



Many have to walk miles under the scorching sun to access water. This photo was taken in Nachole upazila of Chapainawabganj recently.

PHOTO: STAR

HIGH BARIND running out of water

New study paints a grim picture of groundwater depletion in the region

At least 87 unions, which account for 40.65 percent of the total 214 unions in the region, were classified as falling into the two most critical categories of very high and high water stress areas. Water stress occurs its demand exceeds the available amount during a certain period or when poor quality restricts its use. It is often caused due to groundwater depletion.

ANWAR ALI

Due to decades of excessive water extraction, over 40 percent of unions in the high Barind region are facing severe groundwater depletion.

The situation is worsening due to climate change and the affected regions are expanding, leaving little access to water for drinking and irrigation, says a recent study conducted by the Institute of Water Modeling (IWM) on behalf of the Water Resources Planning Organisation (WARPO).

Covering three districts – Rajshahi, Chapainawabganj and Naogaon – the study, titled “Hydrological investigation and modelling of the state of surface and groundwater resources in the high Barind region”, began in 2018 and was approved by WARPO last month.

The final report, financed jointly by the government and Swiss Agency for Development and Cooperation (SDC), is expected to be published in early August, said Md Rezaul Maksud Jahedi, director general of WARPO.

To address this critical situation, the study recommends using alternative surface water sources and promoting the combined use of groundwater and surface water in the affected areas.

The high Barind region, already considered a hotspot in the Delta Plan 2100, must take immediate action to preserve its water

average depth had increased beyond 15 metres.

By 2021, the average depth reached 18 metres across a wider area, and in specific spots like Gomostapur of Chapainawabganj, it even reached up to 46.87 metres.

Mentionable, the increase in depth signifies groundwater depletion.

The study also highlights that less rainfall and increased evaporation caused by climate change has contributed to reduction of groundwater recharge.

IDENTIFYING WATER STRESS AREAS

The study conducted a comprehensive assessment of the aquifers (sediment saturated with groundwater. Groundwater enters an aquifer as precipitation seeps through the soil. It can move through the aquifer and resurface through springs and wells) in the high Barind region, evaluating actual recharge and safe yield levels to determine water stress conditions across 25 upazilas.

Groundwater recharge is a hydrologic process, where water moves downward from surface water to groundwater. Recharge is the primary method through which water enters an aquifer.

Alarmingly, at least 87 unions, which account for 40.65 percent of the total 214 unions in the region, were identified as falling into the two most critical categories of very high and high water stress areas.

BARIND AT A GLANCE

Total area 2,91,087 hectares (Rajshahi, Naogaon, Chapainawabganj)
High Barind 1,66,942 hectares
Plain Barind 1,24,145 hectares
Total deep tube-well 8,500 BMDA, 56,000 Private
Total rice production 33.98 lakh tonnes

REASONS BEHIND WATER SCARCITY

Excessive water extraction
Climate change
Demand exceeding available amount
Insufficient aquifer recharge

RECOMMENDATION

Finding alternative sources
Combined use of ground, surface water
Preserving resources
Identifying stress areas

‘Our struggle for water is never-ending’

ANWAR ALI

Bidyut Kumar Mondol, a farmer from Kamardha village in Naogaon’s Porsha upazila, finds himself grappling with a challenging predicament. He had prepared 23 bighas of land for cultivating Aman paddy, but his dreams have been thwarted by a relentless lack of water.

As the sun scorches the land, and the last two weeks have passed without a drop of rain, Bidyut’s Aman lands and seed-beds are withering away.

He has only been able to plant paddy on 4.5 bighas, despite the fact that the monsoon is halfway over, leaving most of his intended area dry and desolate.

“I’m done if it doesn’t rain in the next two weeks of Ashar,” he says, the weight of uncertainty is evident in his voice.

Porsha upazila, like much of its surroundings, heavily relies on rainfall for sustenance, while both surface and groundwater remain scarce resources.

“In the absence of rainwater, we depend on groundwater for irrigation. But even the groundwater is reducing,” Bidyut added.

“I can understand that by noticing the increase in irrigation hours and reducing flow of water,” he explained.

According to Md Kajimuddin, assistant engineer of Barind Multipurpose Development Authority (BMDA), the designated 283 deep tube-wells help irrigate only 9,252 hectares out of the vast 22,286 hectares of cultivable land in the upazila.

The officials of the Department of Agricultural Extension have also confirmed this information.

With Bidyut’s distress reflecting the broader struggles faced by farmers in the region, a looming question remains – will the skies open up in time to save their hopes and harvests?

FARMERS’ STRUGGLES IN NUMBERS

A 2013 study of Institute of Water Modelling (IWM) suggested the upazila was not suitable for pumping out groundwater due to depletion.

Besides, a recent study of Water Resources Planning Organisation (WARPO) and IWM shows, Chaor, Tetulia and Ganguria unions of the upazila have no suitable aquifer.

“Extracting groundwater is costly in major parts of the Chaor union,” said Nurul Huda, a member of the union parishad.

“We have to dig more than 400 feet to get water. Per hour irrigation costs farmers Tk 150, while farmers in low areas pay Tk 110,” he said.

According to Motiur Rahman, a farmer from Boldahar village in Chaor union, a submersible pump costs Tk 10 lakh to instal when Tk 3 lakh is enough for places having access to groundwater.

“Moreover, these pumps barely allow us to cultivate 40 bighas of land,” he added.

Rahman brings water from one such pump, 3,000 feet (280.84 feet less than a kilometre) away from his village to cultivate Aman on his 16 bighas of land.

Echoing him, Satish Orao, another farmer of the same village said, “Our struggles for water are never-ending... it’s a struggle for life.”

“Last year, at least ponds and canals had water due to rainfall, but this year, the water bodies are yet to be filled up. A submersible pump that supplies drinking water for some 35 families in my village is also near to becoming empty,” he said.

The government installed over 3,000 submersible pumps at villages for drinking water, but the crisis for irrigation water remains, said UP Chairman Sadekul Islam.

Farmers of Porsha and Saahar upazilas converted most of their paddy lands to mango orchards due to lack of water while others cultivate wheat and mustard, said local agriculture officer Sanjay Kumar Sarker.

Mango farming mostly depends on rain water while some farmers dig ponds near their orchards to preserve groundwater and rainwater for irrigation, said Qudrat E Khoda Md Naser, a development activist.



resources, said Prof Chowdhury Sarwar Jahan, a key expert involved in reviewing the study.

“It’s important to manage the depleting resources promptly, as the livelihoods of people in Barind area heavily depend on groundwater,” he added.

According to the study’s findings, back in 1985 and 1990, the groundwater table depth in the region was around eight metres in most areas, with some spots reaching up to 21 metres in Gomostapur and Tanore upazilas.

However, due to excessive extraction for various purposes like drinking, irrigation, pisciculture, and industries, by 2010, the

Water stress occurs when its demand exceeds the available amount during a certain period or when poor quality restricts its use. It is often caused due to groundwater depletion.

These unions experienced a concerning pattern where water levels declined from the previous monsoon to the next, indicating insufficient aquifer recharge. Among the hardest-hit areas were the entire Porsha and Nachol upazilas, where groundwater depletion was most severe.

The same category of very high water stress areas also includes additional 37 unions in nine upazilas, such as Godagari, Tanore, Gomostapur, Niamatpur, and Sapahar, also

fell into the category of very high water stress areas.

Another 40 unions were identified as high water stress areas while 65 unions were identified as moderate ones, where the water resources are under considerable pressure.

On a somewhat positive note, the region does have 28 unions classified under low water stress and 34 under very low water stress categories, where the water crisis has not yet reached critical levels.

AQUIFER ZONES

The study reveals that the region mainly consists of single or double aquifers, except for a few outer areas that have multiple aquifers.

Surprisingly, at Tetulia, Chaor, and Ganguria unions under Porsha and Sapahar upazilas, no aquifers were found at a drilling depth of 445 metres.

In Badhair union of Tanore, Nachol, parts of Chapainawabganj Sadar, and Gomastapur upazilas, there exists only one thin aquifer, ranging from six to 16 metres in thickness at a depth of 426 metres, serving as the sole water source.

The study highlights that some groundwater samples show elevated levels of bicarbonate, iron, and manganese beyond permissible standards, with arsenic contamination limited to Ranihatni union.

RECOMMENDATIONS

To address these issues promptly, the study proposes excavation of surface water reservoirs and emphasises the re-excavation of existing beels and ponds.

Additionally, the report recommends promoting crop diversification as an alternative to water-intensive Boro crops in the areas most affected by water stress.

Finally, the study advises implementing artificial recharge of groundwater to replenish and maintain the aquifers in the region.