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the CEGIS NEWSLETTER

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

Upcoming Events

- Training Workshop on Water, Climate and Resilient Cities at Universiti Teknologi Malaysia
- High powered Bangladesh Delegation to attend the Symposium on SDG-6, at Dushanbe, Tajikistan
- Participate as a member Organization of IUCN in the World Conservation Congress (WCC), Honolulu, Hawaii, 2016
- Visit to Tokyo, Japan for Technical and Environmental Support to Underground Substation Project of DPDC and DESCO
- Attend in the 6th Workshop on Water and Climate Change Adaptation in Transboundary Basins, Geneva, Switzerland

Inside

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South Asia Groundwater Forum on Regional Challenges and Opportunities for Building Drought and Climate Resilience for Farmers, Cities and Villages

Engr. Md. Waji Ullah, Executive Director of CEGIS (4th from right) along with other international participants of the forum

The South Asia Ground Water Forum was organized by the Government of India, in collaboration with the World Bank and the International Water Association (IWA), at Jaipur, Rajasthan from June 01-03, 2016. Decision makers, international technical experts and community representatives, from across and outside South Asia gathered there to discuss the priority actions for tackling manifold problems of ground water. In this 3-day forum, CEGIS along with other participants presented and shared their knowledge and experiences in groundwater management and governance as well as discussed the opportunities of local, national and regional actions to achieve sustainable use of the groundwater and build up the way of drought and climate resilience for farmers, cities and villages.

Recognizing groundwater management as a cross-cutting challenge, the forum adopted a multi-sectoral perspective to focus the knowledge, experience and opportunities that inform the policy reforms, practical action and groundwater programs. It explored the groundwater-energy-food (WEF) nexus, building on recent work and the regional WEF nexus workshop convened in Kathmandu, Nepal (February 2015) by the Fulbright Commission (and partners) with the World Bank support. The groundwater management challenge in South Asia is very complex as it is not simply a water resources problem, it has multi-sectoral issues. The common-pool nature of the resource, multiple externalities, data inadequacy, weak policy frameworks and institutions, compounded the challenge.

Over-exploitation, having no control and management, is deteriorating the groundwater quality and undermining the value

(Cont'd on page 4…)

Interactive Library Information System with Local Area Networking

Abul Kashem Md. Hasan, Database, ICT and System Management Division

Joint Rivers Commission (JRC), Bangladesh was established to address issues relating to the sharing and management of the water of the trans-boundary rivers with the co-riparian countries. JRC is a rich repository of books, reports, maps, meeting minutes and many other sensitive official documents. These available documents in the library of JRC were not organized in a systematic way. In addition, there was no efficient system to manage these valuable documents properly. It was therefore, very difficult to find a particular book, report, map or other document in time. Again, some documents were damaged or had become unusable. Under such circumstances, JRC engaged CEGIS to implement a computer-based system to efficiently manage these documents of the library.

The most advanced and widely used open-source, platform independent and web-based Integrated Library System Koha has been installed and configured at JRC. Koha has been customized for JRC with following five main modules:

1. Acquisition and Cataloging Module: In this module, the task of acquiring library contents such as books, CDs, journals, etc., could be performed. Here, the tasks of creating budget, adding fund, creating vendors, making orders, and receiving orders using invoices could be accomplished. Additionally, the task of cataloging library contents could also be performed.

2. Circulation Module: This module is responsible for circulating library contents. The basic functionalities of this module would be check-out, check-in, and renewal of already checked-out library contents.

3. Serial Module: In this module, the tasks of creating new subscription of a serial, receiving an already-subscribed serial, and making payment (or equivalent acquisition) of the subscribed serial could be performed.

4. Patron Module: In this module, the tasks of creating new patrons or users and modifying existing patrons could be done. Here, the patrons have been configured in such a way that they can get different levels of access for operation to the library system. Patrons can be divided into two major types: Internal and External. Internal patrons are library staffs and external patrons are library users.

5. Report Module: This module helps to generate different types of customized reports.

Information of around 8100 books has already been entered into the system. The information covers Title of the item, Name of the author, Name of the publisher, Place of publication, Date of publication, Edition, ISBN number, Physical description, General note, Bibliography note, Additional author, Item type, Barcode, Shelving location. The entered information has also been checked. A 14 digit barcode has been attached to each of these books to uniquely identify a particular item.

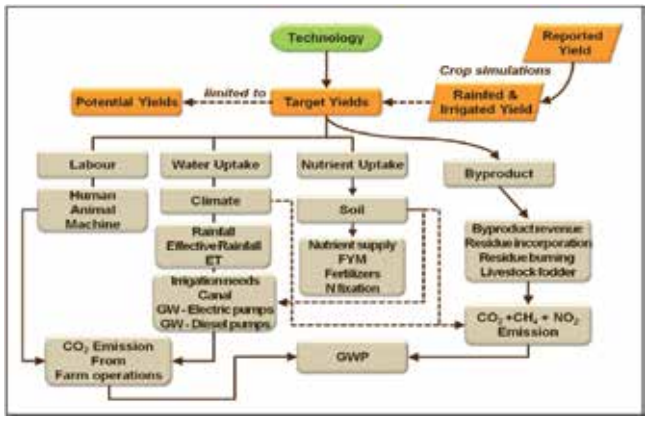
A total of 40 special cabinets and 2 special drawers have been purchased and set up to renovate the JRC Library. As an integral part of the study, hardware items such as server, barcode printer and reader, scanner, online UPS and network accessories have been purchased, installed and configured. A Local Area Network (LAN) has been established at JRC to facilitate intranet connection, internal and external mailing and sharing of printers, files and other IT resources more efficiently and effectively. Around 23 desktop computers have been connected under the LAN to share data and information. High speed (full duplex 3 Mbps) Internet facilities have been provided with dedicated broadband connection from the local ISP. Necessary security measures have been implemented to protect the library database from any unauthorized access.

Home Page of Koha

Validation of Input-Output Relationship of Climate Smart Agriculture Prioritization (CSAP) Toolkit for Bangladesh

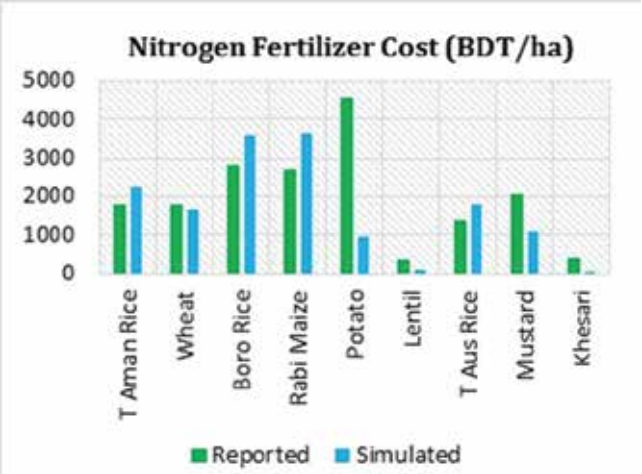
Ahmmed Zulfiqar Rahaman, Climate Change and Disaster Management Division

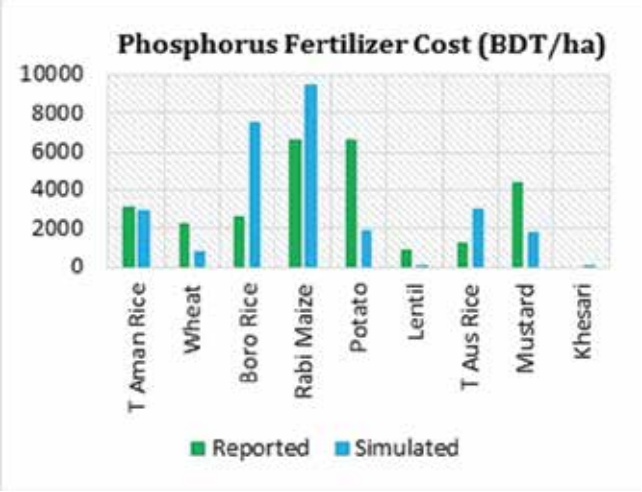
Climate Smart Agriculture Prioritization (CSAP) toolkit, developed and tested by Climate Change, Agriculture and Food Security (CCAFS) South Asia team in collaboration with the International Food Policy Research Institute (IFPRI) is being used for prioritization of climate-smart agriculture under the project 'An Action Plan for Adaptation in Bangladesh

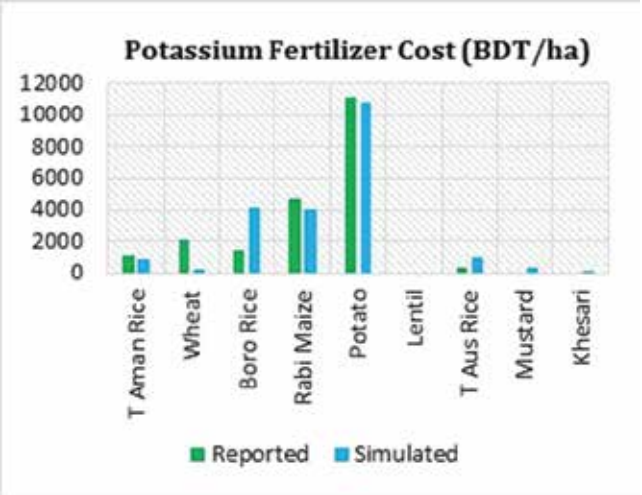


Biophysical framework of CSAP toolkit

Agriculture under Climate Change'. CEGIS has successfully completed the validation of input-output relationship using this toolkit before going for prioritization of adaptation options. This toolkit is intended to help in identifying the best climate-smart interventions for the short, medium and long-term conditions under varying climate scenarios.

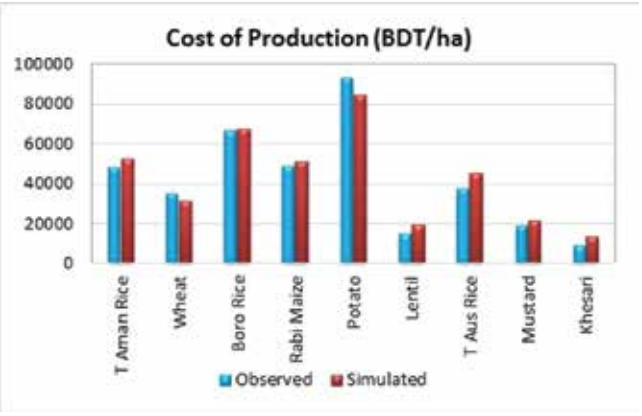






The CSAP toolkit has been simulated with baseline scenario in order to validate the simulated outputs with the reported data. Report on Cost of Production of T Aman, Wheat, Boro, Maize, Potato, Lentil, T Aus, Mustard and Khesari crops of the period 2008-09 has been used for this purpose. Validation has been performed in terms of input cost, cost of production, gross return and net return.

Simulated per hectare fertilizer cost has been estimated based on kg of NPK requirement per tonne of crop, per hectare crop production, NPK (Nitrogen (N), Phosphorus (P), and Potassium (K)) use efficiency,



status of organic matter content and NPK in soil, and price of per kg of N, P and K fertilizers.

It has been found that simulated per hectare irrigation cost is slightly higher for T Aman, Wheat, Lentil, T Aus, Mustard and Khesari crops but much lower for Boro and Potato crops than the reported cost. The irrigation cost for Boro crop is much higher because the farmers use more water than the requirement. Besides, cost of

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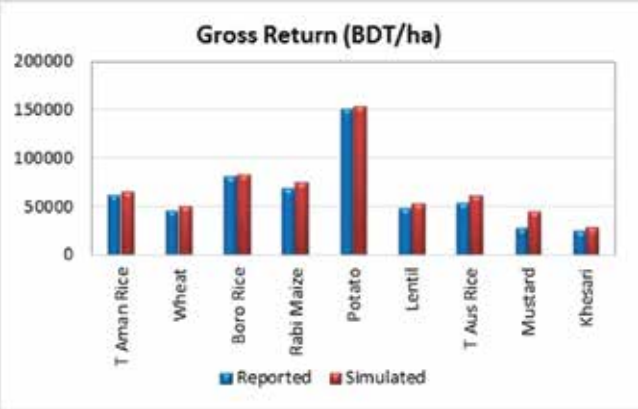
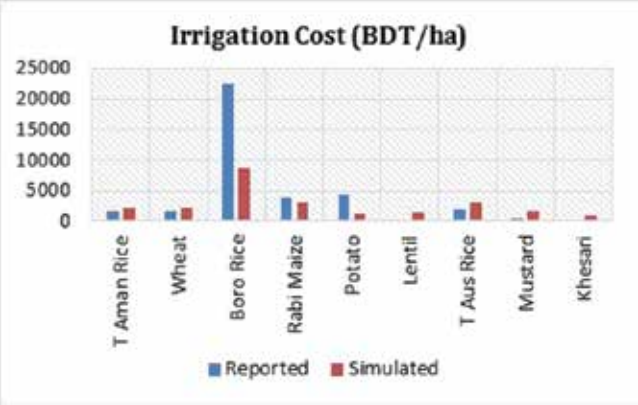
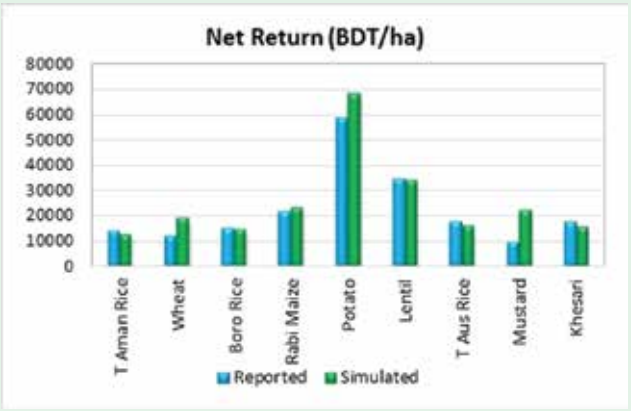
Validation of Input-Output Relationship..... (Con't from page 3)

seeds, biocides, labour, land preparation and land leasing have also been validated in CSAP.





Simulated values of cost of production, gross return and net return for different crops have been found mostly similar for as the reported values were collected from Bangladesh Bureau of Statistics (BBS). The simulated per hectare gross return has been estimated using per hectare production of product, by-product



multiplied and unit price of these items. The simulated per hectare net return has been estimated by deducting cost of production from gross return. All the presented figures illustrate establishment of input-output relationship in CSAP toolkit before prioritization of adaptation options laying a strong footing to an action plan preparation for crop agriculture under climate change.

South Asia Groundwater Forum ..... (Con't from page 1)

of the resource.

This has also significant impact on health. Salinization, water logging, contamination with geogenic arsenic and fluoride, poor sewage, sanitation facilities and open defecation, industrial effluent, leachate from solid waste dumps with mine tailings, and agrochemicals have spread widely in many parts of South Asia. Moreover, in the coastal areas, over-pumping of groundwater is inducing saltwater intrusion.

A number of the South Asian nations are now more aware and are preparing to address the emerging concerns about climate change and its implications to the water sector. Simultaneously, some others are reviewing their concerned policies to reform and address groundwater management challenges by adopting integrated water resources management. The forum provided the opportunity for a regional dialogue that can help, inform and guide such reforms, build up a shared understanding of the major regional groundwater systems, and the likely best practice approaches for sustainable management and improved governance, and forge a regional network of technical expertise to guide an improved groundwater management.

New Faces in CEGIS ..... (Con't from page 8)

Md. Alamgir Hossain joined CEGIS under Socio-Economic and Institutional Division as Junior Consultant on May, 2016. He obtained his Bachelor in Social Science (BSS) and Masters in Social Science (MSS) in Anthropology from University of Dhaka. He worked in the International Mother Language Institute for one year as Anthropologist before joining CEGIS.

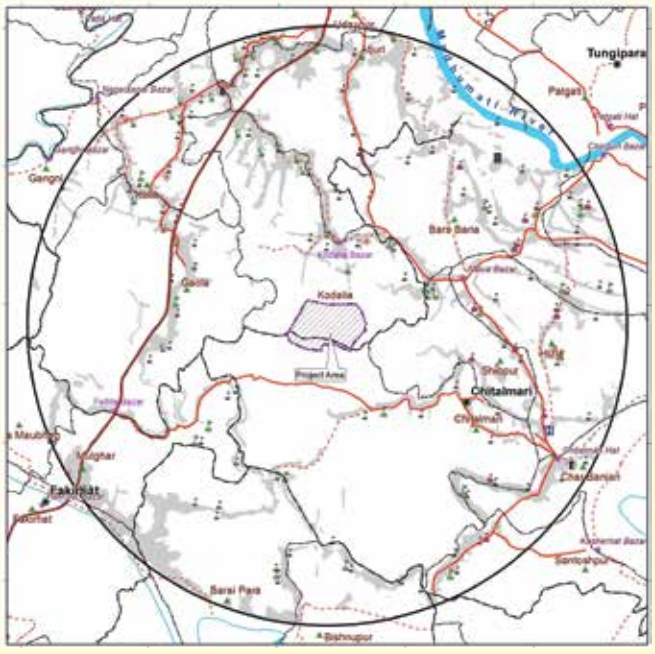
Faria Tuz Zahura joined CEGIS in May, 2016 as Junior Consultant under Power Energy and Mineral Resources and working in the Rive r, Delta and Coastal Morphology Division. She completed her Bachelor of Science (B.Sc.) in Civil Engineering from Bangladesh University of Engineering and Technology (BUET) in March 2016.

DFS, IEE and EIA for 200 (100+100) MW(AC) Solar PV Power Plant and Fisheries Project at Mollahat, Bagerhat, Bangladesh

Fatima Tuz Zohra, Power Energy and Mineral Resources Division

Rural Power Company Limited (RPCL), an independent power producer of Bangladesh, has planned to implement a 200 MW(AC) Solar PV Power Plant Project at Mollahat in Bagerhat District. This initiative of generating renewable energy is in accordance with the target set by Power Division in connection with the Power System Master Plan (PSMP 2010). In this regard, RPCL signed a contract agreement with CEGIS on 19 April 2016 for the consultancy services for "Detailed Feasibility Study (DFS), Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) for 200 (100+100) MW(AC) Solar PV Power Plant and Fisheries Project at Mollahat, Bagerhat, Bangladesh". This is for the first time that CEGIS is conducting a feasibility study as well as environmental assessment studies for a solar-based power generation project.

The proposed Project is an on-grid Solar Power Plant with non-tracking Photovoltaic (PV) panels integrated with culture fisheries that is to be implemented under the PV panels. Solar power plants are the renewable energy based plants that are suitable for the existing condition of Bangladesh . The solar cells in PV panels directly convert sunlight into electricity through converting the photons (light particles) into a flow of electrons. Administratively, the Project is located in



Base map of the Proposed Project

Kodalia village, in Rangamatia mauza of Kodalia union at Mollahat Upazilla, in the District of Bagerhat.

An area of approx. 800 acres of lowland presently used for different shrimps, prawns, and other fish culture is allocated for the project. In the first phase, the proponent will develop a 100 MW(AC) PV solar Power Plant integrated with fisheries project. As such, half of the allotted land (about 400 acres) will be used in this phase. On completion, the proposed Project will add 100 MW of electricity to the national grid in the first phase and another 100 MW in the second phase.

A team of highly qualified CEGIS professionals is carrying out this study. The IEE study has already been completed and the draft IEE report has been submitted to RPCL which is accepted by the client. Presently, the study team is visiting the proposed project area to collect necessary information and data for the EIA and Fisheries studies.

Fish Gher in the Proposed Project Area

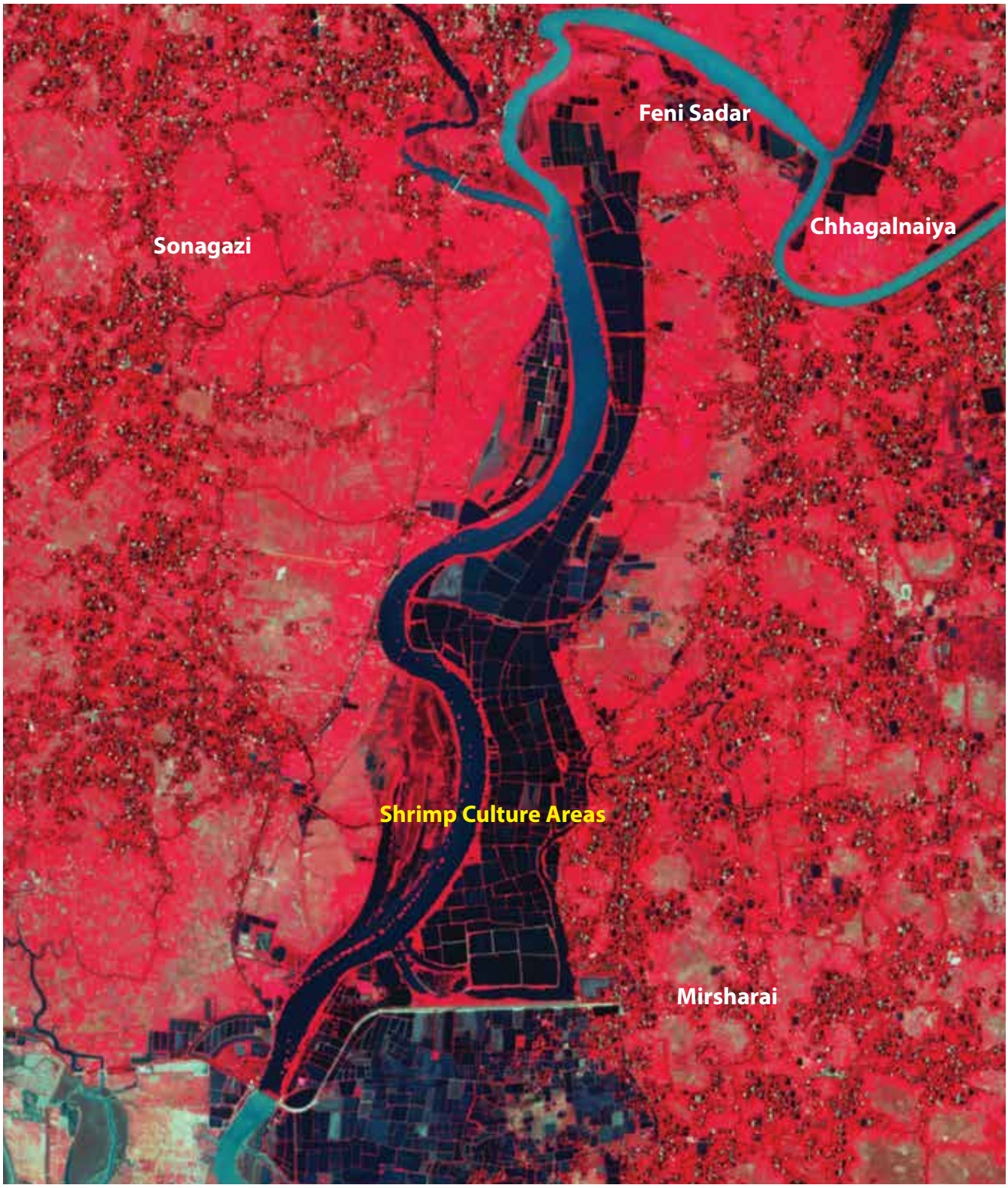
Informal Discussion in the Proposed Project Site

From the initial environmental assessment it is found that the Project will not generate any pollutant or effluent. It has no rotating equipment, so noise pollution will be negligible. There will be thermal plume as no hot water will be discharged from the plant. Only minor heat will be produced in the solar panels. Considering these, this Project thus can be termed as environment-friendly and renewable energy Project. This study Project is expected to be completed very soon.

Identification of Land Features using SENTINEL-2 Satellite Image

Mir Fahim Shaunak, Remote Sensing Division

The SENTINEL-2 Multispectral Instrument (MSI) samples 13 spectral bands: four bands at 10 meters, six bands at 20 meters and three bands at 60 meters spatial resolution. SENTINEL-2 imagery is designed to be modified and adapted by users interested in thematic areas such as spatial planning, agro-environmental monitoring, water monitoring, forest and vegetation monitoring, land carbon, natural resource monitoring, and global crop monitoring.



SENTINEL-2 Satellite Image, (Acquisition date: 18 March 2016)

Training of Trainers (ToT) on Wildlife Crime Monitoring System (WCMS)

Center for Environmental and Geographic Information Services (CEGIS) conducted a study titled "Development of a Web-Based Wildlife Crime Database" under Strengthening Regional Cooperation for Wildlife Protection (SRCWP) Project of Bangladesh Forest Department (BFD) with financial support from the World Bank. One of the important activities of the project is to build the capacity of relevant officials of Bangladesh Forest Department functioning as Divisional Forest Officers (DFO), Assistant Conservator of Forest Officers (ACF), Range Officers, Beat Officers, Forest Case Conducting Officers (FCCO), Foresters and Computer Operators through formal training on the use of Wildlife Crime Database (WCD) and Wildlife Crime Monitoring System (WCMS).

Inaugural Session of the Training Program

As a part of capacity building strategy, CEGIS organized a 3-day comprehensive Training of Trainers (ToT) cum Core Group Training on developed WCD and WCMS at CEGIS's Training Room in Dhaka from May 3 to May 5, 2016. A total of 15 officials participated in the training. Mr. Md. Akbar Hossain, Project Director, SRCWP Project and Deputy Chief Conservator of Forests, Bangladesh Forest Department was present at the inaugural session of the training program as the Chief Guest. Engr. Md. Waji Ullah, Executive Director, CEGIS chaired the session.

Technical Session of the Training Program

The training program included both lecture and practical sessions. The main areas focused during the lecture and practical session of training are:

- Concept and types of wildlife crime
- Use of the wild life crime database and wildlife crime monitoring software
- Exploring of the wildlife data using the developed web based wildlife crime monitoring software
- Familiarization with different modules of the software
- Entering of wildlife crime data into the system
- Generation of wildlife crime report using the database
- Exercise and practical on handling the wildlife crime cases and database

At the end of the ToT, the participants were expected to be able to perform the following activities:

- Entering of new data into the software by themselves or their subordinates
- Browsing of wildlife case and crime related data
- Monitoring the status of wildlife crime for specific location (e.g. circle, division, range, beat or camp) and
- Providing training to their colleagues and subordinates on use of wildlife crime database.

Certificate Awarding Session of the Training Program

The participants were awarded certificates at the end of the three-day ToT course. Executive Director of CEGIS distributed the certificates among the Participants.

Contracts and Agreements between Various Agencies and CEGIS

A number of important contracts have been signed between various agencies and CEGIS in the Q2 (April – June 2016). During this period, CEGIS has also expanded its relationship horizon with new clients and signed contracts for consultancy services for the following: Feasibility Study to Identify Potential Areas for Tourism Centers Development with Bangladesh Pajatan Corporation under Ministry of Civil Aviation and Tourism; Environmental Impact Assessment and Resettlement Action Plan (RAP) for the Ganges Barrage Project with Power China Chengdu Engineering Corporation Ltd.; Geological and Geographical Survey as well as Social and Environmental Survey for JICA's Data Collection Survey on Underground Substation in Dhaka with Tokyo Electric Power Company Holdings INC; Sweet Water Availability and Source Sustainability Pertaining to 750 MW Combined Cycle Power Project at Meghnaghat, Bangladesh with Reliance Power LTD, India.

Engr. Md. Waji Ullah, Executive Director of CEGIS and Dr. Aparup Chowdhury, Chairman of Bangladesh Pajatan Corporation are signing the contract document

In addition, one contract was signed with the Food and Agriculture Organization of the United Nations (FAO) on Technical Support for the Development of National Land Cover Map 2015; two contracts with Bangladesh Water Partnership were signed for Affect of Climate Change on Water and Food Security in Selected Areas of Coastal and Deltas, and Adaptation of Sustainable Micro-irrigation for Improving Irrigation Efficiency and Water Productivity in Orchards (Mango, Lichi, Banana); Dissemination of Riverbank Erosion Prediction Results to The Community and Local Level Stakeholders with Disaster Management and Climate Change Program, BRAC University. Besides, two other contracts were signed with Bangladesh Water Development Board (BWDB) on Preparation of GIS Based Digital Land Information System on BWDB Acquired Land in Dhaka City and its Surroundings, and Development of SMART Project Monitoring and Management Information System (SPMMIS) for ongoing 53 projects and 3 completed Projects of BWDB.

New Faces in CEGIS

Mir Sajjad Hossain joined CEGIS in February 2016 as Advisor, Transboundary Water Resources Management. Mr. Hossain has worked in the water resources sector for about 39 years. He worked in Bangladesh Water Development Board, Joint Rivers Commission (JRC) Bangladesh, prior to joining CEGIS. The noteworthy involvements were in the Teesta Barrage Project, Greater Dhaka City Flood Control Project and Sirajganj Hard Point related to Brahmaputra Right Bank Protection Project. He spent the major part of his career in JRC, Bangladesh. Mr. Hossain led JRC, Bangladesh as a Member for about 9 (nine) years and in this capacity he led the Bangladesh side of the Technical Committee of the JRC regarding Transboundary River issues with India and Nepal. He has visited a number of countries for participating in the trainings, workshops, seminars and dialogues. Water Diplomacy Workshop in Boston, USA, Joint Learning on International Waters in Washington, and 6th Annual International Law and Transboundary Freshwater Workshop in the University of Dundee, Abu Dhabi, Dialogue on Water Cooperation in South Asia supported by the World Bank, Meetings of the Parties to the UNECE on Water Convention are just a few to mention from the list of such achievements.

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