Global Food for Thought

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Commentary - A five-pronged strategy to revitalizing Asia's public irrigation systems

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This commentary is part of a series organized by The Chicago Council's Global Agricultural Development Initiative and the World Food Prize to examine the relationship between water, agriculture, and food security in the lead up to this year's Borlaug Dialogue.

From supporting famed hydraulic civilizations in the ancient past to spearheading Green Revolution in the 1960s and 1970s, public irrigation systems have always played an important role in the agrarian economy of Asia. Asia accounts for the bulk of irrigated land in the world (70% of all irrigated land) and is home to some of the largest, as well as oldest, surface irrigation schemes. Largest and oldest as they may be, Asia's surface irrigation sector is now beset by a number of intractable problems leading to considerable underperformance of irrigation schemes.

Asia's population will reach five billion by 2050. To feed this burgeoning population, there is no doubt that Asia's irrigation systems have to perform better than they are doing now. How best can Asia's irrigation be revitalized so that we can grow more food with less water? Joint multi-stakeholder consultative research by International Water Management Institute (IWMI) and Food and Agriculture Organization (FAO) and funded by the Asian Development Bank (ADB) delineates a five prong strategy to improve performance of Asia's public irrigation sector.

Strategy 1: Modernize yesteryear's schemes for tomorrow's needs

In Asia, most irrigation schemes were built before the 1970s. Since then, farmers' needs have changed and irrigation systems have not been able to respond to those changes. Now, both structural and non-structural innovative irrigation technologies are needed to meet these demands. For example, surface irrigation schemes could be used to recharge aquifers or fill intermediate storage structures, such as farm ponds. This will give farmers better control over their irrigation needs.

Strategy 2: Go with the flow by supporting farmers' initiatives

While the area of surface irrigation has remained stagnant or been shrinking, farmers in South, East and Southeast Asia have increased yields using locally-adapted irrigation technologies to scavenge water from surface sources, wastewater and groundwater using cheap motorized pumps. There are opportunities for investors to identify successful initiatives and direct funds towards schemes that emulate farmers' innovations.

Strategy 3: Look beyond conventional participatory models

Efforts to reform large-scale irrigation schemes by transferring management to farmers have had less than expected success in Asia. This is because farmers have been burdened with responsibilities without adequate power and resources to execute those. Neither has there been much change in attitude of the irrigation bureaucracies towards farmers. So, there is an urgent need to increase accountability of irrigation staff by reforming irrigation bureaucracy and gear them

towards better service orientation.

Strategy 4: Boost knowledge through training

If new approaches are to be successful, investors will need to direct funds towards training existing staff, attracting new talent through forward-thinking curricula and realistic remuneration packages and build capacity of all stakeholders, including irrigation bureaucracy.

Strategy 5: Invest outside the irrigation sector

The irrigation sector is embedded within Asia's wider political economy and therefore affected by policies outside the sector. For example, energy policies in South Asia are the main driving factor for rapid and often unsustainable groundwater development in the region. Similarly, hydro-electricity policies in Southeast Asia will influence the future course of irrigation development in the region, as will cotton prices and quotas in Central Asia.

In summary, the strategy is to look for solutions that work in practice and these need not necessarily be ideal 'text book' solutions. In much of the developing world, indeed, the 'second best' solutions often hold the key to successful policy changes. Examples of second best solutions include: Gujarat's policy of providing high quality but rationed power supply to farmers, Punjab's law prohibiting paddy transplant before the onset of the monsoon, and the decision of irrigation managers at the main systems level in the Zhang He irrigation system in China to reduce water allocation to agriculture and instead divert water to municipal and industrial use. All these interventions led to reduction in water diverted for agriculture; in the first two examples from India, the quantum of groundwater pumped decreased while in the Chinese example, in response to declining water supply, farmers started using water more efficiently and water productivity shot up.

Aditi Mukherji joined IWMI in 2006 after receiving a PhD degree in Geography from the University of Cambridge, UK. Her research focuses on institutions and policies of water resource management. She has published over 40 pieces of work, including two edited books on this subject. In 2012, she was awarded the first ever Norman Borlaug Award for Field Research and Application awarded by the World Food Prize Foundation.

Related publications:

- IWMI and FAO, 2010. Revitalizing Asia's irrigation to sustainably meet tomorrow's food needs
- **Mukherji, A.**, T. Facon, D. Molden and C. Chartres. 2012. Growing more food with less water: How can revitalizing Asia's irrigation help? *Water Policy*. **Vol 14 No 3 pp 430–446**, doi:10.2166/wp.2011.146

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