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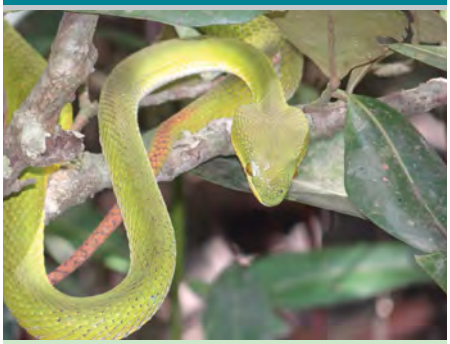


সাদা ঠোঁটি সবুজ বোরা সাপ

Upcoming

- Preparation of Sector Action Plan for Environment and Climate Change
- Coastal Resilience: Developing New and Innovative Approaches in India and Bangladesh along the Bay of Bengal
- EIA Study for Construction of India-Bangladesh Friendship Pipeline Project

Inside

CEGIS
Center for Environmental and Geographic Information Services
(A Public Trust under the Ministry of Water Resources)
House 6, Road 23/C, Gulshan 1
Dhaka 1212, Bangladesh.
Phone: +88 02 222263581, 222282551, 58817651
Web: www.cegisbd.com, Email: cegis@cegisbd.com

the CEGIS
NEWSLETTER
Safeguarding Environment for Future

Curtesy Visit of the Honb'le Minister of State Mr. Zaheed Farooque, MP to CEGIS

The Honb'le Minister of State Mr. Zaheed Farooque, MP of the Ministry of Water Resources, Government of the People's Republic of Bangladesh paid his curtesy visit to CEGIS on 2 September 2020, to know about the activities and its service arena. Due to the pandemic of COVID19, the conference was held in the conference room maintaining health and safety norms and also in the zoom platform. At least 300 participants attended the conference through these two platforms.

The Executive Director Mr. Malik Fida A. Khan and other Directors of CEGIS – a public trust under the Ministry of Water Resources were also present and warmly welcomed the Minister of State.

The Executive Director initiated his speech with the vision of CEGIS that, "The overarching aspiration of CEGIS is to continue as a center of excellence in providing intellectual services, policy advocacy, research & capacity development for sustainable development and enabling better environment", where its motto is "Safeguarding Environment for Future". He revealed some landmark outputs of few mentionable studies conducted by CEGIS in both home and abroad. He also narrated as how CEGIS is providing service intellectually with its multidisciplinary team and highly skilled professionals in different sectors.

To illustrate the strength and capacity of CEGIS, the Executive Director mentioned some recently completed and ongoing studies, namely Water Logging Mitigation in cities, Storm Surge Model of the Bay of Bengal, Environmental Impact Assessment of mega projects, Dredging Monitoring of Navigation Routes, Erosion Prediction Analysis, Tidal River Management, and Morphology of River and Estuary using cross-cutting technologies such as Remote Sensing and Geographic Information Services.

The Honb'le Minister highly appreciated the intellectual services of CEGIS - a center of excellence and assured to work together in the future which are related to water and environment sectors. He also complimented in the Comment Book with inspirational words. Finally, the conference ended through presenting a CEGIS Crest to the Honb'le Minister.

Formulation of Disaster Risk Reduction and Climate Change Adaptation Guidelines for Haor Areas

Ahmmed Zulfiqar Rahaman, Climate Change and Disaster Management Division

CEGIS has been entrusted by the Local Government Engineering Department (LGED) under the Haor Infrastructure and Livelihood Improvement Project (HILIP) to conduct a study on "Action Research on Climate Change forecasting & Participatory Scenario Development and Assessment of the Agriculture & Fisheries Sectors, exposure to climate risk". As a part of the project outcomes, CEGIS has developed Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) guidelines contextualizing the local issues of haor areas particularly focusing on Agriculture and Fisheries sectors. The developed guidelines consist of two generic parts- i) Guideline of DRR/CCA Planning and Integration, and ii) Guideline of DRR/CCA measures formulation.

Steps of DRR/CCA Planning and Integration Guidelines

Further, these guidelines outlined key considerations to identify and prioritize DRR/CCA measures focusing on Agriculture and Fisheries of Haor Area at three different levels i.e. Policy, Institutional and Community level. Some innovative and appropriate DRR/CCA measures have been showcased with pros and cons which could be adopted in Haor Areas.

A few examples of Good Practices as a part of DRR measures included inside the guideline are:

- Some of the stated good practices are already widely practiced in the Haor Region over the years (i.e. Slope protection through brick soling around urban settlements, Slope protection through Greenbelt development, Slope protection through revetments, Emergency Relief Centers with provision for livestocks etc.)
- Some good practices and innovative concepts can be introduced, adopted and successively popularized in the Haor Region in the course of time (i.e. Community Driven Digital Dashboard, Emergency Relief Boat, Boat Ambulance, Seed Store Concept etc.). Popularizing the usage of digital technologies in the root level on a massive scale for Agriculture and Fisheries sectors in the near future might also recommended as an effective tool of DRR measures for the Haor Region.

Similarly, good practices of suggested CCA measures are as follows:

Guidelines strongly recommend to engaging stakeholders at different stages of the DRR/CCA measures formulation, prioritization and integration into the project planning and design. Research, monitoring and evaluation are suggested as integral part of the overall framework. These guidelines will help the local engineers and administrators to plan DRR measures and programs for agriculture and fisheries sectors in Haor Region.

CEGIS Environmental ... (Cont'd from page 5)

characteristics for acceleration and velocity are RMS, peak, EQ peak, RMS and for displacement RMS, EQ peak, EQ p-p, RMS respectively, where, EQ peak = RMS x$\sqrt{2}$, EQ p-p = RMS x$\sqrt{2}$x2. RMS is the true effective value and peak is wave form amplitude value.

Basic Working Principle

The working principle of the instrument is the theory of electrodynamics used in a relative speed sensor. It is based on the phenomenon of induction. In order to apply this principle, a coil and a light permanent magnet is used. The magnet is fixed to the vibrating object. Due to the movement of the magnet, a voltage is induced in the coil. This voltage signal can be detected and measured by vibration meter and it is directly proportional to the speed of the vibrations which can be seen on display. This instrument is used in different project like Rampal Power Plant Project and others for detecting vibration for several periods. CEGIS can use this instrument in different installations and machineries as well as in the development of products such as tools or components to measure vibrations for study of noise and vibration pollution for Environmental Impact Assessment and Monitoring.

EIA Study for Establishing Netrokona Economic Zone

Md. Alamgir Hossain, Research Associate, Socio-Economic and Institutions Division

To become a middle-income country by 2021 and developed country by 2041 the GoB has planned to generate about 10 million employment opportunities and boost up export earning upto around $40 billion through establishment of 100 Economic Zones (EZ) all over the country by 2030. Bangladesh Economic Zones Authority (BEZA) is working with a goal to establish EZ in all potential areas of the country including backward and underdeveloped regions with a view to encourage rapid economic development through increasing and diversifying industry, employment, production and export. For achieving the national agenda, BEZA has attained the approval to establish 88 EZ countrywide comprising 59 under public and the remaining 29 under private initiatives. In line with this, BEZA is planning to establish an EZ over 500-acre of land located at Sadar Upazila of Netrokona District for which an Environmental Impact Assessment (EIA) Study has been carried out by CEGIS.

Proposed Site for Netrokona Economic Zone

The EIA Study of Netrokona EZ (NEZ) followed the participatory approach and a standardized methodology from the beginning to the end of the study trajectory. Both primary and secondary stakeholders were consulted at different layers through different consultation meetings. The study steps included: baseline development, scoping, bounding, major field investigation, impact prediction, mitigation measures, environmental and social management and monitoring plan. In describing the existing condition, three environmental components: physical, biological and socio-economic environment were assessed.

Three number of rivers namely Kangsha, Mogra and Dhalai

Cont'd on page 7

Contract Signing for Different Studies

During third quarter of the year 2020 (July-September), CEGIS has signed 8 (eight) contracts with different other organizations and clients. The contracts with organizations, titles and dates of signing are given below:

i) "Initial Environmental Examination (lEE) and Environmental Management Plan (EMP) study for Expansion and Strengthening of Electrical infrastructure in DESCO Area with the Environmental Clearance Certificate issued by Department of Environment and ADB Guidelines for Social and Environmental Considerations" with Dhaka Electric Supply Company Limited (DESCO) on 23 July 2020; ii) Preparing Sector Action Plan on "Environment & Climate Change" with Planning Commission, Ministry of Planning, Government of Bangladesh on 27 July 2020; iii) "Preparation of GIS based Maps (Ward Level) at DNCC, DSCC & SCC" with Dhaka North City Corporation on 29 July 2020; iv) "Preparation of Detailed Master Plan for Biodiversity Conservation and Ecosystem Development of Mahamaya Eco-Park Project including a) Digital Topography Survey and Mapping b) Detailed Master Plan including lay-out of sections/zones of civil works and species and category wise Eco-Park" with Bangladesh Forest Department (BFD) on 4 August 2020; v) "Monitoring the Performance of Dredging and Assessment of Effectiveness of Dredging at the Inner Bar Area in the Mongla Port Channel" with Mongla Port Authority (MPA) on 1 September 2020; vi) "Training on Climate Change Adaptation (CCA) mainstreaming and Bankable Project Development Skills" with United Nations Development Programme (UNDP) on 13 September 2020; vi) "Formulation and Advancement of National Adaptation Plan Process in Bangladesh NAP Project" with UNDP/NAP on 17 September 2020; and viii) "Update and Enhancing NDCs by 2020 for Bangladesh" with UNDP/NDC on 27 September 2020.

Contract Signing betweem Mongla Port Authority and CEGIS

Comprehensive Feasibility Study for Sustainable Restoration and Protection of Wetlands in Different Hydrological Region of Bangladesh

Md. Amanat Ullah, Ecology, Forestry and Biodiversity Division

Department of Bangladesh Haor and Wetlands Development (DBHWD) has assigned CEGIS to conduct above mentioned study under "Re-excavation of small rivers, canals and wetlands inside 64 districts Project (2nd Phase)" of Bangladesh Water Development Board (BWDB). The objective of implementing this project is to ensure flood control and climate-change onslaught, boosting food production through surface water irrigation, increase fish production, preservation of bio-diversity, improving navigation etc.

DBHWD has the mandate to ensure the overall coordination and monitoring for integrated development of haors and wetlands within the country. In accordance with the mandate, DBHWD has taken initiatives for restoration of wetland-originated rivers including its depended wetlands. DBHWD has identified 81 rivers and their wetlands which have been degraded over the time. The study is aimed to investigate the present situation of the identified rivers and their connectivity, habitat quality and ecosystem services status. The study will also suggest the best alternative intervention for the sustainable restoration of identified severely degraded wetlands distributed within the study area.

Major Activities of this study are to identify the critical wetland areas in terms of protection and restoration; feasibility study of identified river for augmentation and conservation of surface water for expansion of surface water based irrigation and or fish cultivation, establish the migration opportunity for fish, status of biodiversity, environmental health of the eco-system and socio-economic status, framework development to use the natural resources of the wetlands in an equitable way and support the livelihoods of all stakeholders, establishment of prevention, restoration and incentive measures to support wetland conservation and wise use, define restoration and protection goals throughout the region using a multi-scale watershed approach. The study will also identify long-term environmental impacts for improved wetland protection interventions and conduct Workshops to define future management plans.

Belan River

Landuse of Belan River Dependant Area

CEGIS Environmental Lab: Vibration Meter

Md. Rafiqul Alam, Water Resources Management Division

Vibration Meter

Vibration Meter measures vibration like acceleration (m/s2), velocity (mm/s) and displacement (µm) of any vibrating machine or structures that is produced by a vibrating body in air. It has multiple applications in different studies like environmental impact assessment and monitoring, researches and engineering, with common usage in vibration pollution studies for verification of different kinds of vibration level checking of different establishments, especially for industrial hygine investigations, environmental noise and vibration. The vibration meter designed as compact, lightweight and easy to use. The magnetic accelerometer can be attached easily to machinery for increased accuracy and precise operation. This accelerometer detects vibration and changes it into electrical signal. It is the perfect tool to diagnose problematic vibrations with any industrial machinery or manufactured products. Main applications of this vibration meter include: industrial hygiene investigations, industrial machinery check-ups, manufacturing quality assurance.

It is used to keep comfortable vibration, safe and healthy life of people by the evaluation of environmental vibration such as industrial equipment vibration or at offices and factories etc. compared to Bangladesh and WHO standard. CEGIS has one vibration meter. Its model is Kanomax 4200 and it is manufactured in Japan. Vibration Meter is an electronic device which is able to process vibration signals and to display vibration values. It covers measurement ranges (0-20 and 0-200) for acceleration and velocity and (0-200 and 0-2000) for displacement. It is easy to read the present digital value of the readings and see the present monitoring value with a bar in display. It has built in memory for max 256 data. It is possible to process data rapidly on PC and printer. It can also recall and can delete the record data. It covers most measurements corresponding to ISO, IEC and JIS international standards criteria. Calibration is necessary before taking measurement.

During measurement of acceleration, just after power supply on, it starts acceleration measurement mode. The current value is displayed in digital form at an interval of 2 sec and a bar at an interval of 0.1 sec. Display

Cont'd on page 2

Nature: Asian White-lipped Pit Viper: *a venomous snake*

Sharif Tanver Ahammad, Forestry and Biodiversity Division

Asian White-lipped Pit Viper

The Asian White-lipped Pit Viper (*Trimeresurus albolabris*) under Viperidae Family is mostly found in Nepal, Northeastern India (Assam and Jharkhand), Bangladesh, Myanmar, Thailand, Cambodia, Laos, Vietnam, Southern China, Hong Kong, Macau, and Indonesia. In Bangladesh, the venomous pit viper species are mainly found in the Sundarban Mangrove Forest and Ratargul Swamp Forest. This snake is typically green in color, belly looks yellowish and end of the tail is lightly reddish. The shade of this snake is yellowish-green; the region beneath the eye and the lip scales are pale in shading yellow. The iris is yellow and the dorsal surface of the tail is rosy. Males have a restricted white stripe along the lower part of the flanks, anyway females do not have this component. White-lipped pit vipers breed in May. They are viviparous and after the gestation period of 129-157 days females typically give birth to 10-20 live youngs.

It takes rest in the branch of Sundari Tree or the hollow bark of swamp trees. The snake is regularly discovered lying in low vegetation in a 'strike pose', waiting for passing prey. They are nocturnal and prefer to avoid high daytime temperatures and to hunt when their favored preys are also active. The diet of viper includes a varity of animals including lizards, crabs, birds, small frogs and other small mammals. They don't strike and release their prey; like many arboreal snakes, they strike and hold on to the prey item until it dies.

Trimeresurus venom are primarily hemotoxic and considered as medically significant to humans. Currently, this species is classified as Least Concern (LC) on the IUCN Red List and its numbers today are stable.

Hotspots of Landuse Changes in Meghna Basin of Bangladesh

Md. Nasrat Jahan, Remote Sensing Division

The Meghna Basin is crossed by two international boundaries: Bangladesh-India and India-Myanmar. The total area drained by the Meghna River Basin is 64,947 km², of which 43,107 km² (66%) is located in India, 21,077 km2 (32%) is in Bangladesh and only 763 km² (1%) fall in Myanmar. An analysis of landuse change from 2005 to 2019 and hotspots of landuse changes were delineated under the project of Landuse Change Analysis in the Meghna Basin (Bangladesh), 2019 by IUCN.

The Landuse Map 2005, 2010, 2015, and 2019 of Meghna Basin under Bangladesh were prepared using visual interpretation of LANDSAT Images. The landuse classes of the landuse maps were defined following the IPCC (Intergovernmental Panel on Climate Change) Guideline.

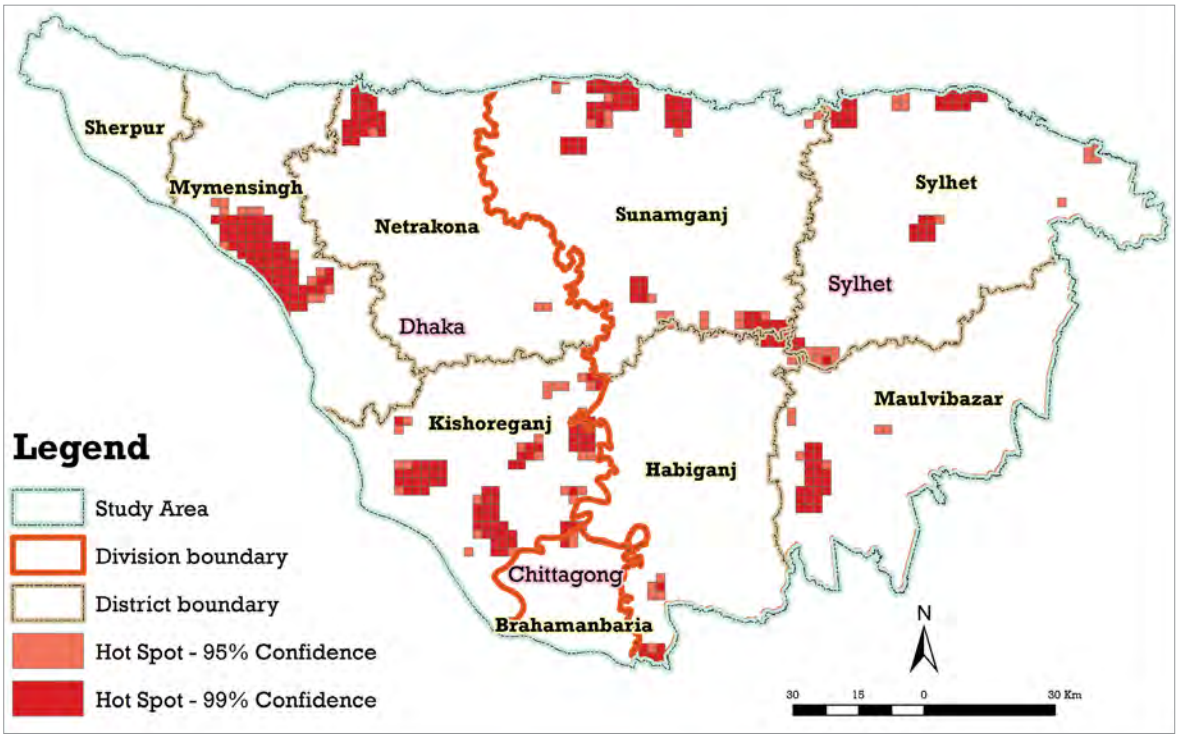
After finalization of the landuse maps, change matrix of six different time periods like 2005-2010, 2005-2015, 2005-2019, 2010-2015, 2010-2019 and 2015-2019 were prepared.

Finally, Getis-Ord hotspots analysis was performed using ArcGIS to delineate the hotspots where high concentration of landuse change in space was found. A total of 412 grids of hotspots equivalent to 39 zones covering 1,55,346 hectare area was identified. Total 189 unions of 45 thanas under 8 districts fall within the 39 Hotspot zones. This information will help to identify the locations for further studies on drivers of landuse changes by socio-economic experts.

Area Statistics of landuse classes of Landuse Map, 2005, 2010, 2015 and 2019 of the Meghna Basin, Bangladesh

Sl. No	Class Name	Area in 2005 (ha)	Area in 2010 (ha)	Area in 2015 (ha)	Area in 2019 (ha)
1	Forest land	74,055	74,061	73,974	73,939
2	Cropland	14,61,625	14,61,646	14,52,618	14,49,894
3	Grassland	41,307	41,321	41,473	41,456
4	Wetlands	86,856	85,784	83,483	82,363
5	Settlements	3,72,187	3,72,344	3,77,485	3,78,066
6	Aquaculture	2,572	2,708	6,859	9,556
7	Orchard and other plantation	64,148	64,276	64,986	64,932
8	Extraction or Mining site	882	1,120	1,896	2,297
9	Other lands	4,035	4,405	4,892	5,163

(Source: Landsat images of 2005, 2010, 2015 & 2019)



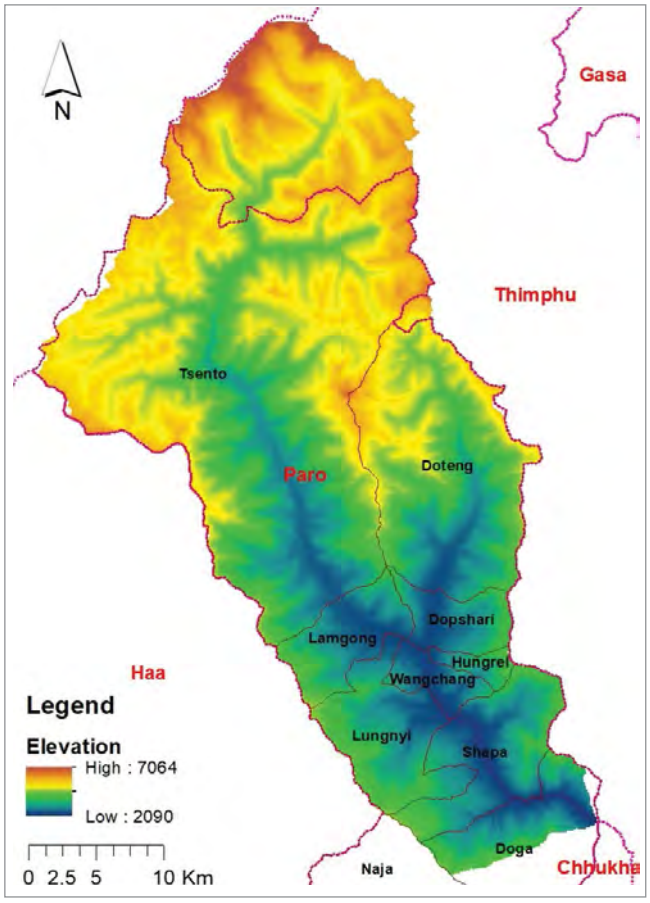
Location of the Hotspot within the Meghna Basin, Bangladesh

Preparation of Climate Resilient Flood Management Plan for the Paro Dzongkhag, Bhutan

Md. Monowar-ul Haq, Water Resources Management Division

This comprehensive study has been taken up by the Ministry of Housing and Public Works (MoHPW) of the Royal Bhutanese Government and is being implemented by the Flood Engineering and Management Department (FEMD). The study aims in developing a comprehensive climate resilient flood management plan for the Paro Dzongkhag through implementing a smart blend of structural and non-structural measures for the primary

rivers Pa Chu and Do Chu as well as their tributary streams. These measures have been devised via extensive mathematical flood modeling for the region based by field observations. Through technical analyses, measures have been devised for maintaining smooth conveyance of flow for the rivers and tributary streams via necessary re-sectioning, bank protection etc., both localized and all along the designated channel sections as well as through development and implementation of large scale flood zoning and flood forecasting and early warning system. Socio-economic and financial analyses have been done to come up with the most suitable measure clusters for each channel stretch, based on which projects have been formulated and guideline has



Topography of Study Area

been provided for chronological implementation. Upon implementation, the administration of Paro will be very well equipped for flood management and its inhabitants will be able to cope better with tackling localized waterlogging and subsequent flooding, which collectively, will render a flood free Paro Valley.

EIA Study for Establishing ... (Cont'd from page 3)

as well as a significant number of perennial and seasonal beels are located within the study area. The area is placed within the Brahmaputra-Jamuna Floodplain where submerged as well as free floating and rooted floating plants are dominant. Total number of population here is 531,806. Agriculture is the main source of livelihood where 87% households are directly or indirectly involved in this sector.

Potential impacts with their magnitudes were assessed by categorizing the key issues into socio-economic and environmental parameters. The key issues were: i) air quality, ii) noise quality, iii) groundwater, iv) surface water, v) drainage and water logging, vi) flooding, vii) land type, viii) landscape, ix) land use, x) crop production, xi) fish habitat, xii) fish production, xiii) fish species diversity, xiv) stock susceptibility, xv) wildlife habitat, xvi) species composition, xvii) dispossession, xviii) livelihoods loss, xix) social conflict, xx) employment generation, xxi) off-site development, and xxii) urbanization & economic development.

The EIA study proposed number of Environmental and Social Management (ESM) measures under specific plans which are to be strictly considered during pre-construction, construction and operation phases of the project. The ESMP includes: i) Compensation, ii) Labor Recruitment, iii) Livelihood Restoration, iv) Stakeholder Engagement, v) Grievance Redress, vi) Land Development, vii) Occupational Health and Safety, viii) Drainage and Flood, ix) Water-Air-Noise Pollution, x) Waste, xi) Transportation, xii) Fisheries Resources, xiii) Water Resources etc. In addition, some special ESMP has also been proposed which are: i) Dredging & Land Development, ii) Industrial Symbiosis; iii) Resource Efficiency & Cleaner Production; iv) Water Conservation & Saving; and v) Komol Beel Management. Besides, a three-tire Environmental Monitoring Plan (EMoP) comprising of compliance monitoring, impact monitoring and external or independent monitoring has been proposed.

Establishment of NEZ will bring some negative consequences for the local environment, landowners and dependent communities; but these would be mitigated through proper implementation of ESMP and EMoP proposed. Although, the ground water, surface water networks, waterbody, aquatic & wildlife, land losers & dependent population should be given special focus following the measures suggested in the ESMP of EIA Report. Alongside, the project will also bring immense positive impacts on local, regional and national economy with specific socio-economic benefits to the local communities.

Landuse and Land Degradation Status - a Regional Perspective of Bangladesh

Sarwat Tazrian, Human Resource and Business Development Division and
Dr. Farhana Ahmed, Research, Development and Training Division

CEGIS is carrying out a study on "Establishing National Landuse and Land Degradation Profile toward Mainstreaming SLM practices in sector policies" as an implementing partner with Department of Environment (DoE). The other implementing partners of the study are Soil Resource Development Institute (SRDI), Department of Agriculture Extensions (DAE) and Barind Multipurpose Development Authority (BMDA). The main objective of the study is to increase the understanding of land use and state of land degradation in the country.

Three regional level workshops have been conducted virtually through Zoom in Khulna (13 July, 2020), Rangpur (12 August, 2020) and Barishal (10 September, 2020) Divisions for getting the feedback from the concerned regions on Land Degradation, Land Use and Sustainable Land Management (SLM) best practices. The meetings were chaired by Dr. A.K.M. Rafique Ahammed, Director General, DoE. Mr. A. Shamim Al Razi, Additional Secretary, Ministry of Environment, Forest and Climate Change. Md. Humayun Kabir, Additional DG, DoE, Dhaka honored the chair as a special guest. At regional level the concerned Divisional Commissioners, Dr. Md. Anwar Hossain Howlader, Divisional Commissioner of Khulna Division, Md. Asib Ahsan, Deputy Commissioner of Rangpur District and Dr. Amitavh Sarker, Divisional Commissioner of Barishal Division were present.

The technical session was chaired by Prof. Dr. Z. Karim, Former Secretary, Ministry of Fisheries and Livestock, GoB and Member, Science Policy Interface (SPI), UNCCD. This session comprised of four technical presentations on Landuse, Land Degradation, SLM best practices and Land degradation Road Map which were presented by the partner organizations. The regional perspectives on land degradation were received from the participants of various government and non-government institutions (DoE, DLO, DoF, DAE, SRDI, BFD, LGED, BADC, Caritas, ESDO, Arannayk Foundation, Termite group etc.), Local Officers (UNA, UAO), Researchers, University Professors and NGO's have been noted.

According to the feedbacks, the regional hotspot wise landuse maps prepared by CEGIS are validated. The regional perspectives are incorporated to update the road map for addressing the land degradation for overcoming the land degradation in our country.

Zoom Virtual Workshop of Khulna Division on 13 July 2020

Editors
Motaleb Hossain Sarker
Md. Sarfaraz Wahed
A. M. M. Mostafa Ali
Md. Mostafizur Rahman

Linguistic Editor
Romina Dewan

Design and Layout
Sonkor Chandra Sinh
Farzana Yeasmin