

## EXPLORATION AND EXPLOITATION OF MARITIME RESOURCES OF BANGLADESH: IMPLICATION FOR NATIONAL DEVELOPMENT

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*“The strength of a maritime state lies in its inherent capacity to place all resources and possibilities offered by the ocean at the service of mankind and make full use of them to develop its economy which ultimately determines all facets of life of the country including its defence capability.” Admiral Sergei Gorshkov*

### INTRODUCTION

Bangladesh is a country with 160 million people, 144,000sq-km land and 111,631sq-km (with disputed part) maritime area. It is the most densely-populated country of the world (1110/sq-km).<sup>1</sup> Although, annual population growth is reduced from 2.7% (1971) to 1.3% (2010); yet the density is 3 to 40 times more than other mega countries.<sup>2</sup> About 65 million (39%) of its population is still below Poverty Line Income (PLI: \$1.25/day).<sup>3</sup> Amongst them, 28 million (17.6%) suffers from extreme and 25 million (15.6%) experiences chronic poverty.<sup>4</sup> Besides, statistics of 2010 shows 4.5% of total population are unemployed and 28.7% are under-employed. Working age (15-65 years) population and labor force shows increasing trend, about two million per year, in last decade. So, it is a great challenge to absorb these new entrants. However, Bangladesh is already focused as economically emerging country with around 6% GDP since 2004.<sup>5</sup> It is aspiring to become middle income country (MIC) by 2021. Accordingly, Bangladesh has first ever formulated long-term ‘Perspective Plan 2010-2021’ with a fundamental objective to eradicate poverty through attainment of even higher growth rates (7%-8%).<sup>6</sup> Factually, current growth trajectory does not guarantee for MIC by 2021.<sup>7</sup> Prime reason is stagnancy in investment (25% of GDP) for about a decade.<sup>8</sup> Today, global investors are seeking opportunities for foreign direct investment (FDI) in developing and least developed countries

1. Ghulam Mustafa, Presentation Given on ‘Manpower Export Sector’ at NDC, 23 April 2013.
2. Razzaque, M Abdur MP, Minister of Food of GoB, Presentation Given on ‘Global Food Scenario & Bangladesh Food Security’ at NDC, 26 May 2013.
3. Zahid Hussain, The World Bank, Presentation Given on ‘Bangladesh towards Accelerated Inclusive & Sustainable Growth’ at NDC, 09 June 2013.
4. Fakrul Ahsan, National Consultant to Ministry of Finance, GoB, Presentation Given on ‘Poverty Reduction Strategy in Bangladesh’ at NDC, 22 April 2013.
5. Fahmida Khatun, Phd, Centre for Policy Dialogue (CPD), Presentation Given on ‘Employment Dynamics in South Asia’ at NDC, 30 May 2013.
6. Fakrul, Op Cit.
7. Hussain, Zillur Rahman, Power & Participation Research Centre (PPRC), Presentation Given on ‘Economic Development in an Uncertain World’ at NDC, 17 April 2013.
8. Hussain, Zillur Rahman, Power & Participation Research Centre (PPRC), Presentation Given on ‘Managing National Economy Accelerating Inclusive Growth’ at NDC, 18 April 2013.

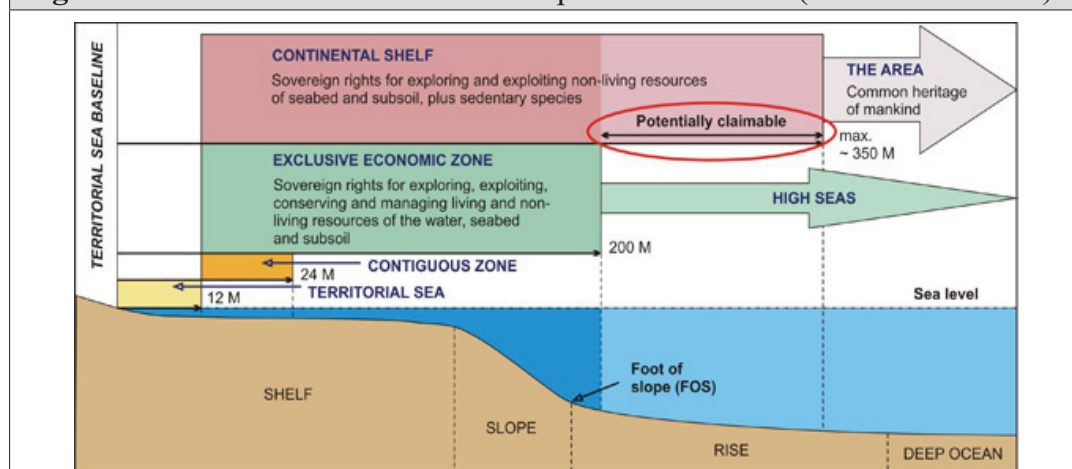
(LDC). Bangladesh needs to attract them in creating employment, increase efficiency of labor, encourage technology transfer and develop new exportable sectors.<sup>9</sup> Any national resources, existing and probable, would be significant in this regard. There is definite existence as well as prospects of maritime resources. As a littoral state of the Bay of Bengal (BoB), Bangladesh definitely needs to extract maritime resources for its aforesaid domestic requirements and also for achieving ‘Vision 2021’.

## LEGITIMATE AREAS OF MARITIME RESOURCES IN BAY OF BENGAL

### Maritime Areas as per UNCLOS-III

At the beginning of study, it is essential to comprehend maritime area or maritime zone (MZ). MZs conceptually mean the legitimate division of water surface each of which is defined through surrounding physical geography. It includes baseline (BL), internal waters (IW), territorial sea (TS), contiguous zone (CZ), exclusive economic zone (EEZ) and continental shelf (CS). Different MZs are defined in UNCLOS-III as comprehensive treaty covering limits of national jurisdiction over ocean-space, access to seas, navigational rights, protection and preservation of marine-environment, exploitation of living-resources, conservation, scientific research, sea-bed mining, and exploitation of non-living resources including settlement of disputes.<sup>10</sup> Various MZs are shown below:

**Figure-1: Different Maritime Zones as per UNCLOS-III (M: Nautical Mile)**



Source: Author

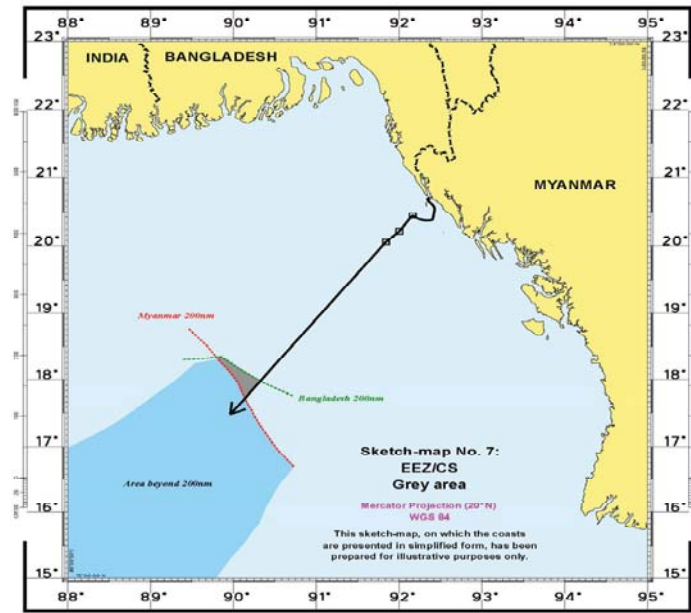
9. Sonjib Talukder, 11 Aug 2011, 'Problems and Prospects of Foreign Direct Investment in Bangladesh', sonjibtalukder.wordpress.com, Accessed on 27 Apr 2013.
10. UN, The Law of the Sea-United Nations Convention on the Law of the Sea, United Nations Publication, New York, USA, 1983, p. xxiv.

## **Maritime Area of Bangladesh**

Bangladesh enacted the Territorial Waters and Maritime Zones Act (TWMZA) on 14 February 1974 in the parliament. Accordingly, it delineated its BL through connecting 8 coordinating points at 10 fathom line and claimed 200nm EEZ (207,000sq-km) as per UNCLOS-III.<sup>11</sup> India protested re-claiming intrusion of 21nm of Bangladesh's BL into their waters. Myanmar also joined the protest.<sup>12</sup> Their re-claims practically cut off maritime area of Bangladesh within 130nm.<sup>13</sup> This offered Bangladesh even less than 50,000sq-km.<sup>14</sup> Thereafter, Bangladesh pursued to resolve the issue but failed and thus disputes persisted. Bangladesh and Myanmar decided to settle it through compulsory dispute settlement. On 14 December 2009, the case entered the docket of ITLOS as the 16th case.<sup>15</sup> Myanmar asked for 'equidistant method'; counterpart, Bangladesh proposed for 'equitable solution'.<sup>16</sup> The tribunal modified the same by a geodetic line at an azimuth of 215°. The court set the length of coast both for Bangladesh (413km) and Myanmar (587 km) at the ratio of 1:1.42. However, total maritime area (283,471sq-km) has been distributed to Bangladesh (111,631sq-km) and Myanmar (171,832sq-km) at the ratio of 1:1.54. Bangladesh can enjoy full rights of CS beyond 200nm except grey area (about 80sq-km) for overlaps with Myanmar's EEZ where Myanmar has right to use water column and Bangladesh has right on sea-bed (Figure-2).<sup>17</sup> Once the final decision on outer limit of CS by the Commission on Limits of Continental Shelf (CLCS) is given, Bangladesh would get more maritime area. Regarding dispute with India, a five member arbitral tribunal will sit in 2104 at Hague to decide the issue. However, EEZ (111,631sq-km) is likely to be reduced once this dispute is resolved. For better comprehension, illustration of BoB is given at Figure-3.

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11. Elahi, M Maqbul-E, 2009, Oil & Gas Exploration in the Offshore (Part of EEZ) Bangladesh: Prospects & Constraints, Seminar Paper Delivered in BIIS in 2009.
  12. Belal, Abu Syed Muhammad, BIPSS Focus, Web: [www.bipss.org.bd/pdf/mb\\_bd.pdf](http://www.bipss.org.bd/pdf/mb_bd.pdf), Accessed on 06 May 2013.
  13. Moin, Ghani, 'A Great Win for Bangladesh', The Daily Star, 27 Mar 2012.
  14. Alam, Rear Admiral M Khurshed (Retd), 'Judgement in the Bangladesh-Myanmar Maritime Delimitation Proceeding', Energy & Power, 16 Jun 2013, p. 40.
  15. ITLOS, List of Cases-No 16, Judgement on Dispute Concerning Delimitation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal, 14 Mar 2012, p. 10.
  16. Ibid, Pp. 83-84.
  17. Ibid, Pp. 133-146.

**Figure-2: Final Verdict by ITLOS & Grey Area**



Source: Author

**Figure-3: The Bay of Bengal**



Source: Author

## **EXPLORATION & EXPLOITATION OF MARITIME ENERGY**

### **Availability and Extraction of Offshore Oil and Gas**

Two years after the independence, Bangladesh for the first time conducted a limited survey in her sea with the help of two the-then Soviet vessels vide 'Petroleum Act 1974'. It opened opportunity for international oil companies (IOC) to explore oil and gas under production sharing contract (PSC). Out of seven exploratory wells, only one gas discovery was made at Kutubdia and was abandoned in 1976. In 1993, two PSC were signed for three offshore and five onshore-blocks. Under PSC-1993, gas was discovered in 1996 at Sangu of Chittagong, as only offshore block.<sup>18</sup> It commenced production in June 1998 with estimated reserve of 850BCF;<sup>19</sup> but the recoverable reserve was 635.50BCF.<sup>20</sup> In its best of times, Sangu produced even 160 million cubic-feet/day (mmcf). Now, it is virtually in its deathbed.<sup>21</sup> Total production of this field (till 30 June 2011) was 477.80BCF.<sup>22</sup> Present production is around 23mmcf. It would not be cost-effective once it drops to 15mmcf or below. It is likely to be abandoned latest by 2015.<sup>23</sup> In 2008, total EEZ was divided into 54 blocks (including disputed-areas); out of which 20 deep sea (DS) and 08 shallow sea (SS).<sup>24</sup> India objected for 10 and Myanmar for 17 of 28 blocks.<sup>25</sup> Only block was given to ConocoPhillips.<sup>26</sup> After the ITLOS verdict, blocks have been re-delineated and re-shaped (Figure-4). Under PSC-2012, IOCs are again invited to bid for acreage of 09 SS and 03 DS blocks.<sup>27</sup> Previous gas structures at Kutubdia and Teknaf are also included in it.<sup>28</sup>

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18. Elahi, Op Cit.

19. Alam, 2004, Op Cit, p 189.

20. Bangladesh Economic Review 2011, Economic Adviser's Wing, Finance Division, Ministry of Finance (Table 10.13), 2011, p 138.

21. Elahi, Op Cit.

22. Bangladesh Economic Review 2011, Op Cit, p 138.

23. The Financial Express, 'Santos Decides to Keep Bangladesh Stake', 17 Nov 2012.

24. Hossain, Mollah Amzad, 'Exploring the Bay Anew', Energy & Power, Vol 10, Issue 4, 01 Aug 2012, p 11.

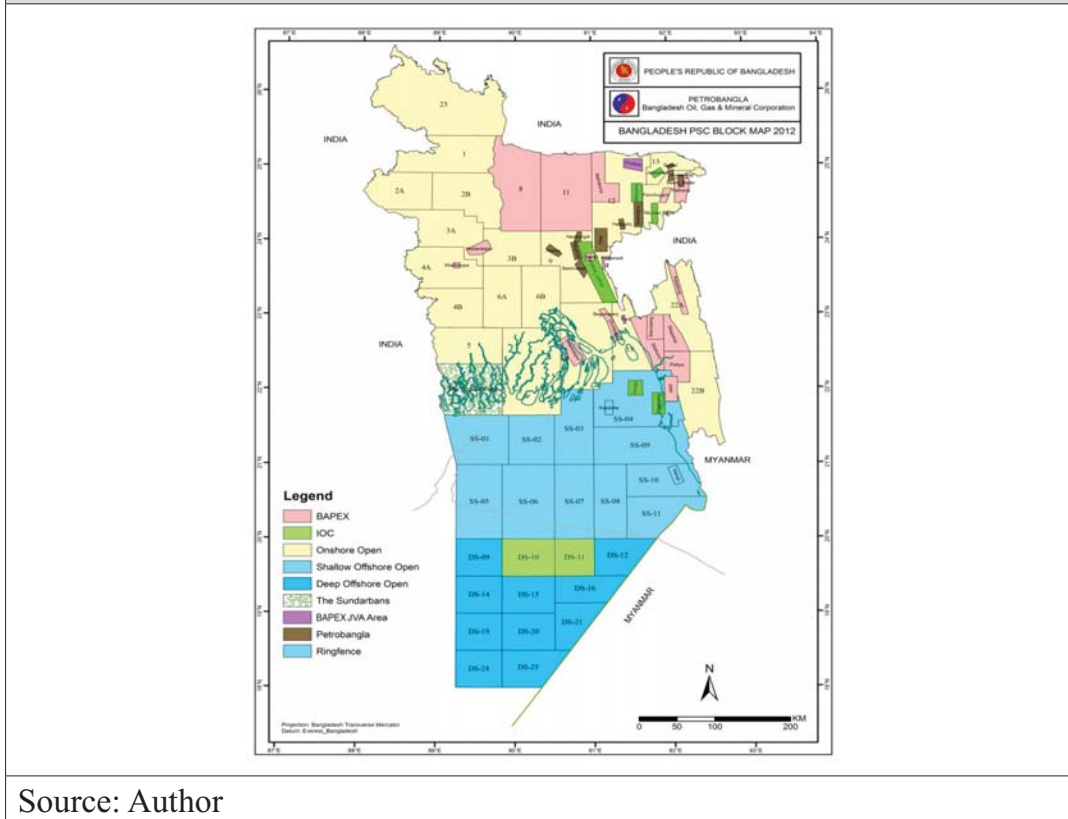
25. Alam, 16 June 2013, Op Cit.

26. Sharier, 2012, Op Cit.

27. Energy & Power, 16 December 2012, Notice Inviting Bids for Oil & Natural Gas Exploration Under Bangladesh Offshore Bidding Round 2012, p 44.

28. EP Report, Energy & Power, 16 December 2012, p 17.

**Figure-4: Gas Blocks as per PSC-2012**



Source: Author

### Probable Offshore Oil and Gas

United States Geological Survey (USGS) conducted study on natural gas in 2001 and forecasted reserve of 33.5TCF for Bangladesh.<sup>29</sup> It predicted for next 30-years (2000–2030)<sup>30</sup>. Possible sources are rock's strata. It opines that there are large reserves in western Bangladesh, West Bengal, Surma basin area, greater part of sub-aerial delta and southern offshore regions of Bangladesh.<sup>31</sup> Assessment summary is given in Figure-5.<sup>32</sup> Discovery of new gas field at Sundalpur substantiates this forecast.<sup>33</sup> There is almost no geological-data available on DS of Bangladesh. However, India and Myanmar discovered large gas-fields a few years back. Annual production of India, from these fields, would nearly be double. This is found not as conventional thermogenic but an unconventional

29. Rahman, Brig Gen A K M Abdur, IRP of NDC, Ref from Web, 'Energy Crisis – Bangladesh Perspective', 07 Sep 2011, p. 29.

30. Wandrey, Craig J, Report on 'US Geological Survey–Petrobangla Cooperative Assessment of Undiscovered Natural Gas Resources of Bangladesh', US Geological Survey Bulletin 2208-A, 18 June 2001, p 01.

31. Ibid, p. 2.

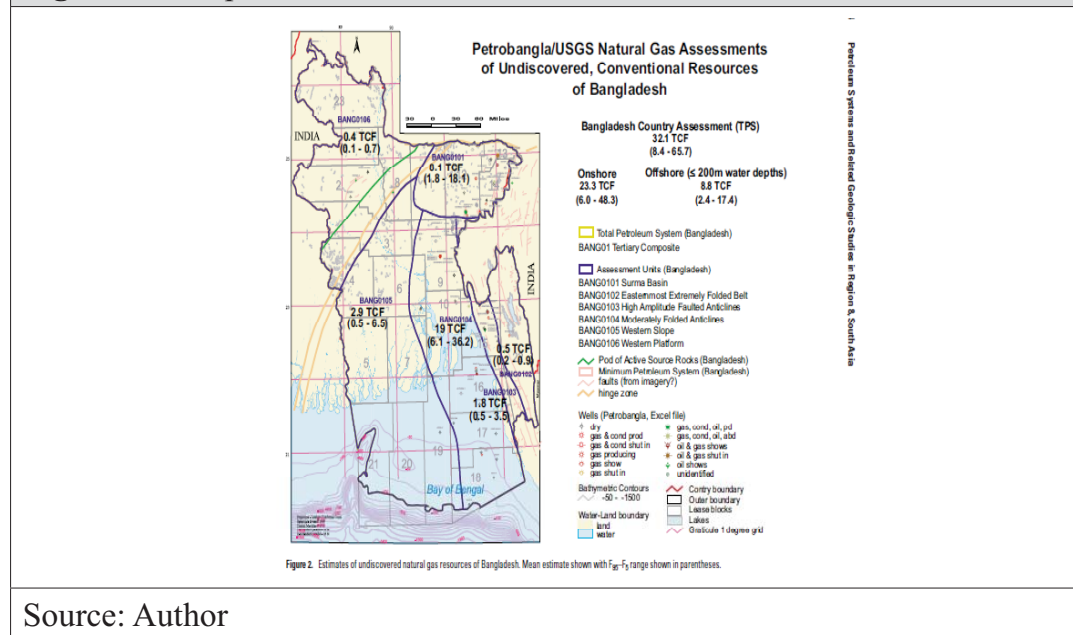
32. Ibid, Pp. 3 – 4.

33. The Daily Star, Dhaka, 18 August 2011, p.1.



biogenic gas popularly known as ‘shale gas’.<sup>34</sup> India is the first Asian country where shale gas has been discovered outside USA and Canada. Recent technology revolutionized the economics of shale gas and made it a boom industry.<sup>35</sup> The shale gas is close associate of natural gas (conventional thermogenic) generated through bacterial action in low geothermal-gradient.<sup>36</sup> All these clearly indicate the prospect of gas in DS of EEZ and CS of Bangladesh.

**Figure-5: Prospective Natural Gas Resources**



Source: Author

## Availability and Extraction of Renewable Energy

A preliminary study on generation of power by using tidal energy of BoB has been recently carried out in Coxsbazar. It says that the country can produce as much as 4,000 to 7,000 megawatts (MW) of electricity.<sup>37</sup> Its feasibility and cost-effectiveness need study. Wind energy is another option. Five locations are identified feasible for non-commercial purposes. The 0.9MW pilot project at Muhuri Dam of Feni and 1.0MW at Kutubdia have been installed.<sup>38</sup> LGED, Grameen Shakti and BRAC have also undertaken renewable energy programme.<sup>39</sup>

34. Hossain, Md Mosharraf, ‘Strategy for Deep Offshore Oil, Gas & Minerals Exploration & Development in Bangladesh’, Energy & Power, 16 June 2012, p. 88.
35. Ibid, p. 89.
36. Badrul Imam, ‘Offshore: The New Gas Frontier of Bangladesh?’, The Daily Star, 16 October 2009.
37. Economic News, ‘7000 MW Power Can be Generated from Sea Waves, 22 October 2011, www.bangladesheconomy.wordpress.com, Accessed on 16 May 2013.
38. Tamim, Dr M, Bangladesh Energy Sector Primer, BRAC EPL Research, February 2013, p. 12.
39. Web Site’, www.lged-rein.org/database.php?pageid=21, Accessed on 16 May 2013.

Government plans to set 100MW (offshore) windmill power-plant at Anwara.<sup>40</sup> Its cost-effectiveness also needs study. Thermal energy is produced out of temperature-gradient difference between the surface and deep water. It is still in experimental stage; so its implementation in Bangladesh is not yet cost-effective.<sup>41</sup>

## EXPLORATION AND EXPLOITATION OF MARITIME MINERALS

### Availability and Extraction of Minerals

Geological Survey of Pakistan first discovered heavy minerals (HM) on beaches and their sand-dunes at Coxsbazar–Teknaf coastal belt in 1961. Afterward for commercial exploitation, Bangladesh Atomic Energy Commission (BAEC) installed there a Beach Sand Mineral Exploitation Centre (BSMEC) in 1979 with the help of the Australian government. Later in 1986, BAEC re-explored and identified availability of HM or placer in 17 deposits on the same coasts. BAEC estimated 4.4 million-tons of HM from 20 million-tons of HM-bearing sands.<sup>42</sup> Amongst all, eight HMs namely ilmenite, magnetite, zircon, rutile, garnet, monazite, leucoxene and kyanite are prominently known as economic heavy mineral (EHM). These eight EHM collectively constitutes 1.76 million-tons. Five minerals (ilmenite, magnetite, garnet, zircon and rutile) are of great economic importance.<sup>43</sup> No effort is taken to explore sea-bed minerals so far. However, the common salt is produced in huge quantity on commercial basis in the coastal area of Bangladesh.<sup>44</sup> This is mostly done in Khulna, Satkhira, Chittagong and Coxsbazar. The production of salt was 1.168 million-tons against the target of 1.450 million in 2011-2012.<sup>45</sup>

### Prospects of More Minerals

The IO offers several opportunities for the offshore minerals both in near and deep sea regions. India has been allotted about 75,000sq-km by the International Sea Bed Authority (ISBA) for harnessing poly-metallic nodules (consisting of Mn, Ni, Cu, Co etc). Total resources estimated to be about 380 million metric-tons.<sup>46</sup> Almost round the coasts of Srilanka, there is definite existence of EHM including 40,00,000tons of ilmenite.<sup>47</sup> About 60% of total global requirement

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40. The Daily Star, Budget Special, Dhaka, 10 June 2011, p. 05.

41. Venkateswaran, Dr T V, 'Energy from Oceans', Web: [www.vigyanprasar.gov.in/Radioserials/Energy from the oceans.pdf](http://www.vigyanprasar.gov.in/Radioserials/Energy from the oceans.pdf), Accessed on 30 June 2013.

42. Hasan Kamrul, 'HM Mining: Chorus of Disapproval', Energy & Power, 01 December 2012, p. 15.

43. Brochure of BSMEC, Kolatoli, Cosbazar.

44. Alam, 2004, Op Cit, p. 177.

45. Bangladesh Small & Cottage Industries Corporation (BSCIC) Web Site ([www.bscic.gov.bd](http://www.bscic.gov.bd)).

46. Hossain, Op Cit, p. 94.

47. Mridha, Shahidullah, Bongoposhagor: Jeeb-Shomuddro Biggyan O Shomuddro Shompod, Bangla Academy, Dhaka, p. 222.



of tin (approximately 2,30,000 tons) are supplied from the Southeast Asian countries.<sup>48</sup> One of the studies focuses on existence of radioactive elements in HM deposits at Coxsbazar.<sup>49</sup> Besides, older beach-sand deposits are abundant on the continents which heterogeneously carry the construction materials, silicon metal, gravel etc.<sup>50</sup> All these provide ample indications of probable minerals in the coast and seabed of Bangladesh maritime area.

## **EXPLORATION AND EXPLOITATION OF MARINE LIVING RESOURCES**

### **Availability and Exploitation of Living Resources**

The country's shelf area covers roughly 66,440sq-km.<sup>51</sup> Coastal waters are very shallow, with depths less than 10m covering 24,000sq-km. The continental edge occurs at depths between 160m and 180m.<sup>52</sup> Recent surveys gave an estimate of demersal standing stock between 150,000 and 160,000 tons within the exploited 10-100m shelf-area.<sup>53</sup> Marine fishes are exploited mostly from the four fishing grounds: south patches, south of south patches, middle ground and Swatch of No Ground occupying about 70,000sq-km area in the BoB (Figure-6). Of these, the most productive zone is south patches. Though the BoB has about 442 species, only about 20 to 30 species are harvested commercially.<sup>54</sup> Besides, in the coastal area of Bangladesh, 2.5 million hectares of land under brackish-water have been brought under shrimp culture. This industry has been grown very fast. Production is almost doubled in last 20 years. Presently, about 1,70,000 MT of shrimp is produced per year.<sup>55</sup> Overall, the average (last five-years) fish production from marine source is 5,15,000MT.<sup>56</sup> There is no commercial production of other living resources.

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48. Ibid, p. 217.

49. Zaman M, Schubert M & Antao S, 'Elevated Radionuclide Concentrations in Heavy Mineral-rich Beach Sands in the Cox's Bazar Region, Bangladesh and Related Possible Radiological Effects', Web: <http://www.ncbi.nlm.nih.gov/pubmed/22724386>. Accessed on 17 May 2013.

50. Water Encyclopedia, Web: [www.waterencyclopedia.com](http://www.waterencyclopedia.com), Accessed on 17 May 2013.

51. Parvez, M Sohel, 'Bay of Bengal: A Prospects toward National Flourishment', Bangladesh Fisheries Information Share Home, Web: [www.en.bdfish.org](http://www.en.bdfish.org), Accessed on 19 May 2013.

52. BFRI Report, 'Sustainable Management of Fisheries Resources of the Bay of Bengal', Bangladesh Fisheries Resources Institute, Dhaka, Bangladesh, 2010, p. 03.

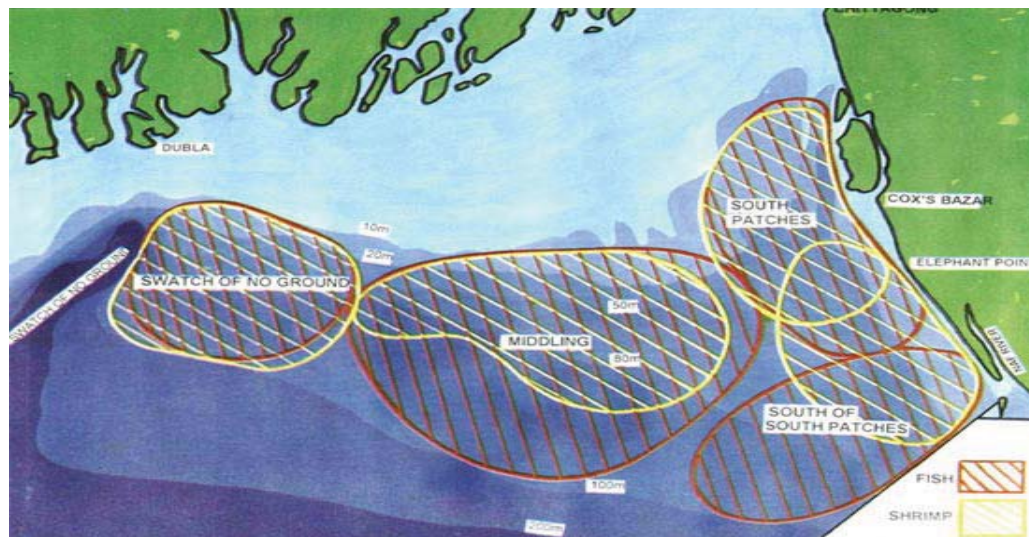
53. Parvez, Loc Cit.

54. Banglapedia, Web: <http://www.banglapedia.org>, Accessed on 19 May 2013.

55. Loni Hensler, 'A Sustainable Future for Shrimp Production in Bangladesh', Sustaining Ethical Aquaculture Trade (SEAT), Web: [www.seatglobal.eu](http://www.seatglobal.eu), 23 April 2013, Accessed on 19 May 2013.

56. Ministry of Fishery & Live Stock (MFL), Web: [www.fishery.gov.bd](http://www.fishery.gov.bd), Accessed on 19 May 2013.

**Figure-6: Fishing Grounds of Fish and Shrimps**



Source:

### Prospects for More Marine Living Resources

Besides fish, there are many more living-resources available in the different places and depths of the BoB. Of these, the green plants are the primary producers and the animals are the consumers but considered to be the secondary and tertiary producers connected with the short and long food chain at all depths of sea.<sup>57</sup> A preliminary survey of St Martins Island and the Sunderbans area revealed the occurrence of nearly 200 species of seaweeds and 160 taxa of marine phytoplankton in the BoB. It is known to have 442 marine fishes, 22 amphibians, 17 marine reptiles, 388 resident birds, 240 migratory birds and 03 species of marine mammals in Bangladesh.<sup>58</sup> Commercial exploitation of all these are yet to be undertaken.

## IMPLICATION OF MARITIME RESOURCES ON NATIONAL DEVELOPMENT

### Implication of Maritime Resources in General

Out of some significant achievement of Bangladesh since independence, progress on UN's Millennium Development Goals (MDG) is remarkable.<sup>59</sup> Besides,

57. Alam, 2004, Op Cit, p. 152.

58. Quader, O, 'Coastal & Marine Biodiversity of Bangladesh (Bay of Bengal)', Proceedings of International Conference on Environmental Aspects of Bangladesh (ICEAB 10) Held in Japan on September 2010, Web: [www.benjapan.org](http://www.benjapan.org), Accessed on 19 May 2013, Pp. 83-84.

59. The World Bank, Report on 'Bangladesh development Update', Report No 76457, Poverty reduction & Economic Management, South Asian Region, April 2013, p. 2.

Bangladesh can also boast for its fairly healthy macro-economic fundamentals and socio-economic stability.<sup>60</sup> Total export earnings were US\$ 16.24 billion in 2010, US\$ 24.56 billion in 2011 and US\$ 25.79 billion in 2012.<sup>61</sup> Against the backdrop of global recession, Bangladesh's economy performed strongly over last few years. However, Bangladesh is facing various domestic challenges.<sup>62</sup> Yet, Bangladesh aspires to be the MIC by 2021. Potential maritime resources could be one of such possible horizon that can accelerate the ongoing tempo.

### **Implication of Energies**

In present context, energy is the pre-requisite for the development of a nation. Bangladesh has also become an energy hungry country particularly since the last decade. The country is not endowed with abundant and varieties of energy resources. Approximately, 60% of its total energy need is currently being met by non-commercial or traditional energy sources (biomass). The rest 40% is met from commercial sources where gas alone accounts for about 80%.<sup>63</sup> It signifies the dependence of country's development on natural gas. Importance of gas is more vivid in power sector. The need of power in 2011 was about 6000MW when the BPDB generated about 4500MW on average causing shortfall of 1500MW.<sup>64</sup> Approximately 90% electricity is generated by natural gas.<sup>65</sup> Total power requirement would be about 24000MW by 2021.<sup>66</sup> Accordingly, gas demand would also be increased proportionately.<sup>67</sup> With the existing reserve (16TCF<sup>+</sup>), the present trend of demand (1.0TCF<sup>+</sup>/Year) cannot be met beyond 2022.<sup>68</sup> If the GDP reaches to 7% or beyond; it would enhance more pressure on natural gases.<sup>69</sup> Lesser supply of gas has already created negative impact on production.<sup>70</sup> Therefore, potential offshore energy might play a dominant role in this regard.

### **Implication of Minerals**

Exploitation of coastal-deposits is easier and cheaper than the land in terms of expenditure.<sup>71</sup> Reserves of HM in the 17 deposits are graphically represented in Figure-7. A large quantity of ilmenite, known as black-diamond, has significant

60. Wikipedia, Web: [http://en.wikipedia.org/wiki/Economy\\_of\\_Bangladesh](http://en.wikipedia.org/wiki/Economy_of_Bangladesh), Accessed on 20 May 2013.

61. Web: <http://www.indexmundi.com/bangladesh/exports.html>, Accessed on 20 May 2013.

62. Ishraq Ahmed, 2012, 'The Bangladesh Economy: Prospects for Future', The Financial Express, 06 June 2012, Dhaka.

63. Tamim, Op Cit, p. 18.

64. Bangladesh Power Development Board (BPDP) Report, *Jugantor* (A Bengali Daily), Dhaka, 11 June 2011, p. 10.

65. Ibid.

66. Ibid, p. 11.

67. Hossain, Mollah Amzad, 'Smoky Gas', Energy & Power, 16 January 2013, p. 11.

68. Ibid.

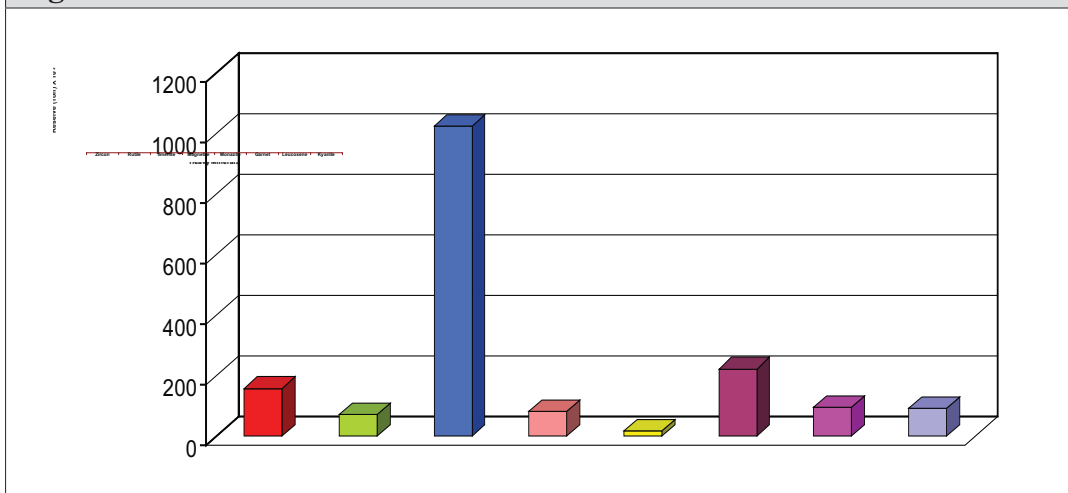
69. Saleque Sufi, 'Gas, Energy Security', Energy & Power, 16 February 2013, p. 101.

70. EP Report, '22,000 Flats Unsold for Power-Gas Problem', Energy & Power, 16 December 2012, p. 21.

71. National Institute of Oceanography (NIO), India, 'Lecture Notes on Industrial Surveys' 1999, p. 223.

industrial use.<sup>72</sup> An Australian company have already got two exploration licences. It identified six minerals as economically mineable and internationally marketable.<sup>73</sup> Besides, these have domestic market as well.<sup>74</sup> The overall mining sector of Bangladesh accounts for 1.2% of GDP.<sup>75</sup> If the maritime-minerals are included, GDP could be much higher. Nevertheless, mineral-salt production almost fulfills annual domestic and industrial demands (14-16lac-tons) of the country.<sup>76</sup> Virtually, by creating livelihood of huge peoples in the coastal area; this sector contributes to national development through meeting domestic & industrial demands.

**Figure-7: Reserves of Prominent HM**



### Implication of Living Resources

Since 1971, marine fishing has become a big industry. The number of mechanized boats has been increased from 200 to 10,000 and marine fishermen from 200,000 to 500,000; conversely, non-mechanized boats decreased from 46,000 to 14,000 in last two decades.<sup>77</sup> Annual average harvest is around 0.5 million-tons which is only 20% of the overall national fish production. Because of over-exploitation, marine fish-stocks are being declined.<sup>78</sup> The sector contributed 5.71% of total export earning and 4.92% to the GDP of 2009-2010.<sup>79</sup> Shrimp

72. Op Cit, Alam, 2004, p. 175.

73. Hasan Kamrul, Op Cit, p. 15-16.

74. Alam, 2004, Op Cit, p. 175.

75. Nehal Uddin, Md, 'The Role of Mineral Resources in Development of Low Income Countries', Energy & Power, 12 December 2012, p. 28.

76. BSCIC Web, Op Cit.

77. Banglapedia, Op Cit.

78. Khan, Md Giasuddin, 'Bangladesh Coastal & Marine Fisheries and Environment', BOBLME Project on Sustainable Management of Fisheries Resources, BFRI, March 2010, p. 01.

79. Hussain, M G & Rahman, M J, 'Marine resources of Bangladesh: Stock Status and Management Issues', BOBLME Project on Sustainable Management of Fisheries Resources, BFRI, March 2010, p. 37.

alone contributes about 0.07% of total export earnings. In 2009-2010, Bangladesh earned about BDT 45000 million by exporting shrimp.<sup>80</sup> Moreover, various type of plant and animal species might have food or/ and medicinal values. Thus, the fishery sector plays an important role in national development in terms of nutrition, income, employment and foreign exchange earnings.

## **CHALLENGES IN MARITIME SECTORS AND WAYS OUT**

### **General Maritime Challenges and Ways Out**

The first and foremost challenge in the overall maritime sector is ‘sea blindness’ of the policy makers and maritime-unawareness of think-tanks and media of this country. Other challenges are security of the far-reached EEZ and CS, availability of maritime and oceanographic specialists, survey of resources in coastal and offshore areas, man-made and natural environmental threat and maintaining productive diplomatic relation with BoB littorals. The most important challenge is the coordination within various maritime agencies. For the sea-awareness, circulation and media campaign is essential. To ensure security in EEZ & CS, capabilities and strength of concerned agencies along with BN, BCG and BAF need to be enhanced. More maritime institutions, higher education abroad and induction of maritime subjects in various universities are required to enhance the number of specialists on these subjects. For coastal and offshore resources, maritime competence of Geological Survey of Bangladesh needs to be much improved. Government, through various international and regional forums, should take short, mid and long-term plan to face various environmental threats. The BoB is sub-regional common; Bangladesh should diplomatically capitalize it for productive maritime outcome. Above all, for effective maritime co-ordination, marine resource management policy is a must.

### **Challenges in Energy Sector and Ways Out**

Facing and handling the IOCs is a great challenge in the energy sector because of ‘energy game’.<sup>81</sup> Thus, response in PSC-2012 is not encouraging.<sup>82</sup> The second challenge is to fulfil the immediate demand of energy for ongoing development. Two up-coming challenges of this sector are ‘shale gas’ and FDI. To handle IOCs, skilful diplomacy like inclusion of non-western companies or self-reliance strategy may be adopted. Survey for offshore gas including shale gas requires to be exploited at the earliest to meet immediate and future demand of energy. Domestic non-fiscal barrier like shortage of power, political instability, traffic congestion need to be addressed on priority basis to attract FDI.

80. Web: <http://www.bdresearchpublications.com>

81. Shakhawat Hussain, Brig Gen (Retd) M, ‘Bangladesh: In the Energy Game’, South Asian Tangle, Palok Publishers, Dhaka, Bangladesh, February 2007, p. 94.

82. EP report, ‘Poor Response to Offshore Bid Invitation’, Energy & Power, 16 April 2013, p. 19.



### **Challenges in Mineral Sector and Ways Out**

There are three distinct challenges in mineral sector namely bureaucracy, coastal erosion and probable existence of radioactivity. A Singapore based Australian company which had got two licences for exploration in Teknaf area in 2007; it is yet to get the mining approval in 2013.<sup>83</sup> It shows the pace of mineral-exploration. A firm and fast decision is to be taken for the exploration of all EHM. Immediate action is also essential to prevent coastal erosion for protecting HM reserve. Existence of radioactive elements in Coxsbazar needs to be confirmed and accordingly actions are to be undertaken.

### **Challenges in Living Resource Sector and Ways Out**

The four important challenges of this sector are over-exploitation of fish, marine-pollution, coastal shrimp-culture and identifying appropriate fishing-ground. For over-exploitation and marine-pollution, encouragement for deep-sea fishing, monitoring on compliance of regulation and appropriate stern actions would be the effective remedy. Shrimp-cultures in the cultivable land have seriously affected the coastal areas.<sup>84</sup> This needs a careful study to come to a concrete decision whether or not it is to be continued. If it is 'yes' then area should be precisely designated from environmental point of view. For identifying appropriate fishing ground, expertise, equipment, sincere survey and online national and regional comprehensive database are needed.

## **RECOMMENDED POLICY FOR MARINE RESOURCE MANAGEMENT**

### **Preamble**

Many of the peoples of the world believe the ocean or the sea possessed by any country is the blessings of the Almighty. Bangladesh, being one of the smallest and densely populated countries of the world, must owe to the creator for bequeathing the BoB which is about 3/4<sup>th</sup> of country's total landmass. Besides, UNCLOS has provided legitimacy to explore and exploit its coasts, surface and sub-surface of water along with the sea-bed including its sub-soil. Since, ITLOS verdict has re-yanked the nation, this is the high-time to move forward. With this discernment, as part of the overall Maritime Policy, the 'Policy for Marine Resource Management' has been promulgated for all concerned directly or indirectly involved, be it government, semi-government and non-government.

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83. Hasan Kamrul, Op Cit, p. 15.

84. Loni Hensler, Op Cit, p. 11.



## **Maritime Vision**

‘Bangladesh would be an Ideal Maritime Nation with Clean, Healthy, Productive and Biologically Diverse Bay by 2030,

## **Aim of the Policy**

To legally and sustainably explore and exploit all kind of marine resources with lesser hindrances from the coasts and/or maritime zones of Bangladesh without endangering environment and eco-system, and utilize the same for the purpose of protractible development of the country and benefit of its people.

## **Objectives of the Policy**

- To promote public awareness, understanding and appreciation, in all levels, about the importance of the sea and value of gifted maritime resources along with their conservation.
- To enhance the quality of monitoring, administration, co-ordination and participation by all respective authorities or regulatory bodies and maritime stakeholders for smooth management of using sea and activities related to marine resources.
- To encourage and promote economically and environmentally sustainable exploration and exploitation of marine natural resources to ensure long term economic benefits and employment of the people.
- To explore and exploit marine resources in a sustainable and environmentally sensitive manner by conserving and enhancing the overall quality of seas along with their natural processes, ecosystems and biodiversity.
- To establish new and develop the existing infrastructure and organization, as deem necessary, to support & accelerate all functions related to exploration & exploitation of resources and utilization the same for industrial & commercial purpose.
- To pursue and support domestic and foreign investment independently or through the PPP in exploring and exploiting marine resources and also in marine resource-based industries of the country.
- To encourage and update the education on marine-based studies and researches along with giving due importance to marine cultural heritage, social and economic development of marginal people of the coastal areas.
- To put all out effort on physical and environmental security of maritime resources in all the maritime zones and the concerned peoples and infrastructure including endeavor for post-disastrous actions in quickest possible time.

### **Strategic Themes of the Policy**

**Legislative and Legal Aspects.** This policy would deal only with resources within the coasts and estuaries and IW, EEZ & CS as defined by Article-2(a) and Article-2(b) respectively of constitution, UNCLOS-III, ITLOS verdict and future legislature. All actions would be done for the benefit of the people in accordance with the related fundamental principles of the constitution. It must not in any way either override or overrule the existing or future constitution, laws, rules, regulations and policies of this land and any international, regional, extra-regional, collective or bi-lateral legal-framework, agreement or treaty in which Bangladesh is signatory to.

**Institution and Organizational Aspects.** This policy would not be enough to implement the same without a regulatory body. As such, there is a need of an organization to be named as Bangladesh National Maritime Organization (BNMO) under cabinet division. All maritime-stakeholders would be the part of this bigger platform. Its prime functions would be monitoring, co-ordinating and directing. However, it would also be empowered to indirectly exercise regulatory role, if so necessary. The organization would prepare and amend any maritime-resource related policies, and also keep close contact with various regional and global maritime organizations and institutions for co-ordination and further development.

**Political and Diplomatic Aspects.** To make the people aware about importance of the sea; there is a need of rigorous circulation in media, seminars and symposiums. There are some NGOs, interest groups and academicians with a wealth of expertise on economic, environmental and social issues, science & technology, community living, jobs, growth and public education which are needed to be capitalized. The country would seek probable assistance in terms of expertise, technical and technological support from developed countries in pursuing the same. As signatory to various international legal-frameworks, the country has some obligations on ocean-related conventions and cooperative arrangements. The country would pursue for maritime regional initiative in terms of resource management and security.

**Financial and Socio-Economic Aspects.** Progress has to be made and support has to be provided in developing maritime industries for economic and social well-being of Bangladesh. For this, FDI would be encouraged. Provision of remuneration may work positively in this regard. A comprehensive review of fishery laws and regulations needs to be streamlined to minimize compliance costs for small businesses. Several initiatives need to be undertaken to identify and agree upon interests of coastal people. The government would continue to support their commercial involvement at sea.

**Science-Technology and Educational Aspects.** The government would promote and support global and regional observing systems for ocean-related data capture. It would always foster implementation or development of educational institutions pertaining to maritime activities. It would also support universities, research centers, associations and technical publication entities that contribute to maritime activities. Strong linkage between scientists, industries and environmental managers would be established. It also emphasizes sharing of technical and technological know-how from other countries with particular expertise.

**Environmental and Security Aspects.** Ocean ecosystem and marine biological-diversity are the core national assets. So, removal of excess capacity from the fisheries and by-catch reduction would continue to be pursued. Environmental effects on seafloor-communities and juvenile fish from trawling and scallop dredging is of great concern. Decline in marine and estuarine-water quality is the most serious environmental threats to Bangladesh. Damage from boat anchors and inappropriately designed moorings is also a serious issue. To prevent the same, a comprehensive and representative system of marine-protected area needs to be established. Besides, exotic species of invasive behavior from ballast-waters and waste-dumping at sea need careful monitoring. The state would operate with effectual response for the rapid recovery of affected maritime-areas and peoples. An efficient surveillance and enforcement by concerned agencies including Bangladesh Navy, Bangladesh Coast Guard and Bangladesh Air Force is fundamental to protecting the national interests. Enhancement of capabilities of all these agencies and organization is a need of the day.

## **CONCLUSION**

The way Bangladesh started its maritime journey, it could not latter continue to hold the same tempo. However, the ITLOS verdict on 14 March 2012 brought some emancipation among all the citizens. Bangladesh is now endowed with about 111,631sq-km of EEZ and CS as additional. EEZ is almost 75% of the total land-mass of the country. Delimitation of maritime boundary is likely to be settled with India by 2014; which might reduce a little area. Bangladesh now should meticulously plan for exploration and exploitation of all kind of marine resources. In this regard, capabilities of concerned agencies including BN, BAF and BCG need to be enhanced. Discover and determine marine resources are still a great challenge for the country. Money, technology and expertise are the prime and critical issues. This cannot be done single-handedly by any of the ministry. In some cases, foreign assistances would be needed. Even at times, regional and global support would also be necessary. Therefore, a marine resource management policy is essential, the outline of which has been presented highlighted above.

## **BIBLIOGRAPHY**

### **Books**

1. Alam, Rear Admiral M Khurshed (Retd), “Bangladesh’s Maritime Challenges in the 21<sup>st</sup> Century”, Pathak Shamabesh, Dhaka, Bangladesh, 2004.
2. Grieve, Roy H & Huq, M Mozammel, “Bangladesh Strategies for Development”, The University Press Limited, Dhaka, Bangladesh, 1995.
3. Gross, M Grant, “Oceanography-A” View of the Earth (5<sup>th</sup> Edition), Prentice-Hall Inc, Englewood Cliffs, New Jersey, USA, 1990.
4. Gupta, Virendra & Kwa, Chong Guan, “Energy Security – Asia Pacific Perspectives”, Manas Publications, New Delhi, India, 2010.
5. Mridha, Dr Shahidullah, Bongoposhagor: Shomuddro Biggyan, Bangla Academy, Dhaka, 1995.
6. Mridha, Shahidullah, “Bongoposhagor: Jeeb-Shomuddro Biggyan O Shomuddro Shompod”, Bangla Academy, Dhaka, 1995.
7. The Constitution of the People’s Republic of Bangladesh (Amended), Ministry of Law, Justice & Parliamentary Affairs, Government of the People’s Republic of Bangladesh, 01 August 2006.
8. Thurman, Harold V, “Introductory Oceanography (2<sup>nd</sup> Edition)”, Charles E Merill Publishing Company and A Bell & Howell Company, Columbus, Ohio, USA, 1978.
9. UN, “The Law of the Sea-United Nations Convention on the Law of the Sea”, United Nations Publication, New York, USA, 1983.

### **Articles/ Journals/ Reports/ Research Papers**

10. Alam, Rear Admiral M Khurshed (Retd), ‘Judgement in the Bangladesh-Myanmar Maritime Delimitation Proceeding’, Energy & Power, 16 June 2013.
11. Badrul Imam, ‘Offshore: The New Gas Frontier of Bangladesh?’, The Daily Star, 16 October 2009.
12. Belal, Abu Syed Muhammad, BIPSS Focus, Web: [www.bipss.org.bd/pdf/mb\\_bd.pdf](http://www.bipss.org.bd/pdf/mb_bd.pdf), 06 May 2013.
13. BFRI Report, Sustainable Management of Fisheries Resources of the Bay of Bengal, Bangladesh Fisheries Resources Institute, Dhaka, Bangladesh, 2010.
14. Billah, Mustain A H M & Khan, M Abdul Aziz, ‘Gas Extraction & Its Implication for Economic Sustainability of Bangladesh, The Bangladesh Development Studies, Vol XXVII, No-3, September 2003.

15. Elahi, M Maqbul-E, Oil & Gas Exploration in the Offshore (Part of EEZ) Bangladesh: Prospects & Constraints, Seminar Paper Delivered in BIIS, 2009.
16. Energy & Power, Notice Inviting Bids for Oil & Natural Gas Exploration Under Bangladesh Offshore Bidding Round 2012, 16 December 2012.
46. EP Report, Energy & Power, 16 December 2012.
17. EP report, 'Poor Response to Offshore Bid Invitation', Energy & Power, 16 April 2013.
18. Hasan Kamrul, 'HM Mining: Chorus of Disposal', Energy & Power, 01 December 2012.
19. Hossain, Md Mosharraf, 'Strategy for Deep Offshore Oil, Gas & Minerals Exploration & Development in Bangladesh', Energy & Power, 16 June 2012.
20. Hussain, MG & Hoq, ME, 'Marine & Coastal Resources of Bangladesh', Sustainable Management of Fisheries Resources of the Bay of Bengal, BFRI, March 2010.
21. Ishraq Ahmed, 'The Bangladesh Economy: Prospects for Future', The Financial Express, 06 June 2012, Dhaka.
22. ITLOS, List of Cases-No 16, Judgement on Dispute Concerning Delimitation of the maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal, 14 March 2012.
23. Loni Hensler, 'A Sustainable Future for Shrimp Production in Bangladesh', Sustaining Ethical Aquaculture Trade (SEAT), Web: [www.seatglobal.eu](http://www.seatglobal.eu).
24. Moin, Ghani, 'A Great Win for Bangladesh', The Daily Star, 27 Mar 2012.
25. Monzur Hossain, 'Bangladesh: Natural Gas Export', The News Today, 16 September 2009.
26. Mosharraf Hossain, 'Strategy for Deep Offshore Oil, Gas & Minerals Exploration & Development in Bangladesh', Energy & Power, 16 Jun 2012.
27. Nehal Uddin, Md, 2012, 'The Role of Mineral Resources in Development of Low Income Countries', Energy & Power, 12 December 2012.
28. Saleque Sufi, 'Gas, Energy Security', Energy & Power, 16 February 2013.
29. Sharier Khan, 'Oil and Gas Exploration Scope Widened', The Daily Star, 16 Mar 2012.
30. Sonjib Talukder, 'Problems and Prospects of Foreign Direct Investment in Bangladesh', 11 Aug 2011, [sonjibtalukder.wordpress.com](http://sonjibtalukder.wordpress.com).
31. Tamim, Dr M, Bangladesh Energy Sector Primer, BRAC EPL Research, February 2013.

32. The World Bank, Report on 'Bangladesh development Update', Report No 76457, Poverty Reduction & Economic Management, South Asian Region, April 2013
33. Venkateswaran, Dr T V, 'Energy from Oceans', Web: [www.vigyanprasar.gov.in/Radioserials/Energy from the oceans.pdf](http://www.vigyanprasar.gov.in/Radioserials/Energy%20from%20the%20oceans.pdf), Accessed on 30 June 2013.
34. Wandrey, Craig J, Report on 'US Geological Survey–Petrobangla Cooperative Assesment of Undiscovered Natural Gas Resources of Bangladesh', US Geological Survey Bulletin 2208-A, 18 June 2001.

### Newspapers

35. The Daily Star, Dhaka, 18 August 2011.
36. The Financial Express, 'Santos Decides to Keep Bangladesh Stake', 17 Nov 2012.
37. The News Today, Wave Power Outlook Bright: Expert, 29 Oct 2011.

### Lectures/ Proceedings

38. Ministry of Power, Energy & Minerals, Proceedings of Meeting on Determination of Minerals the Beach-Sand of River Bank & Coastal Areas, 20 March 2013.
39. Quader, O, 'Coastal & Marine Biodiversity of Bangladesh (Bay of Bengal)', Proceedings of International Conference on Environmental Aspects of Bangladesh (ICEAB 10) Held in Japan on September 2010, Web: [www.benjapan.org](http://www.benjapan.org).
40. Zahid Hussain, The World Bank, Presentation Given on 'Bangladesh towards Accelerated Inclusive & Sustainable Growth' at NDC, 09 June 2013.

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