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- ❑ ESIA on Construction of LGED Roads and Bridges in Haor Areas
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# the CEGIS NEWSLETTER

Quarterly Newsletter of the Center for Environmental and Geographic Information Services (CEGIS)

## New Chairperson of CEGIS Board of Trustees



*Enthusiastic welcome of Mr. Kabir Bin Anwar, Secretary in charge, Ministry of Water Resources and Chairperson of CEGIS-BoT by Engr. Md. Waji Ullab, Executive Director of CEGIS and Member Secretary of CEGIS-BoT*

Mr. Kabir Bin Anwar new Secretary of the Ministry of Water Resources an innovative thought provoking practitioner of good governance in the arena of sustainable development and nature lover has taken charge as the Chairperson of the Board of Trustees and the Executive Committee of CEGIS on 22 March 2018.

Mr. Kabir obtained his Master's in Political Science and L.L.B from the University of Dhaka.

His long working experience in the Prime Minister's Office as Director General, Administration and Project Director, Access to Information (A2i) Project, gave him the opportunity to be a dynamic leader in the implementation of strategies and programs for a prosperous digital Bangladesh with a visionary guideline.

He shouldered many important responsibilities during his long career including the role of First Secretary at the Embassy of Bangladesh in the Netherlands, Senior Assistant

Secretary in the Finance Division and Deputy Secretary in the Ministry of Home Affairs. In addition to that Mr. Kabir is also the Project Director of the Access to Information (A2i-2) Project, Head of Implementation and Monitoring Committee of the Asharayan-2 Project, Head of the Inter-Ministerial Committee to provide Development Assistance to the Minority Ethnic Community.

Mr. Kabir represented Bangladesh Government in many international forums and took part in many seminars, symposiums, workshops, negotiations abroad. He attended the UN Millennium Summit, OIC Summit, Commonwealth Summit, SDG UN Summit, 2015 and visited about 42 countries of which 17 countries along with the Honorable Prime Minister as official member of the delegation. His passion for nature encouraged him to devote his valuable time in observing and documenting the natural, cultural and archeological features and heritage of nature which inspired him to establish his own NGO

(Cont'd on page 3 ...)

## Capital Dredging and Navigation in Bangladesh

*A. T. M. Kamal Hossain, River, Delta and Coastal Morphology Division*

Bangladesh is one of the largest delta of the world. The country is crisscrossed by several hundred of rivers. Once there were 24,000 km waterways on these rivers in monsoon, whereas presently it is only 6,000 km. These waterways have declined due to lack of maintenance, reduction of upstream flow, increase of sediment deposition as well as human interventions. Bangladesh Delta can be subdivided into 4 categories namely - Moribund, Immature, Mature and Active Deltas based on the characteristics of the rivers.

The Moribund Delta areas are in the South Western part of the country. The distributaries of the South of the Ganges River are highly siltation prone which creates oxbow lakes. The Immature Delta is on the South of the Moribund Delta and mainly consists of sea beach and tidally influenced lands. The Sundarbans belongs to this region. The Mature Delta part is more towards the central part of the Southern section of Bangladesh (Patuakhali, Barguna, etc), where areas vary in their relief and tidal affects. The Active Delta is situated mainly at the estuary of the Lower Meghna River entering to the Bay of Bengal (Bhola, Hatiya, Sandwip, etc). Regular flooding and formation of chars and offshore islands are its characteristics. Effectiveness of dredging for the improvement of navigability depends on delta formation process.

Navigation is the cheapest mode of cargo transport which is also environmental friendly. Rivers are the natural gift for a country. Utilization of these resources can play a vital role in any country's economic growth. Bangladesh Government has taken an initiative to carry out capital dredging in a perspective of sustainable development, aiming for the long-term respect for nature. It is implementing on a priority basis through Bangladesh Inland Water Transport Authority (BIWTA) for improving the navigability. Accordingly, 24 routes (1st Phase of Capital Dredging of 53 river routes, in map) have been selected with financial support from the Government of Bangladesh (GoB).

CEGIS, a public trust under the Ministry of Water Resources has been entrusted to conduct the Morphological and Environmental Impact Assessment (EIA) study including the monitoring (supervision) of the dredging activities.

The activities started at the beginning of the year 2014 and are expected to be completed by the end of 2019.

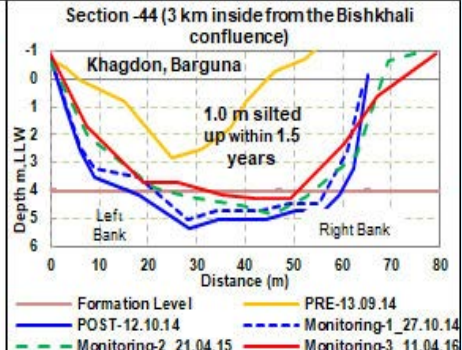
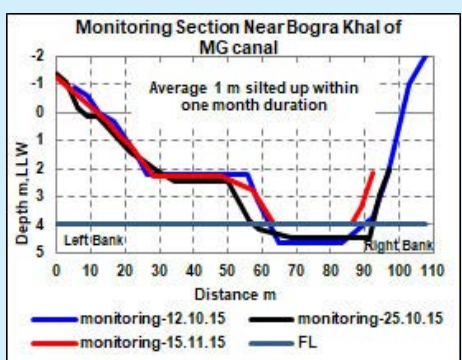
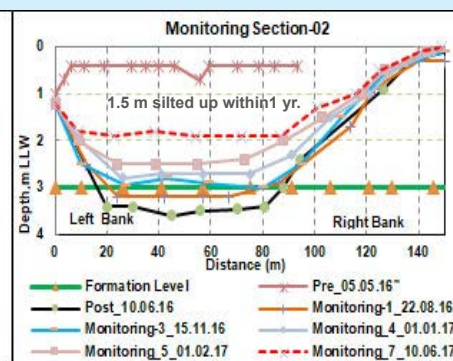
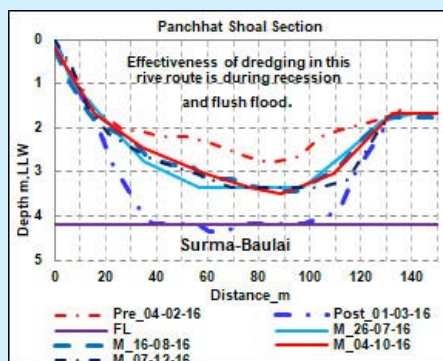
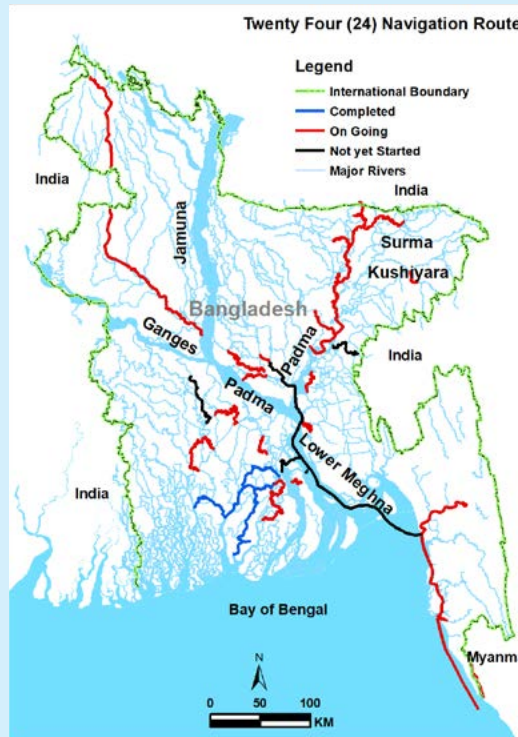
By this time BIWTA has completed dredging activity in 2 routes and continuing in 18 routes under capital dredging of 1st phase of 53 River Routes (24 Routes) Project. Professionals of CEGIS are monitoring the activities in the field using the GPS engineering survey. For dredging, a pre hydrographic survey has jointly performed by BIWTA and professionals of CEGIS using the instrument and vessel of BIWTA. CEGIS professionals validate the survey charts prepared by BIWTA in the field before starting of dredging.

During supervision period, professionals of CEGIS monitored the dredged channels at different intervals (such as, immediate after dredging, after 15 days, after 1 month, after 3 month and after 1 year). In some places, they reinforced their checking where the siltation rate is high. Analysis of the accumulated monitoring data indicates whether the route is sustaining or not. Depending on the monitoring result the recommendations have been prescribed.

Some monitoring results are depicted below which reflects the Bangladesh Delta characteristics.

Monitoring result (in graphs) indicates that capital dredging is very much effective in the Matured

Delta Region, recurrent dredging is necessary in the Active Delta Area for maintaining the navigability, for central region, it is suggested to conduct maintenance dredging at an interval of one year for having sustainable navigation routes. Maintenance dredging will be an effective follow up of the waterways after conducting capital dredging.





## Development Fair 2018



Like previous years the “Development Fair - 2018” was organized all over the country in headquarters of all districts and upazilas of Bangladesh including the Capital City during 11-13 January 2018.

Honorable Prime Minister Sheikh Hasina has inaugurated the Development Fair 2018 across the country through a Video-Conference from her official residence (Gonobhaban) in the City on Thursday, 11 January 2018, at 11.00 am. The slogan of the Development Fair - 2018 was ‘Role Model of Development, Sheikh Hasina’s Bangladesh.’

### Contract Signing ... (Cont'd from page 8)

of Sunamganj and Brahmanbaria with Local Government Engineering Department (LGED) on 12 February 2018; xi) conducting EIA (inclusive of Traffic Impact Assessment and Drainage Modelling) of Block M, N, P and I of Bashundhara Residential Project with East West Properties Ltd on 22 February 2018; xii) Environmental Impact Assessment (EIA) for 15 nos of Bridges over different rivers in Kishoreganj, Mymensingh, Jamalpur, Sunamganj, Sylhet, Narayanganj, Tangail, and Gazipur Districts (Package No: CIB-S-62 with LGED on 25 February 2018; xiii) Dissemination of Riverbank

### New Chairperson ... (Cont'd from page 1)

Isabela Foundation, which works in an innovative way to implement number of programs and projects like “Quest for Sea and Life”. All these experiences and his passion for nature added value to his new position.

## A Fond Farewell to the departing Chairperson of CEGIS-BoT

Bidding farewell is always difficult for all, especially when someone who is cordial and cooperative like Dr. Zafar Ahmed Khan. The honorable Senior Secretary, Ministry of Water Resources, GoB, had to depart from CEGIS after rendering 4 years of service as Chairperson of CEGIS-BoT as he has been transferred to the Ministry of Local Government, Rural Development and Co-operatives, Government of the People’s Republic of Bangladesh on 21 March 2018.

CEGIS had the privilege to work under his guidance and will remain grateful to him for the boundless success it had during his tenure. Dr. Khan’s capable leadership made CEGIS possible to succeed in achieving many awards and achievements. Number of professionals during this 4 years period availed the opportunity of foreign trainings which made them more devoted to their duties by translating their gained knowledge in action.

The 3 day long Development Fair in the Capital City has taken place at Bangladesh Shilpakala Academy premises, Segun Bagicha, Dhaka.

The main objective of the fair was to focus and inform the people about the development activities of the government, its success and ongoing development programs/projects under taken by the present government to build Bangladesh as a middle income country by 2021 and a developed one by 2041.

The occasion started with grand rallies in each venue (headquarter of all districts and upazilas as well as Dhaka) in the morning of that day. The central rally started from the Officers Club and ended at the same venue after parading the main thoroughfares of the City in the morning around 08:30-09:00 am.

The 3 day program included debate, cultural function, documentary show and prize distribution among the winners/performers of different events.

CEGIS as a Trust Organization under the Ministry of Water Resources (MoWR) has participated in the Development Fair both at the central (Dhaka) and local (Gopalganj) levels. CEGIS Team showed its products/publications (map, report, flyer etc.) in the fair under the banner of MoWR in association with BWDB in their nicely decorated pavilions.

erosion prediction results to the community and local level stakeholder with Building Resources Across Communities (BRAC) on 25 February 2018; xiv) Topographic survey and DEM Development for Maddhapara Granite Mining Company Ltd. with Mazumdar Enterprise on 12 March 2018; and xv) The Final Evaluation of the Destitute Women Crews Employed in cash for work component under Rural Employment and Road Maintenance Programme-2 (RERMP-2) with LGED on 21 March 2018.



*Presenting Bouquet to Ms. Rabeya Ahmed Khan (second from left) and departing Chairperson of CEGIS-BoT, Dr. Zafar Ahmed Khan (second from right), Senior Secretary of MoWR in the Farewell Ceremony by Dr. Rokeya Begum (left) and Engr. Md. Waji Ullab (right), Executive Director of CEGIS respectively*

Dr. Khan participated enthusiastically with his spouse and family in CEGIS’s yearly social events. His valuable and informative speeches always inspired CEGIS professionals to own their works. With his strong and dynamic leadership, CEGIS became more organized and can take challenges itself to think differently to implement any plan even if it is too difficult. His inputs indeed helped CEGIS to move ahead and gave CEGIS a much-needed change.

CEGIS wishes him a great and splendid life to come in his career as Senior Secretary of Local Government Division, and for any future endeavor.

## EIA Study of Coal Transportation, Dredging Operation, Morphological Aspect, Jetty and Breakwater Construction of 2x660 MW Coal Based Thermal Power Plant

*Mohammed Mukteruzzaman, Irin Afrin Lopa, Lubaba Mashiat Ali, Power, Energy and Mineral Resources Division*

Power generation is one of the major key components for enhancement of the economic activities of a country. The Government of Bangladesh has indicated in the motto of "Vision 2041" that the nation will emerge as one of the developed nations by 2041. To achieve the Vision 2041,



*Location of Jetty in the Project Area*

increase of Power generation will play a vital role and in this regard different Government, Semi-Government and Private Organizations are contributing towards the enhancement of power generation capacity of the country.

In this respect, SS Power I Ltd., one of the leading industrialist groups of Bangladesh along with SEPCO III Electric Power Construction Corporation and HTG Development Group Co. Ltd. of the People's Republic of China has been allowed by the Bangladesh Power Development Board (BPDB) to construct an imported Coal Based Super Critical Thermal Power Plant of 1224 MW (net) or 1320 MW (gross) capacity at Banshkhali, Chittagong. As the Proposed Coal Based Power Plant is a Red category Project, needs to conduct an EIA study as per ECA 1995 and the subsequent rules of ECR 1997, to obtain the Environmental Clearance Certificate (ECC) from DoE. In order to operate the proposed Power Plant, coal needs to be imported from various countries like, Indonesia, South Africa, Australia etc. During transshipment and transportation of imported coal from the transshipment point at the Bay of Bengal to the Project site, there may have environmental impacts. As such, a study on Environmental Impact Assessment will be needed to take permission from DoE. Accordingly, CEGIS signed a contract with the SS Power I Ltd. on 6 October, 2016 to conduct the EIA for the proposed Coal Transportation, Dredging Operation, Morphological Aspect and Jetty and Breakwater structure construction for 2x660MW Coal Based Thermal Power Plant Project at Banshkhali, Chittagong.

CEGIS has designed a composite and interdisciplinary methodology and conducted the study which is compatible with the international standard practice. Application of appropriate techniques of sampling, statistical analysis, sophisticated model, spatial analysis, GIS Tools, Remote Sensing, and experts judgment have been used to assess the baseline condition, impact of the intervention and take appropriate mitigation measures.

CEGIS has delineated the baseline condition of the study area in respect of physical environment (e.g., meteorological, hydrological, morphological components

and processes), land resources (e.g., land use pattern and soil quality), biological environment (e.g., flora, fauna, fisheries resources and other ecosystems goods and services), and socio-economic condition (e.g., livelihood pattern, historical, cultural and archaeological sites,



*Sample Collection from the Study Area*

economic status, etc.) of the study area. This Project by and large included several modelling activities including Air Quality Modelling (USEPA approved sophisticated model CALPUFF), Noise Modelling (EEA approved SoundPlan Model), Hydrodynamic Modelling (Delft-IIID Model; used to address Jetty & Breakwater related issues), etc. for assessing general and cumulative impacts. Risk of natural and anthropogenic hazards are also assessed for the proposed project activities and has been addressed in environmental management plan and emergency response plan for their mitigation.



### Touch Table Application: A geo-spatial participatory and planning tool

CEGIS has introduced advanced Touch Table technology based computing device which is used for participatory and interactive planning process. Appearance of a Touch Table resembles a flat smart TV with inbuilt special type computer and software (Phoenix). The screen provides touch based interactive surface computing platform. It is a simple interactive device, which enables the users to easily present and visually analyze various type of geographic data, to place them on the top of one another and draw on the screen area of interest.



## Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) under Bhandal Jhuri Water Supply Project, Chittagong WASA

*Roland Nathan Mondal, Agricultural and Fisheries Division*

The Chittagong WASA (CWASA) has planned to extend their water supply system through implementing 'Bhandal Jhuri Water Supply Project (BJWSP)' having three major components, the i) 60,000m<sup>3</sup> (60MLD) Capacity Water Treatment Plant on left bank of the Karnaphuli River; ii)



*Location of Bhandal Jhuri Water Treatment Plant*

113.3 km Transmission and Distribution Pipelines and iii) 2 Water Reservoirs. CEGIS has been entrusted by CWASA to conduct the IEE and EIA of BJWSP. CEGIS engaged a multi-disciplinary study team to assess the nature and extent of probable environmental impacts (regarding water resource, agriculture, fisheries, ecology and socio-economic condition) resulting from the proposed interventions and to prepare the Environmental Management Plan (EMP) to offset adverse impacts to acceptable levels. The coupled hydrodynamic-salinity model was developed using Delft3D Flexible Mesh (FM) to assess the hydrodynamic condition (i.e. water level, discharge, flow pattern, velocity) of the study area both with

and without intervention (i.e., Pump) and also to assess the extent of salinity intrusion under the combined effect of normally prevailing tidal condition and discharge from Kaptai Dam. According to model results, there will be no impact on water availability and salinity in the Karnaphuli



*The EIA team is surveying the project site for information/ data collection*

River for water withdrawal (0.7m<sup>3</sup>/s). CEGIS also conducted several stakeholder consultations (KII, FGDs and PCM) to identify the probable future impacts and possible EMP. The proposed project will supply 16,500m<sup>3</sup> of water per day for domestic and 43,500m<sup>3</sup> of water per day for industrial purposes. It was projected that a total number of 162,000 families (BBS, 2012) will be benefitted. It will, thus, result in increasing water supply coverage of CWASA by 72% over present supply. Nevertheless, the EIA study revealed that the project will result in a few negative but temporary impacts, such as, noise, traffic congestion, solid and liquid wastes which can easily be mitigated by taking proper measures.

## Women's Day 2018 Celebration



March 8, International Women's Day is a global day celebrating the social, economic, cultural and political achievements of women. International Women's Day (IWD) has been observed since the early 1900's and is a collective day of global celebration and a call for gender parity.

Echoing with other organization, CEGIS also celebrated the International Women's Day but on 7 March 2018 at CEGIS office premises. Internationally, purple is a color for symbolizing women. With a purple colored banner signifying justice and dignity, women professionals, along with their colleagues were engaged in interactive conversations centered on male-centric paradigm in the workplace. Women in the office wore different colored

clothes to signify solidarity, equality, purity, hope with justice and dignity as historically the combination of different color originated from the Women's Social and Political Union in the UK in 1908. Women professionals and members of the staff face many challenges which are often ignored willingly or unwillingly. Several issues were raised including allocation of sitting arrangement, ladies toilets, prayer rooms etc. during the discussion. They ask their voices to be heard, their concerns be acknowledged and their femininity be seen as strength.

To make International Women's Day "Our day", CEGIS assured to make a positive difference to all the women working in CEGIS from this women's day onward.



## Spatial and Temporal Monitoring of Brick Industries using High Resolution Satellite Images

*Mohammad Saidur Rahman, Remote Sensing Division*



Rapid growth of industrialization and urbanization in Bangladesh has resulted in fast growth of brick-making industry and are mostly situated on fertile agricultural lands. The major impact is the removal of top soils from agricultural land in particular, the clay loam to silty clay soils with good drainage conditions. Besides this, the

other impacts from production and use of bricks are consumption of non-renewable resources and emissions of substances and contribution to global climate change. High resolution satellite images may be used to locate those brick industries and update and monitor the number of brick fields both spatially and temporally.

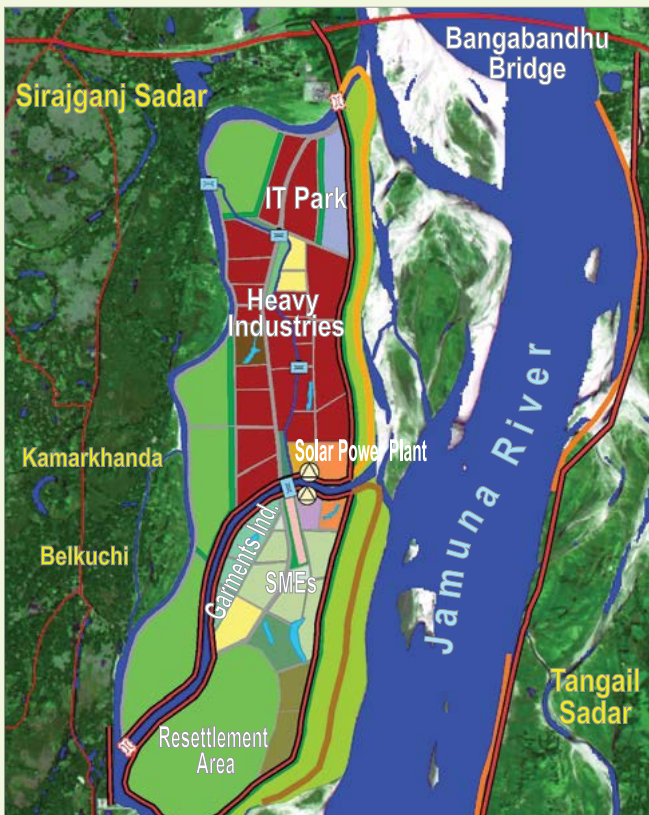


## Outlining Land Reclamation and Development Plan for the Jamuna-Padma Rivers

*A. T. M. Shamsul Alam, Socio-Economic and Institutional Division*

Bangladesh Water Development Board (BWDB) outlined a 'Land Reclamation and Development Plan through Comprehensive Management of the Jamuna-Padma Rivers

Director (Operations), Mr. Mir Sajjad Hossain, Advisor and Mr. A.T.M Shamsul Alam, Director (In Charge) participated from CEGIS.



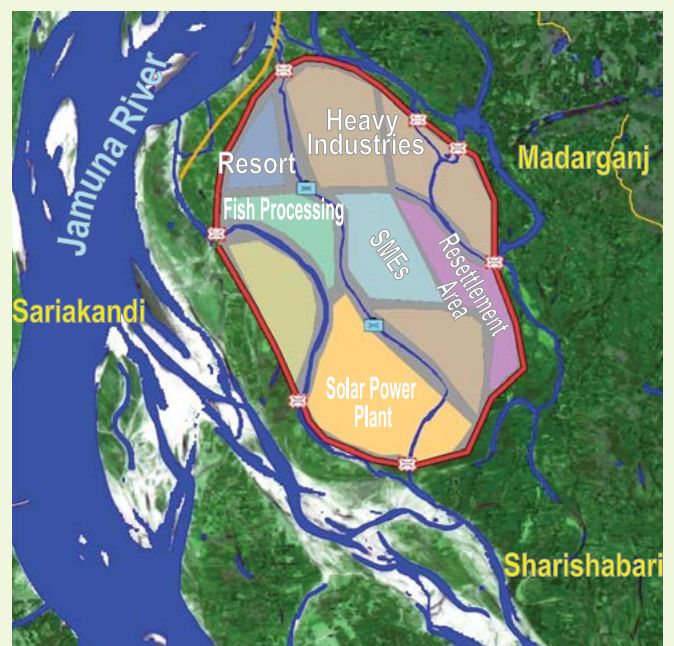
The presented plan outlined a mega project to reclaim 1600 sq.km. land by narrowing down the width of the Jamuna and the Padma Rivers in next 25 years at a cost of Tk 40,000 crore in phases. The proposed project has aimed to reduce the width of the Jamuna and the Padma to 7 km on an average which are now 16 km eventually and to conserve 350 sq.km. navigation route following the "learning by doing" approach of implementation in number of phases. The project proposed to protect 220 km of banks at different places of the Padma and the Jamuna alongside reclaiming lands, develop flood control mechanisms and protect navigation routes through capital dredging. The proposed project has outlined keeping in mind particularly the necessity of huge size of investment-friendly land to materialize Vision 2021 and 2041. For piloting the said plan it is proposed to reclaim 55 sq.km. of land in Belkuchi of Sirajganj, one of the worst affected areas of river erosion, and another 47 sq.km. in Madarganj of Jamalpur.

During briefing on the project at her office, the Hon'ble Prime Minister said protection of rivers being "Bangladesh's lifeline" is a must for "saving and developing" the country while the land reclamation will help to increase investment in agricultural land and remove poverty. "We've to give attention on how we can reap maximum benefits from the rivers. We also have to focus on how we can utilize the silt and reclaim more lands from rivers," she added.

using Dredging and Bank Stabilization' under its ongoing Flood and Riverbank Erosion Risk Mitigation Investment Programme (FRERMIP) funded by the ADB. The Plan was prepared by FRERMIP taking a 6-months intensive intellectual and technical support services of CEGIS under the guidance of the Principal Coordinator (SDG Affairs), Prime Minister's Office (PMO).

Experts in the meeting opined that huge onrush of sediments from the upstream (Indian region) massively reduced the carrying capacities of the Brahmaputra or the Jamuna and the Padma, heightening their bed levels exposing to the areas

This Plan was presented to the Hon'ble Prime Minister, Government of the Peoples Republic of Bangladesh, Sheikh Hasina on 25 January, 2018 at PMO. Among others, Mr. Anwar Hossain Manju, MP, Hon'ble Minister, Ministry of Water Resources (MoWR), Mr. Shajahan Khan, MP, Hon'ble Minister, Ministry of Shipping, Mr. Muhammad Nazrul Islam, Bir Protik, MP, Hon'ble State Minister, MoWR, Mr. Abul Kalam Azad, Principal Coordinator (SDG Affairs), PMO, Mr. Md. Nojibur Rahman, Principal Secretary to the Hon'ble Prime Minister, PMO, Dr. Zafar Ahmed Khan, Senior Secretary, MoWR were present during presentation. Engr. Md. Mahfuzur Rahman, Director General, BWDB presented the plan through power point. The Senior Secretary, Ministry of Agriculture; Senior Secretary, Bridge Division, Ministry of Roads, Transport and Bridges; Secretary, Local Government Division, Ministry of Local Government, Rural Development and Co-operatives; Secretary, Ministry of Shipping; Secretary, Ministry of Land; Secretary, Ministry of Fisheries and Livestock; Secretary, Ministry of Industry; Secretary In Charge, Ministry of Environment and Forests; Executive Chairman, BEZA; Executive Chairman, BEPZA; Chairman, BIWTA along with concerned experts and officials attended this high-level policy meeting. Engr. Md. Waji Ullah, Executive Director, Dr. Maminul Haque Sarker, Deputy Executive Director (Development), Mr. Malik Fida A Khan, Deputy Executive



along their banks to severe erosion displacing millions of people during past few decades. They suggested a proper river management approach through delicate engineering interventions which may help in reclaiming the land grasped by the rivers and expedite the socio economic scenario of the region.

## Contract Signing

CEGIS is a center of excellence and provides intellectual services, action based research and innovative solutions in diversified fields, such as Water Resources, River Morphology and Delta, Environment, Ecology, Agriculture, Fisheries, Forestry, Social and Institutional, Architectural Planning and Design, Power & Energy, Climate Change, GIS, RS, Database and IT. It uses cutting edge technologies like geo-informatics, space technology, information technology, modeling as well as social tools and techniques. It works both independently and in close collaboration with numerous Government and Non-Government Organizations as well as with various Regional and International Agencies.

During first quarter of the year 2018 (January - March) 16 contracts have been signed between CEGIS and other organizations and clients to conduct EIA, SIA, IEE, RAP, LAP etc. These are as follows:

An international contract has been signed between CEGIS and APECS Consultant/Ministry of Works and Human Settlement, Bhutan for Assessment of flooding hazards and development of climate-resilient flood mitigation measures at Shetikheri and Aiepoly (big and small), Bhutan on 26 February, 2018.



Mr. H.N. Adbikrai, Managing Director of APECS Consultant, Bhutan and Engr. Md. Waji Ullah, Executive Director, CEGIS are seen in the contract signing ceremony for the Ministry of Works and Human Settlement of Bhutan

Other 15 contracts are: i) Route Survey, Topographic Survey, Initial Environment Examination (IEE), Environmental Impact Assessment (EIA), Resettlement Action Plan (RAP) including Feasibility study of "Grid Network Development of Southern area" with Power Grid Company of Bangladesh (PGCB) on 7 January 2018; ii) Feasibility, Route Survey, Topographic Survey, IEE EIA and Resettlement Plan of Southern area with Power Grid Company of Bangladesh (PGCB) on 11 January 2018; iii) Consultancy service of Constituency Boundary Delimitation 2018 according to the Delimitation of Constituencies Ordinance, 1976 using Geographical Information System (GIS) with Bangladesh Election Commission on 15 January 2018; iv) Monitoring of Dredging (Supervision), Morphological studies, Environmental & Social Impacts Assessment and Effectiveness of Dredging for the Improvement of Navigability from Mongla to Pakshi River Route via Chandpur-Mawa-Gualanda with Bangladesh Inland Water Transport Authority (BIWTA) on 15 January 2018; v) Development of Digital Elevation Model (DEM) and Delineation of Catchment boundaries for Polder 34/2 of Blue Gold program signed on 22 January 2018; vi) Route Survey and EIA of Bogura-Rangpur-Saidpur Gas Transmission Pipeline Project with Gas Transmission Company Limited (GTCL) on 30 January 2018; vii) Performance Evaluation of an Environmental Impact Study of 2 Tannery Estates on Buriganga and Dhaleswari Rivers with Department of Environment on 1 February 2018; viii) Hydro-morphological study of Paturia Daulatdia Ferry Ghat and Layout Plan & Design of Ferry Ghats & Terminal Building with BIWTA on 5 February 2018; ix) a) Projection of Sea Level Rise for the years 2030, 2050, 2070, 2100; Developing Digital Elevation Models (DEM) in Support of SLR decision-making and b) Impact of Projected Sea Level Rise on Water, Agriculture and Infrastructure Sector of the Coastal Region with cost estimation for required investment with DoE on 8 February 2018; x) ESIA on construction of Hon'ble Prime Minister's committed road and bridges in Haor Area

(Cont'd on page 3 ...)

## New Faces



**Md. Rafiqul Alam** joined CEGIS in February 2018 as Laboratory Expert. He had M.Sc. in Physics from DU, PGD in Hydraulics and Instrumentation from DHI, PGT in Land Drainage from the Netherlands, Land Drainage course from Malaysia and India, Project Management training for DPP from

BPATC, Scientific Instrumentation course from UGC, MIKE11, MIKE21 and MIKE 21C trainings from DHI, BUET and RRI. Since 1982, he served in RRI and retired in August 2016 as DG. He has expertise in instrumentation, hydraulic (physical/mathematical) modelling with geotechnical, sediment, material testing and water pollution studies. He is a life member of Bangladesh Physical Society.



**Engr. A H M Kausher** joined CEGIS on 12 March 2018 as Advisor, River, Delta and Coastal Morphology Division. He has completed his B.Sc. in WRE from BUET in 1977: M.Sc. (Equivalent) (PGD in HE) from IHE, Delft (1986), Diploma in Hydrographic Information System from AIT (1995). He served BWDB in different capacities from 1977 to 2010 and retired as CE, Hy., BWDB in 2010. During his Service he availed 16 S/L Term Trainings in WRE/ WM at home and abroad. He has wide experience in different disciplines of WRM. He served as Member of National/International/Academic Committees including JRC, WRE Dept. & IWFM of BUET and worked for IWM, World Bank, SMEC, IWMI, IRRI, BCAS & BDP 2100.

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