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Financing climate change adaptation and mitigation in Ghana: Challenges and prospects

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Abstract

Current estimates of financial resources needed to support African countries to adapt to climate change are estimated around 10 billion dollars per annum. It is increasingly clear that delays related to the release of voluntary pledges by developed countries would affect Africa's adaptation progression. Given Africa's low GDP and the limited climate change financial aids from develop countries against high financial requirement for mitigation and adaptation, financing climate change in Africa would require some additional sources. In this paper we examine existing financing architecture and discuss further the prospects and challenges African countries could face in an attempt to raise funds locally using Ghana as a case study. There is a risk that many African countries' action to confront climate change may be insufficient, ineffective, inadequate, and delayed if it solely rely on existing global financing architecture. Using the qualitative research approach through in-depth interview of 10 key development partners, donors, non-governmental organizations and climate change experts we found that the international communities have shown preparedness to provide finance for mitigation and adaptation, as they initiated and rectified the Kyoto Protocol. Ironically, their preparedness is not farfetched due to noncompliance to their pledges. The study notes that to sustain adaptation and mitigation program, developing countries and Ghana in particular need to provide financial buffers through appropriate local fundraising mechanisms. Both market and non-market instruments if consultatively develop may provide sufficient local sources of funding.

Keywords: adaptation; climate change; climate change funds; climate change financing; mitigation

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1. Introduction

Climate Change is the greatest current threat to biodiversity, ecosystems services, and livelihood of many people. It is one of the most severe social, environmental, and economic threats the world has ever faced (UNEP, 2009; EU, 2009; OECD, 2008; IPCC, 2007; UNFCCC, 2007). It is happening faster than we expected with devastating impacts in developing countries, particularly on the Africa continent (UNEP, 2009; EU, 2009; IPCC, 2007). Its impacts are expected to deepen food insecurity, poverty, poor livelihoods and unsustainable development (UNDP, 2004; FAO, 2005; IPCC, 2007).

The vulnerability of most African countries to climate change is exacerbated by a number of non-climatic factors, including hunger, endemic poverty, chronic conflicts, high prevalence of disease, low levels of development and low adaptive capacity (Desanker, 2002; FAO, 2009; UNEP, 2002). Addressing climate change is one of the most important challenges of the 21st century (Devis, 2012). "A changing climate has an impact on all countries, but its negative effects most drastically endanger the world's poorest populations" (OECD, 2008; IPCC, 2007). Climate change has put millions poor people at "risk of tragic crop failures, reduced agricultural productivity, increased malnutrition and hunger, water scarcity and the spread of infectious diseases" (Devis, 2012). Climate change financing has emerged in response to the need for predictable, adequate and sustainable (UNFCC, 2007) financing to address climate related issues, particularly in developing countries (OECD, 2009). To improve the resilience level of the poorer communities of developing countries therefore require a cogent financing strategy that will help a feasible adaptation programs and eventually mitigation.

In other to address these negative implications of climate change realistically, stronger policy framework and requisite financial resource are essential for effective mitigation and adaptation programs. According to OECD (2011) ensuring that adequate financing is provided to address climate change remains a highly political and contentious issue within international climate negotiations. Stewart et al. (2009) expound that climate finance is fundamental to curbing anthropogenic climate change. However comparing negotiations over emissions reduction timetables, commitments, and architectures, climate change financing has received limited. This concern is also expressed by Stewart et al. (2009) that there is high deficiency in the climate funding due to lack of fulfillment of commitment by developed countries. According OECD (2011) "recent increase in opportunities to access climate finance is matched by equally increasing complexity". For example the processes, requirements and reporting associated with the many funds can be confusing and overwhelming.

A recent study by the AfDB (2012a) estimates adaptation costs in Africa in the range of US$20 to 30 billion per annum over the next 10 to 20 years. Arithmetically, Ghana alone on average will have to access and disburse over US$463 million year. A cross examination of the numerous challenges with accessing global fund as noted above coupled Ghana's low GDP mean a great difficulty in financing climate change adaptation and mitigation projects. For Ghana to meet the imperative of achieving major reduction in greenhouse gas emissions and adapt to current climate change impact, without sacrificing immediately needed development, requires far larger awareness on the emerging subject of climate finance than it has received. Despites this necessity is there is lack of studies on mobilization, managing and delivering financing on the required scale

in Africa. Given the strong scientific consensus on anthropogenic climate change as a real phenomenon as well as the potential consequences, it is important to understand exactly what, how, which finance is available or can be made available to finance climate change. There is a risk that most developing countries actions to confront climate change may be insufficient, ineffective, inadequate, and delayed due to lack of funding. There is the need to examine what funding could be made available and what challenges are associated with raising such funds, from which sources, how much and how could it be appropriately used. This research *"Financing Climate Change adaptation and mitigation in Ghana"* therefore seeks to examine the challenges and prospects of financing climate change adaptation and mitigation actions using Ghana as a case study.

2. Literature review

2.1. Financing climate change need in Africa

Climate change financing has emerged in response to the need for adequate, predictable and sustainable (UNFCC, 2007) financing to address climate related issues, particularly in developing countries (OECD, 2009). According to Catherine (2011) more than 20 global funds have been established since 2002 for the purposes of financing climate change. Catherine (2011) noted that making the most of these and similar resources will require increased global capacity for coordination, implementation and monitoring. In her conclusion she mentioned that it will be equally important to put in place successful country-level governance arrangements to properly manage these resources. Also financing was one of the four pillars of the Bali roadmap in December 2007 and Warsaw climate change conference (COP 19 / CMP 9) in 2013. Mobilizing finance is vital to address the looming challenge associated with climate change.

According to the African Development Bank (2010) Africa is the most vulnerable region in the world to the impacts of climate change. The bank stated that the majority of studies suggest that damages from climate change, relative to GDP and population, will be higher in Africa than in any other region in the world. "Climate damages in Africa, as a percentage of GDP, may be 10% higher than the next most exposed region (India) and more than twice as high as in the US, Russia, Eurasia and Latin America" (AfDB, 2012a). The level of investment into health, agriculture, energy, education and water and institutional performance in Africa indicates that Africa is often more vulnerable to climate change than any other region.

Statistically, Africa accounts for less than 7% of total emissions (IPCC, 2001; ADB, 2012) and its emissions per capita are less than half the global average (ADB, 2012). Examining the level of the African continent vulnerability and it negligible contribution to climate change it only logical to state that Africa need for financing climate is or should be adaptation sensitive. Financial resources needed to support African countries to adapt to climate change will be in the tens of billions of dollars per annum**.** Most relevant studies (IPCC 2007; UNFCCC, 2007; Watkiss et al., 2010) suggest the costs for adaptation in Africa in the region of US$20-30 billion per annum over the next 10 to 20 years.

2.2. Current climate change financing options

Financial mechanisms or architecture for financing climate change can be grouped into two categories: International public financing initiatives and the private-public financing initiatives (IPCC, 2007). Below provides brief overview of the sources/options/initiatives existing for financing climate change.

2.2.1. Public financing initiatives

Private finance arrangements shoud be an essential part of any global climate regime, but they will not be adequate on their own. Stewart et al. (2009) therefore stated that public finance and other international sources must fill the gap of approximately €50–70bn annually to finance climate change effectively. According to public sources of financing will take a variety of forms in addition to direct bilateral or multilateral transfers. These sources may include concessional debt, loan guarantees, and technology transfer arrangements. Examples of this bilateral and multilateral assistance are the Global Environment Facility, OECD Creditor Reporting System, export credits Kyoto Protocol's Adaptation Fund, United Nations Development Programme (UNDP) and the Australian International Forest Carbon Initiative (IFCI). The initiatives (financing sources) below demonstrate the current perspective of international public funds available for climate change in the developing countries.

2.2.2. Private and public-private financial support

The UN's Kyoto protocol established binding greenhouse gas emissions reduction targets for 37industrialized countries and the European community (Lambert, 2006). To help achieve these targets, the protocol introduced three "flexible mechanisms" – International Emissions Trading (IET), Joint Implementation (JI), and the Clean Development Mechanism (CDM) (www.theguardian.com). According to the Guardian (www.theguardian.com):

> *The CDM has arguably been the most successful of the three flexible mechanisms. It has two main goals: one, to assist countries without emissions targets (ie developing countries) in achieving sustainable development. Two, help those countries with emission reduction targets under Kyoto (ie developed countries) in achieving compliance by allowing them to purchase offsets created by CDM projects.*

2.3. Limitations of the international climate change financing architecture

In addition to significant gaps in financial resources, the current climate change financing architecture has clear limitations and inefficiencies (Lambert, 2006) though it has changed dramatically in the past few years mostnotably with the recent rise in the role played by the World Bank and the multilateral development banks (Catherine, 2011). According to World Bank (2008) funding streams are complicated and diverse, and the process of ensuring verifiable, measurable and consistent reporting and monitoring of climate change action has become a main challenge. The new architecture also poses risks of inefficiency, a lack of

coordination and duplication of effort, and it brings new concerns on the governance of these funds (Catherine, 2011). There is complexity of the current fragmented climate change financing landscape, hence lacks an overarching global framework.

The climate change financing framework should help ensure coordination among resource channels, harmonize monitoring methods and fill in data gaps, increase transparency and legitimacy, minimize transaction costs, prevent duplication and streamline the distribution of funds to programs and projects. However the challenge is that no single binding global treaty is working in this line to ensure such recommendations (Derviş, 2010; Bowen et al., 2009). The framework luck flexibility and therefore do not allow ample policy space for national policy implementation. It does not provide consistent measurement and monitoring methods to ensure the transparent verification that is critical for garnering international trust and cooperation (Derviş, 2010). Again Derviş (2010) noted that with this surge in international climate change financing instruments, new concerns have been raised regarding governance. High administrative fees and overly prescriptive conditions have challenged the principle that climate change finance mechanisms should be housed in the World Bank and the multilateral development banks (MDBs) as undeveloped countries do not feel save in this scenario.

Because of increasing proliferation of special-purpose climate funds there is the possibility of fragmentation or poor coordination of funds. For example funding under UNFCCC alone includes strategic priority on adaptation fund, least developed country fund and the special climate change fund. Similar disease can be found in both multilateral and bilateral public funding approaches of climate change. The surge in special climate change fund has the possibilities of suffering similar problem where fragmentation of financial source has challenged coordination. As AFDB (2012b) indicates:

> *Fragmentation of this sort threatens to reduce the overall effectiveness of climate finance, because as transaction costs increase, recipient country ownership lags, and alignment with country development objectives becomes more difficult. Each new source of finance, whether for development or climate change, carries with it a set of costs. These include transaction costs, inefficient allocation, and limitations on scaling up.*

Also potential costs of taxing certified emission reductions (CERs) to finance the Adaptation Fund raises two important questions making it a limitation to the existing framework. Firstly what is the loss in economic efficiency associated with the tax? And how is the tax burden distributed between the sellers (developing countries) and buyers (developed countries)? An important source of adaptation finance, and the key revenue source of the Adaptation Fund, is a 2% levy on the CDM, a tax that could be extended to include other trading schemes, such as Joint Implementation (Bowen et al., 2009). This is a promising route to raising financial resources for the Adaptation Fund, which offers clear additionality however because of the nagging question above make it limited.

Lastly, the principal instrument for catalyzing mitigation in developing countries is the CDM. According to Bowen et al. (2009) the long-term success of the CDM can be best assessed by its contribution to measurably reducing greenhouse gas emissions. In order not to dilute the environmental effectiveness of the Kyoto Protocol, CDM emission reductions must be additional to the reductions that would have occurred otherwise.

The extent of additionality provided by the CDM has been debated vigorously. The additionality of individual projects is difficult to prove and even more difficult to validate, because the point of reference is by definition a counterfactual reality that can never be incontrovertibly argued or conclusively proven (Bowen et al., 2009).

2.4. Increasing the scale of climate-change finance

There is a huge gap in the climate change financing architecture as promises and estimations have not been matched with commitment and project underway (Srinivasan, 2006). Also authorities such as Practical Aaction (2007), Oxfam (2007), and Müller (2006) noted that need to close the finance gap is crucial. They explained that closing the financing gap requires diversification of financing sources and the existing instruments have to be reformed to increase their efficiency and permit the required scale-up. Equally Elliot (2010) posit that in other to increase the efficiencies to increase financing it requires harnessing new sources of revenue to support adaptation and mitigation by national governments, international organizations, and dedicated financing mechanisms like the Adaptation Fund. Also carbon markets can be reformed to ensure that CDM become a key vehicle to promote private mitigation funding. Also changing the balance between private and public funding requires an expansion of performance-based incentives to land use, land-use change, and forestry (Elliot, 2010; Müller and Hepburn, 2006). Also Srinivasan (2006) indicated that private sector funding for adaptation can be leverage to increase the scale of climate change finance. Considering the fiscal framework for climate action by national countries can also be another option because government action on climate mitigation and adaptation can have important fiscal impact (Srinivasan, 2006; Practical Action, 2007; Oxfam, 2007; Müller, 2006).

2.5. Generating new sources of finance for adaptation and mitigation

As noted briefly on how to increase the scale of climate change finance above it was noted that there is a gap within the existing climate change architecture and hence the need to scale up financing. There are some mechanisms that have been proposed to help to ensure efficient flow of climate change finance. A number of these proposals on how to generate additional funding have been put on the table and discussed here.

So far public institutions have been the key drivers of climate-smart development. Organizations and government have relied almost exclusively on government revenues to finance their activities. But it is unlikely that climate-change costs rising into the tens or hundreds of billions of dollars a year could be predominantly covered through government contributions. Although additional funds will be forthcoming, the experience with development assistance suggests that there are constraints on the amount of traditional donor finance that can be raised. Moreover, there is a worry from developing countries that contributions from developed countries may not be fully additional to existing development assistance. Other sources of finance will therefore have to be tapped, and there are several proposals. These include extending the CDM levy (UNFCCC, 2007) Levy on bunker fuels, internationally coordinated carbon tax, revenues from auctioning in Emission Trading Schemes (European Commission, 2008; UNFCCC 2007).

3. Research methodology

3.1. Study approach, design and data collection

The qualitative paradigm of research was used with Ghana as a case study. This is because this study involves an in depth or intensive descriptions and analysis of financing climate change mitigation and adaption in Ghana within a global financing architecture and attempting to identify appropriate internal framework for financing. This method was deemed appropriate because the researchers examine in detail, many features of a few cases at a point in time often in a qualitative form (Brown, 2010; Yin, 2009). He qualitative research instruments used for this study were In-depth Interviews with practitioners locally and abroad within environmental discipline. To facilitate this process, the researchers first identified the various stakeholders in Ghana through workshops by Arhus University and University of Ghana under the auspices of Building stronger Universities platform-environment and climate organized in 18-23 March, 2013. Ahenkan et al. (2013) observed that stakeholder identification and analysis is best conducted using brainstorming techniques. This procedure is generally best in a workshop setting, with representatives of key participants. The participants first listed all parties which are likely to be needed in financing adaptation and mitigation challenges and prospects.

The stakeholders were grouped into research institutions independent of government who access global fund for environmental activities, governmental institutions that also operate within environmental discipline, nongovernmental institutions that also work around environmental related activities that access global or local fund for their projects and private sector organization that provide funding for environmental related activities. Per the classification, though four, three were used excluding the private sector organizations that provide funding. The reason for noninvolvement of the fourth classification is that anecdotal evidence shows that there is no single private sector firm in Ghana that provide specific funding for adaption and mitigation activities. Key informant interviews with people who have particular knowledge and understanding of the issues regarding the research topic were conducted. A total of 25 respondents participated in the in-depth interviews. They include public sector agencies, Non-Governmental Organizations (NGO), Research Institutions independent of government, International Civil Servant within IPCC AND UNFCCC. Specific public agencies include the Ministry of Environment, Science, Technology and Innovation (MESTI), the Energy Commission, the Forestry Commission, and the Environmental Protection Agency (EPA). The data was analyzed qualitatively consistent with the theoretical view which in this study is the framework for the study. Thus, the empirical data of this study was analyzed by relying on the theoretical framework that led to the study.

3.2. Data analysis and discussion

3.2.1. Demographic data of respondents

A total of twenty-five (25) respondents were sampled for the study from nine different institutions. These respondents were sampled from Ministry of Environment, Science and Technology and Innovations, Forestry

Commission of Ghana, Energy Commission of Ghana, Environmental Protection Agency, Friends of the Earth, Greener Impact International, Center for African Wetlands and Institute for Statistical and Social Research (ISSER). The remaining two respondents were international civil servants who have worked on climate change issues with the UN, UNFCCC secretariat and other international bodies for over two decades.

4. Discussion

4.1. An overview of climate change financing in Ghana

Respondents involved in the study generally demonstrated extensive knowledge on climate change and climate change financing. All respondents noted funds available for financing climate related issues in developing countries are mostly coming from the international financial architecture. The respondents mentioned some of the existing international public multi-lateral and bi-lateral funds. Some respondents indicated that climate change discourse is a new phenomenon whiles others, especially the international civil servant had a different view. To them, the issue of climate change becoming a developmental challenge is more than two decades with the IPCC performing much work on climate change since 1992.

The respondents indicated that financing climate change is very difficult because of short term implications of taken some mitigations decision. Whiles other also indicated that due to poor commitment towards pledges and pulling out syndrome from the Kyoto and other climate change conventions by super powers are some fundamental challenges of identifying and sustainable providing financial support for climate change. Despite all the challenges, there are still existing funds that are performing and countries or organizations that meet requirements can access. But the respondents were quick to add that though there are existing funds they are caged in multi complex conditionalities and cumbersome application process defeating the goals of the funds, thus ensuring adaption and mitigation.

4.2. The prospect of locally generating funds to finance climate change projects

Respondents were asked whether there are prospects in raising funds locally to finance climate change mitigation and adaptation programs in Ghana in lieu of the fact that some international financing architecture are crumbling (Stewart et al., 2009), whiles others are having high deficiencies (AFDB, 2012a). Respondents from the international development agencies interviewed responded in affirmative that developing countries and therefore Ghana has the higher potential to raise local resources for climate change financing. One respondent stated as follows:

> *Raising local funds as an addition to the international funds were appropriate call and in line with existing proposals that have been made not only within the UNFCCC process but also by actors outside the process*". *Some countries have taken the initiative of raising funds locally and it has work and therefore Ghana can replicate same*". "*Amazon fund, Yasuni Trust Fund and*

REDD investment Fund established by Brazil, Ecuador and Guyana respectively as some of the success story of local initiatives".

Other funds they mentioned include Indonesia climate trust fund and the Bangladesh climate resilient funds and climate change funds.

According to Charlene and Smita (2012), the Amazon Fund is a Brazilian-led initiative facilitating direct access to finance to preserve forests and they have been able to raise over US$ 410 million. The Congo Basin fund has also reserved high donation. All these are country specific initiatives that demonstrated the need to provide stable finance to tackle natural resource depletion to help mitigate and adapt to climate change. The respondent from the forestry Commission of Ghana indicated that it is possible to raise local funds for climate change, but he cautioned that the only roadmap that can ensure the success of local fund is policy instrument that will identify financial sources, insulate the fund from political manipulation, provide robust legal framework, and provide improved fund governance system. The respondent specifically stated as follows:

"when there is a policy it will help incorporate climate change issues into national development agenda and hence ministry of finance will always have to budget for it"…."climate change should be seen as extra responsibility and therefore its financial obligation should be captured also as extra financial obligation".

Some respondents however expressed optimism in raising local funds in Ghana to finance climate change related activities if government involve the private sector.

"*The private sector can be consulted and motivated with tax rebates, expect services, other resources help either than finance to boost the capacity of the private sector to be involved in climate change activities like REDD+".*

The forestry commission respondent who is also a member of the Ghana REDD+ program noted that there is huge financial prospect alongside poverty alleviation opportunities with REDDs in Ghana and hence government needs to take the advantage and create enabling environment to motivate private banks to get involved in the REDD business. Ghana's second national communication to UNFCCC (2011, p. 95-96) states:

"According to the World Bank, Ghana has the potential to generate $45-100m worth of carbon revenue per annum especially in the areas of: fuel switch, energy efficiency, avoidance of gas flaring, renewable energy and transport. However, the development of CDM projects targeting voluntary carbon markets has been comparatively forward---looking across sectors. Ghana faces a number of challenges in the development of CDM. Though the challenges border largely on under capacity, high upfront transaction costs and above all, risks, they could be categorized under: institutional, policy, data management and financial"

The communication identifies huge financial prospect after successful implementation whiles recognizing the financial burden at the initial stage. This therefore requires government to target the private sectors that have the financial muscles to help take these unique opportunities. The private sector has been credited with efficiency and effective performance and within the new public management discourse the public sector has been successful in areas where it adopts Private Public sector initiatives. This approach can and should be adopted by the government of Ghana by partnering the private sector where government provides land (in case of REDD projects) and other capacity related issues with the private sector providing the financial resources to ensure CDM project implementation.

Majority of the respondents supported the idea of motivating banks and individuals that have the financial resources to venture into CDM projects. There are existing national laws that provide some opportunities to raise funds through tax to finance social activities but they explained that the laws were developed at a time climate change had not become relatively important. As a result implementation has been very weak. Government needs to improve existing local emission trading laws, pollution taxes, free zone development subsidies etc to provide, another sources for funding climate change activities. Respondents recognize the challenges with implementing emission/pollution taxes but they asked the question "when is the right time". They challenged the government to see climate change as a terrorist that is threatening human survival and therefore a serious threat to development just like poverty, wars, hunger, diseases, bad governance etc. They indicated that seeing climate change in this light would help government to triumph over all challenges that comes with raising funds through taxes.

Some kinds of taxes mentioned by the respondents include ecotourism tax, air travel tax, non-carbon emission tax, and vehicular tax. The recognition of taxes and subsidies by the respondents as a means of curbing future emission and raising funds for effective adaptation to ongoing catastrophic impact of climate change is best situated within the theoretical framework of the researchers. Though there are challenges in these suggested areas but the opportunities in these areas should not be left in oblivion. For example the tourism industry is currently the third largest foreign exchange earner after merchandise exports and remittances from abroad. According to the World Travel and Tourism Council (2012) the total contribution of Travel and Tourism to GDP in Ghana was GHC3, 121.1mn in 2011 (5.4% of GDP) and is expected to grow by 4.3% to GHC3, 254.4mn (5.2% of GDP) in 2012.

This a positive sign of a emerging tourism industry in terms of employment and revenue to government also has some environmental implications such as pressure on our ecosystem services, emission of more CO_2 due to domestic air travel etc. To reduce environmental impact and to have funds for restoration of tourism resource government has to charge extra fees in the form of tax. This would be in line with government agenda of building holistic and integrated approach to enhancing the economic viability the tourism sector as well as ensuring resourcefulness of practitioners, reviving traditional technologies and developing local markets (GSGDA, 2010-2013).

Again air travel tax has bigger potentials in Ghana due to increasing domestic demand of air craft services. From November to December 2011 patronage of domestic flights in Ghana shot up to 12,000 passengers with an average of 12 flights daily on Kumais – Accra route (Daily Graphic, Business News of Wednesday, 3

October 2012). Also in Ghana an average of 70,146 vehicles are imported every year with "home-used-cars" dominating the average (DVLA, unpublished data files). This provides another climate change fundraising prospects. Majority of the respondents agreed that importer should pay just one percent of the total price of his/her car before clearing it from port. Whiles few of the respondents think otherwise. But all respondents agreed that instruments for texting emissions should be procured for the various car inspection garages. Those who emit beyond certain amount should pay some penalties.

The developers of the various oil fields, mining companies, and the timber firms can also be asked to pay some mandatory fees into climate change fund. In other for these entities not to see government hostile with this financial burden requires proper sensitization of the entities to appreciate the need for a fund to finance climate change.

Lastly non-market sources of funding were also proposed by the respondent from the forestry commission. They considered non-market sources as another important source of financing. There are several scholarships that support the call by this respondent for non-market based approached to raise funds locally for climate change activities in Ghana. For example according to Simone (2013) market mechanisms have been unfavorable source of funding for climate change mitigation and adaptation in terms of equity, efficiency and environmental and social effectiveness as it often results in inadvertent negative outcomes, whiles non-market based approaches to addressing deforestation and forest degradation have shown to work, not only from an environmental perspective, but from a social, cultural and economic viewpoint.

In other to raise money from non-market sources government is required to protect and improve ecotourism sites, conserve biodiversity, ensure livelihood improvement through protection of water bodies, forest products, non-timber related resources, protect water sheds etc. when these are done international bodies provides funds for the government through a system known as Payment for Eco-system. Also private individuals can be legislated to sell or buy these protected natural resources. The additionality in terms of protection of natural resource beyond business-as- usual can also be traded within the Kyoto financial mechanism (emission trading).

According to the Forest Trends, The Katoomba Group, and UNEP (2008) a healthy ecosystems guarantees dependable and clean flows of water, productive soil, relatively predictable weather, and several essential services for human well-being. Unfortunately many ecosystems and the services they provide are under increasing threat as the comprehensive study to date, the Millennium Ecosystem Assessment, which engaged over 1,300 scientists, concluded that more than 60% of the world's ecosystems are being used in ways that cannot be sustained. Therefore if the government of Ghana adopts the non-market approach of raising funds through the PES approach there will be enough opportunity to achieve double goal. The goal of getting funding for selling additional activities of managing ecosystem whiles creating jobs for local people and improving livelihood. Indeed Forest Trends, The Katoomba Group, and UNEP (2008) recognizes that Payments for Ecosystem Services (PES) approach are emerging areas where businesses, public-sector agencies, and nonprofit organizations have taken an active interest in addressing particular environmental issues.

4.3. The challenges of generating local funds for climate change programs

Respondents provided five core challenges of raising local funds for mitigation and adaptation program in Ghana. These are presented below.

4.3.1. Institutional collaboration

Poor institutional collaboration is one of the critical challenges of raising local fund for climate change mitigation and adaptation especially if taxes were the target. Government intervention in an economy to restore imbalance or to achieve specific goal requires that players within that policy realm collaborate to ensure successful operation. Therefore any market intervention by the government to raise local climate change fund will requires institutional collaboration. Past government attempt to raise money for similar environmental activities performed poorly due to poor institutional collaboration. Respondents from EPA and Forestry commission noted that there is existing environmental fund at EPA that is intended to raise funds for some environmental related activities and to also ensure arbitrary use of resource but due to poor collaboration from sister institutions the fund is not performing.

4.3.2. Poor dramatization/presentation of country's (Ghana) need

Due to the physical science nature of climate change, its uncertainties, low media reportage etc. it does not attract enough attention of the private sector because they are unable to see the climate change risk and opportunities. Though the private sector is touted to be a point where much fund can be raised but their non-awareness of the implication of adverse impact of climate change makes it difficult to raise funds from them. Until issues of climate change is well presented with empirical demonstration of ongoing climate change impact and it potential impacts on business, societies, civilizations and the alike, people's attention will not be drawn to their responsibility of contributing to local funds. For example the Amazon Fund with strong advocacy from Brazil government- if donations and investments are delayed world will perished the significance climate role of the Amazon Biome.

4.3.3. Pre implementation activities

Raising funds locally meant embarking on corporate appeals for benevolent donations, adjusting fiscal policies like budgetary allocations, taxes, and subsidies etc., which requires rigorous pre implementation activities. Pre implementation activities are to ensure that there is proper framework for funds to be generated sustainably, committed to it intended purposes, and properly accounted for. Unfortunately respondents acknowledged that in Ghana, pre implementation activities of initiatives are often poorly executed or not done at all and hence will become a challenge to identifying sustainable source of raising funds to manage climate change.

4.3.4. Politicization

Just like pre implementation activities identified above, study notes that political sponsorships is likely to affect both market and non-market approach for raising climate change funds. They explained that though climate change present a core developmental challenge to developing countries, however awareness of the risks associated with the phenomenon is often not seen and attributed to other factors. Respondents therefore indicated that any political move to start negotiations as to how to raise funds from either market, non-market or appeals form will suffer from political spectacles. To raise funds in developing economies through market instruments are often politicized and government fear of unpopularity abandons the idea along the line. This situation was identified by respondents as a teething challenge that they perceive to occur.

4.3.5. Extend of private sector involvement

Private sector involvement will help in raising local funds for climate change financing. The study however reveals that the extent of private sector involvement in climate change discourse in Ghana is minimal. For instance some respondents noted that the private sector is yet to be involved in projects like the REDD+ that will raise fund for managing climate change in Ghana. If the private sector is well involved it will expand Ghana's activities beyond business-as-usual. This will help access much bigger international funds. The respondents therefore explained that if the private sector is not well involved it will be a huge challenge toward raising local funds for projects. They also indicated they should be involved at the project initiation stage to enhance their understanding. Others also explained that private sector capacity should be built by government so that they can develop and implement their own project so as to help them access existing funds.

4.4. The difficulties in accessing existing global climate change fund

Eight scores of problems were identified by respondents as some of the challenges they face in accessing existing climate change funds. These are presented below.

4.4.1. Capacity issues

Capacity problems related to climate change funds assessments are three folds: firstly capacity related to expertise of individuals working in government agencies or NGOs who develops projects, supervise and report to funding agency is problematic in developing countries. Respondents noted that within their respective institutions there are climate change fund opportunities they have identify, but unable to access them due to capacity to develop fundable projects. They explained that agency or organization applying for funds must produce good proposal and demonstrate enough capacity to implement projects to prospective funding agency. To be able to access the bilateral and multilateral public funds, a country is required to develop viable projects. However most respondents noted that Ghana and other developing countries as well

as the third sector entities (NGOs) lacked skilled labour to develop such viable projects and hence difficult to access some of the funds.

Second, institutional capacity is also a challenge identified. The study notes that within the requirements of some climate change funds, the agency sourcing for finance must meet some institutional capacity requirements such as it operational scope, its functional scope, trans-boundary activities etc. This has often presented a great challenge to agencies in Ghana. For example Friends of the Earth (an NGO operating in Ghana) respondents indicated that they have not been able to access some of the climate change fund because of their institutional capacity. They indicated that some of the funds are huge with commensurate projects. Institutions wanting to access such fund should have the capacity to develop projects that commensurate the funds requirements. The NGOs respondents indicated that NGOs in Ghana need to collaborate with each other to meet the institutional capacity requirement for some of the funds. Such partnerships, according to respondents will help in developing feasible project identification proposals that will enhance possibilities of accessing international funding.

The third capacity challenge to accessing climate change finance is sectoral capacity. Within the climate change discourse several sectors can be identified to playing a key role in both mitigation and adaptation. These sectors include the public sector, the private profit oriented sector such as banks, insurance companies, productions firms etc, and the third sector organizations such as NGOs, CBOs, etc. In countries where the private sector and the public sector have been strong like china they have taken advantage of CDM and sourced much finance for climate related activities (Mastrandrea and Schneider, 2009). Other areas like Africa, where these sectorial bodies have not been able to take advantage of CDM demonstrate poor sectorial capacity. To comfortably access most of the climate change funds there should be individual (expertise) institutional (agencies, departments, organizations) and sectorial (private sector, third sector, public sector) capacity to meet fiducially responsibilities, perform rigorous pre application activities to qualify for the fund.

4.4.2. Complexities of conditionalities

In an attempt to ensure equity, participation, transparency, accountability and sense of responsibility the international climate funds have developed some requirements or conditionalities. The attempt aims for prudent fund governance and commitment towards the ideals of the fund. Unfortunately, these conditionalities ends up truncating the goals of the fund as respondents indicated that these conditionalities have often rendered them weak in their attempt to source finance. The conditionalities are often complex and difficult to meet. Typical example is Ghana's inability to access the adaptation fund in 2012.

4.4.3. Fragmentation of the funds with different fiducially responsibilities and requirements

Fragmentation of funds for climate change presents huge task to institutions wanting to access the funds. The fragmentation presents twine problem- non awareness some funds and different sets of requirements. What fragmentation of the funds means, is that, if Ghana wants to access most of the fund it qualifies to access it needs to also perform different preparatory activities, provide different reporting and monitoring activities. Respondents noted these situations make it difficult to access most of the fund. Respondent from forestry

commission of Ghana indicated that any country wanting to access any fund the Word Bank is the trustee, the country have to develop a project identification notes (PIN). When the PIN is approved, the country is given $200000 for further development of Readiness Preparedness Proposal (RPP). He explained that Ghana will operationalized its REED+ project in 2015 though it submitted its project in 2007 it was given approval in 2012. Furthermore he noted that there are several other climate change related fund for specific agencies and sector of the economy like energy, agriculture, water resources, biodiversity etc. but what Ghana needs is to be abreast with all the various funds available and to understand their requirement before accessing.

4.4.4. Cumbersome application process

Article 11 of the UNFCCC spells out the financial mechanism for climate change finance. In an attempt to ensuring transparency, accountability and equity the Article 11 of the UNFCCC has entrusted the operation of the financial mechanism to existing international entities like the World Bank. Respondent from the EPA indicated that the standards of the World Bank though robust for good purpose, it is quite cumbersome process in accessing, monitoring, reporting and verification. This situation drives away a lot of developing countries that lack capacity to perform all challenging tasks in monitoring, reporting and verification of projects. The Article 11 (3a and b) of the UNFCCC states:

> *The conference of the parties and the entity or entities entrusted with the operations of the financial mechanism shall agree upon arrangement to give effect to the operations of financial mechanism, which shall include: a) Modalities to ensure that funded projects to address climate change are in conformity with the policies, program priorities and eligibility criteria established by the conference; b) Modalities by which a particular funding decision may be reconsidered in light of these policies, program priorities and eligibility criteria.*

4.4.5. High transactional cost

Another challenge accessing international finance for climate change is the cost of hiring private international consultants for developing feasible projects and providing other relevant service which are requirement to accessing funds. The NGO involved in the study indicated they have attempted to involve a private consultant to develop projects proposal but the cost of the consultant made them to decline the initiatives. But the NGO confirmed that these consultants are sometimes formal employees of the climate change fund trustees and when they develop proposal, on the score of probabilities, one could access funds easily.

4.4.6. Direct access mechanisms of some of the funds

Direct access mechanism was also another challenge to access climate change funds. Though the direct access mechanism was developed to ensure easy access it has some challenges. Respondent's claim that direct access intends to enhance easy access is supported by AFDB (2012a). The bank noted that direct access, as practiced by the Adaptation Fund, has been a success as a result of providing greater country

ownership through use of country systems, increasing the speed of delivery and potentially improving the targeting of resources to local priorities. However respondents cited the direct access which is a devolved mechanism to have some constraint for Ghana.

> "*The devolved direct access was a problem because to access funds through such system requires country level implementation entity which Ghana does not have".*

The challenge therefore is that countries without implementation entities are unable to use this devolved mechanism to access funds despite the plethora of its benefits.

4.4.7. Delays in the approval of funds

Delays in approval of climate change funds are identified as critical issue. Respondents who have had climate change project implemented before indicated that it took them an average of two years to get their projects approved by funding agency or trustees.

> "*The preparatory works, proposal writing, and project identification and development activities are often expensive, so when they pre-finance such activities and it takes a very long time for approval it prevent them from taken further steps to access other funds*". "*The worse aspect is the time scale difference between project approval and releasing of funds".*

Some respondents indicated funds were released in late 2012 for a project that was approved in 2010.

4.4.8. Falling price of CO_2 on international market

Respondents also noted that the CDM, Joint Emissions Reduction and Emission trading are the flexible financial mechanisms that were provided by the Kyoto protocol in responds to Art 11 of the UNFCCC are not faring well. One respondent state:

> *These financial windows were considered as a twin opportunity for achieving both emission reduction and technological transfers. Unfortunately prices of CO2 are elastically falling. There is no market for CO2 and hence the flexible financial mechanism touted to be a trail blazer is woefully not performing. The implication is that if countries depend on the CDM or Emission trading as a source of finance will find it difficult accessing enough funds for mitigation and adaptation projects.*

5. Conclusion

Climate Change has come of age and has moved to the center stage of discussion across all disciplines, and not surprising that one of the strongest pillars of the post 2015 MDGs agenda focuses on climate change. The

phenomenon has become a global monster that threatens all human civilization and hence requires all-inclusive actions. Climate change financing has emerged in response to the need for adequate, predictable and sustainable financing to address climate related issues, particularly in developing countries. The challenge is the pace at which climate-change policy and financial are made available to tackle the phenomenon. Because of this shortcoming, financing climate change has become one of the hottest topics in the international negotiations. Unfortunately, in developing countries climate change finance has received far less attention. The current global funding streams which are diverse and complicated make the processes of climate change actions and funds inflows difficult. To sustain adaptation and mitigation program, developing countries and Ghana in particular requires financial buffers through appropriate local fundraising mechanisms to complement the international architectures.

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