Major Economies and Climate Change Research Group

Agriculture and Land Use, Land Use Change, and Forestry
Executive Summary

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EXECUTIVE SUMMARY

This report discusses the potential for reduction of greenhouse gas (GHG) emissions from land use, land use change, and forestry (LULUCF) and agriculture related activities. The LULUCF and agriculture sectors have been repeatedly identified as sectors where global efforts to reduce carbon emissions can achieve quick and easy wins. To explore this claim, this report examines specific carbon emissions producing activities, evaluates technical interventions and highlights those with the greatest potential for emissions reductions. The report goes on to analyze the costs, benefits and barriers associated with these selected interventions and examines their implementation scope, highlighting specific countries where each intervention is most likely to yield the greatest emission reduction.

Key Findings

(1) Plausible actions: Our analysis identifies 4 agriculture-related actions and 8 forestry-related actions that can increase abatement levels given existing technical, market and governance barriers. Considering varying levels of proposed implementation, we estimate these actions to reduce GHG emissions by 29% or 4.38 GtCO2e from projected BAU emissions for 2030.

(2) Forestry sector gap: The gap between full technical potential and our proposed potential is largely due to the forestry sector. This demonstrates both the importance of forests in the efforts to reduce GHG emissions but also the difficulty to realize full abatement potential. Brazil remains the single most important country in the forestry sector- accounting for over half of the abatement potential but faces high costs.

(3) Agriculture cost efficiency: Although agriculture interventions contribute a smaller portion of the emissions reductions for LULUCF, they offer greater benefits to costs than forestry interventions. Two of the four strategies selected are cost saving for all countries. The top 50% of emissions reductions from agriculture are from China, the US, Russia and developing Asia (mainly Indonesia).

(4) Abatement potential time paths: Agriculture abatement potential will fall more dramatically earlier on and rise steadily between 2025 and 2030. This is due to low projections for full implementation in the near future and the future growing importance of agriculture in relation to forestry. Forestry abatement potential is expected to rise at a more even pace as technical capacity and governance capacity continues to grow.

Barriers

(1) Multiple barriers: Both the agriculture and forestry sector face financial, technical, institutional, political, as well as cultural barriers that discourage sustainable and responsible use of land and forests. These are discussed at length in the report.

(2) Uncertainty and Risk: *In agriculture*, uncertainty, risk, and high upfront costs for smallholders act as barriers to adoption of low-tech mitigation strategies.

(3) Subsidies: Politically motivated subsidies distort the market can encourage practices that have detrimental long-term environmental effects. Subsidies also reduce efficiency and, as a result, stifle innovation. The political barriers are the cause for substantial losses in abatement potential, particularly in agriculture on the African continent.

(4) **Technical capacity:** Lack of locally appropriate knowledge and poor research and development (R&D) prevent the adoption of innovative and sustainable land management practices.
(5) **MRV:** In forestry, the difficulty in institutionalizing and devolving Monitoring, Reporting and Verification (MRV) practices inhibits private sector funding for sustainable forestry projects.
(6) **Contradicting national policies:** Physical and financial pressures from land-use regulation and macroeconomic policies increase the opportunity cost of preserving forests. This makes it difficult for local level actors to conform to national level policy.
(7) **Governance challenges:** Technical and governance barriers such corruption and fragmented political systems discourage private sector investment.

Recommendations

(1) **Comparative abatement potential:** Although abatement potential is higher in the forestry sector, the financial gains make agriculture a more attractive sector to focus current efforts. However, this is contingent on behavioral change, which is slow and difficult to incentivize.
(2) **Concentrating efforts:** The concentration of abatement potential in select countries and regions indicates that we should direct funding, research, technical assistance and capacity building to these areas. In agriculture, these include China, India, Indonesia and USA. In forestry, these include Brazil and Indonesia.
(3) **Leveraging benefits:** *In agriculture,* the gains to individual farmers in crop productivity and low technicality of activities can garner public support and facilitate rollout of agriculture abatement activities. Smallholder farmers can be incentivized to extend their decision horizons by increasing access to credit, drought insurance, and information on weather and market volatility from the international community.
(4) **Highlighting co-benefits:** The DRC and CAR possess tremendous abatement potential, but due to political instability and social unrest, full implementation is lost. The GHG emissions reduction potential in the region is crucial and should be highlighted as a co-benefit to international efforts for peace building in the region.
(5) **Promoting CSR:** Governments can incentivize environmentally responsible corporate behavior through taxation policies and NGOs can lobby for specific areas for improvements in the supply chains of global food and beverage companies.
(6) **Supporting technology:** *In forestry,* continuing and increasing funding for technology transfers and MRV, including Landsat forest cover monitoring systems, at all levels remain critical for decreasing forestry related emissions. Federal governments can incentivize public-private partnerships at subnational level to realize national level plans.
(7) **Expanding mandates:** Expanding the CDM's mandate to apply to other LULUCF-related activities, apart from afforestation, would allow individual sub national level projects to be funded, thus filling the current gap in REDD+ funding.
(8) **Timing matters:** In the short-to-medium time frame (to 2030), we recommend focusing on immediate efforts on the agriculture sector in order to maximize the cost-savings opportunities. Given the sheer volume of GHG emissions from forestry, efforts to continue pushing for change in forestry are essential in the long-term. It is clear that without some action now and efforts to build a better system for financing and MRV, the efforts to battle to reduce global greenhouse gases will be lost.