

Infrastructure and Mega Projects: Building our Future

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Abstract: *Our economy had been unable to gain the momentum as dreamed by our greatest leader of all time as well as the aim of us all including the freedom fighters, martyrs or alive. After being stumbled time to time, present government has strong and effective taken steps to boost-up our economy through taking many significant mega projects. The mega projects are of three categories – projects those are already under implementation; projects, which have been passed for implementation and projects, which are under strong consideration of government for implementation. In this paper, we have considered those projects, which are already under implementation and also have tried to focus on impacts regarding implementation of these projects with a relation to our economic growth. Considering the theme of this conference role of ethics in this regard has been included as well. Undoubtedly, these projects will ensure sustainability of our economic growth, human well-being and the achievement of a sustainable future. These steps will be a milestone for the intellectual history of our nation.*

1. Introduction

Our economy had not been able to gain the momentum as dreamed by the father of the nation, Bangabandhu Sheikh Mujibur Rahman. In fact, this has been the aim of those who fought for freedom of the country and those who sacrificed their lives in the liberation war in 1971. Now this is the dream of all Bangladeshi who

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love this country from the core of their hearts. This dream, since 1975, has stumbled many times due to various banners, which we would not like to mention in this paper. However, making the dream true is always possible when the common people, led by a great leadership, dream it. We, with those dreams, are united under the great leader, Honorable Prime Minister Sheikh Hasina, at this moment and things seem to be gaining momentum to make these dreams realistic.

2. How it Got the Speed

The present government has come in power for the second straight term in 2014. After that, the present government allotted to host of mega infrastructural projects. These projects were chosen with a view to transform the future of the country and to change the course of national progress for good.

In the meantime, good number of projects has been put under the quick-implementation scheme, which have been foreseen, introduced and supervised by Honorable Prime Minister herself. This is resulting in full swing progress being accomplished in a space of three years. The government has given top priority to the mega projects and an amount over USD 2.3 billion has been set from national budget of FY 2015-2016 for fast-track implementation of these projects. During the session in which this budget was declared, a special booklet 'Mega Projects in Transforming Infrastructure: New Dimension in Accelerating Growth' was placed in the National Parliament and such thing happened for the first time in our parliamentary history.

The mega projects are of three categories – projects those are already under implementation; projects, which have been passed for implementation and projects, which are under strong consideration of government for implementation. In this paper, we have considered those projects, which are already under implementation and also have tried to focus on impacts regarding implementation of these projects with a relation to our economic growth. Considering the theme of this conference role of ethics in this regard has been included as well.

3. Projects under Implementation

Nine mega development projects by the government are well underway and are expected to have significant positive impact for the country. Seven of these top priority Fast Track Projects costing around \$40 billion have now gained pace, although some of them are a few years behind the schedule. The projects are the Padma Bridge, Rooppur Nuclear Power project, the Sonadia Deep Sea Port, Payra Sea Port, the Coal Fired Large Power Projects of Matarbari and Rampal, Metro

Rail and LNG Collaboration Terminal. In first quarter of 2016, another project — Padma Bridge Rail Link project — was included in the fast-track project. ECNEC approved the scheme, worth of Tk. 349.88 billion, on March, 2016.¹ Our views regarding these projects along with some facts are given here project-wise.

3.1. Padma Multipurpose Bridge

The Padma Bridge is a multipurpose road-rail bridge across the Padma River to be constructed in Bangladesh. When completed it will be the largest bridge in Bangladesh and the first fixed river crossing for road traffic. It will connect Louhajong, Munshiganj to Shariatpur and Madaripur, linking the south-west of the country, to northern and eastern regions. The Project will build the first fixed crossing across the Padma River for road traffic comprising (a) a two-level steel truss composite bridge 6.15 km long, the top deck to accommodate a four-lane highway and the lower deck to accommodate a single-track railway to be added in the future; (b) 12.0 km of approach roads, 1.5 km on the Mawa side and 10.5 km on the Janjira side; (c) bridge-end facilities including toll plazas and service areas; and (d) river training with dredging and bank protection works, 1.5 km on the Mawa side and 12 km on the Janjira side, to regulate flow and prevent damage to the bridge structure. The Project will also have a component to develop cost-recovery mechanisms to ensure investment sustainability and to carry out institutional capacity building to ensure sustainable asset management. On 07 August 2016, the first span of the superstructure of the bridge reached Mawa site from China. 41 spans are required for the 6.15-km superstructure of the bridge and all the spans will come from China. On a monthly basis, 1-2 spans will come from China every month. The weight of each 150-metre span is some 2,900 tonnes. The spans are being made of steel plate with 20-80 mm thickness in a Chinese factory.

As of December, 2016, overall implementation progress marked around 37% progress. 65% work of the approach road at Jajira point and 73% of work at Mawa point have also been completed. Capable of standing against floods and earthquakes, this mega project means a symbol of hope, height, pride and change of fate for around 30 million southern lives.

With more than one-fourth work already accomplished, the dream for the largest and the longest infrastructure undertaking in Bangladesh—Padma Multipurpose bridge- has started to appear as a distinct reality now. Completely a self-funded

¹. 7 Mega projects gaining pace Padma Bridge makes significant progress; Metro rail to complete early; 2 more schemes included in fast-track list; Sharier Khan, Hasan Jahid Tusher and Partha Pratim Bhattacharjee; The Daily Star; May 14, 2016.

project worth \$3.65 billion, the bridge site is filled with laborers, workers and engineers who are toiling hard day and night to get it open for traffic by 2018. The construction of the bridge over the Padma River is a top priority development agenda for the Government of Bangladesh (GoB) that will not only benefit the southwest region but the country as a whole.

3.2. Rooppur Nuclear Plant

As published in the Daily Sun on 07 October 2016, Bangladesh is in the process of solving its power deficit problem to ensure smooth economic development as well as well being of the people. Even in the recent past the country was almost fully dependent on gas-based power generation. From environmental considerations gas is one of the preferred fuel options, no doubt. But, the source is not unlimited. Rapidly depleting gas reserve compels Bangladesh to go for diversification of its energy mix. In the present world, while planning an energy mix every country needs to actively consider the environmental pollution issues mainly green house effect, which has become one of the greatest threats to our planet. According to the Power System Master Plan – 2010, Bangladesh aims for 24,000Mw of capacity by 2021 and 39,000Mw by 2030. Along with other sources like gas, coal, liquid fuel, renewable resources the country has decided to go for nuclear as well. This is a prudent and pragmatic step by the Government towards meeting up the rising energy demand as well as environmental protection.

The Rooppur Nuclear Power Project, involving a plan to produce 2,400 Mw of electricity, has made significant progress in 2016. A financing agreement of US\$12.65 billion has been signed with Russia in December, 2016. The first and second agreements of the project covering feasibility evaluation, environmental impact assessment, engineering survey, technical documentation and working documentation have been fully completed. On 26 July 2016, Russia and Bangladesh signed an \$11.38 billion loan.

Russian state company Rosatom began working at Rooppur in mid-2013 and is currently undertaking a techno-feasibility study under a half-a billion dollar loan. Rosatom's sister concern Atomenergoproekt, which is undertaking the study has recently floated a tender for engineering survey, environmental monitoring and development of project documents for the Rooppur NPP site. The government expects the main construction of the nuclear reactor to start in early 2017 and complete by 2020. Moreover, Bangladesh has also been sending 20 students every year for the past three years to Russia to get training to run the nuclear power plant.

Bangladesh with the support from Russia is going to build its first nuclear power plant consisting of two units, each of 1,200MW capacity at the western part of the country at Rooppur of Pabna district. Russian company Atomstroyexport (ASE), Rosatom State Corporation Engineering division, has been entrusted with the implementation of the project using latest generation 3+ technologies. First nuclear energy is expected to be injected to national grid in 2023. Another nuclear power plant in the southern part of the country is under active consideration.

According to IEA, operation of all nuclear power plants in the world during the last 45 years has made it possible to prevent blow-out of 56 gigatonnes of carbon dioxide (CO₂), which is equal to two-year volume of global emissions at the current energy output rate. Moreover, if we take into account all Russian-designed nuclear power plants up to 2030 then the volume of prevented emissions will account for 2.4 billion tons of CO₂ per year, which is equal to 80% of global car fleet outbursts.

As planned, Rooppur plant will have two cooling towers allowing it to use a small quantity of water from the river Padma, thereby minimally affecting the ecosystem. Water required for cooling will be preserved in an artificial reservoir and the water will be recycled continuously. The water temperature level at the reservoir will be maintained within permissible limit. So far spent fuel and nuclear waste management is concerned, the latest technology will be used at Rooppur Project and Russia will take back the spent fuel for reprocessing.

It may be mentioned here that during the entire life-cycle of the Plant, no negative effect on the environment was recorded. Dr. M A Matin, General Secretary, Bangladesh Poribesh Andolon (BAPA) after his recent visit of the Novovoronezh NPP site remarked, “The proposed first future Bangladesh nuclear power plant at Rooppur is supposed to be the improvised replica of this plant (Novoveronezh). I hope the Rooppur plant will have the same or better quality environmental managements. Side by side, minimisation of potential hazards from accidental burst, natural disasters & carriage of nuclear waste need to be ensured.” Each Bangladeshi shares Dr. Matin’s expectation from Rooppur Nuclear Plant.

3.3. Deep Seaport

As mentioned in news published in the Diplomat on 07 June 2016, Bangladesh needs a deep sea port. The country has one of world’s fastest growing economies, which is expected to rise at a 7.1 percent clip this year. It is on Goldman Sachs’s list of the “Next 11” emerging economic powerhouses of the 21st century. On the strength of the second-most dynamic textile industry on the planet, Bangladesh’s

export sector is booming, and is expected to eclipse US\$ 50 billion per year in value by 2021. This is all in a country without adequate maritime infrastructure.

Bangladesh has never built a new port in its 45-year history as an independent state. Annual trade of US\$ 60 billion currently pours through the country's two existing seaports, Chittagong and Mongla. Both of these are too shallow for large container ships and require costly load transfers to smaller vessels to get cargo in and out. This added step can cost an additional US\$ 15,000 per day and severely decreases the ports' global competitiveness.

3.3.1. Sonadia Deep Seaport

A few years following 2009, Japanese survey in Sonadia, an island near Cox's Bazar in the south of the country, which determined it a suitable location for a deep-draft port. China Harbor Engineering Company, a subsidiary of the state-owned China Communications Construction Company—the same enterprise that is building Colombo Port City in Sri Lanka, and which also happens to be blacklisted by the World Bank on allegations of corruption—was chosen as the developer, and Bangladesh appeared to have given China the green light.

During the visit of Prime Minister Sheikh Hasina in Beijing, in 2014, it was widely assumed that a deal for Sonadia was going to be formally signed, but then it wasn't. Due to the unpleasant reason, in February, 2016 Bangladesh made the formal announcement that it had been scrapped. Then the GoB decided that deep-sea port at Sonadia of Cox's Bazar will be implemented on a government-to-government basis. To this end, a ten-member committee, headed by the Principal Secretary of Prime Minister's Office, was formed to evaluate the proposals, and its construction work will start soon. A techno-economic study was carried out by Pacific Consultants International of Japan to construct the deep-sea port.

3.3.2. Payra Deep Seaport

As mentioned in news published in the Diplomat on 07 June 2016, originally seeming like a condolence prize for China, which had been beaten out for a deep sea port in the south of the country by Japan, Bangladesh proposed a deep seaport at Payra, which is located on the northwestern coast of the Bay of Bengal. The construction of this port, which was being financed on a public-private partnership (PPP) platform, was originally granted to a Chinese company. The Payra Deep Seaport was then reconfigured as a cooperative port that many different countries could invest and operate terminals in Bangladesh. As usual, after some dramatic and unpleasant situation, the government has signed a

memorandum of understanding (MoU) with Belgian company Jan De Nul to implement the Payra Deep Seaport, for an estimated USD 2.00 billion capital dredging and maintenance dredging.

Given that the entire scheme was divided in 19 components, 13 components will be implemented under FDI and the remaining six under the government-to-government (G2G) deals. Meanwhile, a British company HR Wallingford has completed the feasibility study for Payra Deep Seaport. This would guide the government in finalizing the implementation plan. Construction works for the deep sea port will be implemented through 19 different tenders. Meanwhile, the government is reviewing merits of proposals from China, UK, Belgium, Netherlands, Denmark and India. The government has set short-term, mid-term and long-term goals for the port. In short-term, this year the government would facilitate outer anchoring of clinking, fertilizer and other bulk ships. In mid-term, the government would complete building a multipurpose and bulk terminal infrastructure by 2018 at a depth of 10 meter channel through dredging. By 2023, a full deep sea port facility of 16 meter channel will be operational.

3.4. Matarbari Power Project

Bangladesh had granted a contract to Japan² to build a power project at Matarbari, just 25 kilometers away. Japan International Cooperation Agency (JICA) is to build the port along with a liquefied natural gas terminal, a series of four 600 Mw coal-fed power plants, as well as rail lines, roadways, and electrical systems as part of a monumental infrastructural package deal. The master plan is that the port would be used to receive coal, which could power an entire new industrial zone in the far southeast of the country. To make this happen, JICA offered a loan to take care of USD 3.7 billion out of the total USD 4.6 billion price tag, at 0.1 percent interest for 30 years and a 10-year grace period thrown in on top of that, according to the South China Morning Post. The government has nominated the Coal Power Generation Company of Bangladesh Limited (CPGCBL) to implement the power project with using 3.73 million tonnes of coal annually. The government has a plan to construct a seaport at Matarbari for loading and unloading of coal.

Since the inception of this project in 2014, the government's Coal Power Generation Company has acquired 1500 acres of land for this cause. 90% of

2. 7 mega projects gaining pace Padma Bridge makes significant progress; Metro rail to complete early; 2 more schemes included in Fast-track list; Sharier Khan, Hasan Jahid Tusher and Partha Pratim Bhattacharjee; The Daily Star; May 14, 2016. Building Bangladesh's Future: Infrastructure and Mega Projects in 2016; Published on Thursday, 05 January 2017.

boundary fencing of the project site has been completed while the appointment of the project's consultant is being finalized. A contractor has been selected in February to complete power plant. Works are well underway to complete the port site preparatory works and contracts for power evacuation and building a power substation. With a price tag of D4.6 billion, this plant will come with its own deep seaport to facilitate import of coal. The project will be completed by 2022.

3.5. Mass Rapid Transit

With an aim to provide a safe, fast, affordable and modern means of transportation for the city dwellers, this new urban public transport service promises to significantly reduce congestion in the capital and prevent environmental pollution. The Dhaka Mass Rapid Transit Development Project, official name of the metro rail scheme, stretches from Uttara to Motijheel, and involved USD 2.5 billion. The mode of transport is expected to see half of the 20 km metro line go open by the end of 2019.

Through the inauguration of the construction work by Honorable Prime Minister Sheikh Hasina, a formal commencement of ground development for a depot began on 26 June 2016. The depot is the foremost component to be in place for building the metro rail service system, as metro trains will be launched on the elevated lines from the depot. The entire metro rail route including all 16 stations will be elevated. Only the depot will be on the ground. A Japanese firm, Tokyo Construction Ltd is carrying out the depot land development work.

With every metro rail train comprising of six air-conditioned spacious cars, a city commuter will travel between Motijheel and north Uttara in 37 minutes and there will be a train every four minutes at each of the 16 stations on the way in both directions. A total of 24 trains will together transfer 60,000 passengers every hour on both directions. The project formalized as Dhaka Mass Rapid Transit, otherwise known as Mass Rapid Transit (identified as MRT line-6 in the Strategic Transport Plan), is being implemented by the government-owned Dhaka Mass Transit Company Ltd with Dhaka Transport Coordination Authority as the supervisors. Line-1 to be completed in the second phase, this line will set up lines from Dhaka airport to Kamalapur at first, extending eventually to connect Gazipur, Kamalapur Keraniganj's Jhilmil Residential Area and Khilkhet to Purbachal Residential Area. A high-level delegation from Japan International Cooperation Agency (JICA) is set to arrive in Dhaka on 08 January 2017 to sign a deal to finance the construction of the second Metro Rail of the Mass Rapid Transit (MRT) line-1. A pre-feasibility study has been completed by JICA.

According to the report, the MRT will reduce the travel time to a mere 23 minutes from Dhaka airport to Kamalapur while going from Purbachal to Kamalapur will take just 39 minutes. Line 5 is going between Bulta and Badda, the MRT Line 5, stretched up to 35 kilometers, will have stopovers at Mirpur, Gabtoli bus terminal, Dhanmondi, Basundhara city mall and Hatirjheel link road. Already underway, the feasibility study of the second and third metro rail MRT Line 1 project was scheduled to be completed by 2016 and construction work is scheduled to begin in 2017 and completed by 2025. The MRT Line 2 is the fourth metro rail that will be constructed to connect Ashulia, Savar, Gabtoli, Dhaka University, DSCC Nagar Bhaban and Kamalapur at a length of 40 kilometres which will directly connect Dhaka EPZ to Kamalapur ICD.³

Line 4: To be set up at a stretch of 16 kilometre, the MRT Line 4 will enclose the route between Kamalapur and Narayanganj. With certain parts to be set up underground, construction work for the fourth and fifth metro rail will be completed by 2035.

The Seventh Five-Year Plan (2016-2020) recognizes the urban challenges to growth particularly those linked to the Dhaka city transport system; the vision is to develop a multi-modal integrated and safe transportation system in Dhaka. Policy improvements, better traffic management measures and increased public transport including metro-rail are part of that strategy outlined in the Strategic Transport Plan (STP) for Dhaka of 2005. The government is currently updating the STP to the RSTP with the support from Japan International Cooperation Agency (JICA). The RSTP recommends, in addition to the measure proposed by STP and considering the higher than expected growth of population and traffic in Dhaka, construction of selected arterial and ring roads and improvement of the public transport system.

The Dhaka Metro Project will finance the construction of a metro line in Dhaka as the backbone public transport system in an integrated urban transport system for the city. The Dhaka Metro Project will improve the urban transport system by constructing a high-capacity metro line, which will be integrated with the Mass Rapid Transit (MRT) and Bus Rapid Transit (BRT) lines under construction. The development of the metro line as an environmentally friendly, safe and reliable mode of transport will be based on the findings of the Revised Strategic Transport Plan (RSTP) and coordinated with further investments by development partners. It will also be coordinated with the proposed urban development and land use

³. Building Bangladesh's Future: Infrastructure and Mega Projects in 2016; Published in The Daily Star on 05 January 2017.

strategies and will promote a high level of integration with other modes of public transport and road transport. The metro line will be integrated with the railway system to serve as an environmentally friendly, reliable and safe access to railway services. The tariff for the metro shall be integrated with other modes of public transport.

The project is in line with ADB's Country Partnership Strategy 2011-2015, as it supports easing congestion in Dhaka by improving public urban transport. The project is a large stand-alone project, which will be processed as a multi-tranche financing facility (MFF) to finance slices of long-term contract packages with a long-term implementation plan (time-slicing). The RSTP will serve as the basis to finalize the road map and policy framework for the MFF during project preparation. Financing the Dhaka Metro Project, as a time-sliced MFF is more suitable than other financing modalities, as the project requires an investment of at least US\$2.5 billion with ADB's financing share amounting to D1 billion. ADB financing is required over an implementation period of 7 to 8 years, hence time-slicing ADB's investments into three tranches accommodates the restrictions of ADB's financing envelope for Bangladesh, reduces commitment charges for the Borrower, and enables a continuous policy dialogue with the government.

3.6. Rampal Power Station

The Rampal power station is a proposed 1320 Mw coal-fired power station at Rampal Upazila of Bagerhat District in Khulna. It is a joint partnership between India's state owned National Thermal Power Corporation and Bangladesh Power Development Board each have 15% equity, while the remaining 70% of the total funding is expected to come from bank loans. The joint venture company is known as Bangladesh India Friendship Power Company (BIFPC). The proposed project, on an area of over 1834 acres of land, is situated 14 kilometers north of the world's largest mangrove forest Sundarbans which is a UNESCO world heritage site. It will be the country's largest power plant and is scheduled to be operational from 2020.

In August, 2010, a Memorandum of Understanding was signed between Bangladesh Power Development Board (BPDB) and India's state-owned National Thermal Power Corporation (NTPC) where they designated to implement the project by 2016. On 29 January 2012, the Bangladesh Power Development Board signed an agreement with NTPC to build the plant. The joint venture company is known as Bangladesh India Friendship Power Company (BIFPC). The BPDB and the NTPC agreed to implement the project on a 50:50 equity basis. The NTPC will

set up and operate the plant. Bangladesh and India will equally share up to 30 per cent of the capital of this project as equity. The remainder of the capital, which might be equivalent to US\$ 1.5 billion, will be taken as bank loans with help from the NTPC. According to the sources in the Bangladesh Power Division, the joint venture company will enjoy a 15-year tax holiday.

3.7. A news published in the Financial Express on 14 February 2017 mentioned that the Asian Development Bank (ADB) has assured the official agency concerned of providing nearly USD800 million loan to it for setting up an 800-megawatt (MW) LNG-based power plant in Khulna. Power Division officials held a meeting with the ADB Mission where the lender had assured them of the loan for the power plant project. A Consultation Mission from the ADB met the Power Division, Economic Relations Division (ERD) and other relevant agencies during its more than a week-long visit to Dhaka, they said. The North-West Power Generation Company Limited (NWPGL) has taken the project to set up the power plant, to be run by liquefied natural gas (LNG). It will have dual-fuel provision so that the plant could also be operated by oil during any crisis of gas supply. A senior Power Division official said the power plant would cost nearly USD1.0 billion where the government's contribution is expected to be D200 million. Bangladesh is heavily dependent on its limited natural gas for generating power over the years. Since gas is depleting fast against the backdrop of its growing demand every year, the government has decided to set up power plants based on imported LNG, coal and oil.

4. Impact of These Projects on Our Economy

It started from Padma Multipurpose Bridge to the first ever nuclear power plant of Bangladesh along with the deep sea port are some of such infrastructure and mega projects – which were rolled out to boost up our national progress having substantial progress last year (2016). Such projects have present and future impacts like:

- Changing lives in long deprived regions;
- Opening horizons for businesses fast;
- Creating huge employment opportunities and
- Causing steep rise in inflow of international investment.

These matter a lot for us as will add further momentum to the national growth of our country.

The impacts of the mentioned mega projects are given below:

4.1. Padma Multipurpose Bridge

Impact of this project on our GDP is shown below:

- Will significantly benefit various sectors of the economy of Bangladesh⁴. This will provide direct links between two major seaports of the country and connects missing links for Tamabil-Sylhet-Sorail-Kanchpur-Dhaka-Mawa-Bhatiapara-Norail-Jessore-Benapole highway and will be an integral part of the Asian Highway No 1 and Trans-Asian railway network systems. This will certainly strengthen links between the southwest and north-central zones of the country.
- Will enhance freight, passenger, railway transportation, and utility crossings (high pressure gas transmission, high voltage power transmission, and optical fiber telecommunication cable) between Dhaka and major points in the southwest zone and contribute substantially to the development of the southwest zone as well as to the national and regional economic growth.
- Will reduce the distance from Dhaka to nearly all major destinations in the southwest region by 100 kilometers (km) or more. This will bring considerable savings in passenger and commodity movement time and costs, as well as vehicle operation and maintenance costs. This will also play significant role in lengthening the useful life of vehicles, savings in fuel consumption, and reducing the air emission.
- Will reduce bank erosion and the incidence of worsened vulnerability and poverty among people affected by bank erosion, through riverbank protection.
- Will promote industrial and commercial activity and improve economic and employment opportunities for local people, through economic development of the southwest by constructing the bridge. There will also be better access to healthcare facilities available at Dhaka.
- Will make communication easier that will help to expand education and

4. The southwest zone of Bangladesh is isolated from other parts of the country by the Padma River. Due to this the southwest zone of Bangladesh remains beyond the advantages of integrated road network, despite of substantial improvements and development in the road network of this zone which is currently the linked with the rest of the country across the Padma River and linked only by ferry. The capacity of ferry services is very limited, and waiting time at ferry ghats is more than 2 hours for buses and light vehicles and more than 10 hours for trucks. In addition, the Riverbanks of the Padma are very unstable, especially in the south side (Janjira) and the River width changes frequently, leaving approach ghats seasonally inoperative. These conditions have made expansion of existing ferry terminals difficult.

training facilities, and the resulting skills development will ensure the availability of high-skilled workers.

- Will reduce social, economic, and industrial underdevelopment of the southwest zone that encompasses Bangladesh's second major port, Mongla; its third main city, Khulna; and the inland port at Benapole.

Note that as per ADB publication, the Environmental Impact Assessments (EIA) indicated some impacts like – destruction of total 177,676 trees (excluding 136,218 banana and 200,629 bamboo); loosing fish production of about 6.95 MT/Year as a total of 65 ponds (4.5ha) and 88 derelict ponds (4ha) will be affected; affecting 2 endangered species, namely Shushuk (Dolphin) & Gangetic Gharial, as Padma is a secondary habitat of these as well as hilsha fish as Padma River is an important migratory route for this; affecting 3280 households as a result of land acquiring and requisition of land by 755ha and 163.1ha, respectively; loosing agricultural production of about 5,943MT/Year and crop production of 8,913 MT for 6 years due to acquisition of 584.43 ha agricultural land and requisition of 163.1 ha agricultural land, respectively; affecting 54 cultural establishments including school, madrasha, mosque, eidgah, graveyards and Hindu crematory places; Causing significant environmental pollution through noise & vibration specially during construction etc.

Glimpse of the points mentioned above may lead to a negative impression about the project. But there is no chance of considering those negatively. Because Bangladesh Government was aware of these and adequate plan has been taken in this regard as the infrastructure is a must for boosting our economy. It can be mentioned that some measures, to compensate these negative impacts, are considered as per recommended by EIA like –

- Limiting river erosion/siltation waterway by insignificant constriction of waterway opening of the bridge.
- Mitigating drainage congestion through making 6 bridges and 14 culverts on the approach road at Janjira side.
- Preparing and following appropriate specification of construction equipment based on ambient pollution level.
- Replanting of 482,430 suitable local trees (50% wood, 30% fruits, 10% fuel & 10% medicine trees).
- Ensuring fish culture in new borrow pit ponds in the 5 RS areas and no exclusive habitat of any endangered species near the project site.
- Preparing RAP and land-use plan to mitigate affected household, etc.

With these mitigation/enhancement measures, overall impact will be limited. The estimated EMP cost for mitigating the negative impacts and enhance the positive impacts is about USD 7.6 million.

4.2. Rooppur Nuclear Project

Rooppur Nuclear Project will be an economic development engine of the country. Undoubtedly it may be told that after the completion of this project, our great barrier of development. There are many essential businesses those cannot function properly for uninterrupted electricity, American business that lose about USD 50 billion annually due to power failure⁵.

4.3. Deep Seaports

One of the major factors that have showed down the pace of economic growth in Bangladesh is the lack of proper transport infrastructure, especially deep seaports. The country has not built a new port since independence in 1971, and badly needs to construct one to meet its growing international trade requirements. Government has attached priority to the upgrading of port facilities, since 15% of the country's GDP is dependent on the export of readymade garment. Bangladesh immediately needs a deep seaport that could effectively handle large number of containers. While the Chittagong port suffers due to excessive traffic, Mongla faces the problem of inadequate rail and road connectivity. It is estimated that the delays caused by traffic congestion can cost Bangladesh an extra US\$15000 per day.

4.4. Mass Rapid Transit

As per ADB, the project rationale and its linkage to Country/Regional Strategy are:

- Bangladesh is rapidly urbanizing. In 2011, 42 million people, or 28% of the population, lived in urban areas. Though urbanization is still relatively low, population growth in the urban areas has been more than double that of the national population growth rate of 1.1%. If this growth is sustained, the country's urban population will reach 63 million by 2025, or 36% of the total population. Rapid urbanization is placing severe strains on the natural environment and has fueled rapid growth in demand for urban transport.

⁵. 7 mega projects gaining pace Padma Bridge makes significant progress; Metro rail to complete early; 2 more schemes included in fast-track list; Sharier Khan, Hasan Jahid Tusher and Partha Pratim Bhattacharjee; The Daily Star; May 14, 2016.

- The population of greater Dhaka was about 14.4 million in 2013 and is expected to grow to around 25 million in 2025. The population density of 19500 people/km is amongst the highest in metropolitan areas in Asia or Europe, compared with e.g.1 Metro Manila (18500), Tokyo City (16000), Singapore (7600), Hong Kong (6500) or Greater London (5680). As of 2005, only 18% of trips were done by car, while 34% were done by bus and 36% by rickshaws. Currently, there are only 30 cars per 1000 inhabitants, although ownership is rapidly rising amongst the growing middle-class, and cars are producing 70% of the pollution in Dhaka.
- The development of urban infrastructure has not kept pace with rapid urbanization, causing acute shortages of urban services. The road network is underdeveloped and has insufficient capacity to meet growing traffic volume arising mostly from the increasing motorization rate. Poor traffic management, lack of transport demand management, weak public transport services, and the absence of a strategic vision for - land use planning integrated with urban development and transport planning and effective coordination among the transport and urban development agencies cause massive traffic jams, which add to pollution, high transport and logistics costs and limit access to economic opportunities and social services.

The impact will be economic activities, the environment, and health of residents of Dhaka improved. The outcome will be improved efficiency of the public transport system in Dhaka. The outputs will be - metro infrastructure constructed and commissioned and project implementation capacity strengthened.

While in the short term the construction of MRT-Line 6 financed by JICA and BRT-Line 3 (North), financed by ADB will be completed, more high-capacity urban transport is required in the medium and long-term to keep pace with the rapidly growing demand for transport services in Dhaka.

In an interview, published in the Daily Star on 17 January 2017 and captioned 'Happy and rich Bangladesh is the dream' our Finance Minister said, "Bangladesh's economic growth rate should never fall below 7 percent, at least for the next five years. The target to reach 8 percent GDP growth will surely be achieved. We have fixed it conservatively. A great change is that some kind of peace has been restored in the country. So I am feeling very good. In the latter part of my life, the Bangladesh that I had dreamt of in the 60s and early 70s is going to be materialized. The prime minister concludes all of her speeches with

the phrase ‘Happy and Rich Bangladesh’ and I clap louder.” The clap will be louder indeed, if, these mega projects are implemented properly.

5. Recommendations

In spite of facing technical and resource constrains, the government seeks greater foreign investment to improve the country’s infrastructure. For greater interest of the country as well as to achieve the goals of Vision-2021 and 2041 government should go ahead for completing these infrastructure and Mega Projects.

For the greater interest of the country, all the agencies relevant to implement of these projects must perform their duties and responsibilities maintaining all ethical standards and code of conducts.

Undoubtedly, these projects will ensure sustainability of our economic growth, human well-being and the achievement of a sustainable future. These steps will be a milestone of the intellectual history of our nation.

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