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the CEGIS NEWSLETTER

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

Upcoming

- Seminar on Jamuna-Padma River Stabilization at PMO
- Capital Dredging and Navigability
- Eco-friendly Structural Intervention in the Haor Areas
- ESIA on Construction of LGED Roads and Bridges in the Haor Area
- Development Fair 2017

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IWA Water and Development Congress & Exhibition 2017 in Buenos Aires, Argentina

(From left) Engr. Md. Waji Ullah, Executive Director, CEGIS, Mr. Kala Vairavamoorthy, Executive Director, International Water Association and Mr. Malik Fida A Khan, Deputy Executive Director, CEGIS at the Water and Development Congress & Exhibition in Buenos Aires, Argentina

The IWA Water and Development Congress & Exhibition (IWA WDCE 2017) was held from 13 to 16 November 2017 at General San Martin Plant in Buenos Aires, Argentina. The conference was organized by IWA (International Water Association) in association with its main partner Argentine Ministry of Interior Affairs, Public Works and Housing. Engr. Md. Waji Ullah, Executive Director and Mr. Malik Fida A Khan, Deputy Executive Director, CEGIS were attended in the congress.

Mr. Rogelio Frigerio, Minister of Interior Affairs, Public Works and Housing, Argentina; Mr. Pablo Bereciartua, Under Secretary of Water Resources, Ministry of Interior, Argentina, Mr. HenkOvink, Special Envoy for International Water Affairs, Kingdom of The Netherlands; Mr. Jose Inglese, President, AySA, Argentina; Mr. Agustin Aguerre, Manager of the Infrastructure and Environment Department, IDB; Mr. Faris A.R. Hasan Al-Sheikh, Director of Strategic Planning & Economic Services, OFID – OPEC Fund for International Development; Ms. Diane D'Arras, President, IWA, Mr. Kala Vairavamoorthy, Executive Director, IWA were present in the conference.

Water is one of the most critical issues being faced by the world today, with the developing and emerging economies confronting some of the biggest water challenges and representing some of the biggest opportunities to get our water future rights.

Engr. Md. Waji Ullah shared his ideas and experiences on Drought Management practiced in Bangladesh perspective through a presentation to the global water experts.

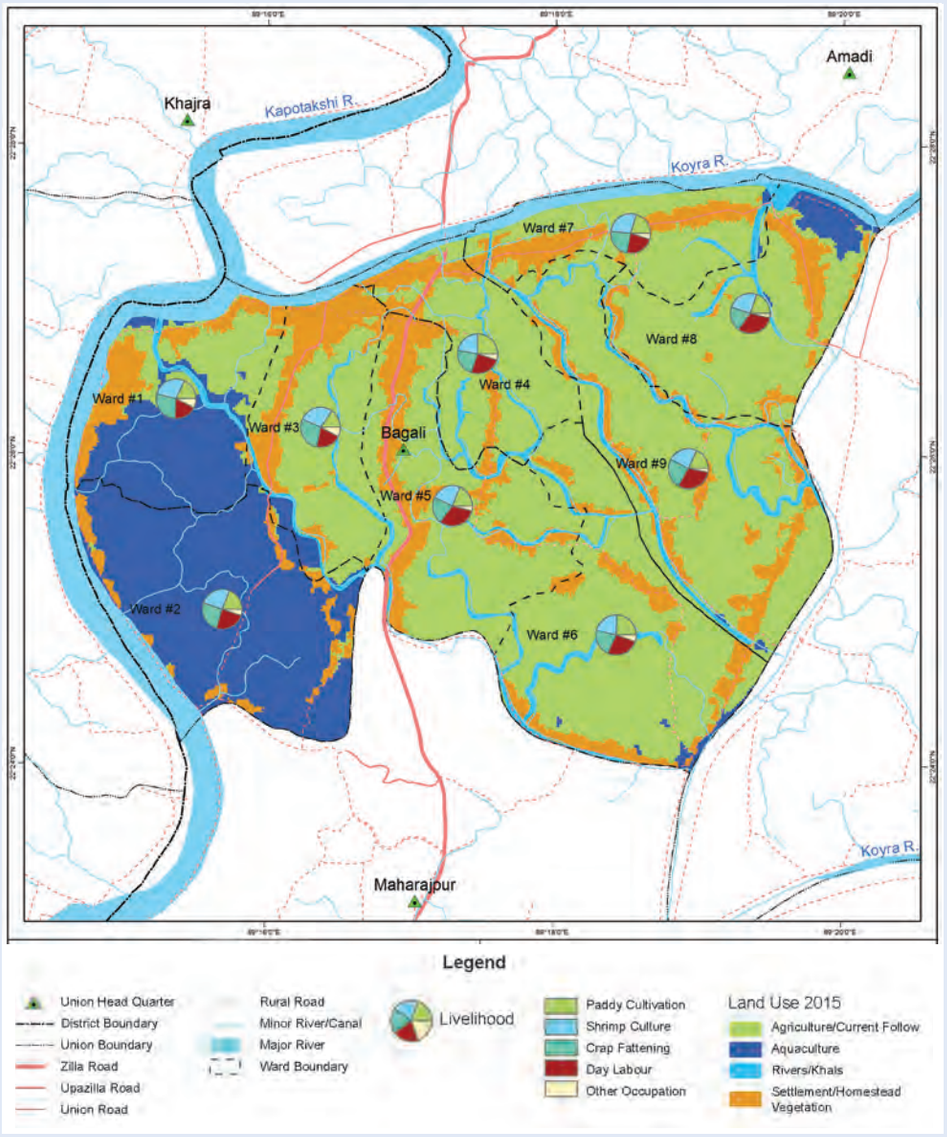
IWA is committed to recognizing the special contributions and achievements of its members and water sector professionals, and the invaluable contribution they made to the key innovations in water science and management.

Gender Responsive Climate Adaptive Livelihood Study in the South-West Region

A M M Mostafa Ali, GIS Division

The most devastating and extreme climate change induced events - cyclone, tidal surge, flood, drought, water logging, salinity intrusion, and sea level rise - are nowadays occurring very frequently and spreading widely in Bangladesh. These extreme events are especially affecting the south-west region of the country. The challenge of livelihood faced by millions of people living there is displacing them from their homes, causing internal migration and setting back development of the country for decades. Children, women, elderly people and persons with disability are the most vulnerable due to the impact of climate change induced events. However, higher levels of risks are more obvious and inevitable for women.

CEGIS has recently carried out a study titled "Gender Responsive Climate Adaptive Livelihood Study" for Practical Action Bangladesh (PAB) and the United Nations Development Program (UNDP) Bangladesh. The overall objective of the study was to assess a recent scenario of livelihood adaptation and climate change vulnerability of women in the south-west coastal region of Bangladesh and to visualize climate change induced vulnerabilities using GIS techniques. The study area included nine unions of five upazillas (Paikgacha, Koyra, Dacope, Assashuni and Shyamnagar) under Khulna and Satkhira Districts of the south-west region.



Livelihood Map of the Study Area

Time series analysis of satellite images of the area indicated a very good insight of the area under water in different seasons and the way of change in the occupation of the people of the area from agriculture to aquaculture. Multi-criteria spatial analysis was made using GIS tools and various spatially distributed data, namely occupation, income and poverty levels, location of the market places, land use pattern.

The analysis used both primary and secondary data of the area. GPS based questionnaire survey and Focus Group Discussion (FGD) were the techniques of primary data collection and these were applied at each Union Headquarters. In case of questionnaire survey, total 353 respondents were selected randomly from 351 wards of 39 unions. All the respondents were women whose ages were in between 18 to 49 years. Spatial data used in this study include multi-criteria poverty maps, base maps, Digital Elevation Model (DEM), livelihood maps, Landuse/Landcover change maps generated from Satellite imagery of three different years. The top six major economic activities in the study area were identified. These include cultivation of paddy, sesame, watermelon, crab fattening, bagda culture and golda culture; the households practicing these economic activities at present and in the past were assessed and the spatial analysis were carried out.

This study will help the donor agencies like UNDP to assess economic value of the distress and vulnerability caused from climate induced disasters and can justify the formulation of projects to support people living in the region under climate induced devastation.

Conceptual Plan for the Jamuna River Stabilization and Land Development of Belkuchi in Sirajganj and Madarganj in Jamalpur for Economic Zones

Farhana Ahmed, Research, Development and Training Division

According to the decision of National Coordination Committee on River Dredging initiated by the Principal Coordinator, SDG Affairs, PMO, CEGIS has been entrusted to prepare a Comprehensive River Management Plan for the Jamuna River. Applying long term experiences in river morphology and water resources planning, CEGIS has prepared conceptual plan for the Jamuna River Stabilization and Land Development in line with the Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP).

The conceptual plan on the "Proposed Pilot Interventions for Land Reclamation and Development in the Jamuna River" was presented by Engr. Md. Waji Ullah, Executive Director, CEGIS in the National Stakeholder Workshop organized by FRERMIP on 29 November, 2017. Dr. M. Emdadul Haque, Executive Member of Bangladesh Economic Zones Authority (BEZA) moderated the session. This technical session was conducted parallelly with other 4 sessions covering different components including 1) the Brahmaputra River Engineering and Morphology - Past and Future, 2) Environmental Enhancement and Impact Mitigation related to the River Stabilization Plan; 3) Social Implications of River Stabilization on Char and Floodplain Population, 4) Institutional and Financing Arrangements for River Stabilization. Mr. Md. Majibur Rahman DG, Directorate of Bangladesh Haor and Wetland Development, briefly described the background of this technical session to give the context to the presentation that followed.

The Executive Director of CEGIS presented the key points related to land development and showed the proposed indicative plans for development of char in the Jamuna River. Two potential locations have been selected for pilot interventions which are Belkuchi Char in Sirajganj District and Madarganj in Jamalpur District. As part of

Presentation by Engr. Md. Waji Ullah, Executive Director, CEGIS

the river stabilization project these char areas will come under protection from river floods. The main objective is to develop the land as economic zones so that the huge cost to be incurred from dredging and infrastructural development can be covered. These outline plans are prepared in line with the FRERMIP and Bangladesh Delta Plan 2100 to fulfill the Government's Vision 2021 and Vision 2041.

Finally, Dr Emdadul Haque, concluded the session with a brief summary of the key findings of the presentation. He thanked Mr. Waji Ullah for his outstanding presentation on the land development plans. He also requested to update the plan including the comments and suggestions of the participants prior to finalization.

Revision of National SLCP Planning Document and Development of a Monitoring and Evaluation Plan

Md. Amanat Ullah, Ecology, Foresty and Biodiversity Division

Department of Environment (DoE) has engaged CEGIS to prepare the Second National Action Plan (NAP) for reducing Short-lived Climate Pollutants (SLCP) of Bangladesh under the Project titled "Strengthening Institutional Capacity to Reduce SLCP". SLCPs are powerful climate forcers that remain in the atmosphere for a much shorter period of time than longer-lived climate pollutants like carbon dioxide and have important roles in human health, crop production and climate change. The Climate and Clean Air Coalition (CCAC) is the first global effort to focus on reducing SLCPs such as Black Carbon (BC), methane (CH4) and many Hydrofluorocarbons (HFCs). Bangladesh is a founder member country of CCAC and DOE under the Ministry of Environment and Forests is continuing a collaborative program of the CCAC entitled "Supporting National Planning for Action on SLCP's (SNAP)". This program is aimed at strengthening the institutional capacity dedicated to promote SLCP mitigation and integrating the SLCPs issues into relevant national planning processes in Bangladesh. The CCAC-SNAP

Stakeholder Consultation meeting on SLCP NAP held at CEGIS

Initiative has initiated a collaborative program aimed to support the efforts of CCAC partner countries to scale up action on SLCPs in a coordinated and prioritized way. In this context DoE has developed First NAP for SLCP in 2014 and has engaged CEGIS to prepare the Second SLCP NAP Document in updated form.

The objective of this assignment is to strengthen and secure the national SLCP planning process and implement an effective process for monitoring and

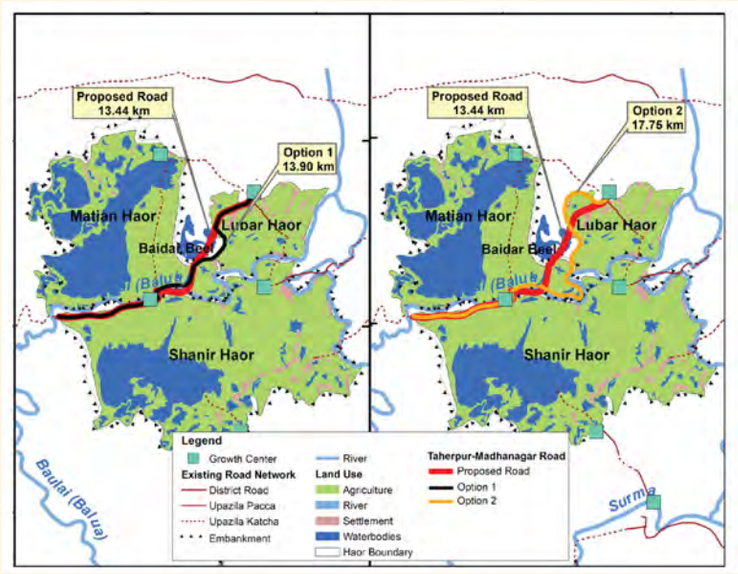
(Cont'd on page 4 ...)

Strategic Environmental Assessment for Infrastructure Development in the Haor Region of Bangladesh

Sarazina Mumu, Water Resources Management Division

Strategic Environmental Assessment (SEA) is emerging as a new form of environmental assessment which aims to integrate environmental considerations into policies, plans and programs and evaluate their inter-linkages with economic and social considerations. In Bangladesh, SEA is practicing but not as a legal binding like EIA. Being a part of current practice, CEGIS has conducted a preliminary SEA for the Haor Region in Bangladesh for plans regarding water management related infrastructure.

The main content of this SEA is to develop alternative strategies to trigger/ strengthen the respective future programs. One of these alternative strategies is on the proposed 'Improvement of Taherpur UZHQ Maddanagar via Solmanpur Road' (13.44 km). The proposed road will go through three haors; Matian Haor, Lubar Haor and Shanir Haor; where Shanir Haor, having a large group of water birds and is an ecologically important haor. In addition, the proposed road is assumed to cross Baidar Beel which is a source of income for haor people. Under this circumstance, two options/strategies have been proposed here which is shown in the map. In option 1, the road alignment is proposed to be changed slightly and go along the haor boundary of Lubar Haor to avoid crossing the Baidar Beel. The proposed road length will be 13.9km. Another strategy can be shifting of road alignment along the Shonir and Lubar Haor to avoid interruption of agricultural land and Baidar Beel. In this way it will benefit the society without any/with minimal trade-off between infrastructure development and haor ecosystem.



Digital Map preparation with detail land information

Revision of National SLCP ... (Cont'd from page 3)

evaluating SLCP-related activities and mitigation. The main objectives of the assignment are to develop, update and amend as necessary and prepare a revised version of the National SLCP planning document including mitigation measures, pathways for implementation of SLCP Monitoring and Evaluation process, estimation of national SLCPs emission, and assess the benefits due to mitigation measures.

This assignment consists two major activities: i) Estimate sectoral SLCPs emission using Long Range Energy Alternatives Planning system-Integrated Benefits Calculator (LEAP-IBC), and ii) Prepare National Action Plan (NAP) and its Monitoring and Evaluation Plan considering trend of sectoral emission, existing Government plans and policies as well as following international agreement and treaties. Considering different emission sources of Bangladesh, Black Carbon (BC) and Methane (CH4) are the major SLCPs. CEGIS is closely collaborating with Stockholm Environmental Institute (SEI) to estimate the national emission of Black Carbon and Methane using LEAP-IBC Toolkit. Under this assignment, SEI experts have given training to the SLCPs related officials in Bangladesh on using LEAP-IBC to assess sectoral emissions and its mitigation benefits. In addition to this, several stakeholder consultations have been conducted to prepare NAP for reducing SLCPs in Bangladesh.

Water Expo

A three day long 'Water Bangladesh International Expo 2017' was organized by the Conference & Exhibition Management Services, CEMS Global, Bangladesh at the International Convention City (ICCB), from 26-28 October 2017. CEGIS participated in the same and organized a seminar on the 26 October 2017 at 3:00 pm on "Application of Innovative Tools and Techniques in Water Resources Management – CEGIS Experience".

Dr. Zafar Ahmed Khan, Senior Secretary, Ministry of Water Resources graces the seminar as Chief Guest, while Dr. Ainun Nishat, Professor Emeritus, BRAC University attended the occasion as the Guest of Honor and Engineer Md. Mahfuzur Rahman, Director General, Bangladesh Water Development Board attended the occasion as the Special Guest.

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Environmental Compliance Monitoring of 2X660 MW Moitree Super Thermal Power Plant at Rampal, Bagerhat

Md. Mutasim Billah, Power Energy and Mineral Resources Division

Power Generation in Bangladesh has been given top priority over other sectors to propel growth in the export-oriented economic sectors and to meet the growing power demands of the country. In this regard, the Government has taken various steps to enhance power generation

Discussion with Construction Contractors in the project area

of the country by constructing mega power plants and other means. Construction of 2x660MW Coal Based Moitree Super Thermal Power Plant at Rampal, Bagerhat is one of the major set-up. As the proposed Coal Based Thermal Power Plant is a Red category project - as per ECA, 1995 and the subsequent rules ECR, 1997- and also the location of project being nearer to the world's largest single tract of Mangrove Forest (the Sundarbans Reserve Forest) with remarkable biodiversity, therefore it needs comprehensive monitoring of environmental and social parameters as well as monitoring of implementation status of EMP during pre-construction, construction and also in the operation phases. Accordingly, CEGIS as an independent Public Trust was engaged by the Bangladesh-India Friendship Power Company Limited (BIFPCL) for conducting the monitoring activities in and around the project influenced area and in the Sudarbans Reserve Forest Area since April, 2014.

However, as per EMP approved by DoE and being the Environmental Monitoring Consultant of the Project, CEGIS has been monitoring various environmental and social parameters such as ambient air quality,

Measuring tree height in the Sundarbans

noise level, water (groundwater and surface water) quality, land resource condition, agriculture, fisheries, socio-economic environment, ecological status and the Sundarbans Reserve Forest health condition. In the total course of monitoring periods, CEGIS has been arranging and conducting the monitoring activities according to the guidelines followed by the United States Environmental Protection Agency (USEPA) and other international standard practices with its experienced manpower and equipment.

At the same time the implementation of Environmental Management Plan (EMP) and Environmental Compliance with the environmental parameters inside the project area has also been monitored. The progress of Project construction activities includes internal drainage system, slope protection works and the two lane main access road from Babur Bari (at Khulna-Mongla Road) to Plant site. The Project Site office has been shifted to the South-West corner of the project boundary from the South-East corner and construction of two lane access roads including bridges and culverts have been completed.

During the monitoring periods, CEGIS recommended few of the site specific measure(s) which should be complied for ensuring environmental and social safeguarding of the Project, such as emphasizing local participants in the training program, engaging local labour in construction activities as to comply with the CSR, standard labour accommodation, demarcation of safety signs in local language, site specific Emergency Response Plan

The team is testing surface water in the Passur River

(ERP) for the construction workers; adequate waste management system, designated working areas with demarcation. Till date, now BIFPCL has been complying with suggestions and all recommendations provided by CEGIS.

Water Expo ... (Cont'd from page 4)

Engineer Md. Waji Ullah, Executive Director, CEGIS chaired the session. A large number of Scientists, Researchers, Scholastic personalities and dignitaries were present in the Seminar.

Mr. A T M Shamsul Alam, Director, Quality Management and Publication Division, CEGIS welcomed the participants and the Key note paper on "Application of Innovative Tools and Techniques in Water Resources Management –CEGIS Experience" was presented by Mr. Malik Fida A Khan, Deputy Executive Director (Operation), CEGIS.

The researchers, scientists, academicians, NGO personalities, and dignitaries shaired their valuable comments and suggestions during the open discussion immediate after the presentation of the key note paper.

The recommendations of the discussants on water sector management through innovative tools and techniques were considered to pave the way of better management practices in Bangladesh.

Feasibility Study of Ashrayan Project (Development of Shelter House for Forcibly Displaced Myanmar Nationals) at Bhashan Char

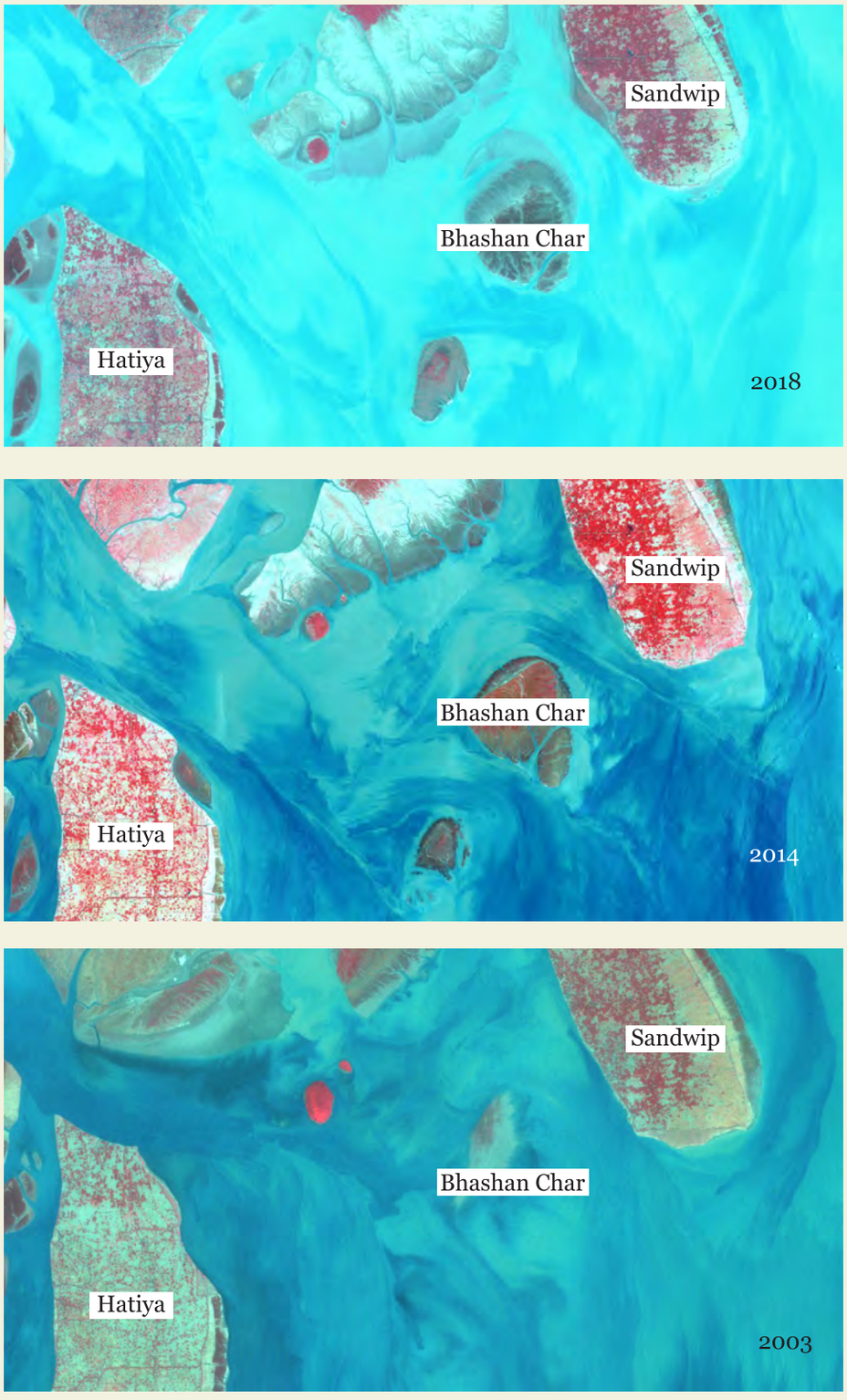
Mohammad Saidur Rahman, Remote Sensing Division

Bangladesh Navy (BN), acting on behalf of the Government of Bangladesh (GOB), was entrusted to deliver a coherent and sustainable framework, for relief and development support for Forcibly Displaced Myanmar Nationals (FDMNs). As per the directive of the Honourable Prime Minister the project work is in progress to develop shelter houses for a total of one lac FDMNs and necessary island security infrastructure at Bhashan Char in Char Ishwar Union, Hatiya, Noakhali. As per the instructions from the Prime Minister's Office (PMO) a feasibility study team was formed consisting members from the PMO, BN, Bangladesh Water Development Board, CEGIS and Detail Specialist by BN. CEGIS has shown and are applying their expertise, experience and practical knowledge in the feasibility study.

Bhashan Char comprises newly accreted land in the Meghna basin, established over the last 20 years. Comprising around 5,261 ha (13,000 acres), it is located 25 kilometres away from the Nalchira Ghat in Hatiya, 35 kilometres away from the Chairman Ghat in Boyarchar, and 7 kilometres away from Sandwip in Chittagong.

The Char is exposed to storm waves and tropical cyclones as well as tidal and fluvial currents. The terrain is largely flat and only marginally above sea level. During normal high tide in monsoon, 1.0 – 1.3 metres of water floods the island. In winter time (roughly 6 months), the high tide does not flood the island.

As Bangladesh is a land scarce country, the rehabilitation of destitute people in the island char is a good initiative from the Government. The phased rehabilitation arrangement will continue until necessary steps are taken for FDMNs to return to Myanmar. After executing the project, the island char will be suitable for crop cultivation, cultured fisheries and enhanced bio diversities.



Bhashan Char in Historical Satellite Images

Overseas Training on Climate Change, Disaster Management and Urban Water Management in Philippines

Like last three years CEGIS has arranged an Overseas Training Workshop Program for the young professionals of the organization as a part of their capacity development.

Participants of the Overseas Training Workshop Program at Manila, Philippines

A 5 day-long training workshop on Climate Change, Disaster Management and Urban Water Management was organized by Philippine Water Works Association (PWWA) in collaboration with the International Water Association (IWA). Sixteen (16) professionals of CEGIS participated in this training workshop held in Manila, Philippines from 13-17 October 2017. CEGIS team was comprised of Executive Director; one Member of BoT, CEGIS; representatives nominated by CEGIS' BoT Chairperson, Team Leader and fifteen (15) Junior Professionals from different divisions. The Training covers about 12 (twelve) classes on the issues like: 'Formation of a Water Supply Company through PPP', 'Water Supply Operation at Manila East', 'GIS in Manila Water', 'Leadership in Organizational Sustainability', 'Operation of Water Treatment Plant', 'Water Security and Climate Resiliency', 'Water Pricing', Water Regulations', 'Gender and Water' etc. A number of national and international experts delivered the lectures in the Training along with 'Role-play Exercises'. As a part of in-house sessions, the CEGIS Team visited Manila Water Company Inc. (MWCI) and Asian Development Bank (ADB) Head Quarter at Manila as well as the International Rice Research Institute (IRRI) at Los Baños, Laguna.

CEGIS Annual Picnic 2017

Similar to other years, CEGIS family had their "Annual Picnic" on 22 December 2017. Dr. Zafar Ahmed Khan, Chairperson of CEGIS BoT and Senior Secretary, Ministry of Water Resources, Prof. Dr. Shamsul Alam, Member, GED, Planning Commission and many other distinguished guests cheered the day long program at Megh Bari Resort, Gazipur. All the participants enjoyed a lot in swimming pool, kids' zone, gardens and moving to and fro of the resort campus. Delicious food and drink were also appreciated by all who attended the picnic. Numerous attractive sports with prizes were offered to both guests and CEGIS professionals. A charming cultural show was organized and performed by the employees of CEGIS and staged at the venue. The whole day program ended with an exciting Raffle Draw.

Advance International Training Program on Strategic Environmental Assessment (SEA)

Mr. Pronab Kumar Halder, Junior Specialist, Power Energy and Mineral Resources Division, CEGIS has been nominated from CEGIS to complete the Second Phase of the "Advance International Training Program in Strategic Environmental Assessment (SEA) 2017" organized by NIRAS and the Centre for Environment and Sustainability at Chalmers University of Technology and the University of Gothenburg sponsored by SIDA, 25 September – 13 October 2017 in Sweden. He is now an important member of trained national SEA expert. He has enhanced capability to conduct SEA for the national policy, planning and program. He significantly contributed to the upcoming SEA studies of CEGIS.

Contract Agreements

Thirteen contracts have been signed by CEGIS with various organizations and clients to carry out different studies during the period October to December 2017. The contract titles are

i) Hydrological study by Mathematical Modelling for the Feasibility Study of Upgrading of National Highways under the "Sub-Regional Road Transport Project (SRTPPF-II)" of the Roads and Highways Department in association with HIFAB on 19 October 2017;

ii) Optimizing the dredging in the Padma, Meghna, Jamuna, Tentulia, Kirtonkhola, Arial Khan, Kumar, M-G Cannel, Surma, Kushiara and Madhumati Rivers and monitoring the dredging activities and volume calculation for the year 2017-2018 as well as maintenance of Touch Table software with Bangladesh Inland Water Transport Authority (BIWTA) on 26 October 2017;

iii) Monitoring of environment parameters and implementation of Environmental Management Plan during pre-construction and construction period along with Engineering Activities for site development of Khulna 1320 MW Coal based Thermal Power Plant with Bangladesh-India Friendship Power Company Limited (BIFPCL) on 26 October 2017;

iv) Four studies under Livestock Development-based Dairy Revolution and Meat Production Project with Department of Livestock Services (DLS) on 09 November 2017;

v) Preparation of Environmental Social Management Framework and Pest management plan with Department of Livestock Services (DLS) on 09 November 2017;

vi) Conducting the morphological study of the Karnafuli River at the vicinity of the Kaptai Dam to assess the impact of dredging from the river bed for the development of the solar power plant with Sunrise Enterprise on 09 November 2017;

vii) IEE/EIA of Two Project Areas for the Construction of Composed Plant (Kishorganj and Feni) with Department of Environment (DOE) on 04 December 2017;

viii) Route Survey and Environmental Impact Assessment (EIA) of Proposed Maheshkhali Zero Point (Kaladiarchar) - Maheshkhali CTMS Gas Transmission Pipeline and Associated Facilities with Gas Transmission Company Limited (GTCL) on 05 December 2017;

ix) Route Survey (RS), Topographic Survey (TS), Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) including Resettlement Action Plan (RAP) with Feasibility Studies with Power Generation Company of Bangladesh (PGCB) on 06 December 2017;

x) Consultancy Services for Initial Environmental Examination (IEE) Environmental Impact Assessment (EIA) & Social Impact Assessment (SIA) study of Gazipur 100 (±10%) MW HFO Fired Power Plant at Kodda, Gazipur with Gas Transmission Company Limited (GTCL) on 10 December 2017;

xi) Web based Water Resource Mapping system with Development Association for Self-reliance, Communication and Health Foundation (DASCOH) on 14 December 2017;

xii) Digitization of Forest Land Boundary of the Cox's Bazar North and South Forest Divisions of Bangladesh with Food and Agriculture Organization (FAO);

xiii) GIS based Forestland Availability Assessment for Plantation/Restoration under Forest Investment Program with Bangladesh Forest Department on 24 December 2017.

New Faces

A number of young professionals were joined as Research Consultant in different divisions of CEGIS during the period October-December 2017. Among them (from left) 1) Nishat Farzana Nimni, 2) Md. Tanvir Ashraf, 3) Tasneem Haq Meem, and 4) Abhijit Das joined in River, Delta and Coastal Morphology Division; 5) Asif Mahmud Anik, 6) Tanvir Hayder, and 7) Sanjib Sarker Shawon in Water Resources Management Division; 8) Nowrin Mow joined in Climate Change and Disaster Management Division and 9) Lubaba Mashiat Ali in Power, Energy and Mineral Resources Division. They have studied in different reputed universities of Bangladesh and successfully completed their Bacholors in Engineering field.