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ADB backs water-efficient irrigation to combat drought in Bangladesh's vulnerable regions

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The Barind area, located in the country's northwestern region, faces chronic water scarcity due to low rainfall and poor aquifer conditions. Groundwater is heavily relied upon for dry-season rice cultivation, raising concerns about the long-term viability of farming in the area.

To address this challenge, ADB, in collaboration with several national and international partners, has initiated a study involving 1,000 farmers in Niamatpur Upazila of Naogaon District during the 2024â??2025 Bboro season. Project partners include the International Rice Research Institute (IRRI), Bangladesh Rice Research Institute (BRRI), DASCOH Foundation, Nippon Koei, Nodes Digital, and Pabna University of Science and Technology (PUST).

AWD is a scientifically proven irrigation technique that can reduce water usage by up to 20 per cent and lower greenhouse gas (GHG) emissions by 30 per cent, without compromising crop yields. Despite being introduced in Bangladesh in 2004, the adoption of AWD has remained limited. The current initiative aims to bridge this gap by providing technical support, capacity

building, and data-driven validation of the technologyâ??s benefits.

IRRI is leading the technical aspects of the project, supporting farmers and partners in implementing AWD while monitoring water dynamics, GHG emissions, and socio-economic factors that influence adoption. In partnership with BRRI, IRRI also collects data to explore potential carbon credit opportunities linked to AWD usage.

Nodes Digital and PUST have deployed Internet of Things (IoT)-based water sensors and automatic GHG measurement devices to enhance data collection. These are being cross-referenced with manual measurements to validate their accuracy and support wider application of smart agriculture technologies. The DASCOH Foundation is overseeing field-level training and farmer engagement, while Nippon Koei is examining irrigation behavior, GHG data, and business models for carbon trading under international standards such as the Gold Standard and Japanâ??s Joint Crediting Mechanism (JCM).

A media day held on April 28 showcased early results and generated broader awareness. The event brought together 50 participants, including 12 journalists from major media outlets, alongside representatives from government agencies, NGOs, international organizations, and farming communities.

Dr. Takashi Yamano, Principal Economist at ADB, highlighted AWDâ??s potential to conserve groundwater and reduce emissions. â??AWD not only helps save water and lower costs, but also creates opportunities for farmers to benefit from global carbon credit markets,â?• he said.

Farmers participating in the project reported positive outcomes, noting a reduction of 4â??5 irrigation events, increased tiller density, and the potential for slightly higher yields compared to previous seasons. Representatives from the Barind Multipurpose Development Authority (BMDA) echoed the urgency of widespread AWD adoption in light of worsening groundwater scarcity.

IRRI officials noted that adopting AWD across 50 per cent of Bangladeshâ??s dry-season rice fields could save approximately $30 million annually in irrigation costs. Representatives from PUST and Nodes Digital reinforced the role of technology in promoting precision farming and sustainability.

The event concluded with a strong consensus among stakeholders on scaling up AWD adoption as a critical step toward ensuring sustainable groundwater use and securing agricultural productivity in one of Bangladeshâ??s most vulnerable farming regions.