Turning Air Into Water

CCDB's Innovative Solution To Bangladesh's Drinking Water Crisis

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Bangladesh, a country known for its abundant water bodies, faces an ironic and severe crisis: the lack of pure drinking water. This crisis is particularly acute in coastal regions, drought-affected areas, and hilly terrains, where obtaining clean water is a daily struggle for millions.

To address this pressing issue, a national NGO CCDB, dedicated to accelerating innovation, knowledge dissemination, and capacity development related to climate change, has introduced a groundbreaking solution.

The Drinking Water Crisis in Bangladesh

In Bangladesh, 3.3 million people lack access to clean water, and over 1,000 children under five die annually from diarrheal diseases caused by poor water quality. The latest Joint Monitoring Program (JMP) Report of 2022 indicates that only 59.11% of Bangladesh's population has access to safely managed water, with just 14.94% under piped water supply – 2.9% of which are in the poorest quintile.

Water contamination is a significant concern, with 86% of the poorest households showing E. coli contamination and 16.7% of the population consuming arsenic-contaminated water.

In the coastal areas, salinity intrusion has made much of the available water undrinkable, putting over 20 million people at risk. Climate change is expected to worsen this issue by increasing river salinity significantly by 2050, leading to acute water shortages in the southwest coastal regions.

In drought-prone areas like the Barind Tract, water scarcity forces women to travel several kilometers daily to fetch water. The Bangladesh Bureau of Statistics reports that access to clean water in these regions remains a significant challenge, impacting both health and livelihoods.

The hilly regions, particularly the Chittagong Hill Tracts, also face severe water scarcity due to rugged terrain and lack of infrastructure, making reliable water sources difficult to access. Addressing these challenges is crucial for improving the quality of life and health outcomes in these vulnerable regions of Bangladesh.

The Innovative Solution: Atmospheric Water Generator

In response to this dire situation, the CCDB Climate Centre has modified a machine known

as the Atmospheric Water Generator (AWG), which can produce pure drinking water from atmospheric humidity. This technology is particularly suitable for Bangladesh, given its high humidity levels. The AWG developed by CCDB can generate up to 18 liters of water per day, sufficient for the drinking needs of an average family.

The quality of water produced by this AWG has been tested and validated by the ICDDR,B, meeting the prerequisites set by the World Health Organization (WHO). Initially, the cost of such a machine was around 200,000 BDT, making it unaffordable for the poor. However, through local innovation and the use of locally sourced materials, CCDB has successfully reduced the cost to approximately Tk 23,000, making it nearly 90% cheaper.

Md. Ashrafuzzaman Khan, Coordinator of CCDB Climate Centre in Gazipur's Sreepur, spearheads the comprehensive modification of the Atmospheric Water Generator (AWS).

Mr. Khan is a dedicated climate activist who brings expertise in Electrical and Electronic Engineering with a focus on renewable energy, low carbon development, energy efficiency, and clean technologies for the last 14 years.

Potential for Wider Adoption

Despite this significant cost reduction, further development and commercialization of the AWG are constrained by the lack of a dedicated scientific research and development unit within CCDB. Nevertheless, the potential for scaling up this innovation is immense. Companies that manufacture refrigerators or air conditioners could collaborate to mass-produce and market these devices, addressing the drinking water crisis more broadly.

Moreover, there is an opportunity to integrate solar energy to power these AWGs, enhancing their energy efficiency and cost-effectiveness. This would be particularly beneficial in remote areas where electricity supply is unreliable or non-existent.

Conclusion

The Atmospheric Water Generator developed by the CCDB Climate Centre] represents a promising solution to Bangladesh's drinking water crisis. By leveraging local innovation and materials, the CCDB has made this technology more accessible to the poor, offering a sustainable and scalable approach to securing clean drinking water.

By fostering partnerships with commercial enterprises and integrating renewable energy solutions, the AWG could become a widely adopted technology, transforming the lives of millions who currently lack access to safe drinking water. As Bangladesh continues to grapple with the impacts of climate change, such innovations are crucial for building resilience and ensuring the well-being of its people.

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