

JANUARY 2019, VOL 02, ISSUE 01

MARITIME CAMPUS

A QUARTERLY MAGAZINE OF BSMRMU

BSMRMU International Seminar

An Inclusive Maritime
Vision for Sustainable
Development of
Bangladesh



Sustainable Shipping Assures
a Safe Environment

Sustainable Coastal Tourism is the Key to
Flourish the Tourism Industry of Bangladesh

Coral reef fishes are a significant food source for over a billion people worldwide. Many coastal and island communities depend on coral reef fisheries for their economic, social, and cultural benefits.

BUT too much of a good thing can be bad for coral reefs.



INDISCRIMINATE FISHING

Use of non-selective gears, like nets and traps, often removes more herbivorous fishes. These fishes eat algae and help keep the ecosystem in balance.

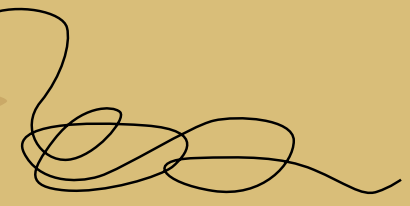
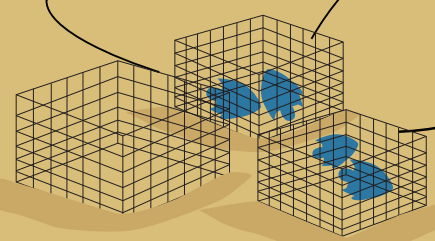
FISHING NURSERIES

Nearshore habitats serve as nurseries for many fish. Catching young fish in nets removes them before they can help replenish the population.



MARINE DEBRIS

Traps set too close to reefs and marine debris, such as ghost traps, lost nets, monofilament, and lines can damage coral reefs, which take a long time to recover.



THREATS TO CORAL REEFS

OVERFISHING



FISHING SPAWNING AGGREGATIONS

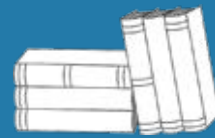
Some species gather in large numbers at predictable times and location to mate. Spawning aggregations are particularly vulnerable to overfishing.



FISHING TOO MANY BIG FISHES

Large fishes produce more young that are likely to survive to adulthood. Their absence means fish population decreases over time.

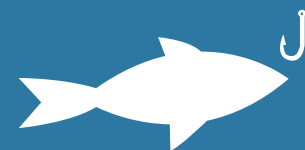
HOW YOU CAN HELP



- Educate yourself on local fishing rules and regulations.
- Relevant government agencies and NGOs working with fish & environment can be helpful.



- Make sustainable seafood choices.



- Only take what you need.
- Catch and release fish that you don't plan to eat.



- Be a responsible aquarium owner.
- Know where your fish come from and DO NOT release unwanted fish into the wild.





January 2019, Volume 2, Issue 1

Maritime Campus

A Quarterly Publication of Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh

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Editorial

Prosperity through maritime vision

To harvest and harness the enormous resources in the maritime sector, Bangladesh needs to develop learned and skilled human resources. Therefore, a major step was taken when Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU), Bangladesh was established on 26 October 2013 to provide the nation with knowledgeable and expert manpower in the maritime fields. BSMRMU has already started its journey toward its motto, 'We Strive for Maritime Excellence'. Towards fulfilling its goals BSMRMU is conducting undergraduate and graduate programmes in various maritime fields and having collaboration with national and international educational and research organisations. BSMRMU also organises seminars on various national issues and for the first time, it organised a two-day long international seminar on 'An Inclusive Maritime Vision for Sustainable Development of Bangladesh' at Bangabandhu International Convention Centre (BICC), Agargaon from 24-25 October 2018. More than 500 participants from home and abroad attended the seminar. On day 1, Prime Minister's Security Adviser Major General Tarique Ahmed Siddique (retd) was the Chief Guest and Dr Dipu Moni, MP, Chairperson, Parliamentary Standing Committee on Foreign Affairs was the Chief Guest for the second day of the seminar. The Chief of Naval Staff Admiral Nizamuddin Ahmed, NBP, OSP, BCGM, ndc, psc graced the seminar as the Special Guest. Our lead story dives deep into the splendid event and narrates the outcome of international networking, expert opinions and exchange of views on inclusive vision for sustainable maritime development of Bangladesh.

Ship engines are powered by heavy fuel oil, the most polluting form of fuel, their contribution to global pollution is considerable. One ship emits the equivalent of 50m cars' worth of sulphur dioxide (SO₂) emissions and just 15 ships emit the equivalent SO₂ emissions of every car in the world. As a result, the shipping industry is increasingly aware of the need to act. Considering the growing importance of sustainable shipping, we have put in an article that focuses on the interaction between shipping and the natural environment and discusses how the use of the oceans through shipping is affecting the environment.

Climate change impacts the various spheres of the business activities of the Inland Water Transportation sector. Climate change challenges may encompass stronger currents and quickly fluctuating water levels due to changing rainfall patterns and intense rain events, erosions related to siltation in the catchment areas as well as less water and lower lean flows and lower depth caused by longer drought periods. We have included an article on that specific topic.

As a special and complex industry, tourism has to be directed at a large number of people in different socio-economic structures having different tests, needs, expectation, attitudes, and behaviour pattern. Bangladesh has tremendous tourism potential and the country should proceed with a sustainable approach. We have also endorsed an article on sustainable coastal tourism to discuss the matter in detail.

All the important international and local maritime news and events happened over the past quarter showcased in 'Around the World' and 'Maritime Bangladesh' section to keep you all informed.

I would like to thank all the departments for the support they have rendered by providing information of their respective activities. Finally, I appreciate the members of the Editorial Board for their remarkable contribution to this publication.

We welcome you to share your thoughts and ideas with us to make this effort worthier. We always value your feedback.

Thanking you

Editor



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LEAD STORY

BSMRMU International Seminar: Inclusive Maritime Vision for Sustainable Development

On a regular basis, BSMRMU organises seminars on various national issues. For the first time, it organised a two-day long international seminar on 'An Inclusive Maritime Vision for Sustainable Development of Bangladesh' at Bangabandhu International Convention Centre (BICC), Agargaon from 24-25 October 2018. More than 500 participants from home and abroad attended the seminar. Distinguished speakers presented 2 keynote papers and 15 research papers on various maritime-related issues in the international seminar.



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Impact of Climate Change on Safe Navigation in Inland Waterways

IWT plays a pivotal role in the government's effort towards growth and the reduction of poverty under the National Strategy for Accelerated Poverty Reduction (NSPAR). Climate change impacts the various spheres of the business activities of the Inland Water Transportation sector.

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Learning becomes easier and faster when learners get exposure to the target language. The first and foremost task of a foreign language learner is to practice the target language. We must remember that learning a language is a life-long process.

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A safe environment is a demand for the survival of human habitation and safe seawater with the healthy living condition of marine lives. However, uplifting environmental concern and planned implementation of the proposed action in shipping is necessary to maintain significant sustainability.

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PANORAMA

Sustainable Coastal Tourism is the Key to Flourish the Tourism Industry of Bangladesh

Sustainable coastal tourism indicates to environment friendly land-based tourism activities counting swimming, surfing, sun bathing and other coastal recreation services and activities taking place on the coast of a sea.

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BSMRMU Central Library and Archive is playing a vital role to accomplish academic activities of its patrons.

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Contributions from the new writers of the student community. In this issue,

- Know Your Safety in the Sea
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SUB TOPIC

Technical Strength of BSMRMU



PM stresses on appropriate utilisation of maritime sector for regional development



Addressing the inaugural session of the Second South Asian Maritime and Logistics Forum 2018, Prime Minister Sheikh Hasina, on 8th October, emphasised on the need for proper utilisation of the maritime sector for massive socio-economic development of the people of this region.

“There is a huge potential in the maritime sector in South Asia and utilising the sector, it is possible to make a big lead into the socio-economic development of the people of this region,” the Prime Minister said. She also added that her government was devoted to improving navigability of the rivers and ensuring safe and secure river routes for transportation of people and goods.

“Initiatives have been taken to dredge the rivers to maintain navigability,” she informed the seminar.

The Prime Minister further said that her government, in cooperation with the government of the Netherlands, had prepared and endorsed the Bangladesh Delta Plan 2100. “One of the main components of Delta Plan 2100 is to accelerate the GDP growth through proper utilisation of water resources,” she said.

BSMRMU team pays courtesy visit to CNS

A BSMRMU team headed by Vice-Chancellor Rear Admiral M Khaled Iqbal, BSP, ndc, psc paid a courtesy visit to newly appointed Chief of the Naval Staff (CNS) Admiral Aurangzeb Chowdhury, NBP, OSP, BCGM, PCGM, BCGMS, ndc, psc on 27 January 2019. The Vice-Chancellor congratulated Admiral Aurangzeb for his well deserved promotion and holding the highest appointment of Bangladesh Navy. He expressed his hope that Bangladesh Navy will go to the pinnacle of success under the able and visionary leadership of Admiral Aurangzeb. The CNS expressed his deep satisfaction on the progress of the university in terms of academic, administrative and infrastructural development taken place over the last few years and assured all out support for the development of the university. During the visit, Treasurer, Deans, Registrar, Controller of Examination, senior officials and faculty members were also present.





Honourable guests and speakers at the BSMRMU International Seminar

BSMRMU International Seminar: Inclusive Maritime Vision for Sustainable Development

Enlighten Vibes Desk

Primer

Bangladesh, as a littoral State, is fortunate enough to carry proud legacies of maritime history and heritage. According to recorded history, the country has been maintaining glorious maritime traditions and affections to the oceans. Evidently, the mariners from Bengal had profound knowledge in the area of seafaring, navigation, communication and shipbuilding. The major breakthrough came to the maritime sector after the independence of Bangladesh, when the father of the nation, Bangabandhu Sheikh Mujibur Rahman promulgated 'Territorial Waters and Maritime Zones Act No. XXVI of 1974'. Through that visionary Act, Bangladesh paved its way towards the path of the maritime economy. In 2012 and 2014 respectively, the government, under the able leadership of Hon'ble Prime Minister Sheikh Hasina, has successfully completed the delimitation of the maritime boundary with Myanmar and India. As a result, Bangladesh has been endowed with a large sea area of 118,813 sq. km. To harvest and harness the enormous resources in the maritime sector, Bangladesh needs to develop learned and skilled human resources. Therefore, a major step was taken when Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU), Bangladesh was established on 26 October 2013 to provide the nation with knowledgeable and expert manpower in the maritime fields. BSMRMU has already started its journey toward its motto, 'We Strive for Maritime Excellence'. Towards fulfilling its goals BSMRMU is conducting undergraduate and graduate programmes in various maritime fields and having collaboration with national and international educational and research organisations. BSMRMU also organises seminars on various national issues and for the first time, it

organised a two-day long international seminar on 'An Inclusive Maritime Vision for Sustainable Development of Bangladesh' at Bangabandhu International Convention Centre (BICC), Agargaon on 24-25 October 2018. More than 500 participants from home and abroad attended the seminar. On the inauguration day, Prime Minister's Security Adviser Major General Tarique Ahmed Siddique (ret'd) was the Chief Guest and Dr Dipu Moni, MP, Chairperson,

The Vice-Chancellor of BSMRMU Real Admiral M Khaled Iqbal, BSP, ndc, psc presents his welcome address at the inaugural session of the International Seminar



// Lead Story //



The Chief Guest, the Security Adviser to the Hon'ble Prime Minister of Bangladesh, Major General Tarique Ahmed Siddique, rcds, psc (retd) receives a crest from Rear Admiral M Khaled Iqbal BSP, ndc, psc, Vice-Chancellor of BSMRMU

Parliamentary Standing Committee on Foreign Affairs was the Chief Guest for the second day of the seminar. The Chief of Naval Staff Admiral Nizamuddin Ahmed, NBP, OSP, BCGM, ndc, psc graced the

seminar as the Special Guest. The Vice-Chancellor of BSMRMU, Rear Admiral M Khaled Iqbal, BSP, ndc, psc, International Association of Maritime President Professor Thanos Pallis, Captain John Lloyd, CEO of Nautical Institute, M Jan Rumi, dean of consular corps in Hawai'i of the US, and Frank Haas, former dean of the University of Hawai'i spoke among others. Maritime experts and academicians from Australia, Belgium, Bangladesh, China, Greece, France, India, Singapore, South Africa, UK and USA also attended the seminar.

In a nutshell

This two-day long international seminar encompassed the following five session themes:

1. "Port-led economic development"
2. "Blue Economy- leading the way for sustainable development"
3. "Maritime education for a new generation"
4. "Maritime technological innovations"
5. "Maritime governance and challenges"

In the seminar, distinguished speakers from home and abroad presented two keynote papers and 15 research papers on various maritime-related issues.

Those who spoke



Major General Tarique Ahmed Siddique (retd)



Dr Dipu Moni, MP



Admiral Nizamuddin Ahmed



Rear Admiral M Khaled Iqbal



Rear Admiral A S M Abdul Baten (retd)



Mr Farooq Sobhan



Rear Admiral M Khurshed Alam (retd)



Mr Clive Van Onselen



Prof. Chen Jihong



Prof. Dr Ainun Nishat



Prof. Dr M. Rafiqul Islam



Prof. Dr Pierre Failler



Prof. Dr Rashed-Uz-Zaman

BSMRMU International Seminar:
Inclusive Maritime Vision for Sustainable Development

Day one chronicle

Day one started with an inaugural session. The Vice-Chancellor of BSMRMU Rear Admiral M Khaled Iqbal, BSP, ndc, psc presented his welcome address. In his speech, he extended a hearty welcome to all participants to this important maritime seminar. He emphasised on regional approach for a better governance in the maritime sector of Bangladesh. Admiral Nizamuddin Ahmed, NBP, OSP, BCGM, ndc, psc, the Chief of Naval Staff, Bangladesh Navy adorned the seminar as the Special Guest. In his speech, he gave importance to the evolving security dynamics of traditional and non-traditional threats range from maritime terrorism to IUU fishing. He also said that the evil nexus of radicalism, terrorism and insurgency aggravated by narcotics, piracy, smuggling, human trafficking and gun-running had been disturbing government architecture creating a perpetual state of anarchy which hinders the growth of the maritime sector to a large extent.

The Chief Guest of the seminar, the Security Adviser to the Hon'ble Prime Minister of Bangladesh, Major General Tarique Ahmed Siddique, rcds, psc (retd) gave emphasis on the balance between development and sustainability. He advocated for creation and implementation of ocean policy for restricting the misuse or unscrupulous use of the sea.

"Harvesting Blue Economy – Need for Intertwined Economics for Bay of Bengal Littorals" was the topic of the first keynote paper

presented by Rear Admiral M Khurshed Alam (retd) Secretary, Maritime Affairs Unit, Ministry of Foreign Affairs, Bangladesh. According to him, the strategic and economic significance of the Indian Ocean Region and its implication for the Bay of Bengal littorals is huge. The Bay of Bengal is inextricably linked to the Indian Ocean where Bangladesh is a key stakeholder. He suggested, Bangladesh needs to develop a cooperative mechanism among the littoral States, for instance among members of Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), in order to promote collaboration for reaping the maximum benefit of the Blue Economy.

Session one started with the theme- Port-led economic development that comprises ports, Special Economic Zones (SEZs), rail, road, air and waterway connectivity with the hinterland. Speakers of this session agreed that Port-led economic development leads to unlocking the economic value by adopting logistics intensive industries, efficient ports, seamless connectivity and requisite skill based community.

'Blue Economy – Leading the way for Sustainable Development' was the theme of the second session. Session speakers said, the Blue Economy is basically a transition from a traditional economic path to a human-ocean centric development which could be seen as 'living with the ocean and from the ocean in a sustainable way'.

The theme for the third session was 'Maritime Education for the New Generation'. The theme aimed at creating awareness among the



Capt John Lloyd



Dr Daud Hassan



Mr Abul Kasem Khan



Mr Bernard Malherbe



Mr Shri Rabindra Agarwal



Rear Admiral M Makbul Hossain



Ambassador Munshi Faiz Ahmad



Mr Syed Farhad Ahmed



Prof. Thanos Pallis



Mr Gavin Allwright



Mr Frank Haas



Mr M Jan Rumi



Vice-Chancellor Rear Admiral M Khaled Iqbal BSP, ndc, psc and speakers of day two are in a photo-session with the Chief Guest of the day, Dr Dipu Moni, MP, Chairperson, Parliamentary Standing Committee on Foreign Affairs, Bangladesh

youth who will help the nation meet the needs of human resources in maritime and offshore industries.

Day two chronicle

It was the second day of the international seminar when attendees gathered again to listen to the speakers for another day. The overall enthusiasm and attention of the audience were highly appreciable. Day two started with the fourth session of the seminar with the theme, 'Maritime Technological Innovations'. Speakers said, technological innovations are moulding the future of the global maritime industry to its next stage of challenges.. This session explored the blessings of technological innovations in details.

The theme of the fifth session was 'Maritime Governance and Challenges'. It is apparent from the speeches of the speakers that sustainably managing and developing coastal and ocean spaces are

critical to a nation's economic development. In this context, two papers were presented in this session.

This two-day seminar had a closing session where the second keynote paper presented his paper. Ambassador Munshi Faiz Ahmad, Chairman, Board of Governors, Bangladesh Institute of International and Strategic Studies (BISS) delivered the paper on 'Foreign Policy Options for Blue Economy'. According to his presentation, the foreign policy options need to be designed in such a way so that Bangladesh can actively participate in regional and global forums or associations and can align herself with various groupings in order to fulfil the vision of the Blue Economy.

Drawing of the curtain

The Chief Guest Dr Dipu Moni, MP, Chairperson, Parliamentary Standing Committee on Foreign Affairs embellished the seminar with her gallant appearance. In her speech, she eloquently emphasised the maritime sector as the major economic player of Bangladesh. She also highlighted the need for a change in approach for national as well as global developments. According to her, the country needs strategies for ocean industries, with a view to paving the way for sustainable growth for years to come. She assured, the government is committed to the sustainable use of resources and concrete measures to combat the threats facing our oceans. She also stressed, the regional countries along with Bangladesh have big roles to play. She said that the threats to the climate and the health of the oceans could only be addressed through innovation and global cooperation. 'We all have to coordinate for a better world,' she said.

At the end of the seminar, Rear Admiral Mohammad Khaled Iqbal, BSP, ndc, psc, the Vice-Chancellor, BSMRMU gave the closing remarks. He enthusiastically said that it had been indeed a matter of great pleasure and immense satisfaction for Bangabandhu Sheikh Mujibur Rahman Maritime University for successfully hosting a two-day long seminar on "An Inclusive Maritime Vision for Sustainable Development of Bangladesh". He

The Chief Guest, Dipu Moni, MP, Chairperson, Parliamentary Standing Committee on Foreign Affairs, Bangladesh receives a crest from Rear Admiral M Khaled Iqbal, BSP, ndc, psc, Vice-Chancellor of BSMRMU



vowed for the continuation of such extensive intellectual pursuit in future.

Feats of the seminar

It evident that the two-day long international seminar has facilitated marine professionals, researchers, policymakers and stakeholders to promote ideas and thought process about the future maritime potential of Bangladesh. Experts from the different sectors of the maritime industry shared their valuable thoughts and experiences so that the seminar could turn out to be a great learning and enriching experience for maritime students. This international seminar has opened several windows through which knowledge sharing, international research and development of Bangladesh's maritime sector can be achieved. There can be joint research projects between BSMRMU and other international institutes in this area of interest. Representatives/scholars representing maritime institutions could be invited for events related to the maritime domain. Apart from that, Maritime Security, Maritime Governance, Blue Economy and SDG 14, Global Warming, Climate Change, responsible fisheries are some areas in which national and international universities can collaborate.

Conclusion

In the two-day long international seminar conducted by BSMRMU, the vast area of the maritime economy for sustainable development was discussed with necessary inclusivity ranging from Port-led economic development to maritime good governance. Bangladesh, as a maritime nation in the Bay of Bengal region, has tremendous scope for Port-led economic development. We can learn a lot from the experiences and challenges of China, India and Europe regarding the Port-led economic development. To achieve the Sustainable Development Goals (SDG's), the Blue Economy can become the widely accepted doctrine and central notion for littoral States like Bangladesh. It goes hand in hand with the Port-led economic development and contributes to the national economy. At the same time, Bangladeshi youths must be cognisant about the present and future potential of the maritime economy. On the other hand, the maritime sector has been going through rapid technological changes due to automation and adaptation of new and innovative technologies. The country needs a maritime mind-set to embrace and avail the blessings of maritime technologies. The Bay of Bengal



The Chief Guest Dr Dipu Moni, MP, Chairperson, Parliamentary Standing Committee on Foreign Affairs signing the visitor's book

was also rigged with the problems from IUU fishing, marine pollution, ineffective marine regulation and the non-traditional security menace. Therefore, to achieve maritime good governance, it is imperative to emphasise on the maritime safety and security issues in the Bay of Bengal for achieving Blue Economy vision and sustainable development.

A portion of speakers and attendees who participated in BSMRMU International Seminar



Impact of Climate Change on Safe Navigation in Inland Waterways

Md. Shahjahan and Mohammed Mojahid Hossain Chowdhury

Introduction

Bangladesh lies within the deltaic plain of the Ganges-Brahmaputra-Meghna (GBM) and many tributaries and distributaries are flowing through the low-gradient alluvial land from north to south. The GBM basin ranks third in the world river system in terms of sediment transport and water discharge. This complex water network has spread in such a pattern that a huge portion of the country, especially the southern tip and the offshore areas, are hardly accessible by land transportation. As the land is crisscrossed with the waterway, almost all infrastructures in the country have always been river-dependent. The Inland Water Transport (IWT) system is well-connected with the rest of the transport system playing a vital role in the transportation sector of Bangladesh. A previous study reveals that around 102 million passengers covering 110 billion passenger-kilometres and 30 million metric tons of freight covering 18.6 billion ton-kilometres are transported by inland waterways. A substantial portion (12.3%) of the rural population only has reasonable access to the transportation system through IWT, which is half of all rural households (25.1%) who have access to river transport. Thus, IWT plays a pivotal role in the government's effort towards growth and the reduction of poverty under the National Strategy for Accelerated Poverty Reduction (NSPAR). Climate change impacts the various spheres of the business activities of the Inland Water Transportation sector. Challenges due to climate change may encompass stronger currents and quickly fluctuating water levels due to changing rainfall patterns and intense rain events, siltation due to erosions in the catchment areas as well as less water and lower lean flows and lower depth due to longer drought periods.

Objectives and methodology of the study

The main objective of the study is to assess the skills and knowledge level of inland navigators (Masters and Pilots) in the light of climate change impacts. Other objectives are to find out the gap between existing skill level and desired skill level of the masters and pilots and to instigate the development of an effective training programme focusing on the gaps between the existing and desired capacities of the masters and pilots.

The study has been done mainly using primary data, collected from the field survey. The field survey was conducted by interviewing the inland masters and pilots in Sadarghat and Narayanganj Port areas since these two are the major inland ports in Bangladesh. Before starting the survey, a set of questionnaires was prepared for interviewing the masters and pilots. In this regard, there were several key persons interviewed and focus group discussion was conducted in Sadarghat and Narayanganj. Among those, there were 67 respondents interviewed in field survey and 13 respondents were interviewed by telephone. A total of 80 respondents was interviewed based on random sampling for this study. The interviews took place in the month of June 2016.



Location of Study Areas (Google Map, June 2016)

Climate change impacts in Bangladesh

According to Climate-Risk-Index 2015, Bangladesh is one of the most climate-vulnerable countries in the world. The low elevation of Bangladesh – two-thirds of the country are located less than five metres above sea level – makes the country particularly vulnerable to sea level rise and extreme flooding. The climate change impacts are a significant challenge for inland water transportation sector as well as investors in the private sector, especially for small manufacturing enterprises (SMEs) which are being seen as the economic growth engine of Bangladesh.

Climate change impacts due to temperature rise

A number of impacts, relevant for the shipping sector, caused by an increase in temperatures have already been identified. One major issue is the high frequency of fog and mist which can cause navigational problems. Moreover, increasing dry periods can lead to a river water flow reduction, which in turn might disturb navigational activities. Another identified aspect is the increased ice melting in the Himalaya Mountains region, causing stronger currents in downstream areas and river bed erosions.

Climate change impacts due to sea level rise

The most important impacts for the water transport and shipbuilding sector due to sea level rise are an increase of seawater intrusion and consequently a higher salinity and siltation in inland waterways. Steel structures in waters with high salinity corrode quicker, causing higher maintenance costs. Another identified aspect is the increasing number of shells growing on ship hulls in saline water, which decreases the speed of ships and consequently causes higher costs for fuel. With higher sea levels, floods become more unpredictable and frequent which potentially leads to disturbances of water

transport.

Climate change impacts due to changing rainfall pattern

Changing rainfall patterns, possibly lead to strong currents, complicating navigation. Riverbank erosion induced by heavy rain events might enforce a reallocation of ferry terminals.

Erosions within the catchment areas lead to an increase of siltation in the river bed. Changing rainfall patterns might either lead to flood events or dry periods. Both effects entail navigational and infrastructural complications.

Climate change impacts due to storms

Heavier storms and cyclones which have increased in the last years and became new phenomena in Bangladesh which may cause accidents and sinking of ships. Shelter places and landing stations have been destroyed and are no more sufficiently available. The safety of ships and crew cannot be guaranteed in unpredictable heavy storm events and cyclones. The sinking of ships causes major safety hazards for the ship traffic and leads to high costs and loss of life. Furthermore, siltation of river beds increases after storm events, causing interferences and closing of waterways. The northwestern storms have increased and pose additional safety issues.

Climate change impacts on the water transport sector

Climate change affects the Inland Water Transport sector in various ways. On the one hand, various ship accidents can be related to extreme weather events which have reportedly increased in the last decades. Due to the siltation of rivers, business activities have to stop for longer period every year and important transport routes had to be closed leading to challenges for many companies in the inland water transport sector. On the other hand, inland water transport is temporarily the only mode of transport for flooded regions. New craft designs that have less draft and are more robust in climate extremes (e.g. Catamarans) and are currently being researched and developed by some companies. The sector depends on its waterways which have shrunk from more than 24,000 km to 3,600 km in the last decades. The shrinking of inland waterways is not only due to climate change impacts like e.g. stronger erosions in the catchment, more sedimentation due to salinity intrusion, but less lean flows in the dry season.

Results and discussions

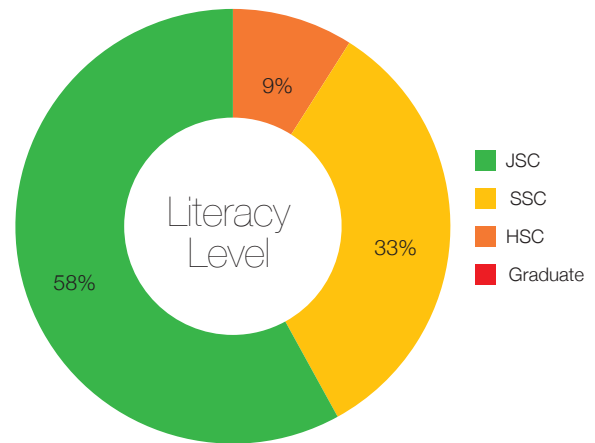
The findings express the current knowledge depth of masters and pilots whose primary responsibility is to navigate the ships safely. Under extreme weather conditions, masters and pilots have to be capable to safeguard human lives and properties. Besides, masters and pilots should safely navigate the cargo ships to transport various types of goods in desired places in due time. The masters and pilots were assessed on their current skill and knowledge for safe navigation in the said region. The findings of the interview are given below:

1. Literacy level

The results from this survey show that the masters and pilots who are working in various ships were not highly educated. Among 80 navigators 58% were JSC Passed, 33% were SSC passed and 09% were HSC passed. But no one was graduated in any discipline.

However, in all government training institution's intake trainees' minimum qualification requirement is SSC (Secondary School Certificate) passed students. It is a matter of concern that only 33% of interviewed masters meet the minimum education requirement.

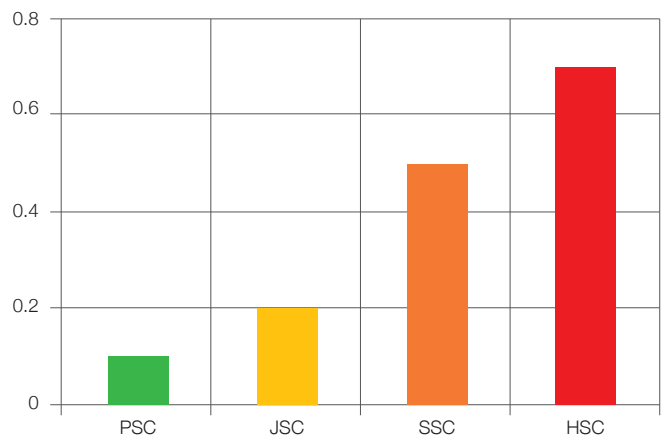
The lower level of education of the masters and pilots will not help them in the future for their good service and also they will face problems in working places.



Literacy level

2. Climate change awareness level of respondents

Masters and pilots having less academic qualification are much less aware of climate change than those having SSC and HSC level education. Most of the masters and pilots in the study areas are not fully conscious of climate change and do not know what the effects of climate changes are.



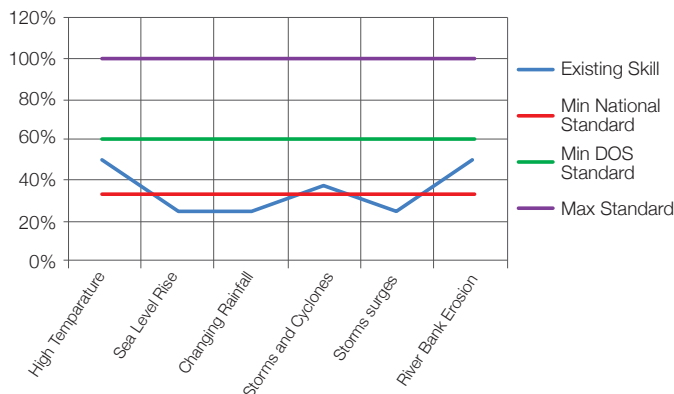
Climate change awareness level

3. Knowledge gaps

Knowledge Gaps are shown in the Table.

The existing skill levels of inland navigators regarding identified effects of climate change are 50%, 37% and 25% as shown in following figure. In three cases the existing skill levels are above Minimum National Standard (MNS) but in the other three cases that is below MNS. But in all the six cases the Masters and Pilots skill levels are below DOS minimum standard level, which is a great concern for all the stakeholders in the inland water transportation sector. On an average, the navigators having only 35.3% knowledge/skill in mitigating climate change impacts on navigation will not be able to handle their vessels properly and they will be required to be educated in inland maritime training institutes sooner or later.

// Special Story //



Knowledge Gap Analysis

Conclusion and recommendations

The current knowledge level of masters and pilots are not sufficient. They are not so educated, but still able to run their ships in normal weather condition on the basis of their year-long practical experiences. By considering everything above about the study, the

followings are recommended:

- In view of recruiting a good master or pilot on the ship some theoretical and practical training should be provided.
- Port operations should also be provided with regular weather forecast, navigational warning, navigational aids, traffic monitoring equipment and control tower facilities.
- Course modules should be prepared to comprise theoretical sessions and practical training onboard under different environmental conditions.
- All the existing masters and pilots should be given the chance to go to the inland maritime training institutes for in-service courses with minimum fees.

Md. Shahjahan

Principal, Deck and Engine Personnel Training Centre, BIWTA

Mohammed Mojahid Hossain Chowdhury

Lecturer, Department of Port and Shipping Management, Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh

Table

Climate	Probable Impacts on Navigation	Existing Knowledge/ Skills (Survey)	Expected Knowledge And Skills (Remarks)
High temperature	<ol style="list-style-type: none"> 1. Higher frequency of fog and mist which can reduce visibility. 2. Reduction in available navigable water during the dry season. 3. Stronger current in downstream areas due to increased ice melting in the Himalaya mountains region. 4. Distraction in concentration due to excessive heat crew fatigue. 	Masters and Pilots are aware of the hazard of reduced visibility and know to drop anchor and wait for clear weather.	But not aware of automatic fog-signalling apparatus and blind pilotage techniques. Most of the ships are not fitted with radar, fog-signalling apparatus and AIS. Have no idea how to calculate set and drift and no speed log is fitted on inland ships.
Sea level rise	<ol style="list-style-type: none"> 1. Shifting of the navigable channel. 2. Higher salinity, higher siltation, frequent flood. 3. Markers and buoys may be misplaced. 4. Increased siltation, reduced channel depth 	They know how to identify channel by markers and buoys and the use echo- sounder fitted on ships.	But most of them are not aware of shipping notices published by DOS and BIWTA from time to time. Also not aware of the possible effects of salinity on the ship's structure.
Changing rainfall patterns	<ol style="list-style-type: none"> 1. Stronger current. 2. Flash flood. 3. Reduced visibility. 4. Delay in cargo operation. 	They are aware of variation in the ship's speed due to current.	But not aware of the impact on ship manoeuvrability, loss of freight and fuel consumption.
Heavier storms and cyclones	<ol style="list-style-type: none"> 1. Difficulty in manoeuvring the ships. 2. Contact incident, grounding etc. 3. Loss of Navigational aid. 4. Channel may be closed. 	They are aware of taking shelter and stay in the open water.	But do not know about heaving to and anchoring in heavy weather. Enough Shelter areas are not yet designated by the appropriate authority.
Storm surges	<ol style="list-style-type: none"> 1. Difficulty in manoeuvring the ship. 2. Contact incident, hull failure and Main engine break down, loss of steering. 3. Channel may be closed. 4. Loss of freight. 	They know about the difficulty of managing the ship, rolling and pitching.	But unaware about the precautions to be taken including speed reduction, emergency situation and structural failure. Not aware of the business implications.
River bank erosion	<ol style="list-style-type: none"> 1. Reduce depth. 2. Channel closed. 3. Nav Marks lost. 4. Increased current. 	They are aware of the channel depth changes and loss of markers.	But unaware about grounding due to the squat effect, sunken shoals. Do not know how to calculate set and drift.



Sustainable Shipping Assures a Safe Environment

Md. Mehadi Amin Miah and S. M. Saief Uddin Ahmed

Introduction

In the planet earth, 70% of the surface is covered by ocean and 90% of human habitation is beside a river or water source. Therefore, humans have always had a close relationship with the aquatic environment, including the early use of the sea for food harvesting and transportation. Today the sea is an important component of the transportation system, with large amounts of cargo and passengers. Ship's transportation has increased tremendously since the industrial revolution, which has resulted in increased emissions due to shipping and increased stresses on the environment. Shipping is by far the world's most efficient form of transport, because more than 90% of the world's traded goods travel by sea, it still has a major environmental impact. There are 100,000 ships that account for 3% of greenhouse gas emissions. And because ship engines are powered by heavy fuel oil, the most polluting form of fuel, their contribution to global pollution is considerable. One ship emits the

equivalent of 50m cars' worth of sulphur dioxide (SO₂) emissions and just 15 ships emit the equivalent SO₂ emissions of all the cars in the world. As a result, the shipping industry is increasingly aware of the need to act.

Ships and shipping

Common ship types can be identified according to their type of use:

Container ships: These vessels carry most of the world's manufactured goods and products in standardised containers that also can be transported by rail and truck.

Bulk carriers: These vessels transport unpacked cargo in large volumes. The cargo might be grain, products such as concrete, or raw materials like iron ore, limestone and coal.

Tankers: These vessels transport liquids, such as crude oil, chemicals and petroleum products.

Ferries: Ferries usually perform short journeys that carry mixtures of passengers, cars and commercial vehicles. Most of these ships are RoRo (roll on–roll off) ferries, in which vehicles can drive straight on and off. Ferries that combine passengers and RoRo transport are often referred to as RoPax.

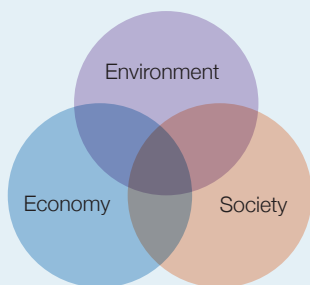
Cruise ships: Cruise ships have different sizes, and several thousand passengers and crew are common on these vessels. Many other types of ships operate regionally or locally. One size limit is up to 500 passenger vessels, which includes road ferries and public transport/shuttle ferries. Vessels might be intended for special purposes, such as pilot boats, fishing vessels, icebreakers and military vessels. Different ships are also adapted for transport on inland waterways in areas with rivers and canals.

Sustainable development and sustainable shipping

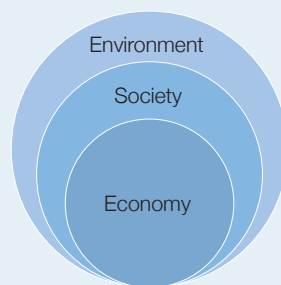
The most common international definition of sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Experts have identified four primary characteristics of sustainability:

- (1) Safeguarding long-term ecological sustainability
- (2) Satisfying basic human needs
- (3) Promoting intra-generational equity, and
- (4) Promoting inter-generational equity.

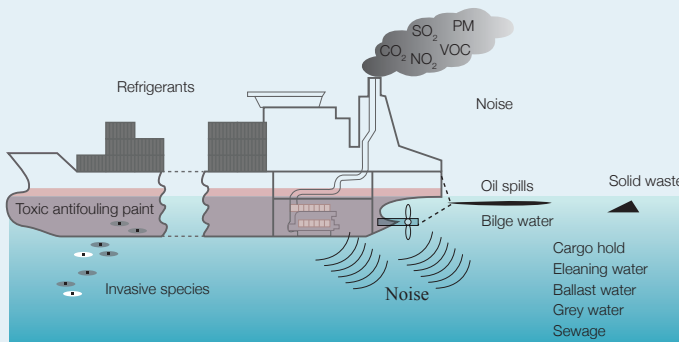
Sustainable development is commonly represented as three pillars: economic, social and environmental aspect or three P, commonly known as people, profit and planet. Hence, sustainable shipping depicts marine economic transportation activities prioritising environmental safety.



View 1: Most common view on sustainable development interception of 3 pillars



View 2: Environment sets the outer limit where ecologically sustainable condition assures sustainable development.



Environmental impact and discharge of Green House Gas by marine transportation

Ships and their environmental impacts

A ship's life cycle

Design and construction phases of a ship allow for a large range of options for technical solutions and offer a large opportunity to influence environmental impacts and energy usage. It is also important in these stages to allow for refurbishment and technical improvements during the long operation time of a ship often 30 years or more. Additionally, the possibility of scrapping a ship in an organised manner that allows for its components and materials to be recycled is largely determined in the design phase. Ship recycling causes colossal environment hazard in third world countries where economic benefits achieve priority over environmental concern.

The hull and ship structure

The main structure of a ship is the hull, which provides a carrying platform and protection against the environment. A stronger and thicker hull comes at a cost. Additional material is required for construction, which impacts both the investment cost and the life cycle demand of material. In addition, a heavier hull requires a higher lightweight which results in reduced cargo carrying capacity for a given ship size and shape. The choice of materials used in shipbuilding has an impact on the emissions associated with shipping.

The propulsion system

Several methods are available to generate the thrust required for a ship to move through the water. However, nearly all of the world 's commercial fleet is currently based on the concept of converting the chemical energy contained in fuel to mechanical energy, which in turn is converted into ship thrust. As a result, this process is responsible for greenhouse gas emission, acoustic and oil pollution.

Ship resistance

Antifouling paints are applied to hulls to prevent the growth of fouling organisms, such as barnacles, mussels, bryozoans and algae. However, the release of biocides from antifouling into the water can result in a harmful impact on the marine environment.

Auxiliary systems

Ballast water is needed to ensure vessel stability during operation without cargo and to balance the weight when the cargo is not evenly distributed. In port, the ballast water might be pumped into specially designed tanks to compensate for changes in the weight distribution as cargo is removed and subsequently released when cargo is loaded. It is estimated that at any given time, approximately 10,000 different species are transported between geographic regions in the ballast tanks alone. Although many alien species become integrated components of the background flora and fauna, others are invasive and will eventually take over and dominate the native flora and fauna. This may have associated economic impacts such as a decrease in economic production by fisheries, aquaculture, tourism and marine infrastructure. Human health can also be affected. For example, the Asian strain of the bacterium responsible for cholera was probably introduced into Latin America via the discharge of ballast water.

Oil spills

Accidental oil spills from tanker vessels have decreased since the 1970s, although numerous small spills still occur in ecologically sensitive locations.

Emission control and green shipping concept

Sustainable or green shipping is generally defined as logistics and transport operations that strive to limit the company's Green House Gas (GHG) emissions. A company's GHG output is often referred to as its carbon footprint, meaning the amount of carbon dioxide and other greenhouse gases it uses.

Low sulphur fuel

From 1 January 2020, all ships and vessels operating anywhere in the world will be required to use fuel which contains a maximum of 0.5% m/m sulphur, as agreed by the International Maritime Organization (IMO) in 2016. This new limit aims to reduce the impacts of sulphur oxide (SO_x) emissions on the environment and human health.

Scrubber technology

The scrubber is a system that is designed by the use of water to wash the exhaust gases from main, auxiliary and boilers to remove sulphur dioxide (SO₂), that is directly harmful to human health. There are different designs in the market today, however, they could be divided into two categories, open and

closed types. The power consumption of operating a scrubber system is typically between 1-2% of main engine power.



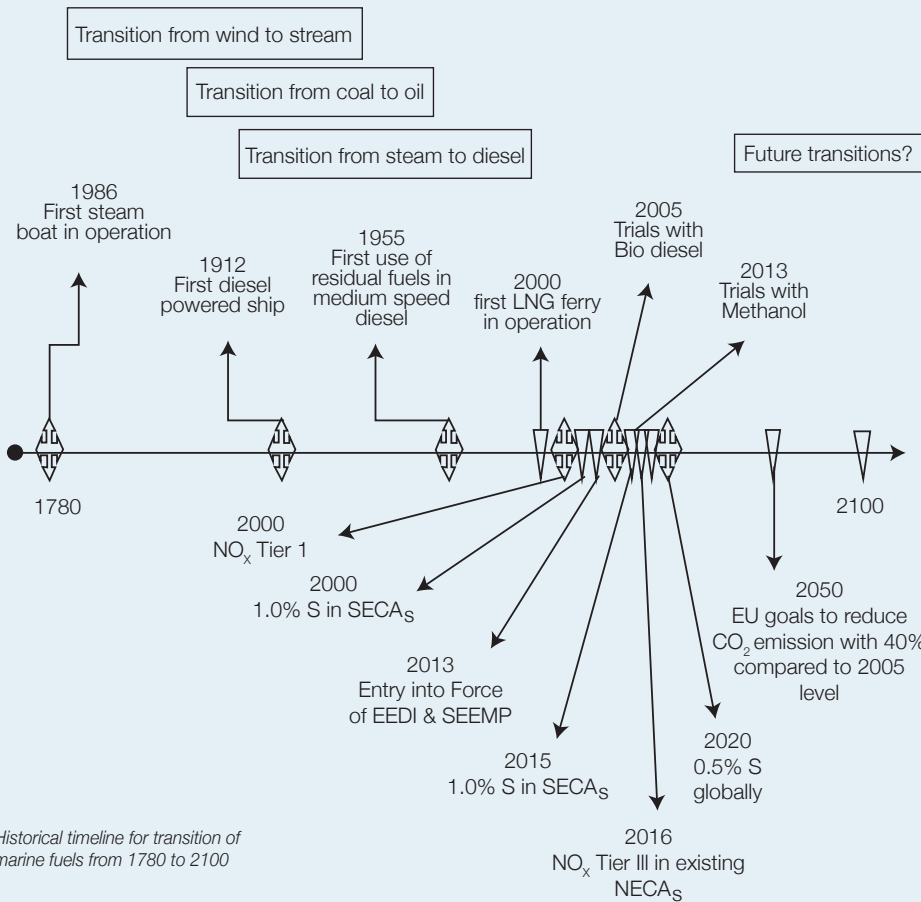
Aft Ship with Scrubber installed having enlarged funnel and LNG tank on the main deck

LNG conversion

With constantly increasing emissions controls, an efficient and affordable solution is always in demand. Natural gas is relatively clean in terms of local pollution when compared to Diesel and Heavy Fuel Oil (HFO). Using LNG cuts CO₂ emissions by approximately 25%. It reduces sulphur oxides by nearly 100%, and it reduces nitrogen oxide emission by about 85%. The initial expenses of switching to LNG ships is countered over time by the rise in efficiency and a reduction in fuel consumption.

Energy sail and Aquarius marine solar power

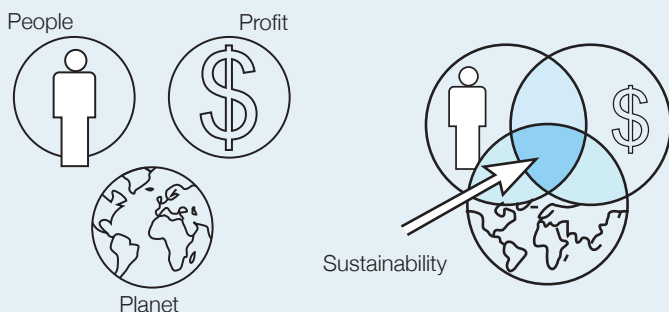
Innovations are made each day that reduce the environmental footprint of ships. Improvements to the engines, better propeller



Historical timeline for transition of marine fuels from 1780 to 2100

Interpretation of sustainability

Sustainability is becoming increasingly important in every aspect of today's society, because of exponential human population growth, enhanced technical skills, and consequently a much larger pressure on the environment. Sustainable use implies that business is economically viable, has a low ecological impact, and is socially acceptable. Thus, a practical application of sustainability is open to many interpretations. Sustainability can be achieved through technological innovations and environmental regulations. However, the effectiveness of innovations and regulations always depend on the professionalism and competence of seafarers: the human element. Therefore, increased awareness of the (marine) environment will contribute to sustainable use of the environment and oceans by maritime professionals.





Sustainably powered ship and solar panel on the deck

performance and high-tech coatings, as well as friction-reducing air cushions and even skysails are reducing carbon and sulphur emissions. Eco Marine Power is at the forefront of developing and supplying innovative marine renewable energy technologies for shipping which harness the power of the sun and wind. These solutions include Aquarius MRE System, Energy Sail and Aquarius Marine Solar Power which reduce fuel consumption, lower noxious gas emissions and deliver cost benefits.

Slow steaming concept

The International Maritime Organization (IMO) has set a goal to reduce greenhouse gas (GHG) emissions from existing vessels by 20–50% by 2050 and develop the Energy Efficiency Operational Indicator (EEOI) as a measure for energy efficiency. To achieve this goal IMO has suggested three basic approaches: the enlargement of vessel size, the reduction of voyage speed, and the application of new technologies.

Sustainability challenges for the maritime industry

Many problems are there to be solved before the shipping industry can be deemed sustainable, e.g., the combustion of fuel in ship engines impacts global warming, acidification, eutrophication and human health; invasive species spread via ship ballast water; the scrapping of old ships on beaches causes heavy metal

contamination; and seafarer working conditions vary depending on the flag state. Another question that arises is related to how shipping can contribute to sustainable development. IMO has developed the concept of a Sustainable Maritime Transportation System for the —safe, secure, efficient and reliable transport of goods across the world, while minimising pollution, maximising energy efficiency and ensuring resource conservation (IMO 2013).

Conclusion

The extent of human activities is increasing with the population, and changes in the natural environment and in the use of resources are also increasing. Humans are a natural component of the environment; thus, human activities should be a natural component of the environment.

Shipping companies across the world are trying to come up with innovative engineering ideas and green technologies to tackle the stringent regulations about fuel emissions from vessels. A few of them are developing zero-emission ships which would utilise a variety of green energy sources for propulsion. Energy Sail & Aquarius Marine Solar Power, low Sulphur fuel, CNG propulsion, Scrubber technology and eco- friendly propulsions are the future of sustainable shipping considering the environment factor. A safe environment is a demand for the survival of human habitation and safe seawater with the healthy living condition of marine lives. However, uplifting environmental concern and planned implementation of the proposed action in shipping is necessary to maintain significant sustainability.

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Reading Corner, Central Library & Archive

BSMRMU Library Gets Bigger and Better

Bangabandhu Sheikh Mujibur Rahman Maritime University Central Library and Archive is playing a vital role to accomplish academic activities of its patrons. To expand the frontier of research-based knowledge, every year the university is commencing new programmes. As a result, the library needs to enrich its collections in various subjects to meet the users' needs. Keep that in mind, the university authority has refurbished and shifted the library to the new floor with bigger user and shelving capacity than earlier. Now almost 30 users can study in the library at a time.

The library is emphasising to subscribe e-resources from different world recognised publishers with the help of University Grants Commission Digital Library to cope up with the modern information exploration era. Right now it is subscribing 5,700 e-books and 10,500 e-journals from Taylor & Francis, ACM Digital Library, JSTOR and Wiley Online Books. The users are able to access 24/7 to these e-resources from anywhere around the world. Besides, the library is using KOHA library management software to manage the library functions which saves the time of the users. It is also using DSpace software which works as the Digital Repository of the university's own publications like student's thesis paper, newsletter, journals, annual reports, magazines etc.



The library has enriched the collections of books in various subjects to meet the user needs

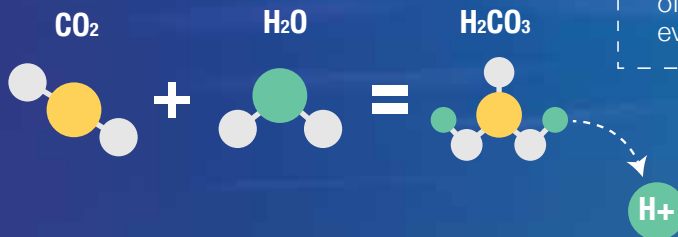
WHAT IS OCEAN ACIDIFICATION?



HOW DOES IT WORK?

The ocean absorbs lots of CO₂ from the atmosphere.

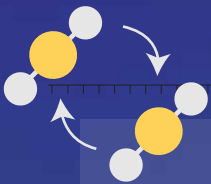
Different things happen to CO₂ once it's in the ocean.



The amount it absorbs is the same as every person on the earth throwing a bowling ball of CO₂ into the ocean everyday

Some of the CO₂ combines with water to form Carbonic Acid, which then breaks apart, releasing a Hydrogen ion.

Hydrogen ions make the ocean more acidic.



HISTORICALLY

CO₂ addition and removal were in equilibrium

BUT TODAY the rate of CO₂ addition is **100x FASTER.**

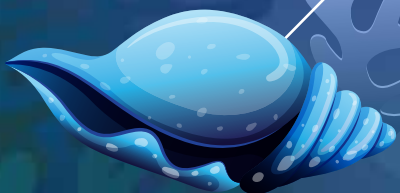
The ocean is already **34% MORE ACIDIC.**

WHAT'S LIKELY TO HAPPEN?

Evidence about the effects of ocean acidification is building, but scientists are uncertain about the extent of the changes. Here are some likely scenarios:

It will be more difficult for many animals to build shells. One reason for this is less Carbonate in the ocean water- a necessary building block in skeletons and shells. Animals like corals and mollusks are at risk.

The shells of very small algae could also be affected. As these form the base of the marine food web, their dwindling numbers might change ocean ecosystems completely.



WHAT CAN WE DO ABOUT IT?

We can't stop ocean acidification entirely, but we can do our best to mitigate the impacts and protect those affected.

1.

As individuals, we can **reduce our carbon footprint** and buy products that support sustainable fisheries and aquaculture.

2.

As societies, we can harness knowledge about marine biology through research and focus on **monitoring** and **forecasting** changes.



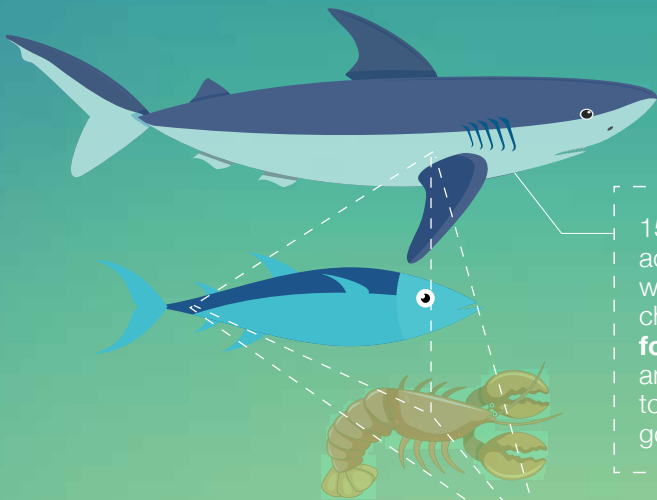
3.

Support initiatives and policies that **reduce carbon emission**.

4.

Protect vulnerable societies, such as island communities that depend on reefs for protection and seafood for protein.

By **2100**, the ocean will probably be **150%** more acidic

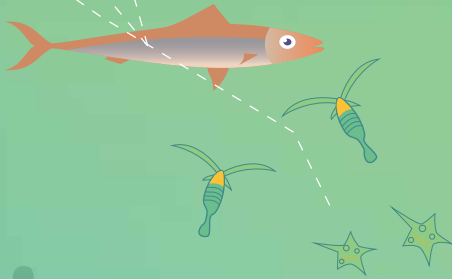


150% more acidic ocean will likely change **entire food webs**, and might lead to species going extinct.



In a worse-case scenario, ocean acidification and warming could mean our grandchildren know only **dead** reefs covered in algae and abounding with **jellyfish**... this is likely when ocean acidification is coupled with warming of the surface waters.

Some organisms might **benefit from ocean acidification**, like certain sea grasses.



Seminar calls for combined efforts and proper utilisation of maritime resources



Maritime experts from different countries urged in a seminar for concerted efforts and appropriate utilisation of maritime resources for the continuation of economic development of Bangladesh.

Speakers at the seminar titled "Maritime Good Governance towards Sustainable Development" said that neighbouring countries of South Asian region should come forward and work together emphasising on maritime resources and proper utilisation of those resources in order to enjoy continuous economic growth. They said, ocean covers 71% of the earth's surface and contains 97% water of the world, therefore, it is necessary to save the maritime resources for the sake of the people of the world.

The Security Adviser to the Prime Minister, Major General (retd) Tarique Ahmed Siddique said that after independence, even before the promulgation of UNCLOS-III in 1982, Bangabandhu enacted the Territorial Waters and Maritime Zones Act 1974. He also said that under the leadership of Hon'ble Prime Minister Sheikh Hasina, the country had successfully demarcated her maritime boundaries and obtained maritime territory of 1,18,813 square kilometres.

"This has unfolded new opportunities for optimum utilisation of the sea and its huge living and non-living resources for sustainable development of Bangladesh and concerned littoral states. Presently, the government has undertaken a challenge to become a middle-income country by 2021 and a developed one by 2041," he said.

Maersk to start an end-to-end logistics solution in Bangladesh

The World's largest container shipping company, Maersk Line, will start an end-to-end logistics solution service in Bangladesh by January 2019.

According to Maersk officials, the company will house its operations and its logistics provider Damco under one roof. On September 19, Maersk said that it will split the activities of its freight forwarding division Damco into two units, with origin-destination services rolled into Maersk and core forwarding kept within Damco.

Managing Director of Maersk Line South Asia, Steve Felder said, "We focus now on offering simple, end-to-end logistics solutions to local customers, which will enable them to reach new markets and focus on their product's development."

According to Maersk officials, Maersk provides end-to-end solutions in many countries globally. Since 1996, Maersk Line has been offering services in Bangladesh. The company provides regular services to transshipment hubs in Colombo, Sri Lanka, Tanjung Pelepas, Malaysia and Singapore, as well as weekly services to the Asia-Europe network.



Japan to promote safe and secure shipping in region

To promote safe and secure shipping in the region as well as for good order and law enforcement at sea, Japanese Ambassador to Bangladesh Hiroyasu Izumi has reemphasised on the importance of cooperation among the members of Asian coast guard agencies and organisations.

Hiroyasu Izumi also introduced Japan's assistance to enhance maritime law enforcement capacity and disaster prevention in various countries including grant aid to provide rescue boats to Bangladesh Coast Guard.

The Japanese Ambassador made the said remarks at a reception party on the occasion of the visit of Commandant, Japan Coast Guard, Admiral Shuichi Iwanami held at his official residence recently.

Japanese Embassy in Dhaka said that the Commandant of Japan Coast Guard attended the 14th Head of Asian Coast Guard Agencies Meeting (HACGAM) held in Dhaka from October 23-27 hosted by Bangladesh Coast Guard.

In that meeting, HACGAM members from 17 countries of this region, including the then Director General of Bangladesh Coast Guard (BCG) Rear Admiral AMMM Aurangzeb Chowdhury (present Chief of the Naval Staff), were present.

The capacity building up of coast guard organisations of the whole region on maritime security and safety is the aim of HACGAM.

The first HACGAM was held in 2004 based on a proposal by Japan, and since then it has been continuing to be held almost every year.

EU invites Bangladesh to take blue economy benefits from 'Horizon 2020'



In Bangladesh's diplomacy, the blue economy has become a buzz word and the maritime resource is largely untapped. The country needs to invest in knowledge and in maritime skill development in order to encourage innovation and business. To synchronise with the local need, the head of the European Union delegation in Dhaka has invited Bangladeshi research organisations and private sector players to take benefits of its flagship 'Horizon 2020' programme for blue economy-related activities.

In 25th November, a seminar, titled "Blue Economy and EU Horizon 2020" was held in Pan Pacific Sonargaon hotel in Dhaka. The foreign ministry and the EU Delegation in Dhaka co-organised the seminar to raise awareness on the blue economy.

Ambassador Ms. Rensje Teerink, Head of Delegation of the European Union to Bangladesh asked Bangladeshi research organisations and private sector to invest their "time and effort" in exploring opportunities in the blue economy in the context of the H2020 programme which funds research and innovation in Europe and

beyond. "EU stands ready to support Bangladesh with its future maritime vision," said Ambassador Teerink.

Retired Rear Admiral Md Khurshed Alam, secretary to the maritime affairs unit at the foreign ministry, sought EU's cooperation in "mariculture" in open water in the Bay of Bengal. "We'll need culture technology in open water in the sea for that," he said, seeking EU's support.

Seminar emphasised on HR condition in marine fisheries sector

In a seminar titled 'The contribution of human rights to the sustainable development of coastal fisheries and poverty alleviation in Bangladesh', speakers emphasised on the importance of improving the human rights condition in the country's marine fisheries sector.

In the two-day long multi-stakeholder seminar that ended in 1st October, speakers also stressed upon the ocean provided critical ecosystem services and nutrition, and supported human wellbeing and livelihoods, employment and economic growth.

The seminar was organised marking the launching of a 30-month research project, supported by the Danish Institute for Human Rights (DIHR). Aiming to develop good practices, tools and guidance to identify, address and monitor the human rights implications and impacts of the fisheries and aquaculture sectors in Bangladesh the project, to be jointly implemented by Manusher Jonno Foundation (MJF), Bangladesh Institute of Labour Studies (BILS) and COAST Trust. The project will also focus on responsible business and human rights, particularly in relation to Sustainable Development Goal 14 on Oceans.

Earlier at the inaugural session on Sunday, DIHR senior adviser Sille Stidsen highlighted global perspectives on sustainable oceans.

She said, the Bay of Bengal of Bangladesh is blessed with rich coastal and marine ecosystems and the recent solutions of longstanding maritime boundary disputes had paved the way for Bangladesh towards adopting ocean and water resource centric approaches towards pursuing economic development.

IMO Launches Phase II of Bangladesh ship recycling programme



To promote safe and sustainable ship recycling practice in Bangladesh, the International Maritime Organization (IMO) has launched the second phase of a project. Under a USD 1.1m agreement between IMO and the

Government of Norway, the Safe and Environmentally Sound Ship Recycling in Bangladesh (SENSREC) Phase II Project will be conducted. The project is designed to build capacity within Bangladesh to create a legal, policy and institutional reform roadmap for enabling the country to agree to the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong Convention).

The 19-month long project will also train several stakeholders to achieve its goals in accordance with the Hong Kong Convention requirements.

Norway Ambassador to Bangladesh Sidsel Bleken said, "Norway is pleased to launch phase II of the project and to continue supporting Bangladesh on its road in compliance with the Hong Kong Convention. The Government of Bangladesh and the ship recycling industry as well as the international ship-owners, have a joint responsibility in making this happen."

Bangladesh is currently estimated to be one the world's top five ship recycling countries in terms of capacity, along with China, India, Pakistan, and Turkey. These five countries account for 98% of the world's known ship recycling activities.

Agreements signed between India and Bangladesh for cargo and cruise movements



According to a top official of India, India and Bangladesh have reached to several milestone pacts that include using two ports of Bangladesh for goods movement and a pact for cruise movement to give a boost up to waterway connectivity.

As a result of secretary-level talks between the two nations and the Standing Committee meeting under 'Protocol on Inland Water Transit and Trade' (PIWTT) between high-level delegations, the pacts were signed.

The Indian shipping secretary Gopal Krishna told reporters, "The two countries have signed an agreement to use Chattogram and Mongla ports in Bangladesh for transportation of goods to and from India. A Standard Operating Procedure (SOP) has also been signed for movement of passenger and cruise services,".

The secretary added, "In addition to this, an addendum to 'Protocol on Inland Water Transit and Trade' (PIWTT) between India and Bangladesh has been signed for inclusion of Dhubri in India and Pangaon in Bangladesh as new Ports of Call,".

It was also agreed between two countries that a Joint Technical Committee will explore the technical feasibility of operationalisation of Dhulian-Rajshahi protocol route up to Aricha and the reconstruction and opening up of Jangipur navigational lock on river Bhagirathi subject to the provisions of the Treaty between India and Bangladesh on Sharing of Ganga Waters at Farakka, 1996.



Gowher Rizvi urged for more research to tap blue economy potential

On 24th November, 2018 a discussion on 'Potential of Blue Economy in Transforming Future Bangladesh' was held in Krishibid Institution, Khamarbari, Dhaka where Prime minister's international affairs adviser Gowher Rizvi was present. He stressed on conducting research and developing skilled manpower aiming to tap the blue economy potential.

He said, "We need to give more importance on research and knowledge. We have made great strides... we want to fully utilise the opportunities. Without research, without building human resource capacity, without developing skills, we will not be able to do that,".

The discussion was arranged by Bangladesh Agricultural Economists Association (BAEA).

Secretary (maritime affairs unit) of the ministry of foreign affairs Rear Admiral Md Khurshed Alam (retd) made a PowerPoint presentation while BAEA secretary general professor M Kamruzzaman also spoke at the discussion.

Md Khurshed Alam, in his PowerPoint presentation termed the Bay of Bengal as the third neighbour and highlighted some of the aspects of blue economy like marine aquaculture, blue biotechnology, marine genetic resource, maritime transport shipping, coastal shipping, and introduction of long-line fishing, cruise line tourism, offshore wind energy and seabed mining.

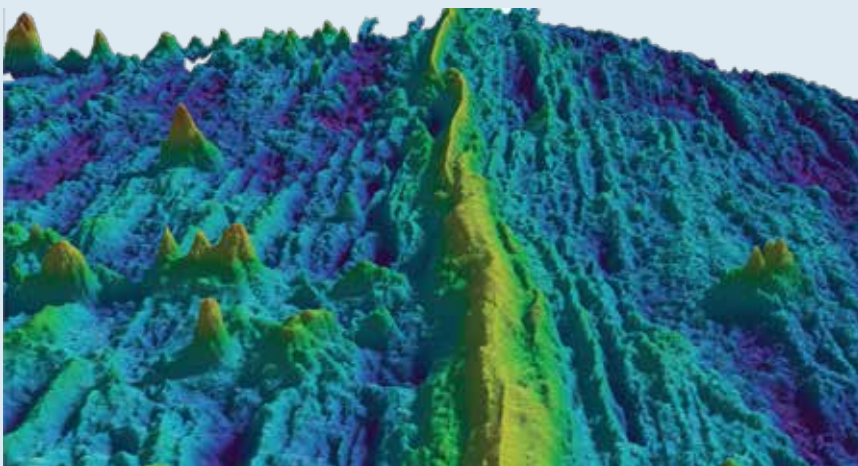
Marine scientists, researchers and scholars from the University of Dhaka and Bangladesh Agricultural University, and representatives from the ministries of fisheries and livestock, shipping, energy and mineral resources, civil aviation and tourism took part in the discussion.

Underwater mountain range - a mid-oceanic ridge

Formed by plate tectonics, a mid-ocean ridge or mid-oceanic ridge is an underwater mountain range.

This uplifting of the ocean floor occurs when convection currents rise in the mantle beneath the oceanic crust and create magma where two tectonic plates meet at a divergent boundary.

The mid-ocean ridges of the world are connected and form a single global mid-oceanic ridge system that is part of every ocean, making the mid-oceanic ridge system the longest mountain range in the world, with a total length of about 60,000 km.



World Maritime university graduates confirm commitment to education



The United Nations' two maritime educational institutions – the World Maritime University (WMU) and the IMO International Maritime Law Institute (IMLI) are firmly committed to the Sustainable Development Goals. They are focussed on delivering high-level education in maritime-related subjects to students from developing countries.



On 4 November, 2018, a graduation ceremony was held for WMU's class of 2018. The ceremony comprised 267 graduates from 71 countries – a third of whom are women. There were 124 MSc graduates from the WMU's Malmö headquarters

and 58 from its China programme, plus two PhD graduates and 83 graduates from WMU's distance-learning programmes.

It is reported that the class of 2018 brings the total number of WMU graduates to 4,921 from 168 countries, many of whom have gone on to hold senior positions in their countries and in the wider maritime world. Current IMO Secretary-General and WMU Chancellor Kitack Lim is himself a WMU graduate.



WMU-Sasakawa GOI launches Land-to-Ocean leadership research programme

A Land-to-Ocean Leadership PhD Scholarship and Post-Doctoral Fellowship Programme is launched by the World Maritime University (WMU) WMU-Sasakawa Global Ocean Institute (GOI), with the support of the Swedish Agency for Marine and Water Management (SwAM) and the Federal Ministry of Transport and Digital Infrastructure of Germany (BMVI).

According to media report, the programme will generate practical methods for implementation of a land-to-ocean perspective of governance and management and contribute to meet the targets as set by the United Nations 2030 Agenda on Sustainable Development, in particular Goal 14 that focuses on sustainable management of the oceans. The project will facilitate increased understanding and knowledge of the links between ecosystems on land, in freshwater and marine waters and explore different sustainable management initiatives.

DP World to develop groundbreaking Storage Rack for Containers



An agreement to develop a storage rack system for shipping containers at Jebel Ali Terminal was signed by DP world and materials-handling firm AMOVA.

It is reported that instead of stacking containers directly on top of each other, the system places each container in an individual compartment within

an eleven-story-tall steel rack. This method creates three times the capacity of a conventional container terminal of equivalent size.

As an added benefit, the rack carries the weight of the upper containers in the stack, so a container towards the bottom can be accessed without restacking all the boxes on top of it first.

The storage system was originally developed by AMOVA for storing metal coils weighing up to 50 tons each, in racks as high as 15 stories. While AMOVA is not the only firm to market high bay rack storage designs-similar systems exist for storing palletised cargo, cartons, trays, air cargo containers, and refrigerated goods - it is a specialist in systems for heavy applications, as it started out designing solutions for the metallurgical industry. It is the first company to transfer high bay storage technology to the container port industry.

Singapore wins Maritime RobotX challenge



On 15 December 2018, 15 teams from three continents met on the beaches of Honolulu, Hawai'i, for the 2018 Maritime RobotX Challenge. The top prize was won by the National University of Singapore, while Australia's Queensland University of Technology and Embry-Riddle Aeronautical University placed second and third respectively. The week-long biennial autonomous maritime system competition is co-sponsored by the Office of Naval Research (ONR), the Association of Unmanned Vehicles International Foundation and NAVATEK, a Hawai'i-based company that designs ships, small crafts and other amphibious vehicles.

By using the Wave Adaptive Modular Vessel (WAM-V) surface craft, all teams had to outfit their vessel with propulsion, sensor and control systems. These systems must be programmed to recognise and compute various data, to help the WAM-V make decisions autonomously as it traverses a course of seven increasingly difficult, maritime-related tasks. The vessels also have to deal with environmental issues like wind, rain and sun glare.

Ocean Literacy 2018 conference stresses SDG 14

The Ocean Literacy Conference was held in Malmö, Sweden from 6 to 7 December 2018. President Doumbia-Henry was a keynote speaker of the conference that brought together nearly 100 participants to inspire and debate marine education and ocean literacy from a local perspective, focussing in particular on coastal cities. The event was held in support of achieving UN Sustainable Development Goal (SDG) 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

The conference discussed how to instill knowledge about the sea at an early age, motivating future generations to undertake preventative work and increase knowledge and understanding regarding the importance of our ocean. Capacity development and knowledge alliances for the sea, the role and responsibilities of coastal towns and cities, and ocean literacy in schools were main topics of the conference.



India decides to use methanol as marine fuel

It is reported that the Inland Waterways Authority of India (IWAI) has taken decision to start a project to present the use of methanol as maritime fuel. This is an attempt to boost shipping on Indian waterways.

According to local media, IWAI vice-chairman Pravir Pandey said that they have placed order for 3 work boats to retrofit engines and 6 low draft cargo vessels of 1,000-2,000 tons' capacity to Cochin Shipyard that will use methanol as fuel with technology from Sweden after a go ahead from NITI Aayog. IWAI has marked that there is draft issues which can be as low as 2 metres

but the design of the cargo vessels has been offered by DST of Germany that requires just 1.5 metres draft. This is an important factor for inland waterways' success.

Across the shipping industry, methanol has begun to offer a long-term solution for the industry's carbon emission reduction strategy. Methanol is superior to fuels not naturally liquid, while it is not classified as 'more dangerous' than other fuels. In fact, it has better fire safety over gasoline. Moreover, a key issue in the uptake of methanol is the fact that relevant infrastructure already exists, and it can be extended by adjusting the existing tanks.

Top maritime educators highlight effective MET



25th International Maritime Lecturers' Association (IMLA) international conference was held in Manila from 22nd October 2018 to 24th October. During a press conference conducted by the Maritime Press Club of the Philippines (MPCP) at the Diamond Hotel, Manila, IMLA Chairman Dr Yongxing Jin from the People's Republic of China underscored the vital role of maritime educators for students faced with the rapid development in the maritime world.

This year's IMLA conference, which for the first time was joined by its two subcommittees – the International Maritime English Conference (IMEC) headed by Prof. Clive Cole, and International Conference on Engine Room Simulators (ICERS) chaired by International Association of Maritime Universities (IAMU) executive director

Dr. Takeshi Nakazawa, was hosted by the Philippines with MAAP president VAdm Eduardo Ma. R. Santos AFP (ret.) as chair of the local organising committee. A total of 104 delegates from 27 nations, including the Philippines attended the historic maritime event.

Cdre M Ziauddin Alamgir, Dean, Faculty of Maritime Governance and Policy and Mohammed Mojahid Hossain Chowdhury, Lecturer, Department of Port and Shipping Management of BSMRMU jointly presented a paper titled "Maritime Education and National Economic Growth: Bangladesh Perspective" on the aforesaid conference.

India Maritime Awards acknowledges the youngest entrepreneur



13 years old Tilak Mehta, an 8th Grade student of Garodia International Centre for Learning Mumbai, won the title, 'Youngest Entrepreneur in the Logistics Sector' at India Maritime Awards-3rd Edition for his start up Papers N Parcels launched in July, 2018.

A nascent entrepreneur, Tilak wanted to ease the bottlenecks to get books couriered within the city

the same day. Tilak decided to 'uberise' the courier service by using mobile based software to leverage a network of 5000 lunchbox deliverer. This meant that the deliveries could be made for prices as low as Rs.40 to a maximum of Rs.180.

It is certain that Tilak's efforts will inspire other students to come up with equally socially important and clever innovations that make a difference to society.

ETF consortium seeks future skills of maritime sector

To address the issue of future skills requirements of the maritime industry, a Europe-wide consortium has launched a four-year project 'Futureproof Skills for the Maritime transport sector (SkillSea)' that will be co-financed by the European Commission.

The ETF Consortium, a trade union organisation that represents the trade unions from the European Union, European Economic Area, and Central and Eastern European countries, is established by the European Community Shipowners' Associations (ECSA) and the European Transport Workers' Federation (ETF). It is led by the Rotterdam-based STC Group. The consortium includes 27 maritime authorities, shipping groups, shipowners' associations, maritime trade unions and maritime education providers from 16 European countries.

The four-year project is designed to develop strategies to discover and meet future skills needs of the maritime sector and attract new people from across Europe to join the sector.

SkillSea aims to outline technological developments in ship operation and their impact on the industry's skills needs. It also intends to ease the mobility of seafaring labour as well as strengthen co-operation between education providers, competent authorities and industry.

Researchers found Ocean Acidification causes toxic algae blooms



If carbon dioxide concentrations in the atmosphere and in the ocean continue to rise, this could fuel the mass development of toxic algae, with

far-reaching consequences for the pelagic food web, an international team of researchers has found.

In a two-month field experiment off the Canary Islands, an international group of scientists led by the GEOMAR Helmholtz Centre for Ocean Research Kiel has uncovered a possible consequence of ocean acidification that could massively affect the marine food web.

The team, including Nicole Aberle-Malzahn from NTNU's Department of Biology, has described how the toxic alga *Vicicitus globosus* strongly increased its abundance at carbon dioxide concentrations above 600 ppm (parts per million) and went into mass development above 800 ppm. These results were published in the 19 November issue of *Nature Climate Change*.

Tideworks, UMIP, MIT-Panama and CMU on strengthening professional technical maritime education



On 12 November 2018, at the Terminal Operators Conference (TOC) Americas, Tideworks Technology, Inc., a full-service provider of comprehensive terminal management and planning software solutions announced the signing of a letter of

intent for academic collaboration between Tideworks, International Maritime University of Panama (UMIP), Caribbean Maritime University (CMU) of Jamaica, and Manzanillo International Terminal-Panamá, S.A. (MIT).

“The cooperative development of diploma programmes and highly focused workshops, along with the availability of technical-training scholarships, will represent a significant contribution to the advanced learning of our university students,” explained UMIP rector, Aládar Rodríguez. “We believe this level of access to real-world terminal operations and the integration with hands-on TOS exposure will provide an unparalleled experience for professional development and training.”

The letter of cooperation and the ensuing agreement will provide a significant impetus for maritime education. “We are proud to be part of this effort,” said Carlos Urriola, president of SSA International representing MIT, “and very much look forward to working toward its success.”

ASEAN adopts ‘The Regional Oil Spill Contingency Plan’



A cooperation mechanism named, ‘The Regional Oil Spill Contingency Plan’ has been adopted for joint oil spill preparedness and response among member states of the Association of Southeast Asian Nations (ASEAN).

The International Maritime Organization (IMO) said that the plan was adopted at the 24th ASEAN Transport Ministers Meeting held in Bangkok, Thailand, on November 8.

The Regional Oil Spill Contingency Plan provides for a mechanism whereby ASEAN member states can request and provide mutual support in response to any oil spills. It also ensures a common understanding and effective integration between affected and assisting ASEAN member states, in the event of incidents involving oil spills.

Since the signing of the memorandum of understanding (MoU) on an ASEAN Cooperation Mechanism for Joint Oil Spill Preparedness and Response in 2014, the IMO has delivered various national and sub-regional activities in the different ASEAN countries to support the concrete implementation of the MoU, including a recent IMO workshop held in Malaysia in July 2018 aimed at familiarising stakeholders with the content of the final draft of the plan.

Jamaican institution ties Nigeria on maritime education



The Caribbean Maritime University (CMU) based in Kingston, Jamaica, recently signed a series of Memoranda of Understanding (MoU) with Nigerian educational

institutions to enhance cooperation between the Caribbean institution and Nigeria’s educational sector.

According to the MoU, CMU, which is recognised worldwide as one of the leading specialist universities in the Western Hemisphere, will establish partnerships between three major Nigerian institutions.

The official release from the CMU delegation defines the objectives of the Memoranda of Understanding as follows:

- The MoU with the Nigeria Maritime University (NMU) will allow CMU to assist the NMU in the development and expansion of its Maritime and engineering curricula, the development of faculty and student exchange amongst others.
- Through this MoU, CMU will assist UNILAG to expand its maritime and engineering programmes. It will facilitate joint research and publications, student and faculty exchanges among others.
- This MoU will facilitate the expansion of Maritime, engineering and logistics programmes. Faculty and student exchanges for Joint research and publication.
- These MoU’s will strengthen the relationship between Jamaica and Nigeria and South – South cooperation.

SpaceX to launch satellites to pinpoint radio signals from dark ships

SpaceX will launch three satellites that will scan the world for radio signals of dark ships. The satellites belong to a startup called HawkEye 360 and aim to help monitor global activity in the oceans using geospatial information.

HawkEye 360 will have a trio of satellites and will be the first commercial operation to capture radio frequency feeds.

HawkEye’s three satellites will have the ability to triangulate and pinpoint any given radio signal. As a result, the company aspires to have 10 separate, three-satellite flocks zooming around the globe. With that much hardware, it will scan any part of the world in less than 30 minutes.

The software launched by the company will receive unique radio signals from ships to small vessels, track them over time and also assume their future movements. In that way, the cluster will be able to triangulate hard-to-pinpoint signals from satellite phones, push-to-talk radios, and marine radar. Ships need these and other radio-emitting tools to voyage the seas.

Learning English Efficiently: What has Worked So Far

Raju Ahmmed

The one question that I often encounter as an English teacher is how someone can learn English to become an efficient user of the language and the books they can study for this purpose. Neither there is any bible book that can satisfy their needs nor is learning a matter of one week or month. Rather, learning a foreign language is a life-long process.

Learning becomes easier and faster when learners get exposure to the target language. Except the university classes, students hardly get the environment in which the medium of communication is in English. So, how can they get the exposure? Certainly, it has to be made artificially. Students can obviously converse with their peers in English; go to the library and read the English newspapers in their class breaks; listen to English news, and watch English documentaries and movies in their free time.

The first and foremost task of a foreign language learner is to practice the target language. I have often observed my students making mistakes in subject-verb agreements, singular-plural nouns and articles. All these happen not because they do not know the grammatical rules but because they do not practice to speak the language and so often they make tiny mistakes in their speech due to their slip of the tongue. To overcome these unintentional mistakes, students need to communicate in English and for that they need good speaking partner. Both of the partners have to listen to each other and give feedback when the mistakes occur.

The second importance needs to be given to developing listening skills. My students often say that they can understand the class lectures in English but face difficulties to comprehend when they listen to the speeches of the native speakers. It happens because many of us are not familiar with the International Phonetic Alphabet (IPA). It is true that the English language has twenty-six letters in their alphabet but learning correct pronunciation requires learning the forty-four IPA symbols. However, the online speaking dictionary can be an alternative to learning IPA. The learners need to click on the words to get the right pronunciation. Again, getting exposure to native speakers is very easy. You just need your mobile and a headphone and then switch on your FM radio in 100 hertz to listen to global English on BBC. Initially, the learners have to listen to the speeches patiently. Along with the BBC, the students can also listen to English songs. For that, FM radio 'Edge 95.6' is a good resource as this station mostly runs the English songs. This is how a day will come when the learners can understand 100% of what is being spoken in news or radio or in a native speaker's speech. The more they listen, the more they can enhance their listening skills.

Thirdly, learning new words every day is excellent for enriching vocabulary and for speaking in novel sentences. Keeping a diary for noting down the meaning of unknown words works perfectly for this purpose. Sometimes hanging a board in your room and writing new words with the meanings work well because the learning goes on subconsciously even if when the learners are taking rest or just lying on the bed.

Fourthly, the reading and writing skills have to be equally emphasised along with other skills. To be a fast reader, students should read English dailies. Although it is difficult to read the entire English

newspaper, students should at least read one news article a day. Besides, they need to practice writing on different topics and get their sentences corrected by the English teachers. Writing a page in English is not an easy task. So, they can summarise the book chapters they read every day and this will tremendously help them the night before the exam.

Finally, watching English videos is also very helpful for foreign learners as they can remember better when they can visualise the situations. For this, watching English documentaries, news clips and English movies with subtitles work favourably for the learners. Besides, translation is also a good exercise for being an expert user of the language. The learners should feel curious to translate every Bangla sentence that they come upon in their surroundings or any Bangla sentence that comes to their mind. For assistance, the English teacher is always available in the counselling hours to consult the students.

Most importantly, learners can learn English online. When there is no one to help them, they can go online and learn the target language online. For instance, the learners can visit some good resources for tutorials in Oxford Online English (<https://www.youtube.com/user/oxfordonlineenglish>), British Council website (<https://www.britishcouncil.org>) and American English website (<https://americanenglish.state.gov/>). All these sites contain a large number of audio-video materials both for learners and teachers.

Learning the English language does not mean studying a course in one semester but it means being a life-long learner. When there is no English course, students can learn on their own by studying English newspapers, listening to English news, songs, practising speaking with their peers, watching video clips and visiting some educational websites. The ultimate purpose of learning is communication and it's very cheap and easy if you just try.

Raju Ahmmed

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Know Your Safety in the Sea

Saif Khan Sunny

Everybody likes to touch the water of a sea. That's why people go to the sea for a vacation in order to revive from the hustles and bustles of city lives. Nowadays, the coastal areas are becoming tourist place. As the roses have thorns, we may face various accidents while observing the enormous beauty of the sea. But If we are aware of dangers, we can easily avoid them. Every year many people die by drowning in the sea. First of all, people who cannot swim should not go into the sea alone without wearing a life jacket or assistance of lifebuoys. During high tide, it is safer because that time water comes towards shore but during low tide water moves towards the deep sea, therefore, there is a risk to float with the water that rushes into the sea. Another dangerous thing is the rip current. This is a kind of water current which can occur near beaches and it is a strong,

localised and narrow current of water which moves directly away from the shore. It becomes strongest near surface water.

Rip currents are hazardous for the tourists at the sea. Swimmers who are caught in a rip current and who do not understand what is going on and who may not have the necessary water skills, may be attacked by panic or exhausted by trying to swim directly against the flow of water. Rip current can be visually identified from the shore before entering the water. Lifeguards, swimmers, surfers, boaters and divers who may need to avoid a rip current, should be able to identify it from the shore. Rip currents often look a bit like a road or a river running straight out to sea and easy to notice and identify when the zone of breaking waves is viewed from a high vantage point.

The water often looks flat at the rip, in contrast to the lines of breaking waves on either side of the rip. The surface of the rip sometimes looks foamy, because the current is carrying foam from the surf out to open water. The rip may differ in colour from the surrounding water; it is often more opaque, cloudier, or muddier, and so, depending on the angle of the sun, the rip may show darker or lighter than the surrounding water. It is sometimes possible to see that foam or floating debris on the surface of the rip is moving out, away from the shore. In contrast, in the surrounding areas of breaking waves, floating objects are being pushed towards the shore. So, if we swim in the safe flagged zones, our tour will be safe and enjoyable.

Saif Khan Sunny

Undergraduate student

Department of Oceanography and Hydrography



Maintaining Eco-friendly Tourism in Coastal Area

Sheikh Fahim Faysal Sowrav

Tourism is traveling for pleasure or business; also the theory and practice of touring, the business of attracting, accommodating, and entertaining tourists, and the business of operating tours. Tourism may be international or within the traveller's country. Bangladesh's tourist attractions include historical places, resorts, beaches, picnic spots, forests and tribal people, wildlife of various species. Activities for tourists include angling, water skiing, river cruising, hiking, rowing, yachting, and sea bathing etc.

Though Bangladesh does not get a big number of foreign tourists, it has millions of domestic tourists who go on vacations often. According to different tour operators, the number of domestic tourists rose to 70 lac in 2017 from 60 lac a year earlier.

Place of tourism can be affected by social malpractices. (i) Negative social effect: Visitor's behaviour can have a detrimental effect on the quality of life of the host community. For example, crowding and congestion, drugs and alcohol problems can occur. (ii) Negative environmental effect: Tourism poses a threat to a region's culture and natural resources, through overuse.

The upsurge of tourism creates employment opportunities, which in turn causes migration from nearby areas to the township. To meet the excessive dwelling demand, some unplanned urbanisation has been created in the city.

Disparity in water consumption between tourists and the local population is an ever-increasing problem and, whatever the complexity of quantifying water consumption by the tourism sector, tourist water consumption is between two and three times that of local water demand in developed countries and up to 15 times the water consumption in developing countries.

Tourism and urbanisation generate direct and indirect solid waste impacts. This problem has multifaceted direction as Cox's Bazar faces difficulties arranging solid waste disposal facilities. Paurashava (City Corporation) waste disposal site is located adjacent to Bakkhali River, which leads to groundwater and surface water contamination. Some tourist resorts empty their sewage and other wastes directly into the water surrounding coral reefs and other sensitive marine

habitats. Many of the land plots which are underdeveloped or waiting to be developed as a hotel or resort in near future have been using as solid waste landfills. In one hand these sites pollute the aesthetics of the adjacent area; on the other hand, it is becoming one of the great threats in groundwater contamination.

The beach area ranges from Cox's Bazar to Teknaf has been already taken for construction of hotels and resorts. Construction along the beach continuously changes the beach morphology by the construction activities like dredging, sand removal, and destruction of mangrove forests. Seagrass meadows have been removed to create open beaches.

Tourism can turn local culture into commodities when religious traditions, local customs and festivals are reduced to conform to tourist expectations. Social instability is growing over harnessing the benefit of tourism. As a result, the crime rate is getting higher unexpectedly. Cultural clashes may arise due to income inequality between locals and tourists, who are spending more at tourist spot than at home.

Tourism has significant effects on socio-cultural elements in Cox's Bazar. Considering tourism from a socio-cultural perspective, it affects traditional lifestyle, changes in occupational types, income inequality, and local values.

Well-Designed tourism policy is of immense importance for combating the detrimental effects of mass tourism. To achieve sustainable tourism in Cox's Bazar area, environmental concerns are to be prioritised and the socio-cultural imbalances are to be prevented. However, the local authorities, tourism sector and tourists need to be harmonised in tandem to overcome the adverse effects of mass tourism in Cox's Bazar area.

Sheikh Fahim Faysal Sowrav

Undergraduate student

Department of Oceanography and Hydrography



ECNEC approves project for BSMRMU permanent campus in Chattogram



On October 30, 2018, the Executive Committee of the National Economic Council (ECNEC) approved the development project titled “Establishment of the Permanent campus of Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh” (1st phase). The total estimated cost of the project is BDT 1183.9684 crore. The project is scheduled to be completed by December 2021. It is highly anticipated that the project will contribute to the maritime education and training smooth functioning of Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh and open a new era in maritime education. BSMRMU authority is grateful to Prime Minister Sheikh Hasina for her visionary decision.

BSMRMU Team pays a visit to Dalian Maritime University, China

BSMRMU team participated and presented a research paper in the 2nd Dalian Maritime University (DMU) International Conference on Maritime Education and Training held from 27-28 October 2018 in Dalian, China. This conference is held once in two years and this time the theme of the conference was ‘Rising to the Challenges: Smart Ships and MET’. The three-member team of BSMRMU consisted of Capt Abu Taher Golam Md Sarker (retd), Controller of Examination; Mansura Akter, Assistant Professor in Maritime Law; and Raju Ahmed, Lecturer in English. The conference was attended by Chinese government officials, Director of IMO Maritime Safety Division, DMU officials, renowned speakers from China, Norway, Ukraine, Japan, Pakistan, Indonesia, and Bangladesh. The BSMRMU team presented a paper titled ‘Maritime English Education: Bangladesh Perspectives’ along with other national and international speakers.



FEOS field trip to enhance oceanography interest

To gather practical knowledge and further enhance interest for learning oceanography, Faculty of Earth and Ocean Science (FEOS) of BSMRMU organised a ‘Marine Planktology, Sedimentology Lab work and Field trip’ in Cox’s Bazar and Chattogram for 2016-17 batch students. A team of 35 pupils including Dean of FEOS, teachers, officers and students set forth their journey for the training for 13 days from 30th October to 10th November 2018. During their stay in Cox’s Bazar, student visited several research institutes including Beach Sand Exploitation Centre, one of the centres of the Bangladesh Atomic Energy Commission to learn about the geological exploration and exploitation of valuable heavy minerals like Zircon, Rutile, Monazite, Garnet etc., from the beach sand of the Bay of Bengal. Students also visited Fisheries Research Institute and Bangladesh Oceanographic Research Institute where they learned about the marine resource and different oceanographic research instrument which garnered the seed of inspiration in the mind of the young learners for future research in these sectors.

BSMRMU delegates present paper in IMLA conference

25th International Maritime Lecturers Association (IMLA) Conference, 30th International Maritime English Conference (IMEC) and 14th International Conference of Engine Room Simulator (ICERS) were simultaneously organised by Maritime Academy of Asia and the Pacific (MAAP) from 22-25 October 2018 in Manila, Philippine. Cdre M Ziauddin Alamgir, Dean, Faculty of Maritime Governance and Policy and Mohammed Mojahid Hossain Chowdhury, Lecturer, Department of Port and Shipping Management jointly presented a paper titled "Maritime Education and National Economic Growth: Bangladesh Perspective" in the aforesaid conference.



BSMRMU and CDA strengthen ties for implementing DPP of permanent campus



A coordination meeting between Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh (BSMRMU) and Chattogram Development Authority (CDA) was held on December 11, 2018, on the relocation of "Construction of Road from Kalurghat Bridge to Chaktai Canal alongside the Karnophuli River" project. A committee has been formed to find out the possible alternative to existing alignment. Rear Admiral M Khaled Iqbal, BSP, ndc, psc, Vice-Chancellor of Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh and Abdus Salam, Chairman of Chattogram Development Authority (CDA) represented their respective organisations. This coordination meeting will definitely strengthen the ties between the two organisations, which will ultimately facilitate to implement DPP of the university's permanent campus.

BSMRMU students visit maritime organisations

With an aim to go beyond academics, the fourth batch students of Master's in Port & Shipping Management and LLM in Maritime Law, second batch students of Master's in Maritime Business and first batch students of Master's in Maritime Science got an opportunity to learn practically by visiting different maritime organisations (Pangaon Inland Container Terminal, BIWTA, Department of Shipping and Radiant Ship Yard) from 19 to 21 November 2018. The main aim of the tour was to acquaint students with the role and activities of

maritime organisations. It gave the students an excellent opportunity to interact with maritime industries and know more about its overall environment. After the internal study tour, students were enriched with theoretical and practical knowledge. The tour was really a good opportunity for the students of BSMRMU to acquaint the role and activities of maritime organisations. It will be easier for them to relate practical knowledge to their theoretical education.



BSMRMU observes 'Victory Day'



On 16th December 2018, Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU) observed the 'Victory Day- 2018' at its campus located at pallabi in the capital city. The Vice-Chancellor of the university, Rear Admiral M Khaled Iqbal graced the occasion as the chief guest. The Treasurer, Registrar, Deans, Faculty members, Officers, Staffs and the students of the university attended the occasion as well. The activity of the day started by hoisting the national flag as the sun rose. The programme started through a discussion on the significance of the 'Victory Day'. Students and Faculty members of the University participated in the session as well. Later, students of the University arranged a cultural programme based on the theme of the 'Victory Day'.

Orientation programme held for Master's students

The orientation programme of the 4th batch of Master's in Port and Shipping Management (MPSM) and LLM Maritime Law, the 2nd batch of Master in Maritime Business (MMB), 1st batch of Master's in Maritime Science (MMS) and Master's in Marine Biotechnology (MMBT) of the university held on 2 October 2018. Rear Admiral M Khaled Iqbal, Hon'ble Vice-Chancellor graced the occasion as the Chief Guest.

In his speech, the chief guest expressed his hope that students graduating from this university will contribute to materialise the "Vision 2041" and "Blue-Economy Policy" of the Honourable Prime Minister through maritime research within the large maritime border as well as building their own career as skilled maritime professionals at home and abroad. Later the students were provided guidelines about the administrative management, discipline, security and environment of the university. Treasurer, Registrar, Teachers, Officers and Staffs of the university were also present at the programme.

BSMRMU team attended a seminar in North Bengal University, India

BSMRMU team participated and presented a research paper in the national seminar on "Environmental Justice Through Sustainable Water Resource Management: Issues, Challenges and Solutions" held from 29-30 December 2018 in Darjeeling, India. This seminar is arranged by the Department of Law, North Bengal University. A two-member team of BSMRMU consisted of Mansura Akter, Assistant Professor in Maritime Law; and Wahidul Sheikh, Lecturer Business Management. The seminar was also attended by academicians and government officials from India, Bangladesh and some more neighbouring countries. The BSMRMU team presented a paper titled "Environmental Injustice in Shipbreaking Industries of Bangladesh: Legal perspective" along with other national and international speakers. The BSMRMU team also called on the Head of Department, Professor Rathin Bandopadhyaya and Professor Gangotry Chakrobarty. Both of them agreed to work collaboratively with BSMRMU in future in different academic activities. The seminar ended with a cordial meeting with different people from multicultural activities and diversified thoughts.

VC graced MCC athletic competition

As the Chief Guest, Vice-Chancellor of Bangabandhu Sheikh Mujibur Rahman Maritime University (BSMRMU), Rear Admiral M Khaled Iqbal, BSP, ndc, psc graced the occasion of 'Inter House Annual Athletic Competition 2018' of Mirzapur Cadet College. After the competition, he presented trophies to the individual winners and handed over the overall champions trophy to the winner house.



Sustainable Coastal Tourism is the Key to Flourish the Tourism Industry of Bangladesh

Maritime Campus desk

Backdrop

To watch and perceive the natural beauties that are surrounded to them, people travel from one part of the world to another. Being inquisitive, they always want to get the taste of unobserved and unknown for pleasure. Monotonous workloads and the pressures of work-deadlines make people depressed. Avoiding crowded city life, breaking traditional daily life, and thus enjoying some time in a new place have natural and cultural significance. Tourism releases the tedium of one's existence and transfer joyful experiences in life. A tour is very helpful to widen the wisdom of a person.

As a special and complex industry, tourism promotion has to be directed to a large number of people in various lands of different socio-economic structures having different tastes, needs, expectation, attitudes, and behavior pattern. A travel can be domestic or international. Based on the purpose of visit, we can categorise tourism into leisure tourism, cultural tourism, religious tourism, family tourism, health tourism, sports tourism, educational tourism, business tourism etc. All those categories can be incorporated in sustainable coastal tourism concept.

What is sustainable coastal tourism?

Clean water, healthy coastal habitats, and a safe, secure, and enjoyable environment are clearly fundamental to successful coastal tourism. The term 'coastal tourism' embraces the full range of tourism, leisure, and recreationally oriented activities that take place in the coastal zone and the offshore coastal waters. Sustainable coastal tourism denotes to environment friendly land-based tourism activities counting swimming, surfing, sun bathing and other coastal recreation services and activities taking place on the coast of a sea. It is based on an extraordinary blend of resources at the border of land and sea environments: water, beaches, sun, outstanding picturesque views, rich biological diversity (birds, fishes, marine creatures, corals etc), sea food and good transportation infrastructure. Various profitable services have been developed in many coastal destinations based on those resources such as well-maintained beaches, diving, boat-trips, guided tours, bird watching tours, restaurants or medical facilities, sports centers, art museums, leisure centre, aqua park, aquarium, fun park, water park, art shop, boutique shop, art camp etc.

In the face of the current tourism growth trends, the managers and investors in tourism have become aware that sustainability is a major factor in the coastal areas since the success of tourism activities in these areas entirely depend on the quality of the fragile and sensitive environments. In the current days, most tourists seek different experiences ranging from natural and cultural attractions to sports, and gastronomy among others in a well-managed and preserved

natural environment. As a littoral State, Bangladesh shouldn't make any delay for its coastal tourism development in a sustainable way. The sustainable development of coastal tourism industry is a continuous process and consists of developing alternative forms of tourism as well as greening the existing tourism industry.

Twelve aims for sustainable tourism are: 1. Economic viability 2. Local prosperity 3. Employment quality 4. Social equity 5. Visitor fulfillment 6. Local control 7. Community wellbeing 8. Cultural richness 9. Physical integrity 10. Biological diversity 11. Resource efficiency 12. Environmental purity.

List of benefits of sustainable coastal tourism:

Benefits of sustainable coastal tourism in Bangladesh are enormous. As the country is thriving to be in the middle-income club, sustainable practices of coastal tourism can attract investment, tourists, and overall foreign currencies. The following list depicts the benefits of the sustainable coastal tourism.

- Sustainable coastal tourism generates revenue for the countries and local areas in which it occurs. In developing countries, it can be a primary source of hard currency earnings.
- Tourism enterprises can provide an important direct source of both skilled and unskilled jobs.
- Tourism investment can support the provision of infrastructure, such as transport, telecommunications, energy and water supply, that may otherwise not be available in some coastal areas and communities.
- The dependency of tourism on attractive coastal environments and culture can lead to a greater awareness of their value amongst local communities, government and other stakeholders, leading to more commitment and support for their conservation.
- Some forms of tourism investment can directly benefit the natural and cultural heritage.
- Sustainable tourism can provide an alternative source of livelihood for local communities, which may be more sustainable than their previous activities.

Environmental challenges for coastal tourism

Contemporary tourists expect more than sun, sea and sand, as was the case two decades ago. They demand a wide variety of associated leisure activities and experiences including sports, cuisine, culture and natural attractions. At the same time, local people in traditional tourist destinations are increasingly anxious to preserve their own identity, their environment and their natural,



historic and cultural heritage from negative impacts. Therefore, there are vivacious challenges to implement the concept of coastal tourism. Here are few points to ponder over:

- Poorly sited new development and sprawling urbanization can destroy natural beauty and amenity.
- Tourism development can lead to removal and fragmentation of important habitats, including sand dunes, coral reefs, wildlife, wetlands and mangroves.
- Pollution can arise from sewerage discharge, gaseous emissions, solid waste, noise, light and other sources, generated by the operation of tourism businesses and the activities of tourists.
- Coastal tourism can be a major user of local natural and non-renewable resources, including water, land, minerals and living species, including fish and crustaceans.
- Coastal areas are very susceptible to the impacts of climate change, including sea level rise, unpredictable climate, storm surges, changing temperatures and flooding.
- Coastal tourism can sometimes have only a very short season, often owing to climate conditions. This can limit the profitability of enterprises, the quality of jobs available and the benefit to local communities.

Coastal tourism in global context

In the middle of the 20th century coastal tourism in Europe turned into mass tourism and became affordable for nearly everyone. According to European Commission report, 65% of the European holiday makers prefer the coast. Furthermore, among all different parts of the planet, coastal areas are those which are most visited by tourists and in many coastal areas, tourism presents the most important economic activity. In the Mediterranean region for example, tourism is the first economic activity for islands like Cyprus, Malta, the Balearic Islands and Sicily.

Even though there is no consistent data specifically on coastal tourism, it is regarded as one of the fastest growing types of tourism in the past decades.

In 2002, an opinion poll was carried out in Germany on a sample of 7,872 people representative of 60.1 million Germans aged 14 years or over. They were asked the following question: When thinking about your next holiday, which of the following environmental factors is most important for you? The answers were as follows:

- 64.5% Clean beaches and water
- 59.1% No rubbish in the resort or in the surrounding area
- 50.0% No urbanisation of rural areas
- 45.8% Good nature protection in the holiday destination
- 51.0% No noise pollution from traffic or discothèques
- 35.1% Minimal traffic and good public transport in the destination
- 29.0% Possibility of reaching the destination easily by bus or train
- 41.8% Environment-friendly accommodation
- 18.7% Finding environment-friendly accommodation in tour operator or travel agents' catalogues
- 14.2% Easy access to information on offers with verified environment-friendly accommodation (eco-labels)

Potential places for coastal tourism in Bangladesh

Bangladesh is bounded on the south by the Bay of Bengal. The coastline of Bangladesh is about 710 km long. Country's tourist attractions include beaches, resorts, historical monuments, picnic spots, forests and tribal people, wildlife of various species.

The northern part of Bangladesh is an ideal place for culture tourism, comprising the Rajshahi division, there are archaeological sites, including the temple city Puthia in Rajshahi; the largest and most ancient archaeological site, Mahasthangarh in Bogra; the single largest Buddhist monastery, Paharpur in Naogaon; the most ornamental terracota Hindu temple, Kantaji Temple, and many rajbaris or palaces of old zamindars.

In the south-western part, mainly the Khulna Division, there is the Sundarbans, the largest mangrove forest of the world with Royal Bengal Tiger and spotted deer. Sixty domed mosque in Bagerhat is also a notable sight for cultural and educational tourism for its historical and architectural importance. In the north-eastern part, Sylhet division, there is a green carpet of tea plants on small hills. Natural reserved forests are great attractions. Migratory birds in winter, particularly in the haor areas, are also very attractive in this area.

In the south-eastern part, which is the Chattogram division, there are natural and hilly areas like Chattogram Hill Tracts, along with sandy sea beaches. Patenga sea beach, Foy's lake, Bayazid Bostami shrine are some important tourist place of Chattogram district. The most notable beach in Cox's Bazar is a contender for the title of longest unbroken sandy sea beach in the world. Cumilla district of Chattogram division has many historical places for the tourists. Shalban Bihar and Maynamati museum, Chondimura temple, Rupban Mura, Itakhola Mura, King Bhoj's palace are some of the main tourist attractions of Cumilla district.

To develop the coastal tourism sector of Bangladesh, the government has taken several initiatives. As of now, the government has taken up three projects related to coastal tourism initiative, specifically Naf Tourism Park, Sabrang Tourism Park and Sonadia Eco Tourism Park, which are all based in the district of Cox's Bazar. Recently, Radiant Fish World, the first fish aquarium in Bangladesh is opened in Cox's Bazar for tourist entertainment.

Sonadia Eco-Tourism Park

Sonadia Eco-Tourism Park is located at Sonadia Island in Maheshkhali Upazila. The total land area is 10000 acres, which has been acquired by BEZA on March 27, 2017 from the district administration of Cox's Bazar. BEZA has already taken the initiative for feasibility study and Master Plan to set up Eco-tourism park in Sonadia Island. Initially, BEZA has planned to use only 30% of the space so that there is no adverse impact on the environment.

Special features:

- Connecting bridge between Sonadia and Cox's Bazar
- Sea side road connecting all of Sonadia together
- Bridge and jetty
- Artery road
- Eco centers
- New green zone
- Green industry
- Tourism focal point
- Cottage Zone
- Wind mill, option for green energy
- Hotel zone
- Golf course
- Observation tower
- Canal
- Theme park
- Resettlement area
- Preservation

Naf Tourism Park

Jaliardwip, the once neglected island is located in the middle of Naf River and was illegally occupied by a group of locals for over 40 years. Today, with BEZA's help the land has been rid of most of these encroachers and now it is set to become the very first river-based tourism park which will be called Naf Tourism Park.

Naf Tourism Park will be the first island-based tourism park in Bangladesh encompassing an area of 271 acres.

Location: Naf Tourism Park is located on an egg-shaped island raised in the middle of the Naf River under Teknaf Upazilla of Cox's Bazar. It has scenic beauty with a hill view on both Myanmar and Bangladesh side.

Connectivity:

- Located beside the Teknaf-Cox's Bazar road
- Only 90 km away from Cox's Bazar Airport
- Teknaf land port only 0.4 km from the tourism park
- A cable car connection will be constructed from Ne-Taung Hill to Naf Tourism Park (8.5km).

Special features of Naf Tourism Park:

- Theme cruise for St. Martin coral reef island
- 5-star hotel, restaurant, honeymoon park
- Multi-formatted food court & themed pavilions
- Jungle, jogging tracks, night camps, eco-friendly resorts
- Mini golf course, light & sound show
- Entertainment zone
- Infant swimming pool, cable car
- Sky bridge
- Oceanarium, water sports complex:
- Game parlours, birds watching and view tower
- Harbour bridge
- Cable car hanging
- Hanging bridge

Sabrang Tourism Park:

Sabrang Tourism Park will be the first exclusive tourism park in the Cox's Bazar district encompassing an area of 1027 acres. Sabrang is an amazing hill and sea beach territory, multifaceted, diverse and admirably beautiful. The purest air, lofty hill, sea and lagoon create perfect conditions for the development of all types of tourism and entertainment.

Location: Sabrang in Teknaf Upazila under Cox's Bazar District.

Connectivity:

Road connectivity: The proposed Park is 5 km away from Teknaf town. Cox's Bazar-Sabrang Marine Drive is the access road to the proposed Park and this connects the National Highway (N1) in a stretch of 5 km. Cox's Bazaar Airport is at a distance of 96 km from the proposed Park. The connectivity from airport to the proposed Park takes around 1.5 hours of travel time by road. Teknaf land port is only 9 km from the zone.

River: Naf river is only 8 km from the zone.

Utilities:

Electricity

Teknaf substation (10 MW capacities) is located at a distance of 7 km from the proposed park. A new solar based power plant of 20 MW capacity has been proposed at Huyakong (located at a distance



of 20 km from the proposed Park).

Telecommunication

- Mobile connectivity available
- 8 km away from Teknaf Telephone Exchange

Water Supply

- Surface water is available within 3 km from the zone
- 4 MLD water line will be installed for drawing water from upstream of Sabrang

Prospects:

Hotel complexes, Eco-tourism, Education and health tourism

Advantages:

- Located with exclusive beach front
- Half an hour sea cruise to St. Martin- a coral island
- 8 km away from Teknaf land port
- 30 Minutes proximity to Cox's Bazar Domestic International Airport
- Access to the Bay of Bengal
- Well-connected by road and sea
- Availability of local operators in tourism sector
- The river Naaf is flowing between Bangladesh and Myanmar

Apart from that, Bangladesh has the potential to become the sustainable tourism hub in the Indian ocean region. In March, 2017, Dhaka requested Delhi to introduce four-nation green tourism utilizing Bangladesh-India-Sri Lanka-Maldives' longest coastal belts. The proposal of Bangladesh came during a discussion about the outcome of blue economy at Indo-Bangla energy secretary level meeting.

Tourism contribution to Bangladesh economy:

According to World Travel and Tourism Council report, the total contribution of travel and tourism to Bangladesh GDP was BDT850.7bn (USD10,567.4mn), 4.3% of GDP in 2017. The figure is expected to rise by 6.4% in 2018.

In 2017, the total contribution of Travel & Tourism to employment, including jobs indirectly supported by the industry was 3.8% of total employment (2,432,000 jobs). This is expected to rise by 2.5% in

2018 to 2,492,500 jobs.

Visitor exports generated BDT18.4bn (USD228.5mn), 0.6% of total exports in 2017. This is forecast to grow by 6.3% in 2018.

The report also noted that travel and tourism investment in 2017 was BDT83.0bn, 1.4% of total investment (USD1,031.0mn). It should rise by 8.0% in 2018, and rise by 6.1% pa over the next ten years to BDT161.8bn (USD2,009.7mn) in 2028, 1.5% of total.

TRAVEL & TOURISM'S TOTAL CONTRIBUTION TO GDP IN 2017

Position	Country name	US\$bn
2	China	1349.3
7	India	234.0
15	Thailand	95.0
	World Average	62.9
23	Indonesia	58.9
	South Asia Average	46.9
28	Malaysia	41.9
47	Vietnam	20.6
61	Bangladesh	10.6
62	Sri Lanka	9.9
87	Myanmar	4.9
120	Nepal	1.9

TRAVEL & TOURISM'S TOTAL CONTRIBUTION TO EMPLOYMENT IN 2017

Position	Country name	'000 jobs
1	China	79900.0
2	India	41622.5
4	Indonesia	12241.6
	South Asia Average	8321.9
9	Thailand	5834.0
11	Vietnam	4060.9
20	Bangladesh	2432.0
	World Average	2341.0
25	Malaysia	1704.5
34	Myanmar	1282.4
38	Nepal	1027.1
41	Sri Lanka	875.1

TRAVEL & TOURISM INVESTMENT IN 2017

Position	Country name	(US\$bn)
2	China	154.7
3	India	41.6
16	Indonesia	12.0
	South Asia Average	8.0
20	Thailand	7.7
29	Malaysia	5.3
30	Vietnam	5.1
	World Average	4.8
66	Bangladesh	1.0
34	Sri Lanka	0.9
106	Myanmar	0.3
128	Nepal	0.2

Source: a report of World Travel and Tourism Council on TRAVEL & TOURISM ECONOMIC IMPACT 2018, BANGLADESH

Problems of tourism sector in Bangladesh

A number of important aspects affect the image of tourism in Bangladesh. The overall tourism industry of Bangladesh is suffering from many problems like:

- Poor image of Bangladesh, as a tourist destination
- Lack of proper publicity. Bangladesh is often projected in foreign electronic and print media as a country of flood, cyclone, strike, political violence etc.
- Unavailable forging aids or investment in the tourism sector of Bangladesh
- Lack of well trained, skilled and efficient manpower
- Lack of required fund allocation in national budget
- Problems of security, accessibility and accommodation for tourist.
- Complicated visa and travel formalities in Bangladesh mission.
- Lack of initiative to preserve, conserve and maintain the tangible tourism products.

Key policy recommendations for sustainable coastal tourism

To overcome the hurdles, here are key policy recommendations for the tourism industry of Bangladesh:

- Need awareness of sustainable coastal tourism's multinational effects
- Need sufficient publicity and marketing for sustainable coastal tourism
- Develop training centers and tourist guides
- Need necessary policies to attract foreign and private sectors investment
- Ensure safety and security for tourists, especially at the tourist spots
- Establish coordination among all the concerned ministries, department and agencies
- Simplify the visa and immigration formalities
- Allocate fund in the national budget and initiate immediate loan system for private sector coastal tourism entrepreneurs and tour operators including BPC to create more facilities
- Exempt sustainable coastal tourism industry from the purview tax and VAT.
- Government should take initiatives to develop sustainable coastal tourism infrastructural facilities to attract tourists to visit the country

Conclusion

Sustainable coastal tourism is a delicate service industry. Hence, the country needs sufficient skilled manpower to meet the growing demand and flourish the coastal tourism industry. At present, the tourism resources of Bangladesh are untapped and the simple and friendly people of Bangladesh along with its indigenous communities, which live isolated from modern society and possess their own distinct culture and way of life, make Bangladesh a unique place of attraction for tourists. As Bangladeshis are always happy to extend their hospitality to visitors, the authority should capitalize and appreciate that culture and promote sustainable coastal tourism regionally and globally.

Technical Strength of BSMRMU

BSMRMU is committed to providing quality education based on state-of-the-art technological support responsive to the emerging challenges at home and abroad. Therefore, the university has all the modern equipment and technologies to train and educate the students. The university uses the structured and interactive multimedia tools in the classroom. There are self-paced learning schemes and 'DSpace' students archive where all the journals, research papers and other newspapers are archived for students use. Through UGC UDL system or e-resource, students have the access to e-library, in which they can subscribe 5,700 e-books and 10,500 e-journals from anywhere in the world. The university has Library Management Software to manage this international standard library.

Information Communication Technology provides general-access computing and communication facilities for the entire university community, including a high-speed campus network linked to the internet, computer labs, and central e-mail services.

The university already has the international standard computer and language lab, physics lab and chemistry lab. Establishment of simulator base physical oceanography lab, chemical oceanography lab, biotechnology lab and mathematics lab are in progress.

BSMRMU also has a plan for a simulator based marine sedimentary & geological lab, planktology lab, fishery lab, ecology lab, pollution lab, food and nutrition lab in their permanent campus at Chattogram by 2021. Apart from that, the university will have a maritime museum and a cultural centre for showcasing national cultural

heritage including the history of the father of the nation Bangabandhu Sheikh Mujibur Rahman in the permanent campus to the new generation of Bangladesh.

Most importantly this university will have an Oceanographic Research Vessel with a modern technological instrument to conduct research activities at the sea.





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