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The U.S. Government's Global Hunger & Food Security Initiative



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The role of small-scale irrigation for climate resilience: Insights from the 2015 ENSO event in Ethiopia

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ILSSI: PHASE II

The El Nino Southern Oscillation (ENSO) weather event of 2015/16 caused severe drought in northern and central Ethiopia

Affected 9.7 million people

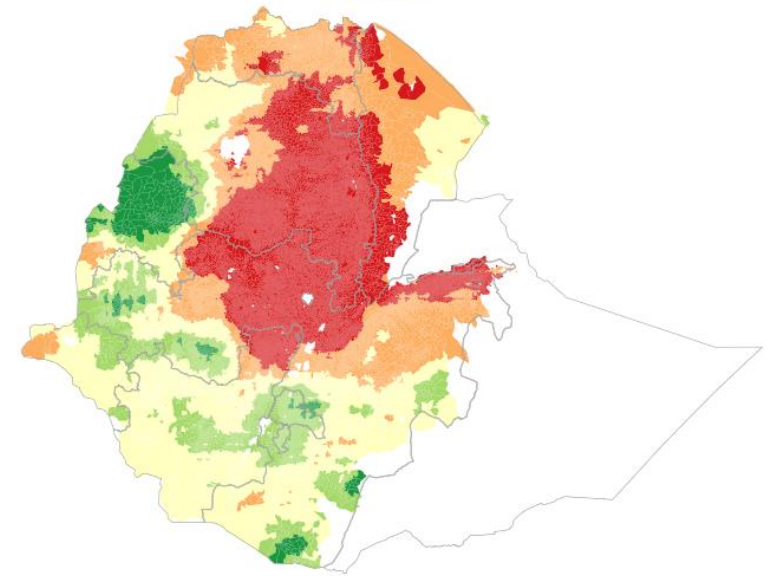
A dip in national GDP by 1.6% and Ag GDP by 3.6 % (Koo et al. 2019)

What were the impacts of the drought on net crop income, cultivated area, average daily food expenditure, HDDS, and market participation?

Did irrigators fare better compared to rainfed farmers?

A difference-in-differences analysis using data from 2012 and 2016

Rainfall deviation from 15-Year Meher Average (2010-2014)
Meher 2015



Z-Score 3 to 1 1 to 0 0 to -1 -1 to -2 -2 to -5

KEY LESSONS FOR SMALL SCALE IRRIGATION AND CLIMATE CHANGE

Impact on rainfed farmers:

- A decline of net crop income by 37%, area cultivated by 8%, HDDS by 3%, and share of harvest sold by 10%

Irrigators:

- Maintained their net crop income, area cultivated, HDDS, and share of harvest sold
- Increased their daily expenditures on food by 23 Ethiopian Birr (in real 2012 prices) which is to 72% of their average daily food expenditure in the pre-drought period, to cope with the effects of the drought

The study quantifiably documented the role of irrigation as a key climate smart agricultural intervention that can improve the resilience of farming households in the face of major weather shocks

KNOWLEDGE GAPS

What information is needed going forward, to improve project and program design and implementation for irrigation

What type of resilience?

- Absorptive (short-term coping capacity to reduce immediate impacts)
- Adaptive (long-term capacity to take incremental adjustment by learning from previous shocks)
- Anticipatory (capacity to foresee climate extremes before a shock occurs through repeated learning, early warning systems, and weather forecast information)
- Transformative (long-term system level changes, changes in social structure, policy shifts, and institutional changes)

What type of irrigation technologies and institutions are more suited to improve the resilience from irrigation? Irrigation is also affected by drought, especially if it is a prolonged drought.

Does irrigation affect farmers' perceived resilience to climate shocks?

Is this consequential to how they prepare for future shocks?