CURRICULUM VITAE

Of

Dr. Mollah Md Awlad Hossain

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Brief Description

Dr. Mollah Md Awlad Hossain holds a Bachelor's degree (B.Sc) in Civil Engineering, a Master's degree in Computer Science and Engineering (CSE), and a ***PhD specializing in flood forecasting system development*** *for Bangladesh using GIS, Remote Sensing, and Artificial Intelligence. He has also received* ***specialized trainings on Flood Forecasting*** *using probabilistic models and Warning Systems from the Asian Institute of Technology (AIT), Bangkok.*

With 37+ years of experience in the field of Water Resources Management and Modelling, Dr. Hossain has expertise in ***water resources planning***, ***hydraulic structure design***, ***hydrological analysis***, ***water system modeling***, ***disaster management system development***, ***digital land management***, ***flood early warning solutions***, ***climate change impact assessments***, ***integrated water resources management (IWRM)***, *GIS and Remote Sensing applications, and* ***ICT-based solution*** *development.*

He has contributed to numerous national projects in Bangladesh, serving as a Team Leader in many of them. His notable achievements include the development of the ***Community-Based Flood Information System (CFIS) Modelling*** *for the Water Resources Planning Organization (WARPO) and a* ***GIS-based Avian Bird Flu Monitoring System*** *for the Department of Livestock Services (DLS), both of which received the National ICT Award.*

Dr. Hossain also developed the ***GIS and ICT-based Scheme Information Management System*** *for the Bangladesh Water Development Board (BWDB), which earned the National Innovation Award. More recently, he developed a* ***Web-GIS-based Land Information System*** *for the Ministry of Land (MoL), Bangladesh.*

Currently, he is leading the development of a ***Flood Forecasting and Early Warning System (FFEWS)*** *and an* ***Online Decision Support System (DSS)*** *integrated with a warning dissemination system for the Narayani and Karnali River Basins* ***in Nepal****. This work includes* ***Hydrological and Hydro dynamic Modelling*** *of two basins and web-GIS based ICT solutions for online Decision Support.*

Dr. Hossain's skills and experiences cover Water, Land, Agriculture, Forest, Disaster, Climate, System

Modelling, Smart ICT-Solutions, Training and Project Management activities.

Detail Description

1. NAME	:	**Dr. Mollah. Md. Awlad Hossain** Water Resources Management and Modelling, Flood Forecasting and Early Warning, GIS, ICT based Smart Solution Development
2. DATE OF BIRTH	:	1st October, 1963
3. NATIONALITY	:	Bangladeshi
4. MEMBERSHIP IN PROFESSIONAL SOCIETIES	:	Fellow, Institution of Engineers, Bangladesh (FIEB) Member, Bangladesh Computer Society (BCS) Member, Bangladesh Society for Geo-Informatics (BSGI)
5. EDUCATION	:	**PhD on GIS and Remote Sensing based Flood Forecasting** and Dissemination System Development for Bangladesh, Department of Environment and Geography, Jahangirnagar University, Savar, Dhaka, 2014. Under this thesis I developed an **Artificial Neural Network based flood forecasting model** named BRANNS (Bangladesh River Artificial Neural Network System). **Masters in computer science and Engineering**, IBAIS University, Dhaka, Bangladesh, 2007 Thesis topic **"GIS and Remote Sensing based Flood Forecasting System for Bangladesh"**. **Higher Diploma in Software Engineering**, 2007. APTECH Computers. **B.Sc. Engineering (Civil),** Bangladesh University of Engineering & Technology (BUET), 1987
6. OTHER TRAINING and Publications	:	**TRAININGS** • ArcGIS Portal and JavaScript Programming, ESRI-Singapore, 2019 • Web GIS Programming using Open-Source applications. ICIMOD, Kathmandu, Nepal, 2014. • Satellite based Rainfall Estimation using RFE2, organized by ICIMOD in Kathmandu, conducted by NOAA and USGS in July 2006. • Use of GIS and RS in water resource management, organized by EMIN in AIT Bangkok, Conducted by AIT and Georgia tech University. • **River Modelling** conducted by IWFM-BUET. • Remote Sensing data analysis using ERDAS Imagine software organized by CEGIS.

		• Water and Land System Spatial Analysis using ESRI Spatial Analyst, ESRI. • Training course on Database concept and GIS, conducted by Engineers Institute, Bangladesh. • Training on GIS using TNT mips GIS software. • Training in Database Management System and Groundwater Modelling, Mott McDonald, England • Training course on Networking System using Windows conducted by Chittagong Stock Exchange Computer Section. **PUBLICATIONS** **Siddiquee, M. S. A., & Hossain, M. M. A.** (2015). Development of a sequential Artificial Neural Network for predicting river water levels based on Brahmaputra and Ganges water levels. *Neural Computing and Applications*, 26(8), 1979–1990. https://doi.org/10.1007/s00521-015-1871-6 **Khan, A. H., Kafi, M. A. H., Khaled, S. M., & Hossain, M. M. A.** (2020). Application of Machine Learning Algorithms for Local Level Flood Prediction: A Simplest Way of Likelihood Predictive Model of Monsoon River Flood. In *A. Haque & A. I. A. Chowdhury (Eds.), Water, Flood Management and Water Security Under a Changing Climate* (pp. 37–52). Springer Nature Switzerland. https://doi.org/10.1007/978-3-030-47786-8_3 **Fakhruddin, S. H. M., Hassan, A., & Hossain, A. M. M.** (2004). Analytical Framework Planning for IWRM. In *30th WEDC International Conference: People-Centred Approaches to Water and Environmental Sanitation*, Vientiane, Lao PDR. WEDC, Loughborough University. **Adham, M. I., Jahan, C. S., Mazumder, Q. H., Hossain, M. M. A., & Haque, A. M.** (2010). Study on Groundwater Recharge Potentiality of Barind Tract, Rajshahi District, Bangladesh Using GIS and Remote Sensing Technique. *Journal of the Geological Society of India*, 75(2), 432–438.
7. LANGUAGE & DEGREE OF PROFICIENCY	:	**Language Speaking Reading Writing** Bangla Mother tongue Excellent Excellent English Excellent Excellent Excellent
8. COUNTRIES OF WORK EXPERIENCE	:	Bangladesh, Nepal

9. EMPLOYMENT RECORD

Employer	From	To	Position & Responsibilities
Institute of Water Modelling (IWM), IWM BHABAN, House#6, Road#3C, Block-H, Sector-15, Uttara, Dhaka 1230, Bangladesh iwm@iwmbd.org www.iwmbd.org	July 2016	Up till now	**Director, ICT-GIS Division, IWM** Duties: • Design and development of Decision Support System (DSS) that include **Water Modelling**, Database, GIS, early warning generation and dissemination, and Decision Support System. • Identifying the seasonal connectivity of Haor and Wetlands with River systems. • Planning, design and monitoring of activities of GIS and ICT based **Land sector** projects. • Planning, design and monitoring and ***Variable Renewable Energy (VRE)*** related projects. • Supervision of **GIS, Remote sensing, and Software development** activities. • Oversee the development of databases and software. • Provide support and guidance on ICT, GIS and RS related training and workshop. • Flood forecasting system and Decision Support System development • Managing the development of Smart Crop Suitability and Fertilizer estimation process in **Agriculture** Sector • Managing **Water and Agriculture** project under "Climate smart agriculture and water management project (CSAWMPM)". • Managing **Forest** department's Site-Specific Plan (SSP) integration and collaborative forest management and monitoring project.

Center for Environmental and Geographic Information Services (CEGIS), F-14/E, Agargaon Administrative Area, Sher-E-Bangla Nagar, Dhaka-1207, Bangladesh.	May 2003	Feb 2016	**Director, GIS Division, CEGIS** Duties: • Framework and ICT tools development for ***Integrated Water Resources Management System (IWRM)*** for Bangladesh – a WARPO project • Design of **Flood Forecasting Early Warning Dissemination (FFEWD)** system for Bangladesh. • Development of Environmental Information Monitoring Network (EMIN) for Bangladesh – a WARPO project. • ***Water Modelling of Coastal Zone*** for assessing the Climate Change Impact – UK research project on climate change. • ***Development of Community based Flood Information System (CFIS) Model – obtained National Innovation Award 2011 – USAID research project for BWDB*** • *Development of GIS based Avian Bird-Flu Monitoring System* ***– obtained National Innovation Award 2011 – a project of FAO for DLS*** • Performed and supervised all **Water, Environment and Land sector GIS activity** for different projects. • Provided overall guidance on capturing and maintenance of spatial data. • Supervised various spatial analyses and generation of contour lines from FINNMAP spot level elevation data to conduct **water resource planning**. • Supervised GPS Survey team • Quality control of maps and reports as required for different projects.

House of Consultants Ltd.(HCL) Jakko Poyry Consulting Organization (a Finnish Company), Finland Bangladesh office, Banani, Dhaka	Jan 1996	April 2003	**Senior Water Sector - MIS/GIS Computer Specialist** Duties: • Project management activities of civil works regarding embankment construction, hydraulic structures, canal excavation, and other water infrastructure planning and monitoring system development. • Foreshore and embankment afforestation monitoring system for managing and monitoring the maintenance activities of the coastal embankment system. • Development and implementation community-based embankment management system. • Prepared Land Use and Water Resource map of coastal polders.
Engineering Planning Consultants Ltd. (EPC), 7/4, Block-A, Lalmatia, Dhaka-1207, Bangladesh.	Aug 1993	Nov 1996	**Water Resources Engineer** Duties: • Water Resource Planning for Northeast Region of Bangladesh • Developed **Hydrological Models** (Per-Monsoon, Monsoon for NE region polders. • Developed ***canal back-water effect estimation model*** • Design of canals and water control structures
Engineering Planning Consultants Ltd. (EPC), 7/4, Block-A, Lalmatia, Dhaka-1207, Bangladesh.	Sep 1990	July 1993	**Groundwater Modelling** for Dhaka City to identify the water availability for abstraction and possibility of subsidence due to abstraction
Engineering Planning Consultants Ltd. (EPC) 7/4, Block-A, Lalmatia, Dhaka-1207, Bangladesh.	May 1990	Sept 1990	Hydrological analysis of Water Management Project. Design of Hydraulic Structures
Master Plan Organization (MPO), Banani, Dhaka	Jan 1988	May 1990	Delineation of Basins and Catchments of Bangladesh. **Water Balance Modelling for Surface Water and Ground Water** for Bangladesh at National Level.
Engineering Planning Consultants Ltd. (EPC), 7/4, Block-A, Lalmatia, Dhaka-1207, Bangladesh.	Aug 1987	Jan 1988	• Hydrological analysis of Water Management Projects • Design of Hydraulic Structures for Naogaon Polder.

10. WORK UNDERTAKEN THAT BEST ILLUSTRATES YOUR CAPABILITY TO HANDLE THIS

ASSIGNMENT

More than 37 years of experience in the field of Water, Land, Agriculture, Forest, Climate change, Environment, Disaster management utilizing cutting edge Information and Communication Technology (ICT) and GIS.

Worked as a resource person for a number of detailed study projects. Experienced in remote sensing and GIS application with spatial data, satellite images analysis along with web application with database management. Provided expert services with GIS application and remote sensing technique in different water resources management projects in Bangladesh and Nepal. Developed GIS based Decision Support System in Water, Agriculture and Land.

As a Resource Person carried out assignments in the following projects:

Name of assignment or project: Flood Forecasting and Early Warning System for Karnali and Narayani Basins

Month and Year: Jan 2023- Date

Location: Nepal

Client: Department of Hydrology and Meteorology (DHM), Nepal

Main project features: The project focuses on developing an advanced, impact-based Flood Forecasting and Early Warning System (FFEWS) integrated with hydrological and hydraulic modeling for the Karnali and Narayani river basins. It includes the design of a web-based Decision Support System (DSS) to provide timely flood alerts and assess socio-economic impacts, supporting disaster preparedness and resilience planning.

Positions held: International IT-Expert

Activities performed:

- Designed and developed basin-scale GIS databases, integrated with hydrological (HEC-HMS) and hydraulic (HEC-RAS) models for real-time forecasting.
- Automated the processing of satellite-based rainfall and temperature forecasts to generate model-ready inputs.
- Established workflows for automated configuration and execution of HEC models, enabling near-real-time simulations of discharge, water levels, and inundation extents.
- Developed a spatial impact estimation module to assess flood effects on agriculture, households, schools, health centers, roads, and embankments.
- Designed and implemented an automated flood early warning (FEW) dissemination system, delivering alerts through bulletins, bulk SMS, emails, and social media platforms (Facebook, X).
- Built online model verification tools for comparing observed and simulated data.
- Led the development of a mobile application that displays station-specific water levels and flood warnings for community-level access.

Name of assignment or project: Development of a Participatory Project Management Information System (PPMIS)

Month and Year: Jan 2022- December 2022

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB)

Main project features: The objective of the project was to design and implement a web-based integrated Management Information System (MIS) to support real-time planning, monitoring, and management of BWDB projects. The system aims to enhance institutional transparency, enable participatory decision-making, and promote e-Governance in line with national digital transformation initiatives.

Positions held: Team Leader

Activities performed:

- Led the overall planning, coordination, and supervision of project activities to ensure timely and effective delivery.
- Designed and developed custom MIS modules and databases, aligned with user needs and institutional workflows.
- Conducted detailed requirement analysis and provided technical solutions to meet functional and reporting needs across departments.
- Oversaw system implementation, testing, and deployment, ensuring integration with existing BWDB systems.
- Delivered training and technology transfer to BWDB personnel for sustainable system operation and maintenance.

Name of assignment or project: Consultancy Services for Procurement of Web Mapping: Development of Web Application for GIS Database Management and its Visualization (Pkg-9)

Month and Year: June 2022- March 2023

Location: Bangladesh

Client: Ministry of Land, Bangladesh

Main Project features: The objective of the project was to develop a comprehensive web-based GIS application for the management, visualization, and systematic storage of digital Mouza maps across Bangladesh. The system was designed to support land governance, improve accessibility, and integrate various forms of spatial data including scanned maps and satellite imagery.

Main project features: Goal of the project is to develop and maintain of web GIS application for digital Mouza maps of Bangladesh.

Positions held: Land Information System Domain Expert and System Architect

Activities performed:

- Led the analysis and compilation of digital Mouza maps and satellite imagery, provided by the Ministry of Land.
- Designed and supervised the development of a web-GIS smart system to store and manage both vectorized and raster Mouza maps along with high-resolution satellite images.
- Provided the system architecture and design blueprint for the Land Information System (LIS), ensuring scalability, performance, and usability.
- Oversaw database and software development, ensuring alignment with national land digitization strategies.
- Maintained ongoing technical coordination with client stakeholders to ensure requirements were met and expectations aligned.

- Supported capacity building and knowledge transfer initiatives to enable long-term sustainability and maintenance of the system.

Name of assignment or project: Consultancy Service for Preparation of Wind map of Bangladesh (GIS based data platform creation, wind map preparation and dynamic data input system preparation)

Month and Year: August 2022- June 2025

Location: Bangladesh

Main project features: The project aims to develop a GIS-based and web-enabled wind mapping system to support investment and decision-making in Bangladesh's renewable energy sector. The system will serve as a centralized platform to store, analyze, and visualize wind data, enabling easy access for investors and planners.

Client: Sustainable & Renewable Energy Development Authority (SREDA), Ministry of Power, Energy and Mineral Resources, Bangladesh

Main project features: The main objective of this assignment is to develop a GIS based and web enabled wind mapping system for SREDA to facilitate the investors by providing necessary wind data.

Positions held: Team Leader

Activities performed:

- Provided overall leadership and strategic direction for project execution, ensuring timely and high-quality deliverables.
- Led stakeholder consultations and requirement analysis to define functional and technical specifications of the platform.
- Guided the collection, processing, and analysis of wind data from various sources to support accurate and reliable wind mapping.
- Supervised the design and development of the GIS database and web GIS-based wind map system, integrating dynamic data input capabilities.

Coordinated closely with the Project Director and maintained effective communication with government stakeholders for alignment and technical validation.

Name of assignment or project: Site Specific Plan (SSP) and ODK Development, Sustainable Forest & Livelihoods (SUFAL) Project.

Month and Year: January 2021 to December 2021

Location: Bangladesh

Client: Bangladesh Forest Department

Main project features: The SUFAL Project aims to enhance collaborative forest and protected area management through forest restoration, biodiversity conservation, wildlife protection, and support for alternative livelihoods for forest-dependent communities. This component involved the collection of geospatial and attribute data from over 200 forest beats using GPS-enabled Android devices and the development of Index Maps for Site-Specific Plans (SSPs).

Positions held: Project Supervisor

Activities performed:

- Provided technical leadership in satellite image analysis to accurately delineate forest beat boundaries and

support SSP preparation.

- Supervised the design and deployment of a Web GIS platform (ssp.bforest.gov.bd/dashboard) featuring data viewing, editing, uploading, querying, and reporting tools.
- Managed the overall project lifecycle, including coordination with stakeholders, ensuring timely data collection, system functionality, and client satisfaction.

Name of assignment or project: Consultancy Services for Preparation of GIS Maps (City & 41 Wards) for Chattogram City Corporation (CCC).

Month and Year: January 2020 to December 2021

Location: Bangladesh

Client: Chattogram City Corporation (CCC)

Main project features: The objective of the project was to establish a comprehensive ArcGIS Enterprise Geo-database for Chattogram City Corporation's structural assets, develop a Web GIS application for data sharing and visualization, and build institutional capacity for the adoption and utilization of geospatial technologies. The project involved digital mapping of all 41 wards and the entire CCC area, supported by high-resolution imagery and mobile field surveys.

Positions held: Project Supervisor

Activities performed:

- Provided overall project management, ensuring alignment with client requirements and timely execution.
- Supervised the analysis of Sentinel satellite imagery to identify land use and structural features within the CCC area.
- Guided the preparation of a digital Geo-database encompassing all city assets, integrated with existing CCC data.
- Oversaw the creation of ward-wise and city-level maps in ArcGIS format, using the asset database and auxiliary datasets.
- Directed the development of a Web GIS application for visualization, query, and management of geospatial data, including the creation of a mobile data collection app.
- Supervised the preparation of 3D visualizations for selected pilot areas.

Managed the compilation and harmonization of existing spatial datasets and conducted land use classification using aerial imagery and remote sensing.

Name of assignment or project: Industry Sector Risk Profile from Natural Disasters: The Case of KEPZ and Kalurghat Industrial Area in Chattogram

Month and Year: February 2020-April 2021

Location: Bangladesh

Client: Planning Division, Planning Ministry, Bangladesh (funded by UNDP)

Main Project features: i) Planning and monitoring of data collection, (ii) Identify disasters and climate change-related risks (flood, drainage, cyclone, salinity, fire, covid) in the industry sector located in the study area; (iii) Assess the risks

and vulnerability of the industry sector (iv) Generate a risk profile of the industry sector for hazards using GIS for developing strategies to address identified disaster and climate-related risks including investment opportunities.

Positions held: Team Leader/Lead Consultant

Activities performed:

- Provided overall project leadership, coordinated closely with UNDP and the Project Director from the Planning Division.
- Oversaw satellite imagery processing and guided the extraction and digitization of industrial features, waterbodies, roads, and infrastructure.
- Supervised hydrodynamic and **hazard modeling**, including flood, river, salinity, cyclone storm surge simulations.
- Planned and guided Terrestrial Laser Scanning (TLS) and UAV-based aerial surveys to generate high-resolution Digital Elevation Models (DEM) and Digital Surface Models (DSM).
- Led the development of an industrial land inventory for KEPZ and Kalurghat, including the preparation of base maps and detailed land use maps.
- Guided the creation of exposure, vulnerability, and risk maps through geospatial analysis.
- Planned and directed Multi-Criteria Analysis (MCA) to generate final disaster risk maps and identify strategic areas for investment and resilience planning.

Name of assignment or project: Development of Upazila Land Suitability Assessment and Crop Zoning System of Bangladesh (Phase-I & Phase-II)

Month and Year: March 2018- December 2021 (Phase-I) and February 2022- ongoing (Phase-II)

Location: Bangladesh

Client: Bangladesh Agricultural Research Council (BARC), Ministry of Agriculture, Bangladesh.

Main Project Features: The objectives of the project is to create, update, and validate land/crop suitability databases to derive appropriate farming practices for sustainable socio-economic conditions using innovative smart ICT-based solution. This includes development of web GIS-based dashboard, analytics application and a Mobile App for crop suitability and fertilizer requirement assessment by the farmer.

Positions held: Principal Investigator (PI), IWM part.

Activities performed:

Lead the Team to

- Led the entire IWM team and coordinated project activities with BARC and other stakeholders.
- Supervised the collection and processing of SAR satellite imagery for generating seasonal agricultural land use maps (Kharif-1, Kharif-2, Rabi).
- Directed the development of a national geodatabase, interactive Web GIS platform, and the “Khamari” Mobile App that enables users to:
- Select any location on the map or via touch input,
- View crop suitability rankings,
- Estimate yield potential and fertilizer requirements.
- Guided the preparation of a Crop Suitability Dashboard, integrating spatial analytics and DSS capabilities.

- Provided technical leadership, ensured quality control, and maintained liaison with the project authority for effective implementation.
- The system is live and available at: http://cropzoning.gov.bd

Name of assignment or project: Development of Interactive Geodatabase for Coastal Zone (IGDCZ) for "Long Term Monitoring, Research and Analysis of Bangladesh Coastal Zone"

Month and Year: October 2018- June 2022

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB), Ministry of Water Resources, Bangladesh.

Main Project Features: The object of Component-3 of this project is to develop a web GIS base Interactive Geodatabase for Coastal Zone (IGDCZ) to support Long Term Monitoring, Research, and Analysis of Bangladesh Coastal Zone. The IGDCZ has developed on ArcGIS Enterprise Server platform to visualize polders features (embankment, sluice, protective works, canals,) rivers, roads, settlements, DEM, contours, land uses, forests, salinity, water levels, discharges, rainfall, groundwater, cross-sections, navigation routes and many other features interactively with spatial and non-spatial search, zoom, report, data export facilities.

Positions held: GIS-ICT Specialist, Task Leader, Component-3

Activities performed:

- Guide and supervise the preparation of data layers (time-series and GIS),
- Development of Geodatabase in Oracle
- Development of web GIS interactive IGDCZ using ArcGIS Enterprise tools and JavaScript APIs for ArcGIS
- Develop backend application using PHP Laravel.
- Project and activity management and coordination with BWDB and the World Bank experts. The website address is https://gis.iwmbd.com/ceip/

Name of assignment or project: Study on Interaction between Haor and River Ecosystem including Development of Wetland Inventory and Sustainable Wetland Management Framework.

Month and Year: August 2017 to February 2019

Location: Bangladesh

Client: Bangladesh Haor and Wetland Development Board (BHWDB), Ministry of Water Resources, Bangladesh.

Main Project features: The project aimed to develop a comprehensive inventory of wetlands and formulate a sustainable, cluster-based national wetland management framework. Key objectives included assessing the interaction between the Haor and river ecosystems, preparing a wetland inventory following Ramsar guidelines, and classifying wetlands into clusters based on hydrological functions, vegetation types, ecosystem services, physiographic features, and demographic characteristics. The ultimate goal was to recommend best practices for wetland conservation and management.

Positions held: GIS Specialist

Activities performed:

- Supervised the processing and analysis of Sentinel-1 (SAR) and Sentinel-2 (optical) satellite imagery.
- Developed spectral signatures for accurate delineation of water bodies and settlements.

- Provided technical support for both supervised and unsupervised image classification.
- Oversaw the geo-referencing and rectification of satellite imagery.
- Conducted quality control of digitized features extracted from satellite images.
- Managed field validation (ground truthing) surveys to verify the spatial and thematic accuracy of wetland features (e.g., boundaries, extent, land cover types).
- Guided the preparation of land use maps, including classification of water bodies, settlements, vegetation, open spaces, and road networks, for integration with the project's hydrodynamic modeling component.

Name of assignment or project: Identification of Char Lands: Pumpkin Against Poverty

Year: From March 2017 to April 2017

Client: Practical Action Bangladesh, An International NGO

Main project features: The project focused on identifying suitable char (sandbar) lands for pumpkin cultivation as a means of livelihood improvement for extremely poor farmers. Practical Action trained local communities in locating appropriate sandbar cropping areas, preparing compost-filled pits, and cultivating pumpkins. The initiative contributed to food and nutrition security, while also enhancing household income. Key deliverables included maps of permanent and transitional charlands, feasibility maps for sandbar cropping, spatial databases, shapefiles, and detailed reports.

Position(s) held: GIS Specialist

Activities performed:

- Supervised the downloading, preprocessing, and analysis of Sentinel satellite imagery for identifying sandbar locations.
- Led the classification of sandbars suitable for cropping based on seasonal and physical characteristics.
- Conducted quality assurance and validation of spatial datasets and analytical results.
- Guided the GIS team in preparing feasibility maps for sandbar cropping potential across the river systems.
- Provided technical support for cleaning, processing, and integrating field data with satellite-based analysis.
- Presented findings at Practical Action's internal seminar and incorporated stakeholder feedback into the final deliverables.

Name of assignment or project: Development of an IIS & Web GIS Mapping for DBHWD's Haor project

Month and Year: May 2017 to November 2019.

Location: Bangladesh

Client: Bangladesh Haor and Wetland Development Board (BHWDB), Ministry of Water Resources, Bangladesh.

Main Project features: The objective of the project was to develop a Web-based Interactive Information System (IIS) to visualize and manage spatial and non-spatial data related to haor ecosystems. The system integrated data on haors, surface and groundwater, land use, water levels, boreholes, **and hydrological modeling** results. The platform enabled dynamic mapping and decision support for sustainable wetland management.

Positions held: Decision Support System (DSS) Specialist

Activities performed:

- Supervised the design and development of a Web GIS-based database system encompassing haor-specific data layers including hydrology, land use, groundwater, and modeling outputs.

- Coordinated the development of the interactive information platform using open-source technologies such as PostgreSQL/PostGIS, GeoServer, OpenLayers, and PHP.
- Provided strategic input for system architecture, data integration, and user interface design to ensure scalability and usability for decision-makers.
- Ensured consistency and quality control across all components of the IIS and its visualization tools.

Name of assignment or project: Upgrading and Development of Web GIS, Google Integration, and Mobile Applications for the Scheme Information Management System (SiMS) of BWDB.

Month and Year: May 2016 to Apr 2018

Location: Chattorgram Southeastern Zone, Bangladesh

Client: Bangladesh Water Development Board (BWDB), Ministry of Water Resources.

Main Project features The project aimed to modernize the existing standalone desktop-based Scheme Information Management System (SiMS) of the Bangladesh Water Development Board (BWDB) by transforming it into a comprehensive, Web GIS-enabled smart platform. This transformation involved the development of an integrated system capable of supporting spatial analysis, real-time monitoring, mobile data collection, and strategic asset management.

A key component of the project was upgrading the existing SiMS into a Web GIS-based application with enhanced interactivity and user accessibility. An extensive inventory database was developed to document BWDB-managed schemes, including embankments, canals, protective works, and various hydraulic structures such as sluice gates, regulators, and bridges. To support field-level operations, a mobile application (SiMS App) was introduced, allowing real-time data collection using smartphones.

The system also incorporated an online project monitoring mechanism, enhanced with IP-Camera integration for real-time visual supervision. In addition, flood forecasting services were developed at the scheme level to support risk reduction and preparedness. To further strengthen operational efficiency, an Asset Information Management System (AIMS) was developed, enabling BWDB to manage data related to land, vehicles, equipment, and other physical assets. The platform also featured SiMS-Google integration to leverage Google Maps capabilities and deliver a seamless user experience. To ensure sustainability and institutional capacity, the project included extensive hands-on training and technology transfer initiatives. The resulting SiMS-Web application provided powerful GIS functionalities including zoom, pan, context-sensitive search, spatial and attribute queries, automated reporting, and dynamic visual charting.

Positions held: Team Leader and GIS-IT Specialist

Activities performed:

- Led the project team and contributed to the work plan, system analysis, solution design, and overall project coordination.
- Provided technical leadership and oversight to database developers, GIS specialists, web programmers, and mobile app developers.
- Guided the implementation of ArcGIS-based SiMS-Web and SiMS-Mobile platforms using Oracle Database for both spatial and non-spatial data integration.
- Supervised the development of Web GIS APIs and backend services using ArcGIS Enterprise and Oracle

technologies.

- Advised on the use of JavaScript APIs for ArcGIS to ensure smooth functionality and responsiveness of the web application.
- Ensured alignment of the development process with BWDB's operational and data management needs, while facilitating training and knowledge transfer for long-term sustainability.

Name of assignment or project: Review of the Physical Condition and Functionality of Existing Hydraulic Structures of BWDB

Month and Year: May 2016- October 2017

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB), Ministry of Water Resources.

Main Project features: The objective of the project was to prepare a comprehensive inventory of hydraulic structures across Bangladesh. As part of the initiative, a centralized Web GIS-based application and supporting database were developed to facilitate data storage, visualization, and future updates of physical and functional attributes of BWDB's hydraulic structures.

Positions held: ICT & GIS Specialist

Activities performed:

As an ICT & GIS Expert, provided guidance on the following activities-

- Provided technical leadership in the design and development of a Web GIS-based application titled Hydraulic Structure Inventory System, accessible at http://sims.bwdb.gov.bd:86.
- Guided the structuring and population of the hydraulic structure inventory database with available nationwide data.
- Enabled integration of information from standardized 'Inventory Sheets' into both the dynamic online system and softcopy report formats, ensuring that BWDB officials can update and manage the database independently in the future.
- Delivered key project outputs including the Hydraulic Structure Inventory System, incorporating Oracle 11g-based data storage and an interactive Web GIS interface.

Name of assignment or project: Procurement of Service for Digitization of Mauza Maps, Geo-referencing, and Physical Feature Survey

Month and Year: November 2016 to January 2017

Location: Bangladesh

Client: Bangladesh Bridge Authority (BBA), Ministry of Road Transport and Bridges, Bangladesh.

Main Project features: The primary objective of this project was to support land acquisition for the Dhaka Elevated Expressway project by digitizing historical Mauza maps, geo-referencing them with high precision, and conducting a detailed physical feature survey along the alignment of Tranche 1.

Positions held: GIS Specialist

Activities performed:

- Managed the collection of RS Mauza map sheets and blueprint maps (Scale: 16" = 1 mile) from the Project

Director's Office, Dhaka Elevated Expressway PPP Project, Setu Bhaban, Banani.

- Supervised the high-resolution scanning of Mauza sheets and coordinated the collection of Ground Control Points (GCPs) — typically 4 to 6 points per sheet — using RTK GPS technology.
- Ensured high-quality geo-referencing of Mauza sheets in the UTM Projection System, maintaining spatial accuracy standards.
- Oversaw the digitization of cadastral features from the geo-referenced maps and conducted rigorous edit plot checks using a light table.
- Performed quality control (QC) on the edge-matching of adjacent digitized Mauza sheets to ensure seamless spatial integration.
- Provided technical guidance to the ground survey team during field validation (ground truthing), targeting sub-meter accuracy in location referencing..

Name of assignment or project: Identify water harvesting areas for Panchhhari Upazila and development of Geospatial Information System.

Month and Year: 2014 to 2015

Location: Bangladesh

Client: NASA, DAI, USAID and ICIMOD

Main Project features: Panchhari Upazila in the Chittagong Hill Tracts faces acute water scarcity for nearly eight months each year, with excess surface runoff occurring during the remaining four months due to steep hilly terrain. The project aimed to assess water demand and availability across sectors—agriculture, forest, domestic use, livestock, and drinking water—and to identify potential water harvesting sites. Using climate change scenario modeling and hydrological analysis, seven cross-dams were proposed to store water during the monsoon period and ensure availability throughout the dry season. A geospatial information system was developed to support planning, monitoring, and decision-making.

Positions held: Team Leader and GIS-IT Expert

Activities performed:

- Led a multidisciplinary team for project planning, stakeholder engagement, and technical execution.
- Conducted geospatial and hydrological analysis using satellite imagery, DEM, and field survey data to identify water harvesting zones.
- Modeled water availability and demand under multiple climate change scenarios using appropriate water balance tools.
- Proposed technically feasible sites for seven cross-dams based on slope, runoff patterns, storage potential, and local water needs.
- Developed a GIS-based decision support tool to visualize water supply-demand gaps, proposed dam locations, land use, and demographic information.
- Facilitated technical workshops with local stakeholders and government agencies for capacity building and validation of results.
- Delivered a comprehensive project report, GIS database, and map atlas as final deliverables.

Name of assignment or project: Digital Archiving of Strip Maps, Dhaka City Mouza maps and Khatians

Month and Year: 2009 to 2010

Location: Bangladesh

Client: Directorate of Land Records and Survey (DLRS), Ministry of Land, Bangladesh.

Main Project features: The project aimed to digitize and archive cadastral resources including Dhaka Mohanagar City jarip (survey) maps, national border strip maps, and land ownership records (khatians), and to develop a Web GIS-based application for improved land information access and management. This system facilitated secure digital storage, retrieval, and visualization of land use and tenancy records for public and administrative use.

Positions held: Team Leader/GIS-IT Specialist

Activities performed:

- Led the team responsible for the digitization and GIS preparation of over 4,000 Dhaka City mouza map sheets and Bangladesh's national border strip maps.
- Designed and implemented a digital archive for storing scanned and vectorized mouza maps along with corresponding land ownership data (khatians).
- Developed a web-enabled GIS application to enable users to search, view, and print plot-level information directly from the digitized maps and associated records.
- Ensured high-quality geo-referencing, data consistency, and usability for both administrative and public interfaces.
- Contributed to capacity building through staff training and technical documentation for DLRS.

Name of assignment or project: GIS based Land acquisition and resettlement for Padma Bridge

Month and Year: 2009-2010

Location: Bangladesh

Client: Bangladesh Bridge Authority

Main Project features: The project involved the preparation of a comprehensive Land Acquisition (LA) Plan for the construction of the Padma Multipurpose Bridge—one of the largest infrastructure projects in Bangladesh. Activities included the collection, geo-referencing, and digitization of Mauza maps around the bridge alignment, followed by the development of GIS-based tools to support land acquisition and compensation processes efficiently and transparently.

Positions held: Team Leader and GIS Specialist

Activities performed:

- Supervised the preparation and digitization of geo-referenced cadastral (Mauza) maps in the bridge and surrounding project impact areas.
- Led the design of GIS-based land acquisition plans by integrating spatial data with administrative land ownership records.
- Guided the development team in creating custom software that linked compensation and resettlement data with GIS layers, facilitating streamlined tracking, planning, and management of compensation disbursement.
- Ensured data accuracy, spatial alignment, and compliance with institutional and legal standards for land acquisition and resettlement.

Name of assignment or project: Application of GIS for Farm Productivity Enhancement through Land Suitability Assessment of Major Cropping Pattern of Bangladesh, Development of Crop Suitability Assessment Model (CSAM) for Bangladesh Agricultural Research Council (BARC).

Month and Year: April 2011 to November 2014

Location: Bangladesh

Client: Bangladesh Agricultural Research Council (BARC), Ministry of Agriculture

Project Overview: The project aimed to enhance farm productivity in Bangladesh by developing a GIS-based decision support tool for assessing land suitability for major cropping patterns across diverse agro-ecological zones. It supported evidence-based agricultural planning and crop zoning, helping policymakers and farmers optimize crop selection and improve yield under varying climatic and soil conditions.

Positions held: GIS Specialist

Activities performed:

- Designed and developed the Crop Suitability Assessment Model (CSAM) within the ArcGIS Desktop environment to evaluate crop suitability based on land, soil, topography, and climatic factors.
- Implemented GIS automation and modeling functionalities using VBA, VB.NET, Python, C#, and MS Access to build a user-friendly, rule-based crop suitability engine.
- Integrated spatial data with crop growth parameters, agro-ecological zones, and land productivity data to generate suitability maps and reports.
- Collaborated with agronomists and soil scientists to ensure alignment of GIS tools with scientific parameters and end-user needs.
- Supported capacity building for BARC staff through technical documentation and hands-on training sessions.

Name of assignment or project: Assess state of information systems and facilitate geo-hazard information sharing among GOB and NGO GIS platforms.

Month and Year: 2007 to 2009

Location: Bangladesh

Client: CDMP, under Ministry of Food and Disaster Management

Project Overview: The project aimed to enhance coordination and information sharing among key government and non-government agencies involved in disaster management by assessing the existing status of GIS-based information systems and facilitating the development of a standardized data-sharing framework.

Positions held: GIS Specialist

Activities performed:

- Assessed the current GIS data infrastructure across major GOB and NGO agencies.
- Conducted consultations with national stakeholders and major GIS data users to evaluate data quality, availability, and system integration challenges.
- Developed data standards, metadata standards, and a draft national GIS policy to promote consistent, interoperable data sharing across platforms.
- Supported CDMP in designing an institutional roadmap for integrated geo-hazard information management.

Name of assignment or project: Preparation of National Geological Data Catalogue**.**

Month and Year: 2007 to 2009

Location: Bangladesh

Client: CDMP under Ministry of Food and Disaster Management, Bangladesh

Project Overview: The project aimed to create a centralized, digital geological data catalogue for Bangladesh to support disaster risk reduction, land-use planning, and policy development. The catalogue served as a national resource under the Disaster Management Information Network (DMIN), integrating geological datasets from multiple organizations.

Positions held: GIS Specialist and Team Leader

Activities performed:

- Led the nationwide inventory and cataloguing of geological data housed in various government and research institutions.
- Supervised the conversion of hardcopy maps, reports, and datasets into standardized digital formats for GIS integration.
- Directed the development of a GIS-enabled and web-based data catalogue, ensuring metadata compliance and interoperability within the DMIN framework.
- Coordinated stakeholder consultations to align data structure and accessibility with national disaster preparedness priorities.
- Ensured quality control and documentation of all catalogued data for long-term usability.

Name of assignment or project: Development of Multi-Hazard zoning maps

Month and Year: 2007 to 2008

Location: Bangladesh

Client: CDMP under Ministry of Food and Disaster Management.

Project Overview: This project aimed to support disaster preparedness and risk reduction by developing GIS-based multi-hazard zoning maps for high-risk areas. The zoning maps were created for 67 unions across seven disaster-prone districts, highlighting areas at risk from floods, cyclones, landslides, and other hazards. The output served as a decision support tool for the Ministry of Food and Disaster Management (MoFDM) and local authorities in planning and response activities.

Positions held: Team Leader and GIS Specialist

Activities performed:

- Provided overall project leadership, coordination, and stakeholder engagement.
- Supervised the preparation and spatial analysis of hazard-specific GIS datasets for the creation of composite multi-hazard zoning maps.
- Guided the technical team in the development of a GIS-based Multi-Hazard Atlas, enabling planners and disaster management professionals to identify risk zones and prioritize interventions.
- Ensured the quality and consistency of all GIS outputs and their alignment with national disaster management frameworks.

Name of assignment or project: Constituency Delimitation of Bangladesh Project

Month and Year: 2007 to 2008

Location: Bangladesh

Client: Bangladesh Election Commission

Project Overview: The project supported the Bangladesh Election Commission in preparing for the National Parliamentary Election of 2008 by developing a GIS-based system for electoral boundary delimitation. The system enabled data-driven analysis and adjustment of constituency boundaries based on updated population figures and administrative units.

Positions held: GIS-IT Specialist

Activities performed:

- Designed and developed a GIS-based software tool to assist in the delimitation of parliamentary constituencies using union boundaries and population data.
- Integrated spatial and demographic datasets to support equitable, transparent, and legally compliant boundary realignment.
- Ensured the system provided user-friendly tools for map visualization, spatial querying, and automated reporting to support Election Commission decision-making.
- Collaborated with election officials and technical teams to validate outputs and ensure alignment with legal and administrative frameworks.

Name of assignment or project: Padma Multipurpose Bridge Project (PMBP).

Month and Year: 2014-2015

Location: Bangladesh

Client: Bangladesh Bridge Authority (BBA)

Project Overview: The project involved geospatial analysis and modelling to support the identification of suitable dumping sites for approximately 30 million cubic meters of dredged spoil generated from river training works and channel excavation during the construction of the Padma Bridge, specifically on the Jazeera bank side.

Positions held: GIS Expert

Activities performed:

- Conducted detailed topographic and spatial analysis using GIS to evaluate land suitability for spoil disposal.
- Developed GIS-based models considering multiple parameters including land use, erosion susceptibility, environmental sensitivity, and accessibility.
- Identified and recommended 11 optimal dumping sites for safe and sustainable management of dredged materials.
- Supported coordination with engineering and environmental teams to ensure that site selection aligned with technical feasibility and environmental compliance.
- Produced maps and analytical reports to aid in decision-making by the Bangladesh Bridge Authority and relevant stakeholders.

Name of assignment or project: Investigating the impacts of relative Sea-Level rise on Coastal Communities and their livelihoods in Bangladesh

Month and Year: 2006-07

Location: Bangladesh

Client: Ministry of Environment and Forests, Bangladesh

Main Project features: The objective of the project was to assess the projected impacts of relative sea-level rise by the years 2020, 2050, and 2080 on the livelihoods of coastal populations in Bangladesh, with a focus on the vulnerability of coastal polders and associated infrastructure. The study combined hydrodynamic modeling and GIS-based spatial analysis to support long-term adaptation planning and policy recommendations.

Positions held: GIS Specialist

Activities performed:

- Conducted cyclone surge, river-floodplain, and salinity modeling to simulate future inundation scenarios under various sea-level rise projections.
- Prepared flood depth maps and analyzed salinity intrusion patterns using advanced GIS applications.
- Assessed the spatial extent of inundation and salinity propagation to evaluate potential impacts on agriculture, settlements, and livelihoods.
- Identified the most vulnerable polders and infrastructure, and proposed adaptation strategies such as embankment heightening and regulator widening.
- Contributed to the formulation of technical recommendations for climate-resilient coastal zone management.

Name of assignment or project: Integrated Water Resources Management **(IWRM) for Bangladesh**

Month and Year: 2002-2007

Location: Bangladesh

Client: WARPO, Ministry of Water Resources, Bangladesh.

Project Overview: This national-level project aimed to develop a comprehensive and integrated water resources management strategy for Bangladesh. It focused on formulating analytical and computational frameworks aligned with the country's development goals, enabling multi-sectoral water planning and policy-making under the principles of IWRM.

Positions held: GIS Specialist

Activities performed:

- Actively participated in the development of an Analytical Framework for IWRM, including the design of the State Indicator–Decision Support Indicator (SI–DSI) matrix based on national development strategies and sectoral priorities.
- Contributed to the preparation of working papers and technical documentation supporting the institutionalization of IWRM practices.
- Supported the design and development of computational framework tools for water resources analysis, integrating GIS and sectoral models to assess water demand, availability, and allocation scenarios.
- Collaborated with multidisciplinary teams and national stakeholders to ensure technical soundness and policy relevance of the outputs.

Name of assignment or project: Impact of Sea Level Rise in Southwest region of Bangladesh

Month and Year: 2005 to 2006

Location: Bangladesh

Client: Ministry of Environment and Forests, Bangladesh

Project Overview: This project aimed to evaluate the potential impacts of projected sea level rise on the hydrology, land use, salinity intrusion, and agricultural practices in the southwest coastal region of Bangladesh. The study considered sea level rise scenarios for the years 2050 (32 cm) and 2100 (88 cm) and used advanced hydrodynamic modelling integrated with GIS-based spatial analysis.

Positions held: Water Resources Engineer and GIS Specialist

Activities performed:

- Analyzed hydrodynamic model outputs to assess changes in water levels, flow patterns, and tidal behavior under future sea level rise scenarios.
- Applied advanced GIS techniques to evaluate the spatial impact on land inundation, salinity intrusion, land use patterns, and cropping zones.
- Assessed the implications for agriculture, drinking water sources, and livelihoods in vulnerable coastal areas.
- Contributed to policy recommendations and adaptation strategies for coastal zone management and climate resilience planning.

Name of assignment or project: Land Ownership Information System for Phulbari Coal Mine Project

Month and Year: Jul 2004 to Feb 2005

Location: Bangladesh

Client: Asia Energy, Ministry of Power, Energy & Mineral Resources, Bangladesh

Project Overview: The project aimed to develop a comprehensive GIS-based Land Ownership Information System to support land acquisition, resettlement planning, and compensation activities for the Phulbari Coal Mine Project. The system integrated cadastral data, land ownership records, and spatial analysis to provide an accurate and user-friendly decision support tool.

Positions held: Project Leader and GIS Specialist.

Activities performed:

- Provided overall project management, including work plan development, resource coordination, and client communication.
- Led system analysis and design of the Land Ownership Information System, integrating spatial and tabular data.
- Supervised digitization of Mouza maps and khatians, ensuring spatial accuracy and data consistency.
- Oversaw the development of a land ownership database and GIS application, including linkage of ownership data with parcel maps.
- Guided the generation of a Digital Elevation Model (DEM) to support terrain analysis and land use planning.
- Conducted presentations, reporting, and stakeholder engagement to ensure alignment with project goals and regulatory compliance.

Name of assignment or project: Computerized Land Management System (CLMS) of Demra Circle

Month and Year: 2004 to 2005

Location: Bangladesh

Client: Ministry of Land, Bangladesh.

Project Overview: The project focused on developing and implementing a GIS-based Computerized Land Management System (CLMS) for the AC Land Office of Demra Circle. The system was designed to streamline land records management, improve service delivery, and enhance transparency in land administration.

Positions held: Project Leader and GIS-MIS Specialist.

Activities performed:

- Led overall project management, including planning, coordination, and client engagement.
- Oversaw the development of a GIS-based land management system, including database design, GIS data preparation, and integration of spatial and textual land records.
- Supervised the conversion of land records into digital formats, ensuring accuracy and compliance with national land data standards.
- Guided the design, development, and deployment of the CLMS software at the AC Land office.
- Conducted training sessions for Ministry of Land officials on GIS applications and system usage to support institutional capacity building.

Name of assignment or project: Early Warning System Study

Month and Year: 2004 to 2005

Location: Bangladesh

Client: ADB

Project Overview: The study aimed to evaluate the existing flood early warning systems in Bangladesh and propose a strategic portfolio of projects to strengthen early warning dissemination and response mechanisms at the national and community levels.

Positions held: Direct consultant of ADB as early warning dissemination expert.

Activities performed:

- Conducted a comprehensive review of existing studies, systems, and practices related to flood early warning dissemination in Bangladesh.
- Identified critical gaps in infrastructure, communication channels, institutional coordination, and community outreach.
- Prepared a portfolio of recommended early warning system (EWS) projects, outlining technical, institutional, and financial aspects.
- Provided strategic guidance to ADB on priority areas for investment and intervention to enhance flood preparedness and response capabilities.
- Contributed to the design of project concepts and implementation frameworks for future ADB-supported EWS initiatives.

Name of assignment or project: Community based Flood Information System (CFIS)

Month and Year: 2003 to 2006

Location: Bangladesh

Client: WARPO

Project Overview:

The project aimed to develop a localized flood information system to support community-level preparedness and response. It involved integrating hydrological data, GIS analysis, and community-based observations to create a practical early warning and decision-support tool.

Positions held: GIS and RS Specialist.

Activities performed:

- Designed and developed a GIS-based software application named 'WATSURF' tailored for community-level flood monitoring and dissemination.
- Performed hydrological analysis and flood modeling using real-time and historical data from the 2003, 2004, and 2005 flood events.
- Led the development, testing, and validation of the system in field environments, ensuring usability and effectiveness at the community level.
- Integrated spatial datasets with flood forecasts and water level observations to generate localized flood alerts.
- Supported implementation and capacity building in the pilot area to promote sustained use of the system.

Name of assignment or project: Environmental Monitoring Information Network.

Month and Year: 2003-2007

Location: Bangladesh

Client: WARPO

Project Overview: The EMIN project aimed to strengthen national capacity for environmental monitoring through the development of tools and systems for flood forecasting, remote sensing analysis, and hydrological modelling. It supported multi-agency data integration and decision-making for disaster risk reduction and environmental management.

Positions held: GIS Specialist

Activities performed:

- Designed and developed 'NATSURF', a GIS and remote sensing-based software for national-level flood forecasting, tailored for integration into the Environmental Monitoring Information Network.
- Supported hydrological and floodplain analysis by providing technical assistance to various units within CEGIS, including satellite image classification and interpretation.
- Led the development of spatial databases, GIS tools, and analysis procedures, facilitating informed decision-making and environmental planning.
- Contributed to the integration of remote sensing data and field information into the broader environmental monitoring framework.

Name of assignment or project: Coastal Embankment Rehabilitation Project (CERP)

Month and Year: Jan 2001 to Apr 2003

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB), Ministry of Water resources.

Main Project features: The project aimed to rehabilitate and strengthen 21 coastal polders to improve flood protection, drainage, and community resilience in the coastal regions of Bangladesh. A key component involved the development of a comprehensive Management Information System (MIS) and GIS-based decision support tools for planning, monitoring, and managing infrastructure and social development activities.

Positions held: Senior MIS/GIS Computer Specialist

Activities performed:

- Designed and developed a Management Information System (MIS) to monitor civil works related to embankments, hydraulic structures, afforestation, operations & maintenance, and social development activities across 21 polders.
- Carried out system analysis, software development, and database design, ensuring comprehensive data management and reporting capabilities.
- Led advanced GIS mapping, including drainage catchment delineation and Digital Elevation Model (DEM) development, to support engineering and environmental planning.
- Introduced a multimedia database system for visual monitoring of polder infrastructure, enhancing transparency and project control.
- Supported the Team Leader in overall project management, utilizing tools such as Logical Framework Analysis (Log-Frame) and Microsoft Project for scheduling and progress tracking.

Name of assignment or project: Second Coastal Embankment Rehabilitation Project (2nd CERP)

Month and Year: Dec 2000 to Dec 2001

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB), Ministry of Water Resources.

Project Overview: This project focused on the feasibility study and planning for rehabilitation of coastal polders in Bangladesh. The objective was to establish a robust GIS system to support engineering design, environmental assessments, planning, and operations & maintenance activities, particularly for selected coastal polders.

Positions held: Senior GIS Specialist

Activities performed:

- Established a dedicated computer and GIS unit, equipped with advanced hardware and software, to support project-wide data processing and spatial analysis.
- Conducted water resources assessments for 139 coastal polders, including evaluation of the condition and functionality of hydraulic structures.
- Designed and implemented systems for both numeric and spatial data acquisition, and developed custom computer programs to streamline data entry and processing.
- Created Digital Elevation Models (DEMs) to delineate catchments and calculate area-elevation statistics, aiding in the hydraulic design of structures.
- Developed detailed base maps for coastal polders, incorporating updated geographical and engineering features derived from satellite imagery, Finnmap data, and field surveys.

Name of assignment or project: Northeast Regional Project (FAP-6)

Month and Year: Dec 1991- to Dec 1996

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB), FPCO, Ministry of Water Resources, Bangladesh

Project Overview: The Northeast Regional Project (NERP), under the Flood Action Plan (FAP-6), was a comprehensive study focusing on integrated water resources development in the northeastern haor region of Bangladesh. The project aimed to improve drainage, reduce flood risks, and enhance agricultural productivity through feasible water management interventions..

Positions held: Water Resources Planning Engineer

Activities performed:

- Conducted thematic studies on haor polders, analyzing hydrological behavior, seasonal flooding patterns, and existing water infrastructure conditions.
- Played a key role in the Feasibility Study of the Dampara Project, with responsibilities including:
    - Hydrological and hydraulic analyses using historical rainfall and flow data; Rainfall frequency analysis using Gumbel, Log-Pearson Type III, and Generalized Extreme Value (GEV) methods.
    - Planning of polder infrastructure such as embankments, regulators, and drainage canals;
    - Development of custom flood modeling software tailored to the haor region's characteristics. Performed flood routing simulations for both pre-monsoon and monsoon seasons, evaluating 16 alternative polder development options to optimize embankment heights and design sluice sizes for effective water management.
    - Preparation of a high-resolution Digital Elevation Model (DEM) to support flood simulations and infrastructure design.
- Actively contributed to strategic planning for sustainable floodplain management and agricultural development in the region.

Name of assignment or project: Dhaka City Subsidence Study & Emergency Water Supply Projects

Month and Year: Dec 1990- to July 1993

Location: Bangladesh

Client: Dhaka Water Supply and Sewerage Authority (DWASA), Under French–Bangladesh Protocol for Emergency Water Supply Project, Bangladesh

Project Overview: The projects aimed to assess the potential for land subsidence in Dhaka due to excessive groundwater extraction and to support emergency water supply planning and operations for the rapidly growing urban population.

Positions held: Assistant Groundwater Modeller.

Activities performed:

- Supported groundwater modelling efforts as part of the Dhaka City Subsidence Study, working under senior hydrogeologists and modelers.
- Assisted in data collection, validation, and processing of groundwater levels, pumping records, and soil

parameters.

- Contributed to the calibration and simulation of numerical groundwater flow models for evaluating aquifer behavior under different abstraction scenarios.
- Worked as Data Analyst in the Emergency Water Supply Project, supporting planning and operational analysis for safe and sustainable water supply during crisis periods.
- Assisted in preparing technical documentation and visualizations for model results and planning reports.

Name of assignment or project: Water Balance Modelling under National Water Sector Planning

Month and Year: May 1990 to Sept 1990

Location: Bangladesh

Client: Master Plan Organization (MPO), Ministry of Water Resources, Bangladesh

Project Overview: The project focused on developing a comprehensive water balance model to support long-term planning and management of Bangladesh's water resources.

Positions held: Junior Consultant.

Activities performed:

- Contributed to **water balance modelling** as part of the national water planning initiative under MPO.
- Assisted in data capture, cleaning, and pre-processing for hydrological and meteorological datasets used in model input.
- Supported data analysis and parameterization for **model calibration and verification**.
- Collaborated with senior engineers and planners in preparing intermediate outputs and visualizations.
- Gained foundational experience in integrated water resources assessment and planning tools.

Name of assignment or project: Flood Control and Drainage Project (FCD-III)

Month and Year: Aug 1987 to May 1990

Location: Bangladesh

Client: Bangladesh Water Development Board (BWDB), Ministry of Water Resources, Bangladesh

Project Overview: The project involved the hydraulic and structural design of various water management structures under the FCD-III initiative, aiming to improve flood control, drainage, and irrigation infrastructure across multiple sites in Bangladesh.

Positions held: Design Engineer.

Activities performed:

- Conducted hydraulic design of SAILGACFH Drainage cum Flushing Regulator (2 vents).
- Performed hydraulic and structural design of:
- KHUDIANGA Flushing Sluice (1 vent)
- PANTHAKATA Flushing Sluice (1 vent)
- Completed hydraulic design and partial structural design of BARADHAR Drainage Regulator (6 vents).
- Executed structural design of SMREEMATKHALI Drainage Regulator (12 vents).
- Completed hydraulic and structural design of SREENAGAR Flushing Inlet.
- Designed three Cross Regulators cum Road Bridges (complete hydraulic and structural components).

- Designed flood protection wall along the right bank of the Little Jamuna River for safeguarding Naogaon Town.
- Developed software for flood routing, hydraulic and structural designs of Sluice gate, Regulation and Flood Wall.

11. Computer and Modelling Skills

Water Modelling:	MIKE 11, HYMOS, HEC-HMS, HEC-RAS1, HEC-RAS2
GIS and RS:	ArcGIS Advance, AutoCAD, TNT Mips, QGIS,
Database:	Oracle, PostgreSQL, PostGIS, MySQL, MongoDB, MS-SQL Server
GIS Server:	ArcGIS Enterprise Server, Geoserver
Web server:	IIS, Nginx, Apache
Programming:	Python, Django, C# in ASP.NET, PHP with Laravel Framework, NodeJS with Next JS framework, Java, Java Script, Open layers, HTML, CSS

CERTIFICATION

I, the undersigned, certify that (i) I was not a former employee of the Client immediately before submission of this proposal, and (ii) I have not offered my CV to be proposed by a Firm other than this Consultant for this assignment and, (iii) to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I also understand that any willful mis-statement described herein may lead to my disqualification or dismissal, if engaged.

I have been employed by **Institute of Water Modelling (IWM)** continuously for the last twelve (12) months as regular full-time staff. Indicate “Yes” or “No” in the boxes below.

YES [√] **NO** [ ]

Signature	
Date of Signing	23/ 01/ 2025 Day/ Month/ Year