ACT

ACTION ON CLIMATE TODAY

July 2016

ON KNOWLEDGE: 7

Can pricing water for agriculture help South Asia to adapt to climate change?

This briefing looks at the potential for water pricing to curb the overexploitation of agricultural water in South Asia. Ideally, water prices should send economic signals about the value and increasing scarcity of water for agriculture, provide revenue for water-related infrastructure and provide incentives to use water more efficiently. However, the success of pricing relies on the proper setting of water tariffs, on the metering of water use and on the collection of user charges. In practice, water pricing is often hampered by poor governance and administration, a cultural reluctance to pay for water, and avoidance by political parties seeking popular support.

About the series
The ACT on knowledge series focuses on key emerging issues related to climate change and how they affect South Asia. Each leaflet synthesises existing knowledge on a topic and aims to stimulate discussion. Suggestions for further reading are provided at the end. Please see the full list of topics at **www.actiononclimate.today**

Fresh water has an uncertain future

Declining freshwater resources are of increasing global concern as an expanding global population is creating an ever greater demand. In South Asia, around 90% of fresh water is used in agriculture[1] and groundwater is being depleted rapidly from overuse and the increasing populations in countries such as India, Pakistan and Bangladesh.

The added factor of climate change brings the importance of water security into stark relief. Only 2% of the planet's water is fresh water – about one-third of this is groundwater, while surface water (rivers, lakes, etc.) makes up less than 0.5%. Warming increases the amount of water in the atmosphere and results in heavier and more frequent rain. Heavier rainfall often means that much of the water runs off into rivers and eventually the oceans rather than soaking into the soil. Warmer air also leads to the melting of glaciers, which increases the water supply to rivers and lakes in the short- to mid-term, but in the longer term, once the glaciers have melted, this will almost certainly reduce.

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But while rainfall may increase globally, already dry regions are experiencing reduced rainfall and increasing droughts. Two of South Asia's most important sources of surface water – the Ganges-Brahmaputra-Meghna and the Indus-Kabul river systems – rely on the monsoon for replenishment, providing ample water for only four months of the year (July–October). Climate change is now delaying the onset of the monsoon as well as substantially reducing the amount of rain that falls during this brief period.[2] Insufficient water storage capacity is a serious problem, leaving much of South Asia with severe water shortages during the dry season.[2]

A United Nations Report estimates that 3–4 billion people will be living in water scarce countries by 2025.[3]

[1] Price et al. (2014).
[2] Loo et al. (2014).
[3] WWDR (2014).

The value of agricultural water – why pricing is important

Charging for water use is primarily a signal that water is valuable and must be used efficiently. It is also a mechanism to provide funds for infrastructure, such as dams, canals and storage facilities.

To date, agricultural water pricing in South Asia is not well applied. Water charges are typically based on the size of the farm or the type of crop being irrigated and do not allow for differences in water use efficiency or productivity. Where tariffs exist, they are often too low and not monitored, providing no economic incentive for efficient water use.[4]

Incorrect water pricing can lead to highly misleading perceptions of the value of water:
"The relative prices of water in Pakistan are absurd: a one-litre bottle of water costs 30 rupees, whereas a farmer gets 60,000 litres of water for one rupee. The result is that people are very careful with bottled water supplies and very wasteful with agricultural water supplies."
Nawaz Khan, Senior Research Associate, Food and Agriculture Division, Planning Commission, Islamabad

Agricultural water charges (e.g. for metering and monitoring) work best when these can be levied on large-scale users or service providers who then pass on the cost to users. In the western United States, some cities buy groundwater rights from farmers or pay farmers to switch to dryland farming in areas where water has become scarce. In Chennai, India, water service providers apply tradable property rights to pay farmers to sell groundwater to towns rather than use it for irrigation.

Photo: Pius Lee / Shutterstock.com

Box 1: A successful centrally priced canal system in Haryana, India

In this scheme, water is divided equally over the command area through a canal system that automatically apportions the water among farmer groups, who then share access to the water in rigidly fixed turns. Water charges cover organisation and management (O&M) costs, but not capital costs, and are based on geographical area and crop type, amounting to approximately 0.5% of the average net farm income. Allocation and scheduling of water among canals is the responsibility of the irrigation department, but once the water reaches the outlets, farmers are fully responsible for the O&M.

Fees are collected by the state revenue department and collection rates are high – between 85% and 95%. The government can take land away from defaulters, operation and maintenance costs are very low and the highly centralized management team has few staff and substantial levels of farmer participation.

This system is one of the most productive in India because of strong peer pressure governance. A farmer who steals a turn from another farmer can cause instability throughout the entire canal as can a delay or shortfall in supply from the irrigation department.

Source: Hasanain et al. (2012): p4

The challenges of pricing water correctly

Effective water pricing in South Asia is hampered by issues of poor governance, politics and a lack of data.

Lack of administrative resources

A common problem is a lack of administrative resources to meter and monitor groundwater use and collect usage charges from vast numbers of users. This is particularly the case in India, which has about 20 million well users.

Political parties use free water as leverage

In regions of South Asia not yet experiencing water shortages the common perception is that water will always be abundant and that it is a 'gift from God'.[6] This is supported by a lack of information about the risk of future water shortages and the subsidising of energy for groundwater pumping.[7] The current situation results in an inherent reluctance among people to pay for water, making promises of low or no water tariffs powerful platforms in political campaigns.

[4] Hasanain et al. (2012).
[5] Shar (2008).
[6] Price et al. (2014).
[7] Shar (2008).

Tariffs require data

The effective setting of tariffs relies on empirical data about how different structures affect different groups of consumers. This is often lacking.

Can it be done?

To date, the pricing of water to take into account the full cost of its delivery for agriculture seems politically fraught. The message that pricing seeks to convey – that water is scarce and must be conserved – requires alternative channels to be heard. Some success has been achieved where water users have been closely involved in the monitoring of groundwater and therefore understand its fluctuating dynamics (see Box 2).

Further emphasis could also be placed on encouraging farmers to adopt water-saving technologies by demonstrating benefits such as better crop yields, fewer pests and financial savings.[8] At present, the concept of water pricing is best applied where the inherent challenges can be addressed, for instance, where water can be clearly allocated and the organisation and management of the water shared between the government and users (see Box 1 about Haryana, India). Effective water pricing for agriculture more broadly will become possible with good regulation, proper education of farmers and improved governance across South Asia.

Box 2: An effective alternative to water pricing: the Andhra Pradesh Farmer-managed Groundwater Systems Project (APFAMGS)

"The core concept of the APFAMGS is that sustainable management of groundwater is feasible only if users understand its occurrence, cycle, and limited availability. To achieve this, the project has engaged farmers in data collection and analysis, building their understanding of the dynamics and status of groundwater in the local aquifers. Even farmers with limited literacy skills have demonstrated their ability to collect and analyse rainfall and groundwater data, estimate and regulate their annual water use based on planned cropping patterns and increase the knowledge of improved agricultural practices through attendance of [sic] farmer water schools."

Excerpt from: *Deep wells and prudence: towards pragmatic action for reducing groundwater overexploitation in India. The World Bank (2010).*

Photo: happystock / Shutterstock.com

[8] Hasanain et al. (2012).

KEY MESSAGES

- South Asia is facing a serious water crisis. Rapid population growth, inefficient water use and climate change are the key contributing factors
- Water must be managed efficiently to ensure water security across South Asia. Proper pricing of water should provide signals that it is a scarce and valuable resource and encourages more efficient water use
- Water governance and pricing vary significantly for different users and different sources of water. However, at present, the pricing of water is failing to improve its conservation
- Water pricing is being hampered by a lack of administrative resources, the lack of necessary data and because politicians use promises to minimise water charges in their political campaigns to win votes
- Given the political nature of water pricing, governments must explore alternative ways to provide economic incentives for water conservation. Active community participation in local water governance warrants further exploration, as do incentives for farmers to adopt water-saving technologies.

Sources and further reading

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Supported by
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ACT (Action on Climate Today) is an initiative funded with UK aid from the UK government and managed by Oxford Policy Management. ACT brings together two UK Department for International Development programmes: the Climate Proofing Growth and Development (CPGD) programme and the Climate Change Innovation Programme (CCIP). The views expressed in this leaflet do not necessarily reflect the UK government's official policies.