The Tragedy of the Groundwater Commons: Adaptation to Environmental Change in Agriculture

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A wave of research on how climate change will affect agricultural output has not reached any agreement. One school of thought says that farmers will adapt to a changing climate smoothly over time and there will be little loss to agriculture as a whole. Another school believes that hotter temperatures and more variable rainfall will devastate farmers, especially poor farmers with little resources to adapt. What is missing to reconcile these views is evidence on how farmers have adapted to extreme environmental changes in practice.

We will study farmer adaptation to man-made environmental change in India. India uses more groundwater than the United States and China combined. Farming with groundwater yields higher profit at lower risk for Indian farmers, but groundwater is growing scarce over time, in a classic “tragedy of the commons,” as farmers use cheap electricity to pump ever more water out of the ground. This project studies how both farmers and the government respond to water scarcity using survey data on agricultural production and geographic data on water scarcity. The RA(s) will use survey data to measure how farmers adapt their agricultural production and GIS data to relate farmer production decisions to groundwater depletion.

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