



Forest plantations' investments in social services and local infrastructure: an analysis of private, FSC certified and state-owned, non-certified plantations in rural Tanzania



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ABSTRACT

With the rapid expansion of forest plantations worldwide, communities, NGOs and researchers are increasingly expressing their concerns about the outcomes of plantations' activities for local households. This study investigates the perceptions of local households about forest plantations' investments in social services and local infrastructure in rural Tanzania. We consider households living in villages adjacent to private, FSC certified forest plantations and households in villages adjacent to a state-owned, non-certified plantation. We use survey data from 338 households to analyze perceived changes in school enrolment, quality of education, and the number and quality of health centers, roads and bridges associated with investments by plantations. We use a mixed method approach and complement the results from a logistic regression model with observations of the size and quality of social services and infrastructure in the villages and with findings from focus group discussions. The results show that households in the villages adjacent to both the private, FSC certified and state-owned, non-certified forest plantations associate the plantations with improved social services and local infrastructure in the study villages. Moreover, we find that the private, FSC certified forest plantations are viewed more favorably than the state-owned, non-certified plantation in terms of their contributions to social services and local infrastructure in the study areas. Richer households tend to perceive the investments of the plantations more favorably than poorer households in the study villages.

1. Introduction

Forest plantations are increasingly promoted as a means to satisfy the rising demand for forest products in the world. The global decline of timber supply from natural forests has been accompanied by an increase in the supply of timber from planted forests in the past three decades and this trajectory is expected to continue in the coming years (FAO, 2015; Indufor, 2012a,b; Payn et al., 2015; Pirard et al., 2017). While the global forest area decreased from 4.28 billion hectares in 1990 to 3.99 billion hectares in 2015, the area of planted forests increased from 167.5 to 277.9 million hectares in the same period (FAO, 2015; Payn et al., 2015). Rising wood demand, availability of land and suitable climatic conditions in the tropics have encouraged investment in forest plantations in this region (Indufor, 2012a,b). The area of

planted forests in Africa increased by about 37% between 1990 and 2015: from 11.7 million hectares in 1990 to 16 million hectares in 2015 (FAO, 2015). Tanzania is one of the countries in Africa which have witnessed rapid expansion of forest plantations and the country's area of planted forests almost doubled in the past three decades: from 150,000 ha in 1990 to 290,000 ha in 2015 (FAO, 2015). Private investments in sustainable forest plantations are growing especially in developing countries because public institutions often lack the financial incentives and capacity to ensure sustainable forest management (FAO, 2015; World Bank, 2008). Tanzania has a long history of promoting private forestry to contribute to development and poverty alleviation (URT, 1998). Accordingly, private forest plantations have been expanding rapidly in the country and are expected to overtake state-owned plantations as the major source of wood supply in the coming

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years (AFF, 2011; Indufor, 2011). Tanzania is also among the countries with the fastest growing area of FSC certified forests in Africa (FSC, 2015).¹

Views regarding large-scale private forest plantations and the outcomes of their activities for local communities are mixed. On the one hand, non-governmental organizations, researchers and local communities have voiced concerns about adverse outcomes of such plantations. Recurring concerns are related to conflicts about land ownership, displacement of local households and restrictions on their access to and control over land and other natural resources (Bleyer et al., 2016; Byakagaba and Muhiirwe, 2017; Charnley, 2005; Gerber, 2011; Gerber and Veuthey, 2010; German et al., 2014; Locher and Müller-Böker, 2014; Schoneveld et al., 2011). For example, Gerber (2011) found that displacement of local people was associated with the expansion of industrial forest plantations in the global south. In a review of perceptions towards socio-economic outcomes related to plantation forestry, Schirmer (2006) found that such plantations are associated with a loss of social services (schools, financial institutions) in rural areas as a result of population decline due to voluntary or forced displacements of rural dwellers. On the other hand, studies and anecdotal evidence indicate that local households perceive forest plantations positively in terms of their socio-economic outcomes (Bleyer et al., 2016; FAST, 2014; Landry and Chirwa, 2011; Pirard et al., 2017). Positive perceptions are commonly related to employment opportunities, higher wages, better living conditions and infrastructure investments by plantations. For example, private forest plantations were associated by local households with improved wealth and perceived well-being of local households and with improved employment opportunities and infrastructure in Mozambique (Bleyer et al., 2016; Landry and Chirwa, 2011). Perceptions of communities towards changes associated with plantations may differ from actual changes linked with plantation activities. Even in situations where plantations have undertaken investments in social services, community perceptions may not reflect these as positive changes. This may arise if the social services are not of use to local communities but rather just promote the activities of the plantations and if communities value the social investments by the plantations less than the value they place on the village land used by the plantations. Moreover, even though actual investments have been made by plantations, these may not necessarily translate into uniform positive (perceived) changes to all community members. Differences between actual and perceived changes may partly be indicative of differential effects of plantations' activities on various groups.

In this study, we examine the perceptions of local households in rural villages in Tanzania about investments by private, FSC certified forest plantations in social services (school enrolment and quality of education) and local infrastructure (health centers, roads and bridges), and compare them with perceptions towards a state-owned, non-certified plantation. It is important to consider the perceptions of local people in investigating the outcomes of investments in land use changes, especially in long-term and risky investments such as forestry operations (Edelman et al., 2013; Pirard et al., 2017; Smalley and Corbera, 2012). In developing countries, forest plantations are often established on village lands which used to be under customary land use arrangements. Whether land use changes to plantations are accepted by adjacent communities partly depends on the legal nature of the land acquisition, consultation of communities in the acquisition process and on the land use type before the plantations (Purdon, 2013). An analysis of perceptions of communities towards forest plantations provides insights into the expectations of communities about rural land use changes to plantations and the acceptability of different types of plantations. Such an analysis can inform the formulation of a land use policy

as social acceptability is an important element in designing such a policy. Social acceptance of plantations depends on acceptance by local communities and can influence the sustainability of plantations (Williams, 2014). Using household data from villages nearby private, FSC certified and state-owned, non-certified plantations, we apply ordered logistic regression analysis to quantitatively examine the relation between the plantations and households' perceived changes in social services and infrastructure. Further, we examine whether the perceptions of households vary over socio-economic characteristics. Evidence shows that perceptions of households towards forest plantations vary among different socio-economic groups. For example, richer households and households who work for plantations perceived the outcomes of plantations' activities positively in Mozambique (Bleyer et al., 2016; Landry and Chirwa, 2011). Unlike previous studies, we compare private, FSC certified plantations with state-owned, non-certified plantations to assess whether ownership and certification status drive differences in perceived changes associated with plantations. We use a mixed method approach whereby we complement the results from the quantitative analyses with a qualitative analysis of community perceptions based on focus group discussions and with results from visual inspection of the size, operation and quality of social services and infrastructure in the study villages.

Despite the continued expansion of private forest plantations in developing countries, there are few quantitative studies on the perceptions of rural communities towards the outcomes of the investments of these plantations (Pirard et al., 2017). Moreover, these studies have focused on the perceptions of communities on the (expected) roles of plantations in employment generation, changes in incomes or wealth and access to forest products for households in adjacent villages (Bleyer et al., 2016; Landry and Chirwa, 2011). However, community development implies more than an increase in household income or wealth: investments in social services and infrastructure sustain long-term development and poverty alleviation (Arrow et al., 2012; Casaburi et al., 2013; Duffy-Deno and Eberts, 1991). Still, national and local governments in developing countries often lack the financial resources to improve infrastructure provision, especially in remote rural areas. In such situations, the role of private sector investments can be vital (Collier and Cust, 2015).

Our study contributes to two academic areas. First, it extends the literature on the perceptions of local communities towards forest plantations by providing quantitative evidence on perceptions of villagers towards changes associated with plantations' investments in social services and local infrastructure. We take a comparative approach involving households in villages adjacent to FSC certified plantations of a private forest company and households in villages neighboring a state-owned, non-certified plantation. We account for differences between villages to relate the investments of the plantations to perceived changes in social services and local infrastructure. Most studies on the interplay between forest plantations and local communities are based on qualitative data and do not triangulate the results from the qualitative surveys with results from quantitative survey data (Locher and Müller-Böker, 2014; Obidzinski et al., 2012; Pirard et al., 2017). Quantitative studies on the perceptions of households towards private forest plantations thus far have not used a comparative approach to assess differences in household perceptions among plantations under different ownership and certification status. Ownership and certification status can potentially affect how plantations conduct their activities and thereby driving differences in (perceived) changes associated with plantations. These are due to the profit maximization motive of private owners and the standards and criteria of certifying bodies which demand contributions to local communities and thus making private, certified plantations more likely to be associated with positive changes in local development (Bass et al., 2001; FSC, 2012). Landry and Chirwa (2011) used quantitative data to assess the potential socio-economic outcomes of plantations in Mozambique and dealt with anticipated outcomes reported by local households (ex-ante analysis), not

¹ Forest Stewardship Council (FSC) is an independent global not-for-profit organization that sets standards for responsible forest management to promote socially, economically and environmentally beneficial outcomes (FSC, 2015).

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