



Global assessment of the economics of land degradation and improvement

Ephraim Nkonya

International Food Policy Research Institute, Washington, United States (e.nkonya@cgiar.org)

Land degradation—defined by the Millennium Ecosystem Assessment report as the long-term loss of ecosystems services—is a global problem, negatively affecting the livelihoods and food security of billions of people. Intensifying efforts, mobilizing more investments and strengthening the policy commitment for addressing land degradation at the global level needs to be supported by a careful evaluation of the costs and benefits of action versus costs of inaction against land

degradation. Consistent with the definition of land degradation, we adopt the Total Economic Value (TEV) approach to determine the costs of land degradation and use remote sensing data and global statistical databases in our analysis. The results show that the annual costs of land degradation due to land use and land cover change (LUCC) are about US\$231 billion per year or about 0.41 % of the global GDP of US\$56.49 trillion in 2007. Contrary to past global land degradation assessment studies, land degradation is severe in both tropical and temperate countries. However, the losses from LUCC are especially high in Sub-Saharan Africa, which accounts for 26 % of the total global costs of land degradation due to LUCC. However, the local tangible losses (mainly provisioning services) account only for 46 % of the total cost of land degradation and the rest of the cost is due to the losses of ecosystem services (ES) accruable largely to beneficiaries other than

the local land users. These external ES losses include carbon sequestration, biodiversity, genetic information and cultural services. This implies that the global community bears the largest cost of land degradation, which suggests that efforts to address land degradation should be done bearing in mind that the global community, as a whole, incurs larger losses than the local communities experiencing land

degradation. The cost of soil fertility mining due to using land degrading management practices on maize, rice and wheat is estimated to be about US\$15 billion per year or 0.07 % of the global GDP. Though these results are based on a crop simulation approach that underestimates the impact of land degradation and covers only three crops, they reveal the high cost of land degradation for the production of the major food crops of the world. Our simulations also show that returns to investment in action against land degradation are twice larger than the cost of inaction in the first six years alone. Moreover, when one takes a 30-year planning horizon, the returns are five dollars per each dollar invested in action against land

degradation. The opportunity cost accounts for the largest share of the cost of action against land degradation. This explains why land users, often basing their decisions in very short-time horizons, could degrade their lands even when they are aware of bigger longer-term losses that are incurred in the process.