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Issues, Constraints and Countermeasures of Development through Non-Renewable Natural Resources: Bangladesh Country Study

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Abstract: Bangladesh is bestowed with a number of non-renewable natural resources such as natural gas, oil, coal, hard rock, limestone, brick and white clay, boulder, gravel, glass and mineral sand. It's economic development, urbanization, industrialization, transportation and communication systems all greatly depends on proper utilization and management of natural resources particularly non-renewable resources. Countries such as Nigeria, Zambia, Sierra Leone, Congo and Angola are lagging behind in growth despite their resource-rich background. On the other hand countries like Japan, Netherlands and Asian tigers South Korea, Taiwan, Hong Kong and Singapore all are resource-poor countries but they are growing smart. Although Bangladesh owned limited in natural resources, however, country is committed to economic development through exploration, extraction and management of natural resources by their own national agency and capacity. Bangladesh through its prime capacities is struggling to explore, utilize and manage its non-renewable natural resources. Though, non-renewable natural resources may help to boost economic development of Bangladesh if proper home grown development strategy and policy can be formed and implemented.

Keywords: Natural resources, Economic development, Rent-seeking.

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1. Introduction

Resources are fundamental for economic growth and development of human society but their withdrawal from the nature, mode of their uses by human being and their disposal has enormous adverse effect on the environment (Ali et al., 2017; Bocken et al., 2014; Dellink et al., 2017; Krausmann et al., 2017; Lozano et al., 2018; Rodrik, 2014; Savindra, 2008; Sun et al., 2017). Natural resources ensure economic development in any country by providing labor, capital and materials for the production of modern technology (Ahmed et al., 2016; Maes and Jacobs, 2017; Shao and Yang, 2014; Solow, 2016). Proper utilization of natural resource increases national income and improves the standard of living. Strong 'know-how' of technology, its capability to explore and mineral resources exploitation and intelligence in consuming those resources appropriately helps in the nation developmental activities (Kellert et al., 2000; Sala-i-Martin and Subramanian, 2008; Venables, 2016).

These non-renewable resources have significant economic value and cannot be rapidly replaced by natural means on equal level of its consumption (Dincer, 2000; Tahvonen and Salo, 2001; Vance et al., 2003). Bangladesh has various non-renewable natural resources such as coal, gas, minerals, ceramic soil, stone, boulder etc. But its institutional and technological ability is not yet advanced enough to properly explore and manage these ressources (Drda et al., 2015; Hasan and Mulamoottil, 1994; Rashid et al., 2016). If the government makes contract with international companies for resources exploration without paying respect tonational constitution or will of inhabitants, there will be serious concerns over human rights violation and environmental safety (Brisman et al., 2016; Lal, 2015). The people of Bangladesh are the actual owners of its natural resources, but a neo -liberal pattern has created a platform which is elitist and class oriented–not general people oriented. International interests have established some 'grabber' friendly institutions in Bangladesh.

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Role of international financial intuitions, including World Bank and International Monetary Fund, remained controversial at spatiotemporal scales. Packaged programs aimed at developmental and economic reforms, imposed by the international financial institutions, remained influential in development agenda as well as on decision making (Clemens and Kremer, 2016; Danaher, 1994; Heyneman, 2003; Kapur, 1998; Kovach and Fourmy, 2006; Muhammad, 2014; Reinhart and Trebesch, 2016). As a result governmental institutions are unable to explore and manage the natural resources themselves. This paper discusses about the economic importance of non-renewable resources management, integration of different stakeholders, and environmental security in this sector in Bangladesh.

Bangladesh has been blessed because having a natural resources heaven. Natural gas among these resources has been proved to be a prospective endowment for which it has already been known in the region of South Asia to be the hub of energy. Due to massive potential and views a greater number of Multinational Corporations (MNCs) are progressively showing their concerns in this sector (Das et al., 2013; Habibullah et al., 2015; Halder et al., 2015; Hilbaky et al., 2017; Islam et al., 2008; Mondal and Islam, 2011; Wadud et al., 2011).

Khan (2011) in his paper intends to sum up all the problems and achievements in Bangladesh economy or the Bangladesh facing economic challenges in the future. The author presumes that readers will be well-informed regarding contours of the challenges and our economic development that we are facing. Instead, it was stressed to discuss need to identify the critical policies and strategies that can be useful. In the ranks of middle income countries, Bangladesh is also includes, and definitely to transformation of the country into a regional player of self-confident and enjoying development of broad-based. The challenges have public features which we are facing as compared to other countries under development. We need to learn from our own experiences with growth and development as well as the experience of other countries.

In developing countries sustainable solutions often requires identifying a small number of developing agencies and possibly implementable institutions that are most likely to make an influence on our understanding of the political economy constraining the process of development (Gibbs, 2006; Pezzoli, 1997; Pretty et al., 2003). Reform efforts are most likely to work if they concentrate on a small number of areas and if the focus of political leadership on building a national consensus which supports the importance of building the political and institutional capabilities for addressing a small number of core issues of development (Grindle and Hilderbrand, 1995; Hopwood et al., 2005; Meadowcroft, 2011; Rodrik, 1996).

To find out the implementation of solutions that may make an influence on the potentially significant problems that a developing country like Bangladesh faces are analytical challenges (Biswas, 1996; Hess, 2014; Lockwood, 2015; Oh et al., 2010). In this paper he gives examples a number of places where the development and capacity of institutions is important and could make an important difference to the outcomes of development. These places are not necessarily exhaustive but give a clue of the type of thinking we need to involve in based on international experiences. Author looks briefly at three significant constraints that are vital to overcome for sustaining development based on our own experiences and those of other countries. The first is the challenge of rapidly generating new productive abilities so as to extend and diversify the sector of production. The second is to formulate suitable political and institutional solutions to address the issue of natural resource extraction and land use (Venables, 2016). And finally, there is the power generation issue.

Muhammad (2014) studies myth and reality vis-à-vis energy security and natural resources in peripheral economies, specially concentrate on Bangladesh. It highlights the fact that abundance of resources does not automatically transform into development; countries like Bangladesh suffer due to their global alliances and local hegemonic rulers which, in the name of development, extract unequal private profits from common property through the use of skewed policies and corrupt practices. It was suggested that natural resources of energy should be considered as common property. To maximize the natural resources potential use, scheduled development of the national ability is a vital precondition (Guerry et al., 2012; Islam et al., 2006). In the case of Bangladesh, inhibition on mineral resource exportation and open-pit mining is also required to ensure sustainable development and security of energy. It concludes that the key of energy security is energy-sovereignty, and therefore to sustain development.

Collier (2010) expounds that in world the prices of natural resources rise, joined with the resources discoveries prompted by higher prices, is transforming opportunities of Africa. The determination of economic future of Africa by this opportunity is compromised. The resource extraction

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history is not encouraging in Africa. This article analyzes and develops the natural resources political economy as a guideline to how Africa might avoid a history repetition. Over several decades the curse of resources has been analyzed. Although initially it was controversial, but the proof is accruing that it is both a reality and also severe.

To understand the essence of fundamental, the co-integration techniques are important to study the temporal outline of the resource revenues effects. An benefit of this approach is that whereas results of cross-section, on which preceding literature has basically been based, encounter familiar problems of understanding, these results obtained by changing global prices, which can judiciously be taken to be exogenous (Brinkerhoff and Brinkerhoff, 2002; Onifade, 2015).

Although they find that in the short run an enhancement in commodities export prices results in raises growth, but in the long run the growth is substantially reduced. Simulating the recent boom of commodities for the exporter of typical commodity of Africa, they discover that if repetition of global history itself, productivity will be around 25 % decreased than it would have been without the booms, after two decades. Although the preliminary explanation for the curse of resources, Dutch disease, was purely economic, it has steadily become evident that the major issues are political. The natural resources and political economy is about the interaction between valuable and natural assets of politics. Potentially the interplay is in both directions: politics have impact on the natural assets and natural assets can affect politics (Venables, 2016). In principle, either of these could clarify the resources curse, however, both are vital.

Chowdhury et al. (2015) conducted the research and deliberately searches in Bangladesh renewable and non-renewable resources in present scenario and also focuses on their effective management. This research specially gives attention to discover the present scenario and to also find the actors who are responsible for NRs management. Through renewable and non-renewable resource there are considerable opportunities for Bangladesh to enhance the economic growth. Bangladesh can generate electricity with the help of these resources and also can meet the required demand in the future. To solve our power crisis therefore, both the Government and Private sector should work hand to hand to emphasize more renewable energy sources to produce electricity. Renewable energy sources discussed above can help Bangladesh to reduce load-shedding problem and produce more power. Time has come to look forward and work with these renewable energy fields to produce electricity rather than depending wholly on conventional method. Additionally we observed that Bangladesh has a greatest amount of natural gas and other mineral resources. Corruption free and proper management can be able to reduce the problem of energy crisis.

2. Non-Renewable Natural Resources in Bangladesh

In Asia, Bangladesh is the seventh-largest producer of natural gas (Feldman, 2015). Natural gas plays a major role in the energy matrix of Bangladesh, because more than 85% of total electricity available in Bangladesh is produced by natural gas (Hossain and Badr, 2007). Presently, 2330 million cubic feet gas is being consumed by captive power (17%), commercial sector (1%), domestic sectors (12%), fertilizer (7%), industry and tea-estate (17%) and power (41%) per day respectively. The main natural resource in the country is natural gas. There are total 26 gas zones in Bangladesh. According to the economic census of 2014, the total amount of gas reserve from 26 zones is 27.038 tcf (trillion cubic feet).

Coal is another natural resource in Bangladesh. The total amount of discovered coal is 2700 million ton which is equal to 37 trillion cubic feet of natural gas. Bangladesh has five main coal mines. Such as Jamalganj and Joypurhat (reserve 1050 million tons), Barapukuria and Dinajpur (reserve 390 million tons), Khalaspir (reserve 685 million tone), Dighipara (reserve 500 million tons), Phulbari and Dinajpur (reserve 572 million tons).

Table1.Non-renewable natural resources of Bangladesh

Total number of gas fields	26
Total number of gas field under production	20
Total reserve of extractable gas	27.12 (trillion cubic feet)
Average daily gas production	2700 (million cubic feet per day)
Average daily gas production by Petrobangla	1100 (million cubic feet per day)
Average daily gas production by international companies	1600 (million cubic feet per day)

(Source: 7th Five Year Plan, 2015).

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Table 2. Annual trend of gas production in Bangladesh

Fiscal Year	Quantity (Billion Cubic Feet)
2010-11	708.92
2011-12	743.57
2012-13	805.67
2013-14	825.56
2014-15	878.51
2015-16	905.67

(Source: Bangladesh Bureau of Statistics, 2016).

In Bangladesh, there are three majors marine mineral deposits including crusts, nodules andsulfides. Sulfides are rich in lead, silver and zinc and usually found in shallow water anywhere from 800-2500 meters deep (Hussain et al., 2017). Crusts are rich in cobalt, manganese, nickeland platinum.Nodules are found in deep waters and are rich in cobalt, copper, manganese and nickel.Waters. Presently, 308 million tons of calcium carbonate and 9 million tons silica sand reservoirs in Bangladesh. There are about 0.8 million ton of ceramic soil (also called white soil). The amount of hard rock in Bangladesh is 1235 million tons. Bangladesh has also sand such as zircon, rutail, zeolite, elmonait, monazite and magnetite, copper, ammonia, salt and other minerals. The amount of mineral sand is 25 million tons (Baba et al., 2014; Chowdhury et al., 2014; Garzanti, et al., 2010; Négrel et al., 2007; Siddiquie et al., 1984).

In 2012, International Tribunal for the Law of the Sea-ITLOS gave the verdict on the disputes between Bangladesh and Myanmar. Bangladesh won 12 gas blocks. In 2014, Permanent Court of Arbitration-PCA gave verdict on the disputes between Bangladesh and India. Bangladesh won 10 oil and gas blocks.

3. Non-Renewable Natural Resources and Economic Development

According to the expert's there are huge amount of gas and oil under the seabed of the sea area of Bay of Bengal (Dewangan et al., 2010; Islam, 2009). Exploration of these gas and oil reservoir can potentially bring significant change the economic condition of Bangladesh and also foreign investment. The GDP will go up and socio-economic status would be sustainable. Import of energy will be reduced that will reduce the pressure on the national reserve of foreign currency.

3.1 Natural Gas

Heaven of natural resources is found in Bangladesh. It has widespread utilization in power generation, fertilizer production, industries and household consumption (Darda et al., 2015; Das et al., 2013; Wadud et al., 2011). The best ways of utilizing natural gas is the production of urea not only because the production technology is mature and standard but also due to Bangladesh's extensive experience in operating plants of urea fertilizer. In fertilizer production, around 30% of the country's natural gas is being used.

The demand of gas is increasing gradually, however, average daily gas production capacity of Bangladesh is about 2000 million cubic feet. International companies produce 1040 million cubic feet and national companies produce 960 million cubic feet (Bangladesh Bureau of Statistics, 2016). At present the daily projected gas demand is 2500 million cubic feet. In order to balance the energy supply, government has taken different initiatives such as establishment of coal based power plant, hydroelectricity projects, wind based power plant etc.

3.2 Coal

In Bangladesh, coal was first discovered by Geological Survey of Pakistan in 1959 (separated from Pakistan in December 1971). Now Geological Survey of Bangladesh is doing well in terms of coal exploration and management. There are five coal zones discovered by BHP Mineral in 1997. The introduction of coal fields is described in Table 3.

Coal is an important source of electricity generation in Bangladesh, contributing 4.29% national electricity. Coal has good heating value, more than 6,072 Kcal/kg which produced from Barapukuria (Planning Commission, Bangladesh, 2015). This quality coal can be used for brick kilns, power plant and steel production. Government has taken essential initiatives to explore and utilize more coal. At 2021, our target is produce 22,000MW electricity where 50% would come from coal.

Table 3.Characteristics of various coal fields in Bangladesh

Coal fields	Depth (m)	Reserve (million ton)	Carbon (%)	Sulfur (%)
Jamalgonj	640-1158	1053	47	0.62
Barapukuria	129-506	300	45.5-54.7	0.43-1.33
Khalaspir	257-483	143	32-80.8	0.24-3.15
Dighipara	328-407	500	51.3-65.6	0.11-1.02
Phulbari	151	386	Not Determined	Not Determined

(Source: Asian Mining Year Book, 2006).

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Table 4: Estimates of mineral reservoirs in Bangladesh

Minerals	Amount(ton)
Zircon	158.117
Rutile	70.274
Ilmenite	1,025,558
Kyanite	96,709
Garnet	90,745
Magnetite	80,599
Monazite	17,352

(Source: Chowdhury, 2015).

In order to meet the growing demand of electricity in Bangladesh, government is going to establish coal based power plant at different regions. Such as Rampal in Sundarban, Munshiganj power plant, Matharbari power plant etc.

3.3 Mineral Resources

Mineral resources fall in three broad categories such as metallic mineral ores, non-metallic minerals and fossil fuel minerals. Metallic mineral ores includes iron, copper, lead, zinc, bauxite, silver, gold, bornite, covelline, galena, chalcocite etc. These are available at Cox's Bazar, Teknaf and Kuakata sea beach. Besides, there are some construction and beach sand in our country. The amount of different minerals is given in Table 4.

Ilmenite, rutile and leucoxene are used in slag, welding and melting of metal. Zircon is used to make foundry, sand, and refractory brick. Monazite is used to make catalyst, television tube, thermal insulator, computer disk and line printer. Non-metallic minerals are mica, asbestos, graphite, sulphur, diamond, phosphate, potash, gypsum etc. These are playing a vital role in the development of fertilizer and coal fired power plants in Bangladesh.

3.4 Hard Rock, Lime Stone and Gravel Deposit

There are some hard rock zones in Bangladesh. Such as, Maddyapara in Dinajpur district and Mithapukur in Rangpur district. Hard rock is essential material at construction section such as highways, road, railway, dam, river bank management. It is also used as a mosaic stone. In Sylhet, Joypurhat, there are some areas of lime stone zone. It is an important mineral resource which is mainly used in cement, ispat, sugar, glass industry. On the other hand, Chittagong hill tracts are a common area of gravel. It is used to construct road, railway, bridge etc.

3.5 White Clays and Peat

White clays are available in Dinajpur, Netrokona, Chittagong districts. It is very important element especially used in making sanitary materials, tiles, paper and cement industries. On the other hand, the reserve of peat in our country is about 170 million ton. Peat is available in Madaripur, Khulna, Sylhet, Faridpur and Sunamganj district. It is used mainly in brick, lime industry and in thermal power plant.

4. Global Context of Natural Resources Security in Bangladesh

Resources or energy security is the key to the sustained development of any country's economy. Countries such as the US, Canada, Australia and Norway are rich in resources and energy is secured. However, availability of primary energy resources does not automatically lead to prosperity for a country. For many countries, it may lead to a "corruption-underdevelopment-repression" trap. Many natural resource-abundant economies grow more slowly than economies that do not possess substantial resources. Basically, there are four kinds of countries around the world in terms of natural resources management.

America, England, Canada, Australia, France, and Germany are in first category. They utilize their own resources as well as controlling the resources of other countries with multinational companies. For example, BHP Billiton is a UK company and Rio-Tinto is an Australian company with interests in other countries.

China, Malaysia, India, Brazil and Vietnam are included in second category. They having developed their institutional capability and utilizes their natural resources with their own agencies. They have developed these national agencies and are now expanding overseas. India has established a mineral exploration corporation, national remote survey agency, Indian bureau of mines, Coal India etc.

Paraguay, Venezuela, Bolivia, Ecuador and Argentina have established ownership of natural resources with a strong movement of the people. Now, they maintain and monitor their natural resources with a strong hand. These countries have treaties with multinational companies who now must work with the best interests of the public and state.

In Sudan, Nigeria, Zimbabwe, Zambia, Angola, Sierra Leone and Columbia**,** the people are victims of different imperialistic countries and multinational companies. Basically they do not know what their own resources are. General people are deprived to use their own resources. They are also affected by local corporate 'grabbers' and rent seekers.

Looking at the global this situation, Bangladesh has planned well reshape the welfare strategies and

tried to reach development even at marginal level. Bangladesh Mineral and Gas Corporation was established on the 26th of March, 1972. In 1974 it was reconstituted as Petrobangla Incorporated Bangladesh petroleum exploration and Production Company. In 1982 World Bank came in to Bangladesh on an energy assessment mission. They talked about the participation of foreign oil and gas companies. Asian development bank was also talked the same criteria for oil and gas exploration. In 1993-94, product sharing contracts were signed in the first round. Cairn Energy- Holland sea search were awarded blocks 15 and 16. Later Halliburton took block 16 and Occidental was given 12, 13 and 14. Then their blocks were transferred to Chevron. Blocks 17 and 18 were awarded to Rex-wood. Bapex was tagged with those companies but with small shares. According to these contracts, the country started purchasing its own gas with earned foreign currency initially at a price that was at least 30 times higher than that offered by public-sector companies (Muhammad, 2014). The present government is doing their best to renovate the energy sectors.

4.1 Natural Gas in Bangladesh: Prescription of World Bank and International Companies

To solve fiscal deficit, raise the price of gas as well as to solve the pressure on foreign currency, export of gas is a strategy. In the past decade, foreign oil companies have received 160 billion taka from selling gas to Bangladesh which could have been purchased with 20 billion from public sector companies. While Bapex and Petrobangla spends around one billion to drill a well, other multinational companies do it by spending up to six times that amount. While Multinational companies sell gas at $3 - 4$ per 1000 tcf, Bapex could sell it at 25% of the price. Bangladesh lost 500 billion cubic feet of gas due to the blow-outs in Magurchara (1997) and Tengratila (2005) gas fields of Moulvibazar and Sylhet. This equals the amount of gas used for power generation over 20 months for all of Bangladesh in 2011. The compensation due from US Company Chevron and Canadian company NICO is still unpaid. The price of the gas lost is more than $5 billion, which is nearly eight times the average yearly budget allocation for the energy sector (Anu, 2011; Hussain, 2015; Khan and Nasir, 2014; Muhammad, 2014).

It is a reality that, lobbying culture and corporate interests is common in third world countries. However, in July 2011, the U.S Ambassador persuaded the government to award two blocks in the Bay of Bengal to Conoco-Phillips. Independent researchers and public bodies expressed their main concerns. Conoco-Phillips receives an 80% export opportunity. Bangladesh's share is given as not more than 20%.Bangladesh has five coal mines with approximately three billion tons of coal reserves. The Barapukuria coal mine was discovered by Geological Survey of Bangladesh (GSB), the first that was feasible for mining in 1985. It went into operation under Petrobangla, the national agency, along with a Chinese contractor in 2004. The Bangladesh government originally awarded a license to explore the Phulbari coal mine in 1994 to the Australian company BHP Minerals. In 1997 Asia Energy was formed and in 1998 BHP transferred its license to this newly-formed company. Asian Energy changed its name to Global Coal Management after the bloody uprising in Phulbari in August 2006. Its major shareholders are Polo Resources US, RAB Capital, Fidelity Group, Barclays, and Credit Suisse. With only 6% royalty for Bangladesh, through the Sundarban mangrove forests 75%-80% of the coal was planned for export.

Bangladesh could not conduct any survey for identifying the types and quantity of the minerals and natural resources in the whole sea area for the disputes with Myanmar and India. Now all the disputes have been settled. The first and foremost responsibility of the Government is to take the measures for identifying all types of natural resources within our sea boundary. We should get also the idea about the reserve or availability of the natural resources. It is difficult to make any effective plan for exploration and use of these resources without identifying and quantification of natural resources.

5. Natural Resources Management, Environmental Impacts and Rent-Seeking in Bangladesh

Institutional and technical capacity is essential for the exploration and extraction of natural resources (Venables, 2016). Various research studies have noted that the implementation of the natural resources exploration policy and the Environmental Protection Act have been bogged down due to some technical and institutional limitations. Petrobangla, a fully state owned corporation and its subsidiary companies, such as BAPEX, BGFCL and Titas Gas are responsible for the distribution, development, exploration, production and , transmission of gas, mineral and oil resources of the country. Ministry of Energy, Power and Mineral Resources deals with the overseas gas, petroleum, mineral and power sectors in operational, policy and regulatory matters.

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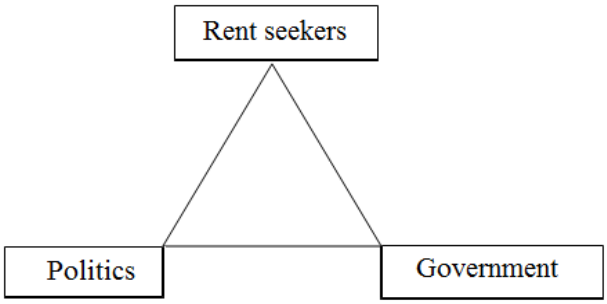

Fig. 1: Rent seeking in Bangladesh (Barkat, 2016).

For effective implementation of the Policy and Act for various operational rules require detailed and complementary operational rules, many of which have not yet been formulated in Bangladesh. One of the major causes of inefficient and poor use of the present policy outline and rules on environmental protection and natural resources management is lack of inter-agency coordination (Venables, 2016). Neither the policy nor the law presents clear operational guidelines for such synchronization of approaches and inter-agency coordination.

Government of Bangladesh have been developed mostly policies from a sectoral approach. Although the Environment Policy emphasizes on maintaining environmental balance and overall development through environment protection, sustainable use of natural resources and ensuring environmentally sound development but some other sectoral policies are not consistent to achieve these objectives (Venables, 2016).

It is important to mention that, oil; gas and mineral exploration are the sources of environmental pollution, drilling accidents, tanker catastrophes, equipment failure and extreme level of natural impacts such as activity of seismic, fields of ice and cyclones. The main threat is associated with the spills and oil blowouts, gas and various other chemical substances and compounds. So, lack of inter-sector coordination is not a positive sign for environmental development and natural resources management in Bangladesh.

The concerned authority need to consider assessment costs, prevention costs, mitigation costs, reclamation costs and compensation costs. The sectors of natural resources such as gas, minerals, oil etc. are the severe sufferers in this context (Venables, 2016). Often criticism on polices are due to their lack of coherence directions, coordination and cooperation between the interested parties which involved there in. The management accountabilities of various components of environment are distributed into different ministries and sectors. It delays smooth operation and implementation of sustainable management regime.

On the other hand, Institutional capacity for implementing the various measures identified in the resources exploration policy is still at rudimentary stage. Coordination among the Bangladesh petroleum exploration company, Geological survey in Bangladesh, Department of Environment, Planning commission and line ministries is not satisfactory. Most of the relevant departments and ministries have lack of capacities of institutions in terms of human, financial and technological resources needed for proper execution of the policies**.** They have a shortage of trained and adequate manpower. There is lack of management system of information which maintained by a strong data bank to back up planning, policies and monitoring activities. Department of Environment is enforcement and regulatory and department but it is highly compacted and lacks significant presence at regional and local level. The infrastructures of the BAPEX are not enough to operate the whole identifying and exploring process. Government should concentrate to increase the strength of BAPEX. The security can be ensured of our natural resources if we keep all the process with our own organization BAPEX. The government of Bangladesh should emphasize the development of our institutional or technical abilities, rather the dependency of multinational companies with agreements that do not favor the society and people of Bangladesh.

Besides, Politician-Polluter Nexus or Rent seekers have been created. Available evidences suggest that in most cases the polluters of environment or corporate grabbers are very powerful both politically and financially. Rent seekers are very active in encroaching on others land and wetland. They destroy forest without considering the environment. They build industries without considering local people; establish mobile phone towers without considering public places such as hospitals, schools, colleges, universities or parks; establish coal based power plant avoiding the security of nature and public health. Their main intention is to increase profits and in doing so they destroy the environment and people's live. It has a negative impact on the environment and general people.

A very interesting point is that those rent seekers maintain a channel of communication with the political government or there is an unholy connection between a section of public bureaucracy, the polluters or corporate grabbers and leading political elites. The

activity of rent seekers damages all kinds of national institutional and technical abilities as well as environmental management and resource exploration initiatives. In this case, we need great intellectual exercises to deal with initial impact assessment and environmental impact assessment system effectively.

In Bangladesh non-renewable natural resources help to develop GDP growth if government comes forward to take beneficial steps to eradicate the culture of rent-seeking, dutch-disease, corruption from natural resources sector. At present, Bangladesh is still trying hard with its development because it is the whole poverty-ridden country and cannot bear to make mistakes related to the natural resources utilization. We need huge amount of gas for producing the electricity. The power sector will be collapsed if we fail to supply the gas. Bangladesh can strengthen its energy security by exploring the gas and oil blocks of Bay of Bengal. In this context, Petrobangla and its affiliates, like any other government organizations, need to work more effectively. The allocations of funds from government for these actions are far from acceptable. Government should enhance the funds and provide accommodations so that relevant organization can stand as sustainable, feasible and effective. In order to ensure the rural electrification, uninterrupted domestic energy supply, exploration and management efficiency of gas, oil, minerals, environmental and social objectives as well as sustainable economy, government should conduct integrated non-renewable resources planning.

6. Conclusion

Bangladesh is now considered to be a lower-middle income country and dreaming for middle income country by the year of 2021. It needs a creative and industrial workforce as well as proper and effective collective approach to face the challenges of national energy security. We have to develop our institutional and technical abilities and train more people in natural resources sector, particularly in the areas of mining and refining, petroleum and gas processing, gas engineering, transmission and distribution, environmental management and pollution control, environmental cost analysis as well as geological and economic studies. Hopefully, Bangladesh, one day will have environmentally sustainable industries and also economically viable. Global experiences teach us that natural resources security is the key to national sovereignty, security and progress. So, Bangladesh have no other option but to make deep-seated changes in their approach towards development to break out of the "Resource-Curse" and "Rent-Seeking" model, and survive, develop and ensure energy security for sustainable development.

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