in addressing root causes, lack of political will, frequent change of policy etc. are pulling it back.

Geographically and strategically South Asia plays a vital role in world security dynamics. Despite having long shared history and culture, countries of South Asia are tangled with multidimensional security complexities. Age old hostilities between India-Pakistan, Afghan War, water sharing and land border disputes, violent extremism etc. are making the scenario more complex. Recent coercive activities of Myanmar and influence of China questioned about the credibility of SAARC. Bangladesh, geographically located at a nuclei point of voltaic South Asian Region faces multi-dimensional security dynamics with her de facto neighbours. These missing links in interconnectivity among the South Asian Regional states demand a holistic CSBMs initiative for future sustainability.

A holistic regional approach with bilateral CSBMs initiatives including China and Myanmar may hold good for future regional stability. All these initiatives are most likely to succeed if their implementation is reciprocal, incremental, long-term, predictable, transparent and verifiable.

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Brief Biography



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The Evolution of Sea Power Concept and Its Impact on Formulating Maritime Strategy: Classical Era to the 21st Century

Commander Haider Jahan Khan Emon, (H1), psc, BN

The importance of sea power is beyond doubt. Several examples of the consequences of not controlling the seas can be cited from history. The Phoenicians controlled the Mediterranean and were thus able to expand their trade. The Ottomans were defeated in the naval battle of Lepanto on 7 October, 1571, effectively ending their land forces.¹ In the mid-18th century, France had Europe's largest and best-trained army. Despite that France lost its overseas empire, including Canada, to Great Britain as they couldn't support its colonies through the seas.² Britain maintained a global empire due to Royal Navy's superiority at sea where "the sun never sets" throughout the 19th century.

Sea power has a fundamental value in terms of global influence and formulating the maritime strategy of the states. In the 21st century during globalization, the importance of sea power, for example, monitoring sea routes and ensuring the ocean commerce, is crucial. Considering the significance of sea power, it can be inferred that studying the theory of sea power is historically important today.

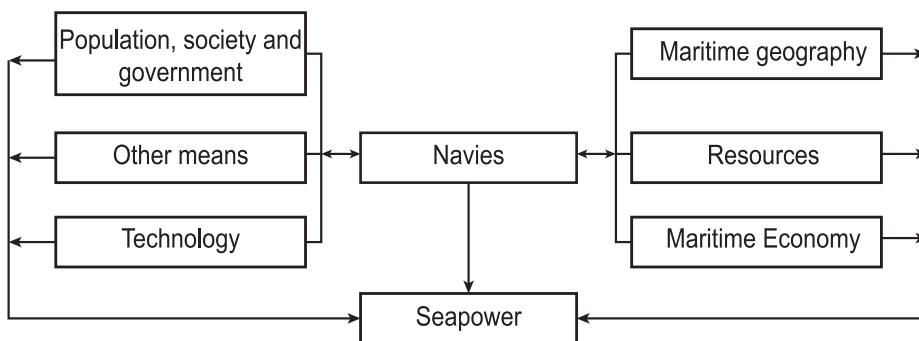
In the late 19th and early 20th century, two contemporary strategists Rear Admiral Alfred Thayer Mahan, USN (1840-1914) and British strategist and historian Sir Julian Stafford Corbett (1854-1922) laid down the foundations and principles of sea power. Mahan took a historical approach to sea power analysis to develop universally applicable rules, rather than a theoretical one. Corbett's primary concern was the effectiveness of sea power during conflicts. At that time, sea power meant the central means of controlling national activities and power projection over rivals. Their categorization of sea power does not match today's technological innovations. Nevertheless, in the classical era of the battleship, they took the initiative to convince others of the value and utility of a state possessing a sea-going capability to fulfil and meet the national objectives of that state in time of war.³

Under this backdrop, this paper will highlight the evolution of the sea power concept to formulate the maritime strategy and evaluate the relevance of the classical era concept of sea power in the 21st century. In this paper, at first sea power will be defined. Then it will discuss the sea power theory of prominent classical era naval strategists. After that, it will highlight the changes in classical concept of sea power over time and its impact on formulating maritime strategy. Later it will discuss the relevance of their thoughts in the 21st century.

Definition of Sea Power

Sea power is difficult to define. It focuses on factors that make countries or people powerful. At the same time, it focuses on whether countries are able to let others do what they want. Power can thus be represented in terms of potential or consequences. Mahan defined the potential of sea power as, “sea power in the broad sense . . . includes not only the military strength afloat that rules the sea or any part of it by force of arms, but also the peaceful commerce and shipping from which alone a military fleet naturally and healthfully springs, and on which it securely rests.”⁴ Thus the potential of sea power can be defined by the presence and number of the naval, coast guard, merchant ships, maritime industries, seafarers and materials needed to use the sea.⁵ However, sea power is defined not only by the number of ships or personnel but also by the ability to influence the behaviour of other states. As Sir Julian Corbett said, sea power is not necessarily about what exactly happens at sea, but about the outcomes of the influence of sea power on land.⁶ Geoffrey Till mentioned that sea power must be defined as input, that is, the sum of the various naval and maritime related assets and output, that is, the ability to influence the behaviour of other actors.⁷ Merchant fleets, the fishing industry, shipbuilding and maintenance, maritime research or even the insurance business all have an influence on naval power and thus also influence in their way. The decisive factor is that the sea power of one state can be significantly higher than that of other states. This difference has a significant impact on the strategic planning of states in peace as well as in war.⁸ Comprehensive definition of sea power means that virtually every state in the world has a certain degree of sea power. In some circumstances, the use of sea power merely creates the possibility of winning the conflict on land or in the air; in other scenarios, sea power is the decisive factor for ending a conflict.⁹

Figure-1: The constituents of sea power¹⁰



Source: G.Till, *Seapower A Guide for the Twenty-First Century* (4th ed.), Abingdon: Routledge, 2018, p .21.

Classical Era Concept of Sea Power

Mahan viewed sea power as an instrument of national power. He stated that control of the sea is necessary to become a world power and to maintain such control a powerful navy is necessary. He defined six principal conditions affecting the sea power of a nation. These are geographical position, physical conformation, the extent of territory, number of population, the character of the people and the character of the government.

By geographical position, Mahan meant that, if a nation is positioned in such a way that it is neither forced to defend itself on land nor forced to pursue territorial expansion on land, it has an advantage over a nation whose borders are continental. This gave England a significant advantage over France and Germany as a sea power. Mahan's second element is physical conformation by which he meant coastline. A country's coastline is one of its boundaries, and the easier the boundaries' access to the sea, the greater the tendency of its people to interact with the rest of the world through it. This element is crucial for a country for the economic well-being. The third condition of Mahan was the extent of territory. When it comes to the development of sea power, the length of a country's coastline and the character of its harbours are more important than the overall number of square miles.¹¹

Mahan's fourth element is the number of people, who rely on the sea for a living, e.g., sailors and fishermen. This is critical because these abilities are difficult to replace. Sailors or fishermen develop their skills over many years, and the loss of a considerable number, especially for a small country, can be devastating.¹² A country may quickly build up a credible and sizeable army if it has a modest standing professional force as the nucleus of the army. A Navy cannot be built in a short period of time. Ship construction takes years, and having sailors that can maintain and fight the ship necessitates extensive training.

The character of the people was Mahan's fifth condition, and it referred to a country's attitude toward commerce. Countries that recognize the importance of trade and are open to it tended to prosper and grow. The character of government was Mahan's sixth and last factor condition of sea power. He meant that if the government pays attention to the sea service in terms of commerce (which directly leads to national wealth) and a strong capable navy (which directly leads to the security of that national wealth) that country will flourish in the long run.¹³

He emphasized four principles that are crucially important for sea powers; the inherent value of a strategic central position, the principle of concentration, the requirement of decisive battle and the relationship between logistics and combat.¹⁴ The strategic value of a place is defined by the position/situation, the military strength and the resources available at the place. Taking a place of great strength may not be worthwhile due to weaknesses in its strategic lines

or lack of resources. However, the value of a central position is not absolute. It is a supporting element and exists alongside many other supporting elements. Thus, the benefit of a central position is very limited when there is a stronger adversary.¹⁵

According to Mahan, victory at sea is only possible through an appropriate fleet concentration and destroying the adversary through a decisive battle. It is accompanied by the fact that the fleet is never divided. The fundamental objective is to gain local superiority by concentration.¹⁶ Concentrated fire on the enemy fleet should be the main means of the battle fleet to exercise sea power. Thus battle fleet is the ultimate key to success.

The connection between logistics and combat was highly emphasized by Mahan due to the technological events of his time. Naval bases were essential because ships powered by steam were not able to travel great distances without stopping. In times of war, coaling stations became a need to sail and function beyond home water. A successful maritime strategy was not possible without logistics. This is accompanied by the supply lines. Thus Sea Lines of Communication (SLOC) must be followed to transport supplies (fresh, fuel and ammunition) to the naval fleet and national commerce.

Beyond these four principles, there are other essential points. The distinction between the navy, which must always be deployed strategically/tactically offensively, and the coast guard, which must always be deployed defensively, was very important.¹⁷ Mahan stressed the determination of a proper objective as an essential element of where to act. His idea was, "... the proper objective is . . . the organized military force of the enemy."¹⁸ Mahan's principle of naval strategy evolved around offensive operation. Thus Mahan stated, ". . . the assumption of a simple defence in war is ruin. War, once declared, must be waged offensively aggressively."¹⁹

Mahan advocated that there were two main methods to gain and maintain command of the sea: decisive battle and blockade. The main task of the fleet was to attack the enemy fleet to destroy the enemy and gain control over the water. This could only be achieved by a decisive and clear victory in the form of a decisive battle. Because of these considerations, many navies neglected operational warfare throughout WWI. They relied on tactics and technology to win decisive engagements. Mahan believed that a close blockade could lead to the detention of merchant and even naval ships in their ports. He was aware that the development of submarines would make close blockade more difficult, so a distant blockade between the blocking ships and the blocked ports had to be taken. However, this distant blockade requires more number of ships. Thus technical progress does not change the basic principle of the blockade.

Corbett had a similar concept to Clausewitz and opined that the ultimate purpose of the naval deployment is to achieve corresponding goals in the war

and to accomplish the political ends.²⁰ Corbett made the distinction between maritime strategy and naval strategy. According to him, maritime strategy plays a role to establish relationship between the army and navy in the war plan. Naval strategy is about operational warfare at sea to deploy the fleet for the mission specified according to the maritime strategy.²¹ The goal of naval warfare is to gain the command of the sea while denying the same to the adversary. The purpose of the navy is to control the SLOC. Similar to Mahan, Corbett also advocated decisive battle and blockade as two main methods to gain and maintain command of the sea. While Mahan was in favour of decisive battle to achieve command of the sea, Corbett viewed fleet in being a legitimate defensive method of disputing command of the sea.²² Corbett made clear that during the war both attack on the enemy and the defence of SLOC have to be carried out simultaneously for the entire duration of the war. Corbett understood that command of the sea is not absolute rather exists in two different states and degrees. He differentiated between general or local and permanent or temporary command of the sea. A general command of the sea may be permanent or temporary. A general and permanent command of the sea does not mean that adversary cannot do anything. Rather it means that adversary does not have sufficient capability to disrupt the trade or change the outcome of the war in his favour. In addition, adversary cannot carry out trade or operation without significant risk of failure. Corbett did not believe that a decisive battle is necessary to achieve command of the sea. Rather he advocated that the political and military consideration may be fulfilled with achieving a local command of the sea.²³

Corbett had different view on fleet concentration. He believed that prudent risk taking and element of surprise are necessary to have successful outcome of the war. With a concentrated fleet it is not possible to achieve surprise at strategic and operational level.

The French Vice Admiral Raoul Castex (1878–1968) was also aligned with Mahan's concept of sea power and requirement of battleships. He believed that the purpose of maritime operation is to obtain command of the sea or at least dispute the enemy's command of the sea.²⁴ He termed command of the sea "is not absolute but relative, incomplete and imperfect."²⁵ He emphasized the use of air power in the conduct of war at sea. Castex similar to Corbett firmly believed in the jointness of the Army and Navy. To highlight the relationship, he said that if army is the infantry then navy is artillery. Navy provides indispensable support to Army that allows accomplishment of the national objectives. The contribution of sea power is directly related to the victory on land.²⁶

Adoption of Principles of Sea Power during World Wars

Pre-World War I: The reliance on the superiority of capital ships in major naval battles was used as a basis for the construction of navies. Mahan's ideas

about the importance of the battle fleet and the decisive battle were adopted by his followers. Mahan's indications that convoy, for example, was an effective method of protecting shipping were practically ignored for a long time.

World War I (1914-18): Mahan's principles were applied during the First World War. The Germans were convinced about the concept of the great decisive battle but did not consider Mahan's view of other naval warfare options such as cruiser wars (scouting for enemy fleets and hunting enemy convoys).²⁷ Options such as assaulting British merchant ships to weaken the adversary or preventing British troops from landing in France were not given enough consideration. The Germans didn't pay enough attention to the importance of a good maritime position for successful deployment at the open sea. As a result, the Allies stopped German ships from reaching the Atlantic's open waters. The navy was no longer able to avert a British sea blockade when German deep-sea traffic was halted.²⁸

Inter War Period (1919-38): Following World War I, the US Navy focused on developing a capable battle fleet. The majority of the naval command was preoccupied with material, and it was considered that smaller ships like destroyers could be built relatively rapidly in the event of an emergency.

World War II (1939-45): US Navy's emphasis on major decisive battles continued during the Second World War, as they were preparing for the Japanese in the Pacific. The Japanese side followed similar views, and many Japanese admirals were also followers of Mahan. Aircraft carriers and submarines were regarded as auxiliary forces for the capital ships that formed the core of the navy.²⁹ In the Pacific theatre, war was fought as an oceanic campaign. The victory was achieved through significant naval battles to destroy the Japanese navy, amphibious operations to gain control of the strategic bases, naval interdiction to disrupt Japanese SLOC and isolation of home ports. In the European theatre, transporting troops and supplies was the primary strategic focus of the allied navy. The protection of convoys due to the emergence of German U-boats became a significant mission for the allied naval forces.³⁰

Changes in Maritime Warfare after the World War II and during Cold War

The end of WWII in 1945 saw the end of the great battleship era. It had strategic and tactical implications. The start of the Cold War created a security environment which was the basis of different considerations in naval planning. The nuclear weapons and the development of supersonic aircraft made naval strategists increasingly abandon Mahan's views and focus more on Corbett's maritime strategy, that is, the interplay among air, land, and naval forces (joint operations). The usefulness of a strong navy was questioned because of its vulnerability to air attacks. It was observed that the concept of command of the sea is no longer feasible thus consideration was given to a strategy of sea

control. According to Admiral Stansfield Turner, "Sea Control is intended to connote more realistic control in limited areas and for limited periods of time... it is no longer conceivable, except in the most limited sense, to totally control the seas for one's own use or to totally deny them to an enemy."³¹ Thus sea control has various degrees. Admiral Richmond countered that aircraft are also instruments of sea power since they carry weapons that can be used for sea control. With the development of nuclear-powered submarines equipped with nuclear missiles, sea power has been given a role in a possible nuclear war. Thus a new concept of sea control was developed at the strategic level, which was able to provide strategic deterrence against a nuclear attack.³² Despite this concept, the vulnerability of naval forces against missile attacks remained. It leads to a key question of how well naval forces could adapt to changes.

Sea Power in the 21st Century

Within the concept of sea control, the naval forces take on different roles. Naval forces have three main functions: military, diplomatic and constabulary to fulfil their purpose.³³ The military function takes priority as the naval forces are equipped to perform tasks such as strategic deterrence and thus power projection, coastal defence or the defence of merchant shipping. Diplomatic role is not a new function for the navy. Naval diplomacy has been used as a

Figure-2: The Relationship between military, diplomatic and constabulary function of the Navy³⁴



Source: 'The Roles and Tasks of Maritime Forces,' *Semaphore*: Newsletter of the Sea Power Centre, Australia, Department of Defence, 2004, p. 2.

catalyst again and again in history. Naval diplomacy is used in a variety of ways. Joint exercises or aiding friendly countries within the alliances are examples of how naval diplomacy can be applied. The third function, the constabulary function, can also be compared to a constitutional role, as navy can maintain national sovereignty, protect national resources and preserve peace at sea.

The naval forces are distinguished from the rest of the armed forces by their agility and capacity to conduct multiple duties nearly simultaneously. The numerous responsibilities can be changed in a short period of time to react quickly and flexibly according to the strategy and as needed. The ability to manoeuvre freely in the world's waters is another benefit of naval forces. The only limitation is the internal and territorial waters of the respective countries. Otherwise, naval forces are free to manoeuvre without the need for local/government permission. Army and Air Force are unable to do so since they require either agreement, allied territory, or the seizure of operational areas to function appropriately.

Aircraft carriers or carrier combat groups began as support units during WWII. Today they are the example of how multi-role naval forces can be operated. They combine formidable offensive and defensive capabilities more than any other armed forces unit. Aircraft carriers enable joint operations by the armed forces and combine sea control with air superiority.

Relevance of Classical Thinkers in the 21st Century

Mahan's six conditions/elements affecting the sea power of a state are necessary without argument. His principles for sea power; the inherent value of a strategic central position, the principle of concentration, and securing SLOC are crucially important in the 21st century. His methods to becoming sea power like achieving command of the sea have undergone refinement due to technological innovation. The concept of sea control has been developed from the same requirement of the command of the sea. A close blockade is extremely difficult and dangerous to achieve. However, the distant blockade is still practiced effectively. The battleship era is over. However, aircraft carriers and nuclear submarines can create strategic deterrence, forward presence and create an environment to win the war even before starting. The US Navy's new strategies 'From the Sea' and 'Forward ... From the Sea' are influenced by Mahan's theory emphasizing strategic deterrence, sea control, maritime supremacy and strategic sealift. Thus, Mahan's concept of sea power in the broader sense is still valid in the 21st century. Today's warfare cannot be conducted successfully without the jointness among the three services which was advocated by Corbett and Castex.

It can be summarized that the classical thinkers were concerned about the role and importance of the sea power, tactics of the fleet like decisive battle/blockade and fleet in being to achieve command of the sea, and naval and maritime strategy. Though they highlighted strategy and tactics, they did

not highlight the operational art or operational level of warfare directly. Some of their ideas are still valid in the broader sense. Some of them have become obsolete due to technological innovation with the passage of time and some of their ideas were not accurate during their time.³⁵ However, the drawbacks do not diminish the requirement of studying classical thinkers. They enriched the sea power concept and enhanced our knowledge of naval warfare.

Conclusion

The concept of sea power has evolved a lot in the last hundred years. The historical importance of sea power, as argued by the classical thinkers, as well as its relevance in the twentieth century, has been sufficiently proved. The importance of sea power will not decline in the twenty-first century. The theory of classical thinkers in the broader sense is still valid in most cases and contemporary. It is more likely that the value of sea power will increase with the

growth of global trade via ocean transportation. The role and significance of naval forces will certainly be affected as a result of this. It can be said with surety that naval forces and the notion of sea power will continue to evolve and become increasingly vital, regardless of the specific duty, whether it supports the government in diplomacy, constabulary operations or the defence of maritime areas.

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Brief Biography



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Remote Sensing and Geographic Information System (RS&GIS) in Terrain Analysis and Military Operations: Application in Bangladesh Armed Forces

Major Md Muntasir Mamun, psc, Engrs

Introduction

Terrain is an important factor for conducting any kind of military operations. Effective terrain analysis is a must to achieve desired goal. Prophet Muhammad (sm) used the terrain considering all available information during the Battle of Khandaq (Trench).¹ In 1971, Joint Forces used the terrain effectively during the month of December. RS & GIS technology is used nowadays by the contemporary armies to collect, store and analyse any geographic referenced (spatial) data to enhance effectiveness of the terrain analysis. Presently Bangladesh (BD) Army Engineer units collect, store and analyse terrain data (in the form of hard copy/word document/any other non-spatial data format) of entire Bangladesh which are not oriented with the RS&GIS technology. Terrain analysis requires extensive database system which should be created during peacetime.² GIS can be used as a powerful tool for terrain analysis.³ Therefore, it is a time demanding issue to create Geo-database by incorporating this technology in BD Armed Forces.

Army GIS Centre (AGISC) has been established to prepare updated topographic maps. At the same time, Army War Game Centre (AWGC) has been established to conduct War Game to evaluate and verify military operation plans. Other sister services also have their own system to update maps and charts. On the other hand, engineer units conduct terrain analysis for the formation headquarters of BD Army. But there is no effective link between these organs. As a result, it may create confusion while implementing operation plans. Therefore, all organs within BD Armed Forces must be connected for using and sharing terrain data to avoid confusion and conduct effective military operations. Moreover, a very good Geo-database is required for analysing and taking timely decision for the effective and successful military operations other than war like disaster management. Damages can be assessed by superimposing photographs (captured by the Unmanned Aerial Vehicles-UAVs) on the base map. Thereafter, probable deployment of different components of the disaster management cell, helicopter evacuation locations, service support vehicles entrance and exit routes etc. can be identified easily.⁴

In doing so, schema and specification for the terrain data collection and storing system for the uniformity of Geo-databases should be established at all levels of command.⁵ Survey of Bangladesh (SOB) web map (geo-portal), which has been newly introduced in 2017, can be used to check terrain data accuracy. Survey aircrafts/UAVs can be used as a speedy data updating tool.⁶

RS & GIS Terminologies and Contemporary Armed Forces

a. **Remote Sensing (RS):** “It is the science (and to some extent, art) of acquiring information about the earth's surface without actually being in contact with it. This is done by sensing and recording reflected or emitted energy and processing, analyzing, and applying that information.”⁷ RS can be visually by human eyes and more specifically sensors used by the aircrafts, balloons, UAVs, satellites etc. which can acquire earth surface and atmospheric information.

Figure-1: Aerial photograph



Source: SOB

b. **Main Goal of RS Technology:** Large-scale details and quantitative representation of relief (contour line) can be displayed as Topographic Map. Using topographic map in military, more number of detailed and enlarged (large scale) maps can be developed for different military purposes.

Figure-2: Portion of topographic base map



Source: SOB

Particular theme of a specific geographic area can be displayed as Thematic Map. Using road network in military, more thematic maps like different types of vehicle plyable routes, cross country mobility routes can be identified considering weather and seasonal variations.

Figure-3: Road and river network of Bangladesh



Source: SOB

c. **Geographic Information System (GIS):** It is a computer system for capturing, storing, querying, analysing and displaying geographic data. This technology can handle and process Geographically Referenced Data (Spatial Data) describing both location data as latitude and longitude (or Grid Reference-GR), and attribute or characteristic data layer by layer, which distinguish GIS from other information system.⁸

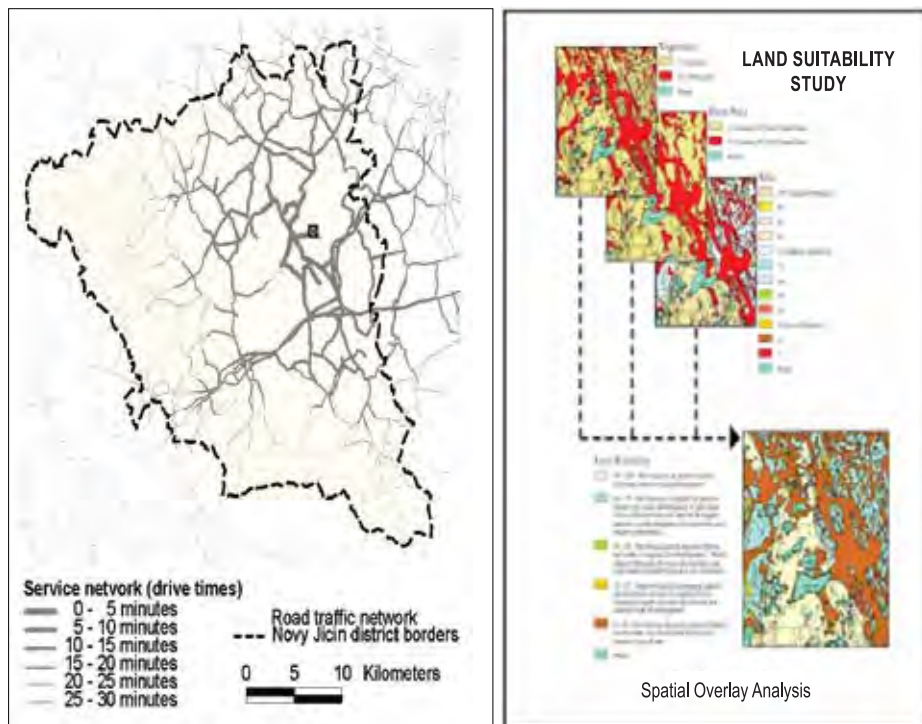
d. **GIS Operation:** Following are the salient features:-

- i. Spatial Data Input as Geo-database which has already been developed by the SOB.
- ii. Attribute Data Management includes data entry, verification and developing Relational Database Management System (RDMS).
- iii. Data can be displayed through map, tables and charts.
- iv. Data Exploration consists of interactive and dynamically linked visual tools, including maps, graphs, and tables.
- v. Data Analysis in GIS is closely related to the vector (geometry based) data model and raster (pixel based) data model. Each data model has its own set of analytical functions.

Table-1: Datasets of SOB geo-database⁹

Datasets of SOB Geo-database	Detailed Attribute Data	Remarks
Building and Structure	Houses, Institutions (school, college etc), Religious building (Mosque, Temple, Church)	
Facilities	Post office, Police station, Hospital/Clinic, Fire Service Station, etc.	
Forest	Reserve or manmade Forest	
Control Points	Latitude and Longitude, Easting and Northing (or GR), Height above Sea Level, etc.	Horizontal & Vertical
Hydrographic Feature	River, Canal (perennial/non perennial), Lake, Swamp, Marshy lands, etc.	
Transportation	Border Check Posts, Ports, Terminals, Bridge, Railways, Highways, Local Roads and Tracks etc.	
Vegetation	Garden, Cultivated Lands, etc.	

Source: Author's self-construct

Figure-4: Suitability and network analysis respectively

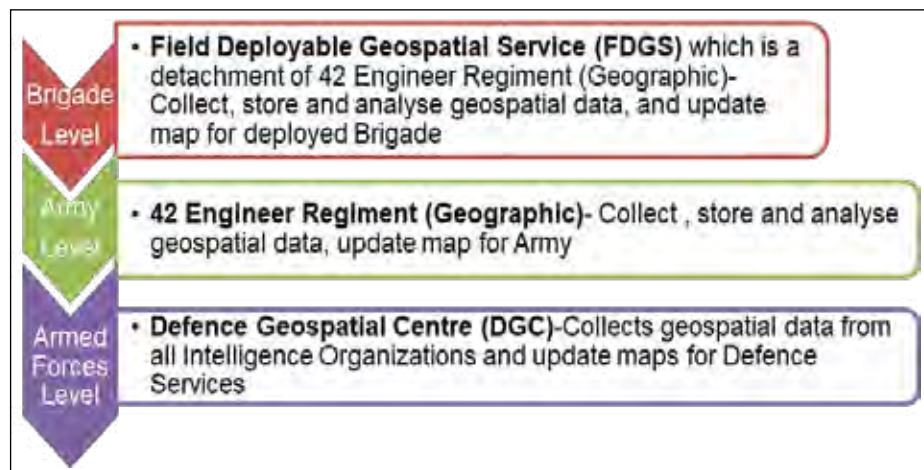
Source: Author's self-construct

In military, by suitability analysis, desired deployments/ positions/areas can be identified considering different parameters. By network analysis, suitable routes can be identified for the A, B, C vehicles; Naval vessels and Air routes can be synchronized during various operations.

e. **Use of RS&GIS in Contemporary Armed Forces:** US Army Geospatial Centre (AGC) (former Topographic Engineering Centre-TEC) which uses RS&GIS technology to maintain geodetic and topographic data libraries for the defence. It is a major subordinate command of US Army Corps of Engineers. They provide all types of geospatial engineering support to the US Army.¹⁰

British Army 42 Engineer Regiment (Geographic) of Royal Engineers provides field deployable geographic services (FDGS), including geodetic survey, terrain analysis, information management and dissemination of geospatial intelligence (GEOINT).¹¹

Figure-5: Chronological data feeding of british defence forces¹²



Source: Author's self-construct

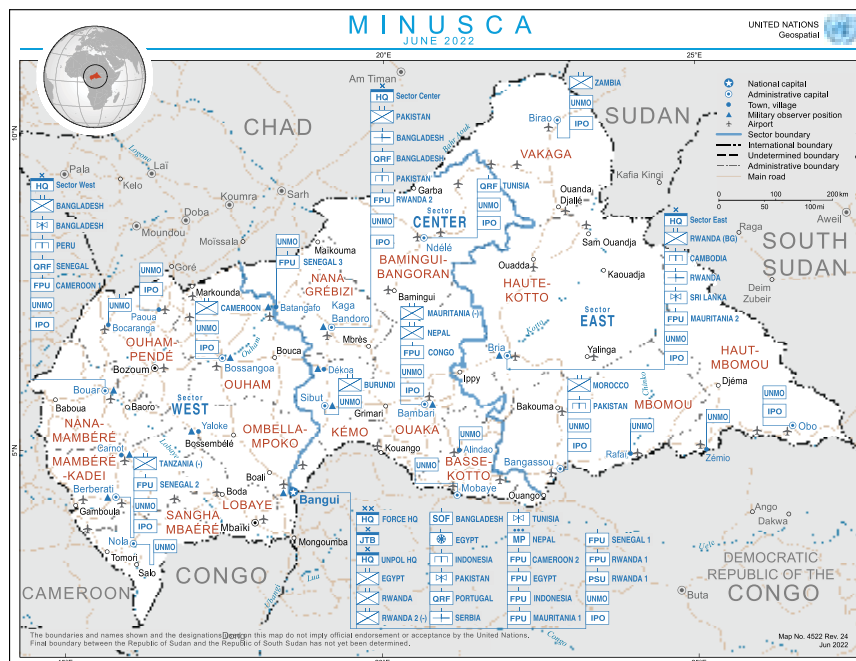
Indian Armed Forces use their own satellites, aircrafts, UAVs, etc. as RS data collection tools.¹³ Corps of Engineers conduct GIS training/course at the School of GIS, College of Military Engineering (CME), Pune.¹⁴

Pakistan Armed Forces use GIS extensively as a primary mean of tactical and operation planning. Selected officers and soldiers are GIS training/course qualified from home and abroad. All selected officers for Command & Staff College, Pakistan undergo GIS course for the planning purpose. GIS is also used in war game at all the levels of command.¹⁵

Geospatial Information Section (formerly known as Cartographic Section) is one of the organs of the United Nations (UN) which deals with the RS & GIS

products like maps, charts, etc. UN Committee of Experts on Geospatial Information Management (UN-GGIM) is one of the working groups which plays pivotal role in setting the agenda for the global geospatial information development. Force Headquarters (FHQs) and Sector Headquarters (SHQs) of all mission areas are composed of Geospatial Information Section to provide map services to all the deployed units/sub-units.¹⁶

Figure-6: MINUSCA deployment map



Source: Internet

Scope of Using RS & GIS

a. Bangladesh Armed Forces and Various Maps/Charts: BD Armed Forces have been using different types of map published by the Survey of Bangladesh (SOB) since beginning. SOB publishes 1:10,00,000; 1:5,00,000; 1:2,50,000; 1:50,000 (previous base map) and 1:25,000 (present base map) scale maps and BD Air Force (BAF) Charts. In June 2017, SOB has completed successfully 1:25,000 scale base map with Geographic Information System (GIS) data base i.e. Geo-data base. BD Army can utilize this Geo-database. BD Navy has its own navigation charts preparation capabilities.

b. Necessity of Detailed and Enlarged Maps: Detailed information is omitted while displaying map data on the 1:25,000 scale base map or any other small scale maps/charts. Whereas detailed and enlarged maps/charts of large scales are required to conduct military operations at different levels of command. Nowadays Officers, Junior Commissioned Officers (JCOs) and

other ranks (ORs) of BD Armed Forces are using different types of open source maps like Google map/earth, Maps.me, etc. for the detailed information. Geo-database of open source maps is reserved by the producers and they can control analytical limit over their system. Therefore, Bangladesh Armed Forces should have their own Geo-database for effective terrain analysis and subsequently successful conduct of military operations.

c. Terrain Analysis: Combined Obstacle Overlay can be developed easily and countless features are manageable in the Geo-database. Restricted, severely restricted and unrestricted terrain can be identified by applying logical formula as 'Yardstick' and seasonal variations can be set once in the Geo-database to save time. Terrain Template can be developed from the Combined Obstacle Overlay by setting different parameters of Mobility Corridors (MCs) and Avenues of Approach(AAs) in the Geo-database layer by layer.

At the end of Terrain Analysis, different types of location map can be developed without cluttering huge dataset in the Geo-database as per Commanders' requirements. Following areas can be identified by setting necessary criteria in the Geo-database:-

i. **For the Defensive Operations:** Airfields, Helicopter dropping zones, Lines of Defence (LODs), Key Terrains (KTs), Areas for Security Zone Battle, Areas for Flank Protection, Engagement Areas (EAs), Counter Attack routes, Killing Areas (KAs), positions/areas for Fire Support, Engineer Support and Logistic aspects etc.

ii. **For the Offensive Operations:** Probable Air and Naval support areas, Objectives in relation to the LODs, KT; concentration areas, assembly areas, harbours, Forming Up Places, bridgehead areas; engineer/fire support assets employment areas; Landing Zones/Dropping Zones etc.

d. Weather Analysis: Consideration of weather effect on terrain with seasonal variations is also important for conducting military operations effectively. Bangladesh Meteorological Department (BMD) or any other related organizations can provide time series weather data which can also be included in the Geo-database.

Weather data can be verified during various exercises conducted by all the sister services. As a result, condition of visibility, winds, precipitation/rainfall, cloud cover, temperature, humidity and moon condition data can help to conduct realistic terrain analysis.

e. Different Types of Templates: In the Geo-database, Doctrinal Template and Terrain Template can be placed over Geo-database of the base map (1:50,000 or 1:25,000 scale map) using specific mapping reference system. Subsequently, these templates can be adjusted basing on the terrain in the Geo-database to develop Situational Template effectively. Situational Template

will be geographically referenced with accurate Grid Reference (GR) which can be identified easily. Situational High Value Targets (HVTs) list can also be prepared with accurate GR by placing Doctrinal Template on the Terrain Template in relation to the Time Phase Lines (TPLs) in the Geo-database. Event Template can also be prepared for each enemy Course of Action (COA). Named Area of Interests (NAIs) can be identified from the Geo-database and exact GR can be provided to the nearest intelligence collection agents. RS&GIS experts can assist Commanders at all levels to solve difficulties with the huge terrain data in the Geo-database.

“This concludes the IPB. Please note three important points here. Firstly, IPB is not a one time work, it continues to be updated. Secondly, it is not a job of Intelligence Section alone, all Battlefield Operating System (BOS) Officers in Charge (OICs) take active part in its preparation. Thirdly, do not think of IPB independent of DMP process.”¹⁷ With this, all sister services can collect their relevant terrain data during peacetime exercises conducted in different seasons. Decision Support Templates (DSTs) with accurate GR of Decision Points (DPs), Named Area of Interests (NAIs) and Target Area of Interests (TAIs) can be selected from the Geo-data base. Accurate GR data are required to calculate time for taking quick decision.

Creation and Updating Geo-Database

Units/sub-units of BD Armed Forces conduct various exercises every year. They can collect their respective terrain data with seasonal variations by using Global Navigation Satellite System (GNSS) receiver (generally known as Global Positioning System-GPS) and other related data from the civil organizations to develop unit level, Formation level and Service level Geo-database. Subsequent paragraphs elaborate how and what are the data to be collected during peacetime exercises.

Infantry units require detailed and enlarged maps before and during conducting military operations and also in aid to civil administration. They can collect present deployment and associated terrain data by including all types of alternative position for further analysis of own position in relation to the friendly forces and enemy deployment. In doing so, they can be trained under Formation training plan.¹⁸ Terrain data related to the mobility and employment of division support infantry elements must be collected, stored and analysed, and subsequently contingency plan should be developed to take positional advantage.¹⁹

Artillery units can collect location data such as gun movement routes and positions including ground condition with probable alternatives and weather data (atmospheric pressure, temperature, rainfall data). These data will facilitate respective commanders to analyse and calculate time, select from many options, ensure security, and find out cover and concealment. Accuracy is paramount important for any kind of Artillery firing. Without accurate and

detailed map of target area and gun position, desired effect of fire cannot be achieved. That is why central Geo-database will enhance accuracy of firing and effectiveness of the operations.²⁰

Armoured units can collect terrain data of tank mobility route, deployment, ground condition (ground pressure/plyable) by the reconnaissance tank troop. They can also collect their different types of position for tanks and positions for infantry and tank together. In addition to that, they can also provide location data of civil transporter including numbers which can carry tanks within their respective Area of Responsibility (AOR). Care must be taken to maintain secrecy and security of the data and maps.²¹

Medical units can collect their deployed location data with alternatives. Additionally, they can collect civil resources such as civil hospitals, clinics or any healthcare facilities with their capabilities and locations to enhance terrain analysis in relation to the other units/sub-units deployment.²²

Workshop units can collect their deployment data with alternatives. Additionally, civil resources such as workshop and other related facilities with their capabilities and locations can also be collected to develop Geo-database.²³

Signal units can collect deployment areas including alternatives and signal communication network. Additionally, they can collect civil resources including statistics and location data of communication network and important points. RS&GIS technology is a useful tool for the database analysis. Using RS technology, enemy's emission devices like radio/RR stations can be detected and subsequently jamming can be planned by the Signal units. Terrain analysis in the Geo-database will help to select suitable location for Radio/RR communication effectively which is a big challenge nowadays due to the lack of detailed terrain data. Updated Geo-database will also help to perform Computer Aided War Gaming Exercise more accurately.²⁴

Supply and Transport (ST) units can collect suitable location data of their deployments including alternatives. Additionally, they can also collect the statistics of civil resources like depots, supply system and transport facilities including capabilities and location data.²⁵

Ordnance units can collect deployment data including alternatives. Additionally, civil resources like location of different types of depot with their capabilities can be stored in the Geo-database.²⁶

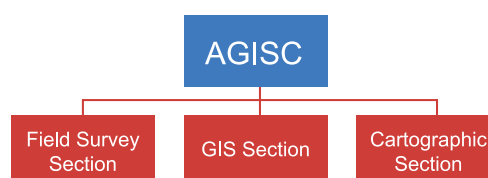
Engineer units are primarily responsible to prepare terrain analysis to support Formation IPB and DMP. In doing so, Intelligence Section can be trained on RS&GIS technology and connected with the FGISC. This Section can play pivotal role to provide training support to the other units/sub-units under the Formation training plan. They can collect and update detailed terrain

data like roads, bridges and culverts condition including Military Load Classification (MLC); infrastructure like school, mosque, industries or any other facilities with the capacity and capability of the particular point. Probable obstacles layout like minefield, wire obstacle, anti tank ditch, natural obstacles (river, lake, pond, etc.), local water point data, etc. can also be collected and analysed. They can also collect terrain data from the local offices like RHD, LGED, BWDB and other civil organizations for the better analysis purpose.²⁷

Army GIS Centre (AGISC) and Defence GIS Centre (DGISC)

AGISC was established in 2014 under AHQ General Staff Branch (MO Directorate). Existing composition of AGISC is shown below:-

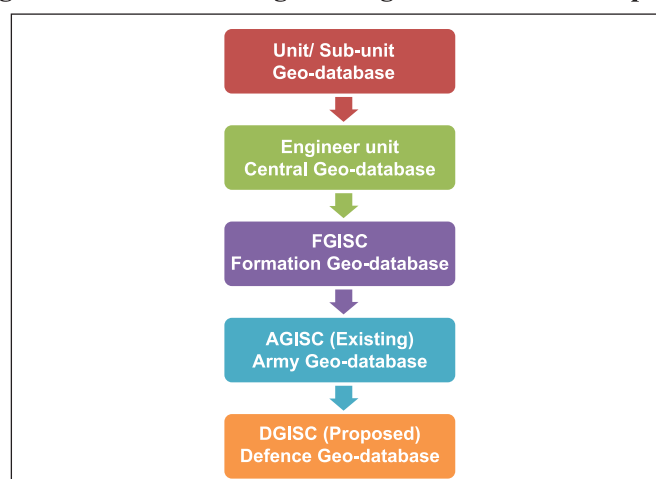
Figure-7: Composition of AGISC



Source : AHQ General Staff Branch (MO Directorate)

AGISC 'Concept Paper' and 'Standing Operating Procedure (SOP)' suggested that every Formation will have Formation GIS Centre (FGISC) which will be responsible to provide necessary mapping support to the Formation HQ. FGISC can provide terrain analysis data to the AHQ through AGISC.²⁸ In this way, DGISC can also be established to integrate all data from sister services.

Figure-8: Schematic diagram of geo-database development



Source: Author's self-construct

To be precise, following maps/overlays can be developed from the Geo-database:-

- a. Fighting arms deployment and mobility routes.
- b. Supporting arms (Artillery, Engineers and Signals) deployment and mobility routes.
- c. Logistic services deployment and mobility routes.

Challenges

New Technology

- a. Adaptation is required to use RS&GIS technology at all levels of command.
- b. Time is utmost important for shifting previous set up to new technology.

Training of Manpower

- a. Establishment of GIS Section at different tactical and operational levels and training related manpower.
- b. Training all members of Armed Forces on using GPS properly.

Budget

- a. Budget is a vital factor to purchase RS&GIS software and hardware.
- b. Establishment of GIS Section with few dedicated computers is also required.

Overcoming Challenges

Challenges can be overcome by various means which are given below:-

a. Update Latest Technology

- i. Coping up with the latest technology is important. Therefore adaptation of RS&GIS technology at all levels of command is a must.
- ii. Skillful time planning can be adapted to cope up the advanced world.

b. Training Module

- i. Manpower designated for the GIS Section at different tactical and operational levels down to the unit/sub-unit can be trained specially arranged by the formation.
- ii. All members of Armed Forces can be trained during their basic military training module and different courses.

c. Budget

- i. Initially special budget can be planned to purchase RS&GIS software and hardware, update and train related personnel.
- ii. Few dedicated computers at all levels can be spared initially for the establishment of GIS Section.

Conclusion

In order to use RS&GIS technology, SOB is a national level data hub (base map and Geo-database) Army GIS Centre (AGISC) is a Army level hub and Engineer units/sub-units can play pivotal role to maintain Formation GIS Centre (FGISC) Geo-database at the formation Headquarters. Defence GIS Center (DGISC) can integrate Army, Navy and Air Force database. Geo-databases and maps/overlays must be uniform at all levels and same mapping parameters must be used to avoid confusion on ground. As part of RS&GIS technology, aircraft or UAVs can be utilized to collect present terrain data for any specific area of operation and later on changes can be detected for military planning.²⁹ Future battle will be highly technology biased than that of the present. Armed Forces around the globe are technologically advanced. Different types of satellite, survey aircraft, UAVs are being used by many countries to acquire ground information accurately for the support of military operations. Contemporary Armed Forces like USA, UK, China, India, Pakistan, Myanmar and many more are using RS&GIS technology nowadays. Therefore, BD Armed Forces should also cope up with the latest trend of the RS&GIS technology like other technologies.

Huge terrain data management is very difficult in the hard copy maps and other non-spatial computer data formats such as word documents. Terrain analysis is too much critical humanly in the non-spatial data format. A very good Geo-database is utmost important for producing detailed and enlarged maps/overlays. On the other hand, weather analysis is also required to consider seasonal variations. RS&GIS can be used to produce different types of template such as Combined Obstacle Overlay with weather effect, Terrain Template, Doctrinal Template, Situational Template, Event Template and finally Decision Support Template (DST) to conduct effective IPB and DMP.

During war, terrain will be used by every unit/sub-unit. Terrain cannot be utilized effectively without knowing updated information. Every unit/sub-unit should develop their own Geo-database by collecting own terrain data during peacetime exercises conducted every year. Engineer units can play pivotal role to organize training for all units/sub-units to conduct terrain data collection, storing and analytical purpose as well as Formation Geo-database should be updated periodically.

Once Formation Geo-database is updated, FGISC will be fully responsible to manage and analyse all terrain data to conduct effective IPB. With effective IPB as well as DMP, care must be taken to perform terrain analysis and IPB accurately all the time. After updating all Formation Geo-databases, AGISC should collect all terrain data from FGISC and develop Army Geo-database. Similarly Navy and Air Force can also develop their own Geo-database. Finally defence database will be developed. This Geo-database will help effectively to conduct any kind of military operations as well as military operations other than war such as disaster management. This is how, same types of map/overlay with the same mapping parameters can be used at all levels of command to avoid confusion on ground.

Recommendations

Following recommendations can be made basing on this paper:-

- a. Army Training and Doctrine Command (ARTDOC) may plan to incorporate RS&GIS technology to meet future military operations.
- b. Pilot project can be launched in any formation.
- c. Bangladesh Armed Forces can get technical assistance from the Survey of Bangladesh (SOB) to prepare similar type of Geo-database.

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19. Lieutenant Colonel M A Yousuf, psc, Inf; Chief G-3, Sector West Headquarters, United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA), interviewed on 29 June 2020 as Ex-Commanding Officer 15th Bangladesh Infantry Regiment (Division Support Battalion).

20. Lieutenant Colonel Md Mahafuz Ul Bari, PBGM, psc, Arty; Legal and Human Rights Officer, Bangladesh Battalion (BANBAT-6), United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA), interviewed on 28 June 2020 as Ex-Commanding Officer 15 Field Regiment Artillery.
21. Lieutenant Colonel Tanvir Ahmad, psc, AC; Civil-Military Coordination Officer (CIMIC), Bangladesh Battalion (BANBAT-6), United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA), interviewed on 27 June 2020 as Ex-Commanding Officer, 12 Lancer.
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Brief Biography



Major Md Muntasir Mamun, psc, Engrs was commissioned on 18 June 2008 from Bangladesh Military Academy with 29 BMA Special Course. He served in 1 Engineer Battalion and 19 Engineer Construction Battalion (ECB), and held all the regimental appointments and served as Second in Command (2IC) 16 ECB. He also served in Survey of Bangladesh (SOB). He participated in United Nations Mission in Liberia (UNMIL), BANENGR 2/20 (Construction)

in 2013-14 and also participated in United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA). Besides his mandatory courses, he completed 'Officers Bomb and Improvised Explosive Device Disposal Course (OBIDC)' and Geographic Information System (GIS) Course from home and abroad. He is a graduate of Defence Services Command and Staff College, Mirpur. He has obtained the Masters of Defence Studies from Bangladesh University of Professionals (BUP). Presently he is serving as Officer Commanding 57 Engineering Company.

Rohingya Crisis: Measures to Manage Degraded Security Situation in Bangladesh

Lieutenant Commander A T M Reza-E-Rabbi, (TAS), BN

Introduction

Rohingyas are the inhabitants of old Arakan which is now a part of Myanmar. The origin of Rohingya Muslims in Arakan can be traced back to the 9th century when Arab Muslims from Arabia, as well as Persia and other countries formed the nucleus of the Muslim population in Arakan. Rohingyas have been denied Myanmar citizenship since 1982 when Burmese Nationality law was enacted. For a long, Rohingya cleansing followed by exodus took place during 1958-1996 in the name of various military operations and lastly in 2017 in the name of counter insurgency operations. On 25 August 2017 Myanmar (MN) security forces carried out a mass genocide against Rohingya Muslims in Rakine.

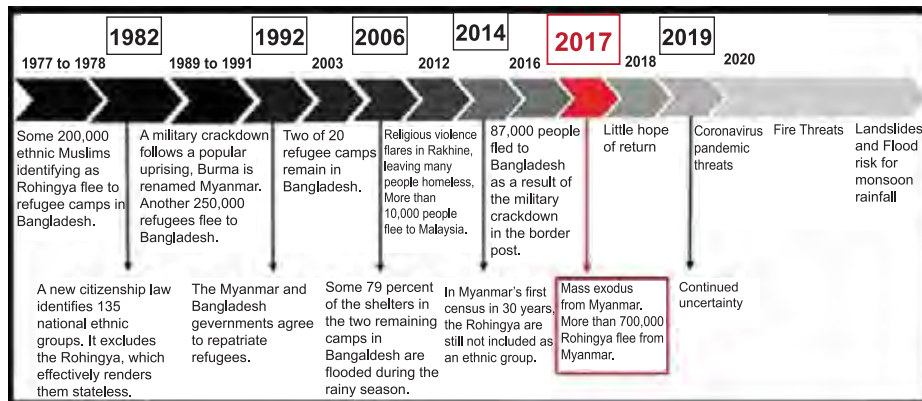
UN investigation reveals as many as 10,000 Rohingyas were killed, another 7,40,000 fled to Bangladesh (BD). United Nations Human Rights Commission (UNHCR) has termed the MN's operation as "Text Book Example of Ethnic Cleansing." This has created world's fastest growing immigration crisis directly implanting Bangladesh (BD). Though Rohingyas were allowed in BD soil solely on humanitarian ground, but with their long time hermitage BD is facing serious threat in security landscape. It is relevant here to quote the honourable Prime Minister Sheikh Hasina "Rohingyas are posing huge security threat to Bangladesh as well as the region."¹

In this milieu, this paper will highlight genesis of the crisis, history of Rohingya Exodus in BD, present situation of Forcibly Displaced Myanmar Nationals (FDMNs) in BD, internal security concerns for BD, BD Govt Initiatives and lastly measures to tackle security concerns with recommendations. The Government of Bangladesh refers to Rohingya as "Forcibly Displaced Myanmar Nationals" (FDMNs), whereas United Nations (UN) refers them as 'Rohingya Refugees.' In this paper these two refer to the same population.

History of Rohingya Exodus to BD

Historically, the major ethnic group of Myanmar (Bamars) has never accepted other ethnicities and tried to suppress them. Since long, Rohingya cleansing followed by exodus took place after various operations conducted by MN military. Since independence BD has hosted Rohingya influx in 1977-2016 and lastly on 25 August 2017. A history of Rohingya exodus to BD can be traced back in Figure-1 below:-

Figure-1: The history of Rohingya exodus to Bangladesh



Source: www.researchgate.net/figure/The-history-of-Rohingya-refugee-in-bangladesh

Present Situation of FDMNs in BD

Prospect of Repatriation: Since exodus BD is trying to resolve issues diplomatically. The bilateral and multilateral engagements with MN have increased. MoU has been signed and a Joint Working Group (JWG) with BD and MN representatives has been formed for repatriation. Besides, BD government is also engaging with regional organizations like ASEAN, International community, UN bodies to create an inclusive environment in Rakhine state of MN for voluntary repatriation from BD. Though initiative has been taken by both BD and MN government to start the repatriation process soon, but till date not a single FDMN could be repatriated to MN.²

Figure-2: Signing of MoU of JWG on 23 January 2018



Source: https://twitter.com/MayWongCNA/status/953212821663133696?ref_src=twsrc%5Etfw

Security Situation of FDMNs Camps in BD: The massive exodus of MN Nationals is posing threat for the internal security of BD. These are vulnerable people in dire need of a living and are increasingly getting involved in petty crimes for their survival. The FDMNs camps in Ukhia and Teknaf have become the nucleus of all sorts of crime in Cox's Bazar area e.g. drug and arms smuggling, gun running, abduction, human trafficking, militancy, etc. To reduce the internal security threat in FDMNs camps in Cox's Bazar, BD govt has decided to shift one lac FDMNs to Bhasan Char.

Figure-3: Kutupalong FDMNs camp, Ukhia, Cox's Bazar



Source: https://twitter.com/MayWongCNA/status/953212821663133696?ref_src=twsrc%5Etfw

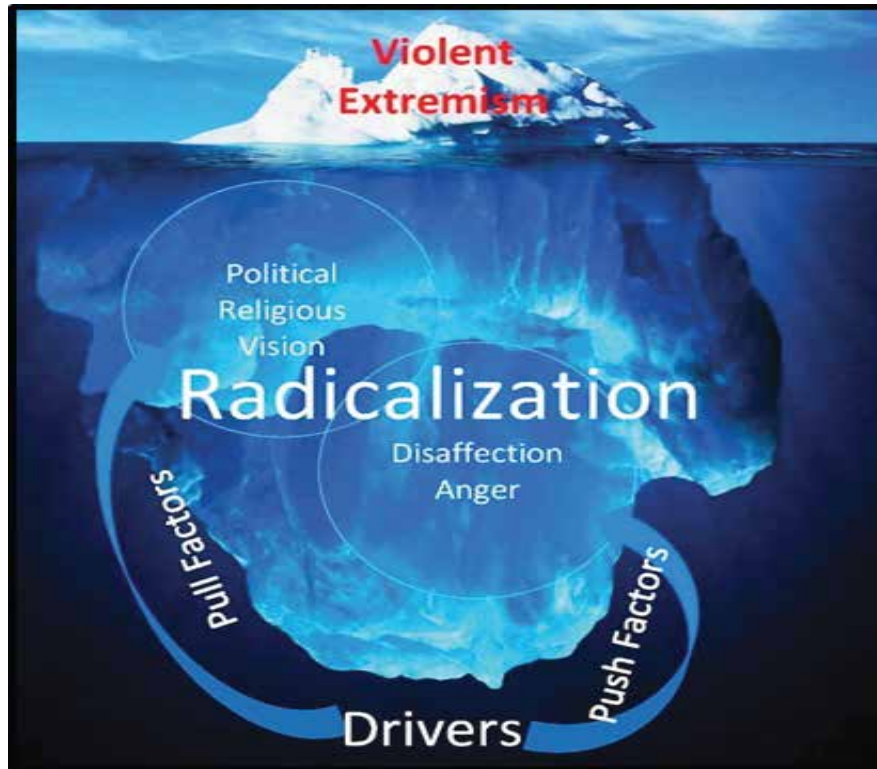
Till October 2021 around 30000 FDMNs have been shifted to the island.³ The same security threats in FDMN camps in Ukhia and Tekhnaf are prevailing in Bhasan Char. The crimes like murder, theft, drug smuggling, fleeing from island, etc. are increasing.

Internal Security Concerns for BD

FDMNs community is causing internal security concern by engaging in many domestic crimes for individual motives. The likely arenas are as follows:-

a. Radicalization/Militancy and Terrorism: The completely marginalized and traumatized Rakhine Muslim population is vulnerable to radicalization. The possibility of prolonged ethnic conflict in Myanmar might create a hotbed of terror as foreign fighters set eyes on the region. In near future, Rohingya crisis may turn into regional flash point if radical Buddhists and radical Muslims are locked in fighting in this region. At present a clear sign of both the 'pull' and 'push' factors for conflict, radicalization and violent extremism, is prevailing in Rohingya community.

Figure-4: Drivers of violent extremism in the Rohingya community

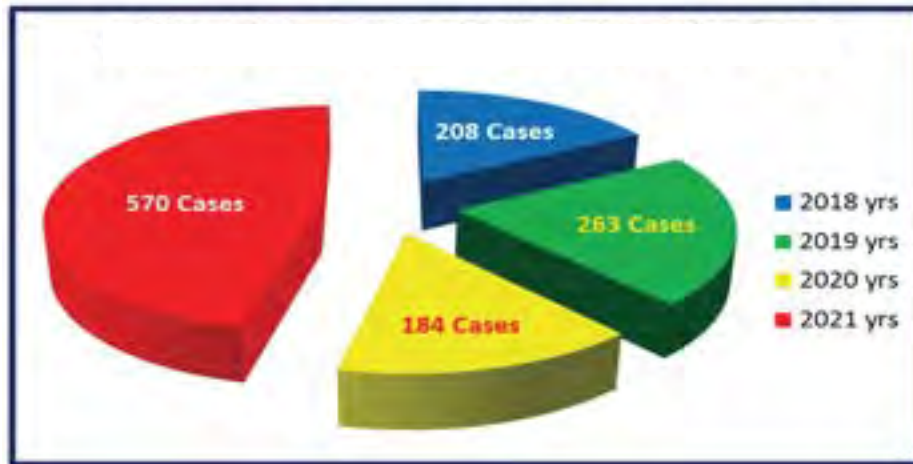


Source: Report on Rapid Assessment of the Rohingya Crisis and Its Potential for Violent Extremism (<https://en.thpb.org/rohingya>)

b. **Trans Border Crime:** Rohingyas are found to be involved in cross border trafficking and smuggling of illegal drugs. Young women and children are prone to the trafficking gangs and may end up in international markets for prostitution and slave labour.

c. **Internal Law and Order Situation:** The massive exodus of Myanmar Nationals is posing threat to the internal security of BD. These vulnerable people are increasingly getting involved in petty crimes for their survival. In 2018, 208 cases were filed while in 2019, 263 cases were filed. In 2020, 184 cases were filed, a drop attributable perhaps to the Covid-19 pandemic. But in 2021, the number reached a new height: to date in 2021, 570 crime reports have been filed from the FDMNs camps.⁴

Figure-5: Criminal cases against FDMNs in BD from 2017-2021



Source: Author's self-construct

d. **Border Tension:** After the influx of Rohingya in 2017, Myanmar increased deployment of its security forces along the Bangladesh-Myanmar Border. MN violated BD air space number of times. MN laid anti-personnel mines at a very close proximity of BD border.

e. **Conflict with Host Community:** The presence of FDMNs in Cox's Bazar has given rise to mounting tensions between them and host communities.⁵ More than a million FDMNs are living in a place where the original population is only 0.4 million. The mass FDMNs presence in a small area of BD is jeopardizing the balance of employment sector. There are signatures of disruption in cohesion with the host community.

f. **Demonstrations by FDMNs:** Since the influx of FDMNs, Bangladesh had witnessed a number of demonstrations surrounding the issues of the FDMNs.⁶ Demonstrations were staged against the persecution of FDMNs at the hands of MN Military Forces.

Figure-6: FDMN demonstration in BD on the 2nd anniversary of the exodus



Source: <https://www.bbc.com/news/world-asia-45307107>

g. Orphans and Unwanted Children: A total of 36,373 orphans have been identified in the FDMNs camps. Many girls and women have been exposed to severe forms of sexual violence in Myanmar before and during the exodus. Many have already given birth to unwanted children in the camps. Both orphan and unwanted children are posing additional social concern to BD.⁷

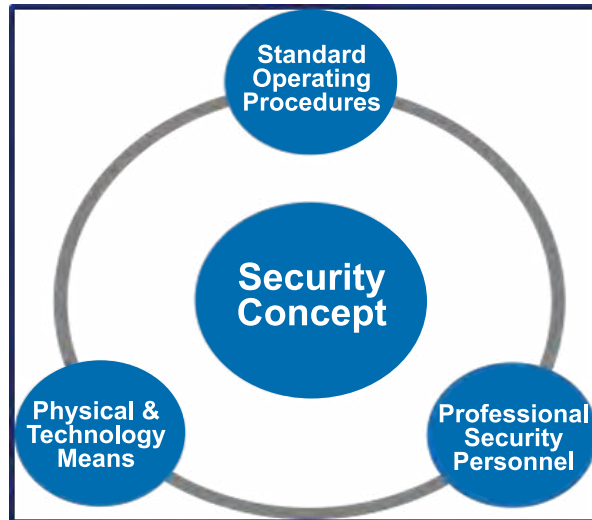
The forcible intrusion of Myanmar nationals into BD is a clear and predominant threat to national security. The presence of more than a million FDMNs in BD is not only a problem for this country but also has serious impact on the local, regional and global security.

BD Govt has taken steps to beef up security at Rohingya shelters amid reports of criminal activities at Cox's Bazar and Bhasan Char Rohingya camps.⁸ The govt held discussions with all concerned and stakeholders to ensure law and order and overall security inside the Rohingya camps in Cox's Bazar and Bhasan Char, and arrangements have been made to increase security. Manpower and logistical support of law enforcement agencies are planned accordingly to enhance security measures. However, BD has taken following steps:-

a. Security of FDMN Camps at Cox's Bazar: Considering the Integrated Security Design Concept a coordinated effort has been taken with the help of Bangladesh Army under 'In Aid to Civil Power' along with BGB, BD Police, BD Ansar and other intelligence agencies to curb the security degradation of FDMN camps in Cox's Bazar. Combined patrols are arranged

regularly in this regard. The presence of BD Coast Guard (BCG) in the riverine and coastal areas has increased. BD Navy (BN) has strengthened its presence to restrict the possible entry and exit of FDMNs/trafficking gangs through sea routes in these areas.

Figure-7: Integrated security design concept



Source: <https://www.bbc.com/news/world-asia-45307107>

b. **Security of FDMN Camps in Bhasan Char:** BN under 'In Aid to Civil Power' along with BCG, BD Police (with female police), APBN and other intelligence agencies are working together in Bhasan Char to counter any drug/arms trafficking, fleeing from the island, petty theft, intrusion of local

Figure-8: Ashrayan Project-3, Bhasan Char



Source: *Bhasan Char-The Beacon of Hope*, booklet of Asrayan-3 Project

miscreants in the camp areas. The Fire Service quick response team is kept ready at all times for response to any fire incidents. Social protection schemes by UN agencies have been introduced for mass awareness program amongst the FDMNs of Bhasan Char.

Measures to Tackle Security Concerns

Interim Steps: Until the repatriation of FDMNs takes place, BD would need to make a realistic plan concerning social security, food security, health security, environmental security, education, child crime, etc. BD Govt, UN Agencies as well as NGO/INGOs are working hand in hand for this.

Managing Security Concerns: The security concerns may be addressed by a harmonized effort by all stakeholders. Following measures may be taken to manage the situation:-

a. **Registration:** All Rohingyas may be biometrically registered to have a complete database. The government has to start recording biometric data of Rohingyas as part of efforts to document the FDMNs entering BD from MN. The Department of Immigration & Passports (DIP) along with Border Guard Bangladesh (BGB) and the Cox's Bazar district administration need to work together. Apart from the fingerprint, important information of each FDMN needs to be stored in a dedicated server including name, gender, age, photo, parent's name, birthplace, nationality, country and religion.⁸

b. **Presence of LEA:** Number of Law Enforcing Agencies (LEA) in the camps for 24 hours are to be increased to manage the law and order situation. The aim should be to protect vis-a-vis refrain the FDMNs from any unlawful activities. Strengthening the covert and overt monitoring inside and outside the camps to stabilize the security situation is to be done.⁹ For that a comprehensive Security Task Force (TF) may be formed with relevant security agencies in the FDMNs Camps of both Cox's Bazar and Bhasan Char.

c. **Movement Control:** The movement of miscreant groups needs to be controlled inside and outside the camps. They must not be mixed up with FDMNs. However, it must not preclude the support agencies to carry out their lawful activities.

d. **Reduction of Camp Concentration:** More number of FDMNs are to be shifted to Bhasan Char to reduce the concentration of the camps. It will definitely improve the livelihood as well as other facilities that are rendered to FDMNs from BD Govt and the Inter-Governmental Agencies.¹⁰

e. **Sensitization of FDMNs:** Awareness build up and sensitization of Rohingyas are to be done in an effective way so that they are not being involved in criminal activities. The Social Safety Net Programs need to be strengthened to support the FDMNs.

f. **NGO in Supporting Role:** NGO/INGOs may also be ushered in rendering drum support to government led agencies in an aim to involve FDMNs in various social programmes. This may keep FDMNs away from social crimes.

Figure-9: An exclusive interview of HPM Sheikh Hasina with *The Straits Times* on 14 March 2018



Source: <https://www.straitstimes.com/singapore/rohingya-continuing-to-slip-into-bangladesh-says-pm-sheikh-hasina>

Repatriation-The Ultimate Solution

BD's policy toward the Rohingya remains focussed on near-term repatriation. The forcibly intrusion of MN Nationals into BD is a vibrant and leading peril to our internal security. Whatever measures may be taken, the repatriation of FDMNs to MN will be the ultimate solution.

Recommendations

In view of the above discussion, it is recommended that:-

- a. FDMNs must be registered by all obtainable means with a handy database by the BD Govt.
- b. Security TFs may be formed for the FDMNs Camps of Cox's Bazar and Bhasan Char.
- c. The relocation of FDMNs to Bhasan Char is to be expedited to reduce the camp concentration of Cox's Bazar.
- d. Social Safety Net Programs for FDMNs along with awareness build up programs are to be strengthened in FDMNs Camps by NGO/INGOs.

Conclusion

Though Rohingyas were allowed in BD soil only on humanitarian ground, but with their indefinite nesting BD is facing serious difficulties. The forcible intrusion of Myanmar nationals into BD is a clear and predominant threat to national security of Bangladesh. While the solution to the crisis lies in the safe and sustainable return of the Rohingya to MN, it is equally important to acknowledge BD's growing concern over hosting the FDMNs.

At a time when repatriation is still an inexact concern for the most Rohingyas, their prolonged and indefinite stay continues to pose a threat to BD's internal stability. The security concerns should be dealt with synergic effort by BD Govt as well as Intergovernmental bodies. Keeping the aim of ultimate repatriation of Rohingyas, BD needs to take all measures to tackle those security concerns.

Bangladesh is suffering a problem which she neither created nor supported. The world community must recognize BD's concern and make concerted efforts to address the challenges of the complex security situation. The humanitarian crisis that has plagued the Rohingya people needs to be dealt through international effort rather than Bangladesh solely bearing the burden. Accepting immigrants is a temporary and limited humanitarian act that the international community must bear together.

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Brief Biography



Lieutenant Commander A T M Reza-E-Rabbi, (TAS), BN was commissioned on 01 December 2008 in Executive Branch from Bangladesh Naval Academy. He is a science graduate from Bangladesh University of Professionals (BUP), Dhaka. Beside mandatory courses the officer has undergone various professional courses in his career. He did Basic Intelligence Course in School of Military Intelligence, Cumilla Cantonment. He also served in various billets of Bangladesh Navy and Tri-service Organizations. He has got UN exposé in UNIFIL, Lebanon. Presently he is appointed as General Staff Officer-2 in Intelligence Directorate, Armed Forces Division, Dhaka.

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এএফডব্লিউসি, পিএসসি, বিএন

সূচনা

ঐতিহাসিকদের এ বিষয়ে দ্বিমত নেই যে, এই বাংলা বঙ্গবন্ধু একসময় ছিল বঙ্গ, সমতট এবং পুন্ড্র রাজ্যের অংশ। এছাড়া, সহস্রাব্দের জন্য এ অঞ্চল মৌর্য (৩২১ থেকে ১৮৫ খ্রিস্টপূর্বাব্দ) এবং গুপ্ত সাম্রাজ্যের (৩১৯ থেকে ৫৪৩ খ্রিস্টাব্দ) অংশীদার ছিল। পাল (৭৫০ থেকে ১১৬১ খ্রিস্টাব্দ) এবং সেন রাজারাও (১০৭০ থেকে ১২৩০ খ্রিস্টাব্দ) বাংলা অঞ্চল শাসন করেছিলেন। পরবর্তীতে ত্রয়োদশ শতাব্দীতে এসে সুলতানগণ এ অঞ্চল নিয়ন্ত্রণ করেন। অষ্টাদশ শতাব্দীর দ্বিতীয়ার্ধে ব্রিটিশ ইস্ট ইন্ডিয়া কোম্পানি যখন বাংলার রাজনৈতিক নিয়ন্ত্রণ নেয় তার আগ পর্যন্ত এ বঙ্গবন্ধু হিন্দু রাজা এবং বারো ভূঁইয়ার মতো জমিদারদের দ্বারা শাসিত হতো। ১৯৪৭ সালে সমগ্র বাংলা বঙ্গবন্ধু বা বৃহত্তর বাংলাকে ধর্মের ভিত্তিতে ভাগ করা হয় পূর্ববঙ্গ ও পশ্চিমবঙ্গ নামে। ১৯৫৬ সালে পাকিস্তানের সংসদে বঙ্গবন্ধুর তীব্র প্রতিবাদ সত্ত্বেও এ অঞ্চলকে পূর্ব বাংলা থেকে পূর্ব পাকিস্তান নামকরণ করা হয়।^১ ১৯৭১ সালে এসে সে অঞ্চলই এক মহান মুক্তিযুদ্ধের মাধ্যমে গৌরবোজ্জ্বল বিজয় অর্জন করে। ঐতিহাসিকভাবে বলা যায়, বঙ্গবন্ধুর আগে আর কোনো রাজা/রাণী, সুলতান বা শাসক বর্তমান বাংলাদেশকে স্বাধীন রাষ্ট্র হিসেবে শাসন করেননি। এছাড়া, তাদের কেউই রক্ত, জাতি, ভাষা, সংস্কৃতি এবং জন্মগত দিক থেকে বঙ্গবন্ধুর মতো খাঁটি বাঙালি ছিলেন না।

দিনটি ছিল ১৯২০ সালের ১৭ মার্চ এবং গুগল ক্যালেন্ডার অনুযায়ী বুধবার। তৎকালীন ফরিদপুর জেলার গোপালগঞ্জ মহকুমার টুঙ্গিপাড়ায় ওইদিন জন্ম হয়েছিল এক শিশুর। তবে তা কিন্তু সাধারণ কোনো মানুষের জন্ম ছিল না। বরং এ ছিল এক বীরের জন্ম, যার বীরত্বপূর্ণ ঘটনাবলী সমসাময়িক ইতিহাসে দুর্লভ ও অতুলনীয়। একইসঙ্গে এটি ছিল ভারতীয় উপমহাদেশের ভূ-রাজনৈতিক এবং ভূ-কৌশলগত নাটকীয় পরিবর্তন আনার দিনও। কারণ, জন্মের অর্ধশত বছর পরেই ‘খোকা’ নামে বিখ্যাত হয়ে ওঠা এই শিশুই নিজ ব্যক্তিত্বের জন্য হয়ে উঠবেন সর্বজন শ্রদ্ধেয়। একইসঙ্গে যার কণ্ঠে স্বাধীনতার আহ্বান প্রতিধ্বনিত হবে পঞ্চাশ হাজার বর্গমাইল জুড়ে। তিনিই সাড়ে সাত কোটি বাঙালিকে স্বাধীনতার প্রশ্নে একত্রিত হতে অনুপ্রাণিত করবেন। তার কারিশমা, প্রতিভা এবং প্রজ্ঞা এমন একটি নতুন জাতিরষ্টি, মুদ্রা, মানচিত্র এবং পতাকার জন্ম দিয়েছিল যাকে আমরা আজ খুব ভালোবেসে বলি বাংলাদেশ। সেই শিশু, সেই খোকা আর কেউ নন, সর্বকালের সর্বশ্রেষ্ঠ বাঙ্গালী জাতির পিতা বঙ্গবন্ধু শেখ মুজিবুর রহমান।

বিখ্যাত জার্মান মনস্তাত্ত্বিক ডিয়েট্রিচ উর্নার তার *দ্য লজিক অব ফেইলার*^২ বইয়ে উল্লেখ করেন, মেধাবীরা যখন জন্মগ্রহণ করেন, জ্ঞানীরা তাদের প্রজ্ঞার মাধ্যমে জটিল পরিস্থিতি ঠিকই অনুধাবন করতে পারেন। ইতিহাস সাক্ষী দেয় যে, কোনো দরিদ্র এবং নিরক্ষর জাতির জন্য তাদের চেয়ে অধিকতর শক্তিশালী শাসক বা নিপীড়ককে পরাজিত করে স্বাধীনতা ছিনিয়ে আনার মতো জটিল পরিস্থিতি আর হতে পারে না। অথচ প্রতিভা ও প্রজ্ঞার সংমিশ্রণে মাত্র নয় মাসের মধ্যে বঙ্গবন্ধু তাঁর কৌশলগত নেতৃত্ব দিয়ে স্বাধীনতা ছিনিয়ে এনেছিলেন। ৭ মার্চের তেজোদীপ্ত ভাষণ দিয়ে লাখ লাখ বাঙালির হৃদয় ও মনে তিনি পৌঁছে গিয়েছিলেন। সে ভাষণে স্বাধীনতার জন্য তাঁর উদাত্ত আহ্বান বাঙালির মনকে আন্দোলিত করেছিল। তাই তো একটি বিজয়ী জাতি হিসেবে আবির্ভূত হতে বঙ্গবন্ধুর এই আহ্বান বা কৌশলগত নির্দেশনা তারা খুব সহজে আন্তরিকতার সাথে পড়তে পেরেছিল।^৩

এই রচনার উদ্দেশ্য আন্তর্জাতিক সম্পর্কের তাত্ত্বিকভিত্তিক রিয়ালিযম এর নিরিখে বিংশ শতাব্দীর অন্যতম সফল ‘রাজনীতির কবি’, ‘দার্শনিক রাষ্ট্রনায়ক’ বঙ্গবন্ধুর কৌশলগত ও অতি বাস্তববাদী দৃষ্টিভঙ্গির বিশ্লেষণ করা।

রাষ্ট্রনায়কত্ব ও রিয়ালিযমের দৃষ্টিতে বঙ্গবন্ধু

রিয়ালিযম বা কারো কারো মতে পলিটিক্যাল রিয়ালিযম আন্তর্জাতিক রাজনীতির এমন একটি দৃষ্টিভঙ্গি যা তার প্রতিযোগিতামূলক এবং বিতর্কিত চরিত্রের উপর জোর দেয়। বাস্তববাদীরা (রিয়ালিস্ট) মনে করেন, আন্তর্জাতিক অঙ্গনের মূল চরিত্র রাজ্য বা ভূখন্ড। মূলত নেশন স্টেটস প্রাথমিকভাবে নিজের নিরাপত্তা নিয়ে উদ্ভিগ্ন। তার উপর তারা নিজেদের জাতীয় স্বার্থ হাসিলের জন্য কাজ করে। এমনকি জাতিগুলোর মধ্যে ক্ষমতা, প্রভাব এবং মর্যাদা অর্জনের অভীষ্ট লক্ষ্য নিয়ে দেশসমূহ পরিচালিত হয়। আর পলিটিক্যাল রিয়ালিস্টগণ মনে করেন, জাতীয় রাজনীতি কর্তৃত্ব এবং আইনকে নিজের মধ্যে অন্তর্ভুক্ত করে। অন্যদিকে, আন্তর্জাতিক রাজনীতি কখনো কখনো নৈরাজ্য এবং অন্যায়ের এমন এক ক্ষেত্র হয়ে দাঁড়ায়, যখন একে সক্রিয় বা সম্ভাব্য দ্বন্দ্ব দ্বারা চিহ্নিত করা যায়।

এই রাজনৈতিক বাস্তববাদের প্রতিষ্ঠাতা হিসেবে থুসাইডিডেস (৪৬০-৪০০ খ্রী.পূর্ব), ম্যাকিয়াভেলি (১৪৬৯-১৫২৭ খ্রীস্টাব্দ) এবং থমাস হবস (১৫৮৮-১৬৭৯ খ্রীস্টাব্দ) সবচেয়ে বিখ্যাত। যদিও বাস্তববাদের প্রাচীন ঐতিহ্য নিয়ে সমালোচনা আছে। তবুও বিংশ শতাব্দীর ধ্রুপদী বাস্তববাদ বর্তমানে বেশিরভাগই নব্য বাস্তববাদিতা দ্বারা প্রতিস্থাপিত। আবার শাস্ত্রীয় এবং নব্য বাস্তববাদ উভয় নিয়েই আন্তর্জাতিক সম্পর্ক বিশেষজ্ঞরা সমালোচনা করেছেন। এমনকি উত্তর-আধুনিক দৃষ্টিকোণ থেকেও এর সমালোচনা করা হয়। এক্ষেত্রে বিংশ শতাব্দীর তাত্ত্বিক রেইনহোল্ড নিবুর (১৮৯২-১৯৭১) এবং হাস মরগেনথাউ (১৯০৪-১৯৮০) বনাম মৌলবাদী বা চরম বাস্তববাদের মধ্যে পার্থক্য আঁকা যেতে পারে। এটা সত্য যে, ধ্রুপদী বাস্তববাদ জাতীয় স্বার্থের ধারণাকে সমর্থন করে। কিন্তু এটি ম্যাকিয়াভেলির সেই মতবাদকে সমর্থন করে না, যেখানে বলা হয়েছে রাষ্ট্রের প্রয়োজনে যে কোনো কিছু করাই যুক্তিপূর্ণ।^৪ বরং ধ্রুপদী বাস্তববাদীরা আন্তর্জাতিক রাজনীতিতে নৈতিক রায়কেই সমর্থন করেন। যদিও তারা তথাকথিত নৈতিকতাবাদীদের যারা নিজেদের উন্নতির সমালোচনাকারী কিন্তু রাজনৈতিক বাস্তবতাকে বা রিয়াল পলিটিক (Real Politik) কে গ্রহণ করে না তাদের ব্যাপারে ভ্রুঁ কুচকান।

সাধারণ জনগণ একজন রাষ্ট্রনায়কের সংজ্ঞা জানতে চায়। একইসঙ্গে তারা জানতে চায় একজন রাষ্ট্রনায়ক ও একজন রাজনীতিবিদের মধ্যে পার্থক্য কী? বিভিন্ন সাহিত্যে বা শব্দকোষে এর সংজ্ঞা নিয়ে কম বেশি আলোচনা হয়েছে। কেমব্রিজ ইংলিশ ডিকশনারিতে ‘রাষ্ট্রনায়ক’ শব্দটিকে সংজ্ঞায়িত করা হয়েছে “একজন অভিজ্ঞ রাজনীতিবিদ হিসেবে, বিশেষ করে যিনি সঠিক সিদ্ধান্ত গ্রহণের জন্য সর্বজন শ্রদ্ধেয় ও গ্রহণযোগ্য”।^৫ এ থেকে সাধারণভাবে বোঝা যায়, রাষ্ট্রনায়ক একজন রাজনীতিবিদের থেকে সম্পূর্ণ বিপরীত। রাজনীতিবিদ এমন একজন ব্যক্তি, যিনি ভোটে নির্বাচিত হওয়ার জন্য জনগণকে কিছু প্রতিশ্রুতি দেন। অপরদিকে, একজন রাষ্ট্রনায়ক এমন ব্যক্তিত্ব, যিনি তাঁর জনগণের প্রতিনিধিত্বকারী এবং তাদের মঙ্গল ও কল্যাণের জন্য প্রচেষ্টা করেন। ঐতিহাসিকরা বিংশ শতাব্দীর সর্বশ্রেষ্ঠ রাজনীতিবিদ হিসেবে স্যার উইনস্টন লিওনার্ড স্পেন্সার চার্চিলকে (১৮৭৪ - ১৯৬৫) গণ্য করেন। কারণ, তিনি এমন একজন পরিবর্তন প্রত্যাশী নেতা এবং রাজনীতিক ব্যক্তি ছিলেন, যিনি তাঁর অনন্য কৌশলগত অন্তর্দৃষ্টি, আবেগ এবং ব্যক্তিত্ব দিয়ে দেশের ক্রান্তিকালে মানুষকে অনুপ্রাণিত করার মহান ক্ষমতা প্রদর্শন করেছিলেন।^৬

নিঃসন্দেহে বিংশ শতাব্দীর শ্রেষ্ঠ রাষ্ট্রনায়ক হলেন ‘রাজনীতির কবি’, ‘দার্শনিক রাষ্ট্রনায়ক’, সর্বকালের সর্বশ্রেষ্ঠ বাঙালি, ‘জাতীয় মহানায়ক’, জাতির পিতা বঙ্গবন্ধু শেখ মুজিবুর রহমান। আমেরিকা থেকে প্রকাশিত বিখ্যাত জার্নাল নিউজউইক তাদের ১৯৭১ সালের এপ্রিল সংখ্যা বঙ্গবন্ধুকে ‘রাজনীতির কবি’ হিসেবে আখ্যায়িত করে।^৭ বঙ্গবন্ধু এমন এক সময় জন্মগ্রহণ করেছিলেন, যে সময়টি ছিল দুর্দান্ত। কারণ, তাঁর ছিল নেপোলিয়ানের মতো Coup d’oeil বা দূরদৃষ্টি, আব্রাহাম লিংকনের মতো দুর্লভ নেতৃত্বের গুণাবলী, যা শুধুমাত্র একজন অতুলনীয় রাষ্ট্রনায়কের চারিত্রিক বৈশিষ্ট্য হতে পারে। বিভিন্ন সময়ে বঙ্গবন্ধু যখন ভাষণ দিয়েছিলেন, বিশেষ করে ১৯৭১ সালের ৭ মার্চ অসাধারণ প্রাণবন্ত কণ্ঠে দেওয়া তাঁর সেই ভাষণ জনগণকে আকর্ষণ করেছিল চুম্বকের মতো। তাঁর সেই নাটকীয় অথচ অত্যন্ত প্রেরণাদায়ক ভাষণ মানুষকে স্বদেশের মুক্তির মতো একটি মহৎ উদ্দেশ্যে সর্বোচ্চ ত্যাগ স্বীকার করতে বাধ্য করেছিল। স্বাধীনতাপ্রিয় মানুষের কাছে বঙ্গবন্ধু ছিলেন একজন অলিম্পিয়ান ব্যক্তিত্ব। এজন্য তাঁর মধ্যেই একত্রে সন্নিবেশ ঘটেছিল জর্জ ওয়াশিংটন (১৭৩২-১৭৯৯), আব্রাহাম লিংকন (১৮০৯-১৮৬৫), চার্লিস বা লি কুয়ান ইউদের (১৯২৩-২০১৫) সামষ্টিক গুণাবলী। তিনি ছিলেন পাকিস্তানি সামরিক জাস্তার চাপানো নব্য ঔপনিবেশিকতার শৃঙ্খল থেকে বাংলাদেশকে মুক্ত করার স্বপ্নদ্রষ্টা। তাঁর এমন এক সোনার বাংলা গড়ে তোলার স্বপ্ন ছিলো, যার লক্ষ্য ছিল: SMART [Specific, Measurable, Achievable, Realistic and Time-bound (সুনির্দিষ্ট, পরিমাপ ও অর্জনযোগ্য, বাস্তবসম্মত এবং সময়সীমায়ুক্ত)]। যার মাধ্যমে জনগণের কল্যাণ ও স্বাধীনতার সুফল নিশ্চিত করা যায়।

১৯৪৫ সালে দ্বিতীয় বিশ্বযুদ্ধ সমাপ্তির পর থেকে বাস্তববাদকে সবচেয়ে প্রভাবশালী তত্ত্ব হিসাবে বিবেচনা করা হয়। এ বাস্তববাদীরা মনে করেন, নেশন স্টেটস মূলত নিরাপত্তার জন্য নৈতিকতার চেয়ে সামরিক ও অর্থনৈতিক আকাঙ্ক্ষার দ্বারা অধিক অনুপ্রাণিত। আর এ মতবাদের প্রধান প্রবর্তক ছিলেন ই. এইচ. কার, জর্জ এফ. কেনান, হ্যানস জে. মরগেনথো, রাইনহোল্ড নিবুর এবং কেনেথ ডব্লিউ. থম্পসন। আবার বিপরীতভাবে, নব্য বা কাঠামোগত বাস্তববাদীরা (Structural Realists) যুক্তি দেন যে, রাষ্ট্রীয় নেতারা ক্ষমতার জন্য তাদের সহজাত আকাঙ্ক্ষার দ্বারা পরিচালিত নন। বরং তারা প্রচলিত রাষ্ট্র ব্যবস্থার কাঠামো থেকেই শক্তি বা ক্ষমতা অর্জন করতে চান। তারা আন্তর্জাতিক ব্যবস্থার এমন নৈরাজ্যপূর্ণ চরিত্রকে চিহ্নিত করেন, যেখানে রাষ্ট্রগুলোকে টিকে থাকার জন্য নিরন্তর সচেতন হতে হয়। তাই রানা ম্যাকমিলানকে উদ্ধৃত করে বলেন, যে তিনটি ‘এস’ বাস্তববাদী ত্রিভুজের তিনটি কোণকে প্রতিনিধিত্ব করে, তা হলো ‘স্ট্যাটিজম’ বা পরিসংখ্যান, ‘সারভাইভাল’ বা বেঁচে থাকা এবং ‘সেলফ হেল্প’ বা স্বনির্ভরতা।^৮ অতএব, বলাই যায় যে, বাস্তববাদী কাঠামোর ভিত্তি হলো ‘রাষ্ট্র’। এ ব্যবস্থায় রাষ্ট্র এবং এর নিরাপত্তা ছাড়া অন্যান্য সব বিষয়কে কম প্রাধিকার দেওয়া হয়। আর এমন মুহূর্তেই সুস্পষ্ট প্রশ্ন ওঠে যে, ‘বাস্তববাদ’ বা বাস্তবতাবাদি রাজনীতি’ শব্দটি বঙ্গবন্ধু ছাড়া প্রকৃত অর্থে আর কে ভালোভাবে বুঝতে পেরেছিলেন? তিনি ছাড়া আর কে বুঝেছিলেন যে, বাঙালি জাতির একটি সার্বভৌম রাষ্ট্র প্রয়োজন? এভাবেই অগ্রহী পাঠক একজন মহান রাষ্ট্রনায়ক, সর্বকালের সর্বশ্রেষ্ঠ বাঙালি বঙ্গবন্ধুর ভূ-রাজনৈতিক দূরদর্শিতার প্রতিফলন দেখে উৎসাহিত ও অনুপ্রাণিত হতে পারেন।

ব্রিটিশ ইন্ডিপেন্ডেন্ট লেবার পার্টির সাধারণ সম্পাদক ফেনার ব্রুকওয়ে যথাযথই বলেছিলেন, “এক অর্থে শেখ মুজিব ছিলেন জর্জ ওয়াশিংটন, মহাত্মা গান্ধী এবং ডি ভ্যালেরার চেয়ে বড় নেতা”।^৯ আবার জেমস নোভাক বলেছেন, “শেখ মুজিব রাজনৈতিক পরিবেশে তাৎক্ষণিকতা এনেছিলেন। তিনি চালাকি চাতুরতা বা আধাআধি কোনো ব্যবস্থা দ্বারা মানুষকে ধোঁকা দেননি। সরকারি অফিস বা

ক্ষমতার প্রতি তার কোনো লোভ ছিল না”। নোভাকের কাছে বঙ্গবন্ধুর রাজনীতির প্রকাশ ঘটছিল অন্যভাবে। তিনি মনে করেন, “কঠিন কাজই ছিল শেখ মুজিবের স্টাইল। তিনি একদিকে গ্রাম থেকে গ্রামে মাঠে মাঠে হেঁটেছেন এবং মানুষের সাথে মিশেছেন, তাদের চাল, ডাল এবং লবণ ভাগ করে নিয়েছেন, তাদের স্বজনদের নাম স্মরণ করেছেন, মসজিদে নামাজ পড়েছেন, মাঠে ঘেমেছেন, বন্যা কবলিত জায়গা পরিদর্শন করেছেন, অন্ত্যেষ্টিক্রিয়া এবং মিলাদে কেঁদেছেন। মানুষের ঘামে ভেজা হাত ছুঁয়েছেন। কারণ, তিনি জানতেন, লোকেরা বিশ্বাস করে, যে জিনিসগুলো তারা বোঝে না, সেগুলো তিনিই কেবল তাদের কাছে ব্যাখ্যা করতে পারেন। আর জনগণ তাঁর এ ক্ষমতাকে সম্মান করতো। সেজন্য জনগণ বিশ্বাস করেছিল যে, বঙ্গবন্ধুর মিথ্যা বলার দরকার নেই”।^{১০}

রাষ্ট্রনায়কের চার গুরুত্বপূর্ণ গুণাবলী বিবেচনায় বঙ্গবন্ধুর রাষ্ট্রনায়কত্ব বিশ্লেষণ

১৬৪৮ সালে ওয়েস্টফালিয়ান সিস্টেম নামে একটি নীতি প্রবর্তিত হয়। যে নীতিতে বলা হয়েছে, প্রতিটি রাষ্ট্রের তার ভূখন্ড এবং অভ্যন্তরীণ বিষয়ে সার্বভৌমত্ব রয়েছে। এছাড়া, কোনো দেশের অভ্যন্তরীণ বিষয়ে অন্য দেশের হস্তক্ষেপ করা উচিত নয়। তা সে যে আকারের রাষ্ট্রই হোক না কেন আন্তর্জাতিক আইন তার জন্যও সমান।^{১১} উত্তর-পশ্চিম জার্মানির ওয়েস্টফালিয়ার শান্তি চুক্তির ওই অধ্যায়ের ত্রিশ বছরের যুদ্ধের অবসান ঘটে। ওয়েস্টফালিয়ান মডেলের বেশিরভাগ জাতিরাষ্ট্রের ক্ষেত্রে তাঁদের প্রেসিডেন্ট বা সরকারপ্রধান নির্বাচন হুবহু এক না হলেও প্রায় একই রকম। এ নির্বাচন প্রক্রিয়ার সময় সাংবাদিক, চিন্তাবিদ এবং বিশ্লেষকরা প্রেসিডেন্ট প্রার্থীদের পূর্ব ইতিহাস, বক্তৃতা, ব্যক্তিত্ব, নির্বাচনী ইশতেহারসহ সব কিছুর আনুবীক্ষণিক পরীক্ষা-নিরীক্ষা বা যাচাই বাছাই করেন। প্রক্রিয়াটি কোনো না কোনোভাবে ভোটারদের মানসিকতাকেও মূল্যায়ন বা বিনির্মাণ করে। এর মধ্যে গুরুত্বপূর্ণ বিষয় হলো, যিনি নেতা হবেন তার কিছু অপরিহার্য গুণাবলী থাকার প্রয়োজনীয়তা। সুতরাং, প্রার্থীদের মূল্যায়ন এবং বিচারের জন্য একটি গ্রহণযোগ্য মানদণ্ড নির্ধারণ করা হয়। এমনকি যারা ইতোমধ্যে উচ্চ পদে আসীন রয়েছেন তাদের কাছেও এ প্রক্রিয়া গ্রহণযোগ্য। আমরা জানি যে, প্রার্থী শনাক্তকরণে ও পরবর্তীতে নির্বাচনের মানদণ্ডে জনমত ভিন্ন হবে। তাই এ ক্ষেত্রে সঠিক মানদণ্ড নির্ধারণে যেখানে তিনি বলেছেন একজন রাজনীতিবিদ এবং রাষ্ট্রনায়ক সমান নন। ব্রেট এবং কেট ম্যাকে এর মতে একজন রাষ্ট্রনায়ক অত্যাচারী নন।^{১২} বরং তিনি হবেন মুক্ত মানুষের মুক্ত নেতা। তবে তাকে “চারটি গুরুত্বপূর্ণ গুণাবলীর অধিকারী হতে হবে” যেমন:^{১৩}

১. প্রখর নীতিবান।
২. নৈতিক মাত্রাবোধ।
৩. রূপকল্প বা দূরদৃষ্টি।
৪. রূপকল্প অর্জনের জন্য মানুষকে একত্রিত করার অপ্রতিরোধ্য ক্ষমতা।

একবার কেউ যদি গণতন্ত্রপন্থী একজন রাষ্ট্রনায়ক হওয়ার চারটি মানদণ্ড অপেক্ষাকৃত গভীরভাবে খেয়াল করে, তাহলে বুঝতে অসুবিধা হবে না যে বঙ্গবন্ধুর চরিত্রে এসব গুণাবলীর সবকটিই বিদ্যমান ছিল। শুধু এ চারটিই নয়, একইসঙ্গে অন্যান্য বিশিষ্ট গুণাবলী বঙ্গবন্ধুকে করে তুলেছে সর্বকালের অন্যতম শ্রেষ্ঠ রাষ্ট্রনায়ক। সংক্ষেপে এ গুণাবলীর উপর নিম্নে আলোচনা করা হলো:

প্রখর নীতিবান

শক্ত নৈতিক ভিত্তি একজন রাজনীতিকের জন্য অত্যন্ত গুরুত্বপূর্ণ। এর মাধ্যমে তিনি তার প্ল্যাটফর্মকে দৃঢ়, অবিচল এবং মৌলিক সত্যের ভিত্তিতে তৈরি করেন। এ জিনিসগুলো তিনি কর্ম ও

হৃদয় দ্বারা যেমন বিশ্বাস করেন, তেমনি গ্রহণ করেন অপরিহার্য দর্শন হিসেবে। যাকে একটি ভবনের ভিত্তির সঙ্গে তুলনা করা যায়। যেখানে ঘূর্ণিঝড় বা ভূমিকম্প ভবনের কাঠামোকে ধাক্কা দিতে পারে, কিন্তু তার ভিত্তি শক্ত হলে সেটি কখনোই হেলে পড়বে না। একজন অভিজ্ঞ রাষ্ট্রনায়কও সবসময় স্থান ও পরিবেশের পরিপ্রেক্ষিতে নীতি বা কৌশল সহজে নির্ধারণ করতে পারেন। এমনকি লক্ষ্য অর্জনের পদ্ধতিগুলোও পরিবর্তনের ক্ষমতা তার আছে। তবে স্বল্পমেয়াদী কৌশল শুধুমাত্র তার চূড়ান্ত লক্ষ্য অর্জনের উদ্দেশ্য হিসেবে কাজ করে। জাতির পিতার এমন সব অসাধারণ কৌশলের ইতিহাস তার সমস্ত কথোপকথনে কর্মজীবনে রেকর্ড করা আছে। এছাড়া, দেশের জনগণ যেন নিপীড়ন এবং অবিচার থেকে মুক্তি পায় সেজন্য তৎকালীন পাকিস্তানি নেতৃত্বের সঙ্গে বৈঠকেও তাঁর অবস্থানের দৃঢ় প্রতিফলন ছিল।

নৈতিক মাত্রাবোধ

ড. ফিয়ার্স আধুনিক রাজনীতিবিদদের সম্পর্কে একটি বিশেষ উদাহরণ প্রদান করেন। তিনি বলেন, আধুনিক রাজনীতিবিদরা ‘অ্যান্টেনা’ নামে একটি বিশেষ যন্ত্র ব্যবহার করে সিদ্ধান্ত গ্রহণ করেন। ড. ফিয়ার্স যুক্তি দেন যে, জনগণের মেজাজ ও তাদের ভোট হারাবেন কিনা তা বোঝার জন্য রাজনীতিবিদরা কোন দিকে হাওয়া বইছে তা পর্যবেক্ষণের চেষ্টা করেন। তারপর জনমত বুঝে তিনি সেদিকে তার পাল তোলেন। কিন্তু একজন রাষ্ট্রনায়ক এমনতর জনমত দ্বারা পরিচালিত হন না। বরং একজন প্রকৃত রাষ্ট্রনায়ক তাঁর নিজের নৈতিক কম্পাসের নির্দেশনা অনুসরণ করে সিদ্ধান্ত নেন। তাঁর নৈতিক মাত্রার বর্ণচ্ছটা হয় গভীর ও নিখুঁতভাবে সঠিক হবে, নয়তো তা যাবে চরম ভুলের রাজ্যে। ক্ষমতার সামনেও তিনি সাহসী এবং সত্য কথা বলতে হবেন দৃঢ়প্রতিজ্ঞ। যদি তিনি কিছু ভুল দেখেন, তাহলে দৃঢ়চিত্তে সামনে এসে বলবেন এটি ভুল। সেইসঙ্গে ওই ভুলের বিরুদ্ধে লড়াইয়েও তিনি পিছিয়ে থাকেন না। আবার যখন নিশ্চিত হন যে এটি সঠিক, তখন একে রক্ষার জন্য যেমন দৃঢ় অবস্থান নেন, তেমনি এর স্বার্থে যে কোনো কষ্ট সহিতেও প্রস্তুত থাকেন। সবমিলিয়ে একজন রাষ্ট্রনায়ককে অবশ্যই উচ্চাকাঙ্ক্ষী হতে হবে। স্বপ্ন রূপকল্প বাস্তবায়নের জন্য তাকে অবশ্যই একটি ক্ষমতা অর্জন করতে হবে। একইসঙ্গে তাকে অবশ্যই হতে হবে সৎ। তিনি দেশবাসীকে তাদের সর্বোত্তম কল্যাণ ও প্রাপ্তির প্রতিনিধিত্ব করার জন্য অহিংস পদ্ধতিতে নৈতিক কর্তৃত্বের দ্বারা নেতৃত্ব দেবেন। এখন যদি আমরা বঙ্গবন্ধুর জীবনের দিকে তাকাই, তাহলে দেখতে পাই যে মন্দ কাজের বিরুদ্ধে দৃঢ় নৈতিক অবস্থানের কারণে তাকে প্রায়শ কারাবরণ করতে হয়েছে। তিনি তার জীবনের মূল্যবান পঞ্চাশ বছরের প্রায় এক চতুর্থাংশ এবং পাকিস্তানি শাসনামলের প্রায় অর্ধেক কারাগারে কাটিয়েছেন।

‘রূপকল্প’ বা ‘দূরদৃষ্টি’

লেখক ‘রূপকল্প’ বা ‘দূরদৃষ্টি’-কে একটি ব্রাকেটে আবদ্ধ করে লিখেছেন, যাতে বঙ্গবন্ধুর ভিশনের উপর গুরুত্বারোপ করা যায়। তাঁর স্বপ্ন ছিল ক্ষুধা ও দারিদ্র্যমুক্ত সোনার বাংলা গড়া। যা অনেকটা মার্টিন লুথার কিং জুনিয়রের অপূর্ণ স্বপ্নের মতো। ভারতের সাবেক রাষ্ট্রপতি এ পি জে আব্দুল কালামের ভাষায়, “স্বপ্ন তা নয় যা আপনি ঘুমানোর সময় দেখেন। বরং স্বপ্ন হলো এমন কিছু যা আপনাকে ঘুমাতে দেয় না”। সুতরাং বলা যায় যে, একজন সফল রাষ্ট্রনায়কের অবশ্যই তার দেশ ও মানুষের ভবিষ্যত সম্পর্কে দ্ব্যর্থহীন দিব্যদৃষ্টি থাকতে হবে। ড. ফিয়ার্স মনে করেন যে, একজন রাষ্ট্রনায়কের অন্তর্দৃষ্টি (Coup d’oeil) তাঁর অন্যতম গুরুত্বপূর্ণ পূর্বশর্ত। তিনি অবশ্যই জানবেন জনগণ ও দেশকে তিনি কোনদিকে নিতে চান। অবশ্যই তাঁর কৌশলগত দৃষ্টিভঙ্গি থাকতে হবে। এতে একদিকে যেমন ওই রাষ্ট্রনায়ক আসন্ন চ্যালেঞ্জগুলো চিনতে সক্ষম হবেন, অন্যদিকে এর কার্যকর সমাধানগুলোও সফলে প্রয়োগ করতে পারবেন। আর এ সমাধান শুধু ভালোই হবে না, একইসঙ্গে

হবে টেকসই। তাই একজন রাষ্ট্রনায়ক কেবল বর্তমান নিয়েই সন্তুষ্ট হবেন না, তিনি ভবিষ্যত সম্পর্কেও থাকবেন আশাবাদী, উদ্বিগ্ন ও সচেতন। এছাড়া ভবিষ্যতে তাঁর দেশের অভ্যন্তরীণ বিষয় বা পররাষ্ট্র নীতিকে প্রভাবিত করার জন্য বিশ্ব কীভাবে উদ্ভূত হবে সে সম্পর্কে ভবিষ্যদ্বাণী করার জন্য স্ট্র্যাটেজিক দিকনির্দেশনা দেবার যোগ্যতা একজন রাষ্ট্রনায়কের থাকা আবশ্যিক। এ ক্ষেত্রে বঙ্গবন্ধুর রাজনৈতিক সমালোচকদেরও একমত হওয়া ছাড়া বিকল্প নেই যে, শেখ মুজিব শুধু একজন প্রতিভাধর রাজনীতিক বা কেবল একটি স্বাধীন দেশের স্বপ্নই দেখেছিলেন এমন নয়, বরং খুব অল্প সময়ের মধ্যে সরকারপ্রধান হিসেবে তিনি তাঁর স্বপ্ন বাস্তবায়নও করছিলেন। কূটনীতি থেকে আন্তর্জাতিক সম্পর্ক, পররাষ্ট্র থেকে অর্থনৈতিক নীতি, সামরিক থেকে রাজনৈতিক বা পরিবেশগত কিংবা আইনি ক্ষেত্র, এমন কোনো ক্ষেত্র খুঁজে পাওয়া যাবে না যেখানে এই দূরদর্শী নেতা অন্ধকারে আলোর দিশারী হিসেবে তার নির্দেশনা দিয়ে যাননি।

লক্ষ্য অর্জনে জনগণকে ঐক্যবদ্ধ করার অপ্রতিরোধ্য ক্ষমতা

যৌক্তিকভাবেই একজন রাজনীতিবিদের দৃঢ় নৈতিক ভিত্তির পাশাপাশি, মাত্রাবোধ এবং একটি ভিশন রূপকল্প বা স্বপ্ন থাকা প্রয়োজন। কিন্তু সে লক্ষ্য পূরণে যদি তাঁর জনগণকে ঐক্যবদ্ধ করার ক্ষমতা না থাকে তাহলে সমস্ত প্রচেষ্টা সম্ভবত নিরর্থক হয়ে পড়বে।

একজন রাষ্ট্রনায়ককে অবশ্যই এমন লোকদের বেছে নিতে হয় যারা তাঁর লক্ষ্যকে বাস্তবায়নে সরকারে কাজ করবে। এছাড়া, একজন সফল রাষ্ট্রনায়কের আসল সাফল্য হলো তার চারপাশের মানুষ এবং সমগ্র জাতিকে নিজের দর্শনের ন্যায়পরায়ণতা দিয়ে তাদের মন জয় করতে বোঝানোর ক্ষমতা। তাই রাষ্ট্রনায়ককে অবশ্যই একজন দক্ষ বক্তা হতে হবে। আর বিভিন্ন বিখ্যাত ব্যক্তিত্বের জীবনী, তাঁদের লেখা বই এবং ইতিহাস বিষয়ে দীর্ঘস্থায়ী পাঠই তাকে মানুষকে যুক্তি দিয়ে বোঝানোর মতো প্রজ্ঞাবান করে তোলে। এছাড়া, একজন সত্যিকারের রাষ্ট্রনায়ক সিদ্ধান্ত গ্রহণের ক্ষেত্রে জনমতের উপর ভরসা না রেখে নিজের নৈতিক কম্পাসকেই অনুসরণ করেন। তিনি বুঝতে পারেন যে, যখন জনগণের আদর্শকে অনৈতিকভাবে দাবিয়ে রাখার চেষ্টা করা হবে, তখন শক্তিশালী নৈতিক বক্তব্যের মাধ্যমেই তাদের আবার সক্রিয় করে তোলা যায়। আর রাষ্ট্রনায়কের বক্তব্যের শক্তি আসে সেই সত্য থেকে, যা আসলে তিনি মনে প্রাণে বিশ্বাস করেন। যদিও অনেকে বলতে পারেন যে, যেসব গুণাবলীর কথা বলা হয়েছে সেগুলো আজগুবি বা বাস্তবসম্মত নয়। আর এসব গুণাবলী কখনো একজন একক নেতার মধ্যে সন্নিবেশিত হবে না। কিন্তু এ চারটি গুণের বস্তুনিষ্ঠ বিশ্লেষণ করলে দেখা যায় যে, বঙ্গবন্ধুর মধ্যে তা খুব স্পষ্টভাবেই সন্নিবেশিত ছিল।

ড. ফিয়ার্স বিশ্বাস করতেন যে, ইতিহাসের তিনজন সর্বশ্রেষ্ঠ রাষ্ট্রনায়ক হলেন এথেন্সের পেরিক্লেস (৪৯৫-৪২৯ খ্রি.পূর্ব), আব্রাহাম লিঙ্কন এবং উইনস্টন চার্চিল। কারণ, তাঁদের তিনজনেরই নীতির ভিত্তি স্বাধীনতার আদর্শ এবং আইনের সমতার উপর প্রতিষ্ঠিত ছিল। কিন্তু তারপরও নিজেদের স্বপ্ন পূরণে কিছু কিছু কাজের জন্য তারা সমালোচিত হয়েছেন। মজার বিষয় হলো, দ্বিতীয় বিশ্বযুদ্ধের সময় জার্মান শহর ড্রেসডেনে বোমা হামলার জন্য চার্চিল চরমভাবে সমালোচিত। আর লিংকন সমালোচিত যুক্তরাষ্ট্রের গৃহযুদ্ধের সময় ‘হাবিয়াস কর্পাসদের’ অধিকার স্থগিত করার জন্য। সে জন্যই এ লেখক যুক্তি দেখান যে, একই মানদণ্ডে বঙ্গবন্ধুকেও ইতিহাসের অন্যতম সেরা রাষ্ট্রনায়ক হিসেবে গণ্য করা উচিত। কারণ, তিনি সারা জীবন সফলতার সঙ্গে কাজ করে গেছেন। এমনকি বঙ্গবন্ধু জনগণ এবং বাঙালি জাতির জন্য সর্বোচ্চ ত্যাগও স্বীকার করেছিলেন। যদিও শক্তির পাশাপাশি তার দুর্বলতাও ছিল। ১৯৭২ সালে স্যার ডেভিড ফ্রস্ট বিবিসিতে এক সাক্ষাৎকারে এ বিষয়ে জিজ্ঞাসা করলে বঙ্গবন্ধু বলেছিলেন, “আমার সবচেয়ে বড় শক্তি হলো আমার মানুষের প্রতি ভালোবাসা। আমার সবচেয়ে বড় দুর্বলতাও হলো আমি তাদের খুব বেশি ভালোবাসি।”^{২৪}

রাষ্ট্রনায়ক বঙ্গবন্ধু: তিনটি উদাহরণ

স্কুল জীবন থেকেই বঙ্গবন্ধু তাঁর নেতৃত্বের দক্ষতা ও সম্ভাবনা দেখাতে আরম্ভ করেছিলেন। তারপরও এক পর্যায়ে কঠোর পরিশ্রম এবং রাজনৈতিক অভিজ্ঞতাই তাকে একজন সত্যিকারের রাজনীতিবিদ হিসেবে ১৯৪৯ সালে প্রতিষ্ঠিত নতুন দল পূর্ব পাকিস্তান আওয়ামী মুসলিম লীগের যুগ্ম সম্পাদক পদে নির্বাচিত করেছিল। অথচ সে সময় তিনি কারাগারে অন্তরীণ ছিলেন। প্রকৃতপক্ষে, এটি ছিল বঙ্গবন্ধুর এমন এক রাজনৈতিক অন্তর্দৃষ্টি এবং দক্ষতা যা বাংলাদেশের সব গুরুত্বপূর্ণ প্রতিষ্ঠানের জন্য ছিল নজির। বলা যায়, তিনি তাঁর সময়ের চেয়ে এগিয়ে ছিলেন। উদাহরণস্বরূপ, ১৯৮২ সালের সমুদ্র আইন কনভেনশন আসারও অনেক বছর আগে ১৯৭৪ সালে বঙ্গবন্ধু বাংলাদেশের জন্য ‘টেরিটোরিয়াল ওয়াটারস অ্যান্ড মেরিটাইম জোনস অ্যাক্ট ১৯৭৪’ প্রণয়ন করেছিলেন। শুধু তাই নয়, তিনি বাংলাদেশের পররাষ্ট্র নীতিরও পথপ্রদর্শক। তিনি বাংলাদেশের সেই পররাষ্ট্রনীতি স্থাপন করেছিলেন, যেখানে বলা আছে, “সবার সঙ্গে বন্ধুত্ব এবং কারো প্রতি বৈরীতা নয়”। অতএব, গবেষকদের বিশ্লেষণাত্মক মনকে উদ্দীপ্ত করার জন্য এ তিনটি উদাহরণই যথেষ্ট। যা বঙ্গবন্ধুর রাষ্ট্রনায়কত্বের অনন্য মহিমারই ইঙ্গিত বহন করে।^{১৫}

প্রথম ঘটনা: বঙ্গবন্ধু ছিলেন ১৯৫২ সালের ভাষা আন্দোলনের প্রথম দিককার বন্দিদের একজন। মাতৃভাষায় কথা বলার অধিকার বিষয়ে শাসকগোষ্ঠীকে চ্যালেঞ্জ করে তিনি বলেছিলেন:

আমরা বাংলা ভাষায় কথা বলতে চাই। আমরা অন্য কোনো ভাষা জানি বা না জানি তা আমাদের জন্য গুরুত্বপূর্ণ নয়। আমরা যদি মনে করি যে, নিজেদেরকে বাংলায় প্রকাশ করতে পারছি তাহলে ইংরেজি জানলেও আমরা সবসময় বাংলায় কথা বলব। যদি এটি অনুমোদন করা না হয়, তাহলে আমরা সংসদ থেকে বেরিয়ে যাব। কিন্তু এই সংসদকে অবশ্যই বাংলা ভাষাকে অনুমোদন দিতে হবে। আর এটাই আমাদের অবস্থান।

দ্বিতীয় ঘটনা: ১৯৭১ সালের ৭ মার্চকে বাংলাদেশের ইতিহাসে একটি অন্যতম টার্নিং পয়েন্ট হিসেবে দেখা হয়। সেদিন বঙ্গবন্ধু তার জ্বালাময়ী ভাষণে বলেন:

...প্রত্যেক ঘরে ঘরে দুর্গ গড়ে তোলো। তোমাদের যা কিছু আছে, তাই নিয়ে শত্রুর মোকাবিলা করতে হবে। ...মনে রাখবা, রক্ত যখন দিয়েছি, রক্ত আরো দেব। তবু এই দেশকে মুক্ত করে ছাড়ব ইনশাআল্লাহ। ...এবারের সংগ্রাম আমাদের মুক্তির সংগ্রাম; এবারের সংগ্রাম স্বাধীনতার সংগ্রাম।^{১৬}

তৃতীয় ঘটনা: ১৯৭১ সালের ২৫ মার্চ রাতে পাকিস্তানি হানাদার বাহিনীর হাতে গ্রেপ্তারের আগে বঙ্গবন্ধু ওয়্যারলেসের মাধ্যমে একটি তারবার্তা চট্টগ্রামে পাঠান। যেখানে তিনি শুধু বাংলাদেশের স্বাধীনতাই ঘোষণা করেননি, বরং ওই সময়ে রাজনীতির ইতিহাসে অতুলনীয় এক স্পষ্ট কৌশলগত নির্দেশনা দিয়ে যান। তার সেই কৌশলগত নির্দেশনা ছিল:

এটাই হয়তো আমার শেষ বার্তা, আজ থেকে বাংলাদেশ স্বাধীন। আমি বাংলাদেশের জনগণকে আহ্বান জানাই, যে যেখানে আছে, যার যা কিছু আছে, তাই নিয়ে রুখে দাঁড়াও, সর্বশক্তি দিয়ে হানাদার বাহিনীকে প্রতিরোধ করো। পাকিস্তানি দখলদার বাহিনীর শেষ সৈন্যটিকে বাংলার মাটি থেকে বিতাড়িত না করা পর্যন্ত এবং চূড়ান্ত বিজয় অর্জন না করা পর্যন্ত লড়াই চালিয়ে যাও।^{১৭}

উপসংহার

বাঙালির কাছে বঙ্গবন্ধু ও বাংলাদেশ সমার্থক শব্দ। দেশ-বিদেশের ভক্ত সমর্থকদের কাছে তিনি ছিলেন হিমালয়তুল্য। ১৯৭৪ সালে হাভানায় অনুষ্ঠিত জোট নিরপেক্ষ সম্মেলনে কিউবার রাষ্ট্রপ্রধান ফিদেল কাস্ত্রো (১৯২৬-২০১৬) লৌহমানব বঙ্গবন্ধুর সাথে সাক্ষাতের পরে যথার্থই মন্তব্য করেছেন, “আমি হিমালয় দেখিনি। কিন্তু শেখ মুজিবকে দেখেছি। ব্যক্তিত্ব ও সাহসিকতায় এই মানুষটি হিমালয় সমান। আর এভাবেই আমি হিমালয় দেখার অভিজ্ঞতা লাভ করেছি।” তার কারিশমা, প্রতিভা এবং প্রজ্ঞা বঙ্গবন্ধুকে একটি নতুন জাতি, রাষ্ট্র, মুদ্রা, মানচিত্রসহ আমাদের পরিচয়ের স্বতন্ত্র প্রতীক লাল-সবুজ পতাকার জন্ম দিতে জনগণকে নেতৃত্ব দানে সক্ষম করেছিল। বিখ্যাত ঐতিহাসিক, পণ্ডিত ও শিক্ষাবিদরা তাদের লেখা বই এবং প্রবন্ধেও বঙ্গবন্ধুকে অন্যতম দীপ্তিময় রাষ্ট্রনায়ক হিসেবে উল্লেখ করেছেন। উপর্যুক্ত আলোচনার বিশ্লেষণে প্রতীয়মান হয় যে, রিয়ালিয়মকে টুল হিসেবে ব্যবহার করে বঙ্গবন্ধুর রাজনীতির মূল্যায়নে আরো অধিক মনোযোগী হওয়া প্রয়োজন। আর এ বৈশিষ্ট্যসমূহের কার্যকর অনুসন্ধান একজন সফল রাষ্ট্রনায়ক হিসেবে কোনো ব্যক্তির গুণগত যোগ্যতাকে প্রমাণ করে। তাই বক্ষ্যমান গবেষণায় রিয়ালিয়মকে ব্যাখ্যামূলক টুল হিসেবে ব্যবহার করা হয়েছে; যাতে বাংলাদেশি ও বিদেশি শিক্ষাবিদ থেকে গুরু করে গবেষকরা একইভাবে বঙ্গবন্ধুর চমকপ্রদ রাষ্ট্রনায়কত্বের বৈশিষ্ট্য থেকে উপকৃত হতে পারেন। এছাড়া, বিংশ শতাব্দীর একজন সফল রাষ্ট্রনায়ক হিসেবে তাঁর উত্থান, কৌশলগত ও বাস্তববাদী দৃষ্টিভঙ্গি, একটি রাষ্ট্রের জন্ম দেওয়ার এবং সফলতার সাথে পথচলার জন্য ভবিষ্যৎ প্রজন্মকে আলোকিত পথ দেখাতে বাতিঘর হিসেবে কাজ করবে।

বঙ্গবন্ধু ছিলেন একজন বাস্তববাদী, সত্যিকারের রাষ্ট্রনায়ক, যিনি কেবল তাঁর নিজের জনগণকেই চুম্বকের মতো আকৃষ্ট করেননি, একইসঙ্গে আকৃষ্ট করেছেন বিশ্ব বিখ্যাত রাষ্ট্রনায়ক, রাজনীতিবিদ, সাংবাদিক, শিল্পী এবং শিক্ষাবিদদেরও। দেশ এবং জনগণের জন্য জীবনের সর্বোচ্চ আত্মত্যাগ বঙ্গবন্ধুকে একজন মহান রাষ্ট্রনায়ক হিসেবে বিশ্ব দরবারে সুপ্রতিষ্ঠিত করেছে। নিপীড়িতদের কাছে বঙ্গবন্ধু ছিলেন দীপ্ত বাতিঘর। আবার বাঙালি জাতির জন্য তিনি ছিলেন তাদের পিতা।

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১৬. *Ibid.*
১৭. *Ibid.*

সংক্ষিপ্ত পরিচিতি



কমডোর সৈয়দ মিসবাহউদ্দিন আহমদ, (সি), এনইউপি, এনডিসি, এএফডব্লিউসি, পিএসসি, বিএন ১৪ জানুয়ারি ১৯৮৬ তারিখে বাংলাদেশ নৌ বাহিনীর নির্বাহী শাখায় যোগদান করেন এবং বাংলাদেশ মিলিটারী একাডেমীতে ১৭তম বিএমএ লং কোর্সের সাথে সামরিক প্রশিক্ষণ গ্রহণ করেন। প্রাথমিক সামরিক প্রশিক্ষণ শেষে উক্ত অফিসার পেশাগত মৌলিক এবং উচ্চতর প্রশিক্ষণ গ্রহণের নিমিত্ত তদানিন্তন ফেডারেল রিপাবলিক অব জার্মান নেভাল একাডেমীতে যোগদান করেন এবং প্রশিক্ষণ শেষে ০১ জুলাই ১৯৮৮ সালে

অল রাউন্ডার মিডশিপম্যান হিসেবে কমিশন লাভ করেন। উক্ত অফিসার ১৯৯৫ সালে নৌবাহিনী জুনিয়র স্টাফ কোর্স এবং পাকিস্তান হতে ১৯৯৭ সালে কমিউনিকেশন এন্ড ইলেক্ট্রনিক ওয়ারফেয়ার স্পেশালাইজেশন কোর্স সম্পন্ন করেন। তিনি ২০০২ সালে মিরপুর সামরিক বাহিনী কমান্ড এন্ড স্টাফ কলেজ হতে স্টাফ কোর্স এবং যুক্তরাষ্ট্রের নেভী ওয়ার কলেজ হতে ২০০৩ সালে ২য় স্টাফ কোর্সে শীর্ষস্থান লাভ করেন। তিনি ২০০৮ সালে এএফডব্লিউসি কোর্স সম্পন্ন করেন। তিনি বাংলাদেশ নৌ বাহিনী প্রতিষ্ঠানে কমান্ড, অপারেশন এবং স্টাফ হিসেবে বিভিন্ন দায়িত্ব পালন করেন। তিনি ২০০৫ সালে জাতিসংঘের শান্তিরক্ষা মিশন UNMIS এর দায়িত্ব পালন করেন। বাংলাদেশ নৌ বাহিনীতে চাকুরীকালীন পেশাগত দক্ষতা, ত্যাগ এবং কর্তব্য নিষ্ঠার ফলস্বরূপ নৌ উৎকর্ষ পদক লাভ করেন। তিনি ২০১৬ সালে ন্যাশনাল ডিফেন্স কোর্স সম্পন্ন করেন। তিনি বাংলাদেশ ইউনিভার্সিটি অব প্রফেশনালস্ হতে ব্যাচেলর অব সোসাল স্টাডিজ এবং মাস্টার্স ইন মিলিটারী সায়েন্স এন্ড ডিফেন্স স্টাডিজ ডিগ্রী লাভ করেন এবং একই বিশ্ববিদ্যালয়ের অধীনে আন্তর্জাতিক সম্পর্ক বিষয়ে পিএইচডি করছেন। তিনি বিভিন্ন প্রকাশনা এবং ম্যাগাজিনে নিয়মিত লেখা প্রকাশ করার জন্য সচেষ্ট। বর্তমানে উক্ত অফিসার প্রতিরক্ষা এ্যাটাশে হিসেবে ব্রাজিলে কর্মরত আছেন।

জাতীয় উন্নয়নের অগ্রযাত্রায় বাংলাদেশ সেনাবাহিনী

কর্নেল মোহাম্মদ শহীদুল ইসলাম, পিএসসি

ভূমিকা

“সমরে আমরা শান্তিতে আমরা, সর্বত্র আমরা, দেশের তরে” এ মূলমন্ত্রে দীক্ষিত হয়ে বাংলাদেশ সেনাবাহিনীর প্রতিটি সদস্য দেশের জন্য নিরলসভাবে কাজ করে যাচ্ছে। দেশের যেকোনো দুর্যোগে বা দৈব দুর্বিপাকে অত্যন্ত পেশাদারিত্বের সাথে দায়িত্ব পালনের মাধ্যমে ইতোমধ্যেই সেনা সদস্যরা বাংলাদেশ সরকার তথা দেশের আপামর জনসাধারণের আস্থা ও বিশ্বাস অর্জন করতে সক্ষম হয়েছে। সেনাবাহিনীর ‘কোর অব ইঞ্জিনিয়ার্স’ এর সদস্যগণ বাংলাদেশ সরকার এর স্বপ্ন বাস্তবায়নে দেশের মেগা উন্নয়ন প্রকল্পসমূহে সততা ও নিষ্ঠার সাথে দায়িত্ব পালন করছে। দেশের গুরুত্বপূর্ণ জাতীয় প্রকল্পসমূহে অংশগ্রহণের মাধ্যমে নির্মাণ ক্ষেত্রে উক্ত কোরের সদস্যগণ তাদের দক্ষতা ও পেশাদারিত্বের স্বাক্ষর রাখতে সক্ষম হয়েছে। “সদা সর্বত্র” এ মূলমন্ত্রকে বুকে ধারণ করে বাংলাদেশ সেনাবাহিনীর ‘কোর অব ইঞ্জিনিয়ার্স’ এর সদস্যগণ দেশের যেকোনো প্রয়োজনে অংশগ্রহণের জন্য সর্বদা নিজেদেরকে প্রস্তুত রাখেন।

বাংলাদেশ সেনাবাহিনীর ‘কোর অব ইঞ্জিনিয়ার্স’ এর সদস্যগণ দেশের গুরুত্বপূর্ণ নির্মাণ প্রকল্প বাস্তবায়নের মধ্য দিয়ে সরকার এর আস্থা ও বিশ্বাস অর্জন করতে পেরেছে। দুর্গম পার্বত্য অঞ্চলে যোগাযোগের সুবিধার জন্য সেনা সদস্যগণ রাস্তা নির্মাণ করেন যা ছিল অত্যন্ত কষ্টসাধ্য এবং দুঃসাহসিক প্রকল্প। সকলের সার্বিক সহায়তায় সেনা সদস্যগণ পার্বত্য অঞ্চলে যোগাযোগ ব্যবস্থার অভূতপূর্ব উন্নয়ন সাধন করেছেন। কক্সবাজার মেরিন ড্রাইভ প্রকল্প বাস্তবায়ন ছিল সেনাবাহিনীর জন্য একটি দঃসাহসিক প্রকল্প। সমুদ্রের স্রোত এবং পাহাড়ি ঢলের কারণে মেরিন ড্রাইভ প্রকল্পটি বাস্তবায়ন করা সম্ভব হচ্ছিল না। অত্যন্ত পেশাদারিত্বের সঙ্গে দায়িত্ব পালনের মাধ্যমে সেনা সদস্যরা এ প্রকল্পটি বাস্তবায়ন করেন, যা বাংলাদেশ সরকার তথা দেশবাসীর ভূয়সী প্রশংসা অর্জন করেছে।

সেনা সদস্যদের অংশগ্রহণে বাস্তবায়িত অন্যান্য গুরুত্বপূর্ণ প্রকল্পসমূহের মধ্যে রয়েছে পদ্মা বহুমুখী সেতু প্রকল্প, জয়দেবপুর-ময়মনসিংহ সড়ক, হাতিরঝিল বেগুনবাড়ি উন্নয়ন প্রকল্প, ঢাকা সেনানিবাস এ মিরপুর-এয়ারপোর্ট রোড ফ্লাইওভার ও বনানী রেল ক্রসিং ওভারপাস নির্মাণ প্রকল্প ইত্যাদি। অত্যন্ত স্বল্পতম সময়ে মেঘনা-গোমতী ব্রীজ এর মেরামত কার্য সম্পন্ন করে সেনা সদস্যরা ঢাকা-চট্টগ্রাম জাতীয় মহাসড়ক সচল রাখতে গুরুত্বপূর্ণ ভূমিকা পালন করেন। জলসিঁড়ি আবাসন প্রকল্প বাস্তবায়নে সেনা সদস্যরা নিরলসভাবে প্রচেষ্টা চালিয়ে যাচ্ছে। এ লেখার প্রতিপাদ্য বিষয় হচ্ছে দেশের জাতীয় গুরুত্বপূর্ণ উন্নয়ন প্রকল্পসমূহে সেনা সদস্যদের অংশগ্রহণ এবং দেশের উন্নয়নের অগ্রযাত্রায় সেনা সদস্যদের সরাসরি সম্পৃক্ততার বিষয়ে আলোকপাত করা।

জাতীয় পর্যায়ে বিভিন্ন উন্নয়ন প্রকল্পসমূহে সেনাবাহিনীর অবদান

বাংলাদেশের জাতীয় পর্যায়ে বিভিন্ন গুরুত্বপূর্ণ প্রকল্পসমূহ দক্ষতার সাথে সম্পন্ন করার মাধ্যমে সেনাবাহিনী তাদের পেশাদারিত্বের সক্ষমতার প্রমাণ দিতে সামর্থ্য হয়েছে। সেনাবাহিনী ইতোমধ্যে জাতীয় পর্যায়ে যে সকল উন্নয়ন প্রকল্প বাস্তবায়নে সম্পৃক্ত ছিলেন তার মধ্যে কিছু গুরুত্বপূর্ণ প্রকল্পসমূহের বর্ণনা নিম্নে উল্লেখ করা হলো:

পার্বত্য অঞ্চলে যোগাযোগ ব্যবস্থার উন্নয়ন

দেশের এক দশমাংশ এলাকা নিয়ে পার্বত্য চট্টগ্রাম গড়ে উঠেছে। পার্বত্য অঞ্চলের উন্নয়নে বাংলাদেশ সেনাবাহিনীর সদস্যদের রয়েছে অত্যন্ত তাৎপর্যপূর্ণ ভূমিকা। পার্বত্য অঞ্চলের সন্ত্রাস দমন এবং

সেখানে শান্তি প্রতিষ্ঠায় সেনা সদস্যদের অবদান অনস্বীকার্য। অন্যদিকে, দুর্গম পার্বত্য অঞ্চলের মানুষের যোগাযোগ ব্যবস্থার উন্নয়নে সেনা সদস্যগণ অক্লান্ত পরিশ্রম করে যাচ্ছেন। সেনা সদস্যদের অবিরাম প্রচেষ্টার ফলে পার্বত্য অঞ্চলের যোগাযোগ ব্যবস্থায় অভূতপূর্ব উন্নতি সাধিত হয়েছে। দুর্গম পার্বত্য অঞ্চলের জনসাধারণ এখন অতি সহজে দেশের বিভিন্ন অঞ্চলে যাতায়াত করতে পারছে। পার্বত্য অঞ্চলের উৎপাদিত পণ্যসামগ্রী প্রত্যন্ত অঞ্চল থেকে রাজধানী ঢাকাসহ দেশের দূর-দূরান্তে স্বল্প সময়ে পৌঁছে যাচ্ছে। চিকিৎসার সুযোগ-সুবিধা পার্বত্যবাসীর হাতের নাগালে পৌঁছে গেছে। ভ্রমণপিপাসু পর্যটকগণ অতি সহজে পার্বত্য অঞ্চলের বিভিন্ন পর্যটন স্থানে ভ্রমণ করতে পারছেন। এ সবই সম্ভব হচ্ছে সেনা সদস্যদের মহতী প্রচেষ্টার ফল। পার্বত্য চট্টগ্রামে সেনাবাহিনী কর্তৃক বাস্তবায়িত কিছু উল্লেখযোগ্য প্রকল্পের সংক্ষিপ্ত বিবরণ নিম্নে তুলে ধরা হলো:

ক। চিমুক-থানচি এবং দীঘিনালা-মারিশ্যা সড়ক প্রকল্প: চিমুক থানচি এবং দীঘিনালা-মারিশ্যা সড়ক দুটি উপজেলা সংযোগকারী সড়ক। থানচি উপজেলাকে জেলা সদর বান্দরবানের সাথে সংযুক্ত করার একমাত্র মাধ্যম হিসেবে চিমুক-থানচি সড়ক নির্মাণ করা হয়েছে। অন্যদিকে, দীঘিনালা-মারিশ্যা সড়ক নির্মাণের ফলে মারিশ্যার (বাঘাইছড়ি উপজেলা) সাথে জেলাসদর রাঙ্গামাটি এবং খাগড়াছড়ি জেলার সংযোগ স্থাপিত হয়েছে। সড়ক দুটি গহীন পাহাড়ি অরণ্যে সভ্যতার ছোঁয়া পৌঁছে দিয়েছে, জনগণের অর্থনৈতিক উন্নতি ও পাহাড়ি সম্পদ সহজে শহর এলাকায় পৌঁছানোর সুযোগ করে দিয়েছে। পাহাড়ের অনগ্রসর জনগোষ্ঠীর জন্য এ সড়ক দুটি বলতে গেলে আশীর্বাদ রূপেই আবির্ভূত হয়েছে।

চিত্র: চিমুক-থানচি সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

খ। বাঘাইছড়ি-মাসালং-সাজেক সড়ক নির্মাণ প্রকল্প: বাঘাইছড়ি-মাসালং-সাজেক সড়ক নির্মাণ প্রকল্পটি খাগড়াছড়ি জেলার সীমান্তবর্তী সাজেক থেকে শুরু হয়ে বাঘাইছড়ি এর সাথে সংযোগ স্থাপন করেছে। প্রকল্পটি বাস্তবায়নের ফলে দুর্গম পাহাড়ি জনগণ স্বল্প সময়ে অতি সহজে শহর এলাকায় পৌঁছাতে পারছে। তাছাড়া, সাজেক পর্যটন এলাকায় পর্যটকদের যাতায়াত এর সুব্যবস্থার মাধ্যমে পর্যটন শিল্পের বিকাশে সড়কটি গুরুত্বপূর্ণ ভূমিকা রাখছে। এ সড়ক দিয়ে প্রতিদিন উল্লেখযোগ্য সংখ্যক পর্যটক সাজেক ভ্রমণ করতে সক্ষম হচ্ছেন।

চিত্র: মাসালং-সাজেক সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

গ। থানচি-আলীকদম সড়ক নির্মাণ প্রকল্প: থানচি-আলীকদম সড়কটি প্রত্যন্ত এবং দুর্গম পাহাড়ি এলাকার মধ্য দিয়ে নির্মিত একটি সড়ক। বাংলাদেশ সরকারের মাননীয় প্রধানমন্ত্রী শেখ হাসিনা ২০১৫ সালের ১৪ জুলাই সড়কটি উদ্বোধন করেন।^১ পর্যটন শিল্পের বিকাশে সড়কটি অত্যন্ত তাৎপর্যপূর্ণ ভূমিকা পালন করছে। দুর্গম এলাকার মানুষের যাতায়াত ব্যবস্থার উন্নয়নে প্রকল্পের গুরুত্ব অপরিসীম।

চিত্র: থানচি-আলীকদম সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

ঘ। খাগড়াছড়ি-দিঘীনালা-বাঘাইঘাট সড়ক নির্মাণ প্রকল্প : এ প্রকল্পের দৈর্ঘ্য ৩২.৮০ কি:মি:। দুর্গম পার্বত্য অঞ্চলের জনসাধারণের আর্থসামাজিক অবস্থার উন্নয়নে সড়কটি গুরুত্বপূর্ণ ভূমিকা রাখছে। এ সড়ক নির্মাণের ফলে প্রত্যন্ত বাঘাইঘাট এলাকার জনসাধারণ সহজেই জেলা সদরে যাতায়াত করতে পারছে। দুর্গম এলাকার শিক্ষার্থীরা শহরে এসে বিভিন্ন শিক্ষা প্রতিষ্ঠানে অধ্যয়ন করারও সুযোগ পাচ্ছে।

চিত্র: খাগড়াছড়ি-দিঘীনালা সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

ঙ। দিঘীনালা-ছোটমেরুং-চঙ্গরাছড়ি-লংগদু সড়ক নির্মাণ প্রকল্প : এ প্রকল্পের দৈর্ঘ্য ৪০ কি:মি:। দুর্গম এলাকায় জনসাধারণের যাতায়াতের লক্ষ্যে নির্মিত সড়কটি যোগাযোগ ব্যবস্থার উন্নয়নে অভূতপূর্ব অবদান রাখছে। তাছাড়া, প্রত্যন্ত অঞ্চলে পাহাড়িদের উৎপাদিত বিভিন্ন কৃষি পণ্যসমূহ সহজেই শহরে বাজারজাত করা সম্ভব হচ্ছে। প্রত্যন্ত এলাকার পাহাড়ি জনসাধারণ শহরে এসে সহজে আধুনিক চিকিৎসার সুবিধা নিতে পারছেন।

চিত্র: দিঘীনালা-ছোটমেরুং সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

চ। সীমান্ত সড়ক (রাঙ্গামাটি, খাগড়াছড়ি ও বান্দরবান পার্বত্য জেলা) নির্মাণ প্রকল্প : প্রথম পর্বে পার্বত্য সীমান্ত অঞ্চলে ৩১৭ কি:মি: দীর্ঘ সীমান্ত সড়ক নির্মাণ প্রকল্প একনেক-এ অনুমোদিত হয়।^২ অত্যন্ত গুরুত্বপূর্ণ এ প্রকল্পটি বাংলাদেশ সেনাবাহিনীর অধীনে বাস্তবায়িত হচ্ছে। এটি একটি চলমান উন্নয়ন প্রকল্প। পার্বত্য জেলাসমূহের সীমান্ত বরাবর নিরাপত্তা বাহিনীর চলাচল সহজ করার লক্ষ্যে এ প্রকল্পটি অত্যন্ত তাৎপর্যপূর্ণ। তাছাড়া, সীমান্ত এলাকা দিয়ে অস্ত্র, মাদক ও মানব পাচাররোধে এই প্রকল্পটি গুরুত্বপূর্ণ ভূমিকা রাখবে। সীমান্ত এলাকার জনসাধারণের কর্মসংস্থানের ব্যবস্থা করা এবং

তাদের আর্থ-সামাজিক উন্নয়নে সড়কটি নির্মাণ করার প্রয়োজনীয়তা অনুভূত হয়। দুর্গম সীমান্ত এলাকায় আইন-শৃঙ্খলা রক্ষাকারী বাহিনীর চলাচল সহজ ও নিরাপদ করতে সড়কটি মূখ্য ভূমিকা পালন করবে।

চিত্র: বাস্তবায়নাধীন পার্বত্য সীমান্ত সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

এছাড়াও কোর অব ইঞ্জিনিয়ার্স কর্তৃক সম্পন্ন বিভিন্ন প্রকল্পগুলোর সংক্ষিপ্ত বিবরণ নিম্নে দেওয়া হলো:

ছ। কক্সবাজার-টেকনাফ মেরিন ড্রাইভ সড়ক নির্মাণ প্রকল্প: বাংলাদেশ সেনাবাহিনীর তত্ত্বাবধানে অত্যন্ত চ্যালেঞ্জিং এ প্রকল্প বাস্তবায়িত হয়েছে নির্ধারিত সময়ের প্রায় পাঁচ মাস পূর্বেই। পাহাড়ি ঢল আর সমুদ্রের লোনা পানির জোয়ার এর স্রোতের কারণে এ প্রকল্পটি বাস্তবায়ন করা কষ্টসাধ্য হয়ে পড়ে। বাংলাদেশের পর্যটন নগরীখ্যাত অপরূপ সৌন্দর্যের লীলাভূমি কক্সবাজার। এখানে রয়েছে বিশ্বের সর্ববৃহৎ সমুদ্র সৈকত। কক্সবাজার জেলা সদর হতে বঙ্গোপসাগরের তীর ধরে টেকনাফ উপজেলার সাথে সরাসরি যোগাযোগ স্থাপনের লক্ষ্যে ৮০ কি.মি. দীর্ঘ এ সড়কটি নির্মাণ করা হয়। মেরিন ড্রাইভ সড়কটি ভ্রমণ পিপাসুদের সাগর ও পাহাড়ের নৈসর্গিক সৌন্দর্য অবলোকনসহ বিনোদন ও সড়ক যোগাযোগের অন্যতম মাধ্যম হিসেবে গুরুত্বপূর্ণ ভূমিকা রাখছে। কক্সবাজার-টেকনাফ মেরিন ড্রাইভ সড়কটি নির্মাণের ফলে কক্সবাজার হতে টেকনাফ পর্যন্ত নিরবচ্ছিন্ন একটি সড়ক যোগাযোগ ব্যবস্থার উন্নয়ন ঘটেছে। এ সড়কটি এলাকার মানুষের আর্থ-সামাজিক উন্নয়নে ব্যাপক অবদান রাখছে। পাশাপাশি পর্যটন শিল্পের বিকাশেও এ প্রকল্পটি গুরুত্বপূর্ণ ভূমিকা পালন করছে।^৩

চিত্র: মেরিন ড্রাইভ সড়ক উদ্বোধন করছেন মাননীয় প্রধানমন্ত্রী



সূত্র: লেখকের নিজস্ব সংগ্রহ

জ। জয়দেবপুর-ময়মনসিংহ সড়ক উন্নয়ন প্রকল্প : জয়দেবপুর হতে ময়মনসিংহ পর্যন্ত ৮৭.১৮ কি:মি: দুইলেন বিশিষ্ট সড়কটিকে চার লেনে উন্নীত করে রাজধানী ঢাকার সাথে বৃহত্তম ময়মনসিংহ জেলার যোগাযোগ ব্যবস্থা দ্রুত ও নিরাপদ করার লক্ষ্যে ০৮ জুন ২০১০ তারিখে প্রকল্পটি একনেকে অনুমোদিত হয়। সড়ক ও জনপথ বিভাগ কর্তৃক নিয়োজিত ঠিকাদার চুক্তির মৌলিক শর্ত ভঙ্গ করলে ২১ অক্টোবর ২০১২ তারিখে বাংলাদেশ সেনাবাহিনীকে এ প্রকল্প বাস্তবায়নের দায়িত্ব প্রদান করা হয়। বাংলাদেশ সেনাবাহিনীর তত্ত্বাবধানে প্রকল্পটির বাস্তবায়ন কাজ দ্রুত গতিতে সম্পন্ন করা হয়। ০২ জুলাই ২০১৬ তারিখে গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের মাননীয় প্রধানমন্ত্রী এ প্রকল্পটি উদ্বোধন করেন।^৪ সেনা সদস্যদের নিষ্ঠা ও আন্তরিকতার ফলে প্রকল্পটি নির্ধারিত সময়ের প্রায় এক বছর পূর্বেই বাস্তবায়ন করা হয়েছে। এ প্রকল্পটি বাস্তবায়নের ফলে স্বল্প সময়ে যাত্রী পরিবহন এবং যানজট সমস্যার স্থায়ী সমাধান হয়েছে। তাছাড়া, বৃহত্তর ময়মনসিংহের সঙ্গে ঢাকার যোগাযোগ ব্যবস্থা অনেকটাই সহজতর হয়েছে। ময়মনসিংহ এলাকার সার্বিক উন্নয়ন এবং কৃষি, ব্যবসা-বাণিজ্যসহ সকল ক্ষেত্রে নতুন সম্ভাবনার দ্বার উন্মোচনের লক্ষ্যে এ প্রকল্পটি বাস্তবায়ন করা অত্যাবশ্যকীয় ছিল।

চিত্র: ময়মনসিংহ-জয়দেবপুর সড়ক



সূত্র: লেখকের নিজস্ব সংগ্রহ

ঝ। মিরপুর-এয়ারপোর্ট রোডে ফ্লাইওভার এবং বনানী রেলক্রসিং এ ওভারপাস নির্মাণ প্রকল্প : মিরপুর এয়ারপোর্ট রোডে ফ্লাইওভার এবং বনানী রেলক্রসিং এ ওভারপাস নির্মাণ প্রকল্পটি একটি জাতীয় গুরুত্বপূর্ণ প্রকল্প। বর্ণিত প্রকল্পটি সড়ক পরিবহন ও সেতু মন্ত্রণালয়ের অধীনে বাংলাদেশ সেনাবাহিনী বাস্তবায়ন করেছে। ২৫ জানুয়ারি ২০১১ তারিখে এ প্রকল্পটির কাজ শুরু হয়। প্রকল্পের ওভারপাস অংশটি ২৭ ডিসেম্বর ২০১২ এবং ফ্লাইওভার ২৭ মার্চ ২০১৩ তারিখে সমাপ্ত হওয়ায় জনসাধারণের জন্য উন্মুক্ত করা হয়।^৭ প্রকল্পটি বাস্তবায়নের ফলে সেনানিবাস এর অভ্যন্তরে এবং এয়ারপোর্ট রোড হতে মিরপুর সেনানিবাস পর্যন্ত সংযোগ সড়কে নিরবচ্ছিন্ন যান চলাচল নিশ্চিত হয়েছে। বনানী রেল ক্রসিং পয়েন্ট-এ যানজট মুক্ত যানবাহন এবং দুর্ঘটনামুক্ত রেল চলাচল নিশ্চিত হয়েছে। বৃহত্তর মিরপুর হতে বিমানবন্দরগামী যানবাহন ও ব্যক্তিবর্গকে স্বল্প সময়ে নির্দিষ্ট গন্তব্যে পৌঁছানোর মাধ্যমে মিরপুর-এয়ারপোর্ট রোডে ফ্লাইওভার এর মাধ্যমে যাত্রার সময় ও পরিবহন ব্যয় কমানো সম্ভব হয়েছে।

চিত্র: মিরপুর-এয়ারপোর্ট ফ্লাইওভার



সূত্র: লেখকের নিজস্ব সংগ্রহ

এও। মেঘনা ও গোমতি সেতুর রক্ষণাবেক্ষণ প্রকল্প: ঢাকা চট্টগ্রাম মহাসড়কে মেঘনা ও গোমতি সেতু দুটি যোগাযোগ এর ক্ষেত্রে অত্যন্ত গুরুত্বপূর্ণ ভূমিকা পালন করছে। দীর্ঘদিন যাবৎ যানবাহন চলাচল এবং পিলারের নীচ থেকে মাটি সরে যাওয়ার কারণে এ সেতু দুটি এক সময়ে অত্যন্ত ঝুঁকিপূর্ণ হয়ে পড়ে। গত ০৫ জুলাই ২০১৫ তারিখে মেঘনা সেতুর স্কাউর প্রটেকশন এবং মেঘনা ও গোমতি সেতুর রক্ষণাবেক্ষণ প্রকল্পটি সরকার কর্তৃক অনুমোদিত হয়।^৮ প্রকল্পটির মূল উদ্দেশ্য ছিল স্কাউর প্রটেকশন কাজ দ্বারা মেঘনা সেতুর ৬ নং পিয়ারকে ঝুঁকিমুক্ত করা এবং মেঘনা ও গোমতি সেতুর হিজবিয়ারিং ও এক্সপ্যানশন জয়েন্টগুলোর নিয়মিত রক্ষণাবেক্ষণের মাধ্যমে সেতু দুটিকে সম্ভাব্য ঝুঁকির হাত থেকে রক্ষা করা। সেনাবাহিনীর তত্ত্বাবধানে অত্যন্ত দক্ষতার সাথে সেতু দুটির মেরামত ও রক্ষণাবেক্ষণ কাজ যথাসময়ে সম্পন্ন করা হয়। প্রকল্পটি সুষ্ঠু ও সুন্দরভাবে বাস্তবায়নের ফলে ঢাকা-চট্টগ্রাম মহাসড়কে যান চলাচল স্বাভাবিক রাখা সম্ভব হয়েছে। জাতীয় এ মহাসড়কটি সচল রাখার মাধ্যমে সেনা সদস্যগণ দেশের অর্থনৈতিক কর্মকাণ্ডে গুরুত্বপূর্ণ ভূমিকা রাখেন।

চিত্র: গোমতি সেতুর রক্ষণাবেক্ষণ প্রকল্প



সূত্র: লেখকের নিজস্ব সংগ্রহ

ট। বেগুনবাড়ি খালসহ হাতিরঝিল এলাকার সমন্বিত উন্নয়ন প্রকল্প: হাতিরঝিল ও বেগুনবাড়ি খাল মূলত এর পার্শ্ববর্তী এলাকার বর্জ্য, তেজগাঁও শিল্প এলাকার শিল্পবর্জ্য এবং ঢাকা শহরের বিভিন্ন এলাকার বর্জ্য লাইনসমূহের নিষ্কাশিত বর্জ্য পরিপূর্ণ ছিল। চারদিক থেকে বর্জ্য এসে হাতিরঝিল এবং বেগুনবাড়ি খালে পড়ত যা রামপুরা ব্রীজ হয়ে নড়াই খাল দিয়ে বালু নদীতে পড়ে নদীর পানিকে দূষিত করত। বর্ষা মৌসুমে পানির উচ্চতা বেড়ে গিয়ে হাতিরঝিলের পার্শ্ববর্তী এলাকায় জলাবদ্ধতা তৈরি করত যা এলাকাবাসীর জন্য অবর্ণনীয় দুর্ভোগ ডেকে আনতো। এছাড়াও, বেগুনবাড়ি এবং হাতিরঝিলে অবৈধভাবে গড়ে ওঠা বস্তিসমূহ ঢাকা শহরের সন্ত্রাসীদের অভয়ারণ্যে পরিণত হয়েছিল। ফলে হাতিরঝিল এলাকায় দূষিত বর্জ্য যেমন ঢাকা শহরের পরিবেশকে বিষাক্ত করে তুলেছিল ঠিক তেমনিভাবে হাতিরঝিলসহ পার্শ্ববর্তী এলাকা মাদকদ্রব্য সেবনকারী ও সন্ত্রাসীদের আখড়ায় পরিণত হয়েছিল। মাননীয় প্রধানমন্ত্রীর বিচক্ষণ দিকনির্দেশনায় রাজউক, এলজিইডি, ওয়াসা, বুয়েট এবং বাংলাদেশ সেনাবাহিনীর নিরলস পরিশ্রম এবং সার্বিক সমন্বয়ের মাধ্যমে বেগুনবাড়ি খালসহ হাতিরঝিল এলাকার সমন্বিত উন্নয়ন প্রকল্পটি বাস্তবায়ন করা হয়েছে।

চিত্র: হাতিরঝিল উন্নয়ন প্রকল্প



সূত্র: লেখকের নিজস্ব সংগ্রহ

ঠ। হাতিরঝিল উন্নয়ন প্রকল্প: ঢাকা শহরের একটি বড় অংশের স্টর্মওয়াটার রিটেনশন এবং হাইড্রোলজিক্যাল ফাংশনের জন্য হাতিরঝিল লেকটি অসামান্য অবদান রেখে চলেছে। পরিত্যক্ত ও দূষিত বেগুনবাড়ি খাল ও হাতিরঝিল লেক প্রকল্প সমাপ্তির পর দৃষ্টিনন্দন ও পরিবেশবান্ধব জলাধার হিসেবে প্রাকৃতিক ভারসাম্য রক্ষায় গুরুত্বপূর্ণ ভূমিকা রাখছে। প্রকল্প সন্নিহিত এলাকার যানজট নিরসনকল্পে হাতিরঝিল এলাকার চারদিকে সড়ক, সেতু, ওভারপাস এবং ওয়াকওয়ে নির্মাণ করা হয়েছে। এ প্রকল্পের ফলে হাতিরঝিল ও সংলগ্ন এলাকা প্রাণ ফিরে পেয়েছে এবং দীর্ঘমেয়াদী দূষণের হাত থেকে নগরবাসী রক্ষা পেয়েছে। এছাড়াও, নগরবাসীর জন্য হাতিরঝিল একটি আকর্ষণীয় বিনোদন কেন্দ্র হিসেবে পরিচিতি লাভ করেছে। বেগুনবাড়ি খালসহ হাতিরঝিল এলাকার সমন্বিত উন্নয়ন প্রকল্প যথাযথভাবে বাস্তবায়নের মাধ্যমে বাংলাদেশ সেনাবাহিনী সর্বসাধারণের ভূয়সী প্রশংসা অর্জন করেছে। ০২ জানুয়ারি ২০১৩ তারিখে মাননীয় প্রধানমন্ত্রী শেখ হাসিনা এই প্রকল্পটি উদ্বোধন করেন।^৭

ড। পদ্মা বহুমুখী সেতু নির্মাণ প্রকল্প: পদ্মা বহুমুখী সেতু নির্মাণ প্রকল্পটি বাংলাদেশের ইতিহাসে সবচেয়ে বড় এবং চ্যালেঞ্জিং নির্মাণ প্রকল্প। এ প্রকল্পের ফলে দেশের দক্ষিণ-পশ্চিমাঞ্চলের ২১টি জেলা রাজধানী ঢাকার সঙ্গে সড়ক ও রেলপথে সরাসরি সংযুক্ত হবে। বাংলাদেশ সেনাবাহিনী অত্যন্ত সাফল্যের সঙ্গে এ নির্মাণ কাজে তিনটি প্যাকেজে সুপারভিশন কনসালটেন্টের কাজ পরিচালনা করেছে। কাজের অগ্রগতি এবং কনসালটেন্টের গুণগত মানের বিষয়ে বাংলাদেশ সেনাবাহিনী সংশ্লিষ্ট সকলের প্রশংসা অর্জন করেছে। তাছাড়া বাংলাদেশ সেনাবাহিনীর কম্পোজিট ব্রিগেডের সদস্যগণ সেতুর নির্মাণ কাজে নিয়োজিত দেশি বিদেশি বিশেষজ্ঞ প্যানেলের সদস্যদের নিরাপত্তা প্রদানে সার্বক্ষণিকভাবে কাজ করেছে। সম্পূর্ণ দেশীয় অর্থায়নে নির্মিত পদ্মা সেতু বাংলাদেশের মানুষের একটি স্বপ্নের প্রকল্প।

চিত্র: পদ্মা সেতুর এ্যাপ্রোচ সড়কে কাজ করছে সেনাবাহিনী



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এ প্রকল্পটি বাস্তবায়নের ফলে জাতীয় জিডিপি প্রবৃদ্ধির হার ১.২ শতাংশ বৃদ্ধি পাবে এবং প্রতিবছর ০.৮৪ শতাংশ হারে দারিদ্র্য নিরসনের মাধ্যমে দেশের আর্থ-সামাজিক উন্নয়নে এ সেতু গুরুত্বপূর্ণ ভূমিকা পালন করবে। সেতুর উভয় পাড়ে অর্থনৈতিক অঞ্চল, হাইটেক পার্ক ও শিল্পাঞ্চল গড়ে উঠবে, বিনিয়োগ বৃদ্ধি পাবে এবং সেই সঙ্গে সৃষ্টি হবে নতুন নতুন কর্মসংস্থান। দক্ষিণাঞ্চলের পর্যটন শিল্পের বিকাশে সেতুটি গুরুত্বপূর্ণ ভূমিকা পালন করবে।^৮

এছাড়াও, পদ্মা ব্রীজ রেল লিংক প্রকল্পে সেনা সদস্যরা নিরলসভাবে কাজ করে যাচ্ছে। দেশের এ আইকনিক মেগা প্রকল্প বাস্তবায়নে সরাসরি অংশগ্রহণের মাধ্যমে সেনা সদস্যগণ দেশবাসী তথা বাংলাদেশ সরকারের ভূয়সী প্রশংসা অর্জন করে।

ঢ। চট্টগ্রাম শহরের জলাবদ্ধতা নিরসনকল্পে খাল পুনঃখনন, সম্প্রসারণ ও উন্নয়ন শীর্ষক প্রকল্প: বন্দর নগরী চট্টগ্রাম বাংলাদেশের বাণিজ্যিক রাজধানী হিসেবে খ্যাত। দেশের বৃহত্তম সমুদ্রবন্দর চট্টগ্রামে অবস্থিত। ব্যবসা বাণিজ্য ছাড়াও দেশের দক্ষিণ-পূর্ব অঞ্চলের এ নগরীটি ভৌগোলিক অবস্থানের কারণে বাংলাদেশের একটি অত্যন্ত গুরুত্বপূর্ণ নগরী। জলাবদ্ধতা চট্টগ্রাম শহরের একটি বহু পুরাতন সমস্যা। এখানে পানি নিষ্কাশনের জন্য পরিকল্পিত ব্যবস্থা না থাকায় সামান্য বৃষ্টিতেই শহরের রাস্তাঘাটে জলাবদ্ধতা সৃষ্টি হয়। এর ফলে এ শিল্প নগরীতে বসবাসরত জনসাধারণ প্রকট সমস্যায় পড়েন। শিক্ষার্থীদের বিভিন্ন শিক্ষা প্রতিষ্ঠানে যাতায়াত, ব্যবসা-বাণিজ্য, অফিস-আদালত সর্বক্ষেত্রে মানুষ ভোগান্তির স্বীকার হন। চট্টগ্রাম শহরের জলাবদ্ধতা নিরাসনকল্পে আগস্ট ২০১৭ সালে ৭৯১৬ কোটি টাকা ব্যয়ে এ প্রকল্পটি বাংলাদেশ সরকার কর্তৃক একনেকে অনুমোদিত হয়।^৯ দেশের দ্বিতীয় বৃহত্তম এই মেট্রোপলিটন শহরের জলাবদ্ধতা দূরীকরণের জন্য সরকার বাংলাদেশ সেনাবাহিনীকে দায়িত্ব প্রদান করেন। সেনা সদস্যগণ দক্ষতা ও আন্তরিকতার সাথে এ প্রকল্পটি বাস্তবায়ন করে যাচ্ছেন। উল্লিখিত এ প্রকল্প বাস্তবায়িত হলে জলাবদ্ধতার অভিষাপ থেকে নগরবাসী মুক্তি পাবে। তাছাড়া, বর্ষা মৌসুমে সৃষ্ট যানজট হ্রাস পাবে, বিদেশী বিনিয়োগ বৃদ্ধি পাবে। এতে করে পর্যটন শিল্পের বিকাশসহ চট্টগ্রাম শহরের সার্বিক উন্নয়নে প্রকল্পটি গুরুত্বপূর্ণ অবদান রাখবে।

চিত্র: চট্টগ্রাম শহরে জলাবদ্ধতা দূরীকরণে সেনাবাহিনীর বাস্তব ভূমিকা



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সেনাবাহিনীর উন্নয়ন কর্মকাণ্ডের সংক্ষিপ্ত মূল্যায়ন

সেনা সদস্যগণ দেশের জাতীয় উন্নয়ন প্রকল্পে অত্যন্ত পেশাদারিত্বের সাথে কাজ করে থাকে। উন্নয়ন প্রকল্পে তাদের পেশাদারিত্ব, সততা, নিষ্ঠা ও আন্তরিকতার ফলে উন্নয়ন প্রকল্পসমূহ নির্ধারিত সময়ের পূর্বেই সম্পন্ন হয়ে থাকে। তাছাড়া, কাজের গুণগতমান বজায় রাখার লক্ষ্যে সেনা সদস্যগণ সদা সজাগ থাকে। সেনা সদস্যগণ বরাদ্দকৃত বাজেটের মাধ্যমে প্রকল্প সম্পন্ন করার বিষয়ে দক্ষতার

স্বাক্ষর রাখে। এছাড়াও, প্রকল্পের নকশা প্রণয়ন থেকে শুরু করে কর্ম সম্পাদনের প্রতিটি পর্যায়ে সদস্যগণ আন্তরিকতা নিয়ে কাজ করে থাকে। প্রকল্পের কাজের সময় নিরাপত্তার বিষয়টিকে সব সময় অগ্রাধিকার দেয়া হয়। যার ফলে সেনাবাহিনীর নির্মাণ প্রকল্পে দুর্ঘটনা ঘটার সুযোগ কম থাকে। প্রকল্প সংশ্লিষ্ট সকল বিষয়ে যথাযথ তদারকির ফলে সেনাবাহিনীর প্রকল্পসমূহ সুষ্ঠু ও সুন্দরভাবে নির্ধারিত সময়সীমার মধ্যে সম্পন্ন হয়। এ সকল কারণে দেশের জাতীয় গুরুত্বপূর্ণ প্রকল্পসমূহে সেনা সদস্যদের সম্পৃক্ততা বৃদ্ধির চাহিদা দিন দিন বৃদ্ধি পাচ্ছে।

উপসংহার

বাংলাদেশ সেনাবাহিনী দেশের স্বাধীনতা ও সার্বভৌমত্ব অক্ষুণ্ণ রাখার পাশাপাশি দেশের উন্নয়ন কর্মকাণ্ডে প্রত্যক্ষভাবে অংশগ্রহণের মধ্য দিয়ে বাংলাদেশের উন্নয়নের অগ্রযাত্রায় গুরুত্বপূর্ণ অবদান রাখছে। সেনাবাহিনীর উপর অর্পিত প্রকল্পসমূহ সেনা সদস্যগণ সর্বোচ্চ অগ্রাধিকার ও পেশাদারিত্বের সাথে বাস্তবায়ন করে থাকেন। প্রকল্প বাস্তবায়নের ক্ষেত্রে সেনা সদস্যদের আন্তরিকতা, নিষ্ঠা, দেশপ্রেম এবং সততার সংমিশ্রণ ঘটে। নির্মাণ কাজের সঙ্গে সংশ্লিষ্ট প্রতিটি সেনা সদস্য পেশাগত দায়িত্ব পালনকে অগ্রাধিকার দিয়ে থাকেন। যার প্রেক্ষিতে সেনাবাহিনীর উপর অর্পিত প্রকল্পসমূহ সর্বদা প্রাক্কলিত সময়ের পূর্বেই বাস্তবায়িত হয়। তাছাড়া, কাজের গুণগত মান নিয়ন্ত্রণের ক্ষেত্রে সেনা সদস্যরা বিন্দুমাত্র আপস করেন না।

পার্বত্য চট্টগ্রামের দুর্গম পাহাড়ি অঞ্চলে সেনা সদস্যরা যোগাযোগ ব্যবস্থার উন্নয়নে নিরলসভাবে কাজ করে যাচ্ছেন। এ প্রেক্ষিতে পার্বত্য অঞ্চলে আধুনিকতার ছোঁয়া লেগেছে, পার্বত্য এলাকার উৎপাদিত পণ্য সারাদেশে দ্রুত পৌঁছে যাচ্ছে এবং পর্যটন শিল্পের বিকাশে গুরুত্বপূর্ণ ভূমিকা রাখছে। সীমান্ত সড়ক নির্মাণ প্রকল্প বাস্তবায়িত হলে দুর্গম পার্বত্য এলাকায় নিরাপত্তা বাহিনীর চলাচল সহজ ও নিরাপদ হবে। পর্যটনগরী কক্সবাজার থেকে সমুদ্রের তীর ঘেঁষে টেকনাফ পর্যন্ত সেনা সদস্যরা মেরিন ড্রাইভ প্রকল্প বাস্তবায়ন করেছে। দৃষ্টিনন্দন এ প্রকল্পটির বাস্তবায়ন অনেক চ্যালেঞ্জিং হলেও তা এলাকার আর্থ-সামাজিক উন্নয়নে এবং পর্যটন শিল্পের বিকাশে গুরুত্বপূর্ণ ভূমিকা রাখছে।

ঢাকা থেকে বৃহত্তর ময়মনসিংহ অঞ্চলে যোগাযোগ ব্যবস্থার উন্নয়নে সেনা সদস্যদের বাস্তবায়িত প্রকল্পটি সকলের ভূয়সী প্রশংসা অর্জন করে। বনানী রেল ক্রসিং-এ সেনা সদস্যরা ওভারপাস নির্মাণ করার ফলে সড়ক যোগাযোগের ক্ষেত্রে যানজট এড়ানো এবং রেলক্রসিং-এ দুর্ঘটনা পরিহার করা সম্ভব হচ্ছে। ঢাকা-চট্টগ্রাম মহাসড়কে মেঘনা ও গোমতি ব্রীজের মেরামত কাজে সেনা সদস্যগণ দক্ষতা ও পারদর্শিতার স্বাক্ষর রেখেছেন। ফলে এ মহাসড়কে যান চলাচল অব্যাহত রেখে ব্রীজ মেরামত কার্যক্রম যথাসময়ে বাস্তবায়ন করা হয়েছে। বেগুনবাড়ি খালসহ হাতিরঝিল এলাকার সমন্বিত উন্নয়ন প্রকল্প বাস্তবায়নের মাধ্যমে সেনা সদস্যগণ ঢাকা শহরে পরিত্যক্ত একটি এলাকাকে দৃষ্টিনন্দন পর্যটন এলাকা হিসেবে গড়ে তুলেছেন। সেনা সদস্যদের পেশাদারিত্ব, আন্তরিকতা ও সততার সাথে বাস্তবায়িত এ প্রকল্প সকলকে মুগ্ধ করেছে। পদ্মা বহুমুখী সেতু প্রকল্প বাংলাদেশের একটি স্বপ্ন ও গৌরবের প্রকল্প। সেনা সদস্যগণ দিনরাত ২৪ ঘন্টা এ প্রকল্পটি বাস্তবায়নে অর্পিত দায়িত্ব নিষ্ঠার সাথে পালন করেছেন। এ প্রকল্পের গুরুত্ব ও তাৎপর্য অপরিসীম। 'জলসিঁড়ি আবাসন' প্রকল্পের মত একটি আধুনিক মেগাসিটি নির্মাণে সেনা সদস্যগণ পেশাদারিত্বের সঙ্গে কাজ করে যাচ্ছেন। দেশের বাণিজ্যিক রাজধানী চট্টগ্রাম শহরের জলাবদ্ধতা নিরসনে সেনাবাহিনী দক্ষতা ও আন্তরিকতার সাথে দায়িত্ব পালন করছে। এসব প্রকল্পের বাইরে আরো অনেক জাতীয় ও গুরুত্বপূর্ণ নির্মাণ প্রকল্পে সেনা সদস্যরা সম্পৃক্ত আছেন।

উন্নয়নের অগ্রযাত্রায় দুর্বীর গতিতে এগিয়ে চলেছে বাংলাদেশ। বিভিন্ন দৃষ্টিনন্দন এবং মেগা প্রকল্পসমূহ বাস্তবায়নের মধ্য দিয়ে বাংলাদেশ সেনাবাহিনী তার সক্ষমতার প্রমাণ দিয়েছে। জনসাধারণের জীবনযাত্রার মানোন্নয়নে এবং যোগাযোগ ব্যবস্থার উন্নয়নে বাংলাদেশ সরকার দেশব্যাপী নানাবিধ উন্নয়ন প্রকল্প বাস্তবায়ন করছে। এ সকল প্রকল্পে দক্ষতা ও পেশাদারিত্বের স্বাক্ষর রেখে বাংলাদেশ সেনাবাহিনী ইতোমধ্যেই সরকার এবং আপামর জনসাধারণের আস্থা ও নির্ভরতার প্রতীক হিসেবে সুপরিচিতি পেয়েছে। দেশের সার্বিক উন্নয়নের অংশীদার হতে পেরে সেনা সদস্যগণ গর্বিত ও আনন্দিত। বাংলাদেশের উন্নয়নের ক্রমবর্ধমান অগ্রযাত্রায় সেনাবাহিনী অবদান রাখার জন্য প্রতিশ্রুতিবদ্ধ।

টীকা ও তথ্যনির্দেশ

১. 'বান্দরবানের থানচি-আলীকদম সড়ক নির্মাণ,' *দি ডেইলি অবজারভার*, ঢাকা, ১৪ জুলাই ২০১৫।
২. 'চোরাচালান বন্ধ এবং পর্যটন শিল্পের বিকাশে পার্বত্য সীমান্ত সড়ক,' *ঢাকা ট্রিবিউন*, ঢাকা, ০৪ ডিসেম্বর ২০২০।
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৪. 'ঢাকা-ময়মনসিংহ চারলেন সড়ক উদ্বোধন,' *জাগো নিউজ ২৪ ডট কম*, ঢাকা, ০২ জুলাই ২০১৬।
৫. 'মিরপুর এয়ারপোর্ট ফ্লাইওভার উন্মুক্ত,' *বিডি নিউজ ২৪ ডট কম*, ঢাকা, ২৭ মার্চ ২০১৩।
৬. মেঘনা-গোমতি সেতুর রক্ষণাবেক্ষণ, বাংলাদেশ সেনাবাহিনী ওয়েবসাইট আর্মি ডট মিল ডট বিডি।
৭. 'হাতিরবিাল প্রকল্প উদ্বোধন,' *দি ডেইলি স্টার*, ঢাকা, ০৪ জানুয়ারি ২০১৩।
৮. 'পদ্মা সেতু: জাতীয় অর্থনীতিতে গভীর তাৎপর্যপূর্ণ,' *দি ফিন্যান্সিয়াল এক্সপ্রেস*, ঢাকা, ১৯ ফেব্রুয়ারি ২০২১।
৯. 'চট্টগ্রাম শহরের জলাবদ্ধতা দূরীকরণে প্রকল্প অনুমোদন,' *দি ডেইলি স্টার*, ঢাকা, ০৩ আগস্ট ২০২১।

সংক্ষিপ্ত পরিচিতি



কর্নেল মোহাম্মদ শহীদুল ইসলাম, পিএসসি 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 হিসেবে চাকরি করেন। এছাড়াও, তিনি ডিজিএফআই এ জিএসও-২ হিসেবে এবং সদর দপ্তর আর্টডক এ জিএসও-১ হিসেবে দায়িত্ব পালন করেন। তিনি ডিফেন্স সার্ভিসেস কমান্ড এন্ড স্টাফ কলেজ মিরপুর থেকে গ্রাজুয়েশন ডিগ্রী লাভ করেন এবং এমআইএসটি হতে বিএসসি ইঞ্জিনিয়ারিং (সিভিল) পাস করেন। তিনি ব্যানইঞ্জিনিয়ার-৪ (কনস্ট্রাকশন) লাইবেরিয়াতে জাতিসংঘ মিশনে অংশগ্রহণ করেন এবং ওকেপি-১ (কুয়েত) এ ইওডি অফিসার হিসেবে ডেপুটেশনে নিয়োজিত ছিলেন। তিনি পৃথিবীর অনেক দেশ ভ্রমণ করেছেন। তার মধ্যে ভারত, কুয়েত, সৌদি আরব, যুক্তরাজ্য, ফ্রান্স, বেলজিয়াম, নেদারল্যান্ড, লুক্সেমবার্গ, জার্মানি, সুইজারল্যান্ড, ইতালি এবং লাইবেরিয়া অন্যতম। তিনি খেলাধুলা, বইপড়া ও ভ্রমণ করতে পছন্দ করেন। বর্তমানে তিনি প্রতিরক্ষা মন্ত্রণালয়ে প্রকৌশল উপদেষ্টা হিসেবে কর্মরত আছেন।

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- iii) Place of publication
- iv) Year of publication
- v) Volume, Issue, Page number

II. Examples:

A. Book Referencing:

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