India International Water Week 2026

24 September 2026: Session 1- Data Driven Governance

WATER INFORMATICS AND CLIMATE RESILIENT GROWTH

GOVERNMENT OF ASSAM'S JOURNEY ENABLED BY DATA AND COLLABORATIVE GOVERNANCE

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Why Data and Governance are critical: Assam's Context

1. Assam's Challenges and Opportunities are driven by abundance of water.

~2500-2800 mm

Average Annual Rainfall

Rainy Season

March to October: 7-8 Months

~6 km

Average width of Brahmaputra River

(Max 18-20 km)

~5 Lakh Metric Tonnes

Annual Fish Production

~40%

of State area is flood-prone

~11%

of geographical area is under waterbodies

~8,000 ha

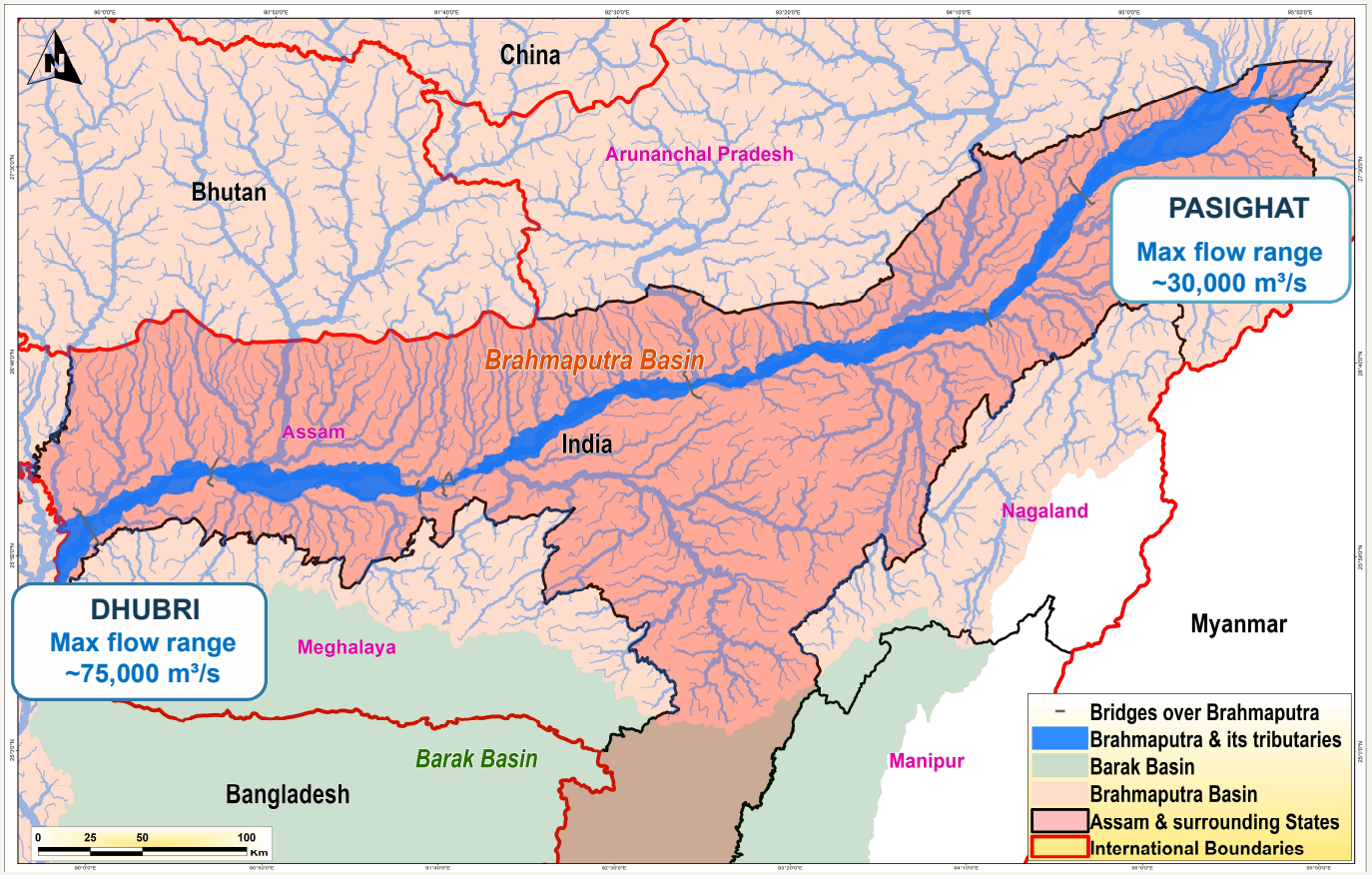
Average annual land loss to erosion;

~4500 km

Navigable length across tributaries

WATER DATA IS THE CRITICAL OPERATIONAL INFRASTRUCTURE

Why Data and Governance are critical: Assam's Context



2. Assam is where the Brahmaputra Basin comes together.

A dense tributary network concentrates basin-wide runoff, flood peaks and sediment within the State-

All of these mainly generated outside Assam

Assam's resilience depends on basin-scale monitoring, upstream information, data sharing and coordinated governance.

WRD Assam: From flood control works to integrated risk management

SINCE THE FOUNDATION (1950s)- Infrastructural Strength Built

>5,000 km
embankments

1,430 Nos
town protection / anti-erosion works

691 Nos
sluices

909 km
drainage channels

RECENT SHIFT

Modern river works

- Emergency Response and Adaptive erosion protection
- Geotextiles
- Reach-based approach

World Bank: AIRBMP

- Tributary sub-basins approach
- Forecasting + early warning
- Institutions + community resilience

ADB: CRBIFRERM

- Brahmaputra mainstem
- Structural + non-structural measures
- Livelihood resilience

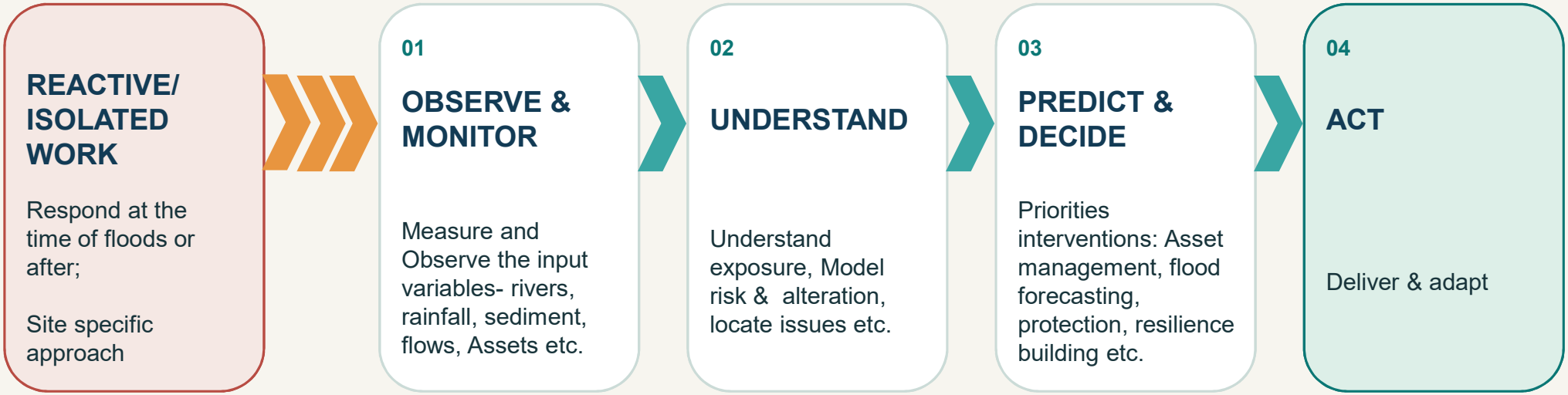
System strengthening

- Hydro-informatics Unit
- Asset management
- Design guideline upgrade

From Data User >> Data Producer >> Data Anchor

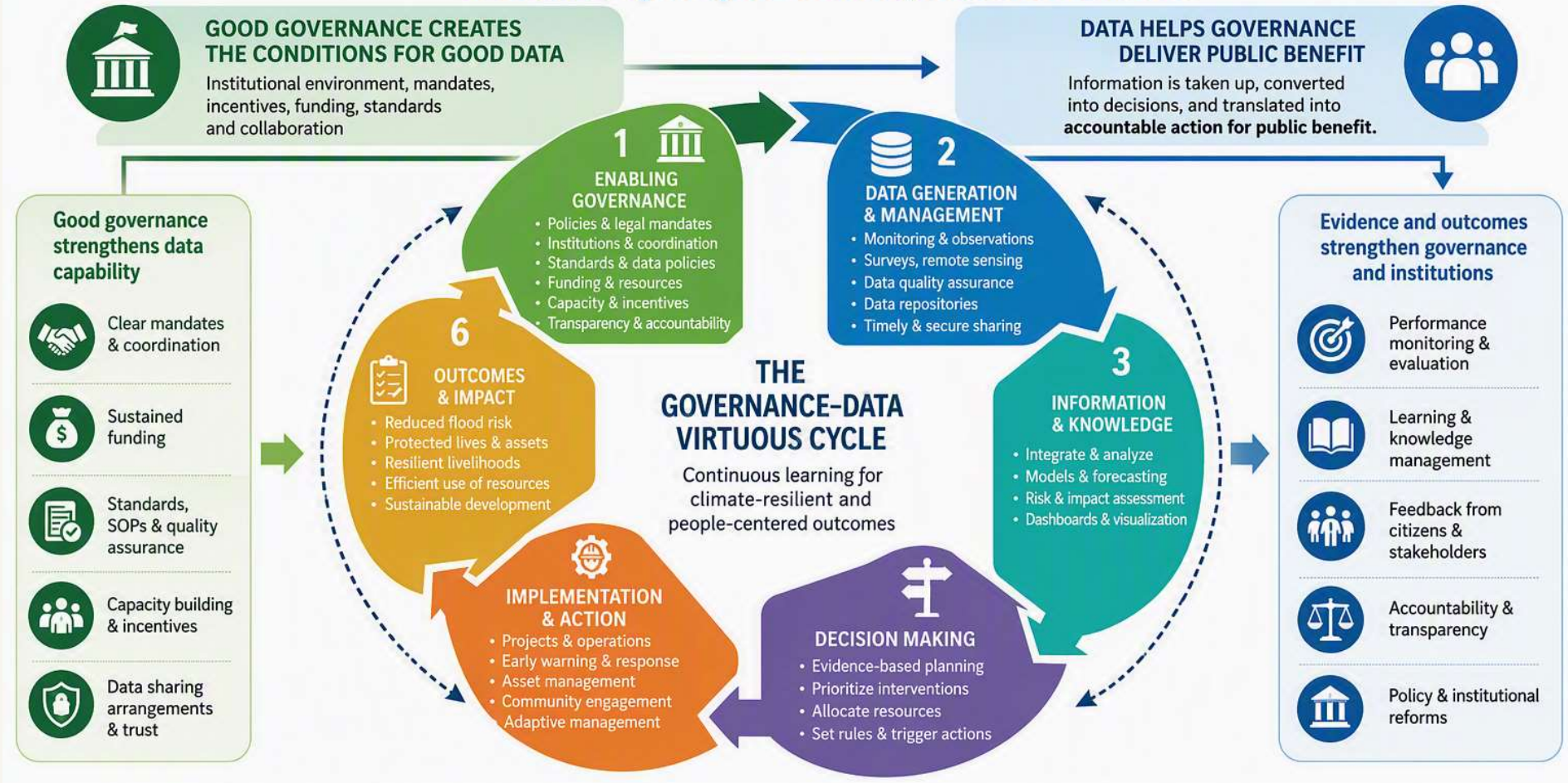
A transformation journey enabled by data

Assam is moving from isolated works toward integrated risk management.



FROM GOOD GOVERNANCE TO BETTER OUTCOMES AND BACK

A Virtuous Cycle of Governance, Data and Decisions



Hydro-Informatics Unit (HIU)- *Smarter Data. Safer Assam.*

HYDRO INFORMATICS UNIT
Building Climate Resilience

The nerve center for water intelligence in Assam

Established on 15th June 2023 (Cabinet Approval)



Flood Forecasting



Integrated Basin Level Planning



Survey and Data Collection



Water Resources Asset Management System

Noteworthy aspects about HIU

1. Developing a Flood Forecasting Systems
2. Mainstreaming Survey and Data Collection
3. Data-driven methods and scientific approaches to aid in decision-making

HIU — Assam's Data-to-Decision Team

A multidisciplinary team : Six areas of expertise working together as one integrated unit.

HYDRO INFORMATICS UNIT
Building Climate Resilience

MULTIDISCIPLINARY TEAM

RS & GIS
Satellite, mapping & spatial information

Atmospheric Science
Rainfall & weather information

RTDAS /Surveys Instrumentation
River & field measurements

IT + Web-GIS
Digital platforms & dashboards

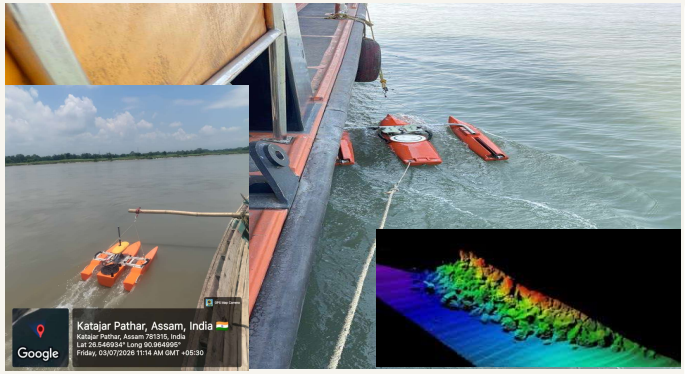
Database Engineering
Organized, accessible information

River Modelling
Flood forecasts & river behaviour

WHAT THE TEAM DELIVERS

- Real-time monitoring
- Survey & data systems
- Flood forecasting
- Asset Management
- Decision dashboards
- Flood Risk Management Plans

Focus: Mainstreaming of In-house Surveys



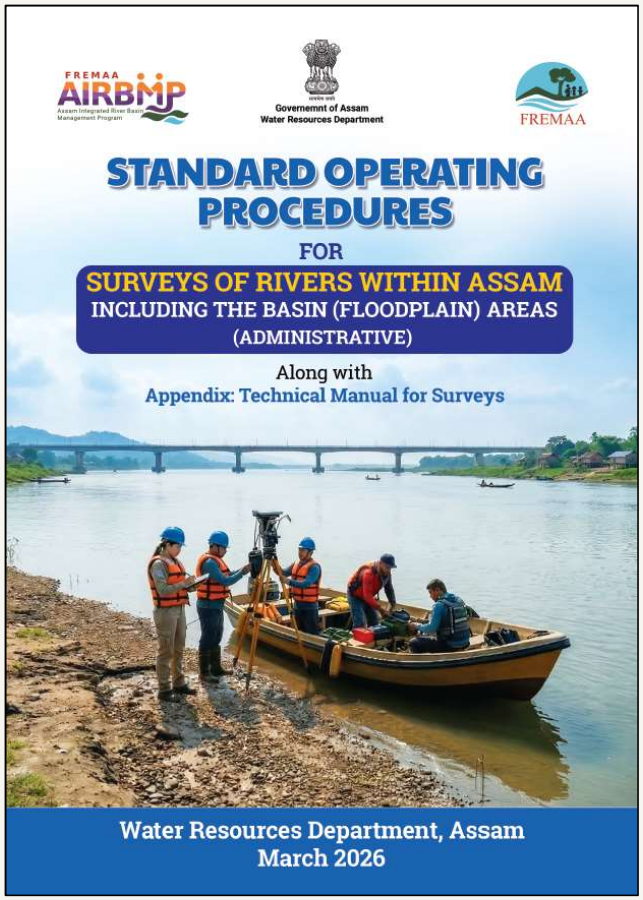
Multibeam sensor deployed from survey vessel



HIU field survey team on the Brahmaputra

Key Uses of Survey Data

- DPR Preparation
- River-bed Monitoring
- Monitoring Execution of Civil Works
- Infrastructural Planning & Design
- Corrective & Supportive Dredging
- Modelling Support



Learning: In-house Survey Capabilities and Institutionalizing Surveys are key to long-term decision support

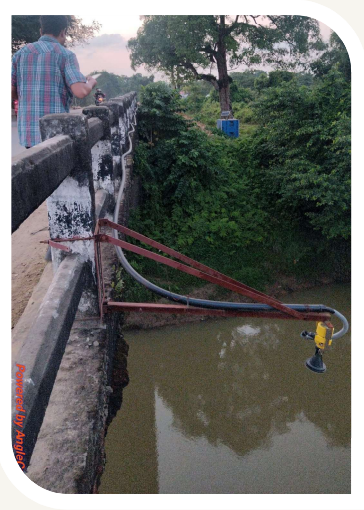
RTDAS & Monitoring Dashboard: Real-Time Eyes on Assam's Rivers

REAL TIME DATA COLLECTION

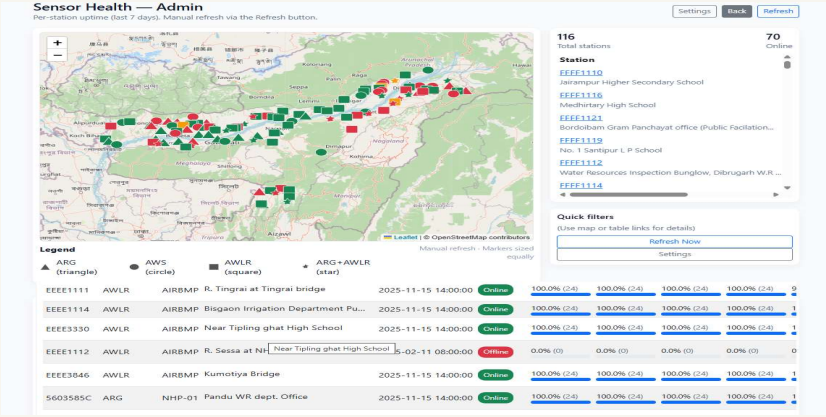
116 RTDAS Sites have been installed under NHP and AIRBMP

- Cabinet has approved **Guidelines for Installation and Maintenance of RTDAS.**
- HIU is planning to convert 100 manual gauges to Automated Systems.
- HIU is a lead agency for **State Water Informatics Centre (SWIC) Assam** - a state unit of NWIC under NHP.
- **In-house dashboard developed for real-time data monitoring**, quality checks, anomaly detection and station health checks





Automated gauge station in the field



Live sensor health monitoring dashboard

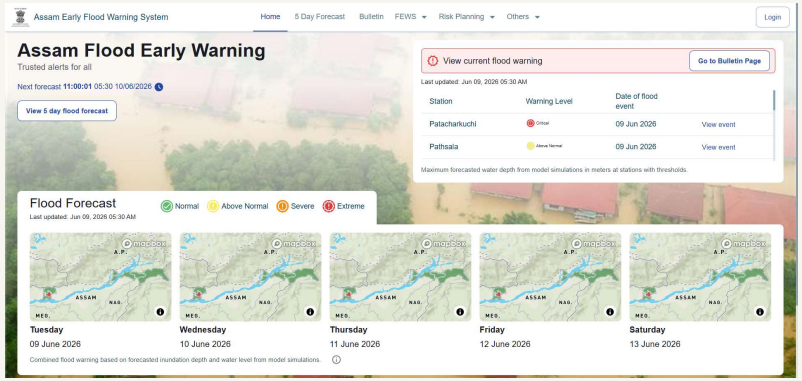
Flood Forecasting & IFRMP : From Data to Decis

HIU is building an integrated operational Flood Early Warning & Decision Support System

3
Basins (Pilot)
Beki • Buridehing • Jiadhal

10+
More Sub-basins
Across Brahmaputra by 2030

Mainstem
Brahmaputra
Forecasting system in development



Assam Flood Early Warning System portal

REAL-TIME DATA
RTDAS + Gauges
Weather + Satellite

Delft-FEWS
Data QC • workflows
• Model orchestration

FORECAST and PLANNING MODELS
Hydrology • Hydraulics
• Inundation

DECISION SUPPORT
Forecasts • Maps
Bulletins • Alerts
• Investment Plans

Designed for multi-basin expansion across Assam and progressively village-level early warning and state level planning and floodplain zoning support.

Water Resources Asset Management System: From asset registers → to planned maintenance

Key Features

A. ASSET MANAGEMENT / GOVERNANCE PLAN

i. INFRASTRUCTURE RISK RANKING AND PRIORITIZATION FRAMEWORK

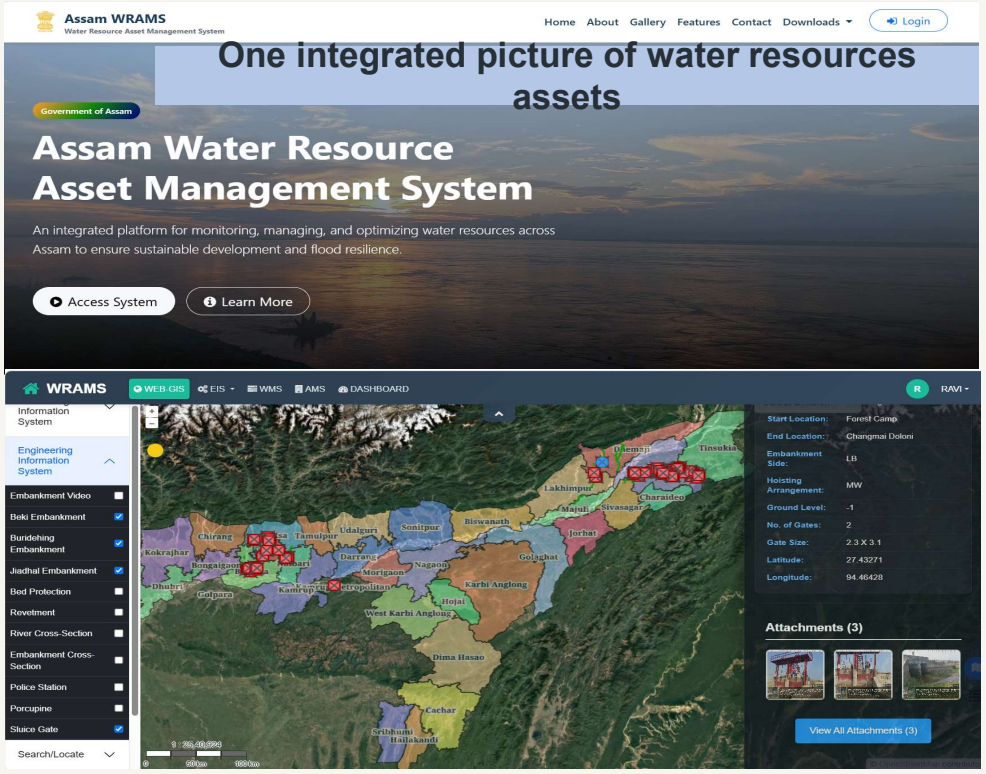
ii. WORKFLOWS, ADMINISTRATION

iii. LIFE-CYCLE COST ANALYSIS FOR INVESTMENT PLANNING

B. DATA, INTELLIGENCE & DECISION SUPPORT

1. ASSET CONDITIONS
2. REAL-TIME WATER LEVEL WARNINGS
3. EROSION / MORPHOLOGICAL PREDICTIONS
4. FEWS FORECASTS

International best Practice



Asset mapping dashboard

FROM DATA TO PUBLIC VALUE
Water:- Multi-Sectoral Challenge

INSTITUTIONAL COLLABORATION

Mandate • cross-department coordination • data sharing • accountability • evidence-based approvals

The enabling bridge that converts technical information into collective decisions and implementable action

WITHOUT THE BRIDGE	**Information remains underused or fragmented**
WITH THE BRIDGE	**Evidence informs action that improves public safety, societal resilience, livelihoods and sustainable development**

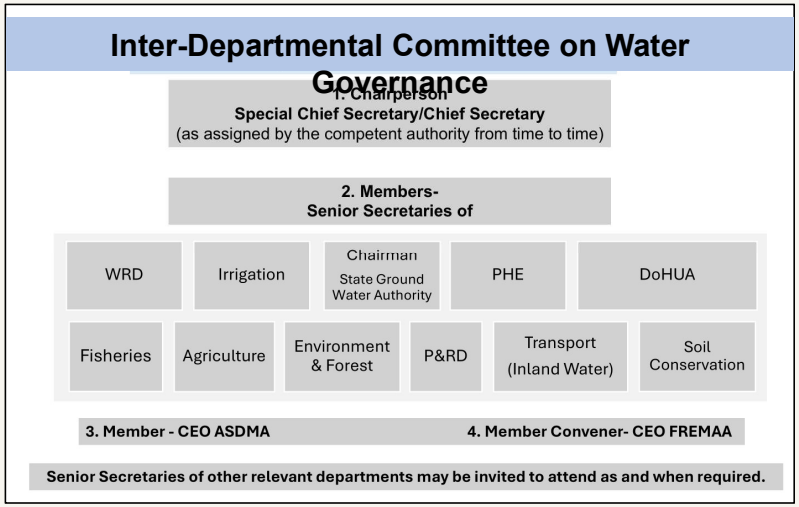
NATIONAL WATER DATA POLICY 2026

CHAPTER 5

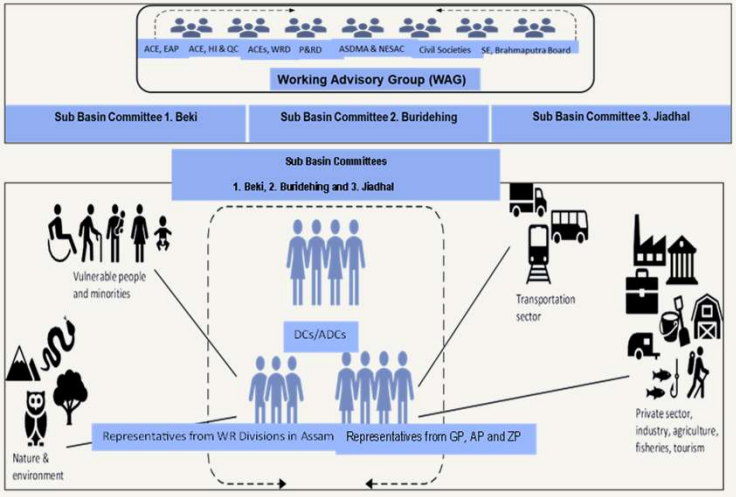
ENSURE WATER DATA IS USED

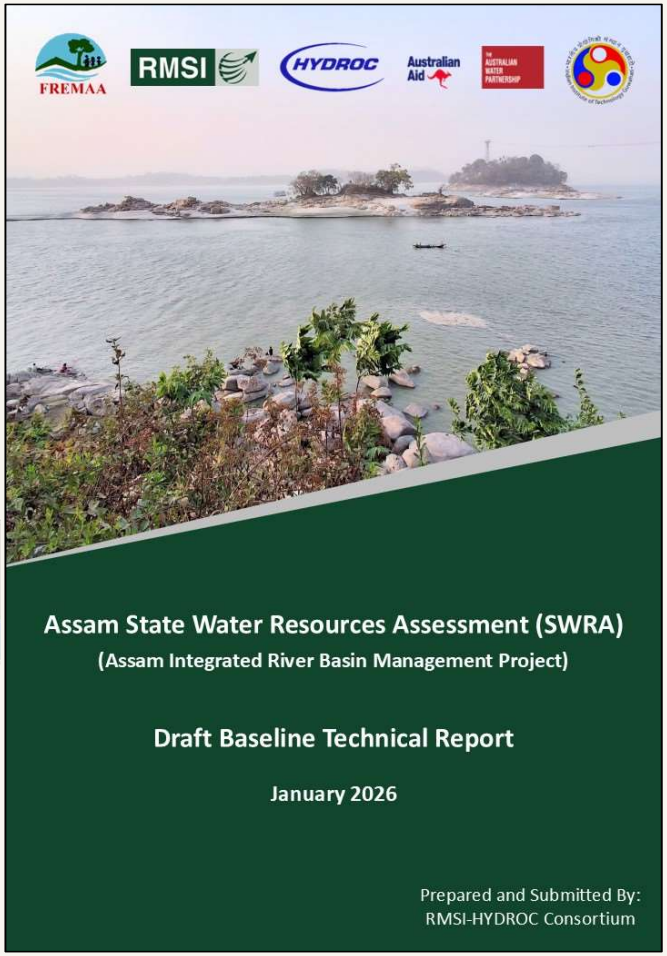
Water Data helps governance when information is taken up across sectors, converted into decisions, and translated into accountable Joint/Integrated Action for public benefit.

KEY INSTITUTIONAL REFORMS AND COLLABORATIONS



HIU-SWIC





KEY INSTITUTIONAL COLLABORATIONS

Master Program at IIT Guwahati

Online MTech Degree Programme

Flood and Water Resources Management

Curated for the Engineers of Water Resources Department of Assam

Offered by

Department of Civil Engineering, IIT Guwahati







WRD-NESAC Collaborations



WRD-Brahmaputra Board

Status: Foundation established, transformation ongoing

Assam has moved decisively. The next phase is to mainstream evidence in everyday governance.

WHAT IS IN PLACE

- ✓ HIU institutional capability
- ✓ Monitoring and survey systems
- ✓ Forecasting pilots and roadmap
- ✓ Asset Surveys, Management and Dashboards
- ✓ Base: SWRA, Survey SOP
- ✓ Interdepartmental governance mechanism

WHATS BEING TARGETTED

- → Close spatial and upstream data gaps
- → Sustain QC, repositories and maintenance
- → Make sharing routine, timely and secure
- → Link evidence to appraisal and budgets
- → Track when decisions diverge from evidence
- → Build regional and basin-level partnerships

The measure of success is not how much data is generated, but how consistently data improves decisions and resilience outcomes.

DATA GOVERNANCE CHALLENGES OF THE UPCOMING ERA

Digital makes data easy to share, but brings new governance risks.

OPPORTUNITY: DIGITAL ADVANTAGE

- Collect data from many sources
- Store and process large volumes
- Share and access data faster
- Generate insights for better decisions

CHALLENGES: RISKS WE MUST MANAGE

- Risk of over-collection and information overload
- Growing storage needs, long-term retention and data lifecycle
- Data security, privacy and cyber threats
- Dependence on foreign servers, systems and software
- Interoperability, standards and data quality

Thank you !