

## Development of Local Flood Early Warning and Dissemination System

### PROVATi3 Project-DDM Component

July - September 2024

#### Quarterly Report

Regional Integrated Multi-Hazard Early Warning System (RIMES)

#### Section A

##### Progress Summary

- DMC training on Flood risk and Early warning system at Kurigram
- Training on DMC portal at Kurigram
- Install River gauges to monitor water level
- Field Visit for river gauge installation and land gauge supervision
- Topography survey
- Land gauge installation
- Trial Based Inundation Mapping
- Voice Message Dissemination
- Meeting on Voice Message Broadcast System (VMB) Development
- Volunteer selection and registration for capacity building training
- Preparation of Training on Flood Early warning for national Level stakeholders
- 3rd annual report preparation
- IFAD project support mission visit

#### Section B

##### Activity 1. DMC training on Flood risk and Early warning system at Kurigram

##### Progress

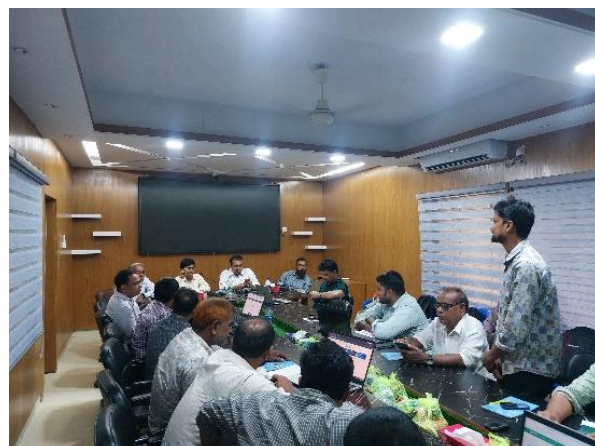
Two training have been held in Kurigram on two consecutive days. One training was arranged for Bhurungamari upazila DMC members on 11<sup>th</sup> September 2024. And another one was held on 12<sup>th</sup> September 2024 for Upazila and union level DMC members of Nageshwari upazila. Honourable DG MD. Razwanur Rahman was the chief guest of the training and inaugurated the training session via online platform. The program was chaired by Netai Chandra Dey Sarker, Director (MIM) and Project Coordinator of PROVATi3 project-DDM part. The training sessions were continued with upazila-level DMC members as participants including UNO, DRRO, UP chairman of respective upazilas and other members of union and upazila level DMC. DDM, BWDB and RIMES representatives serve there as trainers in different sessions. DMC members are trained up on basic disaster terminologies, flood early warning and their roles and responsibilities during disasters.



Activity 2. Training on DMC portal at Kurigram

### Progress

DMC database was developed under this project with the technical support of RIMES. Initially, it contained all the DMC members information of the project area. These information will further be updated by respective DMC by themselves which can be used in time of emergency. For this reason, representatives of each DMC members need to be trained on how to search for DMC members list; update, edit or delete information, upload DMC meeting resolution or additional things of the portal. 2 portal training held in Kurigram. One is for Bhurungamari Upazila DMC representatives on 11<sup>th</sup> September 2024 and other one is for Nageshwari DMC representatives on 12<sup>th</sup> September 2024. Both programs were chaired by Netai Chandra Dey Sarker, Director (MIM) and Project Coordinator of the PROVATi<sup>3</sup> project-DDM component. Mobinur Rahman, ICT specialist demonstrated the portal use. Participants of the training were UP secretary of respective unions, PIOs of respective upazilas and their secretaries, and UDC entrepreneur. Additional participants was Paura Nirbahi Officer (PNO) and secretary of the PNOs office



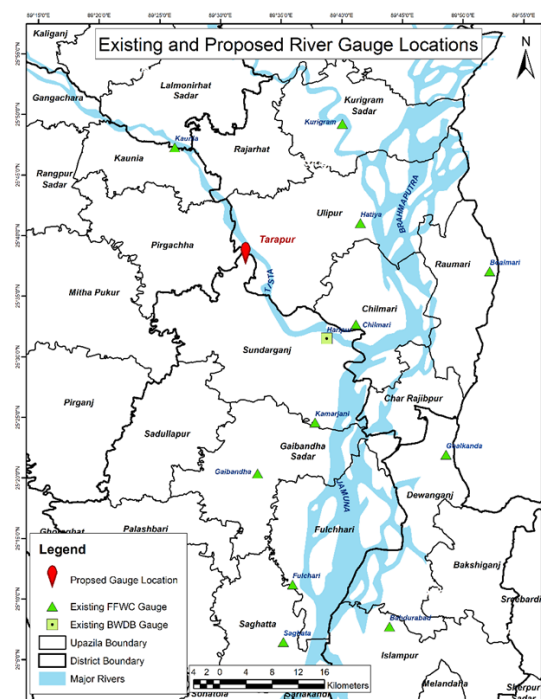
### Activity 3. Install River gauges to monitor water level

#### Progress

The FFWC has a total of 109 water level monitoring stations, of which 65 are designated as forecast stations. These forecast stations provide regular updates on the water levels of their respective rivers. But each river gauge has a specific buffer zone of its own for which it provides information of water level. The existing gauges are not sufficient for flood forecasting for all of the project areas. There is provision of installing 6 river gauges under this project. Following land gauge consultations in Gaibandha and Kurigram district, a meeting on August 28, 2023, with FFWC and BWDB representatives, led to the inclusion of three (03) existing BWDB gauges in the FFWC forecasting system. Following river gauge stations are now added in system:

1. Goalkanda station, Dewanganj Upazila, Jamalpur (Jinjirum river)
2. Boalmari station, Rowmari upazila, Kurigram (Jinjirum river)
3. Kamarjani, Gaibandha (confluence point of Teesta and Jamuna).

0 Gauge readers were instructed to send water level data to FFWC via SMS. FFWC started receiving this data from June, and the observed water level data was first published as a bulletin on their website in August. The installation of the remaining three river gauges will take place after representatives of FFWC visit the proposed location for river gauge installation. The installation of the remaining river gauges will proceed once representatives from FFWC have conducted a site visit to the proposed locations in Tarapur Union and existing gauge in Haripur and, within the Sundarganj upazila of Gaibandha district along the Teesta River.





FLOOD FORECASTING AND WARNING CENTER, BWDB							
RIVER SITUATION AS ON 01-09-2024 AT 09:00 HOURS							
SL	RIVER	STATION NAME	RHWL (m MSL)	D.L. WATER (m MSL)	LEVEL (m MSL)	+ Rise Above(+) - Fall /Below(-) D.L.	
			31-08-2024	01-09-2024	in cm	in cm	
BRAHMAPUTRA BASIN							
1	DUDHUMAR	PATESWARI	30.85	29.60	27.06	27.01	-5 -259
2	DIRAJA	KURIGRAM	27.18	26.05	23.02	23.12	+ 10 -293
3	TEESTA	DALIA	52.90	52.15	51.25	51.28	+ 3 -87
4	TEESTA	KAUNIA	30.42	29.30	28.39	28.34	-5 -96
5	JAMUNESWARI	BADARGANJ	33.10	31.70	27.38	27.40	+ 2 -430
6	GHAHOT	GAIBANDHA	22.06	21.25	17.99	17.89	-10 -336
7	KARATOA	CHAK RAHIMPUR	20.95	19.70	14.67	14.64	-3 -506
8	KARATOA	BOGRA	16.61	15.85	11.23	11.19	-4 -466
9	BANGALI	SHIMTUBARI	18.37	17.75	12.55	12.47	-8 -528
10	BRAHMAPUTRA	NOONKHANA	27.63	26.05	22.99	22.99	0 -306
11	BRAHMAPUTRA	BATTA	25.61	24.40	21.32	21.35	+ 3 -305
12	BRAHMAPUTRA	GHAMMANI	21.82	20.85	18.60	18.50	-10 -304
13	BRAHMAPUTRA	KAMARJANI	-	21.70	19.16	19.11	-5 -259
14	JAMUNA	FULCHARI	20.69	19.35	16.25	16.09	-16 -326
15	JAMUNA	BAHADURABAD	20.63	19.05	16.27	16.21	-6 -284
16	JAMUNA	SAGHATA	21.20	18.50	15.87	15.77	-10 -273
17	JAMUNA	SARIKANDI	18.59	16.25	13.65	13.52	-13 -273
18	JAMUNA	KAZIPUR	16.59	14.80	11.97	11.84	-13 -296
19	JAMUNA	JAGANNATHGANJ	-	13.55	11.26	11.14	-12 -241
20	JAMUNA	SERAGANJ	14.70	12.90	10.46	10.34	-12 -256
21	JAMUNA	PORABARI	18.55	11.80	9.45	9.34	-11 -246
22	JAMUNA	MATHURA	11.08	9.60	7.32	7.28	-4 -232
23	JAMUNA	ARICHA	9.90	8.95	7.18	7.14	-4 -181
24	GUR	SINGRA	12.84	12.20	10.39	10.33	-6 -187
25	ATRAI	BAHABARI	11.80	9.95	8.09	8.01	-8 -194
26	CHALISWARI	ELACIN	10.94	10.66	7.31	7.24	-7 -174
27	NIL-JINJIRAM	BOALMARI	-	23.90	22.02	22.00	-2 -190
28	NIL-JINJIRAM	GUALKANDA	-	19.15	17.46	17.53	+ 7 -162
29	OLD BRAHMAPUTRA	JAMALPUR	17.20	15.95	9.73	9.67	-6 -306
30	OLD BRAHMAPUTRA	MYMENSINGH	12.73	12.05	4.59	4.42	-17 -763

Activity 4. Ongoing Topographic Survey

Progress

Through a topographic survey, digital elevation model data is being collected in the vulnerable areas along the Brahmaputra-Jamuna river system. Earlier data collection has been completed in Gaibandha and Jamalpur. Currently Drone team is working simultaneously in Kurigram Sadar upazila and Ulipur upzila of Kurigram district. Till September 2024, 1062.43 sqkm area has been surveyed through LiDAR drone. Data processing of these area is going on so that DEM data can be used to generate flood inundation mapping.

District	Upazila	Survey Area (sq km)	Status
Gaibandha	5	525	Completed
Jamalpur	4	392.5	Completed
Kurigram	4	144.93	Ongoing
Total accumulated survey area (sq km)		1062.43	



## Activity 5. Field Visit for river gauge installation and land gauge supervision

### Progress

There is provision to install and validate existing river gauges for the enhancement of Teesta river forecasting system. In this view, the proposed site of Haripur and Tarapur Union of Sundarganj Upazila of Gaibandha District was visited on September 07, 2024 for installing the proposed new river gauge. Dr. Jiban Kumar Sarker (Chief Engineer, Hydrology), Dr. Md. Sajjad Hossain (Superintending Engineer, Hydroinformatics and Flood Forecasting Circle) and Dr. Md. Khairul Islam (Superintending Engineer, Groundwater Circle) and Netai Chandra Dey Sarker from Disaster Management Directorate, Director (MIM) and Md. Faqrul Arefin, Program Manager was present. Also Executive Engineer, Northern zone, Pabna and Gaibandha Water Development Board, District Relief and Rehabilitation Officer, Upazila Project Implementation Officer, Sundarganj, Gaibandha and Sundarganj Union were present. Beside this, land gauges installed in Gaibandha district from the project were also visited.



## Activity 6. Land Gauge Installation

### Progress

There is a provision of installation of 60 inundation gauges in the project area to validate Flood inundation map. Based on the latest recommendation from Technical Advisory Committee, locations to install land gauges have been selected. After the selection of the locations, the design and specification for the land gauge have already been developed and sent to the field facilitators to install land gauges. In three districts, three different Local vendors inspected the site and prepared land gauges according to design and specifications. Upon completion, these gauges were transported to their designated locations to

District	Total Number of Installed land gauges	Status
Gaibandha	11	completed
Jamalpur	16	completed
Kurigram	33	completed



install. As of July, 28 land gauges were installed out of 60. The remaining installations were completed by August, ensuring that all 60 gauges are now in place. With the installation phase complete, the gauges are ready to measure water levels in flood-inundated areas for the upcoming monsoon season. To collect data, volunteers need to be selected and trained for each location. With the help of Union Disaster Management Committee members and Upazila Project Implementation Officer volunteers will be selected for each gauge location.

(a) Kurigram



*Installed Land Gauge in Char Rajibpur and Nageshwari upazila of Kurigram district*

(b) Jamalpur



*Installed Land Gauge in Bakshiganj and Islampur upazila of Jamalpur district*

### (c) Gaibandha

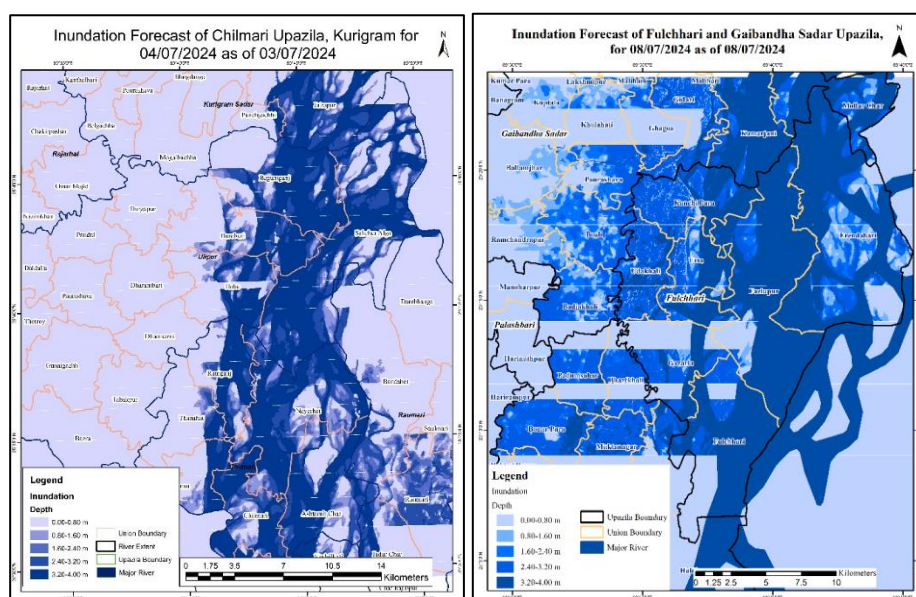


*Installed Land Gauge in Sundarganj and Sadullahpur upazila of Gaibandha district.*

## Activity 7. Trial Based Inundation Mapping

### Progress

To generate local level forecast, finer resolution inundation map is required. As there is no such existing topographic data for the project area, a topographic survey has been conducted since December 2022 and has already been completed in Jamalpur and Gaibandha district. In this survey, LiDAR drone is being used which provides high resolution images. This finer resolution images will



help to generate more accurate inundation map. A total of 1062.43 square kilometers have been



covered till September 2024 and work is ongoing in the remaining areas. A mathematical model has been developed for preparing flood inundation maps using DEM data that is obtained from drone surveys. Based on the collected DEM data, several trials have been conducted to develop inundation maps for the flood event that occurred during the monsoon in July of this year.

#### Activity 8. Voice Message dissemination

##### Progress

Voice message broadcasting is one of the key medium of flood early warning dissemination. Voice Message Broadcasting (VMB) is expected to be effective in overcoming the barrier of information gap. Voice messages have been disseminated across 3 districts, 13 upazilas and 59 unions prior and during the flood in July and September 2024. A total of 52,041 calls were made to disseminate early warning messages. As water levels began rising from July 2 and exceeded the danger level in the adjacent areas of the Jamuna and Brahmaputra rivers, voice messages were sent out to Ward, Union, and Upazila-level Disaster Management Committee (DMC) members, as well as officials from LGED, BWDB, MoDMR, and DDM. For the first time, an AI-generated voice message was used on a trial basis to deliver early warning information about the flood. This innovative approach aimed to quickly and effectively relay critical flood warnings to key individuals, enhancing their ability to prepare and respond more effectively.

District	Upazila Number	Total Number of Call
Jamalpur	2	14149
Kurigram	7	20095
Gaibandha	4	17797
<b>Total</b>	<b>13</b>	<b>52041</b>

#### Activity 9. Meeting on Voice Message Broadcast System (VMB) Development

##### Progress

To develop a voice message portal, a server system is required through which voice messages will be delivered to field level beneficiaries. A meeting was held with BTCL and Teletalk representatives on 9th July, 2024. The meeting was chaired by Netai Chandra Dey Sarker. The main discussion at the meeting was receiving IPTSP service from the telecommunication company to broadcast voice messages on flood forecast to the vulnerable community of the project area. During the meeting representatives from Teletalk demonstrated their existing IPTSP service. Furthermore, delegates from Teletalk and BTCL contributed their insightful recommendations on this matter, indicating their readiness to provide services in this area. During the meeting, the potential use of the shortcode 1090 for sending voice messages was discussed. Following this, both BTCL and Teletalk requested a



detailed list of requirements to support the provision of this service. Quotation collected from GP and Teletalk give a verbal idea about cost per minute of voice message. To make a final decision on receiving the IPTSP service, a comparative study was conducted between GP and Teletalk, which will help RIMES to take the necessary steps as early as possible.



#### Activity 10. Volunteer selection and registration for capacity building training

##### Progress

A key activity of the project is enhancing the capacity of volunteers within the project area. Training will be given on flood management practices before, during, and after events. To identify potential volunteers of the project area a list of LCS members from LGED has been collected. LCS members will get priority in this selection process. The training plan includes the participation of at least three individuals from each ward within the 61 most vulnerable unions in the project area. These unions were identified earlier based on vulnerability assessments and local insights. This selection process is being coordinated with local administrative, including PIOs, DRROs, union secretaries, and union chairman. Field facilitators are collaborating with these officials to identify potential volunteers from each ward in the most vulnerable unions. A registration form has been developed for volunteer enrolment and data recording. Letters with the registration form sent to the relevant officials to take necessary actions as early as possible. Data collection process is ongoing. The design of the training materials and volunteer safety equipment (vest and cap) is being reviewed. Training will start once the selection process is finalized.



Dashboard Development and land gauge consultation. Final report will be submitted to DDM and LGED.



### Activity 13. IFAD project support mission visit

#### Progress

Being a development partner of the PROVATi3 project, IFAD continuously monitor the activities of the project. IFAD representatives arranged a meeting at LGED on 15 September, 2024 with Project director and personnel engaged with the all components of the project were presented and Additional Chief Engineer chaired the meeting. Respective representatives of each component displayed and explained their progress. Progress of this component has been presented in brief.

Along with LGED and local government officials, the country director of IFAD visited Kamarjani union, Gaibandha district. IFAD and LGED visited land gauge and river gauge locations on 17 September 2024 at Kamarjani of Gaibandha Sadar upazila in Gaibandha district. Program Manager of PROVATi3-DDM Component Faqrul Arefin demonstrated the mechanism of data collection and how the collected data shall be used to prepare inundation mapping voice messages afterward. Later he explained the voice message dissemination process to the audience.



To monitor the overall progress of this component especially to have a clear understanding on inundation mapping tools and its working process, IFAD arranged a meeting at DDM on 19



September, 2024. Project director of PROVATi3, Project Coordinator and deputy Project Coordinator (GIS-RM), IFAD representative, LGED's focal person, Consultant of IFAD from IWFM, and RIMES personnel were presented in the meeting. Program manager and GIS specialist gave an overview of the activities. Then hydrologic system developer made a theoretical explanation of inundation mapping action.

After that a pre-wrap-up meeting held at LGED on 24<sup>th</sup> September where mission members share their feedback on this visit and action points.



## Section C

### Challenges & Overcome Strategy

- Due to flood situation, topographic survey remains paused for last 2 months.
- During this quarter, national political unrest created difficult situation for smooth operationalization of project activity.

## Section D

### Work plan for next quarter (Oct-Dec 2024)

- Continuation of topography survey
- Conducting of training on flood early warning and risk management for DMC members
- Conducting of training on flood early warning and risk management for National-level stakeholders
- Conducting DMC portal training
- Commencement of Volunteer Training
- River Gauge installation
- 3rd Annual report distribution

## Section E

### Budgetary Reflection

N/A