



Evidence-informed policy change: improved access to groundwater in West Bengal, India

Groundwater resources in the Indian state of West Bengal are abundant and support irrigated (*boro*¹) rice production. However, farmers believe that access to groundwater has been unduly restricted in recent years, through electricity pricing and licensing of irrigation tube wells that limit agricultural production.

In 2010, 3ie supported an impact evaluation by researchers at the International Water Management Institute (IWMI) to explore the impact of changes in electricity pricing in West Bengal, from a flat tariff to metered pumping of groundwater for irrigation.

State government officials introduced metered tube wells to achieve better energy audits, reduce electric power transmission and distribution losses, and improve revenue collection rates.

Highlights

Evidence use

The West Bengal government made two policy changes to improve access to groundwater for irrigation. These changes were consistent with the recommendations made in the 3ie-supported impact evaluation.

Contributing factors

- timely evidence that coincided with political changes in West Bengal
- relevant evaluation as the interests of several decision makers converged
- clear, feasible and useful recommendations
- researchers' credibility and prior relationships with key actors.



The context

In the 1980s, West Bengal introduced a flat electricity tariff for farmers using tube well irrigation systems. At that time, tube wells were rare, and the cost of meter reading was higher than the revenue generated from it. This scenario led to the rise of informal groundwater markets. Poor and marginal farmers purchased water from better-off farmers to irrigate their crops. Additionally, politicians often set low tariffs to garner electoral support, leading to high revenue losses for the state electricity board. Moreover, flat tariffs resulted in groundwater over-exploitation in regions with low rainfall and poor aquifers.

In a bid to reduce the state electricity board losses, West Bengal reintroduced tube well metering in 2007, along with a requirement to obtain a permit to sink a tube well. While this shift benefitted the electricity board, the move was thought to disadvantage millions of poor farmers with small landholdings, who relied on informal groundwater markets for irrigation.

The impact evaluation was therefore highly relevant and useful to key decision makers. It aimed to assess the impact of the tariff policy on West Bengal's 100,000 pump owners, and the additional 10–20 farmers to whom each pump owner sold water, amounting to 1–2 million affected households.

Looking for the impact of pricing on irrigation use

The impact evaluation explored the link between the pricing of electricity tariffs and the use of irrigation systems. The evaluation team looked at the total number of hours pumped, especially in the summer season, the distribution of groundwater across the pump owner's farm and the sale of groundwater to other farmers. The team also studied the impact of electricity tariffs on cropping patterns and yields.

The study found that farmers with metered tube wells made less use of groundwater during the *boro* rice growing season. This decrease was not confined to pump owners' irrigation of their own farms but also had an adverse effect on water sales and purchases. However, metering did not have an impact on either cropping patterns or the output of *boro* paddy fields.

Two policy changes to improve groundwater access

In November 2011, and again in November 2012, the West Bengal state government made policy changes that were consistent with recommendations made in the 3ie-funded impact evaluation.

The first was the amendment of the West Bengal Groundwater Resources [Management, Control and Regulation] Act 2005 by Subrata Biswas, Secretary of the Water Resources Investigation and Development Department (WRIDD) in West Bengal. WRIDD amended one provision of the Act – farmers located in areas with potential for groundwater development and with lower powered pumps would no longer need to apply for costly permits.

Biswas made a second policy change in electricity policy and procedures after becoming secretary of the West Bengal Department of Agriculture. In 2012 the department launched a scheme to give new electricity connections to farmers in return for a fixed connection fee. This meant that farmers would no longer have to meet the full cost of wires, poles and transformers.

According to Aditi Mukherji², the principal investigator of the 3ie-supported study, reducing the cost of irrigation through a one-off capital cost subsidy meant that ‘it was easier for small and marginal farmers to apply for electricity connections [,it] removes all the road blocks that [the] research had identified.’³

Factors contributing to evidence use

A number of factors contributed to why the findings of this impact evaluation resonated among policymakers, which in turn informed the two policy changes.

Timeliness: political realities shifted priorities

The impact evaluation came at a time when changes in government provided an opportunity to revisit the policy agenda. In the 2011 state election, the Trinamool Congress political party defeated the ruling party that had been in power for 34 years. As part of her election campaign, Mamata Banerjee had promised to revive ‘agriculture, the life force of fertile Bengal, to prosper again’.⁴ This position was seen as a favourable shift from the former government’s industry-led growth strategy.



Mike Lusmore/World Fish

“ I totally doubt, if not for the change in government, that any of these [policy changes] would have happened. They [new government] were looking to do something different and new. So that was an opportune time. ”

Aditi Mukherji,
principal investigator



Mike Lusmore/World Fish

Stakeholders' interests converge

At the same time, one of the key stakeholders in this impact evaluation, Subrata Biswas, secretary of WRIDD, was interested in improving access to groundwater for two reasons. Firstly, his department was under intense pressure from farmers who were angry at not having more access to water. Secondly, there were instances of corruption and leakages in the permit approval process, which reflected badly on WRIDD. This impact evaluation was therefore highly relevant to key decision makers to help address these challenges.

Opportune engagement: early communication of results

Looking to fulfil its election promise, the new government of West Bengal approached the national planning commission for suggestions on increasing investments in agricultural water management. In response, a member of the planning commission⁵, Mihir Shah, who handled the portfolios of water resources, rural development and decentralised governance, approached Aditi Mukherji to join a delegation to West Bengal to address this issue.

Shah had previously met Mukherji at a conference in Sri Lanka, where he was the keynote speaker and Mukherji presented on the 'Paradox of poverty amid plenty of groundwater', drawing on evidence from her previous work and from the 3ie-supported impact evaluation, for which post-fieldwork analysis was underway.

As part of this delegation, Mukherji had a chance to interact with several stakeholders, including the secretaries of WRIDD, the state planning department and agriculture department. At this meeting, officials discussed the declining number of groundwater wells and its possible causes. Mukherji took this opportunity to present preliminary findings from the 3ie-supported impact evaluation, including recommendations for improving the Groundwater Resources Act 2005.

She followed this up with a meeting with Biswas, the secretary of WRIDD, and gave him a copy of her presentation. Biswas contacted Mukherji's employer IWMI for assistance in modifying the 2005 Act in line with the study's recommendations.

“ [The WRIDD secretary] wrote to me saying, “This is interesting stuff but it would require some amount of pushing and lobbying”. Looks like he did that pushing and lobbying, and then he changed the law! ”

Aditi Mukherji,
principal investigator



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Importance of having clear, feasible and useful evidence

During every interaction with policymakers, Mukherji, who was primarily responsible for communication and engagement efforts, presented recommendations and findings that were succinct and free from technical jargon.

Importantly, the study findings supported recommendations that were concrete and feasible for the state government to implement. Senior officials at the national planning commission, including Shah, officials at WRIDD and West Bengal's agriculture department, met to discuss implementation bottlenecks for the new tariff policy and possible solutions.

Mukherji proposed providing a one-off capital cost subsidy to electrify 50 per cent of pumps over the next five years in districts that had alluvial aquifers, which yield large amounts of groundwater. This recommendation was then included in a scheme launched in 2012, called the One Time Assistance for Electrification of Agricultural Pump-sets.

Prior relationships and credibility mattered

The credibility of the research organisation and researchers helped the team to find resonance among West Bengal's policymakers and garner support from high-level officials, such as those at the Planning Commission.

IWMI senior researchers had led study and advisory teams on behalf of the Planning Commission in different Indian states. The organisation's previous work on energy and irrigation in Gujarat (led by one of the impact evaluation researchers), fed into the design of the *Jyotigram Yojana* scheme⁶ in Gujarat, a model that is being replicated in other Indian states.

It was also helpful that Mukherji is from West Bengal, was deeply embedded in the local context, and was aware of the state's political economy. In 2012 she received the Norman Borlaug Award for field research and application in this area. The award committee cited her 'work on groundwater resources in agriculture [which] led to major policy changes that benefitted thousands of farmers in West Bengal'.⁷

Conclusion

Two policy changes reflect the use of evidence from this 3ie-supported impact evaluation. However, the link between evidence produced and what gets changed is rarely direct and attributable. This example is useful in showing that evidence was not the main, or only, reason for policy changes – other factors need to be present for change to occur.

A number of factors contributed to the change in West Bengal's groundwater access policies that went beyond the evidence from this impact evaluation. They include a combination of the researchers' engagement and communication skills as well as their ability to leverage existing networks and their institutional affiliation to gain support from national and state-level policymakers.

The study findings were also timely, clear and closely aligned with the state government's promise to ease groundwater access for poor farmers. The confluence of those factors created a specific window of opportunity for informing West Bengal's agricultural policy priorities.



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About this brief

The link between evidence and its use is often not immediate or directly attributable. Evidence is one of a number of other important factors that can contribute to programming or policy change. Producing good evidence does not ensure that it will be used, or used appropriately.

This brief is based on 3ie's monitoring of the impact evaluation, *Does marginal cost pricing of electricity affect groundwater pumping behaviour of farmers? Evidence from India*, 3ie Impact Evaluation Report 4 by JV Meenakshi, Abhijit Banerji, Aditi Mukherji and Anubhab Gupta.

Through regular monitoring of the study's implementation and the research team's engagement with key stakeholders, 3ie tracks how context, actors and other mechanisms contribute to evidence use. 3ie uses grant documents, progress reports and in-depth interviews with key stakeholders to identify factors that contribute to the use and uptake of findings.

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Endnotes

1. *Boro* refers to cultivation from November–May under irrigated conditions in India.
2. When the final report was submitted to 3ie, Aditi Mukherji, the principal investigator, was working at International Water Management Institute (IWMI). As of early 2017, she is working with the International Center for Integrated Mountain Development. IWMI was the grant-holding organisation for this impact evaluation.
3. Mukherji, A, 2016. One Time Assistance for Electrification of Agricultural Pumpsets in West Bengal. [Blog] Waterscapes. Available at: <https://aditimukherji.wordpress.com/2012/12/04/one-time-assistance-for-electrification-of-agricultural-pumpsets-in-west-bengal/> [Accessed 2 November 2016].
4. Telegraphindia.com, 2016. The Telegraph – Calcutta (Kolkata) Didi deal, straight from stats room. [online] Available at: http://www.telegraphindia.com/1110322/jsp/frontpage/story_13747821.jsp [Accessed 2 November 2016].
5. Up until 2014, the Planning Commission was an advisory body in the Government of India, which formulated India's Five-Year Plans, among other functions. The Planning Commission was also responsible for allocating funds to ministries and states.
6. An initiative of the Government of Gujarat to ensure the availability of 24-hour power supply to rural areas and to supply power to scattered farmhouses through specially designed transformers.
7. The World Food Prize, 2012. Young Indian Scientist Announced as First Winner of the Borlaug Field Award. [online] Available at: https://www.worldfoodprize.org/index.cfm/87428/40141/young_indian_scientist_announced_as_first_winner_of_the_borlaug_field_award. [Accessed 19 January 2017].

About 3ie

The International Initiative for Impact Evaluation (3ie) is an international grant-making NGO promoting evidence-informed development policies and programmes. We are the global leader in funding, producing and synthesising high-quality evidence of what works, for whom, why and at what cost. We believe that high-quality and policy-relevant evidence will make development more effective and improve people's lives.



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