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the CEGIS NEWSLETTER

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

Upcoming Events

- National Workshop on Coastal Embankment Improvement Project
- Training for Trainers (ToT) Workshop on "Participatory Scenario Development and Conflict Resolution for Strategic Delta Planning"
- International Seminar on Drought Management
- Introduction to Land Acquisition and Resettlement Management Training

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Budapest Water Summit 2016

Engr. Md. Waji Ullah, Executive Director of CEGIS along with other international water experts at the Budapest Water Summit

The Goal 6 of the Sustainable Development Goals (SDGs) specifically addresses the accessibility to safe water and sanitation. Access to clean and potable water is a necessity for all as every year, millions of people die from diseases associated with inadequate water supply and sanitation coming from direct result of poor infrastructure and poor economic practices. Thus, in order to discuss global water issues at the highest level, involving international stakeholders, the Government of Hungary in cooperation with World Water Council hosted the Budapest World Water Summit 2016. This high profile Summit conference and Expo with the motto "Water Connects" was held from 28 to 30 November 2016 in the capital Budapest with the aim of promoting the implementation of the sustainable development goal for water and all related targets on water and sanitation, as well as to achieve progress on implementation of the water-related aspects of the Paris Climate Agreement. Various issues related to global water governance were addressed in the Summit, covering all targets of SDG 6. Under the patronage of H.E. Mr. János Áder, President of Hungary and Member of the High Level Panel on Water the organisers invited water ministers from the United Nations member states and high-level representatives of UN specialised agencies and other international organisations to the Plenary Session of the Summit. A strong delegate from Bangladesh led by H.E. Prime Minister Sheikh Hasina along with Hon'ble Minister and Senior Secretary, Ministry of Water Resources attended the Summit. Speaking at the inaugural ceremony, the prime minister, also a member of the High Level Panel on Water, sought comprehensive global efforts for water management and urged world leaders to prioritise the reflection of water related issues in their policies and actions, laying out a seven-point agenda for the scarce resource; placing particular emphasis on charting an appropriate policy on sharing trans-boundary waters. Various light-house initiatives undertaken by the GoB were presented, and which were also the topic of discussion in the global forum. Engr. Md. Waji Ullah, Executive Director, and Mr. Malik Fida A Khan, Deputy Executive Director, CEGIS attended the conference on behalf of CEGIS and actively participated in the sessions. Their participation in the Summit also helped to introduce CEGIS to the larger audience from different parts of the world working in the area of water resources management and thus, developed a strong business network for CEGIS.

Participatory Approach to Formulate Action Plans for SDG 6 in Bangladesh

A T M Shamsul Alam, Quality Management and Publication Division

Background

The Sustainable Development Goals (SDGs) 2030 were adapted by Heads of States at a UN Summit in September 2015, succeeding the MDGs concluded in 2015. Seventeen (17) Goals supported by 169 Targets were adapted as

international development agenda over the next 15 years. The SDG 6 deals with water and sanitation and relates to public health, food security, livable cities, energy for all, environmental wellbeing, and climat e action. Special emphasis has been given on achieving SDG 6 when the UN-WB jointly formed an 11 Member High-Level Panel on Water (HLPW) to mobilize urgent action towards SDG 6. Sheikh Hasina, the Hon'ble Prime Minister (HPM) of Bangladesh was nominated as one of the important members of the HLPW from Asia. Mr. Md. Abul Kalam Azad, Principal Secretary to the HPM, Government of Bangladesh was selected as the 'Sherpa' and Ms. Suraiya Begum, ndc, Secretary of the HPM's office to act as the 'Alternate Sherpa' of the HPM in assisting all the activities of the HLPW. In order to achieve SDG 6 in Bangladesh as well as to support the HLPW in the global platform, it was planned to formulate an action oriented roadmap for her advocacy in the HLPW. The Sherpa assigned the Ministry of Water Resources (MoWR) to coordinate the activities while CEGIS was assigned to provide the intellectual support services to prepare an Action Plan for implementing SDG 6 in Bangladesh through facilitating participatory discussions, consultations and workshops involving all stakeholders.

Sustainable Development Goal 6

Among the 17 goals of the SDGs, SDG 6 is to ensure availability and sustainable management of water and sanitation for all. SDG 6 consists of the following six targets and two implementation mechanisms that are to be achieved by 2030:

6.1. Achieve universal and equitable access to safe and affordable drinking water for all

6.2. Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls, and those in vulnerable situations

6.3. Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

6.4. Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity

6.5. Implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate

6.6. Protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a. Expand international cooperation and capacity-building support to developing countries in water and sanitation-related activities and programs, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b. Support and strengthen the participation of local communities in improving water and sanitation management.

Preparation of Concept Paper and Action Plan

At the onset, the MoWR aarranged a Stakeholder Meeting on 20 July, 2016 as the coordinator for developing Concept Papers and Action Plan on SDG 6. The meeting was attended by the representatives from ministries, departments, NGOs, development partners, academicians, research institutes relevant to the water sector. The meeting decided to give the responsibilities to five government organizations, who, in association with other agencies to coordinate the activities of Concept Paper preparation highlighting lighthouse initiatives and future actions for six major targets as follows:

Target	Lead Agencies	Associated Agencies
6.1 & 6.2	DPHE	GED, DAE, WARPO, BWDB, LGED, BMDA, DoE, BADC, WASA, IWFM, CEGIS, IWM
6.3	DoE	RRI, BUET (WRE, CE), IWFM, JICA, Municipalities, MoI, WARPO WASA, All city corporation and municipalities, BEPZA, BEZA, BIWTA, BIWTC, DAE
6.4	WARPO	GED, DAE, DPHE, BWDB, LGED, BMDA, DoE, BADC, WASA, IWFM, CEGIS, IWM
6.5	BWDB	WARPO, JRC, RRI, MoFA, LGED, BADC, BUET(IWFM), BIWTA, DBHWD, DoF, DoEF, BMDA, DAE, IWM, CEGIS, NRCC
6.6	DBHWD	City Corporations, Municipalities, DCs & Zilla Parisads of Chittagong Hill Tracts, WASAs, BADC, BARC, BCIC, BFD, BIWTA, BRRI, BSC, BSTI, BSEC, BS&FIC, BTMC, BWDB, BMDA, CHTDB, CDA, DAE, DoE, DoF

Process in Preparing Concept Paper and Action Plan

A three-round consultation process was carried out to prepare the Concept Papers along with the Action Plan on six targets of SDG 6. The first round of consultation was initiated by the responsible coordinating agencies to develop a draft concept paper covering the (i) Background, (ii) Objective, (iii) Scope, (iv) Present Status, (v) Target, (vi) Challenges, (vii) Activity Plan, and (viii) Financing & Implementatlion Mechanism. In total, five meetings were conducted and the Draft Concept Papers were prepared as well as reviewed later by respective Panel of Experts which were then further developed through a day long workshop held at CEGIS.

The updated Action Plans on each of the six targets were then prepared through a pre workshop held at PMO after developing the same through five consecutive meetings in the second round consultation.

The targets and their corresponding action plans of SDG 6 were then cross-checked among and between the contributing agencies during the third round of consultation, where a

(Cont'd page 4)

Delineation of Coastal Greenbelt Zone

Dr. Khaled Hasan, Remote Sensing and Hydrology Expert

Coastal greenbelts are proven 'soft' measure that can effectively reduce the height and energy of storm surge and strong winds associated with tropical storms. A greenbelt along the coastal region of Bangladesh is being foreseen to play a significant role in combination with the embankment system to mitigate the risk from such climate driven coastal hazards, predicted to become more intense in future. In addition, greenbelts are 'green adaptation' that helps in sequestering carbon in significant quantity and can enhance land accretion by trapping sediments.

CEGIS was engaged by Climate Resilient Participatory Afforestation and Reforestation Project (CRPARP) to carry out a technical study to delineate the potential areas, to select suitable plant species for planting and to develop an investment plan showing cost and benefit associated with establishment of the greenbelt. The assignment also included the development of a Decision Support System (DSS) that is capable in carrying out all the aforementioned tasks under changing environmental and socio-economic scenarios of the future.

The study proposed for a contiguous greenbelt that will be extended from eastern boundary of the Sunderbans to the southwest tip of Teknaf, covering 37 upazilas of 9 coastal districts. The width of the greenbelt will vary from a minimum of 200m to a maximum of 1000m and has been established on the basis of recommendation from published scientific research, conferences on the subject, organization reports and practices of other countries. The exact width at specific locations was based on the height of storm surge inundation, coastal vulnerability index (CVI), presence or absence of embankment and critical infrastructure, and existing forest coverage of the locations. Five decision rules were developed with which the width of the greenbelt was determined. The final greenbelt was delineated using two approaches, (i) ArcGIS based vector mapping considering the current environmental conditions, and (ii) involving SMCE (Spatial Multi Criteria Evaluation) based raster mapping.

Tree species selection for planting in the greenbelt focused on two conditions: (i) trees should have physical properties (i.e., tall, wide, fast growing, deep roots) which are capable of serving the primary protective purpose of the greenbelt while producing sufficient economic benefits for the local community to encourage their active participation in establishing and maintaining the greenbelt; and (ii) trees that can grow well in the local environment. Both ArcGIS and SMCE based analysis were made to select five mangroves and ten non-mangrove species which matched the aforementioned conditions. Based on these criteria, maps of 'ideal trees for the greenbelt' were produced and placed in 'environmentally suitable' locations. The DSS was designed to allow more trees to be analyzed and suitable locations for them can be mapped in the future as the conditions change.

An innovative planting design for non-mangrove part of the greenbelt (83,180 hectares) was developed to maximize income generation from these areas and to offset some of the cost of developing the greenbelt. The design included space for culture fishery, vegetable and spice cultivation. As per design, a total of 17,965 hectares of land will be allocated for aquaculture, 25,622 hectares for vegetable and spice cultivation, while the rest for non-mangrove plantation.

Investment plans were developed considering all major cost components for establishing the greenbelt and expected benefits of it. A three-category tenure map created by collecting field based information showed that 66,752 hectares of the proposed greenbelt is on government owned (khas) lands, 53,242 hectares on private lands and the remaining 6,859 hectares are government lands currently leased to private owners. Two investment plans have been proposed, which are differing in the approach as to how the greenbelt will be developed on lands currently under private ownership.

Two approaches i.e. 'without land acquisition' and 'with land acquisition' were considered and analyzed in details. The costs of 'with land acquisition' plan will be 15 times more than that of the other plan. The benefits to be achieved from the greenbelt will be same for both the plans. These include marketable products from the trees, fishes, vegetables and spices and other protective benefits of saving crops and infrastructures and sequestering carbon. These tangible economic benefits amount to 122.072 billion BDT per year. About 77% of this is to be generated from carbon sequestration by mangroves and non-mangroves, 8% from different uses of Nipa palms, 9% from aquaculture, 5% from tree products and remaining 1% from reduction in damages of embankment and agriculture from cyclones.

Both the economic and financial indicators were calculated considering 30 year cycle and at a discount rate of 12% per year for 'without acquisition' and 'with acquisition' plan. The economic indicators for both the plans are found economically feasible though the case of 'without land acquisition' plan is much more attractive than that of the 'with land acquisition' plan. On the other hand, the financial indicators for 'without land acquisition' plan is found financially attractive and acceptable while that of 'with land acquisition' plan is not.

(Cont'd page 4)

Delineation of coastal ... ... (Con't from page 3)

As data were not available, few other intangible benefits such as cost of life saved, land accretion, tourism, recreation and such were not used in these calculations. A three phase implementation plan of the greenbelt over 7 years has been proposed based on the multicriteria analysis of degree of vulnerability as measured by CVI and percent of khas land available in the different upazilas.

The institutional requirement in establishing the greenbelt was reviewed and some specific suggestions were made for accommodation in the current forest act and social forestry rules. The most important suggestion is to amend the current land ownership framework where BFD now establishes greenbelt and hands them over to local administration (DCs) after 20 years of forestation and land stabilization. Instead, the Government should consider these greenbelt lands under the permanent stewardship of BFD which will ensure the perpetual existence of the greenbelt and its protective and productive role for the coastal inhabitants of the country. Suggestions on the mechanism of involving the local community in greenbelt development, monitoring and maintenance and on risk management are also made in the report.

The study has finally provided an integrated plan that can be immediately introduced in developing the greenbelt under the current conditions. It has also developed a DSS which can be used in planning for future scenarios if the greenbelt establishment is delayed or the current plan needs to be modified. Both ArcGIS based mapping and the DSS are versatile systems, since both can take in new parameters as they change in real time and generate multitude of options for greenbelt development under the changed conditions for the planners to choose from.

Participatory approach ... ... (Con't from page 2)

coherent action plan was developed. CEGIS provided all out support to the Author Groups to finalize the Action Plan documents taking necessary guidance of the MoWR. The Panel of Experts of each of the Targets as well as other relevant Experts participated in these sessions and provided their valuable advice/suggestions.

National Workshop on SDG 6 Action Plan

The day-long National Workshop titled "Clean Water and Sanitation (SDG 6): Bangladesh Context" was held at the Prime Minister's Office on 20 November, 2016 and the Draft Action Plans on SDG 6 were shared with the stakeholders. The Draft Action Plans were finally improved with the feedback received from the participants of the workshop. High level decision makers along with renowned experts on water sector and stakeholders attended the workshop.

Mr. Anisul Islam Mahmud, M.P, Honorable Minister, Ministry of Water Resources is delivering his speech at the National Workshop

Conclusion

Bangladesh achieved MDGs with an outstanding success under the dynamic leadership of HPM Sheikh Hasina through cooperation and collaboration of GOs, Development Partners and NGOs. It is expected that, the SDGs will also be achieved in the same process within the time frame.

Assessing the Natural Springs of Chittagong Hill Tracts

Salma Sultana Taposhi, Socio-Economic & Institutional Division

Access to safe water for all is a challenge for Bangladesh. The lowering of the groundwater level in large parts of the country - more seriously in the hilly areas including the Chittagong Hill Tracts (CHT) in the south east has made the access to potable water a big challenge.

CEGIS is conducting a study titled "Assessing the Natural Springs of Chittagong Hill Tracts", for Water Aid Bangladesh (WAB). The main objective of the project is to provide support in terms of scientific and local input in developing interventions/policy advocacy to have access to safe water supply in CHT region. This project is follow-up to the study carried out by WAB back in 2008 with support from CEGIS.

The study area refers to the three districts, namely Bandarban, Khagrachhari and Rangamati of CHT. In total, 17 (seventeen) springs have been selected for the study under 12 (twelve) upazilas of the region. Among these springs, the previous study involved 7 (seven) springs and the present study has taken additional 10 (ten) springs. In terms of extended number of springs, the findings are likely to create improved knowledge on the status of the springs of CHT and water access conditions of the people of those areas.

The study has focused on identifying the current status of the identified springs to prepare policy on sustainable resource management including water. The study is also assessing the underlying causes of the non-functionality of the springs, and gathering evidence on this issue through remote sensing and image processing. It will also identify possible alternative water sources and their potentiality to serve the surrounding communities in the selected spring areas. Socio-economic data for the study were collected through household survey, Focus Group Discussion (FGD) and Key Informant Interview (KII). The first two techniques were used with dependents on the spring water at the community level and the KII was used with the people of key agencies working in water sector in the CHT region.

The study will explore the accessibility of safe water issues in the hilly area which will further assist to formulate policy as well as take intervention in future.

Digital World 2016

CEGIS has attended "Digital World 2016", the biggest ICT event (3-day long ICT Expo) in Bangladesh, was organized by the ICT Division and co-organized by BCC, A2i and BASIS for the fifth time with the theme of "NonStopBangladesh". The main goal of Digital Bangladesh is to create digital opportunities for everyone, ensure connectivity, establish e-governance and strengthen IT industry. 'Digital World' has become the flagship event to present the overall scenario of Digital Bangladesh to the world. The event aims at healping to inform the world about the success story of modern Bangladesh.

Honorable Prime Minister Sheikh Hasina inaugurated the event on 19 October 2016 at International Convention City, Bashundhara (ICCB). Key personnel like ministers and government officials attended the ICT Expo to express the commitment of Government's interest in investing and developing the IT sector of Bangladesh with a view to achieve the goals of Vision 2021:Digital Bangladesh. Engr. Md. Waji Ullah, Executive Director and Mr. Motaleb Hossain Sarker, Director of Ecology, Forestry and Biodiversity Division were present in inaugural session.

CEGIS Stall in the Digital World 2016

It was a great achievement for CEGIS to attend this prestigious National ICT Expo under the leadership of the Ministry of Water Resources. It was a unique platform for showcasing the initiatives, adroitness, accomplishments and achievements of both the public and private IT sectors of Bangladesh. CEGIS has demonestrated two MIS and Database systems for two projects namely Wildlife Crime Monitoring System and Gas Pipelines, Installations and Digital Map of Karnaphuli Gas Distribution Company Ltd along with CEGIS Brochure, Newsletter, Posters and CEGIS' documentary video.

Professionals of Systems Management, GIS and Ecology Divisions of CEGIS were there to provide information on CEGIS activities, Databases & MIS Projects to the visitors'. CEGIS has received a crest as an award for successfully participating in Digital World 2016.

Training on Concept of Climate Change: Impacts, Vulnerability, Adaptation and Mitigation Measures

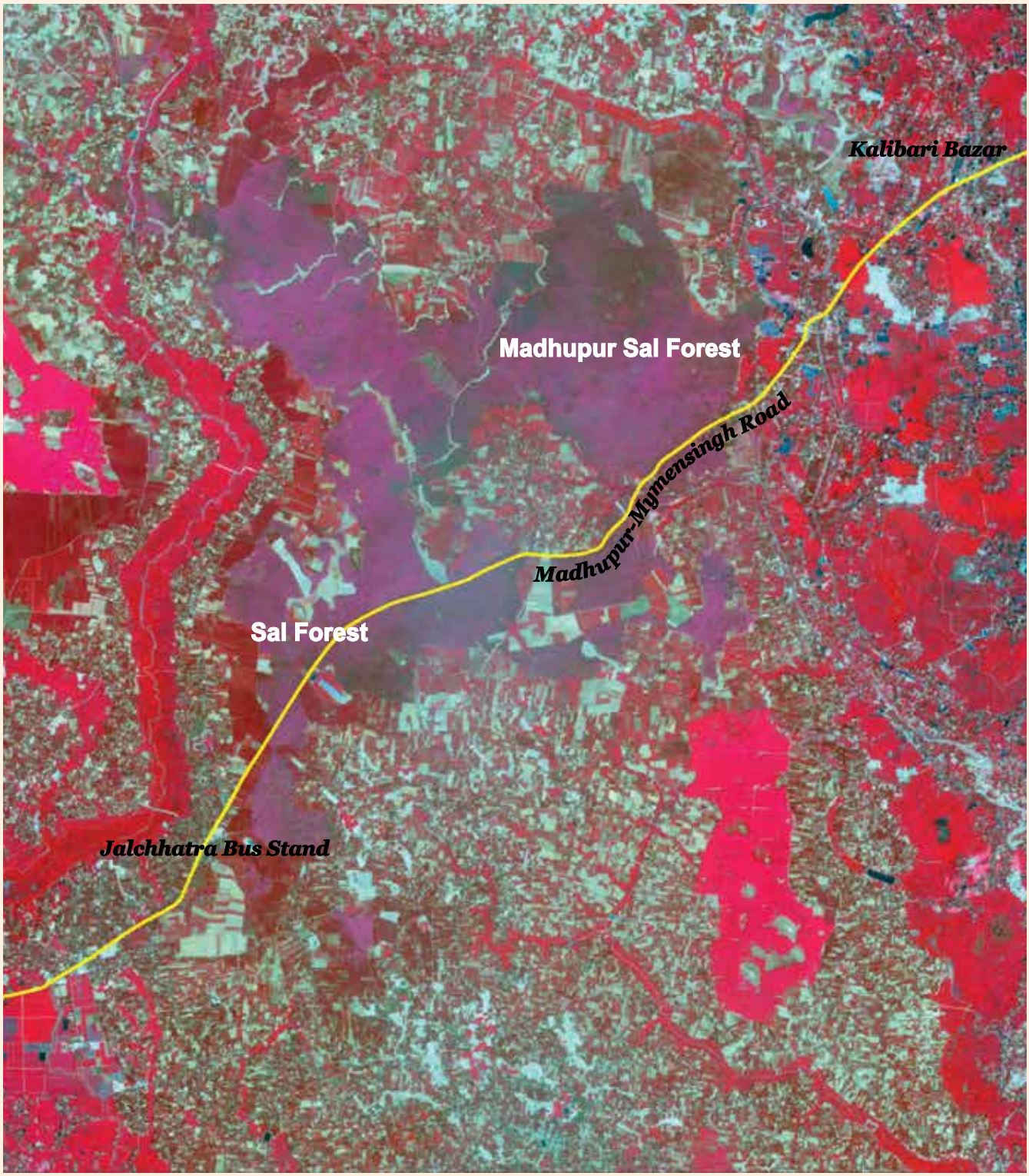
The Center for Environmental and Geographic Information Services (CEGIS) organized a training program on "Concept of Climate Change: Impacts, Vulnerability, Adaptation and Mitigation Measures" supported by the Nuffic-Niche BGD 155 Project from the 6 to 8 of December, 2016. A total of 16 participants from various government organizations along with 5 participants from CEGIS attended the program. The inaugural ceremony was held on 6 December. Dr. Qazi Kholiquzzaman Ahmad, Chairman, PKSF and A. L. M. Abdur Rahman ndc, Rector, BPATC graced the occasion respectively as chief guest and special guest. Engr. Md. Waji Ullah, Executive Director, CEGIS chaired the session. During the program a total of 20 lectures were delivered over three sessions spanning three days. Topics covered were broadly categorized into three clusters namely, Science and Knowledge, Assessment Tools and Techniques, and Vulnerability, Mitigation and Adaptation. Lectures included the basics of climate change science and trends, its vulnerability upon various sectors such as agriculture, energy, ecology, forestry, coastal and river morphology, urban settlements with community perspective. Different climate change scenarios were discussed together with vulnerability and effective adaptation and mitigation strategies. Lectures were also provided on various burning issues such as mitigation of greenhouse gas emissions and management of an effective inventory as well as climate financing and the importance of active governance through negotiations and implementation of climate policy directives. The role of coastal green belt in formulating long term mitigation measures to the impacts of climate change induced disasters, was also discussed. A closing ceremony was organized on the final day. Dr. Zafar Ahmed Khan, Senior Secretary, Ministry of Water Resources was present as the Chief Guest along with the Executive Director of CEGIS, Engr. Md. Waji Ullah as the chair and Mr. Peter de Vries, First Secretary, Embassy of the Kingdom of the Netherlands and Dr. Sabbir Mostafa Khan, Professor, Dept. of Water Resources Engineering, BUET and Project Director (Bangladesh) of the Nuffic-Niche BGD 155 Project as special guests. Feedback was taken from the participants regarding their views and opinions and general experience on having attended the program. At the end of the closing ceremony, certificates were awarded among the participants by the distinguished guests as an acknowledgement of their achievement in successfully completing the training.

CEGIS as a centre of excellence has vast experience in working with climate change topics across various fields and this training was organized as a means of sharing that knowledge. It is expected that this type of program will be further continued in future and in doing so, will thus contribute to enriching the capacity of professionals.

Dr. Zafar Ahmed Khan, Senior Secretary, Ministry of Water Resources is awardeding certificates among the participants along with Mr. Peter de Vries, First Secretary, Embassy of the Kingdom of the Netherlands and Engr. Md. Waji Ullah, Executive Director of CEGIS

SENTINEL-2 Satellite Image

The Sentinel-2 satellites were developed by European Space Agency to perform terrestrial observations in support of services such as land cover changes detection, forest monitoring, and natural disaster management. The Sentinel-2 acquires images in 13 spectral channels in the visible, near infrared and short wave infrared spectral range. The satellite images are used for forestry practices as well as determine various plant indices such as leaf area chlorophyll and water content indexes. Sal (*Shorea robusta*) forest is the main tropical moist deciduous forest of Bangladesh. It has a fairly wide but interrupted distribution in the central and northern part of the country, mostly occurring in Gazipur, Tangail, Mymensingh, Jamalpur, Comilla, Dinajpur, Thakurgaon, Rangpur and Rajshahi districts. The figure below shows a Sentinel-2 image (Resolution: 10m and acquired in 18 March 2016) covering the Madhupur Sal Forest area. It appears violet (Red: near-infrared band, Green: red and Blue: green) in the dry season image.



SENTINEL-2 Satellite Image of Madhupur Shal Forest Area

CEGIS Professional attended the Regional Workshop and Regional Council Meeting of Global Water Partnership South Asia

Participants at the Regional Workshop and Regional Council Meeting of Global Water Partnership South Asia

Ms. Tahmina Tamanna, Jr. Specialist of CEGIS attended the prestigious 22nd Regional Council (RC) Meeting of Global Water Partnership, South Asia (GWP SAS) and the Regional Workshop on Rapid Country Level Analysis which were held back-to-back from 29-30 September, 2016 and on 28 September, 2016 respectively in Kathmandu, Nepal. Around 30 participants from different countries like India, Pakistan, Sri Lanka, Bhutan, Nepal including the Regional Chair GWP South Asia GWP SAS and senior officials of GWP were present at the Regional Workshop and Regional Council (RC) Meeting of Global Water Partnership South Asia (GWP SAS). Ms. Tamanna made a presentation in the Regional Workshop on "SWOT Analysis of the Water Governance in Bangladesh". Later on, Ms. Tamanna also prepared a summary report on the "Rapid Analysis of Country Water Partnership (CWP) under GWP – South Asia" for GWP SAS based on the findings of the above mentioned two events.

Training on "River and Delta Morphology: Evolutions, Dynamics and Prediction"

Center for Environmental and Geographic Information Services (CEGIS) organized a three-day long training program on "River and Delta Morphology: Evolutions, Dynamics and Prediction" from 27 to 29 December 2016 at CEGIS Conference room. The training program was funded by Nuffic-Niche BGD 155 Project. A total number of 25 participants from different government and international organizations along with CEGIS professionals participated in this training program. The main objective was to enhance capacity of the participants on river and delta morphology to deal with issues on morphological changes and prediction of the rivers in future to reduce its impacts at greatest possible extent. The inaugural session was graced by Mr. Muhammad Nazrul Islam, Bir Protik, psc, MP, Honorable State Minister, Ministry of Water Resources as Chief Guest. Dr. Ainun Nishat, Professor Emeritus, BRAC University and Dr. Sabbir Mostafa Khan, Professor, DWRE, BUET and Project Director (Bangladesh Side) were present as Special Guests. Engr. Md. Waji Ullah, Executive Director, CEGIS chaired the session.

A total of 12 lectures were delivered during the whole training program. Lectures covered the concept of time and knowledge, geo-morphological evolutions of rivers and delta, river hydraulics and sediment transportation, ongoing morphological issues and problems and prediction tools/methods. The morphological behavior of the rivers in the subsiding Sylhet basin is unique in nature which was broadly discussed. Lectures were provided on tidal river management with the example of Feasibility Study of the Mongla-Ghasiakhali Channel and the sediment dispersal processes in the Meghna estuary was also discussed.

Lectures also emphasized the effectiveness of the satellite images in predicting the off-take dynamics of the distributary rivers as well as riverbank erosion in the major rivers of Bangladesh. Feedback was taken from the participants about their perceptions, experiences and suggestions about the training program.

In the Closing and Certificate Awarding session, Dr. Zafar Ahmed Khan, Senior Secretary, Ministry of Water Resources and Commodore Mohammad Mozammel Haque, Chairman, BIWTA graced the session as Chief Guest and Special Guest respectively. The session was chaired by Engr. Md. Waji Ullah, Executive Director, CEGIS. Certificates were awarded to the participants for their accomplishment in completing the training program successfully.

CEGIS as a center of excellence has generated wide range of up-to-date information and knowledge on geo-morphological processes of the rivers and the delta and this training was organized as a means of sharing those information and knowledge. This type of training will be continued in future to enhance the capacity of the professionals in the field of the river and delta morphology.

Dr. Maminul Haque Sarker, DED (Development), CEGIS (2nd from left) is delivering speech at the inaugural session where Dr. Ainun Nishat, Prof. Emeritus, BRAC University, Mr. Muhammad Nazrul Islam, Bir Protik, psc, MP, State Minister, Ministry of Water Resources, Engr. Md. Waji Ullah, Executive Director, CEGIS, Dr. Sabbir Mostafa Khan, Professor, DWRE, BUET & PD (Bangladesh Side) and Malik Fida Abdullah Khan, DED (Operation), CEGIS (left) are seen

Contract Agreements

(Form left) Engr. Md. Waji Ullah, Executive Director of CEGIS, Mr. Md. Majibur Rahman, Director General and Dr. Md. Ruhul Amin, Director (Wetland) of Directorate of Bangladesh Haor and Wetland Development are seen at the contract signing ceremony

CEGIS has signed a number of contracts with various clients to carry out different studies during the period October to December 2016. In this connection, a contract has been signed with S S Power for *EIA study of Coal Transportation, Dredging Operation, Morphological Impact, Jetty and Breakwater Construction for 2X660 MW Coal Based Thermal Power Plant* Project. Another important contract was signed with Directorate of Bangladesh Haor and Wetland Development on *Impact of Structural Intervention in Haor Ecosystem and Innovation for Solutions*. Like previous years, CEGIS has signed contract with BIWTA for *Optimizing the Dredging in the Padma, Meghna, Jamuna, Tentulia, Kirtonkhola, Arial Kha, Kumar, and Madhumati Rivers and Monitoring Activity for Volume Calculation & GIS Application Software for Navigation Route using Touch Table for the Year 2016-2017. Assessing of the Natural Springs of Chittagong Hill Tracts in Bangladesh* is another study project signed with Water Aid Bangladesh. Besides, CEGIS has also signed two other contracts with FAO on *Historical Assessment of Land Cover Changes and Technical Support for the Development of the National Land Cover Map 2015* and with Bangladesh Forest Department for *Wildlife Crime Protection*.

We Mourn

Mr. Md. Solaiman passed away (Inna lillahi wa inna ilayhi raji'un) on 12 July 2016. He was very sincere, honest and hard working and had served in CEGIS as Security Guard for more than 20 years.

As per Insurance Policy of CEGIS' Service Rule, his family received an amount of BDT. 10,00,000.00 (Ten Lac) only from the Delta Life Insurance Company Limited. The cheque in this regard has been handed over to his wife on 21 December 2016.

Mrs. Solaiman is receiving cheque from the CEGIS Management

New Faces

Mohammad Shahnewaz Sarker joined CEGIS in November, 2016 as Programmer under the Geographic Information System Division. He has completed his Bachelor of Engineering degree in Computer Science and Engineering from the Jatiya Kabi Kazi Nazrul Islam University. He has attended a number of seminars and workshops before joining CEGIS. He has four years experience in the field of software development and web technologies. He is expert in PHP, ASP, MySQL and software testing. He worked in a multinational company before joining CEGIS.

Abu Sayed Md. Faysal joined CEGIS on December 8, 2016 as Junior Environmentalist under Power, Energy and Mineral Resources Division. He is specialised in Environmental Impact Assessment (EIA), Baseline Environmental Assessment, Environmental Monitoring and Compliance Audit. He worked in CEGIS for 3 years before completing his Master of Engineering degree in the field of Environmental Engineering from Chongqing University, China. Earlier, he completed his Master and Bachelor Degrees in Environmental Science and Resource Management from Mawlana Bhashani Science and Technology University, Bangladesh. He works to preserve the environment and protect it from pollution and other contaminants.

Md. Badsha Alamgir joined CEGIS on 15 November 2016 as Junior Specialist in GIS Division. Md. Badsha Alamgir has worked in Programming sector for about 5 years. His expertise are in ASP.NET, MVC, AngularJs, SSQL, Oracle. He was involved in projects like, GIS Based Land Information System of BWDB, Development of SPMMIS for BWDB, Assessing the Natural Springs of CHT and Slum Survey & Mapping. He complemented his Bachelor of Science (B.Sc.) in Computer Science and Engineering from Khulna University of Engineering and Technologhy (KUET). He attended a number of seminars and workshops in the university.