



SAHF IBF WG IMPLEMENTATION PLAN PROJECT

REGIONAL WORKSHOP ON IMPACT-BASED FORECASTING (IBF)

Heat Season Review & Cold Season Planning

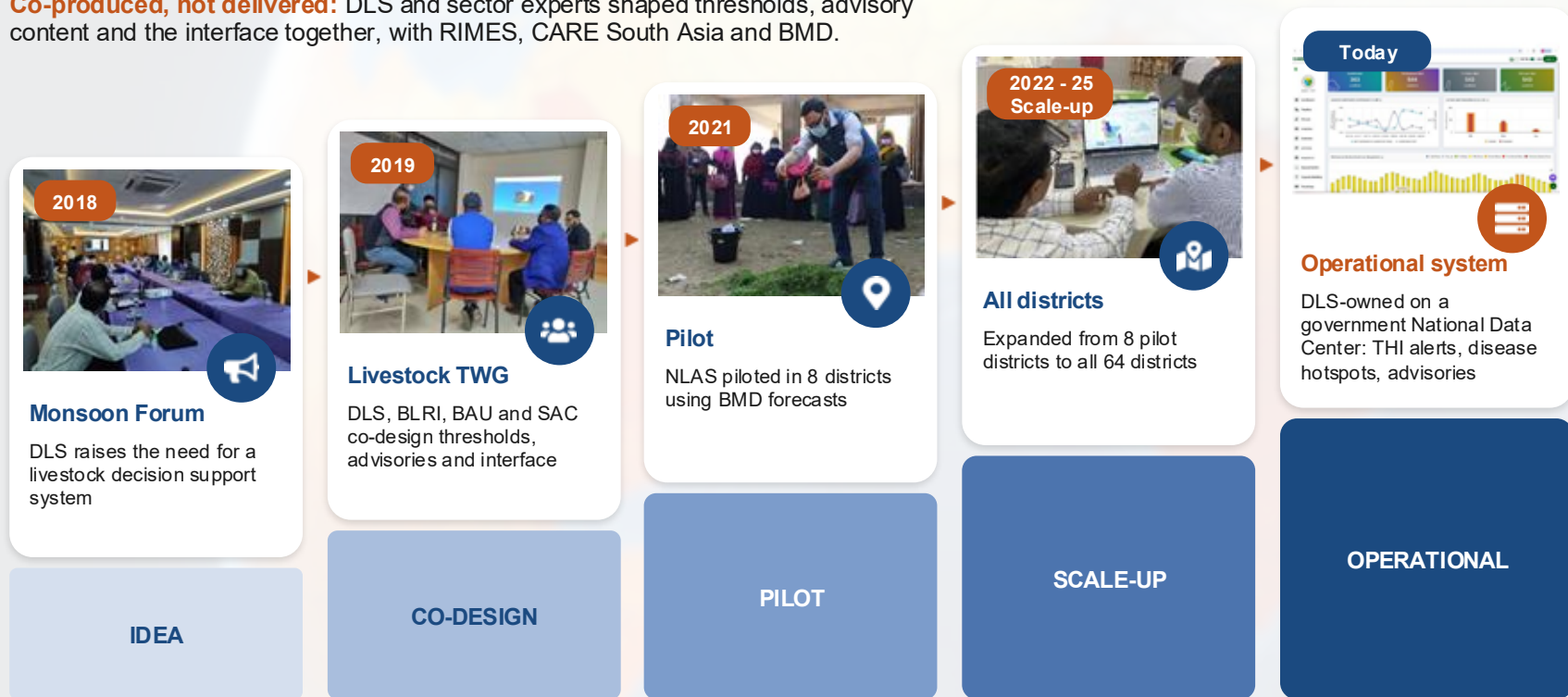
29 September - 01 October 2026 | Bangkok, Thailand



National Livestock Advisory System (NLAS) Bangladesh

How NLAS came to life, 2018 to today

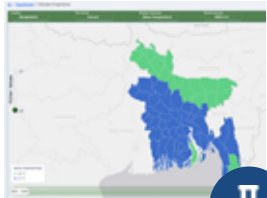
Co-produced, not delivered: DLS and sector experts shaped thresholds, advisory content and the interface together, with RIMES, CARE South Asia and BMD.



NLAS: more than a decision support system

The **DSS is the foundation**; research, capacity building and farmer outreach turn it into action on the ground.

Livestock early warning that farmers act on



Research

THI thresholds, FMD risk maps, climate risk indices and impact assessments



Capacity building

100+ DLS officials trained at national and field levels, including ToT and admin users



Reaching farmers

Bulletins, voice alerts, mobile app, AI chatbot and Bangla leaflets



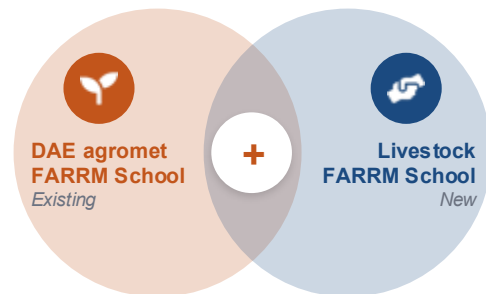
Foundation: NLAS decision support system

Forecasts, THI alerts, disease hotspots, advisories and bulletins

FUTURE PLAN

Integrated FARRM School

Forecast Application for Risk and Resource Management



One school, one forecast

Farmers learn to act on the same forecast for crops and livestock, building on the Livestock FARRM School pilot



NLAS as a Training Case: Co-Producing a Sector DSS Tool

Dr. A.K.M Rakibul Hasan

Upazila Livestock Officer (Leave, Deputation and Training Reserve Post)
Department of Livestock Services, Bangladesh

OUTLINE

01

Background and Context

Climate risk, hazards and losses in the livestock sector

02

National Livestock Advisory System

Co-production journey, modules and heat-stress alert design

03

Advisories in Action and Impact Evidence

Bulletins, dissemination, capacity building, FARRM School results

04

Lessons Learned and Way Forward

Challenges, DLS initiatives and future scope

**Heat Season Review
& Cold Season
Planning
Regional Workshop
29 Sep - 01 Oct 2026**

Why a livestock decision support system?

1.81%

of national GDP;
16.54% of
agricultural GDP

20% | 50%

direct livelihoods |
partial employment

**>3,000
/km²**

livestock density vs
a world average of
29 /km²

2018

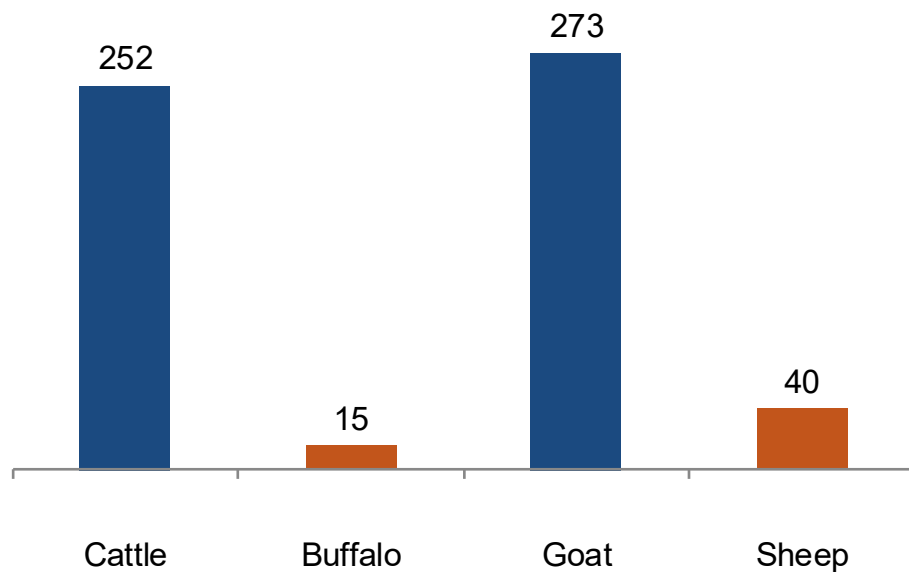
DLS raises the
need for a livestock
DSS at the
Monsoon Forum

Livestock is not "less vulnerable because it can move".

Floods, cyclones, extreme heat, heavy rainfall and high winds raise mortality and cut milk, meat and egg output. Weather variables such as temperature, rainfall and humidity directly shape cattle and poultry productivity, so timely climate services are essential to minimise losses.

Livestock and poultry population

Ruminant population (lakh)



33.61 crore

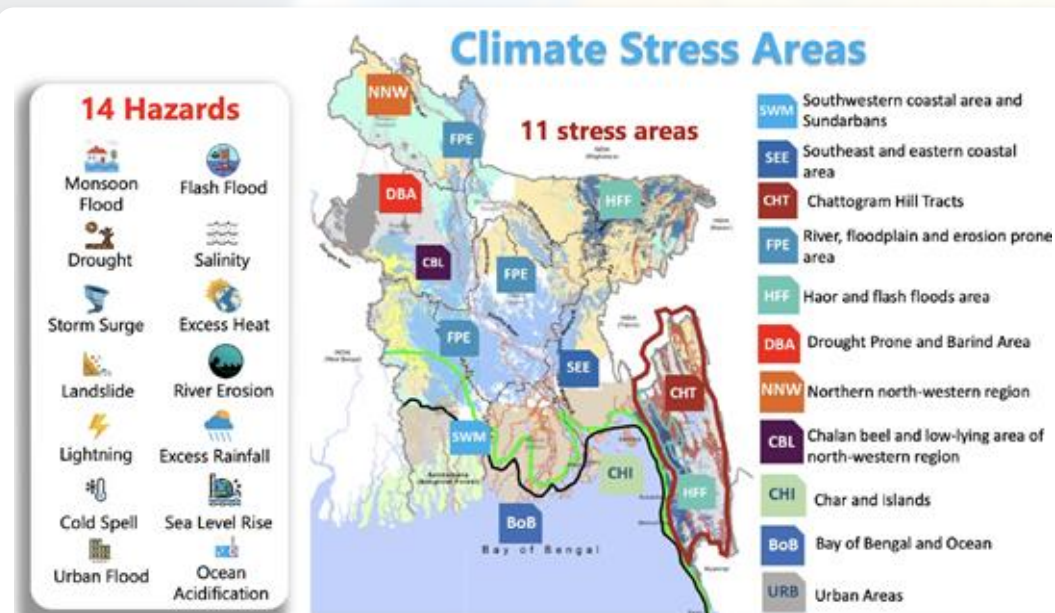
poultry

7.06 crore

ducks

Highest livestock density in the world.
Source: Livestock Economy, MOFL

14 hazards and 11 climate stress areas



Climate stress areas of Bangladesh

14 hazards

Monsoon flood, flash flood, drought, salinity, storm surge, excess heat, landslide, river erosion, lightning, excess rainfall, cold spell, sea level rise, urban flood, ocean acidification

11 stress areas

SW coast and Sundarbans; SE coast; Chattogram Hill Tracts; river and floodplain; haor and flash flood; drought and Barind; northern north-west; Chalan beel; char and islands; Bay of Bengal; urban areas

How climate change hits livestock

Heat stress

Poultry mass mortality within 2-4 hours of extreme heat

Production loss

Milk yield drops 15-40% in peak heat; eggs down 10-30%

Reproduction

Conception rates fall sharply in heat-stressed animals

Shed ruin

Floods and storms damage housing and infrastructure

Fodder loss

Pasture dries up; feed quality falls; price spikes

Vector-borne disease

Stress raises parasite burden and disease risk

Infectivity

Higher susceptibility: mastitis, FMD, lumpy skin disease

Carbon footprint

Emissions matter for trade, e.g. EU carbon border mechanism

Recent climate losses to the livestock sector

BDT 501.9 cr

2024 flood loss: 5 divisions, 16 districts, 88 upazilas, 455 unions

39,220

cattle and 32.05 lakh poultry died in the 2024 floods

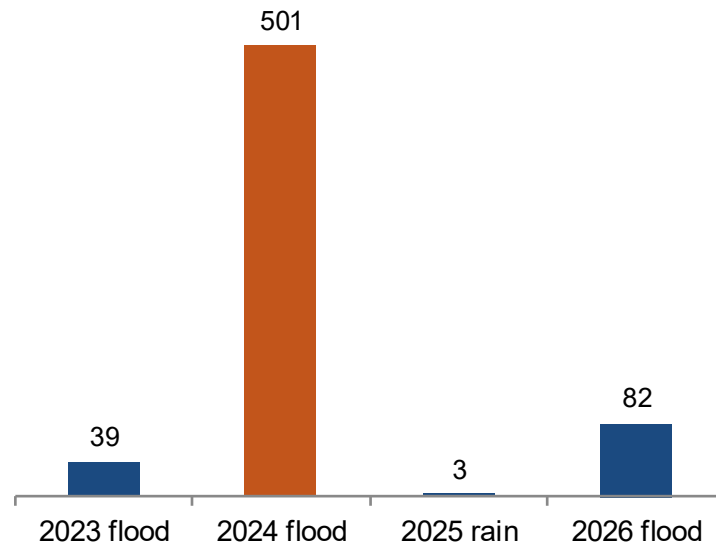
45,629

acres of fodder land lost; 5.29 lakh cattle affected

BDT 34.6 cr

2024 heatwave loss across 8 divisions

Total loss by event year (BDT crore)



NLAS: one platform from forecast to advisory



nlas.dls.gov.bd | dashboard with THI alerts by location

- Rainfall alerts and THI alerts for ruminants, broilers and layers (544 / 543 / 543 locations)
- Weather, climate data, analytics, statistics
- Advisories, adaptation, special bulletins
- Bilingual web and mobile app with an AI chatbot
- Hosted on a government National Data Center

A decision support tool that helps DLS make informed livestock decisions from weather and climate information

NLAS modules at a glance

Dashboard

Alerts, GDP, demand and production, THI maps

Weather

Weekly and 3-hourly forecasts, alerts, bias correction

Climate data

Climatology, projections, outlook, risk indicators

Analytics

Disease analytics and FMD risk maps

Statistics

Livestock population, production, gender data

Advisory

Monthly advisories for 7 regions

Adaptation

Impacts, location plans, 25 national plans

Bulletins

Heat, cold and flood bulletins

Capacity building

Training events with gender comparison

Flood map

District flood risk from FFWC data

Policies & acts

Searchable livestock laws and policies

Vaccines & diseases

Vaccine and disease reference lists

Designing the heat-stress alert together

Livestock

Cow/buffalo, goat/lamb,
poultry/duck

Users

Backyard farmers, commercial
farms

Advisories

Shade, disease, fodder
management

Threshold	THI	RR, Breaths min ⁻¹
Normal	<74	<90
Alert	>74-<79	90-100
Danger	>79-<84	110-130
Emergency	>84	>130

Alert thresholds: THI with respiratory rate (breaths/min)

Ruminant THI

72-78 mild, 79-88 severe, 89-98 very severe
stress

Broiler THI

24-29 comfortable, 30-36 danger

Layer THI

22-28 comfortable, 29-36 danger

From forecast to advisory: the impact chain



Who does what: institutional roles and coordination

BMD

Forecast provider

- District-level heatwave outlook (7-day forecast)
- Heatwave alerts with impact thresholds shared with DLS
- THI-based guidance for livestock risk communication

DLS

Lead sector agency

- Farmer advisories through upazila livestock officers
- Emergency veterinary response during alerts
- Livestock loss reporting to DDM; coordinated recovery

DDM / DRRO

Coordination hub

- DLS included in district emergency response plans
- Multi-agency briefings using BMD alert information
- Livestock losses documented in official reports

Effective response depends on
real-time information flow

BMD



DDM



DLS



Farmers

From forecast to action: DLS response options

BEFORE

7 to 3 days before a heatwave alert

- Activate the DLS district coordination group; share the BMD outlook through NLAS
- Issue upazila-level advisories on heat-stress signs and prevention
- Check cold-chain status; secure vaccine and medicine stock
- Pre-register the most vulnerable commercial poultry farms

DURING

Active heatwave period

- Deploy mobile veterinary teams to high-risk char and remote areas
- Activate an emergency helpline for livestock distress reports
- Advise extra water, shade, lower stocking density, no midday feeding
- Report livestock mortality daily; coordinate emergency fodder with MoFL

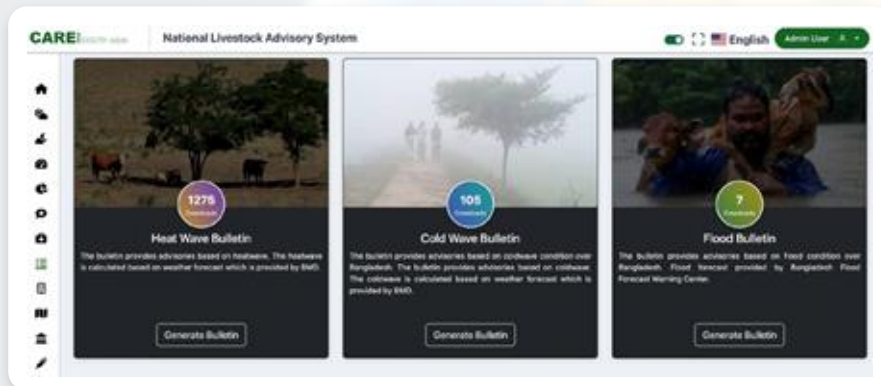
AFTER

Post-heatwave recovery

- Rapid loss assessment of mortality and production by union
- Emergency veterinary treatment and supportive care
- Link affected households to social protection and recovery programmes
- Debrief teams and update the district response plan

Trigger: actions are activated on BMD heatwave outlook thresholds agreed with district DLS and DDM, turning forecasts into anticipatory action.

Advisories and bulletins for every region



1,275

Heat Wave
Bulletin
downloads

105

Cold Wave
downloads

7

Flood
downloads

Generate a bulletin in 6 steps

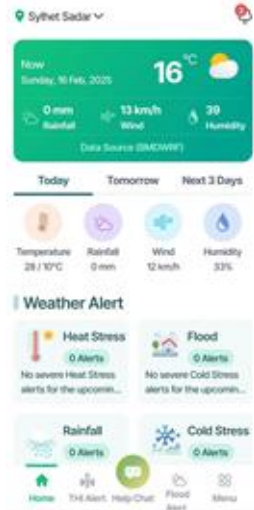
- Choose date, district and upazila
- Preview the bulletin
- Add local notes
- Select Bangla or English
- Review the advisory
- Download and email to field offices

7 advisory regions

Barind and Dry, Jamuna Floodplain, Mid-Eastern, Haor, Mid-Western, Coastal, Hill Tracts. Each has a monthly climatology chart, livestock advisories and a printable download.

Reaching farmers: app, chatbot and leaflets

NLAS mobile app: location- and animal-specific



Weather and alerts



Monthly and special advisories



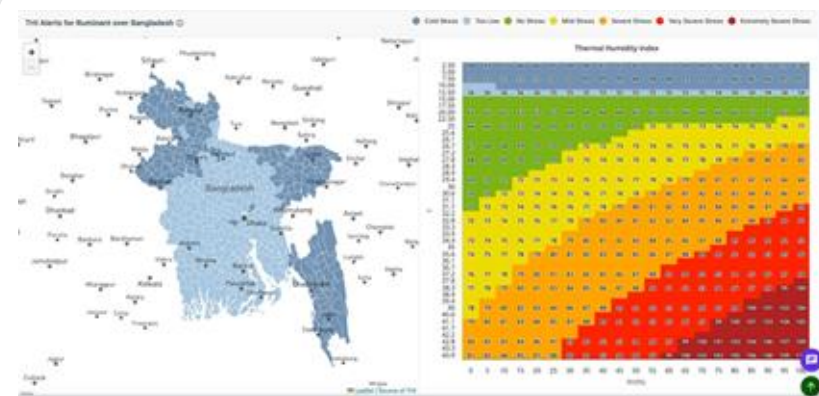
Bilingual AI chatbot

Chatbot trained on real farmer questions and answers



Bangla leaflet: livestock management during severe heatwaves
District Livestock Office, Cumilla

Climate data and analysis inside NLAS



THI forecast map with temperature-humidity index

Weather data: BMD (43 synoptic stations).
NLAS gives 3-hourly forecast, observed and
bias-corrected temperature.

Bias correction

Delta change, regression, quantile mapping

Climatology

31 stations, 1990-2020 baseline

Projections

SSP2-4.5 and SSP5-8.5, 2021-2100

Outlook

Monthly outlook up to 6 months, quantiles

Risk indicators

Days with max temperature $\geq 25, 40, 47$ C

Disease analytics and adaptation planning

Analytics and risk mapping

- FMD risk maps use case records from 64 districts (2014-2020) to predict monthly hotspots
- Climate risk indices use 100 years of projections and livestock density
- Spatial clusters: high-high, low-low, high-low, low-high

Adaptation

- Potential impacts for SSP1-2.6 and SSP5-8.5, from the National Adaptation Plan 2023-2050
- Location-specific plans: pick district, species and period
- National module lists 25 adaptation plans

Building DLS capacity to run NLAS

3 divisions

Divisional training: Rajshahi, Rangpur and Sylhet (ULOs, Veterinary Surgeons, SALOs)



Divisional training

ToT Satkhira

Training of Trainers for district DLS officials



Training of Trainers, Satkhira

27 officers

Admin users from 8 divisional offices: 2-day hands-on training



Admin user training

80 farmers

Livestock FARRM School: forecast application for livestock management



Livestock FARRM School

100+ DLS officials trained at national and field levels to operate NLAS and prepare advisories

DLS in the SAHF IBF national demonstration

NATIONAL



National Climate Watch Forum

DLS joined BMD and partners to review the seasonal outlook, including the ENSO update, from a livestock perspective

Rajshahi



Rajshahi consultation

Local level consultation and briefing on impact-based forecasting of heatwave; DLS presented climate risks to livestock

Lalmonirhat



Lalmonirhat consultation

RDRS Regional Office, 10 May 2026; DLS presented heatwave service delivery concerns for livestock

DLS brought the livestock perspective into IBF at national and local levels, **from outlook to local action.**

Heatwave service delivery concerns for DLS

1

Surge in veterinary demand

Heat-related cases spike across many unions at once, stretching veterinary coverage.

2

Field mobility constraints

Extreme heat limits safe field visits; remote and char areas become hard to reach.

3

Medicine and supply chain disruption

Power outages compromise cold storage of vaccines and medicines at upazila offices.

4

Farmer advisory bottlenecks

Field visits alone cannot reach farmers at scale during emergencies.

5

Coordination with district administration

Alerts from BMD or DDM may not reach DLS officers early enough for proactive response.

These structural preparedness gaps are what impact-based forecasting helps DLS address proactively, **before losses occur.**

Lessons learned and remaining challenges

1

Build community confidence and familiarity with early warning through training and awareness

2

Strengthen forecast-interpretation capacity of national and sub-national stakeholders

3

Involve sub-national extension officials to customize advisories locally

4

Create forecast-based action mechanisms: vaccine stockpiling, IEC distribution, import decisions

Challenges: scarcity of feed and water, disease outbreaks, salinity intrusion, loss of grazing land, limited access to climate-resilient technology, and the economic impact on livelihoods.

Closing the loop: from forecast to financing

We cannot manage what we cannot measure. To move towards livestock insurance, loss-and-damage financing, or climate-related compensation for farmers, we first need a reliable climate-impact evidence base.



A documented evidence chain lets us say: this level of heat or flood exposure produces this level of livestock impact and economic loss — the basis for actuarial analysis, early-action triggers and rehabilitation planning.

Towards a National Livestock Climate Risk & Loss Database

Climate risk data

Temperature, rainfall, flood depth/duration, cyclone & storm surge, drought, cold-wave intensity, geographic exposure

Livestock impact data

Animals exposed by species and age, morbidity, mortality, disease following the event, farm/shed damage

Production-loss data

Milk, egg and meat/live-weight loss, growth and reproductive loss, feed and water-related losses

Economic-loss data

Value of dead/missing animals, treatment and rehabilitation cost, infrastructure damage, restocking cost, farmer income loss

Key gap: weather data and livestock-loss data are held separately. Link them by district/upazila + event + date + climate intensity + livestock exposed + mortality + production loss + monetary loss.

Proposal: strengthen DDM's existing D-Form loss reporting with livestock-specific climate-impact indicators, linked to DLS field reporting — built jointly by DLS, BMD, DDM, BBS, the insurance sector and research institutions.

DLS action and the way forward

DLS initiatives

- 466 climate-resilient sheds; 46 small and 7 large biogas plants
- GHG quantification in 38 upazilas
- Climate-Resilient Buffalo Rearing Project
- Black Bengal goat and native sheep conservation project
- Native cattle genetic improvement by AI



Climate-resilient shed



Biogas plant



Vermicompost

Future scope of NLAS

- Data sharing with MoFL, MoA, DoE and other systems
- AI analytics and automated risk alerts
- Farmer reporting tools and digital logbook
- Emissions monitoring aligned with DLS roadmap
- Mass training to SALO level in 64 districts

Sustainability: DLS operates and owns NLAS on a government National Data Center; RIMES provides hand-holding support beyond the project. Priorities: technology access, financing, research, awareness, policy and capacity.



THANK YOU
FOR YOUR ATTENTION