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The implications of ignoring smallholder agriculture in climate-financed forestry projects: empirical evidence from two REDD+ pilot projects

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ABSTRACT

Changes in agricultural practices can play a pivotal role in climate change mitigation by reducing the need for land use change as one of the biggest sources of GHG emissions, and by enabling carbon sequestration in farmers' fields. Expansion of smallholder and commercial agriculture is often one of the main driving forces behind deforestation and forest degradation. However, mitigation programmes such as REDD+ are geared towards conservation efforts in the forestry sector without prominently taking into account smallholder agricultural interests in project design and implementation. REDD+ projects often build on existing re- and afforestation projects without major changes in their principles, interests and assumptions. Informed by case study research and interviews with national and international experts, we illustrate with examples from Ethiopia and Indonesia how REDD+ projects are implemented, how they fail to adequately incorporate the demands of smallholder farmers and how this leads to a loss of livelihoods and diminishing interest in participating in REDD+ by local farming communities. The study shows how the conservation-based benefits and insecure funding base in REDD+ projects do not compensate for the contraction in livelihoods from agriculture. Combined with exclusive benefit-sharing mechanisms, this results in an increased pressure on forest resources, diverging from the principal objective of REDD+. We note a gap between the REDD+ narratives at international level (i.e. coupling development with a climate agenda) and the livelihood interests of farming communities on the ground. We argue that without incorporating agricultural interests and a review of financial incentives in the design of future climate finance mechanisms, objectives of both livelihood improvements and GHG emission reductions will be missed.

Key policy insights


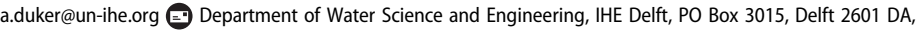
- REDD+ is positioned as a promising tool to meet climate, conservation and development targets. However, these expectations are not being met in practice as the interests of smallholder farmers are poorly addressed.
- REDD+ policy developers and implementers need more focus on understanding the interests and dynamics of smallholder agriculturalists to enable inclusive, realistic and long-lasting projects.
- For REDD+ to succeed, funders need to consider how to better ensure long-term livelihood security for farming communities.

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1. Introduction

REDD+ projects,¹ as part of broader REDD+ national programmes, represent a promising instrument to substantially contribute to climate change mitigation. In fact, REDD+ is one of the mechanisms supported by the Green Climate Fund (GCF). The GCF is meant to provide the main funding opportunities for climate change mitigation and adaptation in the Global South for the coming years, with an aspirational budget of 100 billion US\$ in 2020 (UNFCCC, 2018). However, the development and implementation of REDD+ pilot projects have been heavily challenged and criticized by scholars for various reasons, including poor governance and insecure tenure systems (Davis, Daviet, Nakhooda, & Thuault, 2010; Gupta, 2012; Kanowski, McDermott, & Cashore, 2010; Phelps, Guerreo, Dalabajan, Young, & Webb, 2010), too little inclusion of rights, interests and benefits for communities (Anderson, 2011; Lyster, 2011; Shankland & Hasenclever, 2011; Visseren-Hamakers, McDermott, Vijge, & Cashore, 2012), constrained participation of the private sector in absence of a properly functioning carbon market (Corbera & Schroeder, 2011), and limited cost-effectiveness due to high transaction and opportunity costs (Huettnner, 2012; Visseren-Hamakers et al., 2012).

REDD+ projects can be market-based, whereby funding is sourced from carbon markets, while others derive their funds from more conventional aid and nature conservation funds. Often, a combination of financial incentives and resources from public and private investors is found. This paper reviews two projects in the Global South that serve as trial sites for implementing REDD+ programmes at the national level. These performance-based pilot projects still rely on the voluntary carbon market in anticipation of rolling out fully-fledged national REDD+ programmes, which eventually are expected to source funding from the compliance offset markets for greenhouse gases.²

It is estimated that 80% of global deforestation is caused by agriculture, including logging. Although it is often assumed that subsistence farming is the dominant contributor to deforestation, commercial farming is more significantly impacting forests in both Indonesia and Ethiopia, the focus countries of this paper (Kissinger, Herold, & de Sy, 2012). Furthermore, diverging interests between farmers, pastoralists and forest dwellers are often assumed to be at the root of conflicts over natural resources and accelerated degradation, despite contradictory evidence (Geist & Lambin, 2002). Hence, based on these two assumptions, it would be logical for subsistence farmers to play a central role in the design and implementation of REDD+ programmes. However, as this paper will illuminate, this is not the case, and the smallholder sector is insufficiently considered in the design and implementation of REDD+ projects. Although previous research has shown that overall REDD+ strategies as proposed on paper generally fail to address agricultural drivers of deforestation, limited empirical evidence is at hand to assess the mechanisms relating to this omission (Kissinger, 2013). This paper therefore seeks to identify factors and processes that play a role in this apparent challenge of including the smallholder agricultural sector in REDD+ programmes. We will thereby demonstrate the discrepancy between international and national policy rhetoric on the one hand, and the complex political realities on the ground on the other.

The paper starts with a description of the selected case studies and the chosen methodology (Section 2). This is followed by outlining the main research findings related to the challenges of incorporating smallholder farmers' interests in REDD+ projects (Section 3). The paper ends with a discussion of these findings, drawing specific lessons based on this research to enhance policies on climate financing mechanisms (Section 4).

2. Case studies and methodology

The scope of this study concerns the role of smallholder agriculture in climate financed forestry efforts, in particular REDD+ projects. The projects selected are the Meru Betiri National Park in Indonesia and the Bale Mountain Eco-region REDD+ Project in Ethiopia. We selected these two case studies because smallholder agriculture and use of forest products by villagers were regarded as the main causes of deforestation and therefore changing this behaviour was the primary target of the projects. In addition, both projects serve as test cases in preparation for the implementation of fully-fledged REDD+ programmes at the national level, in line with the REDD+ strategies and action plans developed by the respective government. In these national plans, both the Indonesian and Ethiopian governments have committed to safeguarding the interests of local communities; in the

implementation documents of the selected projects, reference is made to improving the livelihoods of rural households and the sharing of benefits with local communities. It is important to evaluate and draw lessons from the progress made so far in each of these pilot projects in the hope of steering the direction to be taken by the broader REDD+ programmes, as well as other climate financed forestry programmes.

2.1. Meru Betiri National Park

The Meru Betiri National Park (MBNP), located on East Java, Indonesia, comprises 58,000ha of mangrove swamp forest and lowland rain forest. In 1999, an agroforestry programme to tackle deforestation was initiated by an Indonesian NGO, in which communities planted trees and at the same time were allowed to grow food crops inside the national park. Five villages were involved in these agroforestry activities, and in 2009, about half of the village population participated in this programme (Harada, Prabowo, Aliadi, Ichihara, & Ma, 2015). In 2010, this programme was transformed into a demonstration REDD+ project by the International Tropical Timber Organisation as the main funder together with a private sector company. The REDD+ consortium also includes two Indonesian NGOs, which were previously involved in the agroforestry programme, and the Forest Research and Development Agency, which focuses on carbon monitoring. The initiation of the REDD+ programme offered an opportunity for the implementing agencies to secure funding to continue their reforestation efforts, with the aim of removing carbon dioxide from the atmosphere by enhancing carbon stocks in more and bigger trees. However, avoiding emissions by reducing deforestation, allegedly caused by illegal logging and encroachment of the forest by smallholder farmers, was also used as a rationale to acquire the project. The target area for REDD+ project in the rehabilitation zone is 400 ha where the consortium expects to reduce emissions by around 9.8 tCO₂ per year for a period of 30 years (Wibowo, 2015). The demonstration project ran from 2010 to 2013, but since then progress towards a fully-fledged REDD+ project, as part of the national REDD+ programme with carbon credits to be sold on the (voluntary) market, has been stagnant.

Under the REDD+ project, five different zones were demarcated and permitted activities were prescribed for, and monitored in, each zone: a core zone of 27,900 ha and an intact forest zone of 22,600 ha that are both strictly protected; a rehabilitation zone of over 4000 ha where limited agroforestry activities take place including nursing and planting medicinal species; and the buffer and utilization zones (together over 3000 ha) where limited economic activities are allowed, such as harvesting forest products, plantations, agroforestry and eco-tourism. The people living in the 10 bordering villages and 2 villages inside the national park primarily depend on agriculture for their livelihoods, both as land-owning farmers and land labourers. Moreover, several enclaves of labourers for teak and rubber plantation companies live inside the national park. Crops grown by subsistence farmers include mainly rice, vegetables and fruits. In the outer rehabilitation, buffer and utilization zones, pressure on the land is the highest through illegal logging and (unsustainable) agricultural activities. The rehabilitation zone used to be a teak plantation but was completely logged at the end of the 1990s after the fall of President Suharto. Nevertheless, who is actually responsible for current illegal logging in the park remains debated: the management of the park blames the villagers, while the villagers in the park accuse outsiders of organized logging backed by the military and police forces.

2.2. Bale Mountain Ecoregion REDD+ project

The Bale Mountain Ecoregion REDD+ Project (BMERP) is located in Oromia state, Ethiopia, where 70% of the country's remaining forest is present (OFWE, 2014). The area of over 260,000 ha encompasses mainly moist forest, while a small portion (<10%) is classified as dry forest. It experiences high annual deforestation rates, ranging from 1.1 to 6.6% (OFWE, 2014). The REDD+ project is anticipated to run from 2012 to 2031 and expects to reduce carbon emissions by almost 38 million tCO₂ through avoided deforestation (OFWE, 2014). A major aim behind choosing the REDD+ approach was to secure long-term sustainable funding that would offer alternative livelihoods to rural households, so that they would not engage in deforestation, thus reducing anticipated carbon dioxide emissions (Tadesse, 2016). The project is still in its initial stages and depends on donor funds, but once fully operational, it aims to receive performance-based payments from the World Bank as the primary credit buyer in the voluntary carbon credit market.

About 1.6 million people live in the ecoregion and their livelihoods depend mainly on crop production, live-stock and forest-based income. These smallholder farmers are considered to form the major driver for deforestation, combined with natural and induced forest fires. The research focuses on the Dodola and Adaba districts, where a participatory forest management (PMF) project was introduced in 2000 in order to protect the forests while reducing poverty. When funding sources to continue this PMF project dried up, the REDD+ programme offered an opportunity to continue efforts to substitute smallholder agricultural production with income from forest conservation activities. Since deforestation and overexploitation of the forest continued under the PMF project, the rationale for the REDD+ project was to generate extra income from carbon credits to increase efforts to conserve and protect the forest. The organizational set-up of the REDD+ project was not changed from the previous PMF project, in which members of forest dweller associations were provided with 12 ha of forest for which they received restricted use rights. With each association having up to 30 members, the forest was divided into blocks of maximum 360 ha to be managed collectively. Non-members were denied access to the forest and mainly depend on plots for agricultural production outside the national park (see also Kemerink-Seyoum, Tadesse, Mersha, Duker, & de Fraiture, *in press*).

2.3. Methodology

For both areas, an extended case study approach was chosen. This enabled the analysis of relevant interactions and processes over a longer period of time and at different spatial levels. Besides desk reviews, field work with semi-structured interviews and focus group discussions was carried out with (in)direct beneficiaries, project staff, and local governments, amongst other stakeholders. In addition, residents who were not involved in the projects were interviewed to obtain their views and to discuss the implications of the projects for them. In both cases, initial field visits were organized prior to the interviews and focus group discussions to determine the main actors involved in the REDD+ projects. Validation workshops were held to discuss and validate research findings in each of the case studies. In total, 57 interviews were carried out in the Ethiopian case and 32 in the Indonesian case in several field visits between November 2014 and September 2016 (Soentoro, 2017; Tadesse, 2016). Table 1 shows a summary for the research methods and targeted actors in each case study.

Thematic analysis (Petty, Thomson, & Stew, 2012) was used to explore variations, similarities, and relationships within the qualitative collected data to study how the various actors have been involved in designing and implementing the projects; how they perceived the projects; how the projects affected their daily activities and livelihoods; and how the projects fostered and/or jeopardized relationships between various actors.

3. Results

Although the two case studies involved completely different institutional and climatological environments, we found similar challenges and constraints in executing the activities for realizing the objectives in both cases. We analysed the case studies to see how agricultural interests were addressed in the design and implementation of REDD+ projects. In both cases we found that these were not well incorporated and the analysis brought us to three common elements that played a major role in this omission, as discussed below.

Table 1. Data collection methods and target actors per case study.

Meru Betiri, Indonesia		No.	Bale Mountains, Ethiopia		No.
Semi-structured interviews	Farmer group members	19	Forest association members	37	
	Community leaders	4	Non-forest association members	9	
	National Park staff	2	NGOs	3	
	NGOs	4	Government bodies	8	
	Government bodies	3			
	Total	32	Total	57	
Focus-group discussions	Farmer groups (15–20)	4	Forest association members (6)	1	
	Community entrepreneur groups	2			
Validation workshop	Community members, national park, project implementers, local government, NGOs	1	Project implementers, NGOs, governments	1	

3.1. Benefits from REDD+ projects do not substitute for agricultural outputs

The major rationale on which the REDD+ projects are based is that the income from carbon credits will substitute for income from activities causing deforestation and forest degradation. Hence, REDD+ resources may be the most useful where the opportunity costs of deforestation are the lowest, and least likely to be effective where the opportunity costs of deforestation are higher, like with palm oil plantations in Indonesia (Gupta, 2012). In fact, Butler, Koh, and Ghazoul (2009) reveal that the profitability of converting forest into palm oil plantations is up to 10 times as profitable as preserving it for carbon credits, which currently rely on the prices of the voluntary carbon market.

As profit margins in smallholder agriculture are much lower, REDD+ projects can theoretically be more effective, assuming that smallholder agriculture is a major driver for deforestation. However, in the two analysed cases we find that the material and non-material gains derived from REDD+ projects did not compensate the losses in benefits from smallholder agricultural production and forest use. Although their agricultural activities are considered to be the root cause for deforestation, the nature of the benefits from these activities for their livelihoods are not well understood nor compensated.

This mismatch between smallholder farmer's needs and benefits provided by REDD+ projects is illustrated in the case of the BMERP project in Ethiopia. All community members were previously allowed to let their cattle graze in the forest during the dry season, grow crops on rotation in the forest, and collect forest products such as herbs and honey, which constitute essential parts of their diets. Under the PFM, and not redressed within the REDD+ project, a minority of residents could become members of the forest dwellers association and were as such appointed to manage 12 ha of forest land each. This responsibility came with limited use rights of the forest in terms of timber, fire wood collection, restricted grazing and beekeeping. However, the majority of residents of the project area were not allowed to become a member of this association and were denied access to the forest, without the provision of compensation or alternative source of livelihood. The only direct benefit they continued to receive from the forest was (fuel) wood that they occasionally got on request for special family events (e.g. weddings, funerals). Inequity in the distribution of forest resources has thus increased. As a result, for instance, non-members now buy fodder from association members or illegally pay them to have cattle graze in the forest for several months during the dry season. The lack of substitute for grazing cattle thus leads to a situation where the pressure on the forest is not reduced.

In addition, the actual benefits from forest products for the members of the forest association are less than anticipated because of practical concerns not addressed by project implementers. As the following interviewee explains:

In my [forest association] there are 30 members and based on the members' agreement each member is allowed to cut one tree a year for personal benefit. Accordingly, last year I cut one tree that was my share ... However, since I lack the skill of making lumber, I contracted someone owning a pitsaw. The contracted person made 20 pieces of lumber from each tree and took 12 for himself as part of the agreement. I got only 8, which is unfair as I benefitted less than envisaged. (Interview with M7; see Tadesse, 2016)

These findings on the ground contrast with the foreseen benefits as stated in the REDD+ project implementation document:

Social benefits of the project could include boosting productivity of small holder agriculture, the generation of new income sources based on sustainable alternatives, the creation of direct and indirect jobs in monitoring and land management activities, health improvement, education (sic). And (sic) enhance the capacity of the forest management cooperatives in sustainably managing the forests in their vicinity. (OFWE, 2014)

Another factor contributing to this mismatch between interests and benefits results from the fact that REDD+ projects are often based on already existing nature conservation projects. Assumptions and objectives are hardly adjusted from previous conservation efforts and therefore do not position the livelihoods of subsistence farmers at the core of the project. As a result, project activities tend to focus on forest conservation activities with limited benefits for a few, often already advantaged, smallholder farmers. Local forest dwellers in the MBNP project in Indonesia benefit from the project through wages earned from tree planting and, indirectly, by receiving training on how to protect forests and measure carbon. Agricultural activities such as planting crops, grazing

livestock or collecting herbs are banned from most of the project area and restricted in the buffer zones of the national park. These conventional nature conservation activities are cheaper and easier to implement, and show results in the shorter term, but do not meet the livelihood needs of the residents of the targeted villages, let alone compensate for losses. A study in two villages in MBNP by Harada et al. (2015) shows that current agricultural income from the park (primarily rice, vegetables, and fruits) is 4 to 7 times higher than the maximum financial (indirect) benefit to be derived from tree planting. Both participants and non-participants of the project use land outside the park, but the land holdings of the residents who participate in the project are much smaller. Giving up agricultural production within the park without realistic compensation therefore has a significant impact on their livelihoods.

3.2. Funding remains insecure

The concept of REDD+ was formalized during the 15th UNFCCC Conference of the Parties in Copenhagen in 2009. Although the years in which countries were preparing for 'REDD readiness' have gone by, the international carbon market has only made moderate progress to becoming functional. Some current REDD+ projects rely on voluntary carbon markets, resulting in very low prices, but a large investment share originates from donor funds, either performance-based or not, which focus on REDD readiness (Watson, Patel, & Schalatek, 2016). These originate from governmental or non-governmental conservation or development agencies, or from companies that are implementing their corporate social responsibility policies. Although it can be advantageous for an accelerated fund dispersion process, using existing financing channels comes with the risk of losing the opportunity to introduce a performance-based system, a lack of coordination among REDD+ donor agencies, a fragmentation of the incentive system due to different donor requirements, and a missing link between results and finance (Streck, 2012).

Both case studies strive for a performance-based system in which payments are based on actually achieved reductions of greenhouse gas emissions and, to this end, both adopt a benefits-sharing mechanism in which the revenue goes to local actors. This set-up has the potential to provide a secure long-term flow of funding to pay residents to maintain the forest. However, in both cases, this promise is not being met for different reasons. In the case of MBNP in Indonesia, where farmers will be paid according to the density and variety of trees planted on their agricultural land, funding from both private and non-governmental sources was *ad-hoc* and did not provide any secure long-term commitment. Initial steps were taken to apply for the Plan Vivo scheme, a voluntary carbon certification programme, but so far the payments are not yet directly linked to a carbon accounting system or market, and instead depend on short-term external funding from donors. Furthermore, the additionality of REDD+ in this area is questionable, because the net deforestation rate is actually negative, which might limit the attractiveness of the project for buyers in the carbon market (Wibowo, 2015). Consequently, there is no long-term income security for the farmers involved. As they earn a substantial portion of their total income from agricultural products from the National Park, estimated at 25–40% (Harada et al., 2015), there needs to be a secure mechanism in place to substitute for potential losses. However, payments from the agroforestry programme completely stopped after the initial demonstration phase because of a lack of capital from donors. Disappointment and distrust among participants have consequently arisen, since they feel they have been used to showcase performance of the project, without long term prospects. As farmers lose interest, the project fails to deliver its promises of avoided deforestation.

Additionally, tenure security is a highly debated concern in the MBNP area. There was supposed to be an official memorandum of understanding signed between the 5 villages and the park management allowing the farmers to manage and use the lands in the rehabilitation zone for 35 years, but so far, this has not materialized. Hence, a source of conflict remains as land use rights, which are required to secure income generation by farmers, are not clearly defined.

The BMERP project in Ethiopia illustrates that, even though a performance-based carbon-accounting system is under development, revenues remain uncertain. Under a planned benefit-sharing mechanism, members of the forest associations were initially promised direct monetary benefits in cash from the foreseen carbon credit sales. Specifically, they negotiated that they would receive 60% of the revenue generated by any carbon credit sales in the future. They have thus high expectations concerning the benefits that they will

receive from the REDD+ project, and are anticipating that they will be compensated for conserving the forest. Meanwhile, however, the Ethiopian government and the World Bank, as the carbon credit buyer, favour a so-called jurisdictional approach whereby several REDD+ projects in the south of Ethiopia will be monitored together. In this revised set-up, members of the forest associations will only benefit through climate-financed community projects (schools, hospitals, roads etc.), as opposed to the individual monetary payments. This is not well received by most of them as they now need to buy their food, fodder and charcoal, as their own agricultural production is severely hampered. Thus, a yet undetermined negotiation about benefit-sharing at local and national level restricts secure cash benefits to smallholder farmers and the question of who owns and decides about the carbon credits remains debated. In addition, long term prospects are uncertain, because the price and benefits of carbon will be renegotiated every five years.

Overall, evidence from these two projects suggests that engagement in REDD+ activities remains an insecure investment, especially if people are expected to give up the lands that they use for their own production and income. In both projects, these flaws have led to farmers losing confidence and trust in the project implementers and the implementation process. This has led to delays in the projects and has allowed lingering conflicts to amplify (see also Kemerink-Seyoum et al., *in press*). This lack of long term security in the case of rural Ethiopia is especially staggering considering that cattle are regarded not only as a source of nutrition, but also as an asset for overcoming difficult periods, such as a drought or a family (health) emergency. It is precisely this cattle grazing that is restricted under the REDD+ programme, without any alternative security mechanism being introduced.

3.3. Exclusions weaken incentives

Exclusiveness in the implementation of REDD+ projects portrays itself in two different ways. Firstly, the output-based nature of benefit-sharing in REDD+, that is, benefit-sharing based on the changes in carbon stocks, raises fundamental equity concerns as individual contributions towards avoided deforestation are hard to define (Skutsch et al., 2014). In Indonesia this issue has been addressed by assigning individual plots to farmers. Individuals are currently compensated for the successes they achieve on their plots by planting more and a higher diversity of trees. In the case of the Bale Mountains, carbon monitoring will be carried out on the lands allocated to the associations and hence individual contributions will be invisible. Consequently, incentives for avoiding deforestation are undermined, which leads to distrust and illegal use of forest resources.

The second manifestation of exclusiveness relates to the criteria that are in place for selecting participants for REDD+ projects. In the Ethiopian case, access to REDD+ benefits is based on previously defined arrangements in which village residents are denied access to the forest, except for those who are members of the forest dwellers association. As a result, the use of the forest resources, i.e. mainly cattle grazing and timber and fuel wood, is conditionally allowed only for a minority group whereas others are not compensated for their loss in livelihood. The REDD+ project is following the same principle and hence a majority of the villagers is thus deprived of the benefits of REDD+, having already faced a loss in livelihood due to the previous PFM approach. The feeling of injustice felt by those excluded from the forest is illustrated by this interviewee who is not a member of the forest association:

At that time [of the introduction of project], though we were excluded from membership, they [project staff] promised us that we will also benefit from the protection of forest resources. However, gradually they have started to clearly exclude us from the benefit by denying us use rights, even for grazing, which is not fair. (Interview 12; see Tadesse, 2016)

'Enclosing' these forests, which were previously *de facto* considered as common pool resources, leads to perverse incentives to use the forest illegally. A rise in fuel wood prices was in fact further exacerbated by the project as wood became exclusively available to a small group of people, creating an incentive for more illegal logging by non-members, and for association members to become engaged in both legal and illegal fuel wood businesses. Moreover, this inequitable access to forest resources led to an aggravation of existing conflicts, among non-members and members, and also between members and their offspring who are not automatically entitled to forest use rights (Kemerink-Seyoum et al., *in press*).

In Indonesia, a similar process took place at different levels. Firstly, out of the 12 villages residing inside or adjacent to the national park, only 5 were selected to participate in the project, because they were already

cooperating with the previous project owners. Secondly, within the participating villages, only farmers who were a member of the forest farmers groups were selected for the initial agroforestry programme. A total of 42 forest farmer groups joined the project, and these farmers were assigned an individual plot in the rehabilitation zone. REDD+ activities were built on the existing agroforestry project and involved only the people who had previously received a permit to manage lands in the rehabilitation zone. However, there are many more farmers inside the forest who are now deprived of forest resources. This exclusive character of the project has thus created tension among those villagers who are, and those who are not, allowed to participate in the REDD+ project, and triggered conflicts over forest resources within the villages.

4. Discussion and conclusions

4.1. Learning from implementing REDD+

For the future success of REDD+ programmes, a thorough understanding by policy makers of REDD+ (pilot) projects based on empirical research is of crucial importance (see also Negra & Wollenberg, 2012). This study, and specifically the examples from the field, aims to contribute to this need by zooming in on the smallholder agricultural sector. Kissinger (2013) assessed the extent to which twenty REDD+ readiness proposals as submitted to the World Bank Forest Carbon Partnership Facility (FCPF) address agriculture as the main driver for deforestation. She concluded that these strategies and planned activities in general fail to do so. We can add to this finding that, in the cases studied, the implementation of REDD+ (pilot) projects on the ground has similarly failed to respond to the root causes of deforestation by ignoring the needs and interests of those who allegedly are involved in clearing the forests, namely smallholder farmers. The three main reasons why smallholder farmers' needs and interests were not met in our case study projects are (1) the limited benefits obtained from REDD+ (pilot) initiatives to substitute for livelihood losses caused by enclosing forests that are *de facto* used for agricultural activities; (2) the insecure flows of funding within REDD+ programmes in the long term; and (3) the exclusive character of the implemented (pilot) projects, which has marginalized the majority of smallholder farmers in the case study areas.

The case studies in Ethiopia and Indonesia demonstrate that this omission leads to a distrust and loss of interest of smallholder farmers to participate in REDD+ projects and a loss in livelihoods for these farmers. Moreover, the case studies show how the project leads to an increased pressure on forest resources and enhanced incentives for (illegal) exploitation of forest products. In addition, carbon leakage, which occurs when deforestation is halted in one area but at the same time triggered in another because the demand for forest resources is not being reduced, is likely to occur in both cases. Because farmers have not been provided with long-term alternatives to their diverse agricultural benefits, such as fire wood and grazing ground, they will go elsewhere to access these, either directly or indirectly. Hence, it is unlikely that there will be a real reduction in greenhouse gas emissions that can be attributed to these projects.

Realizing effectiveness and equity remains challenging in applying innovative financial incentive-schemes that aim, at least in rhetoric, to reconcile development and conservation efforts (Gross-Camp, Martin, McGuire, Kebede, & Munyarukaza, 2012; Pascual et al., 2014). Likewise, we found that the two REDD+ pilot projects were based on existing community forest or nature conservation projects, whereby actors and institutions continued working on previously defined principles, interests and assumptions geared towards nature conservation. In our cases, this nature conservation perspective has resulted in a bias that is preventing the fulfilment of livelihood needs of the households that are dependent on smallholder farming. The funds disseminated in the case studies were insecure and largely insufficient to substitute for livelihood losses. Thus, the major principle of REDD+, i.e. the concept of results-based payments whereby funds originate either through (voluntary) carbon markets or development or conservation funds, has so far seen limited progress in the two study areas, and is far from the success it promised to be.

4.2. Lessons for future policy developments

This research shows that the understanding and acknowledgment of the interests of smallholder farmers is insufficient, not least regarding monetary and non-monetary needs for enhancing food security in the short

and longer term. These findings are not stand alone cases, as we recognize that similar challenges have been encountered in other parts of the world, e.g. in Peru, Brazil, Cameroon, Tanzania and Vietnam (Sills et al., 2014). They highlight problems related to tenure, finance facilities, adopting and implementing safeguards and finding sustainable alternative livelihoods for subsistence farmers. Hence, there is substantial evidence from recent empirical research that calls for improved recognition and action on enhancing livelihood security of farmers involved in REDD+ programmes and projects.

The major international arena to address these concerns is the Green Climate Fund, which promotes REDD+ as a promising tool to meet carbon targets. We note that there is a gap between local practice and realities on the ground and the rhetoric of REDD+ at this international level, where it is often portrayed as if a reduction of carbon emissions, poverty alleviation and nature conservation could easily go hand in hand (UN REDD, 2012). The reviewed projects were based on the contested narrative of subsistence farming being the main driver for deforestation and related carbon emissions, and on the promise of project activities to promote socioeconomic development and combat climate change. However, our research findings imply that smallholder agricultural interests are not thoroughly understood nor recognized in the objectives and implementation of REDD+. Focus is centred on conservation targets with a narrow perspective on meeting socioeconomic development goals. This omission results not only in REDD+ missing out in realizing the overall target of reducing carbon emissions, but also in exacerbating poverty and fuelling looming conflicts over resources at the local level. In addition, funders for these projects, either market-based or from development or nature conservation sources, need to consider how to engage in and support long-term livelihood security on an inclusive basis for smallholder farmers in order for REDD+ to succeed.

Finally, the findings call for a debate on how the smallholder agricultural sector could benefit from climate change mitigation programmes and vice versa. In this respect, attention needs to be given not only to the potential threats of (subsistence) agriculture to our climate as result of deforestation but also to the opportunities and synergies offered by reducing carbon emissions through improved farming practices and by sequestering carbon in agricultural lands. These can be implemented at plot, farm and landscape level, e.g. reduced use of inputs, generation of biogas from manure, and restoration of degraded lands and wetlands through landscape governance (Harvey et al., 2014). We therefore recommend promoting more and stronger feedback from (smallholder) farmers to policy makers, to ensure joint learning and improvement of climate finance policies and strategies. Or, as one of the interviewed NGO staff members in Indonesia stated:

... The government should think beyond buying and selling carbon in regard to REDD+, but recognize activities of local communities in the conservation area as a contribution to forest conservation. Communities should not be considered as a threat but as partners to work collaboratively for forest. (Soentoro, 2017)

Notes

1. REDD+: Reducing Emissions from Deforestation and Forest Degradation, with the '+' referring to conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks (UN-REDD Programme, 2018).
2. In the voluntary carbon market, buyers can purchase carbon credits to voluntarily offset their emissions, while in the compliance market, a regulatory instrument, e.g. an emission cap set by a governmental body, defines the demand for carbon credits to be purchased by buyers who need to comply with respective regulations.

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