



Manisha Golda Khal Sub-project of LGED

Upcoming

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- ❑ River Management of Panchagarh and Thakurgaon District
- ❑ Char Ages of the Padma River

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the CEGIS NEWSLETTER

Safeguarding Environment for Future

Riverbank Erosion Prediction for 2024

Sudipta Kumar Hore, River, Delta and Coastal Morphology Division



River Protection Works in the Eroded Bank of the Jamuna River near Kulkandi Union, Islampur Upazila under Jamalpur District

Riverbank erosion, a major natural disaster in Bangladesh, causes untold miseries every year for thousands of people living along the banks of the country's rivers. This destructive impact has led to millions of displacements, posing a severe social risk in the country. Implementing structural measures to prevent riverbank erosion involves substantial costs. However, combining nonstructural approaches such as erosion prediction with structural measures could be more effective in dealing with riverbank erosion and minimizing its adverse effects.

CEGIS has developed a unique tool using time series satellite images for

riverbank erosion prediction in the Jamuna, the Ganges, and the Padma rivers. Like the previous years, CEGIS has predicted thirteen (13) probable vulnerable locations for 2024 along both banks of the Jamuna, the Ganges, and the Padma rivers for three different probabilities (70%, 50%, and 30% probability of erosion). Among these, seven (7) locations are in the Jamuna River, three (3) are in the Ganges, and three (3) are in the Padma River. The prediction is not only limited to identifying the vulnerable locations but also provides information on the vulnerability of the land, settlement, and other physical

Baseline Study of 30 Subprojects under the Small Scale Water Resources Development Project (Phase-2), LGED

Muhammad Shifuddin Mahmud, Socio-Economic and Institutional Division

After completing the Small-Scale Water Resources Development Project (SSWRDP)-Phase-1, LGED is currently executing SSWRDP-Phase-2, funded by JICA. This phase includes 145 new subprojects (SPs), of which 90 are additional development SPs, 9 flagship development SPs under SSWRDP-1, and 46 for rehabilitation or enhancement, developed under SSWRDP-1 and 2. Within these categories, 30 SPs were selected for the baseline study, including 20 new development SPs (two-thirds of the total), 8 additional development SPs (one-third), and only 2 flagship development SPs.



Teli Haor Sub-project

Beneficiary (50 households) and non-beneficiary (25 households) in each of these SPs are chosen through a random sampling process; thus, a total of 2250 households from both SPs and control villages (CVs) are surveyed for collecting quantitative data. Besides, key informant interviews (KIIs) are carried out with the Upazila Engineer, LGED, Project Consultants, Water Management Cooperative Association (WMCA) Members, and local people to collect qualitative data to complement the quantitative data.

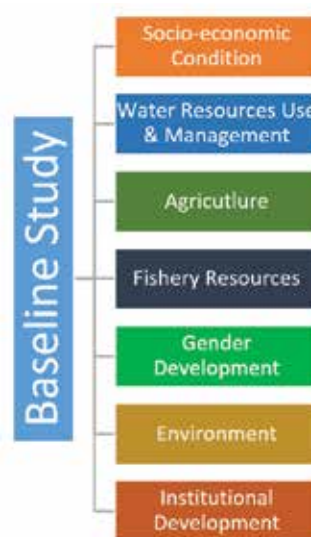
The study includes seven modules, i.e. (1) socioeconomic condition, (2) water resources management, (3) agricultural production, (4) fishery resources, (5) environment, (6) institutional development, and (7) gender and development. The analyzed data revealed that male-headed (95%) households are dominant in both SPs and CVs, with about five members on average per household. Agriculture is the predominant occupation in both SPs (28.74%) and CVs (30.71%), while most household members are involved in household work and have secondary occupations such as jobs, fish catching and small business. All households in both areas collect drinking water from tube wells. About 78.33% of households in the SPs and 83.33% in CVs have sanitary/ring slab sanitation facilities, while about 20.33% use traditional or pit/kutcha latrines.

In the SPs, marginal farmers own 0.13 hectare (ha) of land, small farmers own 0.45 ha, medium farmers own 1.45 ha, and large farmers own 3.93 ha of land. Besides, marginal farmers own 0.14 ha of land, small farmers own 0.47 ha, medium farmers own 1.39 ha, and large farmers own 3.86 ha of land in the CVs. The total agricultural area of the SPs and CVs under the new development SPs is 10,058 ha and 4,900 ha. The major cropping patterns in both areas under the new development SPs are Fallow-HYV Aman-HYV Boro, while Fallow-Fallow-HYV

Boro in additional development SPs and Fallow-Fallow-HYV Boro in flagship development SPs. Cropping intensity in the SPs under the new development SPs, additional development SPs, and flagship development SPs are 158%, 167%, and 143%, respectively. In the CVs, cropping intensity is 165%, 179%, and 162%, respectively, in new, additional, and flagship development SPs. The estimated net returns per hectare from HYV Aman are BDT 52,136 in SPs and BDT 58,370 in CVs. For HYV Boro, the net returns are BDT 60,257 in SP areas and BDT 64,813 in control areas.

Concerning additional development SPs, the net returns per hectare for HYV Aman are BDT 43,600 in SPs and BDT 49,089 in CVs. For HYV Boro, the net returns are BDT 57,665 in SPs and BDT 62,641 in CVs. Under flagship development SPs, the net returns per hectare from HYV Aman are BDT 38,888 in SPs and BDT 40,397 in CVs. For HYV Boro, the net returns are BDT 55,419 in SPs and BDT 59,133 in CVs.

Both culture and capture fisheries are practiced in river, khal, and beel habitats in SPs and CVs. The total fish habitat area in 20 new development SPs is 257.68 hectares, yielding 158.72 metric tons of fish annually, while 8 additional SPs cover 123.5 hectares, producing



Overall Themes of the Baseline Study

Cont'd on page 4

Contract Signing for Different Studies

During the 2nd quarter of the year 2024 (April to June), CEGIS has signed 11 (Eleven) contracts with different organizations and clients. The contract titles with clients and dates of signing are given below:

i) "Monitoring of Water Quality of Transboundary Rivers in Bangladesh" with Joint Riveres Commission (JRC) on 1 April 2024; ii) "Sustaining Climate and Disaster Risk Resilient and Low Carbon Development in South Asia" with Asian Development Bank (ADB) on 10 April 2024; iii) "Hydro-Morphological Study for Dangabazar Bridge over the Shitalakshya River at Narshingdi, Mongla Bridge over the Mongla River at Bagerhat, Khaliakhuri Bridge over the Dhonu River at Netrokona, Bhushir Bandar Bridge over the Atrai River and Khanshama Zia Bridge over the Korotoa River at Dinajpur" with Roads and Highways Department (RHD) on 29 April 2024; iv) "Ecological Monitoring of the Sundarbans under the project Protection of Sundarban Mangrove Forest Project (PSMFP)" with Bangladesh Forest Department (BFD) 06 May 2024; v) "Hydrology and Morphology Study using mathematical model and Environmental Impact Assessment (EIA) for Construction of 160.00 meter long PC Girder Bridge at 19th km of Delduar-Lauhati-Saturia Road at Batulia over the Dhaleswari River in Tangail District under Tangail Road Division" with Roads and Highways Department (RHD) on 06 May 2024; vi) "Preparation of Economic Enumeration Area, Operational Area and Development of Online Integrated Census Management System (ICMS) Using GIS and Remote Sensing Technology for the Economic Census 2024" with Bangladesh Bureau of Statistics (BBS) on 09 May 2024; vii) "Design and Development of the Web GIS-based Data Inventory Management System (DIMS) as a Secured Online Platform for BAPEX" with Bangladesh Petroleum Exploration and Production Company Limited (BAPEX) on 26 May 2024; viii) "Environmental and Social Impact Assessment (ESIA), and Resettlement Action Plan (RAP) of the Project entitled 'Replacement and Improvement of the Existing Gas Network System in Dhaka and

Narayanganj City Corporation Area, incorporating GIS Mapping and SCADA System" with Titas Gas Transmission and Distribution Company Limited (TGTDC) on 24 June 2024; ix) "As-build drawing of KDA's Inter District Bus Terminal Area, Outer Bypass Road (1st Phase) and Sonadanga Residential Area (Phase-3) through digital topographic survey of 32 acre by total station Machine (package-1)" with Khulna Development Authority (KDA) on 30 June 2024; x) "As-build drawing of KDA's Nirala Residential Area with Commercial plot's, lake & Road including through digital topographic survey of 68 acre by total station Machine (package-2)" with Khulna Development Authority (KDA) on 30 June 2024; xi) "As-build drawing of KDA's Majid Saroni and Majid Saroni Side Plots adjacent to KDA Avenue and Avenue Plots Commercial Area including,



Ms. Zakia Sultana, Director (Estate), Khulna Development Authority (KDA), Khulna & Mr. Motaleb Hossain Sarker, Director, CEGIS with other professionals from both organisations were present in the contract signing ceremony with KDA

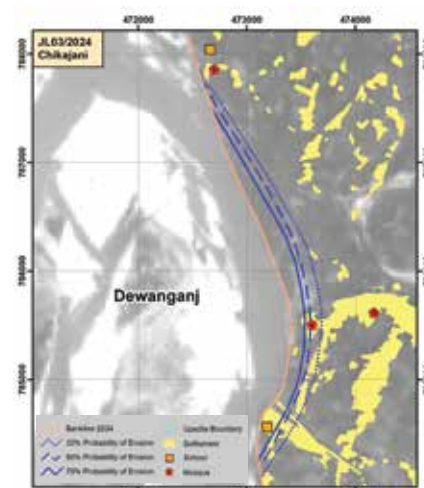
KDA New market and New market Adjacent Plots (including Prantic market & present biponi bitan area and Existing Commercial Areas) Sonadanga Residential Area (1st Phase) Sonadanga Residential Area (2nd Phase), KDA Office Building Area, KDA Rupsa Market area, KDA Staff Quarters Area, Commercial area adjacent to Jessore Road, survey of 145 acre by total station Machine (Package-3)" with Khulna Development Authority (KDA) on 30 June 2024.

Riverbank Erosion Prediction ... (Cont'd from page 1)

infrastructures of the predicted locations. It is predicted that riverbank erosion in the Jamuna River would be about 475 ha, whereas for the Ganges and the Padma Rivers, it would be 205 ha and 585 ha, respectively. Moreover, 130 ha of settlement, 80 m of District Road, 24 educational institutions, 3 hat/bazaars, 11 mosques, 2 government offices, 2 graveyards, and 1 orphanage may damage due to riverbank erosion.

The riverbank erosion is predicted to affect 9 districts situated along the banks. These are Kurigram, Jamalpur, Gaibandha, Sirajganj, Tangail, Pabna, Kushtia, Faridpur, and Madaripur.

CEGIS regularly monitors erosion prediction to assess the robustness of the prediction tool. In the previous year (2023), erosion predictions closely matched actual occurrences, but there were a few instances of riverbank erosion that were not predicted. The overall accuracy of this Prediction Tool is approximately 70-80%.



Erosion Vulnerability Map for 2024

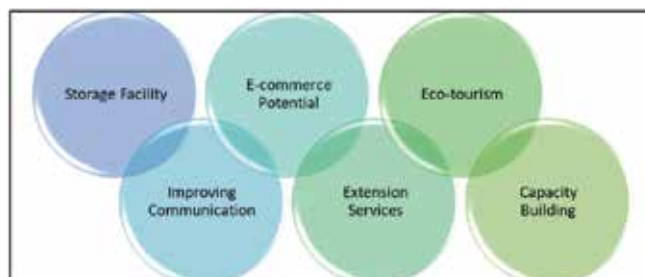
Baseline Study of 30 Subprojects ... (Cont'd from page 2)

74.88 metric tons of fish per year. Similarly, the yield is approximately 63.99 metric tons of fish yearly, with a diverse range of 31 fish species in the 2 flagship development SPs.

Women are actively engaged in various income-generating activities across the SP beneficiary groups, with service-related roles, tailoring, construction/earthwork, and poultry emerging as common choices in all 3 SP categories and CVs. Women in the flagship SP category contribute significantly more than their counterparts in the other SP categories, contributing 19% to the income generation of landless farmers. Additionally, around 13% of marginal women in flagship SPs contribute to family income, followed by large farmers (10%), small farmers (8%), landless individuals (8%), and medium farmers (3%) in the additional development SP category. About 63% of women in the SPs are actively involved in NGOs, a percentage similar to that in the control areas (64%).

A small no. of the population receives assistance from local NGOs in the SPs, while approximately 70% receives support from government departments that encompass various services, including agriculture development, fishery development, water management, and training,

among others. A significant portion of the respondents show interest in participating in WMCA, with approximately 77% in new development SPs, 88% in additional development SPs, and 76% in flagship development SPs. Among those interested, the majority prefer to be general members of the WMCA. At the same time, about 20% of new development, 16% of additional development, and another 16% of flagship development SPs expressed interest in taking leadership roles in the



Agri-business Center and Its Auxiliary Services

WMCA. Regarding financial commitment, over 80% of individuals in new development and additional development SPs are willing to contribute to the Operation and Maintenance (O&M) costs of the proposed small-scale water management interventions. Conversely, about 76% of people in flagship development SPs express their readiness to participate in O&M efforts.

ESIA and Conservation Plan ... (Cont'd from page 6)

the study area, which covers Pallabi, part of Dhaka Cantonment, and Mirpur Thana. The Digun Khal receives water from Abdullahpur Khal, Diabari Khal, and Baunia Khal, and drains to the Turag River through an eight-vent pipe sluice when water levels in the countryside exceed the prevailing water level in the river-side. RAJUK has designated Diabari Khal and parts of Baunia Khal and Abdullahpur Khal as lakes under the Utara phase-3 project.

During the monsoon, when the riverside water level exceeds that of the countryside, the water in the study area is stored in Goranchatbari Retention Pond and pumped out by the existing pump station. The Khals area is shrinking gradually due to increased urbanization. The water flow in the Khals is sluggish and stagnant in many places because they are filled with household garbage and water hyacinth. Illegal encroachment and structures over the water bodies and low-lying areas are common occurrences in this area. The main concern in the study area is the odor problem, which is worsened by the poor current state of the Turag River's water quality. The water quality has deteriorated due to the lack of awareness among the local people. Local people have been seen dumping their homesteads and small industrial garbage in the Khals.

The study area is under one bio-ecological zone termed as the Brahmaputra-Jamuna Floodplain. Urban as well as the urban fringe play significant roles in bird and biodiversity conservation. Wildlife is an important component of biodiversity and bio-resources but in urban areas of Bangladesh, they are facing an existential

crisis.

For understanding the status of the water quality, ECR'23 (Environmental Conservation Rules, 2023) standard values are used as reference values, because these standards are specifically designed to ensure the health



Water sample collection from Diabari Khal

and safety of aquatic life. They take into account the sensitivity of fish and other aquatic organisms to various pollutants and environmental conditions, providing a benchmark that helps maintain optimal living conditions. Adhering to these standards helps prevent the adverse effects of pollution on fish populations, supporting biodiversity and the sustainability of aquatic ecosystems, which are vital for ecological balance and human livelihoods.

ESIA Study on Sustainable Coastal and Marine Fisheries

Deeba Farzana Moumita, Power Energy and Mineral Resources Division

The 'Sustainable Coastal and Marine Fisheries Project (SCMFP)' by the Department of Fisheries (DoF) aims to sustainably boost coastal and marine fisheries' contribution to the national economy and provide fishing communities with environmentally friendly alternative livelihoods. In line with this, DoF has taken an initiative for the development and rehabilitation of infrastructures under four (04) sub-projects: (i) Rehabilitation of 10-, and 11-acre shrimp estate and 48-acre Shrimp Demonstration Farm at Chakaria, Cox's Bazar; (ii) Development Works for Sustainable Management of BFDC Harbor at Chattogram, (iii) Establishment of Specific Pathogen Free - Black Tiger Shrimp (SPF-BTS) Brood Management Center (BMC) at DFTC of Teknaf, and (iv) Desilting and re-habilitation of existing canals in Khulna, Bagerhat and Satkhira Districts with the concept of implementing cluster shrimp farming.

To obtain necessary approval from the Department of Environment (DoE) and the World Bank Group (WBG), the DoF has entrusted CEGIS to conduct a full-fledged ESIA Study with corresponding suggestions of mitigation/ enhancement measures and recommendation of Environmental and Social Management and Monitoring Plan with budget.

The ESIA Report focuses on the detailed ESIA Study for each of the sub-projects emphasizing on the proposed interventions, especially those which are under RED Category as per ECR 2023. The entire ESIA study has been carried out strictly following the national legislations that are relevant to this proposed project i.e., ECR 2023 and World Bank's Operation Policy (OP)/Bank Procedure (BP) along with World Bank Group (WBG) guidelines and standards including International Finance Corporation (IFC). Intensive public consultation meetings were also conducted under this study. The proposed project has been designed in such a way that is physically sustainable, environmentally sound and socially acceptable. The sub-projects are located at different districts namely Cox's Bazar, Chattogram, Khulna, Satkhira and Bagerhat.

The study used Multi Criteria Analysis to select the DFTC, Teknaf area for the BMC. It analyzed environmental and social baseline conditions for each sub-project area using primary and secondary data. A wide array of environmental components have been assessed which include: Geomorphology and Topography, Geological Settings, Land and Land Resources, Climate and Meteorology, Hazard and Risk Vulnerability, Water Resources, Environmental Quality (Air, Water, Noise and Soil), Ecological Resources, Fisheries Resources, Agricultural Resources, Livestock Resources as well as Socio economic aspects of the study area in order to identify the key environmental and social issues for each sub project. Based on collected information and

considering the sub-project activities, an assessment of the impacts has been done and corresponding mitigation measures has been provided for the adverse impacts. In addition, current climatic issue, "El Niño and La Niña effects" has been considered for water quality management to get highest production in shrimp farming.

The proposed sub-projects have positive socio-economic, environmental, and biodiversity impacts. They promote sustainable shrimp farming, preserve fish habitats, and reduce farming risks. Efficient resource use serves as a model for sustainable practices. Mangrove restoration protects coastal areas and enhances biodiversity. Improved infrastructure and better access will benefit the community, while job creation in various sectors will reduce unemployment. Training programs will increase local employability. Economic growth from these activities will raise living standards and provide better educational opportunities for children.

Various Environmental and Social Management and Monitoring Plan including respective budget have been suggested. Considering these budget including



FGD with Cluster Farmers Group

institutional arrangement, indirect project benefits, and sub-project approval cost from DoE for the four sub-projects have been estimated as around BDT 248 million.

By implementing the sub-projects, the Government of Bangladesh (GoB) through the DoF will achieve sustainable coastal and marine fisheries, contributing to the national economy and poverty reduction. The project will create job opportunities, prioritizing local skilled workers. With the necessary mitigations, the project is expected to be environmentally friendly. Given the importance of the project and the comprehensive ESMPs and ESMoPs in place, ESIA approval from the DoE is anticipated before implementation.

ESIA and Conservation Plan for Integrated Development of Goranchatbari Retention Pond in Dhaka City

Monmita Taber, Water Resources Management Division

Bangladesh, a delta country with a high population density, is one of the most climate-vulnerable countries in the world. The frequent floods endanger the country's infrastructure, agriculture, and clean water supply. After the successive floods of 1954 and 1955, several studies were initiated and since then large investments have been made in the water sector, particularly in Flood Control. In 1987 and 1988, the country experienced disastrous floods. After the devastating floods of 1988, the Government of Bangladesh (GoB) developed the Flood Action Plan (FAP) to mitigate, control, and manage flood damages for the whole country, including Dhaka City.

Under, one of the components of the FAP studies, FAP-8B, a feasibility study for integrated flood control measures was conducted to prevent flooding in the western part of the Greater Dhaka city. The study also promoted a sustainable long-term development perspective and contributed to enhancing the environmental conditions in Dhaka City. In the 686 hectares of low-lying wetlands in the northern portion of Dhaka Western Area, FAP-8B advised keeping a flood retention pond together with other development elements such as a pumping station with a capacity of 22 cumec, etc.

Accordingly, 274 hectares of low-lying land were purchased for the Goranchatbari Retention Pond Area (GRPA). However, with the rapid decrease of the effective area of GRPA, caused by growing urbanization in the surrounding areas of the wetlands it was felt necessary to increase the pump station capacity for flood and drainage management. In response to the demands a second pump house with a 22 cumec capacity was built during July 2010-June 2015. The third phase of the Goranchatbari Pump House was constructed to address the drainage issue by increasing the retention capacity. Following the completion, the Goranchatbari Pump Station's overall capacity increased to 66 cumec, with the retention pond's capacity stood at 257.79 hectares.



Polluted Water of Turag River

The retention pond has significant importance in two respects. The first one is for the flood and drainage management of the area. The other is related to ecological and environmental importance. The GRPA and



Goranchatbari Retention Pond with island

its watersheds are rapidly being urbanized, which leads to severe damage to the overall eco-system mainly due to urban pollution. Considering the significance of the ponding area, BWDB is planning to develop an integrated development plan for GRPA covering flood and drainage management, environmental conservation, and sustainability including bird sanctuary, Environmental Management, and Monitoring Plan (EMMP) for the conservation of two natural islands inside the ponding area, its aquaculture, navigation, transportation, pollution control, water quality improvement, recreational facilities, etc.

In this context, BWDB plans to conduct a feasibility study for the comprehensive development of the pond including the social, environmental, and economic aspects of the project. Considering the expected integrated development plan, it is understood that the water quality in retention pond would be crucial to the overall success of the development plan.

The main focus of the study (ESIA-CEGIS part) is GRPA, which is located at Goranchatbari on the left bank of the Turag River and the floodplain area on the right bank of the river. The GRPA is bordered to the north by Uttara Residential Model Town (3rd Phase), to the southeast by Dhaka Cantonment Area, to the south by the Botanical Garden and the Eastern Housing Project named Pallabi, and to the west by Dhaka Western Flood Protection Embankment. The major drainage Khals of the study area include Rupnagar Khal, Abdullahpur Khal, Baunia Khal, Diabari Khal, and Digun Khal, etc. The Abdullahpur Khal and Diabari Khal drain the northern portion of the study area, which covers Uttara and part of Pallabi Thana. The Baunia Khal drains the southeastern part of

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Climate Resilient Infrastructure Design and Construction Monitoring in the Haor Region

Shajal Mebedi, Research Associate, Climate Change and Disaster Management Division

Bangladesh is widely recognized as one of the most climate-vulnerable countries in the world. The Surma-Kushiyara river system area, also known as the Haor basin, is under additional stress due to climate-induced changes in temperature and rainfall patterns. Wave erosion, or 'Afaal', is a major threat to the Haor settlements. People in the haor area generally build houses compactly on small, raised areas (commonly known as Haati) due to the lack of available raised land. Waves from Afaal inundate these areas, destroying houses in the Haati. To enhance the climate resilience of some Haati communities in Sunamganj by promoting climate adaptive infrastructure and improving biodiversity conservation, the Center for Environmental and Geographic Information Services is providing intellectual services to Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

The implementing partner of this project is the Palli Karma-Sahayak Foundation (PKSF), while GIZ Bangladesh monitors the implementation on behalf of the Government of the Federal Republic of Germany. Under this project, three small-scale projects in three

selected Haatis will be undertaken by selected partner NGOs of PKSF, ensuring an optimum number of beneficiaries from the project interventions. The interventions to be implemented under this project are: constructing 1km of flash flood protection measures as the main element to reduce wave action and flash floods, creating a buffer zone with two to three rows of local tree species, and improving the condition of common area of each Haati by raising the plinth level by earth filling. This project will enhance the protection of households and livelihoods from the impact of flash floods (Afaal) and improve biodiversity conservation. It will also promote nature-based solutions for climate-resilient infrastructure. Based on local conditions and scientific information on climate change impacts in the area, the interventions have been designed for the three Haatis.

The construction work will be carried out by PKSF's selected local partner organizations (POs), which will implement the project under PKSF's supervision. The project implementation will follow a community-based construction and maintenance approach to enhance ownership of the community's common needs.



Lombabak Haati, Jamalganj



Jarulia Haati, Dera



Radbanagar Paschim Haati, Jamalganj

TRI-FIELD Electromotive Force (EMF) Meter ... (Cont'd from last page)

magnetic settings and less than "1" on electric settings.

Working Principle:

British physicist and chemist Michael Faraday enunciated the law of electromagnetism. It explained how varying magnetic fields could induce a transient current in a conductor. Faraday's law explains how EMF meters work: $\Delta E = D \cdot V \cdot B$, indicating that a conductor moving at speed V within a magnetic field B will generate

an induced EMF proportional to its speed. The device is divided into two parts: a primary element sensor and a secondary element. The meter can differentiate current flow direction and electromagnetic flow based on user preferences, detecting issues in electromagnetic fields by changing the electric/magnetic energy in the field. Electric/magnetic energy fluctuations can specify existent issues. An electromagnetic field probe with meter output and headphone socket can detect audio, RF signals, and metal wiring conducting AC.

Exhibition on Innovation in Water Resources

Dr. Farhana Ahmed, Principal Specialist, Research, Development and Training Division

The Ministry of Water Resources of the Government of Bangladesh organized a showcasing event on 16th May 2024 at Pani Bhaban, BWDB. The Exhibition on Innovation in Water Resources showcases cutting-edge advancements, technologies, and strategies for sustainable water management, conservation, and quality improvement through research and development. All organizations under the Ministry of Water Resources were invited to showcase and highlight their innovative contributions to the water resources sector.

Mr. Nazmul Ahsan, Secretary, Ministry of Water Resources was the chief guest at the event. During his visit to the CEGIS stall, he inquired about the innovative approaches used in various studies. He expressed particular interest in integrated water resources management projects, such as the East Gopalganj Integrated Water Resources Management Project, Identification and Revitalization of Water Sources for Sustainable Water Resources Management of CHT, and the Feasibility Study for Rehabilitation of Chandpur Irrigation Project. Furthermore, he showed interest in the implementation

process of the Bangladesh Delta Plan 2100 and the National Adaptation Plan (2023-2050). Representatives of CEGIS, including senior professionals and experts, showcased the organization's activities using advanced tools such as GIS, RS, and hydrodynamic modeling. The



CEGIS Stall of Innovation Exhibition at Pani Bhaban, BWDB

honorable secretary appreciated CEGIS for their efforts in translating plans into action by generating innovative knowledge.

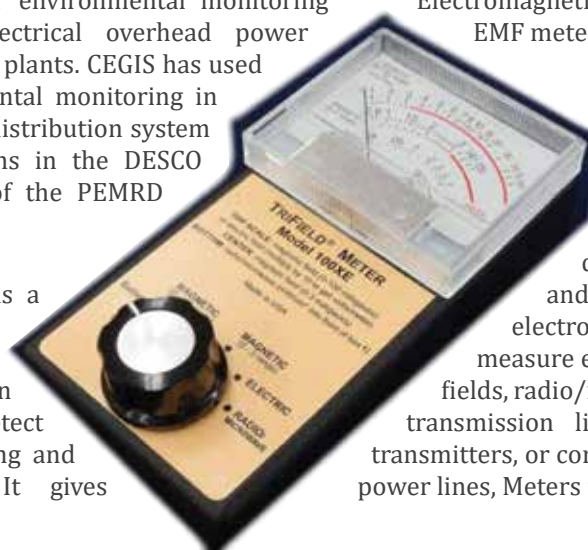
TRI-FIELD Electromotive Force (EMF) Meter

Md. Rafiqul Alam, Laboratory Expert, River, Delta and Coastal Morphology Division

CEGIS has fortified its technology and equipment support base with the latest addition of tri-field EMF meters. These meters are used for environmental monitoring studies, especially for electrical overhead power transmission lines or power plants. CEGIS has used EMF meters for environmental monitoring in various projects, including distribution system substations, grid substations in the DESCO Area, and other projects of the PEMRD division.

EMF meter model 100XE is a battery-operated instrument manufactured in the USA. It is used in industrial applications to detect problems in electrical wiring and overhead power lines. It gives

information about electromagnetic fields by measuring electromagnetic radiation flux density. Faraday's Law of Electromagnetic Induction serves as a basis for the EMF meter.



A series of coils creates a magnetic field in the electromagnetic flow meter. Electric voltage is induced in it as it moves through the electromagnetic field. The direction of the electromagnetic field and current flow are perpendicular to the electromagnetic field. Its main function is to measure electric voltage, electric and magnetic fields, radio/microwave signals of overhead power transmission lines or electric equipment, radio transmitters, or cordless phones. In rural areas, far from power lines, Meters read less than 1 milli gauss on

TRI-FIELD Electromotive Force (EMF) Meter

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