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¹ Author to whom any correspondence should be addressed.E-mail: mapa@ign.ku.dk and om@ign.ku.dk**Keywords:** avoided deforestation, demonstration projects, non-governmental organizations, climate change mitigation

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**Abstract**

Reducing emissions from deforestation and forest degradation (REDD+) has become a major conservation and development concept for international climate change mitigation over the past years with hundreds of so-called ‘demonstration’ or ‘pilot’ projects being planned and implemented across the Global South. Since the broad aim of such projects is to demonstrate climate benefits from reduced deforestation, as well as social co-benefits in receiving countries, the decision on REDD+ locations should ideally center on specific geographical and socioeconomic characteristics, such as high deforestation threat, low opportunity costs, large forest area size, and high local willingness to engage. Based on recent literature supplemented with opinions and perspectives from REDD+ specialists, we compare these desirable qualities for REDD+ locations with actual location of REDD+ projects. We illustrate how locating REDD+ projects is often in the hands of external organizations and tightly connected to their previous engagements in the location. We also show how specific characteristics of these externally driven REDD+ project locations vary according to the sub-objectives of the individual projects and do not always correspond with the overall goal of REDD+. These pre-conditioned decisions and diverging objectives at the meso-level may further complicate global REDD+ agreements.

1. Introduction: matching ambitious expectations with challenging pre-conditions

Forest protection projects aiming to reduce emissions from deforestation and forest degradation (REDD+²) are planned and implemented at a fast pace and extensive scale across the developing world (Jagger *et al* 2010, Cerbu *et al* 2011, UNFCCC 2014). The basic idea behind REDD+ is to offer incentives for maintaining the carbon stored in forests and thereby reduce greenhouse gas emissions and mitigate climate change (UN-REDD 2009a, World Bank 2013). Besides the

intended preservation of climatic services, various social and ecological co-benefits are ambitiously expected from REDD+ in terms of biodiversity gains, employment opportunities, livelihoods, land tenure clarification, as well as enhanced participation in decision-making and improved governance (UN-REDD 2009b).

While intended to function on a national scale (Sunderlin *et al* 2014), REDD+ has been piloted in more than 300 subnational activities across the tropics (Sills *et al* 2014). According to UNFCCC (2014) more than 80 countries have ongoing or planned demonstration activities, including 36 country participants through the World Bank’s Forest Carbon Partnership Facility program and 44 partner countries in the UN-REDD Programme. Besides initiatives under the United Nations and the World Bank multilateral umbrellas that include the Forest Investment Programme, other REDD+ activities are affiliated with, for

² REDD plus is according to the UNFCCC defined as: reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (http://unfccc.int/land_use_and_climate_change/redd/items/7377.php, checked 12th April 2016).

instance, the Congo Basin Forest Fund or implemented through bilateral funds from the Norwegian International Climate and Forest Initiative or the UK's International Climate Fund.

REDD+ demonstration activities can be defined as 'activities implemented in a particular sub-national region or unit [...] with the intention of reducing deforestation or forest degradation in that particular area' (Cerbu *et al* 2011, p. 170), but can also be described as 'activities (which) focus on experimenting with mechanisms that can reduce forest emissions in preparation for the era of conditional carbon deals' (Wertz-Kanounnikoff and Kongphan-apisak, 2009) or as activities supporting the development of REDD+ 'by carefully documenting and disseminating their efforts to reduce emissions by addressing nationally relevant drivers of deforestation' (De Sassi *et al* 2014, p. 420). Demonstration activities typically involve site-specific projects, for example targeting specific districts under the 'jurisdictional approach' (Fishbein and Lee 2015), and can include the promotion of more sustainable forest management practices, forest conservation combined with incentive payment schemes, and monitoring systems that measure the change in carbon stocks and fluxes (Wertz-Kanounnikoff and Kongphan-apisak 2009).

Calling these projects 'pilots' or 'demonstration projects' (e.g. Sills *et al* 2014) appears not only to be a misnomer; it is also seriously downplaying the actual consequences and role of these projects. First of all, any study or assessment aiming to measure changes in selected 'pilot villages' or 'pilot provinces' based on a counterfactual approach would be seriously challenged and compromised by existing activities and previous interventions (Pasgaard 2013, Müller *et al* 2014). Secondly, even if these projects do aim to test, assess and evaluate changes caused by the project, they go beyond 'experimenting with mechanisms' (Wertz-Kanounnikoff and Kongphan-apisak 2009) and 'carefully documenting and disseminating' (De Sassi *et al* 2014 p. 420). The pilot projects have significant and long-term implications for the people involved. While some projects have no plans to sell carbon offsets (Atmadja *et al* 2014), many function on the voluntary carbon market (e.g. Pact 2012) due to absence of a global compliance market for carbon offsets (Sunderlin *et al* 2014). Some projects have sold carbon credits (Sills *et al* 2014), and/or are meant to feed into future national level REDD+ programs (e.g. Evans *et al* 2012). Thus, many projects are fully functional REDD+ projects affecting climate, people and markets, and should be classified as such.

These demonstration activities have been followed closely by both project implementing partners and by research scholars, many of whom continuously examine and discuss the prospects of REDD+ by collecting lessons and experiences across specific projects (e.g. Naughton-Treves and Day 2012, Sunderlin *et al* 2014, McGregor 2015) and through individual case studies.

Such case studies are emerging at an increasing pace addressing the challenges and effects of national or project-level REDD+ across the tropical developing world. Some of these studies emphasize the importance of the local realities and existing conditions in prospective or functional REDD+ locations. For instance, Leggett and Lovell (2012) stress the implications of local realities for the overall feasibility and success of REDD+ with a study in Papua New Guinea by evaluating local communities' awareness, understanding and willingness to participate, as well as the existing local institutions and subsistence activities. In Tanzania, Burgess *et al* (2010) illustrate the real-world challenges of REDD+ related to forestry data, government capacity, and experience with REDD-type projects at the operational level. Hansen *et al* (2009) analyze the multiple underlying causes of deforestation and degradation in Ghana from a political economy perspective arguing that policy reforms are unlikely to come fast and easy, even with the prospects of future REDD+ payments. For Brazil, Börner *et al* (2010) establish a set of economic and institutional pre-conditions for a feasible and cost-effective conservation mechanism, suggesting that while economic pre-conditions are in place in half of the threatened forests investigated, the institutional pre-conditions constitute real medium-term impediments for schemes such as REDD+ in terms of land grabbing, insecure and contested tenure, and lacking information. These and other studies strongly emphasize the importance of the pre-existing context and pre-conditions of potential REDD+ project locations, and the assessment thereof.

While multiple scholars have examined REDD+ in relation to the impacts and challenges of projects as exemplified above, only few studies have explicitly examined the actual decisions on locations for REDD+ projects, or critically discussed how these locations resonate with the climatic, ecological and social objectives of REDD+. It is the overall aim of this paper to connect these aspects in a discussion of the characteristics behind decisions on REDD+ locations *versus* the desirable qualities for achievement of the stated REDD+ objectives. We make this comparison on the basis of recent scientific and 'grey' literature on decisions of REDD+ locations supplemented by a survey of opinions among scholars and stakeholders in REDD+. Specifically, the literature draws on sources ranging from scientific case studies and meta-studies to policy documents and consultancy reports dealing with pre-conditions of and lessons from REDD+ activities. The survey was conducted in 2014 among 49 REDD+ specialists across 23 different countries and is documented in detail in Pasgaard *et al* (2016). The survey supplements the literature with additional contextualized perspectives on current conditions in prospective and functional REDD+ locations, on the willingness of actors to engage in REDD+, and on preferred location characteristics. We identified potential

survey respondents on the basis of their participation in recent conferences, meetings or seminars about REDD+, such as the ‘Carbon-Land-Property’ conference in Copenhagen 2014, ‘Beyond Carbon’ conference in Oxford 2012 and the UN-REDD Programme 4th Policy Board Meeting, or based on their contribution to recent meta-study publications on REDD+ (e.g. Naughton-Treves and Day 2012, Sunderlin *et al* 2014). Of those who replied to the survey, most described themselves as researcher (almost 60%) or student (20%), followed by government official (12%), consultant (about 6%), NGO or administrative staff (each about 4%), while about 10% stated ‘other’ (note that multiple answers were allowed). Although few of the respondents had implemented REDD+ demonstration activities, they all had knowledge on these from research and development work. The survey used a combination of statement questions (assessing levels of agreement), multiple choice questions, and open ended questions. Survey responses were anonymous allowing respondents to air their personal opinions and perspectives on sensitive matters.

The paper is structured as follows. First we propose five desirable qualities of project locations based on the stated objectives in international REDD+ debates. Then follows an examination of how project locations are decided on in practice and of the current conditions at prospective REDD+ locations. Finally, we compare desirable qualities with actual locations, and discuss the implications of our findings.

2. Desirable qualities, location selection and current conditions

2.1. What should be desirable qualities for REDD+?

In order to meet the overarching goals of REDD+ and fit the purpose of the demonstration activities outlined above, ideal characteristics or desirable qualities for locations for prospective REDD+ projects can be proposed. We focus our attention here on five broad and essential characteristics, which have also received attention in the public and academic debates about REDD+. We do not aim to outline an exhaustive list of desirable qualities for REDD+. Rather, in order to facilitate a comparison with the actual decisions on REDD+ project locations, we wish to outline some of the qualities which could potentially be desirable to meet some of the stated goals. The five specific characteristics we explore cut across climatic, ecological and social objectives in REDD+: deforestation threat, opportunity costs, forest area size, the willingness of local actors to engage, and co-benefits in terms of biodiversity and poverty reduction. We suggest the desirable ‘state’ of these characteristics in potential locations where REDD+ is expected to succeed. We acknowledge that the characteristics can

be highly auto-correlated and that they rarely overlap in the same location, which is discussed further in section 3.

First, a present and/or future *deforestation and forest degradation threat* is of course not ‘desirable’ as such, but it is a fundamental pre-condition for project locations, since REDD+ in its simplest meaning aims to reduce emissions from deforestation and forest degradation in order to mitigate climate change (UN-REDD 2009a, World Bank 2013). Hence, locations selected for REDD+ should face such a threat in order to enable a reduction of emissions eligible for sufficient carbon credits compared with agreed reference levels. Second, relatively low *opportunity costs* are desired; if opportunity costs are too high, then carbon investments are in jeopardy because considerably higher payments are required to compensate land users for foregone income opportunities (Newton *et al* 2012, Mertz *et al* 2012). Third, *local willingness* to engage in REDD+ projects is likewise desired in order to ensure effective and efficient emission reductions along with expected social co-benefits; discontent and community-level resentment against REDD+ initiatives can thwart both national and global objectives of REDD+ (Angelsen and Agrawal 2009). Fourth, prioritizing large *forest areas* is desired, since small and fragmented forest areas are ill suited to assure efficiency of large emissions reductions, which is relevant to the global scope of REDD+ policy (Balooni and Lund 2013). Fifth and last, achieving *co-benefits*, such as biodiversity protection and poverty alleviation, are important objectives in REDD+ as outlined in the UNFCCC safeguards measures (UNFCCC 2010). Translated into concrete desirable qualities, REDD+ locations should be selected based on their potential to achieve these co-benefits. For instance, the spatial combination of poverty and carbon stocks should be a factor to consider (Hett *et al* 2012), as should the relationship between biodiversity and forest degradation (Gardner *et al* 2012).

2.2. Criteria for location decisions

In a review of 179 REDD+ initiatives, Cerbu *et al* (2011) found five national characteristics related to the number of REDD demonstration projects in a given country. Baseline CO₂ emissions, forest carbon stock, number of threatened species, quality of governance, and region all had significant effects, while human needs (as indicated by the Human Development Index) and opportunity costs of land were found to be relatively unimportant. REDD+ initiatives, especially demonstration activities, tend to target countries where deforestation or the risk of deforestation is high, and focus on areas with high additionality (emission reductions compared to reference levels) in terms of high forest cover and high deforestation (Wertz-Kanounnikoff and Kongphan-apirak 2009).

Interestingly, while government agencies, local NGOs and private sector actors in a given country take the lead in REDD readiness and demonstration activities—often with donor support—external donor organizations and international NGOs are much more involved in the decision on sites for REDD+ demonstration activities—and these organizations do also to a large extent decide which countries to focus on. As an example, all of the REDD+ demonstration activities reviewed by Cerbu *et al* (2011) were at least partially financed by external organizations. An inventory of first generation REDD+ pilot projects by Sills *et al* (2009) confirms this pattern, but also shows that REDD+ proponents develop projects in forests where they previously ran various forms of nature conservation projects, exemplified by Indonesia where international environmental NGOs play a prominent role in REDD+ project development. Similarly, Sunderlin *et al* (2014) take stock of 23 REDD+ initiatives out of which 20 had implemented forest protection activities before the subnational REDD+ initiative was established and some of these activities dated several decades back. Confirming this pattern, Mustalahti *et al* (2012) note that many REDD+ pilot projects are undertaken in already protected areas.

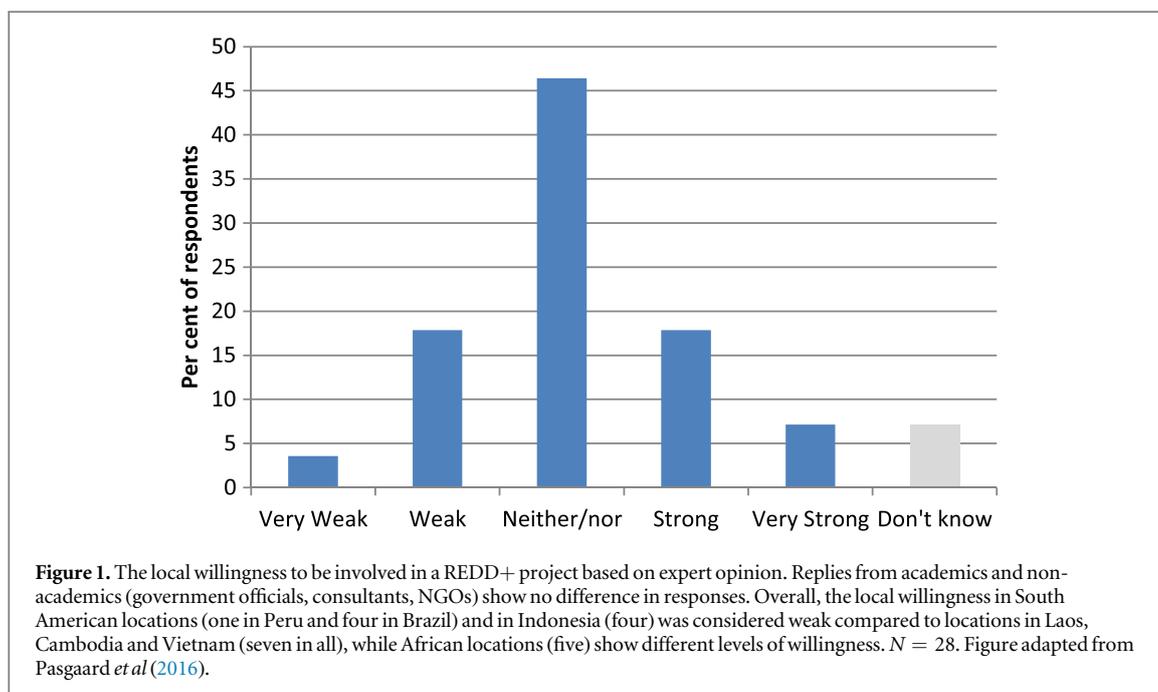
Supporting these meta-studies, examples from Laos and Nepal show how external organizations with previous and existing activities in potential REDD+ locations actively pursue development of REDD+ (see also Aguilar-Støen 2015 on cases from Colombia and Costa Rica). In Laos, a REDD+ feasibility study was conducted in a national park with the aim to determine historical baseline emissions in order to calculate the project's emission reduction and credit generation potential for a future REDD+ project. It was found that the project would 'not achieve financial sustainability' because there was insufficient historical deforestation in the national park; instead, the study concludes that alternative approaches were to be explored to determine whether 'REDD can serve as a mechanism to protect and preserve the important biodiversity values that exist' within the area (Moore *et al* 2011: p 1). In Nepal, Khatri *et al* (2015) demonstrate that the way conservation projects frame the climate change problem and needed interventions is primarily driven by donor or implementing agencies (influenced by their historical mandate). The authors show how old activities are 'repacked' to create or take advantage of new funding opportunities. These two examples show how REDD+ is adapted to specific locations with previous activities rather than being placed in the most suitable areas. In the case of Laos, the REDD+ project was eventually moved to several districts outside the park, but still within the area supported by the German funding agency (Vongvisouk *et al* 2016).

2.3. What are the current conditions in prospective REDD+ locations?

The survey among REDD+ specialists offers insight into the current conditions in existing or prospective REDD+ locations. With regard to the *deforestation and forest degradation threat*, the most important drivers as perceived by the survey respondents (such as economic land concessions, new infrastructure and agricultural expansion), are also considered among the most costly to tackle. However, some of these key drivers are not considered very feasible to target, especially not new infrastructure and timber extraction by the military. Respondents' estimates of *opportunity costs* indicate that these might be high for land users (Pasgaard *et al* 2016). The *willingness* of local communities to engage in REDD+ as perceived by the survey respondents varies among locations, but with the 'neither/nor' option being the most dominant response to the question of how strong or weak the local willingness to involve in REDD+ is (figure 1).

Respondents explained the limited enthusiasm about REDD+ projects with the high level of opportunity costs and unmet requests for alternative income options, the levels of information and knowledge about REDD+, level and pace of benefit sharing, the commitment of government and local authorities, and importantly, expectations and realization of payments, an issue which might be beyond the control of project implementing partners. One respondent stressed the risk of local people losing interest in participation or confidence in the project, while another respondent was concerned about hostility among communities to the concept of REDD+/PES (Payment for Environmental Services). The majority of survey respondents (64%) agreed or strongly agreed that the willingness differs substantially among local community members due to several reasons, such as variations in alternative opportunities and forest dependencies, lack of understanding and misinformation, or differences in perceptions and interests. While the survey did not reveal any opinions on *forest area size*, the responses showed a relatively strong faith in the prospects of potential REDD+ to deliver *co-benefits*, in particular to improve the current state of biodiversity, but also to reduce poverty and improve tenure rights and forest governance (Pasgaard *et al* 2016).

Besides opinions and perceptions linked to our proposed desirable qualities of REDD+, several respondents aired their concerns about the dominant role of the NGOs involved in project implementation. For instance, a concern that NGO involvement alienates locals was expressed together with comments like 'NGOs implement the REDD+ work, disconnecting local people from the process, creating suspicion and possibly feeding corruption'.



3. Discussion and conclusions

We fully acknowledge the difficulties of actually identifying favorable initial characteristics of any natural resource management program or project (Blaikie 2006), such as REDD+. We nonetheless open the discussion of decisions related to location of REDD+ activities, since specific favorable, facilitating or desirable characteristics for the project locations are made explicit based on the objectives of REDD+, and these characteristics are sometimes overlooked due to other dominant selection criteria, such as pre-existing projects.

As mentioned earlier, REDD+ initiatives tend to target countries with high *deforestation threat*, whereas low *opportunity costs* were found to be relatively unimportant (Cerbu *et al* 2011). As high deforestation threat and high opportunity costs typically occur in the same locations (Castella *et al* 2012), most REDD+ projects will inherently have to deal with a high risk from failure, as their economic incentives will rarely be able to compete with income from alternative land uses. We have not been able to find studies specifically assessing *local willingness* to engage in REDD+, but Leggett and Lovell (2012) and Mustalahi *et al* (2012) find contrasts between REDD+ activities and local needs and priorities such as water scarcity, rural development, and food security. Our survey suggests variation among locations and within participating communities regarding the willingness to engage (see section 2.3).

Concerning *forest area size*, Balooni and Lund (2013) argue that forests under decentralized management (often targeted as REDD+ locations) are generally many and small in size, and these locations therefore seem ill-suited to assure sufficient emissions

reductions relevant to the global scope of REDD+ policy. Some projects are implemented to incentivize further conservation of forests under existing decentralized management, which is likely to result in limited emissions reductions at high cost given their small-scale nature. Even though the expansion of such forest areas is part and parcel of the vision of REDD+ policy, Balooni and Lund (2013) see few indications of these visions becoming reality.

With regard to *co-benefits*, similar inconsistencies are found and trade-offs exist between forest management strategies for climate and biodiversity purposes and human development needs (Sills *et al* 2009, Bucki *et al* 2012). It is argued that the distribution of biodiversity is vital for helping to identify priorities for conservation investments under REDD+ to target the most biodiverse areas (Gardner *et al* 2012), but also that national priority areas could be identified based on poverty alleviation potential (Hett *et al* 2012). Atela *et al* (2015), for instance, studied the spatial targeting of REDD projects in Kenya to find that most projects are located in low-vulnerability counties as opposed to medium to high vulnerability areas, which would enable lower opportunity costs and explicit livelihood impacts. Hett *et al* (2012) also show that only one tenth of surveyed villages in Laos have the combination of high carbon stock densities and a pre-dominantly poor population. The authors argues that since poverty rates and carbon stock densities can occur in different combinations, different approaches would be needed depending on the spatial combination of carbon stock densities and poverty, and REDD+ might not be considered a core instrument for poverty alleviation after all (Hett *et al* 2012).

Thus, the desirable qualities of locations for REDD+ appear to suffer from a range of

contradictions and REDD+ planners are faced with unavoidable trade-offs between the different stated objectives of REDD+ policies that aim to achieve all in one mechanism. This can inevitably lead to pragmatic decision-making and often the interests, capacities and past experiences of the external organizations funding and sometimes implementing the projects—as well as their aim to secure continued funding for existing projects—become decisive for REDD+ project location (Pasgaard 2015). Thus, REDD+ demonstration projects end up in already protected areas and in locations under existing decentralized management (Mustalahti *et al* 2012, Balooni and Lund 2013), locations that may or may not be suitable for REDD+ to meet its goals. While this might compromise intended overarching benefits, relying on external funding is of course inevitable in the current form of REDD+. It might be this way or nothing at all.

And since it appears hard to change, we agree with Blaikie (2006) on the need to extend the focus on facilitating conditions of candidate sites, though they are important, to the *political conditions* under which they are negotiated, since ‘the interests of different actors, both within political elites and in civil society, will shape the strategy of acceptance followed by active implementation, acquiescence, rhetorical gestures, or foot-dragging’ (Blaikie 2006, p 1954). This political approach also questions the use of common feasibility and outcome assessments in REDD+ projects with respect to effectiveness, efficiency and equity (Angelsen *et al* 2009, Bucki *et al* 2012), and the assumption of coherent ‘communities’ in REDD+ (Pasgaard and Nielsen 2016), as these criteria and constructs assume ideal REDD+ locations.

In the end it begs the question of which problem(s) we are trying to solve with REDD+. Besides climate change mitigation (the underlying rationale behind REDD+), can this mechanism also address poverty, governance, economic development, and biodiversity if these objectives are not compatible with carbon emission reductions? It seems that the overall climate change mitigation objective is being pushed and stretched in different and sometimes opposing directions in various local contexts by multiple stakeholders with diverging interests and sub-objectives.

In an ideal world, the intended outcomes at a national scale should determine the selection of REDD+ sub-national locations based on identified desirable qualities; however, in the real world, locations are decided upon by external organizations based on different criteria, such as pre-existing projects and expertise. The next critical thing to consider is what will happen when and if a global binding agreement on national scale REDD+ is implemented. How will these emerging or functional demonstration projects be included in the national programs and will they represent the locations that national processes identify as most suitable? The five desirable qualities proposed in this paper could offer a more realistic, yet context-

sensitive, approach to consider location characteristics of specific REDD+ activities and their (in)consistencies, and will hopefully inform and inspire the progress on future national REDD+.

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