

# REDD+ in Africa: contexts and challenges

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## Abstract

*REDD+, a climate change mitigation mechanism that values carbon in tropical forests, is expected to provide Africa with a range of environmental and socio-economic benefits. Drawing on a vast array of literature and personal experiences, this review analyzed particular features and challenges that REDD+ implementation has faced on the continent. The distinct contexts and major challenges regarding governance, finance and technical capacities are discussed, and mechanisms to fill these gaps are suggested. Radical land tenure reform and a perfect safeguard mechanism that transfers forest land and carbon to the communities are unlikely. REDD+ should rather look for systems that respect local institutional arrangements, and allow forest-based communities to participate in decision-making and benefit sharing, particularly benefits from emerging REDD+. Finances for REDD+ infrastructure and the results-based payment are in short supply. While negotiating for potential external sources in the short term, Africa should generate domestic financial resources and look for additional payments for ecosystem services. Africa should also negotiate for forest monitoring capacity building, while strengthening local community forest monitoring. This review contributes to an improved understanding of the contexts and challenges to consider in the capacity and policy development for REDD+ implementation.*

*Keywords:* Africa; deforestation; finance; governance; forest monitoring; REDD+.

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## 1. Introduction

### 1.1. Background

Deforestation and forest degradation, mainly in the tropics and subtropics, continue to be a significant source of global greenhouse gas emissions, second only to the industry sector (IPCC, 2014). At the same time, forest conservation and management have been thought to offer a relatively low-cost and quick emissions reduction option if the right policies and institutional structures are designed and implemented (Richards and Stokes, 2004; Stern, 2007). These tenets provided the theoretical basis for the United Nations Framework Convention for Climate Change (UNFCCC) to

progressively recognize a mitigation mechanism for reducing emissions from deforestation and degradation and promoting conservation, sustainable management of forests and enhancement of forest carbon stocks (REDD+) (UNFCCC, 2010). REDD+ aims to provide performance-based financial incentives for developing countries, with the major benefit of mitigating greenhouse gas emissions, particularly from the forest sector. It has also anticipated co-benefits of addressing socio-economic development challenges, such as poverty alleviation and promoting good governance.

In the most recent global climate agreement (the Paris Agreement), REDD+ has been offered a stand-alone article (Article 5) (UNFCCC, 2015), signaling a continued, broad international political backing of the mechanism. The emergence of REDD+ has increased the engagement of developing countries in global climate change negotiations (Agrawal *et al.*, 2011; Miles and Kapos, 2008), whose concerns and interests were largely sidelined in the past. Consequently, REDD+ has attracted a number of developing countries in Asia, Latin America and Africa to participate voluntarily. In the UNFCCC climate change negotiations, however, African countries have been lumped in one large group – the Africa group and the Group of 77 (G77), a

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block consisting of countries with very different views and interests. Divergence in views often leads to difficulties in reaching consensus or that negotiating positions are only stated in very general terms (Kasa *et al.*, 2008). African countries are thus too disenfranchised to influence major decisions and to promote Africa's unique but diverse interests in climate change negotiations (Atela and Quinn, 2014).

Despite a weak role in significantly influencing the course of the UNFCCC negotiations and the challenges they face in implementing REDD+, 26 African countries have shown interest so far, mostly through their national REDD+ readiness plans and policy documents. Some have also established REDD+ pilot projects. Most are partnering with UN-REDD, have signed bilateral agreements with developed countries or have sought multilateral arrangements with international financing or technical institutions.

### 1.2. Features and challenges

Implementing REDD+ in sub-Saharan Africa (Africa, hereafter) has unique features in addressing (points 1–3 below), and faces a number of roadblocks (points 4–6 below).

(1) Africa faces a high potential for increased emissions, as African forests are under continuous threat from deforestation and degradation (FAO, 2010, 2015; Keenan *et al.*, 2015). (2) Africa is home to the largest proportion of forest-dependent subsistence households in the world (Somorin, 2010). Consequently, the drivers of deforestation and forest degradation in Africa are mainly subsistence livelihood-related national and local scale drivers (FAO, 2010; Fisher, 2010; Hosonuma *et al.*, 2012; Kissinger *et al.*, 2012). Thus, the challenge to the African forest sector is how to reduce the fast rate of forest depletion, and at the same time manage forests and woodlands to provide sustainable livelihoods to the large and rapidly growing forest-dependent population. Therefore, REDD+ emerges as a viable alternative to those activities that lead to deforestation and forest degradation, and has the potential to represent Africa's contribution to the global initiatives to curb emissions. (3) REDD+ promises socio-economic development, including poverty reduction and sustainable livelihoods (Atela *et al.*, 2014; Pokorny *et al.*, 2013). The envisaged contribution to the goal of socio-economic development is, particularly, more attractive than the climate goal because in the African context, socio-economic development takes precedence over climate change mitigation. Hence, many African countries have recognized a substantial potential in REDD+ and documented their interests through their readiness activities, national strategies and demonstration projects. (4) REDD+ in Africa faces financial challenges, including financing in advance of performance-based payments (Angelsen, 2013) and there is a lack of investments, which is likely fueled by uncertainties related to global carbon markets and finance provisions (Joseph *et al.*, 2013). (5) Forest governance and

related land tenure reform issues are critical for success, but highly sensitive in the context of Africa (Larson *et al.*, 2013). (6) REDD+ requires a credible system that will ensure measurement, reporting and verification (MRV) of emissions from forests (UNFCCC, 2010). African countries, however, have not been able to accurately measure and report the carbon in their forests.

Since the emergence of REDD+, there has been a surge in literature on related topics, such as the evolution, policy, financing, and monitoring of forest carbon. Nevertheless, particular features in the context of REDD+ in Africa, as well as the potential challenges that REDD+ in Africa might face, are poorly documented and debated. The objectives of this paper are to analyze features and challenges that Africa might face in implementing REDD+, and to offer some mechanisms for addressing these challenges. Such analyses may contribute to an improved understanding of urgent features and challenges for capacity and policy development to enable REDD+ implementation in Africa.

## 2. Method

This paper draws, initially, on published scientific literature and reports based on an independent search or search combination of major terms, including REDD+, Africa, deforestation, finance, governance, and forest monitoring. The main research question that guided the literature search was 'what are the particular features and challenges REDD+ has faced in Africa?' Because REDD+ is a relatively recent development, most of the available evidence is found outside of traditional academic literature. Therefore, a focused literature review targeted UNFCCC documents consisting of 'Decision Reports' from the conference of the parties (UNFCCC, 2007, 2009, 2010, 2011a, 2011b, 2012, 2013, 2014, 2015), country reports, and communications from governments and non-governmental organizations (NGOs). A further refined review looked at published scientific literature, policy literature from institutions related to REDD+, such as the UNFCCC and UN-REDD, key journals related to climate, environmental and forest policy issues in the tropics, and country-level reports on REDD+. The refined search, together with our own experiences, enabled an understanding of the particular features of REDD+ in Africa. Furthermore, these sources were used to identify the challenges African countries have faced or will potentially face in moving from the readiness phase (i.e., policy, technical and structural preparation phase) to REDD+ implementation on the ground. The analyses further served to put the features and challenges identified into perspective, and offered a discussion of the mechanisms for addressing the challenges.

While features and challenges of REDD+ are related to an extensive economic, social and political agenda, the scope of this review is limited to (1) financing REDD+

implementation, (2) governance, particularly land tenure issues, and (3) technical issues related to monitoring, reporting and verifications of forest carbon.

### 3. The context of REDD+ in Africa

#### 3.1. Forest types and country circumstances

In the context of REDD+, Africa may be widely recognized because of the vast rainforest in the Congo basin. Indeed, the Congo basin is comprised of an area of about 4.1 million km<sup>2</sup>, spanning across six countries, and containing the second largest block of dense rainforest after the Amazon (Perez *et al.*, 2005). However, Africa is endowed with a wide variety of other forest types and woodlands, such as the vast seasonal Miombo woodlands, semi-arid wooded savannahs and mangroves with varied carbon storage, biodiversity and socio-economic benefits. Africa also has immense, but often overlooked, tree resources in agro-forestry (Mbow *et al.*, 2014), with a potential for carbon storage, while providing livelihoods for poor smallholder farmers. These forests and woodlands make Africa a major stakeholder in any climate change mitigation action, particularly REDD+.

The various forest types, coupled with national circumstances such as deforestation and degradation rates and the potential for implementation and the levels of engagement in REDD+, varies by regions and countries. As a result, African countries may pursue different approaches with regard to adopting and implementing REDD+, and the types of the primary REDD+ activities in which they may engage in will typically vary. Countries in the Congo basin, such the Democratic Republic of Congo (DRC) and Cameroon, rightfully attract REDD+ because, together, they represent about 85% of the Congo basin rainforest, and consist of areas of high carbon, conservation and biodiversity importance. Consequently, the Congo basin receives a lot of attention from donor countries and institutions. In terms of the forest conditions, the Congo basin can be considered as a high forest cover/low deforestation region (Megevand *et al.*, 2013). As a result, in this region, forest conservation may be considered as a priority REDD+ activity. However, deforestation and forest degradation are also becoming important due to increasing pressures on the forests from slash-and-burn agriculture, commercial export-oriented farming, mining and logging operations, and charcoal production (Megevand *et al.*, 2013; Potapov *et al.*, 2012). REDD+ will, in this region, face strong challenges from business-as-usual activities, including mining (Megevand *et al.*, 2013), commercial and illegal logging (Perez *et al.*, 2005) and, in the future, large-scale agriculture (Lisk, 2013). Therefore, the success or failure of REDD+ in this region will have significant global and regional implications for climate change mitigation actions.

Countries in eastern, central and southern Africa, including Tanzania, Zambia, Zimbabwe, Angola, Mozambique and Malawi are endowed with the savannah woodlands, most notably the Miombo – the most extensive tropical woodland formation in Africa (Campbell, 1996). These woodlands support the livelihoods of millions, and are experiencing high rates of deforestation and forest degradation, mostly due to shifting cultivation as well as wood extraction for charcoal and firewood (FAO, 2007). Therefore, reducing deforestation and forest degradation can be thought of as primary REDD+ activities in these regions. Other African countries such as Ethiopia, Kenya, Madagascar and West African countries including Ghana and Nigeria have already lost a significant portion of their forests and woodlands to decades of deforestation (FAO, 2010, 2015). Therefore, their participation in REDD+ entails efforts for forest landscape and ecosystem restoration, thus enhancing the carbon stock of their forest land as their major REDD+ activity.

#### 3.2. Forest dependence and drivers of deforestation and forest degradation

Among the unique features of African forests is that they are home to a large human population, and that their resources further play a major role as a regular household income source (up to 15–20%, Vedeld *et al.*, 2007). The forest sector accounts for 6% of Africa's gross domestic product (GDP), which is the highest in the world (UNEP, 2006). Another major piece of evidence of high forest dependence is that fuel wood and charcoal are the major sources of household energy for more than 80% of rural households in Africa (World Bank, 2011), and such a dependence is far larger than that of any other regions of the world.

Furthermore, a large proportion of the African population depends on climate sensitive economic activities such as rain-fed agriculture and pastoralism, which are particularly vulnerable to climate change and variability and related stresses such as droughts, floods and diseases, coupled with the systems' low adaptive capacity (IPCC, 2014). Africa has a large proportion of subsistence farmers and poor landless households. For such households, forests serve as safety nets against climatic and economic shocks (Somorin, 2010). In addition, the population of Africa is growing at a much faster rate than any other region of the world, and more than two thirds of the growing population depends either directly or indirectly on forest resources (Somorin, 2010). The continued high fertility (5.4 children born per women) and high population growth rates (Canning *et al.*, 2015), coupled with a large proportion of young people looking for land for agriculture, energy wood and settlement, have put an enormous pressure on forests. Consequently, Africa experienced the greatest forest losses out of all other tropical regions between 2000 and 2010, and the second largest of all regions between 1990 and

2010 (FAO, 2010). Furthermore, between 1990 and 2015, all sub-regions in Africa have experienced a decline in forest area (FAO, 2015; Keenan *et al.*, 2015).

In general, since the 1980s tropical deforestation and degradation has been seen as increasingly driven by the international timber and agricultural markets which, in turn, are driven by large-scale industry (Ananda and Herath, 2003; Butler and Laurance, 2008; DeFries *et al.*, 2010; Rudel *et al.*, 2009). Defries *et al.* (2010) find quantitative support for this argument, illustrating a correlation between deforestation and net agricultural trade and urban population growth. They concluded that forest losses in the tropics are driven by growing export demand for both agricultural and primary products, such as cattle, soybeans, palm oil and timber.

Market-driven deforestation has been a dominant feature for many years in tropical forested countries in Latin America (e.g., Brazil) and Asia (e.g., Indonesia). But the threat to African forests from commercial agriculture is also growing, and is expected to increase substantially. There is a possibility of cross continental leakage (Jonsson *et al.*, 2012), as palm oil agribusinesses expand into forested African countries such as Cameroon, Ghana and Liberia. The agribusiness expansion into Africa might be related to Indonesia's decision to ban granting new concessions of land to palm oil plantation companies, together with the restrictions and the reduced availability of land in Malaysia. Furthermore, since the mid-1990s, millions of hectares of land in African countries have been under transnational land deals or 'land grabbing', which involves the transfer of land to investors (at least one million ha each in Ethiopia, Liberia, Mozambique, and Sudan) between 2004 and 2009 alone (Afionis, 2012; Baglioni and Gibbon, 2013; de Haro, 2013; Lisk, 2013). This will inevitably lead to the expansion of agriculture into tropical rainforest regions (DeFries *et al.*, 2010), and will potentially increase the opportunity cost of implementing REDD+ by putting a higher price on timber and cleared land than the benefits that REDD+ can generate.

Despite evidence of market-driven deforestation, including land grabbing, country reports and meta-analyses indicate that deforestation and forest degradation in Africa are still mainly driven by poverty-related factors, such as subsistence agriculture, fuel wood collection and charcoal production (FAO, 2010; Fisher, 2010; Hosonuma *et al.*, 2012; Kissinger *et al.*, 2012). Once cleared, the land is often subject to widespread and serious erosion and degradation, aggravated by poor land management (Ananda and Herath, 2003). This has strong negative implications for food production. Consequently, REDD+ is often suggested to look into the rural sectors, particularly subsistence agriculture and household energy. REDD+ needs to address all major drivers of deforestation and forest degradation (UNFCCC, 2010), and its sustainability in Africa thus depends on how well it addresses these drivers. The drivers, however, are systemic and intertwined in African land use policies,

economies and politics, and hence are too broad and heavy for REDD+ policies alone to fully address.

### 3.3. *The goal and promises of REDD+*

Climate change mitigation remains the major goal of REDD+. Meanwhile, REDD+ promises financial opportunities through markets, performance-based payments or aid. Africa can therefore potentially become a significant beneficiary if REDD+ were to be implemented on a large scale. REDD+ further promises to address some of the typical socio-economic development challenges such as poverty and poor governance. The envisaged payments or aid could be a significant source of funding for socio-economic development. External finance would attract African governments to voluntarily participate in the REDD+ program, including those that previously had shown less interest in forest conservation and management.

REDD+ also promises to promote environmental and social safeguards while promoting forest conservation and management (UNFCCC, 2011a). The rights of forest-dependent communities and reducing environmental risks such as pressures on biodiversity and promoting ecosystem services are particularly relevant to Africa due to its large and diverse forest resources, as well as the millions of forest-dependent vulnerable populations. Therefore, synergies are feasible among the multiple benefits of REDD+. Yet, tradeoffs exist that may favor the social and environmental co-benefits over the climate change benefits. Western donors and investors emphasize carbon benefits, while REDD+ practitioners such as civil society groups and local communities are often interested in the non-carbon benefits (McDermott *et al.*, 2012). In contrast, central governments in Africa would be interested in the promised external funds through REDD+. In general, co-benefits may be favored, because socio-economic development, including poverty reduction, takes precedence over the urgency of emissions reduction. Trade-offs will thus be inevitable and reflect the relative value of land for different purposes. This puts pressure on REDD+ to meet opportunity costs of clearing for agriculture and charcoal production, the two most important causes of deforestation and degradation in Africa (Fisher, 2010; Fisher *et al.*, 2011).

## 4. **The challenges of implementing REDD+ in Africa**

### 4.1. *Governance challenges*

In the context of international development, governance refers to a structure of decision-making and resource management and is associated with issues such as transparency, participation and accountability (Thompson *et al.*, 2011). Bad governance has been identified as a major contributor to Africa's development problems, including poverty and

natural resources depletion (Brautigam and Knack, 2004). In particular, development and environmental projects in Africa often fail because of corruption, mismanagement of project finances and poor participation by the wider public (Sachs and McArthur, 2005). Consequently, good governance has been among the preconditions for funding from the International Monetary Fund (IMF), World Bank, and bilateral donors (Paloni and Zandari, 2006).

In the context of REDD+, governance covers issues such as land tenure, resource rights, benefit sharing and policies and forms of forest management (Phelps *et al.*, 2010). In particular, governance of the forest sector in Africa is characterized by poor institutional capacity and performance, weak forest conservation programs and insecure land and forest tenure by indigenous and local communities (Agrawal *et al.*, 2011). Furthermore, lack of cross-sectoral coordination on REDD+ and compatibility between REDD+ and the national land and agriculture policy are suggested to have impeded REDD+ implementation (Atela *et al.*, 2016). Weak political and governance systems were among the major roadblocks in pre-REDD+ forest management policies, such as the Tropical Forest Action Plan (TFAP) and National Forest Programmes (NFP) (Somorin *et al.*, 2012). Consequently, REDD+ implementation requires reforms in governance such as land tenure, and institutions that address the rights and interests of a wide range of stakeholders, particularly local and indigenous communities. REDD+ was largely welcomed as an opportunity to redefine governance, including national and local institutions for forest management, for the benefit of large forest-dependent populations (Levin *et al.*, 2008). As it begins to shape up, however, there are concerns regarding REDD+ as an emerging environmental mode of governance in crisis (Thompson *et al.*, 2011), and further concerns that it enables national states to control rural resources (Phelps *et al.*, 2010). There has also been a concern that poor governance will compromise the REDD+ goals, because it can offset reductions in carbon emissions from REDD+ initiatives by favoring activities such as illegal logging, uncontrolled land conversion and charcoal extraction. It can indirectly weaken REDD+ by undermining institutional reform efforts by favoring the status quo (particularly illegal logging as the driver of deforestation), and thus undermining the interests of local people (Byamugisha, 2013). Further concerns suggest poor governance can weaken international support in soliciting finances for REDD+.

There were also concerns that as a mechanism, REDD+ has not learnt much from the design challenges that the integrated conservation and development projects (ICDPs) were facing (Minang and van Noordwijk, 2013). If REDD+ were to be effective, environmental democracy experts would push for the appropriate engagement of local stakeholders who live in the areas where the forests are located. Failure to do so may result in REDD+ becoming another mechanism that jeopardizes forest resource conservation and exacerbates poverty issues that the mechanism ought

to alleviate (Takacs, 2014). There was practical evidence (e.g., in Kenya) indicating that most REDD+ projects target less vulnerable areas in terms of poverty, thus contradicting the mechanism's poverty reduction objectives (Atela *et al.*, 2014).

In the context of REDD+ in Africa, land tenure probably represents the most serious governance concerns, as rural land remains the single most important resource for development across Africa. Particularly, land tenure reforms to allow local communities to claim property or collective tenure rights on the forest land and its resources appear at the top of REDD+ development objectives. In most African countries, the state claims legal title over land, especially forested-land, but often appears to have weak control over the forests themselves. On the other hand, a great majority of the rural population, including both individuals and communities, depends on forests that they do not legally own. More than 90% of Africa's rural land is tenuentially undocumented (Byamugisha, 2013), and less than 2% of Africa's tropical forests are legally owned or designated for use by forest communities or indigenous groups, compared to nearly one-third of all forests in Latin America, Asia and the Pacific (Allen, 2011).

Compared to other tropical forested regions, Africa lags behind – and most likely will remain behind – in forest tenure reform. Customary institutions related to forest resources are often disregarded, or replaced with 'modern' laws that effectively exclude the communities, for instance, in the Congo basin (Acker, 2005; Oyono, 2005). In most cases, central governments control tenure arrangements using a general formal law in administration, allocation and use of forest resources. Even when the communities exercise participatory forest management, formal ownership of the forests remains with the state, for instance, across all participatory forest management projects in Ethiopia. This would make forest lands highly vulnerable to land grabbing and expropriation, with poor or often no compensation to the locals. The surge in land-grab by companies from Asia and the Middle East, as well as corrupt local government officials in the name of foreign direct investment in Africa, have not generated much sustained economic growth or improved food security for the communities. Instead, land deals consider domestic elites, not local communities, as partners and beneficiaries, as documented in Southern Africa (Hall, 2011). In Madagascar and Ethiopia, recent land-grabs resulted in public discontent as the deals ignored the livelihoods and subsistence rights of small farmers (Robertson and Pinstrup-Andersen, 2010). Therefore, generally land tenure, including ownership, access, use and transfer, remains the most difficult challenge, not just for REDD+ implementation, but also for development policies across Africa.

In addition to the land governance issues, Africa also does not have any clear rights to the carbon from the forests. Globally, indigenous people and local communities own legally recognized rights to one-eighth of the global

forest resources, which sequesters about 37.7 billion tons of carbon in its biomass (WRI, 2014). Despite this strong stake, the recognition of rights to carbon from such forests through the REDD+ mechanism has been an uphill task for many practitioners due to the interests of the national and sub-national government regarding the revenue that is likely to be generated from the REDD+ mechanism. Challenges remain, especially relating to the social safeguards, such as carbon rights, as REDD+ moves into the implementation phase. Therefore, there is a strong need to articulate upon social safeguards if REDD+ is indeed to benefit the local communities, such as the indigenous people whose entire livelihoods depend on the forests.

#### 4.2. Financial challenges

Unlike the preceding project-based tropical forest management approaches, REDD+ intends to involve a performance-based approach, in which payments will be made *ex post* in respect to the actual emissions reduction. The UNFCCC's decision at COP 21, the Paris Climate Agreement (UNFCCC, 2015), also recognized the continued importance of adequate financial resources for the implementation of REDD+ and the results-based payments for REDD+. Large amounts of funds are needed to finance all phases of REDD+ – readiness, capacity building and piloting. Forested countries outside of Africa, such as Brazil, Indonesia and Guyana, entered bilateral agreements that guarantee performance-based payments with developed countries, mainly Norway. In addition, most of these countries are in better economic situations, and can finance a significant part of their REDD+ development using domestic resources. African countries, in contrast, have poor institutional capacities, and thus less leverage for performance-based negotiations – and will have to depend on external aid as domestic resources are limited (Angelsen *et al.*, 2012).

A recent evaluation of Norway's International Climate and Forest Initiative (NORAD, 2013) underscores a lack of performance-based payments in the agreement between Norway and Tanzania as a disincentive in establishing forest carbon monitoring systems in Tanzania. Because of uncertainties surrounding the performance-based payments, practitioners in Africa lack the confidence to promise local communities REDD+ payments for protection and improved management of their forests. In order to negotiate for performance-based payments, African countries would have to first build capacities of their technical, governance and financial institutions.

The major sources of funding for REDD+ readiness, strategy design and pilot projects in Africa are currently non-market initiatives such as the Congo Basin Forest Fund (CBFF), the World Bank's Forest Investment Fund, the Forest Carbon partnership facility, UN-REDD and the Government of Norway. The challenge is that if all countries were to apply for these funds, those initiatives would be

very far from sufficient. Official development assistance might be thought of as a significant source of funding for REDD+ (Angelsen, 2013). In Africa, however, the present bulk of foreign financial assistances, at best, are allocated to basic services such as education, health and consumption. In most cases, foreign funds are otherwise wasted on corrupt recipients, leaving limited finance for environmental projects. Furthermore, where poor governance and corruption are experienced, as often is the case in Africa (Sachs and McArthur, 2005), governments lose the leverage for receiving further official development assistance. Even if external finance is available, national financial institutions in Africa often lack the capacity and competence to meet fiduciary standards, transparency and the capacity to manage large funds in efficient and transparent ways.

Market-based mechanisms (REDD+ credits) to support REDD+ have attracted substantial interest, especially among western donors. There has been a debate regarding whether or not REDD+ credits should be included in the future global carbon market (Seppanen *et al.*, 2013), mainly because of the skepticism that REDD+ credits will crowd out mitigation in other sectors (Beltran *et al.*, 2013). Second, the bulk of the carbon market today is outside of Africa, and is likely to remain so. Africa has benefited relatively little from the global carbon market so far. This is associated with the private sector's perceived level of high risk, associated with limited infrastructure, poor governance, uncertain land tenure, and limited capacity and awareness in Africa (APF, 2009). Third, even if REDD+ credits were available in carbon markets, it is highly likely that Africa would be outcompeted by other regions that have better technical capacities for providing reliable emission reductions. For instance, by mid-2014, Africa hosted only 3% of all registered Clean Development Mechanism (CDM) projects developed with international partners (Röttgers and Grote, 2014).

A further challenge is that REDD+ should generate funds large enough to reduce business-as-usual activities. In the African context, these include agriculture and wood extraction that would otherwise lead to deforestation or forest degradation. This means that the revenue to be generated by REDD+ should be comparable or larger than the opportunity costs plus the costs of implementing REDD+, such as costs for environmental and social safeguards, transaction, and monitoring (Karsenty *et al.*, 2014). In the face of low demand for carbon and thus low carbon prices in an already volatile carbon market (Seppanen *et al.*, 2013), the revenue that can be generated through the market would be far less than that which is needed to support REDD+.

#### 4.3. Technical capacity challenges

REDD+ payments require a demonstrated emissions reduction from REDD+ activities. Consequently, the UNFCCC (UNFCCC, 2009) decides that countries that wish to

participate in REDD+ will have to establish an MRV system to quantify emissions reductions and removals. In addition, participating countries are required to develop forest reference (emission) levels (UNFCCC, 2010) that provide a benchmark for estimating emissions reductions from REDD+ activities (Meridian Institute, 2011). The Warsaw framework for REDD+ (UNFCCC, 2014) sets minimum reporting requirements before countries can qualify for results-based finance. Particularly in the face of quality indicators in the context of reporting to the UNFCCC (IPCC, 2003, 2006), there is a large technical capacity gap that needs to be filled before REDD+ can be fully implemented.

The methodological guidance for monitoring (UNFCCC, 2009) recommends the use of a ground-based forest carbon inventory, remote sensing or a combination of the two in estimating forest carbon stocks and forest area changes. Forest inventory in Africa is characterized by a general lack of regular and frequent data collection, absence of standardized methods for data collection and lack of complete and up-to-date inventories (Austin *et al.*, 2012). In addition, institutions that have forest information are poorly coordinated, and data are often scattered across agencies (Cheung *et al.*, 2014).

In the absence of a National Forest Inventory (NFI), MRV for REDD+ may be based on the use of remote sensing to monitor deforestation (Herold *et al.*, 2011). Indeed, forest area and crown cover are readily detectable via remote sensing, enabling a reliable estimation of changes due to deforestation (Goetz and Dubayah, 2011). The challenge is estimating emissions from forest degradation, which in the African context is particularly important, because the annual rate of forest degradation is estimated to be about 50% of that of deforestation (Lambin *et al.*, 2003). Therefore, accurately identifying degraded areas and estimating the amount of carbon loss due to degradation is decisive for REDD+ payments. However, small-scale clearings for charcoal and wood fuel collection and subsistence agriculture, as well as forest degradation due to illegal logging, are difficult to detect via satellite.

The lack of forest carbon monitoring capacities has strongly contributed to a lack of large-scale investment in mitigation strategies (Williams *et al.*, 2007). By the same token, the prevalence of a capacity gap for monitoring forest carbon in Africa (e.g. Herold, 2009; Romijn *et al.*, 2012), could possibly limit the potential benefits from REDD+ in Africa.

## 5. Addressing the challenges of REDD+ implementation

### 5.1. Governance- land tenure reform and social safeguards

Addressing the drivers of deforestation calls for reforms in governance and national policies such as tax and trade

regimes, monetary policies and economic development strategies, and market forces are necessary (Kaimowitz and Angelsen, 1998). Such reforms in governance or policies may require incorporating REDD+ into the mainstream agricultural, forest and energy policies to address the need for land conversion to agriculture for food production and forest clearing for energy wood. Some African countries (e.g. Ethiopia and Cameroon) promise to integrate REDD+ into their economic development and climate policies. Although it is not clear whether or not there will be a genuine political will to go so far as to commit to the required reforms, the approach could be hailed as a positive development for forest governance.

Many African countries have the poorest scores on established quality indicators of land ownership rights – the recognition of customary and associated rights to forest lands and benefits. Given the cases where REDD+ has provided some new opportunities for securing local tenure rights outside Africa (e.g., in Brazil) (Larson *et al.*, 2013), forest land tenure reform is often suggested as crucial in achieving the goal of REDD+ (Dokken *et al.*, 2014; Larson *et al.*, 2013). A profound reform in land tenure, however, requires a strong political will and ability. In practice, many African countries have instead constructed a political system explicitly opposed to any land tenure reform, and thus will find land tenure reform as an unacceptable trade-off between their political interests in land and the benefits of REDD+ to the local communities. In Africa, politics and land are heavily intertwined (Jouve, 2007; Unruh, 2008), such that land represents the major subject in the social and economic contract between the state and the society. State-led strategies to land reform rely on ‘top-down’ initiatives and bureaucratic implementation, and thus will encounter problems, including conflicts when policy reaches the community (Peters, 2009; Sikor and Müller, 2009). Therefore, few governments would be interested in a genuine policy reform that encourages private actors or communities to legally own forest land. When governments promise land reform, it will most likely be to attract the political and financial backings of donors and foreign direct investments or to conform to frequent international pressures (Peters, 2009), while carrying out dubious or little efforts for genuine reforms. In effect, African countries remain hesitant, and the potential for substantial changes in existing land tenure appears unlikely (Larson *et al.*, 2013).

Experiences from Latin America and Asia show relative advances in reforming the legal systems to recognize and secure customary tenure rights as ownership rights (Allen, 2011). In Africa, where land reforms were made in the past (e.g., Ethiopia), it did not produce the intended impacts. Rather, it increased tenure insecurity, undermined access to land for landless, poor households or faced design and political challenges, and remained incomplete (Holden *et al.*, 2013). Incomplete reforms could lead to speculation, which could easily result in an aggravated deforestation. This is because in Africa, land entitlements for either

individuals or communities are often limited to already cleared land for agriculture or settlement. The perception that land clearing secures long-term claims to the land may lead to excessive forest clearance. The subsequent cleared areas, in a rush to claim rights to new land, are often much larger than needed for cultivation (Unruh *et al.*, 2005). It is thus less likely that REDD+ will address the complex tenure problem in Africa so as to satisfy the stipulated requirements of REDD+ as per the UNFCCC requirements. Rather, REDD+ -related policies and strategies should seek for arrangements that recognize indigenous and other forest-based communities as right holders to carbon and non-carbon benefits, similar to experiences in Latin America and Asia.

REDD+ further requires governance that extends to local institutions that guarantee a robust safeguard mechanism to enable the protection of forest livelihoods, human rights and the conservation of biodiversity (UNFCCC, 2011a). The Paris Agreement (COP 21) (UNFCCC, 2015) explicitly recognizes the need to respect human rights. However, social safeguards fail unless those entitled to benefits are aware of their rights. Engaging customary institutions and the local communities in a genuine governance process could enable building trust in the prospect of REDD+ – and motivate them to protect their forests (Reed, 2008). Furthermore, it is likely that strengthening local governance institutions is needed to reduce the risk of leakage – that is, the displacement of thousands of forest villages due to deforestation.

Conceptually, it would be hard to argue against the need for such perfect institutions and robust safeguard. Unfortunately, however, local governance institutions in Africa are under the control of central governments, which have vested economic and political interests in local forests, or can be hijacked by local elites with more socio-political power, as in REDD+ pilot projects in Madagascar (Poudyal *et al.*, 2016). While developing a safeguard mechanism, therefore, REDD+ implementation should adapt to local circumstances. For instance, Atela (2013), using evidence from a local REDD+ project in Kenya, suggested that well-defined communal systems may enable inclusivity, collective action and promote societal benefits from REDD+. This may be particularly so when existing institutions enable indigenous and other forest-based communities to participate in decision-making and benefit sharing. Where these do not exist, the creation of institutional arrangements, such as communal land certification and joint state forest management, are much more acceptable to central governments than radical land tenure reform.

There are, however, emerging opportunities, as exemplified by a few recent developments in countries like Ghana, Malawi, Mozambique, Tanzania and Uganda (Barrow *et al.*, 2009), where attempts are being made to formalize local tenure rights through community forestry. In Ghana, for example, policy reforms that entail clarifying tree and

carbon rights were placed among the top five issues that need to be addressed for REDD+ to move beyond the readiness phase (Mayers *et al.*, 2010).

## 5.2. Financing REDD+

Africa is largely portrayed as a recipient of public resources to finance climate change adaptation and mitigation policies. REDD+ readiness-finance for upfront payments for investments into the REDD+ national strategy and action plan, forest reference level, national forest monitoring system and a system for information on safeguards requires unprecedented funding. Rightly so, Africa may have to negotiate for a combination of aid and bilateral and multilateral non-market initiatives for REDD+ infrastructure development. Records of REDD+ finance flows from 2009 to 2014 (Goldstein, 2015) show that nearly two-thirds of the pledged or committed funding has gone to countries outside of Africa, such as Brazil and Indonesia, and that 60% of the committed finance came directly from individual donor countries, mainly Norway. Africa, indeed, had also received readiness funding for national strategies and action plans or technical support from UN-REDD and the governments of Norway, Finland and Germany, as well as the World Bank's Forest Carbon Partnership Facility (FCPF). But most of the funding from UN-REDD went to the DRC, although a few countries with some of the highest rates of deforestation, such as Ghana and Ethiopia (FAO, 2015), also received commitments.

For results-based payment, there are only a few, if any, operational financing mechanisms for Africa under the UNFCCC, but outside the UNFCCC, countries may apply for fund-based payments such as the carbon fund of FCPF, the bio-carbon fund and the REDD+ early movers program. However, these funds are available only for countries that have made significant progress into their REDD+ readiness, and they deploy results-based approaches to incentivize changes at the landscape level, which in turn require capacity building for monitoring and reporting the associated changes. African countries should, therefore, negotiate for finances for capacity building in order to demonstrate the actual reduction in carbon emissions and to compete against other regions or countries of demonstrated capacities (e.g., Brazil) for results-based finances. In addition to reduced emissions, Africa may also seek further ecosystem service payments, such as payments for biodiversity conservation (Johns *et al.*, 2008; Phelps *et al.*, 2010).

Developed countries may promise conditional funds and technical assistance in the short-term, but in the medium to long-term, there may be no clear sources of finances to pay for emission reductions at a scale that is needed to meet REDD+ emissions reduction targets (GCP *et al.*, 2014). Recognizing that REDD+ is a long-term investment that would eventually pay off (through carbon market or credits), Africa should rather consider domestic resources to self-finance REDD+ implementations in the long run. As a



good lesson from which to learn, India has recently developed an innovative, results-based, approach for forest management (Busch, 2015). The formula deploys distribution of tax revenue for regional states, not just on the basis of population, area and income, but also forest cover. In Africa as well, countries endowed with large oil or other natural resources such as DRC, Ghana and Angola and more advanced economies, such as South Africa, should be able to self-finance REDD+ implementation in the medium to long-term. Africa should also be able to attract public and private sector actors for results-based finance to pay for emissions reductions.

### 5.3. Bridging the capacity gap in forest monitoring

Africa has weak technical capacities for forest carbon monitoring (Romijn *et al.*, 2012; UN-REDD, 2012). Romijn *et al.* (2012) attributed the large capacity gap in Africa to the limited engagement in the REDD+ process and development, but clearly the absence of pre-existing monitoring capacities play a major role. Some developing countries outside of Africa, such as Brazil, Indonesia and India, have benefited from relatively well-developed systems of forest carbon monitoring, including existing national forest inventories (Mora and Center for International Forestry Research, 2012; Romijn *et al.*, 2012).

If REDD+ has to be implemented at the national and subnational levels, a large NFI scheme and advanced remote sensing technologies might be required (UNFCCC, 2009). Indeed, for large remote regions such as the Congo basin, estimating deforestation without the use of remote sensing can be costly. Technologies such as optical high resolution sensors, satellite synthetic aperture radar (SAR) and airborne light detection and ranging (LiDAR) have greatly improved forest carbon measurements, while fulfilling international monitoring requirements for REDD+ (Achard *et al.*, 2010; Goetz and Dubayah, 2011).

The COP 16 agreement (UNFCCC, 2010), and the Paris Agreement (UNFCCC, 2015) continued to encourage developed country parties and international institutions to assist in capacity building and technology development in developing countries. In response to this call and in light of the principle of ‘common, but differentiated responsibilities’, developed countries, mainly Norway, as well as some multilateral organizations such as FAO and UN-REDD, entered into agreements with African countries to support capacity building. Most developed countries committed to the Kyoto protocol report greenhouse gas emissions resulting from land use, land-use change and forestry (LULUCF) activities. The LULUCF activities are closely related to that of REDD+ (Maniatis and Mollicone, 2010), and the UNFCCC encourages the same Intergovernmental Panel on Climate Change (IPCC) guidance (IPCC, 2003) and guidelines (IPCC, 2006). However, developed countries were able to report their GHG emissions, mostly because they have pre-existing monitoring capacities,

including NFI or remote sensing capabilities. There is considerable potential for experience sharing from developed countries, particularly regarding compiling carbon reporting. Some countries, for example, Tanzania, Zambia, Cameroon and Congo have (national) forest inventories of some form, assisted mostly by the FAO (FAO, 2006, 2008, 2009, 2013). These programs have begun to generate information relevant to REDD+ such as forest area, carbon stock and socio-economic data at national and subnational levels. Some African countries have benefited from existing data and ongoing international cooperation. For instance, as of January 2016, Congo, Ethiopia and Zambia have submitted their proposed forest reference (emission) level, a bench mark against which performances are compared. Initiatives such as ‘Congo Basin MRV Regional Project’ (ADB, 2012) envisage developing technical and institutional MRV systems for a number of forested African countries.

Where capabilities for national NFI and remote sensing are low, Africa can also benefit from community forest monitoring (Gupta *et al.*, 2012; Pokorny *et al.*, 2013). Local communities can measure forests with a comparable accuracy to that of professional foresters, if proper training is provided (Danielsen *et al.*, 2013; Fry, 2011; Mustalahti *et al.*, 2012; Pratihast *et al.*, 2013; Skutsch *et al.*, 2010). This approach will have additional values, including promoting local employment, improving local institutions and widening community acceptance of the REDD+ mechanism (Danielsen *et al.*, 2013; Fry, 2011; Mustalahti *et al.*, 2012). In the past, lack of popular participation or the exclusion of significant sections of a community has contributed to failures in forest management in developing countries (Agarwal, 2001), a pitfall REDD+ should avoid.

## 6. Conclusion and outlook

Despite the particular relevance of REDD+ to Africa, its implementation is facing a number of challenges. Progress thus far has been slow and inadequate, and most African countries are not able to graduate from the readiness phase. Consequently, the much anticipated environmental, social and financial benefits do not seem to be accomplished, and the optimism of the early days of REDD+ appears to have been decimated. Clearly, governance, financial and technical challenges all represent significant roadblocks in implementing REDD+ on the ground.

However, there are some reasons for optimism. Among others, the potential benefits of REDD+ (social, economic and environmental) provide strong incentives for governments and communities to invest in the mechanism. Although a radical land tenure reform that encourages local communities to legally own forest land may be unlikely, there is a possibility to adapt to existing local tenure arrangements, such as respecting the role of customary

institutions and recognizing the rights of the communities in sharing carbon and non-carbon benefits. Recent developments in a few African countries in which attempts are being made to formalize local tenure rights through community forestry should encourage other countries.

While recognizing international financial support in the short-term, some African countries (e.g., Ethiopia, Cameroon and Ghana) have considered incorporating REDD+ into their mainstream economic development policies. This ensures sustainability and provides a possibility for REDD+ to address the drivers of deforestation, and prompts domestic financing, governance reforms and technical developments.

In the past, many African countries lacked the capacity to monitor their forests and report carbon emissions. Since the emergence of REDD+, some progress has been made in forest area and carbon change monitoring through remote sensing, and some countries (e.g. Tanzania, Zambia) have established NFIs. In the meantime, local forest monitoring capacities, together with free or low cost technologies, should facilitate the data requirement of REDD+ implementation in Africa.

The shared interests of African countries regarding REDD+ and the common features and challenges across the continent offered a possibility for a generalized continental scale analysis presented here. Africa needs strong cooperation for representation on the UNFCCC negotiation platforms in order to illustrate their particular contexts and challenges. Although all African countries are in the readiness phase, Africa is a continent with a wide range of regional and national differences regarding the state of their forests, economic backgrounds, perspectives and priorities. Moreover, there are differences in their progress, including advances in policy reforms, capacities in forest carbon monitoring, and approaches to financing parts of REDD+. Therefore, future studies need to promote more differentiated assessments and solutions appropriate for individual countries.

## Acknowledgments

The Norwegian Institute of Bioeconomy Research (NIBIO) supported the study. We thank three anonymous reviewers for their constructive comments on the earlier version of this article.

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