



Crested Serpent Eagle, strong feet with sharp talons for grasping or killing prey

Upcoming

- ❑ Investing in Climate Change Adaptation through Agro-ecological Landscape Restoration: A Nature-based Solution for Climate Resilience
- ❑ Channel Incidence and Char Ages Mapping of the Lower Jamuna River

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the CEGIS NEWSLETTER

Safeguarding Environment for Future

Courtesy Visit of the Chairperson of CEGIS Board of Trustees



Executive Director of CEGIS Mr. Malik Fida A Khan Congratulated Mr. Nazmul Ahsan, Secretary of MoWR and the Chairman of the Board of Trustees of CEGIS

Mr. Nazmul Ahsan, Secretary, Ministry of Water Resources and Chairperson of CEGIS Board of Trustees, paid a courtesy visit to CEGIS on December 29, 2022. The CEGIS family greeted him with a warm welcome.

Mr. Malik Fida A Khan, Executive Director of CEGIS, briefed the visiting guest about CEGIS. He discussed the institutions' technical and scientific capacity and resources, emphasizing CEGIS' contribution and knowledge support to government and non-government development activities and projects.

The CEGIS directors also shared their experience with the Secretary on various work related issues.

Honorable Secretary, Mr. Nazmul Ahsan, appreciated CEGIS' efforts as the organization acts as a knowledge center of the Ministry of Water Resources and provides various intellectual services. The Chairperson aspires that the experienced professionals of this institution will serve the country's sustainable development and welfare.

He wished for CEGIS's continued growth and conveyed his heartfelt greetings to the CEGIS family.

Feasibility and Review Study on Rural Water and Sanitation

Foerz Ahmed, Water Resources Management Division

Through its two implementing agencies, LGED and DPHE, the Government of Bangladesh have launched the "My Village-My Town" project to bridge the urban and rural gaps by extending urban services to each village. The project goal is to guide the country's transformation into 'Sonar Bangla,' –a poverty, hunger, and corruption-free society, with rapid income growth and shared prosperity as envisioned by the father of the nation Bangabandhu Sheikh Mujibur Rahman.

The "My Village-My Town" project has six components such as; (i) Rural Road Connectivity, (ii) Rural Growth Center and Hat Bazars, (iii) Rural Water Supply and Sanitation, (iv) Rural Waste Management, (v) Community Space and Recreation, and (vi) Upazila Physical Plan/Master Plan. Among the six components, CEGIS has been assigned by LGED to conduct a Feasibility and review study on "Rural Water Supply and



Sanitation."

The process is carried out in four phases: baseline survey, priority assessment framework, feasibility study, and ESIA. A questionnaire survey identified freshwater sources and developed a priority assessment framework. After the baseline survey, a detailed feasibility study progressed to develop water supply and sanitation technologies for the proposed interventions. Finally, a technical, socioeconomic, and environmental analysis of the water supply and sanitation system has also been conducted.



Group Discussion and Questionnaire Survey for the Study

Birds of Prey ... (Cont'd from page 5)

scavenge and eat carrion.

There are many species of raptors in the world. One large group (order) of them, called Falconiformes, includes eagles, kites, and falcons and has around 300 species. Another order, called Strigiformes, contains over 200 species of owls. The raptors in Bangladesh include eagles and eagle-like birds, falcons, buzzards, kites, owls, harriers, shikras, besras, bazas, ospreys, and the smaller shrikes.

Among the raptors of Bangladesh, eagles are higher in species number. About a dozen species of eagles, both migratory and resident species, can be seen in Bangladesh. But the most typical raptors are the kites, though the most common kites, Black Kite and Brahminy Kite, are more scavenger than raptors as they eat carrion and waste. Shrikes are the smaller birds of prey found in Bangladesh.

Birds of prey are not only astonishing to watch; they also perform important tasks for our ecosystem. They are susceptible to many environmental changes in an ecosystem. Raptors at the top of ecological food chains

may act as sentinels of environmental change, giving early warnings of potential anthropogenic impacts on biodiversity. They have been called "ecological barometers," meaning they help us gauge a habitat's health. Furthermore, they can even sense chemical and pollutant levels that warn people early of impending airborne threats. Pesticides and other chemicals can build up in our environment and pass on to animals. This can lower raptor populations due to birds ingesting prey riddled with toxins, which signals to scientists that a possible problem exists. Since many smaller raptors feed on insects and larger ones prey on rodents, many farmers appreciate them as their true friends. They have a significant contribution to disease management through the biological control process.

The population of predator birds is declining for various anthropogenic activities and natural factors. We urgently need more scientific knowledge to provide adequate responses to the challenge of keeping healthy populations of avian predators in a rapidly changing world.

Contract Signing for Different Studies

During the 4th quarter of 2022 (October-December), CEGIS signed 15 (Fifteen) contracts with different organizations and clients. The contract titles with the dates of signing are marked below:

i) Environmental and Social Study Component of the project “Feasibility Study for the Management of the Padma River Basin and Rehabilitation of Pabna Irrigation and Rural Development project in Pabna District-” with Bangladesh Water Development Board (BWDB) on 02 October 2022; ii) “GIS map on WASH facilities and services in Tarabo Pourashava including demarcation of low-income communities, accessibility, type of sanitation containment, sanitation service gaps, etc.” with United

Bangladesh Water Development Board (BWDB) on 07 November 2022; viii) “Consultancy Services for ESIA of proposed intervention for integrated water resources management at the Left Bank of Jamuna River in Jamalpur District” with Bangladesh Water Development Board (BWDB) on 12 December 2022; ix) “ESIA Study for Integrated Water Resource Management & Development of Polder no – 73/1(A+B) & 73/2 under Hatiya upazila in Noakhali District” with Bangladesh Water Development Board (BWDB) on 15 December 2022; x) Midterm Evolution of Extended Community Climate Change Project-Flood (ECCCP-Flood) of PKSf with Palli Karma-Sahayak Foundation (PKSF) on 20 December 2022; xi) Consultancy Services for an independent audit

report on the effectiveness of the Environmental and Social Management System of the “Extended Community Climate Change Project-Flood (ECCCP-Flood)” with Palli Karma-Sahayak Foundation (PKSF) on 20 December 2022; xii) “Implementation of GIS-Based Distribution Network System with Consumer and LT Pole survey of Mymensingh Circle- 1 & 2” with Bangladesh Power Development Board (BPDB) 21 December 2022; xiii) “Implementation of GIS-Based Distribution Network System with Consumer and LT Pole survey of Chattogram Circle” with Bangladesh Power Development Board (BPDB) 21 December 2022; xiv) Environmental and Social Impact Assessment Study in Connection with “Detail Study for Restoration and Development of Water Resources Management System of Polder 31 under Dacope Upazila in Khulna District”

with Bangladesh Water Development Board (BWDB) on 27 December 2022; xv) Environmental and Social Impact Assessment Study in Connection with “Detailed Feasibility Study for Char Stabilization and Livelihood Development Project in the Jamuna River (Pilot Study Kawakhola Char)” with Bangladesh Water Development Board (BWDB) on 27 December 2022.

Nations Children's Fund (UNICEF) on 10 October 2022; iii) “Environmental and Social Impact Study for Integrated Water Resources Management and Development of Surma-Kushiyara River Basin in Sylhet District” with Bangladesh Water Development Board (BWDB) on 10 October 2022; iv) “Environmental and Social Impact Study for Integrated Development and Management of Naf River Estuary and Land Development of Shahparir Dwip” with Bangladesh Water Development Board (BWDB) on 10 October 2022; v) “Optimizing the Dredging in the ferry and Navigation Routes of Bangladesh (Dhaka, Barisal, Khulna, Sylhet and Mymensingh Zone) for 2022-23” with Bangladesh Inland Water Transport Authority (BIWTA) on 20 October 2022; vi) “Empirical Research on the Social and Economic Impacts of Infrastructure Project in Bangladesh” with ALMEC Corporation on 03 November 2022; vii) Environmental and Social Study Component of the project “Feasibility Study for Surface Water Retention in Hurasagor River System and Flood Risk Management of Jamuna River in Sirajganj District” with



Dr. Takayoshi FUTOSE, Manager, Almec Corporation and Deputy Team Leader of the project and Mr. Md. Jabid Hossain Jahangir, Director, Human Resource and Business Development Division of CEGIS along with other officials were present in the signing ceremony of JICA Funded Empirical Research on Social and Economic Impacts of Infrastructure Projects in Bangladesh



Ms. Rubina Haque, Director, Directorate of Purchase, Bangladesh Power Development Board and Mr. Lt Col Syed Afzalul Abedin (Retd), Director of CEGIS along with other officials were present in the signing ceremony of Implementation of GIS Based Distribution Network System with Consumer and LT Pole survey of Chattogram and Mymensingh Circle- 1 & 2

Hydro-Morphological Study for Three Bridges at Rangpur Zone of RHD

Gazi Md. Riasat Amin, Climate Change and Disaster Management Division

Roads and Highways Department (RHD) has taken a plan to construct the Jaysingh Bridge over the Bangali River, the 2nd Karatoya Bridge over the Karatoya River, and Langolerhat Bridge over the Ghaghot River. CEGIS was awarded consultancy services for "Hydro-Morphological Study for the 2nd Karatoya Bridge over Karatoya River at 14th m of Z-5060, Langolerhat Bridge over the Ghagot River at 09th km of Z-5020 and Joyshingh Bridge at 12th km of Z-5072 at Rangpur Zone".



Bank Protection Work and Char Formation at Mirgarh Wooden Bridge, Panchagarh (Karatoya River)

The study objective is to conduct a hydro-morphological survey of the rivers and determine the hydraulic design parameters for bridges. The study is based on a detailed hydrological, morphological, and hydraulic analysis of the river system. It uses mathematical modeling to determine the bridge's opening width, approach road slope protection, and river bank protection. The study will compute design flood discharge, design flood level, etc.

It will identify the appropriate bridge location through a 1D hydrodynamic model, assess the effect of the proposed alignment on river hydro morphology, finalize the bridge location, and determine the hydraulic design parameters for bridges. It will further identify justified bridge location on a 2D morphological model through planform analysis, erosion accretion pattern,



Overall Site Condition at Jaysingha Khayaghat, Bogra (Bangali River)



Overall Site Condition at Langolerhat Bridge (Ghagot River)

understanding the requirement of RTW, and selecting preferable alignment for bridges. The study also incorporates an Environmental and Social Impact Assessment (ESIA) study.

Integrated Water Resources Management ... (Cont'd from page 6)

use of water for irrigation. This practice is evident in the field by farmers as well. Researchers at Wageningen University put an extreme amount of effort into finding out the stresses due to the impacts of climate change, e.g., Salinity Intrusion, Flood, Drought, etc. To conserve water, a network of perforated pipes has been installed in each bed, and Moths are used as natural pollinators as a Nature-based Solution. A visit to the Tomato World offered exposure to greenhouse horticulture practices to optimize crop-health production.

The port building in Rotterdam is a milestone in the navigation and industrial sector in the Netherlands. The study team visited the westward extension of the Port (Maasvlakte 2). The dredging activities and coastal polders in this area testify to the continuous water management in the Netherlands.



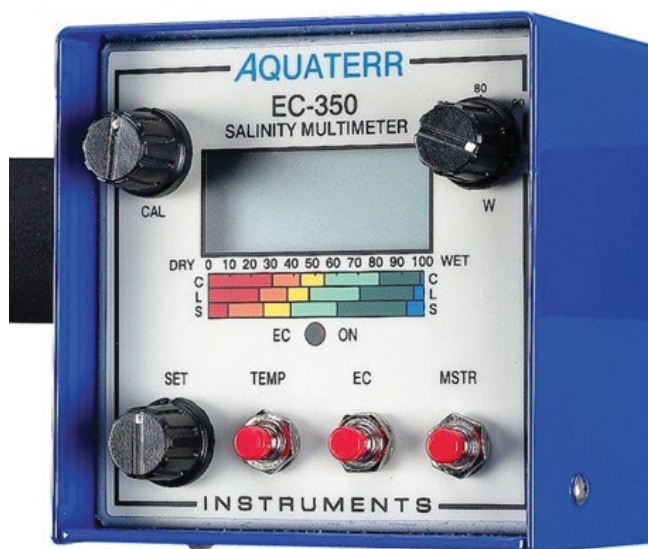
Tomato World Greenhouse

CEGIS Environmental Lab: AQUATERR EC- 350 Soil Salinity Multimeter

Md. Rafiqul Alam, Water Resources Management Division

AQUATERR EC-350 is a digital, battery-operated Soil Moisture, Temperature, Electrical Conductivity, and Salinity Meter. It measures soil moisture percentage, soil temperature °F, and electrical conductivity S/m. Salinity in ppt can be calculated from EC value as EC by the concentration of dissolved salts. It is used in various soils and is unaffected by temperature, pH, dissolved salts, or metallic ions. Simply anybody can insert the probe at least six inches into a reasonably soft, moist area and press the appropriate test button then results appear quickly. Rapidly it can perform multiple tests at various depths and locations. It is necessary to wipe off the probe after each test. Features of the instrument include a 30" stainless steel probe, clay, loam, sand scales printed on the meter's face panel and soft foam handles. AQUATERR EC-350 has a portable soil probe.

The AQUATERR 350 series portable soil measurement instruments are widely used in rugged environments and are built to withstand industry abuse. Application of the Instrument includes assisting anybody in effective soil-water management. It is lightweight and portable, providing instantaneous moisture, EC and salinity readings in rapid succession rapidly providing instantaneous moisture, EC, and salinity readings at multiple sites and depths. Calibration of the instrument is needed while necessary. EC-350 field-tested rock-stable electronics have been used for many years, working in rugged environments and holding long-term calibration with excellent reading accuracy. The portable Soil Probes of EC-350 are the most versatile, rugged soil measuring instrument on the planet's most versatile, rugged soil-measuring instrument. It contains a display of a temperature button, EC button, moisture button, CAL switch, SET switch, 30-inch stainless steel probe, Handle for hand holding and Amplifier switch. All electronics are housed within a rugged double weather proof, tamper proof enclosure.



AQUATERR EC- 350 Soil Salinity Multimeter

Nature: Birds of Prey: A unique avian predator

Mushfiq Ahmed, Ecology, Forestry and Biodiversity Division



Brahminy Kites - curved, powerful beaks for tearing off flesh

Birds of prey, or predatory birds, are hypercarnivorous bird species that actively hunt and feed on other vertebrates, mainly mammals, reptiles, and smaller birds. These birds are also known as raptors. These birds have strong feet with sharp talons for grasping or killing prey, and curved, powerful beaks for tearing off flesh off. In addition to speed and strength, these predators have keen eyesight for detecting prey from a distance or during flight. A sharp eyesight is very important for the raptors so that they can see prey that is far away or camouflaged far away or camouflaged targets. Some raptors, like peregrine falcons, fly fast, and some raptors, like harriers, are slow fliers. Flying speed varies with the needs of the raptors. Although predatory birds primarily hunt live prey, many species, such as fish eagles, vultures, and condors, also

[Cont'd on page 2](#)

Soil salinity is measured by passing an electric current based on Ohm's law between the two electrodes of the salinity meter in the soil sample. The electrical conductivity of the soil sample is influenced by the concentration and composition of dissolved salts. Soil sample's electrical conductivity influences dissolved salts' concentration and composition. Salinity refers to the concentration of soluble salts in the soil. The tendency of soil salinity multimeter is that soil salinity multimeter tends to underestimate salinity at higher salt concentrations has to do with the influence of direct current versus alternating current on the ions in the soil. The instrument converts the current flow into a number representing a percentage. Instrument design and measurement mechanics differ, so it is to be checked instructions for accurate interpretation. Variables include the soil's type, density, and salinity, although many meters have settings to compensate for these factors.

This instrument is used for different EIA, SIA, EMP, ESMP, and ESIA studies for analyzing Soil salinity for several periods. CEGIS can use this instrument to monitor the soil salinity of different agricultural and water resource study projects for soil-water management.

Metamodel Working Session and Exposure Visit in the Netherlands under JCP

Dr. Farhana Ahmed and Anindya Banik, Research, Development and Training Division

Water is critical in developing the ecosystem, especially in a deltaic country like Bangladesh. The Netherlands, a deltaic country, faces similar environmental and ecological challenges. The Dutch have adapted their lifestyle and socio-economic system based on water

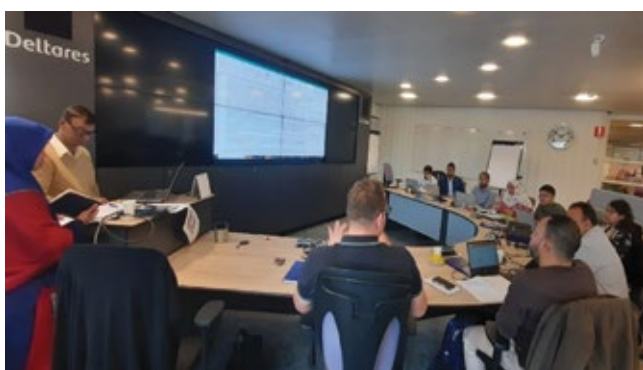


Study Team Members at WUR

management. A study visit was conducted by CEGIS, IWM, and DAE professionals to experience the intertwined nature of water and ecosystem management in the Netherlands as part of the Joint Cooperation Program (JCP) between the Netherlands and Bangladesh. JCP was conducted by collaborating between Dutch institutes Deltares, Wageningen University, and Research and Bangladesh institutes CEGIS and IWM.

Metamodel Work Sessions

The 1st week of the visit offered training on the metamodel application. During this 4-day training and work session, study team members were divided into two groups and assigned to prepare Metamodel runs and visualize the outputs on two interdisciplinary projects. Dr. Kymo Slager and Ms. Tiaravanni Hermawan from Deltares facilitated the teams. The training program ended with concluding remarks and certificate distribution by Mr. Tjitte Nauta. Regional Manager - Asia, Deltares.



Presentation of Metamodel Outputs

Meeting on JCP components and Exposure Visits

Second week of the training program offered meeting opportunity with sub-project and exposure visits. The sessions focused on the tasks' progress during the past 4 years and the way forward. The training sub-content included: (1) JCP Knowledge app on BDP2100, (2) Water and Food Nexus, (3) Clean and safe water for Dhaka, (4) ensuring flow in the old Brahmaputra River, (5) designing polders for the future, (6) the Bangladesh Metamodel, (7) Landuse change knowledge using modeling, (8) Managed Aquifer Recharge in the Barind and Char, (8) Suitability Assessment for Mangrove Afforestation.

The exposure visits were intended to illustrate different aspects of IWRM and ADM concepts. Each visit highlighted a theme, which is described below.



Port and Summer dike along the Rhine River in Wageningen

In the past, the water districts focused on providing infrastructure-oriented measures for flood control and drainage. In the last 20-30 years, especially after the flood in 1995, the approach has had a paradigm shift towards adaptive management philosophy. This change in thinking has led to concepts like adaptation pathways, tipping points, and programs like Room for the River. The dikes are divided into two categories, a) summer dikes and b) winter dikes. The summer dikes are closer to the river, and winter dikes are farther away. Since floods in the Netherlands mostly occur in winter, the winter dikes are greater in height and therefore designed for flood events of greater magnitude.

The Netherlands, as a nation, emphasizes the efficient

Cont'd on page 4

Feasibility Study of River Management for Enhancing Navigability, Conveyance Capacity, Wetland Ecosystem, Tourism, Irrigation, and Landing Facilities by Capital and Maintenance Dredging in the Rangpur Division

Md. Kamruzzaman Akand, River, Delta and Coastal Morphology Division

The major rivers in the northern part originated from the Himalayan Range and considered by steeper topography. The heavy monsoon rainfall in the Himalayas causes enormous flash floods in this area. Flash floods govern in the northern part, associated with extreme erosion and sand deposition along the rivers. Due to sedimentation, the rivers are reducing flow capacity, consequently reducing the different types of water usage of these rivers at the Rangpur Division.

Under these circumstances, Bangladesh Inland Water Transport Authority (BIWTA) initiate a study project for river management through dredging in the Rangpur division. The study's main objective is to conduct a hydro-morphological analysis of 48 selected rivers and prepare a dredging plan to improve Navigability, Conveyance Capacity, Wetland Ecosystem, Tourism, Irrigation, and Landing Facilities. CEGIS is conducting this study for BIWTA.

Following available data, survey charts, historical maps, and time-series satellite images, CEGIS will assess the selected river's hydro-morphological condition and development process. The study will prepare a complete feasibility report for restoring the water depth and flow



Rivers selected for Dredging at Rangpur Division

of the selected rivers considering the technical, environmental, social, and economic aspects.



Present Condition of Karatoya River

Celebration of Victory Day 2022

Bangladesh was born as an independent country on 16th December 1971, under the leadership of the Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, at the cost of the supreme sacrifice of the millions of martyrs. Every year, the people of Bangladesh commemorate this anniversary by recalling the sacrifices and triumphs of the 1971 independence warriors. CEGIS also celebrated National Victory Day like the previous years.

Mr. Malik Fida A Khan, Executive Director of CEGIS, and colleagues paid respect by placing wreaths at the National Memorial at Savar, Dhaka. Following their homage, CEGIS professionals stood in somber silence to pay their respects to the nation's martyrs.



Executive Director of CEGIS along with other professionals pay homage at the Jatiyo Sriti Shoudho (National Martyrs' Memorial), Savar to commemorate the Victory Day

Event Outline (Oct-Dec 2022)

October 4, 2022: Meeting with Powertek Energy Sdn Bhd regarding project activities

October 10, 16, 2022: Unmanned Surface Vehicles (USV) Training by Remote Sensing Division

October 19, 2022: Meeting with Joint River Commission Bangladesh for the Study of Development of Water Quality Database of the Trans-Boundary Rivers in Bangladesh

October 19, 2022: Meeting with ADB & DESCO regarding study for Expansion and Strengthening of Electrical Infrastructure in DESCO Area

October 26, 2022: Discussion meeting with Powertek Energy regarding Gas Pipeline Routes Survey under the Proposed Development of a CCGT Project of PESB

October 30, 2022: Management Coordination Team (MCT) Meeting

November 8, 15, 16, 2022: Capacity Development on Hydro-morphological Assessment of Bridges by Applying Morphological Assessment and Mathematical Modeling Technique under Hydro-morphological Study for three Bridges at Rangpur Zone of RHD

November 14, 2022: Sectoral Meeting of Land Zoning Mapping using Satellite Images and Remote Sensing Technology

November 20, 2022: Discussion meeting for Feasibility Study, DRS, IEE, ESIA, LAP and RAP of Construction of Onshore Gas Pipeline from Kuakata to Khulna

November 22, 2022: Drone use in Agriculture organized by Remote Sensing Division

November 22, 2022: Meeting for Preparation of Payra-Kuakata Comprehensive Plan Focusing on Eco-Tourism (PKCP)

November 24, 2022: Meeting with JICA for Baseline Household Interview Survey for the Empirical research on the social and economic impacts of infrastructure projects in Bangladesh

November 28, 2022: Meeting on Scoping Report on the study titled Vulnerability Impact Assessment in the Barind Tract and Haor Wetland Area

November 29, 2022: 56th Board of Trustee (BoT) Meeting of CEGIS

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