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Incentives for Water Conservation in Gujarat

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Ground water depletion in Gujarat India has immediate consequences for the agricultural sector and economic development in the region. Farmers are abandoning their land due to unreliable access to water resources. Moreover, deeper drilling for groundwater as a short term solution could result in irreversible salt water intrusion into the groundwater supply.

Water instability is compounded by energy concerns concomitantly in Gujarat. Public policy in Gujarat does not require farmers to pay additional costs for pumping deeper groundwater which is delivered to farmers at a fixed price. Co-dependently, water and energy in Gujarat are being consumed at unsustainable rates.

In an exclusive interview with Dan Stellar, Assistant Director of Columbia Water Center (CWC), he informed WaterWideWeb that the CWC in Gujarat will enlist local farmers in water and energy use efficiency by providing monetary incentives for conservation efforts.

CWC has partnered with local organizations such as the Taleem Research Foundation, Uttar Gujarat Vij Company Limited (UGVCL), the Sardarkrushinagar Dantiwada Agricultural University (SDAU), and the Government of Gujarat to stabilize water access and energy efficiency in Gujarat, initiatives closely linked to the Millennium Development Goals (MDGs). The results of CWC's study are still confidential pending final review. Nonetheless, Stellar provided preliminary analysis and implications of the Gujarat project to WaterWideWeb.

EAB: How did CWC identify water and energy as an interrelated issue in Gujarat, India?

DS: We have been aware of the severe groundwater depletion problem in Gujarat for a long time. Generally, the electricity supply problem is well known. It is due to the massive amounts of energy needed to pump groundwater. The electric supply is irregular and unreliable.

The state has made efforts to address this problem, most notably through a program called Jyotigram. Jyotigram targeted farmers' use of electricity.

In light of these facts, CWC conducted an extensive study in the area. The study yielded a great deal of information about the water and energy region. We have presented several phases of this study to the Government of Gujarat. At the moment, the details of the study are still confidential. We will be issuing a paper soon. However, the main points from the study show that:

- *Water tables in the study area have been falling steadily over the last 15-20 years. They have reached about 600ft below ground, risking irreversible salinization of aquifers.*
- *Farmers are adversely affected by the falling water tables. They need to drill deeper wells and buy more powerful pumps connected to the power grid.*
- *Energy use has most likely increased over the last two decades without a matching increase in irrigated area.*
- *The depths where groundwater is currently extracted, tubewell irrigated agriculture, as practiced today, is probably not financially viable.*

EAB: What are some of the short and long term goals of the project?

DS: The overall goal of the project is to reverse the problem of groundwater depletion in this area. We hope to stabilize groundwater level point at which large scale saltwater intrusion will occur. It is important to note that this project exemplifies a win-win system that encourages conserve resources rather than taxing them for additional water usage.

EAB: How can this project exemplify a sustainable solution to the water and energy crisis?

DS: The project will demonstrate a policy level solution to the water and energy crisis. While this particular solution is somewhat unique to context, it will show how policies can be structured to create economic incentives for conserving water and energy.

Currently, farmers in the area pay an extremely low fixed rate for electricity. They use electricity to pump water for crop irrigation. There is no incentive to conserve water or energy since farmers pay the same fixed cost regardless of how much electricity they use.

We propose the institution of an alternate system, one where farmers are given an allowance of units of energy. If they use less energy than they are allowed, they will be compensated for the amount saved. This system costs the state nothing since it was providing electricity essentially free of cost.

The project is economically sustainable. It does not have any net cost to any party. The project was designed in close consultation with local government officials to accommodate the local area.

Participation is completely voluntary. Farmers can opt to participate or not. If they prefer to continue with their usual pumping practices, they can do so without facing a penalty.

EAB: Are you sharing best practices on water and hydropower projects with any other organizations?

DS: We intend to share best practices, once the results of the project are analyzed. This will be accomplished through outreach on our web site, submission of academic papers, participation in conferences and other media appearances.

EAB: Thank you for interviewing with WaterWideWeb

DS: You're welcome.

Projects like the CWC's offer an innovative multifaceted approach to two of the most complex issues of the 21st century— reliable water and energy resources. Developing infrastructure and providing farmers with reliable water resources will support the achievement of MDGs in Gujarat.

Overcoming the complex environmental water and energy nexus in Gujarat requires the active involvement of local residents, enforceable public and private sector entities. In the case of CWC's Gujarat project, both water and energy are forces to be reconciled.

Please watch the video of CWC's work in Gujarat India [here](#)

The photo above was provided by Columbia Water Center.

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