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The untapped value of water

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Pakistan, a country facing increasing water scarcity, is struggling with a critical challenge in efficiently managing its water resources. Without significant reforms, Pakistan faces the danger of worsening its position as a water-stressed nation.

The country's per capita annual water availability has dropped by over 30 percent, decreasing from 1,500 cubic meters in 2009 to 1,017 cubic

meters in 2021. Moreover, the World Resources Institute projects that by 2050 Pakistan will be among the most water-stressed countries in the world.

This inefficient use of water is primarily due to outdated water pricing mechanisms, which encourage wasteful practices, especially in the agriculture sector.

The agriculture sector in Pakistan stands as the country's largest water consumer, using over 90 percent of its available resources. So, at the heart of excessive irrigation lies the Abiana system, a water charge imposed on farmers where prices are not truly representative of the economic value of the resource. Consequently, water is often seen as a low-cost or even free resource, resulting in overuse and depletion.

While the rates were revised in 2019, they remain too low, failing to truly capture the value of water. Furthermore, revenue collection through the Abiana system is extremely low.

The Sindh and Punjab provinces, for example, report that less than 60 percent of the assessed revenue is actually collected, barely covering 10 percent of the maintenance costs for water channels.

Water management in Pakistan remains fundamentally flawed, the Abiana system is poorly structured and inadequately enforced. Consequently, the current pricing mechanism has failed to encourage conservation or the adoption of water-saving technologies despite substantial subsidies for initiatives like drip irrigation.

The current Abiana system operates on a flat-rate basis, charging Rs. 275 per acre for the Rabi season and Rs. 385 per acre for the Kharif season, rather than utilizing metered charges based on actual water consumption. This flat-rate system fails to reflect the true value of water.

Additionally, it does not account for the actual amount of water provided to each farmer. Without water meters, farmers have no limitations on the quantity of water they use, which leads to inefficient consumption. As a result, the current system neither promotes efficient water usage nor encourages conservation, ultimately exacerbating problems of resource depletion and mismanagement.

The absence of economic water pricing means that there is no financial penalty for excessive water usage, allowing unsustainable practices to continue unchecked. Farmers often resort to water-intensive cropping patterns and inefficient irrigation methods. This strains the country's water resources and contributes to long-term environmental degradation. Therefore, without addressing this issue, the wasteful consumption cycle will likely continue.

Addressing this issue requires a fundamental restructuring of Pakistan's water pricing system. The goal should be to establish a pricing mechanism that accurately reflects the true value of water and incentivizes efficient use. This could involve revising the Abiana charges to account for actual water consumption, thereby promoting conservation.

Implementing economic pricing systems would discourage excessive usage and encourage farmers to invest in more efficient irrigation techniques. By aligning the cost of water with its scarcity and importance, Pakistan can promote sustainable agricultural practices and reduce the stress on its water resources.

A comprehensive economic valuation of water resources in Pakistan reveals the significant fiscal impact of the current inefficiencies. According to Economic Survey of Pakistan (2023-24), Pakistan has approximately 92.5 million acre-feet of surface water available. An acre-foot is a substantial volume, representing the amount of water needed to cover one acre of surface area to a depth of one foot.

Based on the updated Abiana rate, the potential revenue, if properly taxed and enforced, could be up to Rs. 32.66 billion. However, actual receipts in Punjab during the last fiscal year were only about Rs. 1.49 billion.

Given that Punjab accounts for nearly 70 percent of Pakistan's agricultural land and thus a large share of water consumption, it can be assumed that the total revenue from Abiana will be under Rs. 3 billion in the country. This indicates a substantial gap between the estimated potential revenue and actual receipts.

The economic price of water, determined by the opportunity cost of water per acre based on diesel costs, ranges from Rs. 871 to Rs. 1143 for extracting 100 to 120 m^3 of water. This results in a cost of Rs. 7.92 to Rs. 10.39 per cubic meter. Hence, the economic value of total surface water is between Rs. 904 billion and Rs. 1186 billion, highlighting the significant economic value of Pakistan's water resources. This calculation excludes water scarcity rent. If scarcity rent is included this impact will be much bigger than this.

A comparison between the total potential revenue of the current Abiana system and the overall economic value of surface water reveals a significant gap, estimated to be between Rs. 871 billion and Rs. 1153 billion. This means the lack of an effective economic water pricing system leads to considerable losses for the government, underscoring the fiscal impact of missing economic water pricing.

Pakistan stands at a critical juncture in its water management journey. Comprehensive reform of the water pricing system is essential to align water usage with its true value. By recognizing the true value of water and implementing necessary reforms, the country can overcome its inefficiencies and build a sustainable future.

By restructuring Abiana charges and implementing economic pricing mechanisms, Pakistan can create financial incentives for conservation and efficient water use. This lost revenue could be redirected towards critical infrastructure projects, research and development of water-saving technologies, and public awareness campaigns to promote sustainable water usage.

The economic implications extend beyond the immediate financial losses, affecting food security, agricultural productivity, and environmental sustainability. The time for action is now, and comprehensive reform of the water pricing system is a crucial step towards securing Pakistan's water resources for generations to come.

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