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THEMATIC AREA: Agriculture, Land & Food Systems

Promised Harvests, Lost Forests:

Two decades of large-scale land transfers in Gambella reduced tree cover — but did not raise agricultural production

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KEY MESSAGES

- Between 2000 and 2020, Ethiopia transferred about 664,000 hectares of land in Gambella to large-scale agricultural investors. Satellite evidence covering every square kilometer of the region shows these transfers produced no detectable gain in crop production or cultivated area.
- The transfers did carry an environmental cost: tree cover in affected areas fell persistently — roughly half a percentage point per year — through progressive thinning and partial clearing rather than outright conversion of forest to farmland.
- The root cause is an implementation gap: government can allocate land far faster than it can screen investors or enforce productive use. About 70 percent of Gambella's commercial farms do not effectively use the land they hold.
- Future transfers should be conditional: verify investor capacity first, release land in stages, write productive-use and environmental covenants into leases, monitor them with low-cost satellite data, and reclaim idle concessions.

The Issue

Since the mid-2000s, Ethiopia has treated large-scale land transfers as an engine of agricultural transformation. The first Growth and Transformation Plan targeted roughly 3.3 million hectares for commercial investors, and about 2.47 million hectares were transferred between 2005 and 2015 — much of it in the lowland frontier. Gambella sat at the center of this drive: around 41 percent of the region was designated for agricultural investment, and about 664,000 hectares were handed to private investors between 2000 and 2020.

The promise was capital, technology, jobs and export earnings. The concern was that transfers into forested, weakly governed frontier areas would damage ecosystems and livelihoods without delivering production. Two decades on — with new allocations suspended and federal and regional governments weighing whether and how to restart them — the policy question is direct: did the transfers deliver transformation, and at what environmental price? This brief summarizes causal evidence on both questions, taking the Gambella region in Ethiopia as a case study.

Methods

The study divides Gambella — Ethiopia's lowland investment frontier, where about 41 percent of the region was designated for commercial agriculture — into roughly 30,000 one-square-kilometer grid cells and follows each one from 2000 to 2020, linking the government's

administrative records of land transactions to high-resolution satellite measures of crop growth, forest cover and land use. About 38 percent of grid cells were reached by a transfer, most during the 2008–2014 wave.

Because transfers reached different kebeles in different years, the staggered rollout serves as a quasi-natural experiment: grid cells overlapping contracted land are compared, before and after transfer, with untouched grid cells in the same investment-exposed kebeles, using an event-study difference-in-differences estimator built for staggered adoption.

What the Evidence Shows

Three results stand out (Figure 1):

No gain in production: Crop growth (NDVI) in transferred areas is statistically unchanged after transfer (Panel A) — a precise null that holds across two independent satellite systems — and cultivated area did not expand. Land moved; production did not follow.

Persistent loss of tree cover: Tree cover declines by roughly 0.4 a percentage point per year among affected areas (Panel B), and the share of forest land inside affected areas fell by about 3 percentage points — the signature of progressive thinning, access roads, base camps and partial clearing rather than wholesale deforestation.

No offsetting local boom: Night-time lights — a proxy for local economic activity — grew more slowly in and around transferred areas than elsewhere. There is no sign of positive spillovers for neighboring communities.

Why It Matters for Policy

The state proved far better at allocating territory than at screening investors or enforcing productive use. About 70 percent of Gambella's commercial farms do not effectively use the land they hold. The costs of commercialization — early clearing, access roads, base camps, speculative holding — therefore arrived at the moment of transfer, while the benefits never did. Contract terms that tied clearing to fixed timelines, and privileges such as duty-free equipment imports that did not depend on actual production, rewarded holding and clearing rather than farming. These findings speak most directly to lowland frontiers such as Gambella and Benishangul-Gumuz rather than to every setting; but as the government weighs reopening the land pipeline, they set the condition on which new transfers should depend — the capacity to enforce productive, environmentally responsible use, not merely the capacity to allocate.

Conclusion

In frontier regions where the state can allocate land faster than it can oversee it, large-scale transfers have delivered the environmental costs of transformation without its benefits. The corrective tools — staged release, enforceable covenants, satellite monitoring, credible reclamation of idle land — can be applied not only to future transfers but also to the 664,000 hectares already committed. The single most important next step for decision-makers is to put that enforcement capacity in place before the next hectare is transferred.

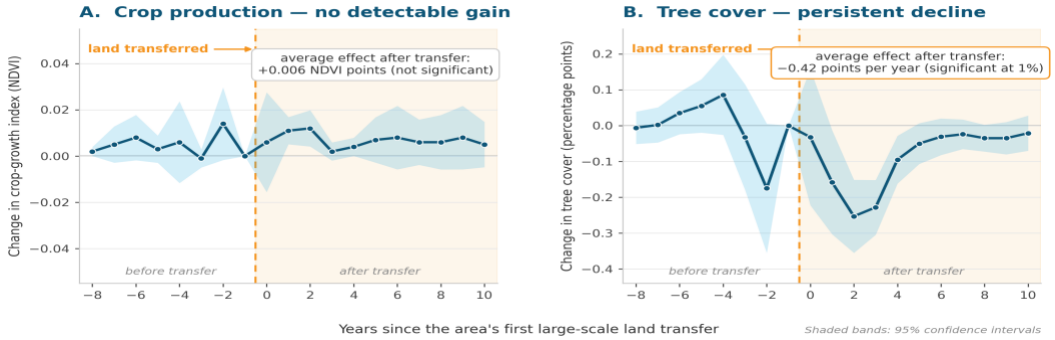


Figure 1. Each dot shows how areas handed to investors differed from comparable untouched areas in a given year; year 0 is when the land was transferred. Panel A: the line stays flat at zero — transferred land produced no more crops after the transfer than before, and no more than land that was never transferred. Panel B: after the transfer the line falls below zero in the first years after transfer, then returns to zero but never above it — the cover that was lost was not regained. Shaded bands are 95% confidence intervals. Source: PIRC, based on Kassie et al. (2026).

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POLICY RECOMMENDATIONS

1. **Screen and stage.** Before signing, the Ministry of Agriculture and regional investment bureaus should verify investors' capital, equipment and technical capacity — and release land in tranches tied to demonstrated development milestones, rather than transferring full concessions up front.
2. **Enforce use-it-or-lose-it, with satellites.** Write productive-use and tree-cover covenants into every lease, monitor compliance annually with the satellite data used in this study, and reclaim concessions that remain idle or are held for speculation or duty-free import privileges.
3. **Sequence support; drop clearing deadlines.** Coordinate feeder roads, credit and equipment-import access with allocation so that investment can actually follow transfer — and replace clearing requirements based on contract timelines with development plans based on land attributes and environmental safeguards.

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ABOUT THIS BRIEF

This brief was prepared by Solomon Zena Walelign, Dagim Belay, Workineh Asmare Kassie and Jipeng Zhang. It draws on a peer-reviewed, quasi-experimental study of large-scale land acquisitions, combining administrative records of land transactions in Gambella (2000–2020) with high-resolution satellite data on crop growth, forest cover and land use. The full citation of the paper is: Kassie, W.A., Admasu, Y., Belay, D., Walelign, S.Z. and Zhang, J. (2026). "Large-scale land acquisitions in Ethiopia: Impacts on agricultural productivity and deforestation." *Journal of Development Economics*, 183, 103836. https://doi.org/10.1016/j.jdeveco.2026.103836

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