



Bangladesh Delta Plan 2100: Implementation Challenges and Way Forward

Seminar Proceedings

24 December 2018
BISS Auditorium, Dhaka



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Seminar on Bangladesh Delta Plan 2100: Implementation Challenges and Way Forward



Bangladesh Institute of International and Strategic Studies (BISS) organized a seminar on “Bangladesh Delta Plan 2100: Implementation Challenges and Way Forward”, in collaboration with General Economics Division (GED), Bangladesh Planning Commission, Government of the People's Republic of Bangladesh on Monday, 24 December 2018 at BISS Auditorium. The seminar was organized with a view to exchanging ideas and knowledge on Bangladesh Delta Plan 2100 (BDP 2100). **Dr Mashiur Rahman**, Adviser to the Honourable Prime Minister on Economic Affairs, Government of the People's Republic of Bangladesh, graced the occasion as the Chief Guest. **Ambassador Munshi Faiz Ahmad**, Chairman, Board of Governors, BISS, chaired the seminar. The welcome address of the programme was delivered by **Major General A K M Abdur Rahman, ndc, psc**, Director General, BISS.

Dr Shamsul Alam, Member (Senior Secretary), GED, Bangladesh Planning Commission, Government of the People's Republic of Bangladesh made the keynote presentation titled “Bangladesh Delta Plan 2100: Implementation Challenges and Way Forward” at the seminar. **Mr Abdullah Al Mohsin Chowdhury**, Secretary, Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh; **Dr Saleemul Huq**, Director, International Centre for Climate Change and Development (ICCCAD); and **Professor Dr M Monowar Hossain**, Executive Director, Institute of Water Modelling (IWM) were present as distinguished panelists at the seminar. Senior officials from different ministries of Bangladesh, management authorities, representatives from relevant organizations, academia, researchers, teachers from various universities and media representatives participated and expressed their valuable opinions and observations on the topic.

The seminar provided an opportunity for sharing the insights of BDP 2100 and its developments so far. It also provided a platform for sharing of ideas on the challenges of this mega plan and suggested the way forward to face those obstacles. It is hoped that this will also contribute in the review and develop monitoring mechanism of BDP 2100.

Welcome Address



Major General A K M Abdur Rahman, ndc, psc
Director General, BISS

Major General A K M Abdur Rahman, ndc, psc highlighted the importance of the Delta Plan 2100 at the beginning of his speech. He said that the plan is not only a mega plan but also a plan for the survival of Bangladesh and the survival of the future generation. As the plan deals with some of the important issues which, if not handled well, will ultimately have an impact on Bangladesh's economic growth and human development. All other plans, such as Vision 2021, Vision 2041 and Bangladesh's aspirations of becoming a developed country, will depend on the success of the Delta Plan 2100. Therefore, the proper implementation of the plan is important.

He said that Bangladesh Delta Plan 2100 is a holistic approach that aims to address integrated water resources management and climate change related issues of water safety and availability, food production and food security, saltwater intrusion, shortage of land, and environmental and ecological problems. It is considered as an exceptional and groundbreaking policy document on water and environmental resource development for the next 82 years in Bangladesh. Government of Bangladesh has rightly understood the need for an integrated long-term approach for dealing with land and water management issues and initiated this Bangladesh Delta Plan 2100 in 2014. He thanked the General Economics Division (GED) of Bangladesh Planning Commission, which formulated the mega plan with the support from the Government of the Netherlands and the World Bank.

He said that since Bangladesh Delta Plan 2100 is a mega plan to be implemented throughout next eight decades, it might face challenges related to the issues of strategy, investment, monitoring and evaluation. Infrastructure management and maintenance would be important objectives of the plan. However, management of the existing infrastructure and building new infrastructure to support the Bangladesh Delta Plan 2100 would be expensive. There are also issues related to accountability and transparency. Therefore, there is a need for more discussion on this plan to find out possible way out to deal with this mega plan. He stated that the audience is keen to hear from the distinguished speakers and panelists about the possible challenges that Bangladesh Delta Plan 2100 might face in the long-term and how these challenges could be addressed.

Lastly, he mentioned that despite being one of the most complicated and important plans for the country, there is lack of awareness among the general public about the scope and features of the plan, which should be changed. With that view in mind, BISS had organized a similar day-long seminar on Bangladesh Delta Plan 2100 in November 2017 in collaboration with the GED when the plan had not been finalized. The valuable comments and suggestions made in that seminar were helpful in the formulation of the final plan documents. Therefore, he stated that the deliberations and remarks by the distinguished guests and ensuing comments from the learned participants in the open discussion session in the current seminar would help everyone immensely to learn more about this issue and suggest the way forward.



Keynote Address

Presentation on “Bangladesh Delta Plan 2100: Implementation, Challenges and Way Forward”



Dr Shamsul Alam

Member (Senior Secretary)

*General Economics Division (GED), Bangladesh Planning Commission,
Government of the People's Republic of Bangladesh*

At the outset, **Dr Shamsul Alam** thanked the organizers for showing keen interest in Delta Plan 2100 and propagating it from the very beginning. He echoed the Director General of BISS by saying that the first consultation on the draft of BDP and the second consultation meeting on the plan and finished documents were held at BISS. Then he paid his respect to the Honourable Prime Minister Sheikh Hasina, who realized the need of a plan like BDP for Bangladesh as the country is facing climate change which is a big challenge to make the growth and development sustainable.

He said that on behalf of the Prime Minister, GED took the leadership to secure the mega plan with the help of technical experts, consultants and academia, media before finalizing the documents. GED tried to take as much consultations as possible from the intellectuals and the people who really mattered. It visited the hotspots in rural areas to meet the arcane people and described to them about the BDP and how they would be benefitted. In this way, GED tried to take into account their views from the grassroots level. He regarded Prime Minister Sheikh Hasina as visionary to adopt a plan like BDP 2100 as the country is passing through an intense period due to adverse climate change. By using metrological data from 1971 to 2016, he shared two points regarding the progress of the country on climate change. One, the temperature of Dhaka has increased only 1°C over the time period, from 25.6°C to 26.7°C. Second, the average rainfall halved from 640 millimeter to 370 millimeter in these 47 years. So, this is high time to address a plan like BDP.

Dr Alam noted that as a deltaic country Bangladesh has both advantages and disadvantages. Bangladesh has around 700 rivers including 57 transboundary rivers (54 with India and 3 with Myanmar). There is abundance of water supply in wet season but scarcity of water in dry season, which is the main problem of the country. In addition, 93 per cent of the catchment area lies outside Bangladesh with annual sediment load of 1 to 1.4 billion tonnes. The complexity and dynamics of the Bangladesh delta necessitates a long-term plan to address challenges and realize the opportunities of Bangladesh delta.

The BDP 2100 is a holistic and integrated plan considering many themes and sectors for the whole country. The needs of natural resources management have been articulated in a single plan. BDP 2100 is a techno-economic mega plan which covers both technical and economic issues, e.g., GDP growth, poverty reduction, employment, food security, investment, etc. This is also an implementable plan having an investment programme up to year 2030 linked with mobilization of financial resources. BDP 2100 has strongly focused on climate change and Adaptive Delta Management (ADM) approach. One of the principles that is followed in preparing the plan is, “living with nature”. It is not possible to get the best outcome if one disturbs the nature. Another salient feature is “no regret” measures. The suggestion is that before taking any interventions, accurate measurement should be accumulated. Otherwise, this can create mess. All the interventions are considered in the lens of “economic growth” and “sustainability”. BDP 2100 is a very much consultative plan as all the interventions of it is inclusive of all the stakeholders. Lessons from all other relevant plans and policies are drawn and linked with the plan. The plan itself is both “horizontal” and “vertical” in nature with administrative hierarchy which is connected to each implementation level.

BDP 2100 is called an integrated plan because of its inter-sectoral linkages which have amendments that can protect soil not only from erosion but also help it in irrigation purposes. They took the projects that are linked with the livelihood of the people living in the areas where they were creating physical infrastructures. They also took projects that are linked with food security, water availability and agriculture in later stages. Now the plan is called Adaptive Delta Management (ADM) since for the very first time they have included climate change as an exogenous variable in the plan. So, BDP 2100 has adopted an integrated and holistic delta management approach to formulate the projects that will address the management of water security, climate change impact, environmental sustainability covering biodiversity, environmental pollution, climate change adaptation, climate change mitigation and disaster risk management. Each of the projects will also address the management of food security and livelihood, crop, livestock and fisheries production. Integrated transportation management (road, river and rail), market linkage and even value chains are given attention as economic growth. Social development in terms of poverty reduction, women and development and institutional and knowledge development in terms of water management organizations, land management, knowledge development, management and update will also be emphasized in those projects. The focus they have given in the plan covering every aspect of development explains why it is called techno-economic plan.

Dr Alam highlighted the concept of ‘hotspots’. In the plan, the country has been divided into six hotspots to develop strategies and suggest measurement to eliminate problems. The hotspot is defined as “a place of significant activity or danger”. Hotspots are prototypical areas where similar hydrological and climate change vulnerability characteristics and problems converge also influenced by natural hazards. In BDP 2100, hotspot is a broad grouping of districts and areas facing similar risks evolved by hydrology, climate change and natural hazards. Six hotspot areas have been identified, viz. 1) coastal zone (27,738 sq km), 2) Barind and drought prone areas (22,848 sq km), 3) haor and flash flood areas (16,574 sq km), 4) Chattogram Hill Tracts (13,295 sq km), 5) river systems and estuaries (34,240 sq km) and 6) urban areas (19,823 sq km). The remaining areas are identified as “cross-cutting” areas characterized by a combination of issues and

challenges, e.g., floods, drought, river bank erosion, sedimentations, ground water depletion, water pollution and water supply and sanitation. Each hotspot has distinctive climate state, so the problems are also different from each other. He identified the issues and challenges for each hotspot. Coastal zone, for example, has cyclonic storms and tidal surges, salinity and water-logging; Barind and drought-prone areas have fresh water scarcity, groundwater level declines and inadequate sanitation services; in haor and flash-flood areas, there is problem of flash floods/monsoon floods and water logging/drainage congestion. The Chattogram Hill Tracts is affected by fresh water scarcity and biodiversity decline. In river systems and estuaries, there is problem of sedimentation and navigation, river bed changes, erosion and accretion. In urban areas water-logging/drainage congestion has become a big problem accompanied by waste and effluent management.

Regarding the vision of the BDP 2100, he said that each plan must have its own vision. The BDP's vision is achieving safe, climate-resilient and prosperous delta. The mission is: ensuring long-term water and food security, economic growth and environmental sustainability while effectively reducing vulnerability to natural disasters and building resilience to climate change and other delta challenges through robust, adaptive, and integrated strategies and equitable water governance. While talking about the goals of BDP 2100, he said that it proposes three higher level national goals and six Delta (BDP 2100) goals that contribute to achieving the higher-level goals. The higher level goals are: elimination of extreme poverty by 2030; achieving the status of upper-middle income country (UMIC) by 2030 and being a developed country beyond 2041. The Delta goals are: ensuring safety from floods and climate change related disasters,



ensuring water security and efficiency of water usages, ensuring sustainable and integrated river systems and estuaries management, conserve and preserve wetlands and ecosystems and promote their wise use, developing effective institutions and equitable governance for a country level and transboundary water resource management and achieving optimal use of land and water resources.

In order to illustrate the role of BDP 2100 and its contribution to the long-term development of Bangladesh, two policy options are considered. First, Business as Usual (BAU) policy option, which is a

representation of the government's Vision 2021, Perspective Plan and the Seventh Five Year Plan. When the adverse impacts of the climate change and natural hazards increase, the GDP growth rate may start falling over time, efficiency of capital would fall resulting in lower agriculture production, unemployment, migration and pressure on urbanization would take place. Second, Delta Plan (DP) policy option which incorporates the adoption of strong climate change and other delta related adaptation measures to achieve higher and sustainable growth trajectories in the face of the various weather-related natural hazards and risks. Macroeconomic analysis done for BDP 2100 reveals that in BAU policy option, the extreme poverty will be eradicated at around 2041. However, if the country adopts DP policy option, the extreme poverty could be eradicated at around 2027. The yearly economic loss of about 1.3 per cent or more of GDP due to climate change impacts and natural hazards has been predicted. This has been estimated year by year by linking growth and employment. For analytical purposes, DP has been divided into three phases. The short-term plan includes 80 investment projects costing US\$37.5 billion, over 2-3 years cost benefit analysis has been observed and checked for the feasibility. These 80 projects have been selected from 130 projects submitted by various ministries. The analysis has been done with the help of World Bank. The medium-term phase is up to year 2050 and the long-term is 2050 onwards.

Dr Alam spoke about the national level strategies under BDP 2100. The strategies are based on 3 principles: strategies conducive for economic development without hampering environment sustainability; developing climate change resilient Bangladesh through optimal use of natural resources and climate change resilient development through participatory process. The main strategy for flood risk management is equipping the flood management, drainage and irrigation (FMDI) schemes for the future, thereby protecting economic strongholds and critical infrastructure as well as safeguarding livelihoods of vulnerable communities. The measurement that the plan suggests is the provision of immediate discharge of excess water during monsoon and flood in all the river and embankment management activities. He emphasized that if Delta Plan is implemented at the second stage, there will be no flood in the country, and it will become a flood-free country like China. The plan has focused on the "submerged char" management in all the flood management and water discharge control activities, river excavation and dredging preceded by proper feasibility studies (permanent river area and flow at 480 thousand hector), preservation of water reservoirs and maintaining connectivity with FMDI schemes (reservoir area will be 90 thousand hector). He suggested that by diplomatic approach Bangladesh can try to negotiate with the neighbours as much as possible to solve the water scarcity problem. But it also needs to solve the problem on its own by using lake, ponds, canals and rivers. He advised that if the country can save water in October, it can supply them back in the dry season.

He then identified the strategies for hotspots under BDP 2100. He said that coastal zone is a problematic zone in terms of natural hazards. In this regard, the main strategy is combating storm surge and salinity intrusion through effective management of existing polders, reclaiming new land in the coastal zone and conservation of the Sundarbans. He listed some of the measures: revival of the regional rivers like Madhumati and others, channels and improvement of drainage and local rivers and canals, and containing tidal river management activities at least in seven polders. The plan emphasized on tidal river management that means bringing the water during the high tide and after sending sediment in the depression area and allowing water to go out when there is low tide. He mentioned that construction of Noakhali-Urir *Char* cross dam for reclamation of new lands from the sea has accelerated the land accretion process in the Meghna estuary as the river brings a lot of sediment than other rivers. So, the government has to manage that sediment very carefully and scientifically. Regular dredging of *Ghasiakhali* and other channels in the Sundarbans is needed. The plan suggested accelerating the afforestation in the newly accreted land by mangroves.

He stated that the main strategy for the *Barind* and drought-prone areas is balancing supply and demand for sustainable and inclusive growth, minimizing losses due to floods and drainage congestion and ensuring water supply and sanitation. The underground water is going down very rapidly in *Barind* area, leading to desertification. However, the government has already stopped it by emphasizing the use of surface water and keeping harvested rain water. He mentioned that there is a set of appropriate regulations for groundwater uses and regulating the groundwater extraction. He expressed concern that it should be stopped as quickly as possible. Development of detailed basin management plan for *Barind* and Atrai basin is necessary. People draw water from Atrai and Padma for surface water. Currently, 30 per cent water for irrigation comes from Atrai and Padma, and the government wants to increase it gradually. There is a need to restore and preserve the natural flow of *Chalan Beel* area. It is covering a district but the *Beel* is coming out of sediment, and Boral River has already died. He said that these should be excavated. He stated that like the other river in the *Chalan Beel*, there is a need to create rubber dam to preserve water and also encourage harvesting there. He elaborated how the rain water harvesting works there. The farmers use something like upside umbrella to keep the water in the well. The rain water comes in and the farmers put the water in the wells for irrigation. He mentioned that the government strictly abides by the nature with preservation and regulations. The government is encouraging fisheries and other agro-crops in place of rice cultivation. As rice cultivation takes lot of water, the government encourages wheat cultivation and other crops that are more profitable. By increasing productivity of those crops, the government encourages farmers to go with other crops – not only with rice.

The proposed measures for Chattogram Hill Tracts are construction of multifunctional dykes, diversion of flow in erosion-prone areas using groynes, dykes or diversion or chute; production of floodplains and towns from flash floods and Chengi, Karnafuli, Sangu, Matamuhuri and Bakkhali rivers and fully streams using new embankments/water control infrastructure; and emphasis on integrated catchment area management and creating water reservoirs. He said that there are areas where water can be preserved by creating rubber dam or creating barriers. He emphasized on preservation of *Charas*, biodiversity conservation and protecting natural forest resources from deforestation and increases the afforestation.

He then mentioned that the main strategy for the rivers system and estuaries is to provide adequate room for the rivers. He suggested letting the flow in and let the rivers live. He highlighted concern on that rivers cannot be allowed dying out. The principle is all rivers will remain live and flowing as usual – they can only be channelized. Citing the example of Jamuna River, he said that it is spreading 14 km but the planners can bring it down to 10 km by channelization and by dredging. The government will not allow any rivers to dry out. He mentioned the strategy of dredging and removal of silt is based on detailed morphological and sedimentological study. He said that random dredging will not help – it must be done carefully. And dredging may accelerate embankment erosion if the planners do that without having feasibility study. Development of integrated town and spatial planning, and integrating river management and land reclamation issues in the urban development planning and initiative are important as well.

In regards to urban area, the Delta Plan would look into following issues: integrated and sustainable use of urban land and water resources, improved urban utility services including water supply, sanitation, waste management, conserve and preserve urban wetlands and ecosystem and promote their rational use. He said that it would help create more greenery and open spaces in the urban areas. Some of the planned measures are: appropriate action plan for removing water logging in the urban areas; categorization of wastes into e-waste, hospital wastes and others and separate effective waste management plans for each of them. He said that waste management is linked to having pollution free river. In most of the cities, wastes actually

go by the rivers. So, he urged everybody to manage urban waste very carefully. He mentioned the strategy of improvement, proper maintenance and optimum use of the existing sewage and drainage systems and recovery and protection of natural water reservoirs and canals at urban areas. He said that canals need to be reclaimed. He urged for strategic establishment of green (forestation) and blue (water bodies) spaces and networks in the urban areas to preserve urban water areas and encourage involvement of private sector in waste management.

He mentioned that sustainable land use and spatial planning include developing effective policy guidelines and rules for the *Balu Mahal* (sand quarry) and sediment management. *Balu mahals* are creating hazards even sometime expediting erosion of river that need to be stopped. He also mentioned the strategy of prevention of salinity intrusion and desertification, management of newly accreted land in the Meghna Estuary, restoration and protection of soil quality, erosion and land loss. The BDP has also touched upon agriculture because agriculture is largely dependent on water availability. He described the necessity to address crop agriculture, fisheries or aquaculture, and to manage livestock in the changing change situation. That has been said in the part called, "Agriculture, Food Security, Nutrition and Livelihoods" under the cross-cutting issues.

Regarding transboundary water management, Dr Alam said that it is an important issue which requires multi-layered dialogues between the participating countries. He mentioned the strategy of selecting of prospective sites for the construction of embankments considering the water flow from the upstream and with understanding and cooperation from upstream countries. Multitrack water diplomacy can prevent any conflict emanating from this problem and peacefully resolve it as well. In this regard, international engagement is important which requires the active participation of a third party. Citing the example of the Indus Water Treaty between India and Pakistan, he said that the World Bank acted as the third party in concluding the treaty. According to him, the World Bank can be a potential actor in Bangladesh-India case as well. He also mentioned that the plan will try to improve basin-wide flood forecasting that can be done with countries, such as China, India, Bhutan and Nepal.

One of the important cross-cutting issues of Delta Plan is dynamizing the inland water transport system. He said that once Bangladesh had 24,000 km navigable waterways which have come down to 6000 km in the dry seasons. This rivers need to be revived in a planned way by dredging in required areas. BDP has incorporated several strategies in this regard. Development and modernization of 24 important inland river ports all over Bangladesh is important. Besides, maintenance of navigability of 88 important river routes of IWT Network by capital and maintenance dredging can be crucial. The plan has also emphasized on transit facilities. He also mentioned other measures: preparation of Dredging Master Plan, modernizing existing DGPS System to Electronic Positioning System for system security and strengthening of river transport safety measures.

While talking about Blue Economy, he said that the plan considered it as a new 'Development Space' for Bangladesh. Hence, water transport, coastal shipping, sea port, ship building and recycling, marine fisheries, coastal tourism, ocean energy, land reclamation, ocean survey and surveillance, etc. have been identified as key priority sectors. Different strategies have been recommended: completion of multidimensional survey of marine resources; increasing both shallow and deep sea fishing; introduction of eco-tourism and private sector initiatives in sea cruise; strengthening the safety and security at sea and exploring the economic prospects of Blue Economy other than fish resources, such as marine animals, plants, oil, gas, etc.

Dr Alam said that the plan has touched upon renewable energy as well. Bangladesh is expected to have enormous potential in renewable energy development. Hence, it is important to develop long-term renewable energy policy, specific strategies and formulate a master plan for 50-100 years to harness the potential of renewable energy resources in the country involving public and private sector investment. The plan recommends promoting research on the development of conducive technology for renewable energy in universities and research institutions as well as building capacity for its application. Enhancing Green Growth through research and development of renewable technologies including Clean Development Mechanism (CDM) are imperative. The Delta Plan has targeted that at least 30 per cent of the energy should come from renewable sources by 2041. In the 7th Five Year Plan, the government states that Bangladesh would have 10 per cent of total energy from renewable sources by 2020. He mentioned the examples of Germany, England, and Sweden; all of the countries have similar goals. By 2050, these states will not use any fossil fuel and now they have 30 per cent energy from renewable energy sources. In this regard, important measures are: encouraging use of solar power for both surface water and ground water irrigation; exploring the potential of hydro-power in the hilly rivers, such as Sangu and Matamuhuri; installing solar panels in land strips available in flood embankments, barrages and other hydraulic structures.

Dr Alam mentioned that the plan has also taken earthquake into consideration. Bangladesh and the north eastern states of Indian have long been one of the seismically active regions of the world and have experienced numerous large earthquakes during the past 200 years. He said that the plan recommended designing earthquake-proof structures including barrages, regulators, sluices, embankments, cross-dams, roads, bridges, buildings in conformity with the Bangladesh's national building codes or any other approved standards; strengthening earthquake management; enhancing the capacity to cope with earthquakes; formulating a proper land use plan for building construction in municipal areas and conducting a detailed study on identification of faults and epicenters.

While talking about governance and institutional framework for BDP 2100, he said that the issue is very important in implementation. The government has formed Delta Governance Council (DGC) which is a small but high level inter-ministerial forum chaired by the honourable Prime Minister. It will be established as a supervising and guiding authority of BDP 2100. The DGC would function as formal linkage for achieving political commitments regarding BDP 2100 implementation. It will provide strategic advice and policy guidelines. Besides, it will provide overall coordination to the functioning of GED. The government has vested the responsibility of overall facilitation, coordination, as well as the monitoring and evaluation of BDP implementation to General Economic Division (GED) of Bangladesh Planning Commission. To render those assignments in an integrated and holistic manner as well-structured set up, Delta Wing will be established in GED. He informed the audience that GED has five wings now and it will either convert one wing or will create a new wing only to deal with this Delta Plan implementation issues.

Dr Alam spoke about the funding arrangements and financial mechanism. He stated that creation of a dedicated fund, Bangladesh Delta Fund with minimum 2.5 per cent of GDP would be needed, of which 2.0 per cent would be for new investment and 0.5 per cent would be for operation and maintenance. He also stated that by 2030, 80 per cent of overall funding would be from public sources and private sector involvement will be around 20 per cent, equivalent to 0.5 per cent of GDP. He then discussed the sources of delta fund briefly. He mentioned about government fund, development partners, environment and climate change related funds (GCF, GEF), and public private partnership (PPP) as possible sources. Funding strategy of the plan combines tax with non-tax revenue, cost recovery for public services such as 'beneficiary pays principle', 'polluter pays principle' and operation and maintenance funding. He explained that for cost

recovery, time-bound 'beneficiary pays principle' will be applied primarily in major cities, whereby all public urban water and sanitation services will be required to cover 100 per cent of the operation and maintenance cost that would come from the service beneficiaries. Over time, as he extended, consideration may be given to recover costs of capital expenditure and other public services.

He then talked about investment requirements for water resources management, climate change impact and environmental sustainability. He introduced the audience to some of the sources of funding. He stated that the plan has taken Fiscal Year 2016 as base year since the plan was being formulated at that time. He showed that how much fund is coming from different sources in FY 2020, FY 2025 and FY 2030. He talked about different aspects of funding, such as public investment requirement, maintenance cost, and private investment requirement. Out of the required 2.5 per cent GDP, only 0.8 per cent of GDP is currently allocated in the budget in water related projects, he informed. Gradually the funding would be shifting to projects relating to climate change. The government's next focus would be building mega-infrastructure in future like metro-rail, underground rail, tunnel, etc. The government will shift its focus on development budgeting towards those big projects rather than small roads or highways.

While talking about BDP 2100 Investment Plan, Dr Alam mentioned that an investment plan comprising of 80 projects (of which 65 are infrastructure projects and 15 are knowledge/institutional capacity development projects) of different sectors and hotspots have been identified for implementation up to the year 2030. There are a number of projects for each hotspot and the GED has estimated the amount the plan will spend for each hotspot. At the end, an approximate amount of US\$37.52 billion would be needed for the implementation of these projects. This amount is quite manageable as per GED's estimation.



Dr Alam said that the comprehensive knowledge domains of delta issues as well as the adaptive nature of delta management put knowledge management at a premium. Knowledge of global climate change and analysis and regional experiences will play important roles in guiding delta strategies and policies in future. The BDP 2100 knowledge and data management approach includes: knowledge needs and agendas; knowledge accumulation; knowledge availability; value realization; and delta knowledge community.

He identified the challenges of the implementation of BDP 2100. He stated that financing of the BDP 2100 investment plan will be a challenging task. However, he assured that Bangladesh has the ability to face that challenge. He suggested aligning Delta Plan implementation works with Annual Development Programme (ADP). He urged that focus should be changed because enough small roads, culvert, bridges, school, colleges have been built and established. ADP should be based on the Delta Plan to face the challenge. PPP and climate financing can be possible sources of financing for projects under BDP 2100 investment plan. He said that if he was correct by 2020, there will be US\$100 billion dollars in from the green climate fund. So, he hoped that Bangladesh would have share in the fund. Besides, Bangladesh needs to prepare itself by building capacity of the professionals who will implement the plan. Coordination among/between/within agencies is necessary. Designing new projects taking climate change impacts in consideration is important as well.

Finally, Dr Shamsul Alam listed the immediate actions needed for the Implementation of BDP 2100. The establishment of 'Delta Wing' in GED for overall support, guidance and coordination for the implementation of the BDP 2100 is necessary. It is important to establish 'Delta Knowledge Hub' for hosting, updating and sharing of data/information collected for and relevant to BDP 2100. He emphasized on presenting BDP 2100 to the development partners. He informed the audience that in January 2019, GED would hold convention with all the development partners for broadcasting what is Delta Plan and how they can help. He suggested development of the Water Users Association. Strengthening regional cooperation for transboundary water management issues should be given priority. He emphasized on basin wide water management and sharing approach for the Ganges, Brahmaputra and Meghna basin. He also mentioned about pursuing construction of the Padma Barrage in suitable location following basin wide approach through mutual cooperation. He said that the Honorable Prime Minister Sheikh Hasina is the member of the UN constituted high-level panel on water issues. So, Ministry of Foreign Affairs (MoFA) has to explore and promote international cooperation on water uses and development. He suggested that an action plan for next 12 years may be developed on these issues. Other suggestions include: sensitization of development partners about the plan for mobilizing supports to the implementation; capacity building of the relevant government organizations and acquiring knowledge of international best practices, as well as technology transfer; realizing the potentials of the Blue Economy.

Panel Discussion



Mr Abdullah Al Mohsin Chowdhury
Secretary, Ministry of Environment, Forest and Climate Change
Government of the People's Republic of Bangladesh

At the outset of his discussion, **Mr Abdullah Al Mohsin Chowdhury** thanked BISS and GED for such a timely initiative of organizing the seminar which is very important for the implementation of BDP 2100. He said that Bangladesh crossed over from a World Bank classification of low-income economy to a lower middle-income economy in 2015. The country has already fulfilled all the criteria for graduating from Least Developed Country (LDC) to a developing country. The country now is aspiring to reach upper middle-income country status by 2030. The development process has accelerated over the past ten years under the strong political leadership by honourable Prime Minister Sheikh Hasina and many well-planned development policies.

He noted that Bangladesh has been ranked as the 7th most vulnerable countries in the world in terms of risk from natural hazards and climate change. Tidal surge, salinity, flooding, river erosion and cyclone are the regular features of the country. These features pose continuous challenges to food security of the country and the livelihood of the large part of the rural population. Growing risks to sea level rise threaten to engulf a considerable area of the coast belt that could displace millions of people living in the coastal districts. He informed the audience that Ministry of Environment, Forest and Climate Change conducted a research on sea level rise in the coast of Bangladesh. The research found that during the thirty years the sea level rise is now 0.6 to 0.21 millimeter. He added that since climate change and natural hazards affect most of the Bangladesh, including its delta formation and integrated water management in the context of its interaction with climate change, environment, ecology, biodiversity, agriculture and land management, it is an integral part of BDP 2100.

He also informed the audience that the latest report of the Intergovernmental Panel on Climate Change (IPCC) shows that climate change effects at a 1.5° temperature rise will be more severe than what has been thought. The report also shows that from 2030 to 2052 global warming will reach 1.5°C from pre-industrial level. Until now, it was thought that global warming will reach from 0.62°C to 1°C but within

thirty to fifty years it will reach to 1.5°C. In this regard, he inferred that if the global temperature is not kept below 1.5°C then the climate change impacts will be more severe.

He then shared some of the initiatives of Ministry of Environment, Forest and Climate Change to combat adverse impacts of climate change. Firstly, the ministry formulated Climate Change Strategy and Action Plan in 2009 and now they are updating it. Secondly, under the personal initiative of Prime Minister, it has established Bangladesh Climate Change Trust Fund. The ministry already allocated more than Tk. 30 billion to address the adverse impact of climate change. They also allocated fund for more than five hundred projects. Thirdly, it has formulated country investment plan for environment, forest and climate change. This is a five-year plan. It found that to combat climate change issues, it needs US\$11.7 billion. But currently it has US\$4.7 billion. Hence, there is a gap of US\$7 billion. Fourth, it has already submitted Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) where it also showed that voluntarily Bangladesh can reduce 5 per cent emission of carbon and if it can get support then another 10 per cent can be reduced. Totally, it can reduce 15 per cent of carbon emission within 2030. The ministry estimated that to lower carbon emission and adaptation, Bangladesh needs US\$67 billion. He informed that of these, Bangladesh needs US\$42 billion for adaptation and US\$27 billion for mitigation. Fifth, it has conducted a national vulnerability assessment and the assessment report would be published within one month. The report will show the hotspot of the vulnerability and the types of vulnerability. Sixth, it is now preparing the National Adaptation Plan for submitting it to UNFCCC.

He noted that implementation of the Delta Plan involves total spending on delta-related interventions, through new projects and maintenance of new and old projects in an amount of about 2.5 per cent of GDP. The strategy for public funding that has been mentioned in this plan includes a combination of tax financing, application of cost recovery based on 'beneficiary pays principle' and mobilizing foreign funding including tapping into the global Green Climate Fund (GCF) initiative. There is a pledge that within 2020 onwards this fund will have US\$100 billion but unfortunately until now the pledge amount is US\$10.7 billion only.

He suggested that for entering into the Green Climate Fund, Bangladesh needs to prepare a bankable project. But in this regard, it has less capacity to prepare such kind of project. Hence, there is a need to increase the capacity to prepare bankable project in order to access Green Climate Fund and other funds, e.g., Global Environment Facility Fund, Least Development Country Fund and Adaptation Fund. In order to combat the adverse impacts of climate change, Bangladesh needs to access these funds. He stated that private sector financing is very important aspect in this Delta Plan. Engaging private sectors will generate sizable resources to finance the Delta Plan. For Delta Plan projects, on an average from private fund, it should, be able to mobilize at least 0.5 per cent of GDP per year. International experience shows that attracting private investment through public private partnership in water treatment, water supply and sewerage treatment is excellent. He suggested that it will require a new and innovative arrangement to encourage private sector participation in certain areas.



He added that the delta investment plan identifies with total of 80 projects: 65 are physical projects and 15 are institutional and knowledge development projects. Its total capital investment is estimated US\$37 billion and all projects can be started within the next eighty years. In this respect, he suggested that Delta Plan requires implementation arrangement involving multiple line ministries, local government institutions, communities and private sectors. Again, clarity of role, interdependence of actions and a coordinated approach are essential requirement for Delta Plan implementation. Additionally, new investment, adequate financing and an institutional arrangement are needed to implement the Delta Plan. The Plan has many opportunities. The soil and water combination of Bangladesh makes it a highly fertile land and land with multiple opportunities. He stated that there is a need to take these opportunities to implement the Delta Plan. To tap these opportunities, there is a need to overcome all the challenges as well. In conclusion, he suggested that there is also a need to work together under a holistic approach and in this respect Ministry of Environment, Forest and Climate Change is willing to work together with all relevant stakeholders with broader objectives to achieve BDP 2100 goals.



Dr Saleemul Huq

Director, International Centre for Climate Change and Development (ICCCAD)

Dr Saleemul Huq said that climate change has been well integrated in the BDP 2100. The timeframe involved in the Delta Plan is extremely unusual as it goes up to 2100 and the one thing that is in common in the timeframe is climate change. Climate change is going to turn out over that time scale. So, it is important for the policy makers to think about how climate change is addressed. He informed the audience that he has the privilege to attend all the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC) so far. He shared his experience of attending the latest COP 24 which took place in Poland. It was a good meeting as the parties had rulebook for the Paris Agreement which is the operating manual needed for executing the global deal in 2020. Nevertheless, he urged the global community to be much more ambitious than before. He stated that Bangladesh is concerned about adaptation. In this area, he made three main suggestions for the consideration of the Planning Commission and the government which are: thinking beyond projects, capacity building of the future generation and Bangladesh to play a leading role in global climate change negotiations.

Dr Huq emphasized on moving beyond thinking of projects to get funded by the green climate fund. Bangladesh needs to think about projects in terms of scientific methodology and transformational adaptation. Not just dealing with the problems by having a project deal with it but think about the whole country. He said that the country wants to become resilient as well as transformational in dealing with climate change over a period of time. The country needs much more resources which should be deployed in a strategic level rather than a project level. He has discussed the issue with a strategic adviser in Poland who showed interest in Bangladesh. Therefore, Dr Huq invited him to visit Bangladesh and meet the government about strategic partnership with Bangladesh. Currently, every initiative in the country is project-based. It is very difficult to get the project out of the Green Climate Fund. However, Bangladesh needs billions of dollars over a longer period of time and it is well placed to become a strategic partner. He hoped that they would be able to facilitate the partnership going forward.

He emphasized on investing for capacity building for the next generation. It is important to think about education and capacity building over the period of time and how to enhance the quality of that education. However, education in Bangladesh is providing quantity rather than quality. In particular, he emphasized the potential to utilize the university sector/the tertiary sector. Bangladesh has more than hundred universities not particularly with good quality which can be improved. Therefore, he hoped to work together on the knowledge management side of climate change. He mentioned that ICCCAD has a consortium of well over fifty institutions, universities and research institutes under platform called 'Gobeshona' where they regularly share information with the government and they have an annual conference.

He suggested that there is a need to quickly develop a teaching module from Delta Plan that can be taught at university level courses in Bangladesh. He stated that every student should have knowledge about the Delta Plan which is a major issue of the country, regardless of their educational major. He expressed his desire to collaborate with the government in developing a teaching module for universities which can be put into their regular master's degree courses. He hoped that it could address the issue of reaching bigger audience in terms of what the Plan is.

Finally, he opined that Bangladesh should think like a global player. Bangladesh is not only well known as a vulnerable country but also a resilient climate change country. Bangladesh's graduation from the Least Developed Country (LDC) should be seen as an opportunity. He recalled that he worked very closely with the LDC countries group in the negotiation for climate change. Bangladesh plays significant role in sharing South-South knowledge on how to graduate from the LDC status and how to become a more resilient country. So, there is a big foreign policy opportunity for Bangladesh to use the Delta Plan and other activities related to combating climate change as well as economic development and human development more broadly as a tool and share that knowledge to South-South and other developing countries particularly with LDC countries' group. He suggested that Bangladesh should not leave the LDCs behind; rather help them in graduation from LDC status which is an aspiration shared by all.



Professor Dr M Monowar Hossain
*Executive Director,
Institute of Water Modelling (IWM)*

Professor Dr M Monowar Hossain stated that BDP 2100 is a well-documented and long-term visionary integrated plan. The plan would be updated in either five or ten years interval. He then talked about some of the implementation challenges of the BDP 2100. He mentioned that due to Bangladesh's geographical location, it has some inherent challenges, such as floods, soil erosion, sedimentation and Bay of Bengal coastal cyclones and pollutions. Citing the example of Buriganga River, he said that there was a time when its water was so clear that people could swim. The authorities have been trying to clean the water but the success is not appreciable as they expected. Besides, implementing the projects in given time and the cost estimated would be another challenge.

He mentioned that Institute of Water Modelling (IWM) has developed a number of modelling scenarios for the Delta Plan. First, what will happen in the changing climate scenarios in 2050, 2060, 2070 and 2080? They have seen that rainfall will increase in rainy season and will decrease in dry season. It means flood flows will increase by 10-15 per cent and the dry flows that come from the transboundary rivers will decline up to 40 per cent. These two situations – heavy flood in rainy season and drought in winter will put Bangladesh in difficult situation.

He suggested that the government should evaluate the failure and success of the previous projects considering the technical aspects rather than financial aspects. According to Ministry of Agriculture (MoA), some land will be degraded because of the development activities but lands do not refill its quality easily. It can be said that more lands are degraded than new lands are accreted. Another issue of concern is the displacement of population which is about 50 thousand per annum. This is also a big problem experienced by Bangladesh. He asked where these people will go and if they move to the city or town. He agreed with Dr Alam that urban areas are hotspots and expressed his concerns over the difficulties in creating green and blue spaces. There are some procedures that need to be followed in order to create lands and implementing these procedures is not easy.

Then he shared one of his experiences regarding implementation challenge. He said that if one considers creating land, firstly they have to dredge and then dump the dredged soil. They took a pilot capital dredging project for the government of Bangladesh for Jamuna River. They tried to dredge for 22 kilometers in the Jamuna River upstream of the Bangabandhu Bridge and spent Tk 20 billion on it. As soon as the dredging was completed, they monitored the dredging in daily basis and found out that within three months 80 per cent of the dredged area was filled up due to sedimentation. He advised that before taking any

gigantic project, the planners need to foresee what would happen in the future, if the project can proceed under critical studies or continue with the faulted modelling otherwise, the policy makers might have to regret in future.

Lastly, he emphasized on having proper education, skilled and qualified people and above all having ethically strong people who love the nation and the land. Because the delta is nothing but lands and rivers, people should love their land and their rivers. He advised that everyone should leave something good for the next generation that they will appreciate it and feel proud of. He also talked about transboundary river agreement negotiation in which the Chief Guest had played an important role. He conveyed his interest to know whether Bangladesh could still use the water after the agreement ended.



Open Discussion



Dr Syed Anwar Husain, Professor, Bangabandhu Chair, Bangladesh University of Professionals (BUP), expressed his delight and excitement about the fact that there are people in Bangladesh working at the Planning Commission, thinking about securing the future of Bangladesh. He thanked the Planning Commission and specially BIIS because it appeared to him that this was the most important seminar that he has attended at BIIS. He said that BDP 2100 seems to be a plan in the right direction. But he had certain questions bearing on the implementations of these huge plan and challenges,

which need to be responded adequately. First of all, the people know that there is a primacy of the political. The Planning Commission could plan this because the government in power is conducive to whatever they are thinking and planning. He asked what would happen if there comes a government which does not as bear to them as the present government would be bearing. He asked if the Planning Commission that had taken into consideration these challenges about the primacy of the political. Secondly, he thanked the Planning Commission as they are thinking about the past and present in delineating the future. Moreover, he remembered the statement of Winston Churchill that said "if one can look longer back, they can look ahead". His third point was about financing. The government had certainly identified the sources of possible funding of this huge plan. He also had one worry about the financial management in Bangladesh. In fact, all plans and programmes when come to implementation require good management. He thinks that Bangladesh's financial sector needs good management to finance this plan. He agreed that the plan needs to have finances from foreign origin, but the domestic finance should be better organized.

Maj Gen (Retd) Jiban Kanai Das, ndc, psc, Former Director General, BIIS, said that a great deal of dynamism and courage of conviction is needed to conceive such a 100-year plan. He congratulated everyone including the honourable Prime Minister for conceiving and delivering such Plan. He agreed with Dr Saleemul Huq and Dr Monowar Hossain about education. Awareness is crucial for developing the minds of the people. He urged that people need to perceive that they belong to Bangladesh and their future lays on this and they should count it as an investment. He suggested that there is a need for motivating the people. He emphasized on regulatory mechanism of the Delta Plan. In both Dhaka city and in the rural areas, the size of the house is getting bigger, and smaller number of people is staying in it. The country could not afford because it would soon have a population to the size of 26 or 27 crore people. He urged the authorities to manage the population and suggested that there should be regulatory mechanisms. In this regard, he gave the example of Singapore which is surrounded by sea but could manage its water problem quite successfully.





Mr Saleh Ahmed, Freelance Journalist, stated that he has been working on the issue of water and water resources. He referred to the panelist Professor Dr M Manowar Hossain who had talked about dredging in the Jamuna River and wasting about Tk 20 billion in a while. He mentioned that last year government had a plan for about Tk 170 billion allocation basically for these kinds of projects on rivers and water transportation. Every year Bangladesh had more than 100 crore tones of natural gift, that is, sediments, which had not been pointed out or taken into account; resulting in the wastage of this

great resource. It is his personal belief that if these 100 crore tones of sediment are properly managed, it will not only give return, but also will help in water preservation, which is also a major problem for Bangladesh. In addition, it is important that how this sediment is managed in a cost effective way and the soft water is kept in the rivers by dredging. He commented that the way the government is adopting the plan is not proper and adequate, as he had observed the process closely. He pointed that 80 per cent of the allocated funds for the dredging purpose was misused. Dredging is a highly costly thing and fuel consuming. For last eight years, he has been trying to convince the Ministry of Water Resources and other concerned people to use gas instead of oil-based dredging, but all were surprised that how there will be gas on the river. According to him, the process is very easy as Shahbazpur gas field have remained unutilized since 1995. He had submitted the plan that stated that for every dredger three water vessels containing the gas cylinder will be needed; one will be with the dredger, one will be on the way and one will be on the point. The dredgers can be built in the shipyards, which were already developed. So, in his opinion, without conversion of the dredgers from oil to gas, no plan of the government will be successful. Secondly, there should be separate department or ministry who will contact with the other side of the world—those who are trying to raise their land, to expand their country and so on. He mentioned that it has become a very modern business now. Few years back he heard that government is consulting with Singapore to enter into agreement for the enhancement of land and other facts. If the government could very effectively contact those countries who are willing to expand their land and enter into an agreement where they can come, dredge, and take the sediment then Bangladesh would be safe. That would serve two purposes of Bangladesh, the dredging cost will be zero, the water basin will remain fine and it will be able to keep all the soft water which is a natural gift and costly thing. He believed that if this plan is done moderately and successfully, Bangladesh need not to turn back, it can stand on this sediment and water basin. He believed that there are enough resources for Bangladesh's upliftment for its development programme.

Mr Shamsul Huda, Special Correspondent, The Daily Observer quoted Dr Shamsul Alam who said that about US\$38 billion is needed for implementing Delta Plan. In this regard, Public Private Partnership is mandatory. He asked how the money would come and how private investment would be set or be benefitted for these projects. He also wanted to know whether Blue Economy could be included in the Delta Plan.





Samshad Nowreen, Assistant Professor, Department of Tourism and Hospitality Management, University of Dhaka, noted that Delta Plan is the most visionary plan ever formulated in Bangladesh. While teaching courses like Sustainable Tourism, Development or Tourism Geography, she suggests her students to go through the whole Delta Plan because it covers almost everything. She raised a question regarding urban greenery. She asked what type of prioritization is given to the wetlands of the urban areas in the Delta Plan

since it is a very concerning issue.

Shamila Sarwar, Programme Associate, CPD, asked the keynote presenter to elaborate his view on the green road strategy that has been included in the Delta Plan. She said that in addition to the research on the technology, research on renewable energy has to be done. She requested the panel to elaborate on specific green road strategy that can be evolved for the further development of the Delta Plan.



Dr Helal Ahammad, Professor, Department of Economics, North South University, thanked the presenter for such a magnificent presentation and undertaking a herculean task in terms of implementing the plan. His question was about capacity development. His understanding is that adaptation takes place at various scales, but it has been done in Bangladesh at the top level. So, to proportionalize other levels of decision making and adaptation, there is need of information. In terms of passive development, the government should be more focused and there should be projects or tasks

identified to develop information and sharing it with broader community so that they can also do their piece in terms of adapting to climate change phrase and vulnerabilities. He pointed out that adaptation is the international priority, nevertheless, mitigation should continue as well. Discussions about 100-year plan are going on, so today's small footprint in terms of carbon may not last long. As a very energy poor country, once Bangladesh moves on to that it needs to think about mitigation. Some of the energy projects got long life, 30, 40 or 50 years and they are sub-dependent, and those things need to be taken into account as well.



Ambassador Shahed Akhtar, Former Principal, Foreign Service Academy, said that 2100 is coming only in 82 years. The next generations would see what would happen and understand it. He opined that challenges are removable and mentioned that time to time it would be further revisited and taken care of. Environmental experts say that certain portion of Bangladesh would go under water. He pointed that he had not heard much about that in that particular area, such as how much this Plan would add new delta, emerging area or something would be missing in near

future. He mentioned during his assignment in the Ministry of Fishery and Livestock, he had received very good proposals. But the programmes and projects were very small. Bangladesh, in the last year, has done a number of mega projects. The people have quite well understanding of the ongoing mega projects and it is a good sign for the stateholders of the mega projects, which are getting foreign investments and international participation. He further added that it is a very viable one and those who wanted to help the people of the country, definitely they would come forward. He remarked that Bangladesh's delta would become quite visible before it came into reality. He suggested that the way forward should not come after sometime, rather it should be immediately. Bangladesh has a number of divisions and districts and he thought that some programmes in coastal districts need to be run immediately.

Mr Liton Kumar Sarkar, Executive Engineer, Bangladesh Water Development Board, thanked the panelists for their excellent presentations. He drew attention of Professor Dr M Monowar Hossain, who had mentioned about capital pilot dredging that costs nearly Tk 20 billion but as far his knowledge the project cost below Tk 10 billion. In that project, 22 km dredging and 16.5 square km area were incorporated. He finished his clarification mentioning about an ongoing project on the plan for an industrial park.



Group Captain Syed Fakruddin Masud, Bangladesh Air Force, talked about the challenges of implementing the Delta Plan within the natural threats, such as earthquake. If any strong earthquake hits Bangladesh or any of the other areas, this plan might slide down significantly. He asked if Bangladesh had any preparedness to control the damage caused by earthquake especially in urban areas or mega cities. He asked whether Bangladesh has any policies to control and stop deforestation as it is largely responsible for reduction of the rainfall in Bangladesh. He mentioned that one of the best of sources of water in the country is rainfall which could be stored and used in future. Bangladesh has no control over the inflow of the water from the neighbouring countries which depends on their will. He was skeptic about how much Bangladesh could



enforce them but pointed out that rainfall could be controlled. He suggested that rainfall could be increased through forestation and reducing the deforestation. He mentioned that near the south of Muhuri dam, large amount of coastal land was forested aerially. The seeds were dropped from the air and huge forest had been developed there. Finally, he asked if there was any plan to use the around 24 thousand sq. km of coastal area for the purpose of forestation to make impact on the rainfall of the country.



Dr Feisal Rahman, Research Coordinator, International Centre for Climate Change and Development (ICCCAD) and an author of IPCC 1.5 report, conveyed kudos to all involved in formulating the Delta Plan. He said that there were several targets in the plan and particularly pointed out the energy sector. According to BDP 2100, 30 per cent of the power is supposed to be coming from the renewable energy sector by 2041. However, according to the Power System Master Plan for the year 2041, the total target from the internal sources for renewable is about 6 per cent. On the other hand, according to the Renewable Energy Policy

Targets 2020, it supposed to be 10 per cent. Right now, as of today it is somewhere around 2.7 per cent or 3 per cent, which is clearly less than 3 per cent. So, his question was who is going to monitor that whether Bangladesh could reach those targets and if there is a policy mismatch between targets then how implementing agencies would synchronize.

Commodore Kazi Emdad Haq, Director General, Bangladesh Institute of Maritime Research and Development (BIMRAD), reinforced the recommendation that the teaching module package for the awareness of the Delta Plan, might be termed as 'Delta Plan 2100 Awareness'. He emphasized on the role of media in awareness building. For instance, media can play a big role in awareness raising at the rural level. He opined that waste management and pollution are important issues as well. People are poisoning, using equipment sand dumping. The ship breaking yard area is the greatest pollution zone along the coast in Bangladesh. Some parts of Bangladesh would go under water due to sea level rise. He was concerned about the condition of the people in the affected area and urged to think about the diaspora. The government needs to be conscious about corruption and ensure good governance in implementing BDP 2100.





Mr Salahuddin A Bablu, Journalist, SATV, had the query that though it is heard since many years that Bangladesh is an active delta, whether it is dead by now or not. He wanted to know about the growth rate of this delta in last 100 years and the present condition as well. He also asked what will be the area of Bangladesh in the coming 100 years. He wanted to know whether these issues were incorporated in the plan or not. According to him, active delta is always a resource, but this discussion gives the essence that it has become a burden for Bangladesh. He asked to clarify that whether

this resource had been converted into a problem, and if the answer was yes then who was responsible for that. Regarding Russian technology of dredging, he clarified that the Russians do not use dredgers for river dredging. Rather, in the monsoon season when there is huge amount of river current, they blow away the coasts with dynamites. It eventually gets broken and erodes with the flow of water. As it is of low cost, he requested Professor Dr M Monowar Hossain to clarify whether Bangladesh can pursue this kind of technology.

Dr Munsur Rahman, Professor, Institute of Water and Flood Management (IWFM), BUET, said that the knowledge hub is very important. He mentioned that GED is working informally for the last 6-7 years for the knowledge hub. He requested to formalize the platform in order to use the research output in the planning process. He added that the people currently in charge might not be alive but the system might sustain which could march towards sustainable development. He urged to find a mechanism on how the knowledge hub would be operated. He expressed his willingness to contribute if GED works on this issue.



Response by the Speakers



Dr Shamsul Alam

*Member (Senior Secretary), GED, Bangladesh Planning Commission,
Government of the People's Republic of Bangladesh*

On the issue of change in the political government and continuity of the plan, **Dr Shamsul Alam** agreed with Professor Dr Anwar Hossain and said that many people say that the government is visionary and it has made good plans and projects. He stated that it is difficult to answer this question as it is political, if one considers hypothetically, till current time, in case of changes in the government, the political projects of the previous government have been annulled by the new government. For example, Goat Development Projects (2001-2006) has been abandoned. He added that it seems, if the government changes, “Ekti Bari Ekti Khamar” (One House One Farm)” project might be a scapegoat. But he assured that no government had rejected any major plan. Citing the example of First Five-Year Plan, he said that in the context of post-75 situations and even though the First Five-Year Plan was from 1973-1978, it was not abandoned. He added that though there was a major shift in economic policy, the plan was effective since 1978. Officially, it was implemented and a two-year plan in 1978-80 was formulated for bridging the gap. He also mentioned that the Fifth Five Year Plan was from 1997-2002 and Awami League was the ruling party. In October 2001, the government was changed but the then government did not abandon the Fifth Five Year Plan. They had made interim Poverty Reduction Strategy Paper (PRSP), but it was not abandoned. The current government continued the previous PRSP-2. It was revised and PRSP was so popular, that it was not abandoned. He also hoped that since the BDP 2100 is a huge and beneficial plan, whoever in government, would never abandon it. He also added that some projects may be cancelled but he believed that no government would abandon the entire Delta Plan.

On the comments about dredging, he said that some people used to say that 80 per cent of money is misused in the process. It was true in certain period of time, but today it is computerized. During dredging, he claimed, how much sediment is coming with water per second can be traced. He claimed that there is no chance of malfunctioning because of the development of technology. He also added that the Blue Economy has been included in the plan as wetland, priority has been given to it because it is related to the livelihood.



Dr Saleemul Huq

Director

International Centre for Climate Change and Development (ICCCAD)

Dr Saleemul Huq said that there were two major issues regarding the green growth strategy: pollution and resource utilization. Resources for Bangladesh are mainly energy and water. For a 100 or 82-years plan in the energy sector, there has to be an understanding that Bangladesh will not be constrained by present realities and the plan can bring out some kind of scenarios in the future that are not just projections of the usual business. One of such future scenarios is regarding energy sector. At the global level, the energy cost of renewable, solar and wind that is a tripartite combination, along with their storage technology, is going down continuously. One did not have to pay for the sun, or wind but for the technology to convert it into usable energy and he opined that technology is getting cheaper and it has already crossed coal; it will cross petroleum and natural gas within a few years. So, future investment in fossil fuel will not make economic sense anymore. It would be better not to think about the present constraints; rather focus should be on the future opportunities.



Major General A K M Abdur Rahman, ndc, psc
Director General, BISS

Major General A K M Abdur Rahman, ndc, psc said that he has not found any study in last couple of years which can make him think about the use of renewable energy, particularly the solar energy for the commercial purpose in the context of Bangladesh. This is because a awful scenario comes out if the track records are observed. He did not know the answer of the question raised that from where will the 30 per cent renewable energy by 2041, as envisaged by the Delta Plan, will come from. According to him, the reality was something different from what the panelist Dr Saleemul Haque said. In Bangladesh, there is scarcity of land, where, for generating 1 Megawatt (MW) of power there is need for 1,700 square meter space. So, if 30,000MW by 2041 is confirmed as a target, total generated target as per Power System Master Plan 2016 and the government plan is 60,000MW; which means 18,000MW will have to come from renewable energy. Apart from the solar, if the main source of renewables is taken into account, normally which comes from hydro, Bangladesh does not have more than 500KW. *Kaptai* dam can produce 250KW but its average production is 120KW and it can be exceeded by another 100MW by extending another dam. *Matamuhuri* and *Sangu* are the two rivers where maximum 100MW could be produced and another 75MW can be added. So, in average 500MW is the maximum amount for the future. He did not observe any progress in the wind or the wave energy, so he was not very hopeful about that. Considering all these, he remarked that there is a necessity of thinking about the reality of Bangladesh and also the Delta Plan 2100 which envisages 30 per cent of energy coming from the renewable sources. The only bright hope to compensate, according to his opinion, was to make a real tri-nation power sharing agreement among Bangladesh-India-Bhutan or Bangladesh-India-Nepal, because they have huge prospects and it could last long. That is one of the good future prospects of Bangladesh, if it really wants to incorporate the 30 per cent goal. Otherwise, the goal has to be modified.



Professor Dr M Monowar Hossain
Executive Director
Institute of Water Modelling (IWM)

On the issue of dredging, **Professor Dr M Monowar Hossain** said that dynamite technology is used in Russia to dredge the river. He was aware of it, nevertheless, personally had not thought about whether it can be used in Bangladesh or not. He said that the use of dynamite certainly needs security clearance for the conduction of survey and using instruments like unmanned vehicles. According to him, it would be very difficult and Bangladesh cannot do it without joint venture. But he agreed that was a potential area to be explored.

Regarding capacity development and delta hub, he informed the audience about few research projects to support the Delta Plan 2100. One was mentioned earlier – the Delta CAP, which meant Delta Plan Capacity Building Project. He cited few institutions involved with it, including the IWM, Water Board, WARPO, BIKAS and some other institutes. Another project was Water Management Knowledge Innovation Programme. IWM was leading one in research along with other partner organizations. It also involved different implementing agencies like Water Board, Planning Apex bodies and also Planning Commission. From 01 January 2019, joint cooperation project will start which would also include lot of partners to support Delta Plan 2100. He referred to Dr Shamsul Alam who said that Delta Plan is a mega plan but it has many small component plans and hotspot plans. Along with these plans he mentioned about the inclusion of own integral planning which was suggested by Dr Syed Anwar Husain. Lastly, on the clarification of the budget of dredging, he opined that numbers were not an issue. The amount of money in the dredging budget could be different, as his focus was only on about how siltation took place. He also clarified that the fact about creation of an island was under another project, which came after the dredging.



Mr Abdullah Al Mohsin Chowdhury

Secretary

Ministry of Environment, Forest and Climate Change

Government of the People's Republic of Bangladesh

Mr Abdullah Al Mohsin Chowdhury started his response with the question on the green growth. According to him, green growth is the combination of all work including reforestation, afforestation, greener production, clean air, etc. He mentioned about the works undertaken to achieve the green growth. One was the Clean Air Project which was being implemented since last ten years. Eleven camp stations had already been established to monitor the air pollution, to find out where the air pollution was higher and which industries were responsible for the air pollution. He also informed the audience about a research as well, where it was found that air pollution from Dhaka city was mainly due to the brick burning. He said that 58 per cent of the air pollution of the Dhaka city was due to brick field. There are also some programmes for afforestation and deforestation. Some projects were for newly accredited *chor* land and within those projects there are plans to plant trees in 100 acres of land along the coastal belt and also upper land of the country. The government is also trying to establish effluent treatment plants (ETP) for all industries. Until now, 80 per cent of the industries have ETP. When under observation, the industries use ETP but without it they stop using ETP. He remarked that the main problem was the enforcement of ETP. Another problem was lack of awareness about it among the educated people, which, in his opinion is the real threat. He gave an example that though everybody know that polythene is bad, they never deny using it for shopping. Rather, they insist the seller to give the purchased products in polythene. So, his thought was on the need for self-awareness of educated people. Otherwise the green growth cannot be achieved.

Regarding the question of information sharing, he shared the plans on Nationally Determined Contribution (NDC) to mitigate carbon emission of Bangladesh, which was been submitted to UNFCCC. In that plan, Bangladesh committed to reduce 15 per cent carbon emission from business areas within 2030. He said that adaptation is the priority of Bangladesh. The last report on third national communication will be set for submission to UNFCCC within one month, which will show in which sector how much emission is taking place. He pointed that the figure was really negligible, but still Bangladesh committed to reduce its 15 per cent carbon emission from business as usual situation if support from outside is available. The government also voluntarily committed to reduce 5 per cent emission with its own resources. He mentioned that all the information regarding adaptation and mitigation can be found from the mentioned document.

Address by the Chief Guest



Dr Mashiur Rahman

*Adviser to the Honourable Prime Minister on Economic Affairs,
Government of the People's Republic of Bangladesh*

At the outset, **Dr Mashiur Rahman**, conveyed his regards to the audience. He congratulated BISS for taking a timely initiative of organizing the seminar on a very important subject. He praised all the presenters for making high quality presentations in the seminar.

Talking about good governance and corruption, he said that there is no country that does not have corruption. The government may not always be functioning the way it should. Some government is more interested in its self-aggrandizement while others try to help the people in general and improve the conditions of the country. Bangladesh is fortunate that the current government is committed to the welfare of the country. He stated that people choose their government. If they choose their government rightly, the government will also do the right things to them and to the country.

Regarding dredging, he informed the audience that there are two institutions that are involved in dredging which are: Bangladesh Inland Water Transport Corporation (BIWTC) and Bangladesh Inland Water Transport Authority (BIWTA). They follow different modes of dredging. BIWTC is interested on getting their ferries across. If there is *char* somewhere, they will remove the *char*. In most cases, the sediment that is removed from the *char* remains within the river. So, it accumulates elsewhere. Therefore, they do not take the mud out. On the contrary, BIWTA follows a course which takes it out of the river. They have a problem of depositing mud as the land on the shore may belong to someone else. However, the government is trying to find ways of using the dredged land to raise low land and to prepare that for construction, social and civic purposes. It is a difficult contractual arrangement but the government is trying to do that and succeeding in many places.

He agreed with Dr Saleemul Haque that technology does not remain static; rather it responds to human needs. For example, the battery holds charge much longer than it used to do even a year ago. So, it has become cheaper and more efficient. Technology for transforming a material to something else becomes also more efficient in terms of generating utilities. Thus, things move on and people use less and less tangible material in order to produce more and more utilitarian objects. He opined that knowledge hub is very

important in that kind of transformation as it is knowledge that gives the power to transform tangible material into something more useful and efficient. Realizing the significance of knowledge, the government is setting up institutions and universities focusing on science and technology as well as social sciences. Undoubtedly, unless a new technology is introduced to a society which is prepared to accept something new, it does not work. The institutions and to some extent social science will prepare the people psychologically and culturally to accept that things happen for a reason and it happens for the better.

Bangladesh is the largest delta and an active delta. It is very difficult to say precisely what would happen in the coming years. However, the government is trying to look at the delta within its present form, as it has developed within the last couple of years. There is a kind of probabilistic future as it is not a determinant project. The plan describes how things will happen and identifies the ways how the country can prepare itself. He commented that a 100 years plan needs proper monitoring whether things are changing or not to which the plan has to be adapted properly.

One of the significant contributions that the report plays is identifying 'hotspots' which are characterized by slightly varying patterns of hazards. The six hotspots are i) *haor* and flash flood area, ii) coastal zone iii), Chattogram Hill Tracts (CHT), iv) urban areas, v) drought prone areas, vi) river systems and estuaries. The report has undertaken a very thorough analysis of the hazards in the areas down to the level of upazilas. He shared some of the important findings with the audience. The population growth was highest in the urban areas. CHT is identified as the less hazard prone area. The growth of population in urban areas is justified as people migrate to urban areas. In regards to CHT, there is a different kind of explanation which has the availability of land but the per capita income in CHT is lower than other places. So, there is land which is not used to its full potential. But there ought to be some constraints in using the lands in CHT as it is also the largest concentrated forest area of the country. CHT did not grow much. Coastal zone has a negative population growth whereas others have a positive population growth than the nations average. The coastal zone also has higher literacy rate other than the urban areas. Urban areas have about 67 per cent people educated where as the coastal zone has about 54 per cent. Employment is low in the coastal zone areas. One of the good news is that poverty reduced very significantly by large margins in all the areas. He opined that it is something the country can be proud of.

There are few concerns that the government and the policy makers need to look at. High concentration of population, modern facilities and economic activities create load that the land in urban area, CHT and hazard-prone areas may not be able to bear. It also requires a scheme of de-concentration in those areas so that the load does not increase. People often say that Dhaka has become very difficult to live which refers to the discomfort created by this overload in small area. Second is the negative population growth in the coastal area with high literacy rate. The coastal areas also have resources. That is one area the government need to look at. Land use in CHT needs to be contained according to a plan so that the forest is preserved as Bangladesh is already low in forest area.

He then talked about sub-regional cooperation. About 93 per cent of the catchment area of the major rivers is outside Bangladesh. However, 90 per cent or even more sediments flow through Bangladesh. As the speed of the flow slows down, there is more sedimentation. So, these are kinds of accelerated sedimentation as water loses some of its speed. Undoubtedly, Bangladesh would be benefitted if there is sub-regional cooperation. Unfortunately, Bangladesh, Bhutan, India and Nepal have not been able to set up sustained long term programme of cooperation. Bangladesh bears the brunt of that failure too. Bhutan and Nepal lose a few points of growth as well as India. Besides, India has serious problem in terms of energy security. If it grows at the speed as it is growing, India's energy demand would be much higher.

He said that in January 2010, Prime Minister Sheikh Hasina visited New Delhi. A joint communiqué was issued, leading to cooperation in a number of areas. The following year when the Prime Minister of India visited Bangladesh, a framework agreement for cooperation for development was signed. Since then, substantial progress has been made in transport connectivity and transit. But, the progress has been slow in other areas. Joint Rivers Commission (JRC) was set in 1972 which prepared a draft text for Teesta River. But it is in stalemate. Referring to *Gajoldoba*, he said that it is difficult to think of a major structure for diversion of water. It seems the point of the stalemate is fuzzy as the agreement was basically to see how much the water flows into Bangladesh and then to reach an agreement that Bangladesh would be assured of water. In 1996, when the Awami League was elected after so many years, one of the high priority diplomatic initiatives was the Bangladesh-India Ganges Water Sharing Treaty. The treaty guarantees minimum flow of water. But the minimum is the average throughout the year. In monsoon, Bangladesh gets more than what it needs. On the other hand, most often the country gets less than what it needs during dry season. There are reports that in some cases it could be as low as one-seventh what the country needs. He observed that Bangladesh should advance with Ganges barrage project to overcome water crisis during the lean period. Bangladesh did prepare a feasibility report of the Ganges Barrage which has been handed over to India. Since then, at the technical level of JRC, there has been some exchange of questions. It seems that there is a need a little bit of traction and speed in moving ahead with Ganges Barrage.

With having 57 trans boundary rivers and 93 percent of river catchments areas outside its territory, Bangladesh has to step up diplomatic efforts for a greater regional cooperation in getting equitable share of water as well as importing hydro-electricity from Bhutan and Nepal. Dr Rahman informed that Bangladesh already discussed the issue with India which agreed in principle to allow Bangladesh for importing hydropower from Bhutan and Nepal. However, he regretted that no progress has been made to this end in practice. He emphasized taking a very strong initiative by Bangladesh in persuading that it is beneficial for all the countries. Even after the signing and committing to the agreement, it will take years to do the design and get the money to put it up. He mentioned that Bangladesh has started importing energy from India. But India cannot give us much more. Bhutan, Nepal and the North Eastern states have enormous hydropower generation capacity. If the capacity is used, there is a possibility of having clean energy at a very low price. But the countries are not moving into that direction. It seems that the attitude toward cooperation is ambivalent.

Bangladesh lies in the confluence of three mighty rivers—the Ganges, the Brahmaputra and the Meghna. Rivers by all definition are international. International rivers are the one which flows through more than one country. It does not depend on individuals designating the statue of a river being international. It is the nature of the river which makes it international. So, these three rivers are indeed international rivers. India in the late 1950s and 1960s agreed to the river basin agreement which provides irrigation water to Pakistan. The irrigation system was conceived and set up before 1947. In 1960, India and Pakistan signed an agreement in which India did validate that it is an international agreement. To the credit of India, this agreement has been honoured by India even in the worst time of conflict or any other situation. India is sensitive about its international commitment. It should be also sensitive to its potential international commitment particularly if the commitment is beneficial for its neighbours who are on friendly terms with India. He urged the Indian authorities to show more sensitivity regarding its closest neighbour's interest.

He said that the government should have proper water treaties with neighbours so that hydropower could be used for sustainable development. UN defined the concept as the use of resources in such manner that the next generation gets the resources it needs for decent standard of life. The next generation definitely would like to have a standard of life which is much better than what the people have at present. The solution

is more efficient technology. One should consider that it is their responsibility to save resources for next generation which is a question of the intergeneration ethics. There can be ethics for the neighbours too. He remarked that India has an obligation to do justice and show morality to the interest of its close-door neighbours. India ought to consider seriously moving ahead to a cooperative arrangement which is beneficial to the countries around it particularly; with the countries it is with a very good term. It may benefit Bangladesh more than others but it does benefit Bhutan and Nepal which do not have very promising sources of revenues other than using the hydropower potential. So, he emphasized taking concrete diplomatic initiative to do that. He observed the fact that the country has put more emphasis on immediate access to power import from India and leaving the water issue, is a kind of constrained strategic foresight. He opined that if the country had foresight, it would have been put more emphasis on water sharing issue. However, the country has responded to the immediate need and ignored the farsighted strategic need.

He concluded his speech by hoping that after the election the country has the government that does well for the people and the country which is necessary for moving ahead with the plan. Finally, he thanked the organizers once again for giving him the opportunity to share his thoughts and concerns with the audience.



Closing Remarks by the Chair



Ambassador Munshi Faiz Ahmad
Chairman, Board of Governors, BISS

Ambassador Munshi Faiz Ahmad mentioned that this seminar was a follow-up to the previous seminar held in early-November 2017. The seminar was an initiative to promote awareness and draw more attention from different sections of the society to Delta Plan 2100. It focused on the challenges to implementation and how to address those through discussion and dissemination of information.

He said that Bangladesh is the largest delta in the world and sits on top of the largest bay in the world, the Bay of Bengal. It is crisscrossed by numerous rivers and their tributaries that are indispensable part of our life. They have shaped the land, its history and geography since time immemorial. He added that water means the water carried by all the rivers, stored in internal water bodies, underground sources as well as the Bay. The life and psyche of the people are very much water-centric and their lives, livelihood and future are intimately connected with and dependent on how the delta and its water resources are managed.

He mentioned that BDP 2100 is a comprehensive, integrated, holistic, long-term perspective development plan for Bangladesh spanning almost a century. It also includes a framework for implementation with an investment plan phased out in short, medium and long-term interventions. It was set to contribute in achieving three national goals: a) realization of the government's Vision 2021; b) achieve the SDGs and upper-middle income country status by 2030; c) become a prosperous country by 2041. However, the plan would be looking much beyond that timeframe. By nature, it had to be adaptive and flexible; perhaps, corresponding to current five year plan cycles. It is needed to evaluate and reevaluate what could or would be achieved in next 5-10 years and how to move forward from that point. Some projections would be missed/ not realised, and would require recalibration of the plans and projections every few years.

The GED of Bangladesh Planning Commission has been in charge of preparation and coordination of the BDP 2100. They had already produced its final version, approved by the honourable Prime Minister. In the process, they had consulted various stakeholders, e.g., practitioners, relevant experts from different government agencies, academia and other stakeholders. The father of the Nation, Bangabandhu Sheikh Mujibur Rahman, realised the critical importance of water and water management in people's lives in his

great wisdom and was committed to developing flood control, drainage and irrigation facilities in the country. He established the Bangladesh Water Development Board (BWDB) in 1972. The first Five Year Plan of Bangladesh (1973-1978), prepared under his guidance as chairman of the Planning Commission, strongly emphasized on sound management of water resources. Many strategies and policies for sound management of water resources highlighted in that plan are as relevant today, as they were then, suggesting his far-sightedness in identifying the need for holistic management of water.

Ambassador Ahmad commented that the BDP 2100 is grounded in a vision of future for the country. The Delta Vision had also been included in Bangladesh's 7th Five Year Plan (2016-2020) as follows: "Ensure long-term water and food security, economic growth and environmental sustainability while effectively coping with natural disasters, climate change, and other delta issues through robust, adaptive and integrated strategies, and equitable water governance." He mentioned that a few weeks ago, Ministry of Foreign Affairs held a major consultation workshop at this very premise to discuss their possible contribution in strengthening and effective implementation of the BDP 2100. He noted that there had been different initiatives in the country earlier, to ensure efficient management of water, namely the Krug Mission Report (in erstwhile East Pakistan, 1957), Flood Action Plan, Bangladesh National Water Policy 1999, National Water Management Plan 2001, Bangladesh Water Act 2013, etc. He emphasized that the BDP 2100 cannot be seen as isolated from its predecessors and needs to be closely linked with them in terms of lessons learnt.

Finally, he said that all the participants of the seminar enriched understanding of the BDP 2100, current and future challenges, and way forward. Since the plan is an ongoing process, there would be a need for regular evaluation, adaptation and calibration as required from time to time. He hoped that the seminar would significantly contribute in addressing these important issues successfully.

Summary of Suggestions and Recommendations

Many suggestions and recommendations have been put forward during the presentation and discussion of the Seminar. Some of them are as follows:

Bangladesh Delta Plan 2100

- The BDP 2100 cannot be seen as an isolated project from its predecessors, e.g., Flood Action Plan, Bangladesh National Water Policy 1999, National Water Management Plan 2001 and Bangladesh Water Act 2013. It needs to be closely linked with them in terms of lessons learnt.
- The plan should be adaptive and flexible to incorporate changes as and when required.
- The BDP needs to have greater emphasis on climate change with research and innovation to find out advanced adaptation capabilities. It has been recommended to consider climate change impact in every phase of its implementation.
- Implementation works should be aligned with Annual Development Programme (ADP).
- There is a need to conduct Feasibility Studies before taking up Delta Investment works, e.g., dredging, TRM, etc.
- Emphasis should be given on the use of social accountability tools that would be essential to engage communities and ensure their participation in implementing the BDP 2100.
- For implementing the BDP, new investment, adequate financing and improving institutional arrangement should be considered. Bangladesh's financial sector needs good management to finance this plan. Home finances should be channelized as well as foreign finances.
- Emphasis should be given on private sector involvement in the implementation process of the BDP 2100. Engaging private sectors will generate sizable resources to finance the Delta Plan. In this regard, a new and innovative arrangement will be needed to encourage private sector participation in certain areas.
- BDP 2100 should be presented to the Development Partners and negotiate with them in order to secure investments for the projects enlisted in the IP of BDP 2100.
- All the local and foreign investment and technical assistance in the field of water resources management, tackling climate change impacts, conservation of environment and ecosystems and agriculture should be in line with the principles of BDP 2100.

- Developed countries have promised to provide US\$100 billion fund support yearly to the LDCs and developing countries for achieving SDGs, particularly for climate mitigation and adaptation actions reiterated in G-20 Summit of 2018, which has to be realized.
- There is a need to increase the capacity to prepare bankable projects in order to access Green Climate Fund and other funds, e.g., Global Environment Facility Fund, Least Developed Country Fund and Adaptation Fund.
- 'Delta Wing' in GED should be established for overall support, guidance and coordination for the implementation of the BDP 2100.
- Coordination among/between/within Agencies and Ministry/Divisions has to be strengthened. In this regard, aligning planning, implementation and financing activities of Delta Ministries/Divisions with BDP 2100 is required.

Capacity Building and Education

- Emphasis should be given on institutional capacity building for the implementation of the BDP.
- There is a need for developing a teaching module on Delta Plan that can be taught in universities.
- Media should play a larger role in awareness raising.
- A 'Delta Knowledge Hub' should be established for hosting, updating and sharing of data/information collected for and relevant to BDP 2100.

Monitoring and Governance

- Emphasis should be given on regulatory mechanisms to implement the Plan.
- A transparency and integrity framework is needed to ensure accountability and control corruption in water resource management projects.
- Budget and audit reports of the BDP 2100 should be published to ensure transparency and accountability.

Water Resource Management

- Regional cooperation should be strengthened for Trans-boundary water management issues.
- Emphasis should be given on Basin wide water management and sharing approach for the Ganges, Brahmaputra and Meghna basin.
- There is a need to continue efforts for signing of the Treaty for sharing water of Teesta and all other trans-boundary rivers.
- Regarding the sensitive nature of trans-boundary water management, multi-layered dialogues between and among participating countries are needed which could include the active participation of third parties (multilateral/bilateral donors), e.g., the World Bank.
- Emphasis should be given on cooperation among neighbouring countries, including India, Bhutan and Nepal, for executing projects under BDP.

- Ministry of Foreign Affairs (MoFA) should explore and promote international cooperation on water uses and development. In this regard, an action plan for next 12 years might be developed.
- Dredging and channelization of rivers are required to ensure their stabilization and increase water carrying capacity.
- The concepts for the Water User Association (WUA) should be developed.
- New pricing policies for Water and Sewerage services should be developed.
- There is a need to strengthen the Delta Coalition formed by 13 countries for mutual benefits and exchanging/accessing water technologies for improved production and consumption for both home and industrial use.

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Annex:

Concept Note

Background

The riverine Bangladesh stands unique in terms of marine environment having the confluence of three mighty rivers- the Ganges, the Brahmaputra and the Meghna all washing in to the Bay of Bengal. Bangladesh is the largest delta within the world sitting on top of this largest Bay in the world- the Bay of Bengal. Bangladesh has been ranked as the 5th most climate vulnerable country in the world due to the deltaic formation of the country, configuration of the rivers and climate change. Tidal surge, salinity, floods, river erosion and tropical cyclones are regular phenomenon. Water scarcity in the dry season and excess water during monsoon makes water management the major deltaic concern of Bangladesh. Besides, maintenance of water quality for irrigation, industrial, drinking and other purposes is crucial; which includes prevention of the contamination of water. Thus, along with challenges like macro-economic development, governance, globalization, environmental protection, climatic impacts that lie ahead for Bangladesh, the increasing pressure on the use of water bodies becomes noteworthy.

Since peaceful settlement of the maritime boundary disputes with neighbours Myanmar and India in 2013 and 2014 respectively, the maritime domain has emerged as a major component of our development strategy. Therefore, the Delta Plan focuses on the rivers, other inland water bodies, the land as well as the huge new maritime space in the bay while planning for the future.

The Government of Bangladesh (GoB) rightly understood that there is a need for an integrated approach and consistent long-term plan to deal with the future land and water management issues. Thus, a new concept of Adaptive Delta Management in the form of a very long-term water-centric, multi-sectoral techno-economic plan has been formulated. This has been conceptualised in the Bangladesh Delta Plan 2100 (BDP 2100) which was initiated by the GoB in 2014. The plan was formulated by General Economics Division (GED) of Bangladesh Planning Commission with support from the Government of the Netherlands and the World Bank. Prime Minister Sheikh Hasina approved the mega plan in the National Economic Council (NEC) on 4 September 2018. It incorporates the various short and medium term visions of the government (2021, 2030 and 2041) and looks far beyond.

BDP 2100 is envisioned as an integrated plan that considers how water management, climate change and environmental challenges can impact long term development of Bangladesh and how to move forward addressing those. The vision of the integrated and comprehensive delta plan is “achieving safe, climate resilient and prosperous delta”. The mission of the delta plan has been formulated as “to ensure longterm water and food security, economic growth and environmental sustainability while effectively reducing

vulnerability to natural disasters and building resilience to climate change and other delta challenges through robust, adaptive and integrated strategies, and equitable water governance” (General Economics Division, Bangladesh Planning Commission, Bangladesh Delta Plan 2100 (Bangladesh in the 21st Century), Volume 1: Strategy, Dhaka: GED, October 2018, pp. 180-181). It enabled the GoB to integrate climate change adaptation within the national policy and to plan for the diverse delta that will ensure water safety, food security and economic growth.

BDP 2100 is not only about better water management, but also about better maintenance of people's livelihood through sustainable development. It categorised six unique hotspots including the coastal areas; *Varendra* or *Barind* and drought-prone areas; *Haor* or back swamps and flood-prone areas; hilly areas; river and estuaries as well as urban areas. The national level policy goals of the plan include elimination of extreme poverty by 2030, achievement of upper middle-income country status by 2030 through pursuance of the SDGs and become a developed country by 2041. Delta plan specific goals comprises of ensuring safety from floods and climate change related disasters; enhancing water security and efficiency of water usages; ensuring sustainable and integrated river systems and estuaries management; conserving and preserving wetlands and ecosystems, reversing depletion and contamination of ground water and promoting their wise use; developing effective institutions and equitable governance for in-country and trans-boundary water resource management and last but not the least, achieving optimal and integrated use of land and water resources. Blue economy is now considered as the new 'development space' in Bangladesh.

The projects under BDP 2100 are expected to add 1.5 percentage points to the annual growth of Bangladesh's economy by 2030. Bangladesh will need around 2.5 percent of its GDP every year to implement the plan. The government has decided to undertake 80 projects under the plan, costing nearly Tk 2.98 trillion and to be implemented by 2030. It will need US\$29.6 billion annually for implementation until 2030. Out of the 80 projects, 65 have been marked as infrastructure-related, and the rest would be focused on building organizational capacity. Bangladesh Water Development Board (WDB) have brought 6.34 million hectares out of 11 million hectares of flood-prone areas under flood control and drainage system in the country. Under the project, the WDB already constructed 15,616 km embankment along with 4,750 km embankment in the coastal areas.

As part of the ongoing consultation process the GED has already arranged workshops and seminars with practitioners in the government, academics and experts in the universities as well as other stake holders. In November 2017, Bangladesh Institute of International and Strategic Studies (BISS) hosted a major seminar in collaboration with the GED. On 4th December 2018, the Ministry of Foreign Affairs organised a special seminar focusing on potential contribution of the Ministry in taking forward the Delta Plan.

Rationale

BDP 2100 is the futuristic adaptive approach to delta planning which is at its preliminary stage with 80 projects and expected to expand further involving multiple line ministries, local government institutions, communities and effective engagement of private sector. The selection of these investment projects provides the link between the short to medium term development targets and investment programs with the long term goals of sustainable development based on climate sensitive management. Thus the implementation requirements of this megaplan include multisectoral participation and coordinated approach, which will be facilitated through extensive dialogues and discussions.

The sectoral strategies of BDP 2100 incorporated the lessons learnt from the past, starting with the First Five Year Plan of Bangladesh (1973-1978) and require periodic review and update in a Five Year Planning Cycle on the basis of context and developmental needs. These strategies highlighted the opportunities and vulnerabilities created by the environment, ecology and bio-diversity; land management; inland water transport; blue economy; renewable energy and earthquakes. As a result, frequent review and evaluation of the contemporary situation and dissemination of the derived learning is essential.

The investment plan of BDP 2100 has focused on a rigorous, consultative and inclusive process including the principles of adaptive delta management. Thus congregation of associated agencies and stakeholders is vital along with the consultation of the local expertise having indigenous and traditional knowledge. Without coordinated policy options and effective actions, the problems such as increasing pressure on the land and water, intrusion of saline water in the coastal area and sea level rise will remain unsolved. On the eve of becoming upper middle income country, complete scrutiny of this comprehensive delta plan of Bangladesh is momentous. Reassessment of the project policies and their implementation mechanisms is also crucial. So, a congregation of experts, researchers, scholars, members of academia and policy makers is necessary to engage in collaborative dialogues.

Objectives of the Seminar

In this backdrop, BISS organises the seminar on “Bangladesh Delta Plan 2100: Implementation Challenges and Way Forward” in collaboration with and at the behest of the GED, Planning Commission, Government of Bangladesh, with a view to further facilitating the exchange of ideas and knowledge on Delta Plan 2100. The seminar is expected to provide an opportunity for sharing the insights of BDP 2100 and its developments so far. The seminar will not only provide a platform for sharing of ideas on the challenges of this mega plan, it will also highlight the way forward to face those obstacles. Along with the keynote presentation on the topic and discussions by the respected panelists, the participation of distinguished guests from diverse backgrounds including professionals, environmental activists, experts on different sectors, government officials, implementing agencies, NGO, etc. will make the seminar lively. This interactive seminar intends to share knowledge and learn from their perspectives on BDP 2100. It will also contribute in the review and monitoring mechanism of BDP 2100.

BISS plans to publish an outcome document, as soon as possible, incorporating summary of the various statements made by keynote presenter and panelists as well as reflecting comments etc. from other distinguished participants. The publication is also expected to contain various suggestions as recommendations emanating from this seminar.

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Bangladesh Institute of International and Strategic Studies (BISS) is a statutory institution established in 1978 under the administrative control of the Ministry of Foreign Affairs, Government of Bangladesh, for undertaking and promoting research and deliberation on international affairs, security and developmental issues.

The priority areas of the Institute's research activities are: foreign policy, security and strategic issues with specific relevance for Bangladesh; regional, inter-regional and international cooperation, sustainable development with focus on resource management and environmental issues; conflict studies, peace keeping, disarmament, non-proliferation and area studies.

Contemporary issues of South Asian politics, security and development are the focus of research activities of the Institute. Ethno-religious issues, regional and sub-regional cooperation, globalisation and environmental issues are of special research interests. Problems of institutionalisation of democracy, economic liberalisation, trade and investment links, challenges of governance and strengthening the civil society receive significant scholarly attention.

The general guidance and superintendence of the Institute's affairs are vested upon the Board of Governors, headed by a Chairman and consisting of representatives of ministries, armed forces, academics and professionals. The Director General is the Member-Secretary of the Board and Chief Executive of the Institute. The main activities of the Institute are carried out by the Research Faculty consisting of a team of full-time researchers with varied social sciences background.



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