African Centre for Technology Studies

Harnessing Science, Technology and Innovation for Development

June 2015

Balancing Extractive Activities and Biodiversity Conservation in the Congo Basin: Opportunities for Green Growth

Fideline Mboringong and Kevin Enongene
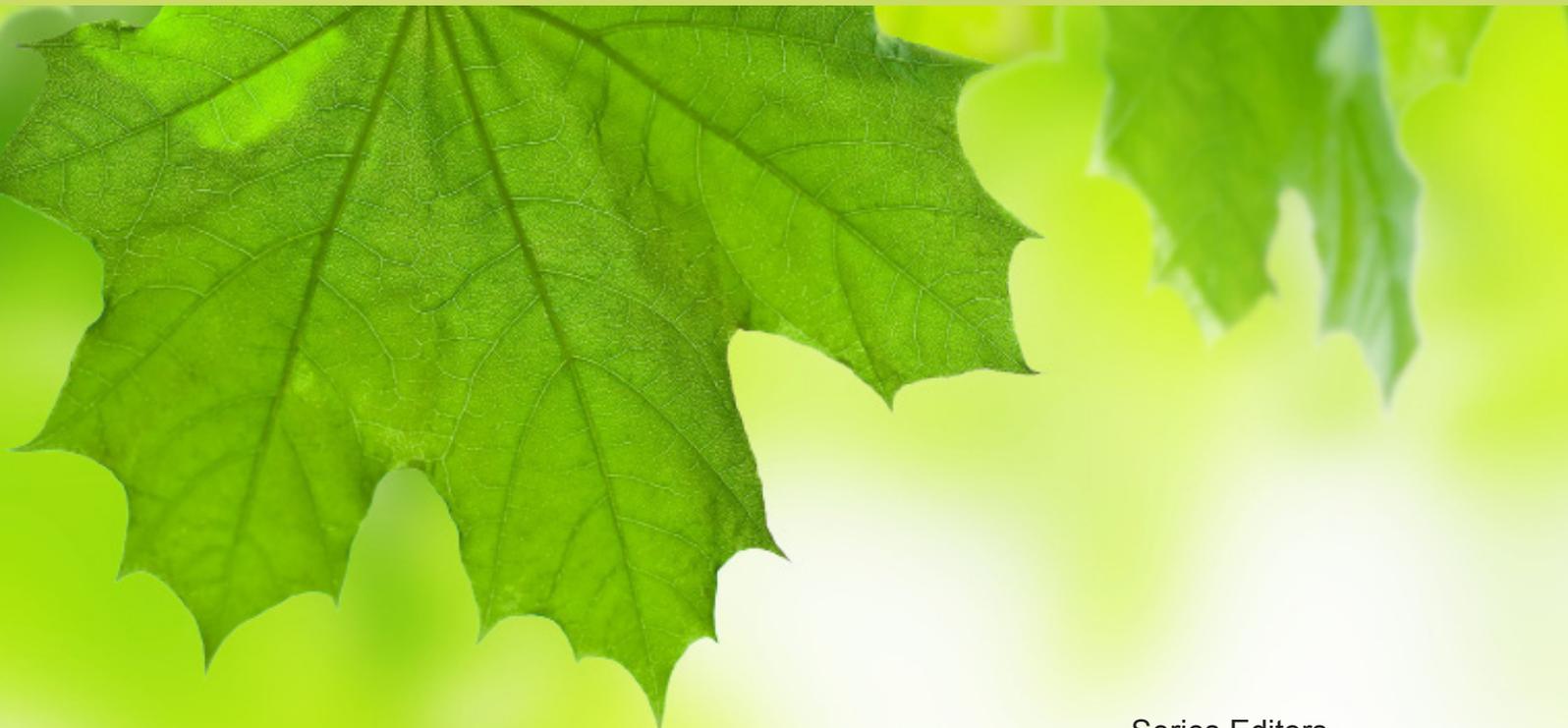
Series Editors

Dr. Joël Houdet
African Centre for Technology Studies (ACTS)

Dr. Cosmas Ochieng
African Centre for Technology Studies (ACTS)

Responsible Natural Resource Economy Issue Paper Series

Balancing Extractive Activities and Biodiversity Conservation in the Congo Basin: Opportunities for Green Growth

Fideline Mboringong
World Wide Fund for Nature (WWF) Central Africa Regional Programme Office (CARPO)

and

Kevin Enongene
Institute of Agriculture and Environment Massey University, Palmerston North, Manawatu

ACTS Special Issue Papers are circulated in order to stimulate or to inform policy debate on critical issues. They have been reviewed by the ACTS' Publication Review Committee. They represent the views of individual authors and do not necessarily reflect the views of ACTS.

Table of Contents

Abstract

The Congo Basin forest is the second largest intact tropical rainforest in the world and also contains mineral deposits of economic importance. This paper discuss challenges and opportunities for balancing extractive sector activities and biodiversity conservation in the Congo Basin. First, we discuss economic development, human resources and governance challenges in the region and highlight the impacts and threats linked to mining (large and small-scale) and other extractive industries. We then discuss the concept of green economy at several levels (international, other African countries) and propose to adapt it to the Congo Basin by making use of No-Net-Loss principles. This proposed green economy model aims to enable green growth through ensuring "win-win-win" outcomes for people, nature and the extractive sector.

1. Introduction

Africa is the second largest continent and home to the Congo Basin forests which constitutes the second largest tropical forest in the world after the Amazon (Wilkie and Laporte, 2001), spanning six Central Africa countries: Cameroon, Democratic Republic of Congo (DRC), Republic of Congo (RoC), Central Africa Republic (CAR), Equatorial Guinea and Gabon. As opined by de Wasseige et al. (2012), the forests are extremely rich in flora and fauna and have the largest number of plant species per unit area in the world with a wide distribution of animal species (about 552 mammals, 300 fish), 460 reptiles and 1000 bird species). The Congo Basin forests also contain diverse natural resources (timber, minerals, fertile soils etc.). Most importantly, the forests are home to about 30 million people and support livelihoods for more than 75 million people from over 150 ethnic groups who rely on the forest ecosystems for food, nutritional health, and livelihood needs (Megevand, 2013). Outside this stunning biodiversity endowments, the forests is rich in other natural resources, containing over 1,600 mineral deposits of different types (Thiart and de Wit, 2015). The entire continent possess about 30% of the world known reserves of minerals, about 10% of oil and 8% of gas resources, largest cobalt, diamonds, platinum, and uranium reserves in the world (Taylor et al., 2009).

With this huge potential of mineral resources, governments of African countries including those of the Congo Basin have in recent years established their respective country developmental plans/ visions which have aspects that are tied to the exploitation of these mineral resources. An example of such a vision to be cited is the Cameroon Vision 2035. According to the African Development Bank, Africa's natural resources have been the bedrock of the continent's economy and continue to represent a significant development opportunity for her people. In 2012, natural resources accounted for 77% of total exports and 42% of government revenues. This depicts that the exploitation of Africa's natural resources has a leading role to play in the development of the continent and in building strong societies. Rising interest in the extractive sector has placed the continent at the verge of an unprecedented mining boom which attracts billions of dollars in foreign investments (Zhang, 2011). The author further puts it that, this existing interest in the extractive sector have fuelled the rush of foreign countries in establishing their investment within this sector of the continent with China present at the forefront, having an investment in African mining that quadruple between 2000 and 2009. However, these raw materials are exploited and exported overseas to China, Britain and America among other countries with little or no transformation taking place in Africa, leaving the continent impoverished. Generally, Africa is said to be experiencing a resource curse, a situation where countries rich in extractive resources remain poor despite the huge revenues these resources generate. However, it can be argued that the curse results from men who manage (poor governance and corruption among others) the revenue emanating from this sector.

With large parts of the continent being geologically unexplored (Taylor et al., 2009), there exists huge potential for growth associated with job creation and the provision of social amenities among others, expected to result from the exploration of minerals and the establishment of other extractive sector based activities including but not limited to palm plantation. This is good but the bone of contention is that a great part of these investments are found in primeval ecological areas. A quarter of 4,151 mineral occurrences are concentrated in three areas of endemism within the Congo Basin forest of which most of such sites are yet to be designated as protected areas (Edwards et al., 2014). These sites have or are likely to suffer significant adverse social and environmental consequences. Hence, while growth is an opportunity for the Congo Basin countries, the forest preserved for many years is under the threat of deforestation and degradation as a result of mining and associated infrastructure. Maximising benefits from the extractive sector and conserving biodiversity is an

issue that countries must handle with care and due diligence so as to enable a smooth transition to a green economy in Africa. This paper therefore seeks to examine how natural resource exploitation and biodiversity conservation can be balanced.

1.1 Research questions and objectives

This study seeks to answer the following research questions:

• What are the contributions of the extractive sector to development in the Congo Basin?
• What are the effects of mining exploitation on biodiversity?
• How can economic development and biodiversity conservation be achieved?

In answering the above mentioned questions, three objectives were formulated: to analyse the contributions of the extractive sector to development in the Congo Basin; appraising transparency in mining revenue and how it can contribute to sustainable development in the Congo Basin; and to propose best ways of balancing the extractive industry sector and biodiversity conservation with reference to promulgating for a green economy approach. In order to attain the above mentioned objectives, this study employed content review and analysis of scientific literature alongside governmental and other institutional documents applicable to the Congo Basin (Desk review of WWF documents and those of other institutions).

The subsequent sections of this paper are structured as follows: section two deals with Congo Basin extractive sector activities and development; section three addresses issues related to the extractive sector and biodiversity conservation in the Congo Basin; section four focuses on the practical implications of proposed green growth model for Congo Basin countries; while the last section is basically conclusion and recommendations.

2. Extractive sector activities and development in the Congo Basin

The extractive sector of Congo Basin countries constitutes an avenue for economic growth in the region owing to the wealth of mineral resources therein. This sector makes a significant contribution to the GDP of these countries. As reported by Erik and Marta (2007), petroleum accounts for over 24% of government revenue and 6% of GDP in Cameroon, DRC had 24% of her GDP emanating from minerals before the advent of the civil war and this declined to 9% in 2004. In 2010, fiscal revenue from mining in DRC accounted for over 20% of the total (Banerjee et al., 2015). From a macroeconomic perspective, Huehne (2014) demonstrated that the mining sector of Sub Saharan African countries contributes to both social and economic development. His findings shows that resource rich countries in Sub-Saharan Africa possesses a higher annual GDP and GDP per capita growth rates when compared to their resource poor counterparts. However, the extractive sector may drive macroeconomic growth of countries but may fail to alleviate poverty (Weng et al., 2013). Regardless of the potential of natural resources to contribute to economic development, there has been a general disappointment to convert mineral wealth into sustainable development. This has led to the paradox of plenty hypothesis that suggests that, contrary to expectations, resource rich countries are not amongst the leaders in poverty reduction and sustainable development but the laggards.

Countries of the Congo Basin Region like Cameroon, Central African Republic (CAR), the Republic of Congo (the RoC), the Democratic Republic of Congo (the DRC), Equatorial Guinea, and Gabon host a wealth of mineral resources, including oil, iron ore, diamonds, gold, copper, manganese, and uranium. These mineral resources have provided significant revenues for the respective countries of the CBR. Despite the rich resources found in the Congo Basin and the Central Africa sub region at large, the region is still rocked by high degree of poverty and unemployment which is particularly common among the youth, depicting a lack of improvement in the socio-economic conditions of the region's population. The African Development Bank-ADB (2013) attributes this stagnant economic growth witnessed over the past decade to lack of structural transformation in the region's countries caused by inadequate infrastructure, weak human resources, governance deficits, poor business climate and socio-political instability. Structural transformation as used in this context imply the reallocation of the economic resources from activities with low productivity to more productive ones, thus maintaining a strong, sustainable and inclusive growth which is often characterised by an increase in the manufacturing and services share in the GDP with a steady decline in the share of agriculture, and a shift in the agricultural workforce to more productive sectors of the economy

Investments have grown in Africa. Overall growing Foreign Direct Investments in Africa stood at 5.7% in 2013. Despite this progress in trade, hindrances to the trade growth of Africa include; Corruption, climate change, and Political instability, which negatively affected trade opportunities in Africa during the past years. Congo Basin countries have developed peculiar policies with regards to their respective natural resources. The extractive sector and Energy remains key focus areas of driving these countries (CMR, Gabon, RDC, RoC) towards economic emergence. However, economic emergence cannot be achieved in the absence of good governance mechanisms, institutions and necessary infrastructures.

2.1 Challenges in economic development progress within the Congo Basin

Economic exploitation of the extractive industry (mineral, oil and gas) constitutes the basis for economic growth within the Congo Basin and the Central African sub region at large. According to the African Development Bank-ADB (2013), the sub-region has recorded high economic growth rates from the exploitation of its natural resources over the past decade with countries experiencing a GDP growth of 5.8% on an average between the period of 2001-2012 as against 3% between 1990-2000, putting Central Africa as the continent's region with the second highest economic growth over this period. However, poverty remains a major challenge in the region. The factors posing a challenge to economic growth in the sub region includes the following:

2.1.1 Inadequate Infrastructure

Despite the investment in recent times made in the infrastructural sector by countries in the Central Africa sub region, this sector still remains weak and inadequately developed. The 2010 World Bank Africa Infrastructure Country Diagnostic (AICD) study revealed Central Africa as the continent's least infrastructural developed region especially in the energy and transport sector. Energy which is termed as the missing millennium development goal (Brew-Hammond, 2012) plays an unequivocal role in the development of nations and it is ironical that this sector is underdeveloped in Central Africa with an electricity access of 14.4%, lower than the continent's

average despite the huge hydropower potential possessed by countries in the region notably the Democratic Republic of Congo (DRC) and Cameroon emerging first and second respectively in the continent (Nfah and Ngundam, 2009). There is acute lack of transport infrastructure which is attributed to inefficient links and interconnections between air, road and rail transport. Inter public transport in major cities in the countries are unreliable and are in some cases, the roads are not accessible all year round (Yossa, 2013). Existing paved roads in the region is at 8% of the total roads, against 16% for the entire sub Saharan Africa (ADB, 2013).

2.1.2 Weak human resources

The infrastructural quality in Central Africa does not often match the amount of expenditure level as a result of poor or deficient investment undertaken. As revealed by the international monetary fund (IMF) public investment management index (PIMI), the quality of public investment (with respect to appraisal, selection, implementation and ex-post evaluation) on an average basis for Central Africa is lowest in the continent, with project appraisal and selection being the areas with the most significant deficiencies (Dabla-Norris et al., 2011). This poor result is largely due to lack of technical capacity and the inadequate returns in public and private investment. Also, poor governance in the infrastructure sector which culminates to poor management of public investment coupled with corruption are issues that plague the infrastructure sector yielding public investment output of low quality.

2.1.3 Unattractive Business climate

From 2005 to 2012, countries in the Central Africa sub region initiated some reforms in an attempt to render the business climate friendlier. Despite these efforts, significant progress in the region's business climate is yet to be achieved (AFD, 2013) as the business climate for majority of countries in the region can still not compete with those of other countries in the continent and the world at large. As per the 2014 World Bank's Doing Business ranking based on the conduciveness of a country's regulatory framework in the starting up and operation of a local firm, Gabon was first in the region occupying the 144th position out of 189 countries on the list while the Central African Republic emerged last in the region occupying the 187th position on the list. The magnitude of deficiencies in doing business varies from country to country in the region but the four main areas requiring urgent reforms include: starting a business, getting credit, legal environment, and trading across borders (ADB, 2013).

2.1.4 Mismatch between human resources and economic opportunities and needs.

While primary education in Central Africa has witnessed a remarkable improvement, technical and higher education still lags behind and needs improvement in its quality (ADB, 2013). Less than 10% of enrolments in the region are in vocational and technical education which is below the 20% minimum recommended by UNESCO. More so, the skills produced by the education system do not match the economic needs in the region. This mismatch between economic needs and skills emanating from the educational system coupled with the low skilled work force are barriers to emergence of the different economic sectors.

2.1.5 Poor Governance

Over the past decade, there have been positive changes in governance in Central African countries but the pace of the change has been slow to contribute to economic transformation in the sub region (ADB, 2013). In most of the countries, the strengthening of extractive legislation and improvement in the management of public finance has led to an overall improvement in the management of natural resources. That notwithstanding, the sub region has lower key governance indicators compared to regional averages. The lack of information on the income derived from the exploitation of natural resources coupled with the weakness of institutions charged with the monitoring of government actions are setbacks in the transparency and accountability with respect to the management of public resources in the region. Limited countries in the region have attained the status of complaint country under the Extractive Industry Transparency Initiative (EITI) which is an aspect of governance of importance in the transformation of economies.

2.1.6 Unconducive socio-political atmosphere

The success of any economic development programme is highly dependent on political stability which is an aspect lacking in the sub region corroborated by the conflicts experienced by over half of the Central African countries over the past two decades which have tend to retard the economic transformation process in the region (ADB, 2013). These observed conflicts have their roots partly from natural resources and the desire to control the related rents, and this has led to the destruction of the economic base and infrastructure which in turn causes the weakening of public institutions and the prevalence of bad governance.

2.2 Extractive sector and Extractive Industries Transparency Initiative (EITI) in the Congo Basin

Albeit the extractive industries offers relatively few jobs compared to the manufacturing or service industries, this sector is often blamed for distorting national economy and undermining good governance (Frynas, 2010). The extractive sector (oil, gas, mining) has the potential of generating significant revenue however, natural resources abundance has not contributed to social and economic development but have led to political mismanagement and military conflict; hence the issue of natural resources been looked at as a curse. Challenges in governance and policies has been looked at as one of the main causes of this problem hence EITI was brought forth to help resolve this issue. Launched in 2002 by the British Prime Minister at the World Summit for Sustainable Development in Johannesburg, EITI is a global coalition of governments, enterprises and civil society organisations working together to improve transparency and the responsible management of revenues from natural resources (Ravat & Kannan, n.d). The aim of EITI is to support and promote good governance in resource rich countries through the publication and verification of payments made by companies and revenues to the government from the oil, gas and mining sectors (Ravat & Kannan, n.d). EITI is built on the foundation that the wealth of a nation should benefit its citizens. This implies the use of revenue from natural resource extraction in developing countries for the satisfaction of basic needs including but not limited to health and education, and the alleviation of poverty rather than for such revenue to end up in the private pockets of corrupt officials in both the public and private sector. As of 2011, there existed 35 EITI implementing countries (Ravat & Kannan, n.d). The entire EITI process entails three articulated

steps: achieving EITI candidature; achieving EITI compliance; and maintaining EITI compliance (Ravat & Kannan, n.d). The first step is characterized by five different requirements which must be met by the government of a nation prior to achieving the EITI candidate country status. Step two entails conditions to be fulfilled by a country so as to be confirmed as an EITI compliant nation and an important aspect of this step is the compilation of the EITI report which must among others include information on material payments and revenues, and all registered extractive companies in the country involved in exploration and production. Once the report is compiled, it is audited by an auditor. At the end of this step is the validation of the country by an external, impartial and independent assessment mechanism that proves that the country has met all the EITI requirements. The final step is associated with a periodic review of compliance to ensure that the entire process is being carried out effectively and on an ongoing basis. Cameroon, DRC, Republic of Congo are compliant nations to EITI while Central Africa Republic has been suspended. Progress has been made in the implementation of the EITI process in the different countries for example Cameroon has published several EITI conciliation reports but the fundamental question remains whether transparency alone will confer local benefits to the population if the generated revenues are not used rightly. The EITI need to go beyond publications of government receipts and company payments. Despite the challenges made in the implementation of the EITI in these countries, progress is been made for example DRC been declared a complaint nation again in July 2014 after its suspension. However it takes more than just EITI to bring change in this sector; governments must be committed in this process.

3. Extractive activities and biodiversity conservation in the Congo Basin

According to the African Development Bank (2013), 7% of the continent's oil resources is hosted by Central Africa. The cobalt, diamond and copper reserves in DRC alone accounts for over 45%, 23% and 3% of World reserves while Gabon hosts over 3.5% of the world Manganese reserves. The Congo Basin forests are extremely rich in flora and fauna. This rich biodiversity deserves to be conserved for posterity and a number of regional agreements and cooperation have been arrived at to this end. The Central Africa Forest Commission (COMIFAC) was established in February 2005 as the political and technical steering, coordinating, harmonizing and decision making institution to take the lead in the conservation and sustainable management of the forest in Central Africa (FAO, 2011). Other regional agreements such as the Congo Basin Forest Partnership (CBFP), the Congo Basin Forest Fund (CBFF) and the Central Africa Wildlife Conservation (OSFAC) have been established to ensure conservation of biodiversity rich Congo Basin forest.

3.1 Impact of extractive activities on protected areas

The past decade witnessed the creation of two international trans-boundary protected areas: the Dja-Odzala-Minkebe Tri-national (TRIDOM), established between Cameroon, the Republic of Congo and Gabon, conserving over 14.6 million hectares of the Congo Basin forests; and the Sangha Tri-national (TNS), established between Cameroon, the Republic of Congo and Central Africa Republic which covers 2.8 million hectares of the forests of the Congo Basin (FAO, 2011). More recently, four of the six Congo Basin countries (Cameroon, Central African Republic, the Republic of Congo and Democratic Republic of Congo) are participating REDD+ countries under the Forest Carbon Partnership Facility-FCPF (FCPF, 2014). These countries envisage using this novel climate change mitigation policy in conserving their forest cover and biodiversity in a holistic approach

while enhancing development in their respective countries.

Despite the biodiversity conservation efforts in the Congo Basin, activities of the extractive industries within this region is conflicting with biodiversity conservation goals. Mining for instance is highlighted in the REDD+ Readiness Preparation Proposals (RPP) of Congo Basin participating REDD+ countries as a driver of deforestation and/or forest degradation. It is argued that mining operations comes along with associated infrastructural constructions including but not limited to roads, railway lines and power stations which often cut into and fragment natural habitats thereby constraining wildlife movement and restricting the flow of gene pool (Bele et al., 2015). Considering the case of Cameroon, the last decade has witnessed the award of 28 mining and oil exploration permits inside of 12 protected areas (Readiness Preparation Proposal, 2013). Such conflict is not uncommon owing to the lack of institutional coordination between the government ministries in charge of issuing mining and oil permits and that responsible for the management of protected areas. The situation is not any different in DRC where industrial mining activities with inadequate social and environmental safeguards continue to put the country's forest and biodiversity resources under threat caused by the overlap between mineral resources and tropical forests of which some are protected areas (USAID, 2011). Virunga, Africa's oldest and top national park for biological diversity, has witnessed the attribution of oil drilling permits by the government of DRC and a major report has called for the DRC government to revoke these permits that will allow oil drilling in this park (Coghlan, 2014). As indicated by reports, China and the government of DRC will likely conclude on deals worth over $US9 billion (Seyler et al., 2010) so as to give China more access to the copper and gold deposits in DRC for the development of the former. The author further argues that it remains unclear whether the government of DRC will have the political will and the capacity to enforce strict environmental regulations under the mining code. As opined by Samndong & Nhantumbo (2015), expected continual expansion of mineral exploitation could significantly affect the biodiversity and forest cover of DRC's forest which constitutes a major block of the Congo Basin forest, thereby exacerbating global climate change.

The growth in the extractive sector has promoted the rise in associated infrastructures with its own significant consequences on biodiversity. For instance, the negative impact on WWF priority areas in TRIDOM landscape of the planned Chollet dam threatens to be very significant. Also, the construction of the double carriage highway and transmission lines by Sundance within the dense tropical forests around the southern part of the Cameroon is likely to have significant impact on the rich biodiversity in the area.

3.2 Impact of artisanal small scale mining on biodiversity

Often ignored are the artisanal small scale miners whose activities often have a considerable impact on forest cover and biodiversity. Artisanal mining is an important source of income and livelihood to local populations but the lack of regulation of this activity is a major challenge (Bele et al., 2015). Meanwhile the impact of artisanal mining activities are often localized, their indirect impacts including but not limited to pollution and poaching are usually widespread (Ingram et al., 2004). In DRC, artisanal miners produce the bulk (about 90%) of the minerals with over 500,000-2,000,000 diggers thought to be involved in mineral extraction (Seyler et al., 2010). This activity continues to impact on DRC's forest and biodiversity including wilderness and national parks. In 2002, 10,000 and 4,000 artisanal miners moved into the Kahuzi-Biega and Okapi Wildlife reserve respectively (Brown, 2010). Artisanal mining activities and coupled with the lack of reclamation or remedial programmes have led significant areas of decreased habitats and lower carrying capacity among

other impacts which tend to negatively affect biodiversity in DRC (Samndong and Nhantumbo, 2014). In Cameroon, artisanal mining often results to open pits which subsequently become flooded during the rainy season constituting a dead trap for wildlife (Bakia, 2014). It is argued that a lack of appropriate mitigation measures, best practices and compensation measures of the mining sector questions the sustainability of the Congo Basin forests and poses threat to its rich biodiversity (Bele et al., 2015).

4. Proposed green growth model for the Congo Basin extractive sector

4.1 The green economy concept

The term green economy was appeared in Pearce *et al.* (1989) in "Blueprint for a Green Economy". Although no initial definition of the term was conceived, green economy was generally recognized as a means of achieving sustainable development. Elements of green economy were further discussed at the World summit on Environment and Development in Rio de Janeiro, Brazil in 1992 where the Rio Declaration called for internalizing environmental costs and an elimination of unsustainable production and consumption (UNGA 1992). UNEP (2011) defines green economy as one that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low in carbon, resource efficient and socially inclusive. This definition emphasizes reduction in emission and pollution, improvement in energy and resource efficiency and minimal or no loss of biodiversity and ecosystem services.

4.2 Green economy in Africa

There exists a number of African countries pursuing a green economy pathway including: South Africa, Mauritius, the Seychelles, Rwanda, Kenya, Mozambique and Ethiopia (Nhamo, 2013). South Africa embraced green economy as an avenue for economic growth and the generation of employment. This implies exploring new options that will improve the standard of living of the citizens while reducing the environmental footprint of the nation. Their green economy framework emerged in 2010 with focus on key areas, including but not limited to: sustainable consumption and production; green buildings and built environments; green cities and towns; clean energy and energy efficiency; resource conservation and management; sustainable waste management; and agriculture, food production and water management (Nhamo, 2013). Rwanda's green economy (green growth strategy) is tied towards developing climate resilient and low carbon economy with planned programmes under this strategy including but not limited to: sustainable forestry, agro forestry and biomass; sustainable land use management; integrated water resource management; climate compatible mining; disaster risk reduction; green industries; and a resilient transport system (Nhamo, 2013). For the case of Ethiopia, the country is developing a green economy with the intention of attaining a middle income economy from 2020-2030 (Federal Democratic Republic of Ethiopia, 2011). Ethiopia's green economy framework is oriented towards climate change resilience and is centred on sectors with high greenhouse gas emissions. Congo Basin and other Central Africa countries have recently been committed towards a green economy transition as a way forward to achieve economic growth while safeguarding their natural environment. It can be argued that the motivation of African nations to embrace green economy is influenced by

their quest to attain economic development under a sustainable pathway. The Congo Basin region hosts a wealth of natural resources which sustain national economies and more particularly, the forests serves as home and source of livelihood to many indigenous and local communities. Hence, without neglecting other sectors with potentials of bolstering economic growth, it is incumbent for green economy in the Congo Basin to be tied to the conservation of natural capital.

4.3 Green growth model for Congo Basin Extractive Sector

Economic growth goals are often in conflict with those of environmental protection and it is therefore not uncommon for economic growth to occur without harm on the natural environment. However, governments of Congo Basin countries like those of other nations have the responsibility to always strive to strike a balance between economic development and environmental protection so as to ensure that likely environmental impacts to emanate from economic projects or activities are avoided where possible or kept minimal. The Congo Basin countries have regulations in place already to check environmental impacts that may occur from developmental projects including mining. For instance, under the Cameroon Law No. 96/12 of August 5, 1996 pertaining to environmental management, a proponent of an activity which is likely to incur harm on the natural environment is liable to conduct an environmental impact assessment for the proposed activity. However, the poor governance system that characterizes these Congo Basin countries keeps the enforcement of these environmental regulations low. Congo Basin countries are keen to develop economically on one hand while protecting their natural resources on the other hand; majority of the constitutions of countries in the Congo Basin recognised the right to have the environment protected for the benefit of present and future generations.

So far, green economy is not an entirely new concept in Central Africa. In 2007, Central African countries under the leadership of the Economic Community of Central African States (ECCAS) adopted the "vision 2025" with its prime objective being making green economy a pivotal sector in the economic development of the sub region (Yossa, 2013). ECCAS adopted the green economy concept as a tool and an approach envisage to conciliate natural resources management and socio-economic development of member states, development of enterprises, creation of jobs and amelioration in the living standard of the population, while also serving as a forum for operationalizing sustainable development in the Central Africa in line with the outcome of the Rio+20 conference (ECCAS, 2014). Hence, it is only incumbent for the green economy coordinating institution in Central Africa (ECCAS) to advocate for green economy in the extractive sector. Such an approach will entail the setting up of regional standards and or the adoption of international norms which will be applicable to the extractive sector pertaining to: the health and safety of workers; soil erosion and pollution control (soil and water pollution) alongside prescription for remedial measures; and forest and biodiversity loss control (no net loss).

4.4 NNL as one of the pillars of a Green Economy model for Congo Basin countries

No net loss (NNL) of biodiversity is widely advocated for development activities. The goal of the NNL initiative is to reduce tension between development and conservation by creating an enabling environment for the achievement of economic growth without a concomitant loss of biodiversity (Gardner et al., 2013). Put simply, NNL implies that compensating the loss of biodiversity in one area by balancing with gains elsewhere. Biodiversity offsets represents an important component

for achieving no net loss of biodiversity by compensating for residual impacts that still emanates from developmental projects/activities after developers have rigorously followed the mitigation hierarchy (to avoid, minimise and restore impacts), in order to limit residual impact on biodiversity to those that can be offset (Gardner and Hase, 2012). The mitigation hierarchy refers to the steps that are taken to avoid, minimise and restore impacts in the course of project implementation prior to employing biodiversity offsets as the last option. At the national level, it is important for governments of Congo Basin countries to embark on No Net forest loss but insist on Net gains by demanding for strict application of mitigation measures to avoid or reduce environmental harm associated with the implementation of developmental projects. This could take the form of offsets or compensation plans where necessary. A good example to cite is that of the Sundance Resources' Mbalam project in Cameroon. This company is mining iron ore in the Ngoyla-Mintom forest massif block which is part of the Dja-Odzala-Minkebe Trinational (TRIDOM). This mining company has acquired a forest management unit (FMU) from the Ministry of Forestry and Wildlife which it has allocated to forest and biodiversity conservation in a way to make up for the damage to the environment that emanates from their mining activities, with technical assistance from the Worldwide Fund for Nature (WWF) Cameroon Country Programme Office (CCPO) which has an ongoing REDD+ project in the Ngoyla-Mintom landscape. Notwithstanding the fact that this initiative in Cameroon is yet to yield concrete positive results, there are prospects that it is going to make a remarkable positive difference. Hence, other Congo Basin countries should consider adopting a similar approach where possible, depending on their national circumstances. More so, companies should be encouraged to embrace International best practices/standards. Sundance Resources for example has already indicated that they will apply the performance standards (PS) of the International Finance Corporation (IFC). Another example of NNL initiative in the mining sector implemented in Africa from which Congo Basin countries can draw lessons from is that of Ambatovy in Madagascar. The Ambatovy mining enterprise has as its vision to deliver world-class results in safety, environmental stewardship, social performance, product quality, production, and cost efficiency through a committed and engaged workforce (Hase et al., 2014). The enterprise is committed to meet or exceed all its environmental obligations and to deliver no net loss, but preferably a net gain in biodiversity to Madagascar's ecosystem.

Box 1: Ambatovy's approach to NNL

No	Item	Ambatovy
1	Policies on offset and compensation	The company's biodiversity management strategy is based on application of the mitigation hierarchy with an objective of no net loss (NNL), or preferably a net gain (NG), of biodiversity. In this regard, Ambatovy primarily follows two standards – the Biodiversity Offset Standard (BBOP, 2012) and the IFC Performance Standards on Environmental & Social Sustainability (IFC, 2012). Both standards promotes adherence to the first three steps of the mitigation hierarchy before offsets which are designed based on the standards of BBOP are implemented.
2	Stakeholders involvement	Diverse government institutions, networks and organisations
3	Respect of steps	Aggressive application of the steps of the Mitigation Hierarchy from the project design stage to the restoration of the mine sites. Ambatovy even has a biodiversity management programme with guidance from different stakeholders like BBOP, IFC

Source: Hase et al., 2014

However, biodiversity offset as a tool for achieving NNL is not without shortcomings. They reside in its inadequateness in some cases to avoid NNL and the fact that the impacts of some projects on biodiversity are practically impossible to offset (Gardner et al., 2013). In other words, the value of the biodiversity lost as a result of a mining project may be higher to that of the biodiversity secured via offset measures.

Hence, Congo Basin countries, when adopting biodiversity offsets as part of NNL initiatives in the extractive sector, should ensure that biodiversity offsets program implemented by project developers meet three conditions: biodiversity gains are comparable (in type and amount) to losses; gains are additional to what would have been obtained in the absence of an offset; and the gains should be lasting (the same duration like the residual impacts) and protected against risks. Hence, a transparent and science-based approach is needed if NNL is to realise its full potential as a mechanism for promoting environmental responsibility in mining development.

The green economy approach strives to ensure that economic growth occurs within the boundaries of environmental protection and social equity, therefore more holistic. We propose the adoption of a green economy approach for the mining sector of Congo Basin countries with NNL as one its pillar. Unlike the NNL initiative which tends to focus solely on biodiversity, the green economy approach to mining is more holistic since it encompasses NNL including guidelines for mitigating other environmental and social impacts likely to emanate from mining projects with the ESIA serving as a pertinent tool in this model. The establishment of different cells within the ECCAS secretariat to coordinate these different aspects at the regional level will go a long way to yield positive outcomes. We argue that everything being equal, this proposed regional green economy approach in the extractive sector has potential for ensuring improved human well-being, social equity and reducing environmental risks and ecological scarcities in the Congo Basin. While this approach is proposed for the extractive sector, it could be applicable to the forestry sector among others.

4.5 Linking biodiversity NNL with REDD+

Most of the mineral deposits in the Congo Basin are found in highly forested area and mining concession permits have been allocated by governments to mining companies for most of these sites. Ironically, with the exception of Equatorial Guinea, the Congo Basin countries are participating REDD+ countries under the Forest Carbon Partnership Facility (FCPF, 2014) with the Central Africa Forest Commission (COMIFAC) responsible for steering REDD+ activities at the Central Africa regional level, exploring opportunities for sustainable forest management and forest conservation with the prime objective to contribute to national development goals. So far, there have been some collaboration between ECCAS and COMIFAC on REDD+ and green economy issues in Central Africa. It is likely that there will exist a link between the objective of the green economy model for the extractive sector and that of REDD+ in the Congo Basin. This is inevitable owing to the fact that most of the mining sites are located inside forest of rich biodiversity which are currently under the REDD+ scheme. Hence, it is anticipated that both regimes will have a positive significant impact on the attainment of each other's objective and this could be termed as an impact level interaction (Gehring and Oberthür, 2009). REDD+ will contribute to NNL since the whole idea beyond REDD is focused on reducing forest degradation and deforestation. If REDD+ projects are rigorously implemented at project and national levels then it will contribute greatly in NNL of biodiversity because a key part of REDD+ is focused on the conservation of tropical forest and promotion of improved forest management practices.

4.6 Practical implications of proposed model to Congo Basin Countries

This model which is out to advance a green economy and ensure that the challenges limiting the contribution of the extractive sector to development are addressed has several implications for the Congo Basin countries. At the Central Africa regional level, forest conservation under the REDD+ mechanism and green economy initiatives have several commonalities. While the former is coordinated by COMIFAC, the latter is led by ECCAS. With different mandates, there exists indication that both institutions have been strategizing together on REDD+ and green economy issues in the sub region. In 2009 and 2010 for instance, COMIFAC and ECCAS organized two conference sessions that led to the 10 member states of COMIFAC and ECCAS to declare their intentions and commitments to continue their efforts towards REDD+ and sustainable forest management. Similarly, in 2014, both institutions brought together the ministers in charge of Economy and Finance, Foreign Affairs and Cooperation, Forestry and the Environment to discuss on issues pertaining to the green economy fund in Central Africa and the structural transformation of the natural resources economy. There is therefore need for stronger and further institutional collaboration and coordination between ECCAS and COMIFAC on issues of forest conservation and green economy in the extractive sector among other sectors. In this way, a common policy approach could be adopted to achieve both green economy and REDD+ objectives in Central Africa which will not only yield synergistic outcomes, but will avoid conflicting institutional goals and reduce implementation costs associated with pursuing each of them independently.

Structurally, Congo Basin countries will have to resort to business transformational models capable of feeding the conservation objectives as a market driver's force. This aspect has more potential to effectively work, if most of the voluntary principles (IFC, Equator, International Council on Metal and Mining-ICMM) are done under a mandatory context led by Congo Basin countries hosting mineral reserves. Under the governance and operation framework, a large benefit of extractive industries outcome should be explored at the national level by the countries in the sub region under win-win partnership between key stakeholders (State, Civil Society, local content & community, large landscape zoning and planning).

The creation of an enabling environment for effective governance within the extractive sector is yet another implication of the model to the countries of the sub region. It is necessary to create a legal context that ensures an effective law enforcement for revenue /taxes collection and management, land management and independent monitoring by third parties or civil society for assessing the compliance against key agreed upon standards (including but not limited to EITI, Equator Principles, ICMM and IFC).

4.7 Envisaged practical challenges of the proposed model

Notwithstanding the potential of this model to ameliorate the social, economic and environmental aspects associated with the extractive sector of Congo Basin countries, it is not without challenges. Firstly, the investment and transactions costs involved in the implementation of a model of this type would be high. Governments, institutions, and the private sector will need a strong commitment and motivation to be able to break through this financial barrier and invest in this model. Secondly, there is the absence of pertinent policies and structures/institutions especially at the regional level to implement this model. There is also inadequate cooperation and inter-ministerial coordination between government ministries on issues of conservation and extraction of natural resources, culminating to conflicting goals between environmental conservation and the extraction and use of

natural resources. This is further exacerbated by poor governance system, lack of transparency and insufficient capacity that rocks Congo Basin countries. Where appropriate policies and regulation exists, inadequate monitoring of their performance remains a setback. Thirdly, there exists a considerable proportion of the population of the respective Congo Basin countries living in poverty. These poverty stricken populations use the available natural resources within their environment to improve their living standards and to come out of poverty. A key focus on this is with regards to artisanal small scale mining (ASM) which involves mostly the youth. This sector is often neglected and consequently given less attention which tends to have a considerable impact on the natural environment since it is carried out by the local population who in most cases do not adhere to regulations. Under this scenario, striking a balance between conservation and development becomes very challenging since the local population who are in most cases the custodians of these natural resources are more concerned with emerging out of poverty. Governments should therefore give more attention to ASM ensuring that their environmental impacts are managed and their activities regulated to create a more responsible and viable opportunity for livelihood development. Increased capacity building of the local population involved in ASM by government institutions, local and international civil society organizations on sustainable mineral extraction techniques with minimal impact on their health and the environment should be solicited.

Fourthly, like other developing countries in the African continent, access to information in the Congo Basin based on which informed decision can be made is often a challenge.

4.8 Opportunities for proposed model

Several opportunities occur for this proposed model for the Congo Basin. This among others includes:

• The availability of internationally recognised good norms/standards (e.g. IFC, ICMM, Equator Principles) for the management and mitigation of environmental impacts of mining operation which can guide private sector actors in their operations in protected areas in the Congo Basin.

• Green growth is a concept which could be easily used and promoted by several institutions in the sub-region such as ECCAS, COMIFAC and BEAC (Bank of Central African States).

• Poverty reduction is an objective Congo Basin countries are keen to pursue. This model, if well implemented, can address issues of poverty alleviation, hence unlocking support from national governments and other stakeholders.

• The local communities and civil society can be leveraged to achieve this model, especially when it comes to the monitoring of activities of companies.

5. Conclusion

Africa's natural resources are supposed to be a blessing not a curse. While the extractive sector contributes to economic growth of the Congo Basin countries from a macroeconomic perspective, the sub-region is still rocked by poverty which is associated to poor infrastructure, weak governance system and political instability amongst others. The environmental impacts of the activities of the extractive sector on the Congo Basin forest are a course for concern. The presence of extractive companies, predominantly mining companies, in biodiversity rich areas

of the Congo Basin constitutes a tangible threat to the second largest tropical rainforest in the world. If well coordinated and managed, the extractive sector has the potential to bolster economic development and biodiversity conservation in the Congo Basin. Hence, adopting a green economy model in the Congo Basin will drive economic growth from the extractive sector on one hand while protecting the environment and improving human well-being on the other hand. This will require close coordination and collaboration between regional bodies like ECCAS and COMIFAC which have the mandate of steering green economy and REDD+ approaches respectively in the Central African sub-region. At the national level, there will be need for improved governance and coordination between government ministries so as to avoid conflicting national developmental and environmental conservation goals and build a culture of NNL of biodiversity. This will result to a "win-win-win" outcome for people, planet and profits.

Several civil society organisations, communities, governments and the private sector have started identifying ways through which the extractive sector can go hand in glove with conservation and sustainable development. Some of these proposed solutions which should be embraced include: land-use planning, reducing new development in environmentally sensitive areas, mapping High Conservation value forest and respect of No Go zones. Hence, governments should engage in integrative planning and governance which takes into account both issues of development and conservation.

Increase institutional coordination and collaboration between government ministries of Congo Basin countries with particular respect to those in charge of the issuance of mining permits, management of forest and wildlife resources, and the protection of the environment will reduce institutional conflicting goals pertaining to development and environmental protection and conservation.

References

African Development Bank Group (n.d) *Africa's natural resources wealth: A snapshot*. Available from: <http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/african- natural-resources-center-anrc/> [10 January 2015].

African Development Bank (2013) *Structural transformation in Central Africa*. Thematic Review. Available from: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and Operations/Quarterly_Thematic_Review_Central_Africa_Structural_Transformation_in_Central_Africa_-_Issue_N_2_-_August_2013.pdf>.

Bakia, M. (2014) East Cameroon's artisanal and small-scale mining bonanza: *How long will it last?*. Futures, Vol. 62, Part A, October, 40-50.

Banerjee, S. G., Romo, Z., McMahon, G., Toledano, P., Robinson, P., & Arroyo, I. P. (2015) *The Power of the Mine: A Transformative Opportunity for Sub-Saharan Africa*. World Bank Publications, Washington DC, USA.

Bele, M. Y., Sonwa, D. J., & Tiani, A. (2015) *Adapting the Congo Basin forests management to climate change: Linkages among biodiversity, forest loss, and human well-being*. Forest Policy and Economics, Vol. 50, January, 1-10.

Brew-Hammond, A. (2012) *Energy: The missing Millennium Development Goal*. Energy for Development, Vol. 54, April, 35-43.

Carlos, L. (2013) *Africa must benefit from its mineral resources*. Available from: <http://www.uneca.org/es-blog/africa-must-benefit-its-mineral-resources> [8 December 2014].

Coghlan, A. (2014) *Pressure mounts to save Africa's Eden from drillers*. New Scientist, Vol. 222, No. 2970, May, 12.

Dabla-Norris, E., Brumby, J., Kyobe, A., Mills, Z., & Chris, P. (2011) *Investing in Public Investment: An Index of Public Investment Efficiency*. IMF Working Paper 11/37 (Washington: International Monetary Fund).

de Wasseige, C., de Marcken, P., Bayol, N., Hiol-Hiol, F, Mayaux, P., Desclée, B, Nasi, R., Billand, A., Defourny, P & Atyi, E. (2012) *The forests of the Congo basin: state of the forest 2010*. Publications Office of the European Union, Luxembourg.

ECCAS (2014) *Note d'orientation. Conférence des Ministres de la CEEAC sur le Fonds pour l'Economie Verte en Afrique Centrale et la transformation structurelle de l'Economie des ressources naturelles*. Kinshasa, Republic Democratique du Congo.

Edwards, D. P., Sloan, S., Weng, L., Dirks, P., Sayer, J., & Laurance, W. F. (2014) *Mining and the African Environment*. Conservation Letters, Vol. 7 No. 3, May/June, 302-311.

Erik, R., & Marta, M. (2007) *Assessment of the Mining Sector and Infrastructure Development in the Congo Basin Region.* World Wide Fund for Nature, Washington DC, USA.

FAO (2011) *The State of Forests in the Amazon Basin, Congo Basin and Southeast Asia.* A report prepared for the Summit of the Three Rainforest Basins Brazzaville, Republic of Congo.

FCPF (2014) *REDD+ Countries.* Available from: <https://www.forestcarbonpartnership.org /redd-countries-1> [5 December 2014].

Federal Democratic Republic of Ethiopia (2011) *Ethiopia's Climate Resilient Green Economy Strategy.* Available from: <http://www.uncsd2012.org/content/documents/287CRGE%20 Ethiopia % 20Green%20Economy_Brochure.pdf>.

Frynas, G. J. (2010) *Corporate social responsibility and societal governance: Lessons from transparency in the oil and gas sector.* Journal of Business Ethics 93, 163-179.

Garder, T. & Hase, A. V. (2012) *Key ingredients for Biodiversity Offsets to Achieve No Net Loss.* Available from: <http://www.doc.govt.nz/Documents/conservation/key-ingredients-for-biodiversity-offsets.pdf>.

Gardner, T. A., HASE, A., Brownlie, S., Ekstrom, J. M. M., Pilgrim, J. D., Savy, C. E., Stephens, R. T T., Treweek, J., Ussher, G. T. & Ward, G. (2013) *Biodiversity offsets and the challenge of achieving no net loss. Conservation Biology*, 27(6), 1254-1264.

Gehring, T., Oberthür, S. (2009) *The causal mechanism of interaction between international institutions. European Journal of International Relations* 15 (1), 125–156.

Hase, A.v., Cooke, A., Andrianarimisa, A., Andriamparany, R., Mass, V., Mitchell, R. & Kerry ten Kate (2014) *Working towards NNL of Biodiversity and Beyond Ambatovy, Madagascar – A Case Study.* Forest trend and Ambatovy, available from: http://www.forest-trends.org/documents/ ambatovy_2014.

Hobbs, J. (n.d) *ASM in Africa – 10 Policy Principles and their Environmental Relevance.* Available from: <http://www.globaldialogue.info/Paper%20at%20IGF%20ASM%20Workshop %20at%20 Mining%20Investment%20Indaba%202014%20Jon%20Hobbs.pdf>.

Hobbs, J. (n.d) *Reducing biodiversity loss from oil, gas and mining development.*

Huehne, M. (2014) *Mining and developing nations: does mining contribute to socioeconomic development?* Deakin Papers on International Business Economics, Vol, 7, No. 1, 22-41.

Ingram, V., Tieguhong, J.C., Schure, J., Nkamgnia, E., & Tadjuidje M.H. (2011) *Where artisanal mines and forest meet: socio-economic and environmental impacts in the Congo Basin.* Natural Resources Forum, Vol. 35, No. 4, November, 304–320.

Megevand, C. (2013) *Deforestation trends in the Congo Basin: reconciling economic growth and forest protection.* World Bank Publications.

Nfah, E. M., & Ngundam, J. M. (2009) *Feasibility of pico-hydro and photovoltaic hybrid power systems for remote villages in Cameroon.* Renewable Energy, Vol. 34, No. 6, June, 1445-1450.

Nhamo, G. (2013) *Green economy readiness in South Africa: A focus on the national sphere of government.* International Journal of African Renaissance Studies - Multi-, Inter- and Transdisciplinarity, Vol. 8, No. 1 May, 115-142.

Nzita, M. N. D. M., Halleson, D., Ngongo R., Kalala D., Ndong, E. & Wachter, d. P. (2014) *Green Heart of Africa: Business and Extractive Industries Program Development and strategic Road Map.* World Wide Fund for Nature, Yaoundé, Cameroon.

Pearce D.W., Markandya, A. and Barbier, E. (1989) *Blueprint for a Green Economy.* Earthscan, London, UK.

Ravat, A. & Kannan, S. P. (n.d) *Implementing EITI for Impact.* A handbook for policy makers and stakeholders. The World Bank.

Samndong, R. A., & Nhantumbo, I. (2015) *Natural resources governance in the Democratic Republic of Congo: Breaking sector walls for sustainable land use investment.* IIED, London.

Thiart, C., & de Wit, M. J. (2015) *Metallogenic Fingerprints of the Congo Shield with Predictions for Mineral Endowment Beneath the Congo Basin.* Geology and Resource Potential of the Congo Basin (pp. 393-405): Springer.

UNEP (2011) *Towards a Green Economy. Pathways to Sustainable Development and Poverty Eradication.* United Nations Environment Programme, Geneva, Switzerland.

UNGA (1992) *Rio Declaration on Environment and Development. United Nations General Assembly (UNGA).* Available from: <http://www.un.org/documents/ga/conf151 /aconf15126-1annex1. htm>.

Weng, L., Boedhihartono, A. K., Dirks, P. H. G. M., Dixon, J., Lubis, M. I., & Sayer, J. A. (2013) *Mineral industries, growth corridors and agricultural development in Africa.* Global Food Security, Vol 2, No. 3, September, 195-202.

Wilkie, D. S., & Laporte, N. (2001) *Forest area and deforestation in central Africa.* African Rain Forest Ecology and Conservation: An Interdisciplinary Perspective. Yale University Press, New Haven and London, 119-139.

World Bank (2014) *Doing Business.* Available from: <http://www.doingbusiness.org/rankings> [6 January 2015].

Yossa, T. (2013) *Report on the sustainable development goals Central Africa Sub region.* Africa Regional Consultative Meeting on the Sustainable Development Goals, Addis Ababa, Ethiopia.