

## **The Economic Consequences of Popular a Drought-Mitigation Policy**

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Global warming produces erratic rainfall patterns, increasing the incidence of extreme weather events, including prolonged drought. In developed countries, prolonged drought can drive regional agricultural sectors to the verge of ruin, and significantly depress economy-wide growth rates. Lesser-developed countries face widespread crop failure and starvation. Policymakers are challenged to adopt resource management policies satisfying the following political criterion: devastating impacts of water scarcity must be mitigated without inflicting further economic pain. Policymakers worldwide promote improved on-farm irrigation efficiency as a drought management policy that meets this criterion by conserving water while sustaining agricultural production.

Current policies that support increasing irrigation efficiency are however potentially ineffective in improving water supply downstream, because they overlook or underestimate the possible positive externality of inefficient irrigation, which arises due to the fact that farmers pay for water diversion instead of paying for water consumption. Increasing irrigation efficiency in the presence of this externality can lead to *increased* consumption of water on a basin-wide scale. We build a multi-sector model of an agricultural economy to demonstrate the potential negative effects on economic growth of improving irrigation efficiency, as well as to develop optimal policy for encouraging effective water policy. Additionally, this paper provides an interesting example of marginal productivity-increasing technological innovation that threatens sustainable resource use.

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