



TA-6539 REG: Investing in Climate Change Adaptation through Agro-ecological Landscape Restoration: A Nature-Based Solution for Climate Resilience - Climate Change Risk and Adaptation/Restoration Option Assessment in Bangladesh

Webinar on Agroecological Landscape Restoration

Developing a Watershed Management Information System in Bangladesh

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Goals of the WMIS

Addressing the prevalent data scarcity and fragmentation in the Chittagong Hill Tracts (CHT) is a foundational goal of the WMIS.



Informed Policy Decisions

Facilitate evidence-based integrated CHT watershed management by providing real-time data and analytical insights to policymakers and stakeholders.



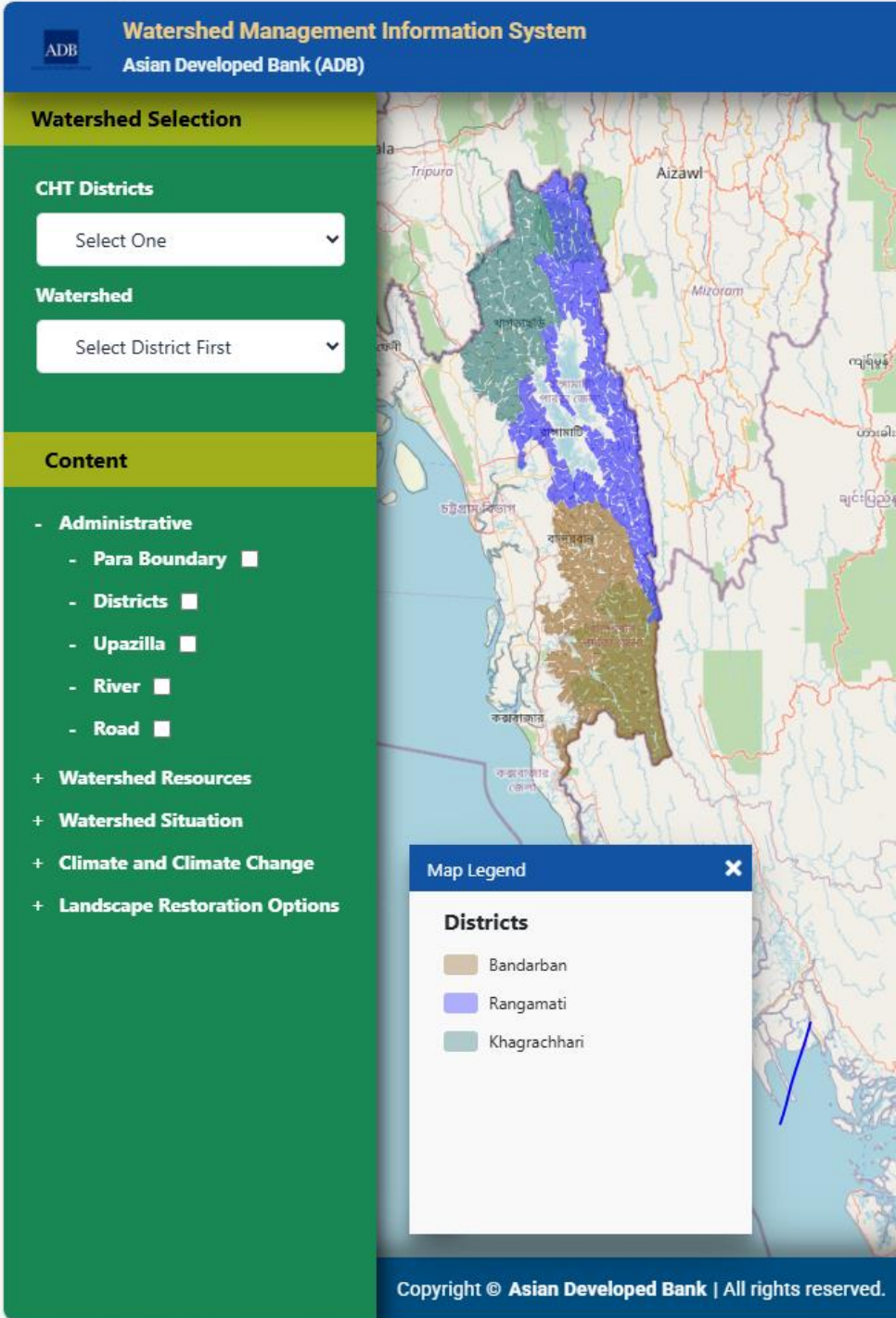
Agro-Ecological Restoration

Promote Nature-Based Solutions (NbS) and landscape restoration techniques for climate change adaptation and long-term ecological health.



Improved Livelihoods & Resilience

Build climate resilience and enhance sustainable livelihood opportunities for indigenous communities residing within the critical watershed areas.



Scale of Intervention in CHT

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Watersheds

The system covers and monitors crucial ecological zones across the Chittagong Hill Tracts region.

180+

Beneficiary Para (Villages)

Direct intervention in over 180 villages ensures grassroots level impact and adaptation.

45,000+

Total Population

The project aims to improve the quality of life and resilience for over forty-five thousand people.



Training Modules

Structured programmes to educate local staff and community representatives on system use and data interpretation.



Data Collection Tools

Providing simple, mobile-friendly tools for field agents to gather accurate and timely data from the ground.



Demonstration Activities

Hands-on sessions showcasing the effectiveness of Nature-Based Solutions and agro-forestry best practices.

Key Components of the WMIS

The WMIS offers three primary functional areas, providing users with comprehensive tools for data visualization, monitoring, and knowledge access.



Information Mapping

- **Map Viewer:** Interactive platform for viewing and analysing diverse geospatial data layers.
- **Map Gallery:** Curated repository of pre-generated maps, reports, and visualisations for quick access.



Watershed Monitoring

- **Health Tracking:** Metrics and dashboards for assessing overall Watershed Health (e.g., water quality, soil stability).
- **Resilience Indicators:** Monitoring framework to track progress on Climate Resilience and vulnerability reduction.



Reporting & Knowledge

- **Factsheets:** Concise summaries of key data, performance, and project outcomes.
- **Reports:** Comprehensive technical and analytical documents accessible on demand.
- **News and Event:** Reports on the events, workshops and training

The system uses advanced GIS technology to integrate environmental, socio-economic, and climate data.



Data collection and Digitization Panel

This panel enable the user to collect and digitize the field level data using mobile phone or tabs

Information Mapping

ADB

Watershed Management Information System

Asian Developed Bank (ADB)

Home

Map View

Contact

About

Watershed Selection

CHT Districts

Rangamati

Watershed

Ghilachari (R114)

Content

+ Administrative

+ Watershed Resources

+ Watershed Situation

+ Climate and Climate Change

+ Landscape Restoration Options

●

Administrative

- Para Boundary
- Districts (Sub-National)
- Upazila (Sub-District)
- River
- Road

●

Climate & Climate Change

- Climate Risk Assessment
- Climate Induced Hazards
- Climatic Condition

●

Watershed Resources

- **Social** (Population, Income, Expense, Education, Literacy)
- **Natural** (Soil, Slope, Landuse, Topography)
- **Economic** (Agriculture, Fisheries, Livestock, Forestry, Agroforestry, Agroforestry Business)

●

Landscape Restoration Option

- Proposed Interventions

●

Watershed Situation

- **Water Availability** (Dry Season and Monsoon)
- **Soil Erosion Risk**
- **Water Quality**
- **Soil Quality**
- **Forest Degradation**

●

Map Gallery

- Basemap and Topography
- Landuse
- Hazard
- Climate Change Risk
- Socio-economic

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Population

Map Legend

Total Population (No.)

< 200

200 to 367

368 to 533

534 to 700

> 700

Income

Map Legend

Avg Daily Wage (Female) (Taka 800)

< 300

300 to 330

331 to 360

361 to 390

> 390

Expense

Map Legend

Household Expense (11K to 15K) (No.)

< 10

10 to 20

21 to 30

31 to 40

> 40

Education

Map Legend

Primary School (No.)

0

1

2

3

4

Literacy

Map Legend

Total Literacy (Pop. No.)

< 50

50 to 120

121 to 190

191 to 250

> 250

Economic Condition

Map Legend

Average Livestock Production Cost

< 90000

91000 to 100000

101000 to 110000

111000 to 120000

> 120000

Map Legend

Ghilachari

Punarbashan Para

Nua Adam Para

Dajiyachhari Para

Maischhari Para

Dakkhin Hatimara Para

Dakkhin Paschim

Krishnamachhara Para

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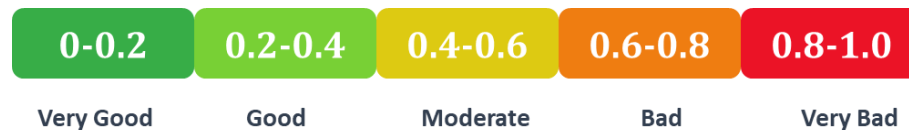
Watershed Monitoring

2 comprehensive monitoring matrices

1) Watershed Health 2) Climate Resilience

- **Result-based monitoring** matrices
- **SMART** (specific, measurable, achievable, relevant and time bound) indicators
- Principles of '**Theory of Change**'
- **Web-based and dynamic**

Composite Rating for Tracking



Watershed Health Tracker

Components

- Soil and Land
- Water
- Local Climate
- Forestry/Agro-forestry
- Ecosystem & Biodiversity

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Climate Resilience Tracker

Components

- Socio-economic Development
- Social Inequality
- Hazard Impact Reduction & Recovery
- Food & Nutrition Security
- Water Resources
- Ecosystem and Biodiversity
- Education and Awareness

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Watershed Monitoring

HomeMap ViewerWatershed MonitoringMajor ComponentsCapacity Building

Climate Resilience

Select a WatershedGhilachari

Overall StatusComponent Wise Status

Overall Status Of Gilachhari (R-114)

» Number of Para: 15

» Area: 1897 ha

» Total Population: 5034

» Male: 2490

» Female: 2544

» Number of Household: 1168

» Number of Community: 3 (Chakma, Marma & Tripura)

Watershed Health Standardized Rating

0-0.20.2-0.40.4-0.60.6-0.80.8-1.0

Very GoodGoodModerateBadVery Bad

Current Status (0.5)

Currently, standardized rating is reflecting 'Bad' condition of Gilachhari watershed in terms of watershed he

HomeMap ViewerWatershed MonitoringMajor ComponentsCapacity BuildingAbout CRLIWM-CHTSign In

Climate Resilience

Select a WatershedGhilachari

Overall StatusComponent Wise Status

Component Wise Status

Socioeconomic

Hazard Impact

Agro forestry and Food Security

Water Resources

Ecosystem and biodiversity

Education and Awareness

Average income of household

List of Parameters

Average monthly income of household (BDT)

Household expenditure- income ratio

Literacy rate

Gender and Social inclusion

People living under poverty line

Health and medication expense reduction

Climate Resilience Monitoring

60k50k40k30k20k10k

Target

202520302035204020452050

Year

12,95017,50025,00035,00050,000

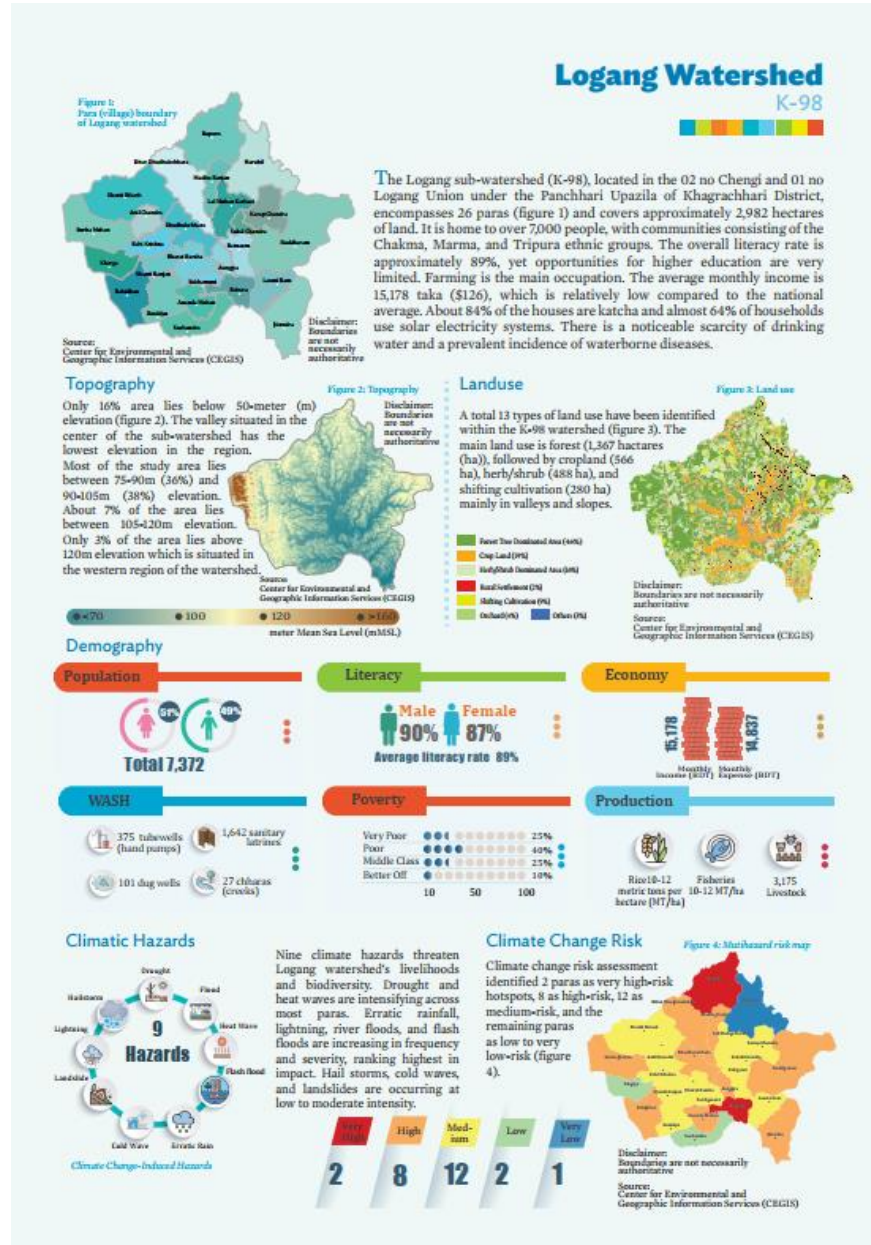
BaselineTarget

Highcharts.com

		Target			
Unit	Baseline (2024)	2030	2035	2041	2050
BDT	12950	17500	25000	35000	50000

Watershed Factsheet

- Topography
- Landuse
- Demography
- Climatic Hazards
- Climate Change Risk
- Watershed Degradation
- Watershed Conservation
- Watershed Management
- Infrastructure



Watershed Degradation

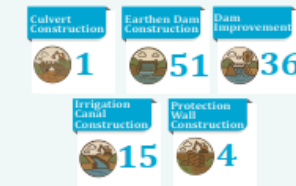


Watershed Conservation

Conservation measures focused on enhancing ecological resilience as well as improving livelihood quality of the local community were identified and categorized into 6 classes.



Watershed Management Infrastructures



Watershed conservation interventions in Logang include dam construction (46) and dam improvement (36) being the most implemented, followed by irrigation canal construction (15), aimed at enhancing water storage and distribution. In addition to these, other watershed conservation measures have been identified to further boost water availability, agricultural productivity, and overall ecosystem health. Measures such as check dam construction, culvert construction, and protection wall construction will help control runoff, reduce soil erosion, and protect critical infrastructure. Together, these interventions will significantly benefit the local community by ensuring year-round water access, improving crop yields, and reducing vulnerability to climate-induced hazards. These integrated efforts promote sustainable livelihoods and strengthen resilience in the Logang region.

Data Digitization Platform



Enhanced Operational Efficiency

- Centralized and structured survey forms drastically **reduced manual data entry time**.
- Minimized errors at the source



Superior Data Integrity

- Built-in validation rules and **automated error checking**.
- Mandatory manual review steps.



Real-time Access and Intervention

- Provided **instant, on-demand data visualizations**.
- Enabled targeted interventions and **faster, evidence-based decision-making** in the field.



Streamlined Project Operations

- Automated **reporting and monitoring** processes.

Visualising Progress: The CEGIS Dashboard

**Para Wise
Information Entry**

**VCF Wise
Information Entry**

**LULC and Landscape
Degradation Entry**

**Water Quality Test
Data Entry**

**Soil Test
Data Entry**

**Business Model and
Value Chain Entry**

Thank You

