**“Money Growing on Trees” Background: Global Deforestation, PES, and REDD+**

Over 50% of global forests have been converted to human use since the advent of modern agricultural practices (Millennium Ecosystem Assessment, 2005). Tropical forest area is decreasing at over 10 million hectares per year, with much of the deforestation occurring in developing countries (Bluffstone et al., 2013; Millennium Ecosystem Assessment, 2005; Pan et al., 2011). Forest degradation accounts for 11–24% of annual greenhouse gas emissions (IPCC, 2014; Saatchi et al., 2011; Van der Werf et al., 2009).

Restoring forests and preventing forest degradation can be a vital part of reducing greenhouse gas emissions. The 2015 Paris climate accord committed to limit “the increase in the global average temperature to well below 2°C above preindustrial levels” and for the first time counted (toward emission reduction targets) countries’ efforts to offset their emissions by planting or protecting forests (Griscom et al., 2017; Popkin, 2019). Bastin et al. (2019) find “there is room for an extra 0.8 billion hectares of canopy cover, which would store 205 gigatonnes of carbon.” Curbing deforestation and forest degradation is also believed to be a very cost-effective way to address climate change and also support adaptation (Angelsen, 2009; McKenney et al., 2004; McKinsey & Company, 2009; Stavins and Richards, 2005; Stern, 2006).

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| **Flavors of REDD**  REDD:   * Focus only on carbon sequestration; allows no forest use   REDD+ (or REDD plus):   * Sustainable forest management * Conservation of forests * Enhancement of carbon sinks   REDD++:   * Low-carbon but high biodiversity lands |

The UN’s Reducing Emissions from Deforestation and forest Degradation (REDD+) program serves this purpose. REDD+ is a payment for ecosystem services (PES) system created under the UN’s Framework Convention on Climate Change (UNFCCC, 2011). PES programs are market-based (a.k.a., incentive-based) approaches to environmental regulation and are a key part of the policy toolkit for goals like watershed management, reducing deforestation, species preservation, and managing non-point source pollution (Engel, 2016; Engel et al., 2008; Wunder, 2005).

PES programs use a market to connect the receivers and the providers of an ecosystem service. REDD+ creates a market for carbon sequestration and reduction in greenhouse gas emissions by linking providers of carbon sequestration with countries that are required by the UNFCCC (or otherwise committing) to reduce emissions. Effectively, the program provides incentives to release less, and sequester more, carbon in selected countries and for countries that are required to reduce emissions to fund these efforts by purchasing credits (Baker et al., 2019; Bluffstone, 2013; Bluffstone et al., 2013; Rakatama et al., 2017). The ‘+’ in REDD+ signifies other co-benefits that have been added to the original REDD program (which was focused solely on carbon) to address potentially negative, unintended effects on non-carbon ecosystem services and mitigate the program’s effects on the people who currently have claims to forests (Bluffstone, 2013; Bluffstone et al., 2013; Sims and Alix-Garcia, 2017).

REDD+ is expected to create an opportunity to increase investment in forest management. This investment can bring many benefits, including achieving critical development goals, enhancing forest governance, bolstering global conservation efforts, reducing carbon emissions and deforestation, and contributing to poverty reduction, particularly in communities that manage forests (Bluffstone et al., 2013; Economist, 2010; Sims and Alix-Garcia, 2017; Springate-Baginski and Wollenberg, 2010; Toni, 2011). As of 2014, about 64 counties were engaged in conducting about 300 pilot REDD+ projects (Sills et al., 2014; UN-REDD, 2015).

Community forestry management has generally been considered a successful means to not only to halt deforestation and forest degradation but also to craft institutional mechanisms for equitable benefit sharing in communities. About 25% of developing country forests, or three times as much as is owned by the private sector, is community owned (Agrawal et al., 2008; Bluffstone, 2013; Bluffstone et al., 2013; Chhatre and Agrawal, 2009). Therefore, the successful adoption of REDD+ in developing countries depends on the effectiveness of REDD+ in community-controlled settings. Community-controlled forestry requires coordination between community members, but, as discussed by Ostrom (1990, 2010), Bluffstone et al. (2013), and Agrawal et al. (2008), such coordination can be challenging.

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