6.3 Energy poverty, REDD+ and FLEGT in Ghana

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Introduction

Over the past 100 years, forest management in Ghana has led to deprivation, exclusion and marginalization in many forest communities. To succeed, REDD+ and FLEGT VPAs must reverse this century-old legacy.

In November 2009 Ghana was the first timber-producing country to sign a FLEGT VPA with the EU. Ghana estimates it will be ready for REDD+ by 2013 and for FLEGT licensing a short time later. It must address energy poverty[1] in order to ensure the success of any forest-related policy that requires the cooperation of households. Reliance on fuelwood and charcoal as the main source of energy for cooking indicates energy poverty at the household level. Ghana's recent impressive growth in gross domestic product was realized with traditional biomass accounting for over 60% of total energy consumption, making REDD+ and FLEGT relevant for Ghana's energy sector.

This article examines the extent to which fuelwood use can affect the goals of REDD+ and FLEGT. It is expected that the increased living standard obtained through REDD+ will enhance the implementation of FLEGT by reducing the competition between the use of Ghana's forests for energy and timber.

Energy poverty is a potential threat to realizing the goals of REDD+ and FLEGT in Ghana.

It tries to fill the gap in micro-level analysis by providing a bottom-up discussion to inform REDD+ and FLEGT policy in Ghana and other developing countries. It also supports the argument that REDD+ projects will be successful only if the bulk of their actions (readiness, pilots and implementation) are applied at the sub-national level. The article focuses on the savannah and transition zones — where most forest degradation occurs — to provide a better picture of the true effect of REDD+ implementation. The presence of substantial forests and woodlands within the savannah zone would have a significant impact on REDD+ and FLEGT outcomes (Figure 1).

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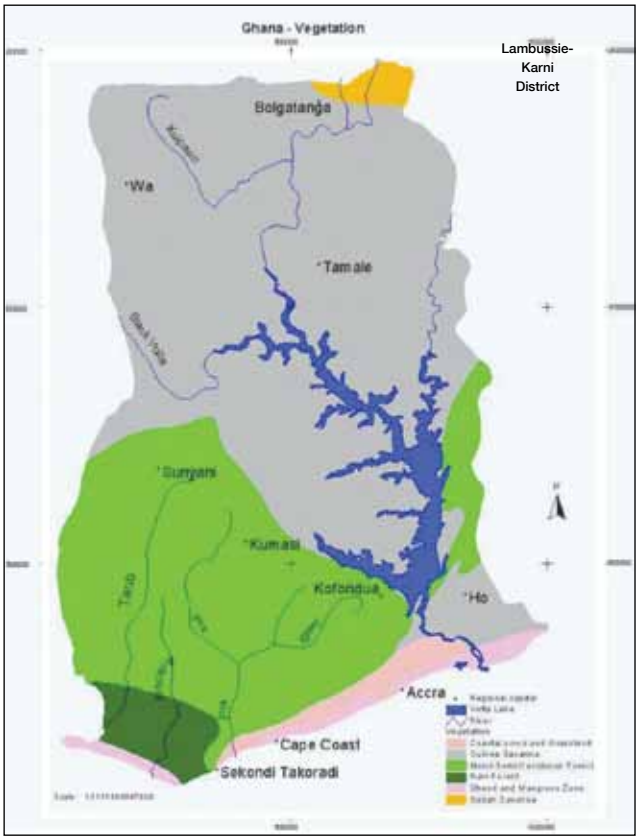
Figure 1. Map of Ghana's vegetation zones



Study problem and objectives

The potential of REDD+ and FLEGT in Ghana appears uncertain, partly due to a lack of detailed information on the costs associated with these programmes. A number of studies on the costs and benefits of REDD+ attempt to estimate the forest area that could be conserved or the volume of CO_2 emissions that could be avoided. But it is uncommon to find micro-level analytical studies that focus specifically on the national, sub-national and project-level costs of REDD+ (Olsen and Bishop 2009) and FLEGT.

In addition, the nature of REDD+ arrangements means that their most important outcomes are delivered at the sub-national level, where land users, communities and local governments are the main stakeholders. Ghana's readiness activities, however, have been dominated by national-level actors, just as its failed forestry policies were. From the outset, the exclusion, marginalization and deprivation that characterized the country's top-down forestry policies are seen in the readiness activities of REDD+. This could jeopardize the success of FLEGT by worsening the already fragile policy context.

In Ghana, REDD+ readiness activities include reforms to forest policy, legislation and administration as well as capacity building (Eliasch 2008). Hansen, Lund and Treue (2009) observed that REDD+ readiness activities in Ghana seem to ignore the massive policy failures that have led to the current predicament of most deforested countries in Africa. The quick acceptance of the idea that transfer payment regimes will work assumes that there is clear and enforceable tenure to forests and trees, which instead is complex and inadequate in most developing countries (Hansen, Lund and Treue 2009). In addition, Ghana's REDD+ and FLEGT readiness activities have been limited to the High Forest Zone (HFZ), almost entirely neglecting the rest of the country. Figure 1 shows that more than 60% of Ghana's biomass supply would be excluded from REDD+ interventions if this restriction is maintained.

The REDD+ model

REDD+ actions are sustainable development policies and measures to reduce and/or enhance removal of GHG emissions. These measures may well extend to the agriculture and bioenergy sectors, insofar as they affect forests. Angelson and Wertz-Kanounnikoff (2008) identified the creation of a multi-level Payment for Emission Reductions scheme through the REDD+ mechanism (Figure 2).

Figure 2. Flow of emission reductions and payments for REDD+

Source: Modified from Angelson and Wertz-Kanounnikoff (2008)

Based on the model in Figure 2, if REDD+ payments to households are lower than the costs at the sub-national level the flow would be disrupted and the system would eventually break down. In order for REDD+ to be successful, payments must be large enough to compensate households for the sacrifices they will be making. In order to improve livelihoods the net cost of fuelwood use under REDD+ must necessarily be less than the net cost of fuelwood use without REDD+. Any other outcome would lead to a leakage of benefits and to reduced economic welfare. This is one of the most important factors influencing REDD+ outcomes.

REDD+ and FLEGT in Ghana

Edjekumhene and Cobson-Cobbold (2011) observed that the primary function of Ghana's forest is undoubtedly as a fuel source, although this fact is absent from much of the discourse on Ghana's forest policies. The FAO (2011) revealed that 94.9% of the wood harvested in Ghana is used for fuelwood, which is the main source of cooking fuel for up to 85% of households in the country.

McFarland (2012) argues that in addition to carbon market uncertainty, the revenue that the Ghanaian government and forest communities can derive through REDD+ is unlikely to be as great a motivation for change as is secure future income from forest resources. This is recognized in Ghana's R-PP (FCoG 2010), where there is an unmistakable emphasis on economic gains from timber production, a trend in Ghanaian forest policy for too long (Boon, Ahenkan and Badoun 2009). According to Ghana's R-PP (FCoG 2010), the lowest opportunity cost method to reduce emissions is by increasing timber value through better industrial efficiency and adding value. Such a measure is not capable of achieving much, however, due to the relative insignificance of this lack of efficiency as a driver of forest carbon loss in Ghana. Although the multi-faceted pressure on Ghana's forests should be guiding the direction of forest management policies, policy-makers are still focused on timber production (McFarland 2012). This makes the bond between REDD+ and FLEGT extremely strong in Ghana; it creates a trade-off in forest use between energy and timber, with timber-related activities having to compete as one entity.

The current readiness and pilot proposals in Ghana target REDD+ in the High Forest Zone (HFZ), not in the transitional zone or savannah regions (FAO 2011). These are the regions where the scope for REDD+ initiatives integrated with other economic activities — for example, cocoa growing and fuelwood production — could also support areas of Ghana where climate change is the greatest threat to livelihoods (EPA and MEST 2011). The current target area increases the uncertainty that REDD+ will succeed in Ghana, which could have an effect on FLEGT operations as well.

The VPA includes a Timber Legality Assurance System (TLAS), which incorporates details on wood tracking and legality verification protocols as well as independent monitoring of the system and review of policy and legislative frameworks. The TLAS supports policy reforms that will engender good governance, transparency and accountability in the country's forestry sector. The greatest challenge for Ghana in preparing for VPA implementation will be meeting the TLAS requirements. This will require cooperation from multiple stakeholders whose handling of forestry issues has created major challenges in the sector in the past. Getting things right with these stakeholders will require a bottom-up approach, as will REDD+.

The ultimate goal of FLEGT is to encourage sustainable management of forests. FLEGT VPAs are doing this through the promotion of good governance, transparency and accountability in the forestry sector by means of the TLAS. This will also address most of the challenges for REDD+. That is because these TLAS requirements continue to be the most difficult issues working against successful forestry in Ghana. If REDD+ can deliver enough payments to satisfy stakeholders whose livelihoods will be affected through forest conservation, then this in turn would enhance the execution of FLEGT. Evidence for this is provided by the empirical assessment of energy poverty in the Lambussie-Karni district of Ghana.

Assessment of energy poverty

The study area

The Lambussie-Karni District, a typical energy-poor area, was assessed for the potential effect of REDD+. The district is located in the northwestern corner of Ghana (see Figure 1). It ranks within the bottom 10% of the poorest districts in Ghana. This makes it particularly suitable for fuelwood policies, especially those implemented through REDD+. The diversity of trees found in the district meets all domestic needs for fuelwood and charcoal.

A systematic sampling approach was used to select every third household to respond to a questionnaire. The respondents were heads of their households or their selected representatives. A sample of 120 households responded to questions out of a generally homogeneous 6,000 households. The survey asked about willingness to pay for forest restoration for sustained fuelwood supply, and also obtained socio-economic data.[2]

Economic benefit of fuelwood use in Ghana

The author used a Contingent Valuation Model (CVM) to assess the economic benefit of fuelwood to residents of the Lambussie-Karni District (Bolt, Ruta and Sarraf 2005). The main question concerned the households' willingness to pay (WTP) for forest restoration, which was necessary due to the degradation caused by fuelwood harvests.[3] Each household's WTP represents its estimate of the total value of benefits it derives from fuelwood used in one month. Extending the valuation results for Ghana's fuelwood sector gives the total willingness to pay (TWTP) shown in Table 1.

Table 1. TWTP per month for forest restoration for sustained fuelwood supply, Ghana

a. WTP (midpoints in US$)	b. Relative frequency (%)	c. Households depending on fuelwood as main source of energy (in millions)	d. Total WTP/month (in millions of US$) (d = a x c)
1.25	37.5	1.65	2.06
1.56	30.8	1.36	2.12
1.88	15.8	0.70	1.32
2.19	4.20	0.18	0.39
5.63	11.7	0.51	2.87
Total	100	4.40	8.76

Source: Calculations from the author's fieldwork, 2010.

Of the 5.5 million households in Ghana, 80% — i.e., 4.4 million — depend on fuelwood as their main source of energy (GSS 2008). Following the TWTP calculations in Table 1, the monthly TWTP for forest restoration to ensure sustained fuelwood supply in Ghana equals US$ 8.76 million. If this is multiplied by 12, the annual TWTP of fuelwood used in Ghana is US$ 105.12 million.

Net cost estimation

Since most fuelwood is collected rather than bought, the net annual economic benefit could approximately equal the TWTP. The Ghana Energy Commission (2006) estimated the average total life-cycle cost[4] per household of using fuelwood to be about US$ 53 each year. For 4.4 million households, this amounts to US$ 233.20 million. This means the net value of fuelwood use in the absence of REDD+ is US$ 233.20 minus US$ 105.12 million, which equals US$ 128.08 million per annum.

The introduction of REDD+ brings both challenges and opportunities for fuelwood users. Since REDD+ will limit the areas that are open to fuelwood collectors, it should also result in a reduction in forest degradation. In the short term, REDD+ will lead to a decrease in fuelwood supply. This will mean that women and children spend more time and effort to fetch fuelwood. The current one-to-five hours spent by women (UNDP 2011) could increase to two-to-seven hours or more, based on an assessment of Ghana Energy Commission (2006) data. This means that the cost of collecting fuelwood would increase.

If REDD+ targets a decrease of 60% of fuelwood from standing forest stocks by 2020 (Ghana Energy Commission 2006), this would increase the cost of fuelwood by approximately 60%.[5] The demand for fuelwood among the energy poor in Ghana would not affect the price since no cheaper alternatives exist in meaningful quantities.[6] A 60% increase in cost would mean that the net cost of fuelwood used as a result of REDD+ would be US$ 204.93 million (US$ 128.08 X 1.60) per year. Thus, the net cost of using fuelwood under REDD+ (US$ 204.93 million) exceeds the net cost of using fuelwood without REDD+ (US$ 128.08 million) by US$ 76.85 million per year.

In order not to worsen the living standard of households, the REDD+ mechanism must be able to deliver this US$ 76.85 million per year to fuelwood users in Ghana. This would, however, not provide the missing 60% of fuelwood supply for REDD+ and would only keep the level of degradation at its current level.

If REDD+ is not able to deliver the US$ 76.85 million per year, it could cause a decrease in the economic welfare of fuelwood users in Ghana. The long-term outcome depends on the effectiveness and efficiency of the transition from energy poverty to more modern sources of energy or on the provision of wood lots for fuelwood.

In order to deliver more than just carbon, the REDD+ mechanism must be able to compensate for the increased net cost of fuelwood use caused by its implementation. If this compensation is achieved, it would be a major breakthrough for REDD+, since it would help free the initiative from local interference with top-down policies. The Lambussie-Karni district will not be considered for any REDD+ action, since it is not within the HFZ, even though it has a significant and indirect effect on FLEGT through REDD+ and changes to economic welfare.

Conclusion and recommendations

Energy poverty is a potential threat to realizing the goals of REDD+ and FLEGT in Ghana. This is because the main use of Ghanaian forests is for fuelwood, which will be more difficult to obtain when these programmes are implemented. The establishment of energy wood lots through REDD+ funding could create jobs for households, which is also relevant to FLEGT as a mitigation measure for potential negative impact on livelihoods. This could prevent households from experiencing negative effects from REDD+ activities. If FLEGT VPA could be expanded to include an energy sector component in its interventions this would support the energy segment of REDD+. Both interventions also need to address their concentration on the HFZ to the neglect of the wooded savannah area, which supplies most of the fuelwood used in Ghana.

Endnotes

1. Energy poverty is the situation where people's well-being is negatively affected by very low consumption of energy, use of dirty or polluting fuels, and excessive time spent collecting fuel to meet basic needs. See http://en.wikipedia.org/wiki/Energy_poverty.
2. These were income levels, household head's highest educational attainment, household size, and sources and uses of energy.
3. Responses were obtained through the "bidding game" approach.
4. Life-cycle costs are calculated by adding up all the costs associated with the initial purchase, installation, operation and maintenance of a system throughout its operational lifetime.
5. This is due to the fact that fuelwood has unitary elasticity of demand among its users, even though there appears to be a theoretical inelasticity (author's observation, 2013).
6. This occurs because the market for fuelwood among the energy poor is not a normal one. Most of the fuelwood used is not purchased but collected from wooded vegetation. It is therefore the cost of access that increases under scarcity, not the price.

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