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Contemporary Deforestation and the Vulnerability of Forest Peoples in the Southeast Forest of Cameroon

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Abstract: Vulnerability of forest peoples (FPs) in the light of deforestation has received very little attention in contemporary environmental discourses and actions unlike forest and forest resources depletion within the framework of the Convention on Biological Diversity and climate change. Influence of foreign capital and the generalisation of the notion of agriculture being the fundamental driver of deforestation in the tropics, set the pace for deemphasizing the vulnerability of FPs to large-scale drivers of deforestation and forest degradation. This paper examines the extent to which deforestation and forest degradation perpetrated by exogenous stakeholders predispose FPs to socio-cultural, economic and environmental vulnerability in the southeast forest (SEF) zone of Cameroon. In-depth secondary data sourcing was carried out while primary data were collected from representatives of State Ministries, workers in industrial plantations, mining, dam construction, logging companies, FPs and a human rights activist using questionnaires, interview and focus group discussion (FGD) guides and field observation. Findings showed that paucity of Cameroon's environmental political will, inadequate human, material and financial resources, emergence euphoria and State acceptance of baiting gifts from foreign partners created plenty of room for legal oversights on fundamental deforestation and forest degradation drivers to which FPs, particularly indigenous Baka, are most vulnerable. Alleviating their vulnerability, achieving economic emergence and environmental resilience in the SEF zone require human resource development, an unprecedented political will, effective policy implementation and monitoring of deforestation and forest degradation drivers, as well as formalise tenure security, adjudicate intercommunity dialogue, informed consent and equitable benefit sharing.
Keywords: Deforestation, deforestation drivers, foreign capital, forest peoples, forest resources and vulnerability.

INTRODUCTION

With upsurge of interest in global warming, climate change and biodiversity depletion, deforestation has become a topical issue in global environmental literature and debates, with no emphasis on the extent to which it impacts the existential realities of FPs. Deforestation, the complete removal of a forest or stand of trees, either naturally or through anthropogenic effort has profound cause and consequent attributes [1-3].

The cause-attributes of deforestation are perceived through natural and human activities that depletion forests. Natural deforestation is Divine-purpose and man-purposeless, and can result from droughts, ravaging lava from volcanic eruptions, bushfires and landslides [4]. Human-induced deforestation stems from the creation of crop farms, ranches, settlement space, roads, mines, oil wells [5-7] and from intentional deprivation of enemy forces of cover [8, 9]. On the consequent perspective, deforestation engenders environmental vitiation and resource depletion, all of which impact the social, cultural, economic, health and environmental life (existential realities) of FPs.

In the context of this paper, FPs are those local and indigenous communities, who due to their geographical location, historical background and customary tenure, live in forests, depend on them for existence and serve as forests custodians. The southeast forest (SEF) zone of Cameroon is a 10% north-western part of the Congo Basin Forest (CBF) found in the East and South Regions of Cameroon. It is located approximately between longitudes 12º0′0″ and 16º7′0″E of the Greenwich Meridian and latitudes 2º0′0″ and 4º30′0″N of the Equator [10] and the inhabitants are Pygmies, Bantu and other migrant groups [11]. Although forest means different things to different people, it means everything to these SEF peoples whose existence is inextricably linked to the forest [12]. Unfortunately, this source of their livelihood has

recently been discovered to be a forest and subsoil resource hotspot that attracts many exploiters.

Cameroon hosts just 10% of the CBF, yet it ranks second after the Democratic Republic of Congo in terms of deforestation rate (0.14%) in the Central African Sub-region [13]. This deforestation is alleged to result mainly from small-scale farmers practising slash-and-burn shifting cultivation [14-16]. Emphasis on small-scale agricultural deforestation has been instrumental in masking the vulnerability of FPs in the SEF zone of Cameroon to more severe deforestation and forest degradation drivers which are associated with foreign capital and emergence euphoria.

Deforestation-related vulnerability of FPs seems not to have attained any disturbing thresholds up to recently as observed from mainstream environmental discourses and global action. Global attention has been towards the effects of deforestation on biodiversity loss, global warming and climate change. In this respect, it has been argued that tropical deforestation accounts for almost one-fifth of greenhouse gas emissions worldwide and threatens the world's most diverse ecosystems [17]. World Wide Fund for nature (WWF) in a press release statement on FAO's global forest resources assessment on 7 September, 2015, held that deforestation is of particular concern in tropical rainforests because these forests host much of the world's biodiversity. In 2015, an expert in environmental issues, Larry West, shared this view by focusing on the vulnerability of tropical rainforests in Indonesia, the Congo and the Amazon Basins, and not on the vulnerability of the custodians of the forests.

Forest peoples in the CBF in general and the SEF zone of Cameroon in particular, are becoming more and more predisposed to greater deforestation following the monetization of emissions and the euphoria for emergence. This assertion has been amply corroborated in the Central African sub-Region that hosts the CBF [18]. The authors were pessimistic that effort of the Central African Forest Commission (COMIFAC) and the Observatory for Forests of Central Africa (OFAC) to map a common intervention strategy for countries of the sub-region to participate in emerging carbon markets and exploit opportunities associated with financial incentives for voluntary reduction of national deforestation and forest degradation may unlikely be brought to fruition within a foreseeable time lapse following historical low levels of deforestation and forest degradation rates in the sub-region [19]. Unfortunately, the planned emergence of countries of this sub-region, which is oriented towards stepping up deforestation rates will invariably undermine the existential realities of FPs as little or nothing will trickledown to them. In corroboration [20, 21], opined that reaching scattered subsistence farmers in the SEF zone of Cameroon, within the framework of REDD+ is a major challenge.

Before independence, forestry policies in Cameroon were designed and applied by successive colonial masters. The first policy attempt to check the impact of deforestation and forest degradation in Cameroon was the 19th century decision obliging loggers to plant between three to ten seedlings of the same species for each tree logged. This policy was soon abandoned due to difficulties in monitoring operations in the vast tracts of forest where logging was taking place [22]. Next policy effort was in 1935, when the colonial administration embarked upon tree-planting operations in Cameroon with the result that several thousands hectares were covered but with little success. In 1947, the French re-introduced natural regeneration where exploited forest tracts were being supplanted with forest plantations. This approach still proved unimpressive and the practice virtually disappeared between 1960 and 1980 [22]. As from 1994, the independent government of Cameroon introduced a wide range of conservation, tenure and mining laws that led to forest classification and zoning with severe impact on access rights and cultural erosion of FPs as well as undermine environmental resilience (table-1). The zoning approach proposed so far by the Cameroon Government and non-governmental organisations (NGOs) are based on scientific and policy strategies which do not coincide with the values and units of social live of FPs in the SEF of Cameroon. Such strategies relegate the socio-cultural concerns and ethical equity of FPs behind market considerations for emergence [23, 24]. Paucity of political will, corruption and a segmented policy system where framework laws are promulgated and application texts awaited, accentuated the vulnerability of these FPs to deforestation [25, 26]. In addition, local communities have been stripped of the incentive to take care of the forest estate by the practical transfer of ownership rights from them to the State and other moral persons with public utility status [26, 27].

METHODOLOGY OF THE STUDY

This study made use of the descriptive survey method proposed by [28] where documentary exploration, observation, description and field data gathering are its tenets. Secondary data on the vulnerability of FPs were gleaned from existing forestry and mining laws of Cameroon, documents on deforestation and forest degradation and websites. Primary data were sought through two questionnaires, interviews, focus group discussions (FGDs), impromptu discussions and field observation.

The first questionnaire was administered to 65 workers employed in agro-industrial plantations, mining, dam construction and logging companies (indirect impact population) found in Betare-Oya,

Kette, Djoum, Lom-Pangar and Ngoyla-Mbalam areas. The second questionnaire was administered to 190 household members of FPs who are Bantu and indigenous Baka (direct impact population) in Betare Oya (40), Kette (30), Djoum (50), Lom-Pangar(20) and Ngoyla-Mbalam (50) based on their willingness to collaborate. Structured interviews were granted to Inspectors in three State Ministries, a member of the Cameroon National Commission for Human Rights and Freedoms (CNCHRFs) and to four community leaders of FPs for qualitative data collection. Other qualitative data were got through six FGDs, three in Kette and Betare Oya (communities of local population) [1], and three in communities of indigenous peoples [2] in Djoum and Ngoyla-Mbalam. On-the-spot data sourcing through impromptu discussions were reserved for cadres of the companies, and some staff of conservation NGOs (WWF and Observatory of the Cultures of Baka and Bantu (OCBB)) working in the study sites. Participant observations were also carried out in the field for qualitative data sourcing. Quantitative data were processed into descriptive statistics and *in vivo* codes for qualitative data. The codes were drawn directly from interviewees' own words [29].

[1] Local population here refers to the Bantu forest people in the southeast forest zone of Cameroon.

[2] Indigenous peoples are the Pygmies made up of Baka, Bakola/Bagyeli and Bedzang. Although Mbororo Indigenous peoples were also in the southeast forest zone of Cameroon they were considered as migrants and did not constitute part of the study.

Table-1: Recent legal policies related to deforestation in Cameroon

Legal instrument	Related portion	Details of its relationship
Ordinance No. 74/1 of 6 July 1974	Section 3 of the Ordinance	To establish rules governing land tenure.
5/6/1981Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).	Article 1 of CITES	Provides that the Convention regulates international trade in wild animals and plants whether dead or alive
Law N° 81-13 of 21 November, 1981 The 1983 Decree n° 83-169 of 12 April, 1983		The law sets conditions to be fulfilled by physical or moral persons in order to enter the logging profession.
The 1988 Cahier des procédures pour l'exploitant forestier"		Carries the procedures for granting and renewal of licences, the control of exploitation by girth and species, and the various taxes
Law No. 94/01 of 20 January 1994	Part III of the law Section 20 Section 29	This law was enacted to facilitate the implementation of the 1993 National Forestry Action Programme (NFAP) -Classifies the national forest estate into Permanent Forest Estate (PFE) and Non-permanent Forest Estate (NPFE). -Guidelines for drawing up of Forest Management Plan for Production Forests.
19/10/1994 Convention on Biological Diversity (CBD)	Article 6 of the CBD	It led to the development of the National Biodiversity Strategy and Action Plan (NBSAP) in 1999 and officially validated in 2000
Decree No. 95/531/PM of 23 August 1995.	Article 13 of the decree	Determines the conditions of implementation of forestry regulations
Law No. 96/12 of 5 August 1996	-Section 9 of the law - Article 17 -Article 37(1&2) -Article 67(1)	Relating to National Environmental Management Plan (NEMP) - EIA for all projects that can cause environmental degradation -Holders of mining permits or quarrying permits shall rehabilitate the exploited sites (Article 37(1). -Holders of mining permits or quarrying permits may choose to pay the financial cost of rehabilitation carried out by the competent Administration (Article 37(2). Mining resources and quarries shall be explored and exploited in a sustainable manner, making allowance for environmental consideration (Article 67(1).
The 2001 Mining Code No. 2001/001	Articles 4 and 6(1), (2) and (3)	Art. 4 : Except with legal dispensation all land and the water therein is free for attribution of mining titles. Art. 6 : (1) Owner of mines is different from land owner. (2) Mines are and remain a reserve of the State. (3) For mining activities, the State has sovereign rights over the entire territory of Cameroon.
Decree N° 2006/0129 /PM of 27 January 2006	Article 86 of the decree	Deals with permits for exploitation of poles, fuel wood and timber for local transformation reserved for Cameroonian nationals.
2011/OJ L 92/4) Voluntary Partnership Agreement (VPA)	FLEGT	It was between the European Union (EU) and the Republic of Cameroon on forest law enforcement, governance and trade in timber and derived products to the European Union (FLEGT). The purpose is to ensure that timber and timber products exported to the EU come from legal sources.

Source: Compiled from Law N°. 96/12 of 5 August 1996, Code minier, Loi N° 001 du 16 Avril 2001, Ministère des Afaires Foncières-MINDAF-, Land Tenure and State Lands in Cameroon: Laws and Ordinances, Decrees and Orders, Circulars and Instructions. Yaounde, Cameroon, MINDAF, 2008 and Egute and Abugiche (2015).

FINDINGS AND DISCUSSIONS

Salient policy variables that predispose FPs to the challenges of deforestation in the SEF zone of Cameroon are found on table-2 and the *in vivo* codes of informants. Among them are paucity of political will, suboptimal suitability of existing laws, weak implementation and monitoring capacities and misplaced priority on small-scale agriculture as a prime driver of deforestation in the SEF zone of Cameroon. Field returns on the sources of deforestation and forest degradation are summarised on table-4 while impact indicating variables are contained in figures-3 and 4,

tables-3 and 5 and the *in vivo* codes of informants. These impact findings focus on loss of access to ancestral lands, resources and sacred forest, increasing rate of deforestation due to planned emergence in 2035 and tenure challenges, cultural erosion, dwindling value of the pharmacopeia industry, and household income, non-respect of engagements on local employments, compensation, social amenities and environmental resilience. Increasing health risk, weakened gender roles, water pollution, food scarcity and increasing human/wildlife conflicts constitute other impact findings.

3.1 Policy-related impact of deforestation on FPs

A number of human and external factors have stifled effective implementation of environmental laws and monitoring of the drivers of deforestation in the SEF zone of Cameroon as interviewees in the Ministries of Environment, Nature Protection and Sustainable Development (MINEPDED), Forestry and Wildlife (MINFOF) and Mines, Industry and Technological Development (MINMIDT) observed. The interviewees were unanimous that the contents of the laws are often exogenous and that all laws of the land are framework laws, which when promulgated, their texts of application [3] take too long to be signed, making it difficult for effective implementation. This assertion has earlier been observed by [25, 24] when they cited the enabling decree for articles 17 to 20 of the 1996 Law which provide for environmental impact assessment (EIA) which was signed only in 2005, nine years later. The implication is that for all those years, mining, dam construction and logging companies have been applying the law axiomatically in the SEF zone with severe environmental spoliation that impacts FPs. The interviewees also alleged that their ministerial departments were not sufficiently equipped to implement the laws and monitor deforestation-related activities in the field regularly. Awareness of the existence of laws/policies regulating these activities in the country has not been a problem up to now (table-2).

[3] The decrees specifying application directives.

Table-2: Responses of FPs on deforestation-related policy framework in Cameroon

S/N	Study site	Number of respondents	Awareness level			Suitability level			Implementation capacity		
			High	Low	Nknown	High	Low	Nknown	High	Low	Nknown
1	Betare-Oya	13	10	2	1	4	7	2	1	11	1
2	Djoum	15	11	4	0	5	9	1	1	12	2
3	Kette	10	7	2	1	3	6	1	0	9	1
4	Ngoyla-Mbalam	16	12	3	1	5	9	2	1	13	2
5	Lom-Pangar	11	8	2	1	2	8	1	1	9	1
Total		**65**	**48**	**13**	**4**	**19**	**39**	**7**	**4**	**54**	**7**
%		**100**	**74**	**20**	**6**	**29.2**	**60**	**10.8**	**6.2**	**83.1**	**10.8**

Source: Fieldwork, 2015

Table-2 shows that 74% of the respondents as against 20% were aware that such laws exist in Cameroon. They corroborated that the terms of references (*cahier des charges*) and agreements singed between the State of Cameroon and these companies are based on existing legal instruments. On that score, therefore, the bone of contention lies on the suitability of the contents of these legal instruments, and the capacities to implement and monitor as table-2 depicts. Suboptimal suitability of legal instruments in Cameroon was ascertained by 60% of the workers in the companies as against 29.2% who were in favour of acceptable level of suitability. Similarly, 83.1% of them were of the view that policy executors in Cameroon lack the capacities to implement existing laws while only 6.2% acknowledged such capacities. According to 2006 statistics revealed by Alison Hoare, a Senior Research Fellow at Chatham House, government enforcement units in Cameroon lack the numbers they need, as every enforcement agent in the country has to cover 176,000 hectares of exploitable forest, more than half the land area of Luxembourg [30]. The paucity of political will is also tied to graft, Hoare said. Forest protection strategies are intended to shine light in dark corners of the forestry sector – places where corrupt officials can find ways to supplement their incomes. "There's a lot of self interest in maintaining the status quo," she said.

The responses elucidate earlier views on external influence on the contents and economic orientation of legal instruments. EIA guidelines in Cameroon are often imposed by funding bodies and are formulated to safeguard the interest of these bodies and political elite [31, 24] with no regards to the direct impact populations who are the custodians of forests and the subsoil resources therein. The *Reseau de Parlementaires pour la Gestion Durable des Ecosystèmes Forestière D'Afrrique Centrale* (REPAR-Cameroun) clearly highlighted lacunas in the 1994 Forestry and Wildlife Law with emphasis on economic orientation of the law, outrageous external influence and little regards to the interest of local populations among whom are the FPs [25]. Economic orientation of laws is a common feature of legal instruments related to environmental protection in Cameroon. Representatives of state ministries opined that the contents of the legal instruments do not conform to the requirements of most multilateral agreements. Scholars have also attested to this assertion, citing the Voluntary Partnership Agreement (VPA) between the European Union and the Republic of Cameroon on issues of forest and mining laws enforcement, governance and trade in timber and derived products to the European Union (FLEGT) (2011) OJ L 92/4) which is neglected in the laws [24, 32, 31]. The non-involvement of FPs in policy formulation is partly blamed for the non-conformity of the contents of the policy which centre on the values and understanding of elite decision-makers.

External influence on the legal instruments of Cameroon, inadequate financial, material and human resources, limited monitoring capabilities and lack of necessary incentives have created plenty of room for bad governance. It has been indicated clearly that three subsidiary French logging companies (Sibaf-Bolloré, CFC-Thanry and Coron) held more than 200,000 hectares of concessions in violation of the law. Seven of the concessions acquired by CFC-Thanry and Coron were allocated through discretionary than competitive and public allocation processes in violation of legislation. One out of five violation reports was completely dropped after the intervention of influential persons in the east and central provinces. Similarly, at least 21 of the 31 allocated concessions (UFAs) to logging companies did not go to the highest bidders, confirming corrupt practices [33].

The government also condones with irregularity through defeatist tendencies. It has been demonstrated succinctly that when the EIA for the Chad-Cameroon pipeline carried out by Cameroon Oil Transportation Company (COTCO) was brought under criticism, the company declared that in the absence of the project the affected environment would remain in its present state or would continue to be degraded by human activities and natural resource exploitation [31]. The state never challenged such declarations, which

undermine the rationale for developing a new environmental management policy (NEMP) by the Ministry of Environment, Nature Protection and Sustainable Development (MINEPDED) as an integral part of Law N°. 96/12 of 5 August 1996. Little regards to this law increases the vulnerability of FPs to deforestation.

Exogenous contents of policies have often defeated the purpose for which the legal instruments were meant as such instruments become imbued intentionally with lacunas and clauses that lack clarity. Such policy missing links, coupled with foreign baiting gifts, stifle the implementation capabilities of national policy executors and bridge gaps for oversights. China has suddenly become the main investment partner of Cameroon with over US$400 million annual investment. Chinese investments in deforestation prone domains such as Kribi deep-sea port and mining, worth over US$567 million and US$458 million respectively and have opened access to most natural resources. This capital has lured Chinese, European, American and Cameroonian firms into legal and illegal exploitation of natural resources to quickly satisfy growing Asian and western World demands with increasing oversights on their activities which are environmentally unfriendly. These oversights were affirmed by the Executive Director of Greenpeace Africa (Michael O'Brien Onyeka), who noted that illegal logging and exportation of timber from the countries of the Congo Basin was becoming overwhelming with countries rated at (65%) for Cameroon, (90%) for the Democratic Republic of Congo and (90%) for the Republic of Congo [34]. Such illegality undermines forest certification as earlier decried by a scholar [35].

While optimism was high among some scholars with the 2001 Mining Code, which professes the economic dimension [36], the baiting influence of foreign capital on law enforcement, environment vitiation and vulnerability of FPs were eclipsed. It is a truism to say that foreign capital is diminishing the capability of Cameroon to alleviate the deforestation-related vulnerability of FPs, worse still, within the context of 2035 emergence.

The influence of this economic dimension has rendered legal instruments mere paper tigers. Law N°. 96/12 of 5 August 1996 elucidates this assertion. "Holders of mining permits or quarrying permits shall rehabilitate the exploited sites" (Article 37(1). "Holders of mining permits or quarrying permits may choose to pay the financial cost of rehabilitation carried out by the competent Administration" (Article 37(2). Article 37(1) has an appropriate contents but its implementation has been largely ineffective, particularly in the mining sector. Article 37(2) has a conditional content that opens up avenues for corruption and non-compliance.

Field observation showed that mining companies in Betare Oya, Kette and Ngoyla-Mbalam, and the 'competent Administration' seldom respect the provisions of these articles to rehabilitate the abandoned sites after exploration or mining *per se* (plate 1). A field informant working for *Cadre d'Appui et Promotion de l'Artisanal Minière* (CAPAM) in Kadey Division alleged that mining is a complex economic venture that has two phases, which have severe environmental consequences when parties do not take their legal responsibilities. Unsuccessful exploration ventures [4], had often led to abandonment of sites in anger. After mining the sites are also abandoned and it is left for the 'competent Administration' to play its rehabilitation role, the informant noted. Rather than assuming responsibility, policy executors are of the view that mining in Cameroon contributes only very little to deforestation since industrial mining was taking place only in Mbalam.

By insisting that only industrial mining is prone to causing deforestation in the SEF zone of Cameroon, implies one of two assumptions or both. The first assumption is that policy executors in the country do not consider artisanal mining and mining exploration as drivers of deforestation with adverse environmental consequences. The second assumption is that policy executors in the country do not monitor environmental impact from mining adequately. The first assumption insinuates that Cameroonian mining companies do not cause deforestation and land spoliation since artisanal mining is their legal reserve [37]. The second assumption affirms corruption associated with a laissez-faire attitude where mining companies mimic exploitation for exploration just to evade responsibilities. Field observation shows that whether mining exploration, artisanal mining or industrial mining, all are veritable drivers of deforestation

[4] This is when exploration data reveal that mineral availability in the explored site is economically unprofitable for exploitation.

with unprecedented consequences on FPs in the SEF zone of Cameroon.

Plate-1: Abandoned mining pit

Non-rehabilitated mining site in Betare Oya years after mining activities stopped. This is against the provisions of articles 37(1&2) of Law N° 96/12 of 5 August 1996 on new environmental management plan (NEMP). Photo by Enchaw G.B., 29/8/2015

Drivers and impact of deforestation on existential realities of FPs

There is growing unanimity that agriculture is the leading cause of deforestation in the world, particularly in the tropics (fig-1). It is observed from fig-1 that in Africa, where one of the lungs of the world, the CBF is found, subsistence agriculture is the prime driver of deforestation. This assertion was confirmed by interviewees in State ministries and indirect impact population though neither the figure nor the informants mentioned whether such deforestation from local agriculture was within or beyond the rim of the 10% CBF belonging to Cameroon. Such generalisations are not only ambiguous, but have led to ambivalent and sometimes paradoxical outcomes in the analysis of the vulnerability of FPs to deforestation and forest degradation in the SEF zone of Cameroon.

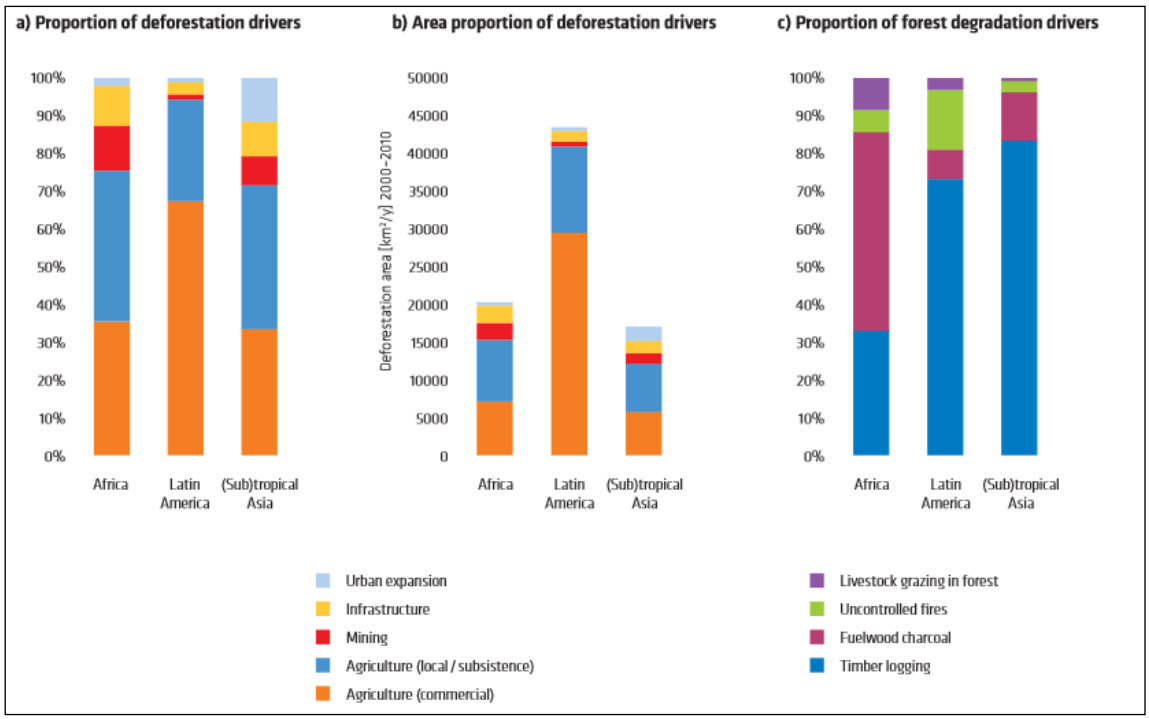

Fig-1: Hierarchy of deforestation drivers in the tropics

Source: Adopted from Preston, Hoare, Bradley and Glover (2015:6) [38]

Field observation in Betare Oya, Kette, Ngoyla-Mbalam and Lom-Pangar, interviews with FPs and findings of some other scholars have challenged that assertion strongly in the SEF zone of Cameroon.

An interviewee in Minko'o II-Djoum alleged that the inhabitants of the SEF zone of Cameroon are Pygmies who are mainly hunter/gatherers and Bantu crop farmers who do not deforest the land used for cash crop cultivation. The interviewee held that the tracts used for slash-and-burn food crop cultivation are too small in size (0.5 to 10ha [39] and few in number to create significant deforestation comparatively (plate 2), particularly as their population densities are very low. Impact of small-holders is largely incomparable with country level economic-motivated deforestation [1, 2]. The Mbalam mining project alone covers an area of 163,952ha, excluding a railway line of 510km which are under deforestation and excavation [40].

Plate-2: Farms in the SEF

A portion of a small-holder cocoa farm with more than 7 trees standing and prepared land for food crops in Minko'o II-Djoum. Photos by Enchaw, G.B. 17/9/2011

These findings are in conformity with the views of [41] which revealed that deforestation from small-scale agriculture is not a significant driver of deforestation in the SEF zone of Cameroon unlike in the western parts of the country where forest land is deforested for cocoa and food crops cultivation. Land used for either cash or food crops in the SEF zone of Cameroon, is confined in tiny stretches along road axes reserved for agroforestry in the non-permanent forest, while the rest of the forest is being scrambled for by mining, logging and agro-industrial operators (fig-2).

The figure also shows that the greater part of the SEF is the permanent forest carved out into national parks, mining concessions, forest management units and synergetic hunting zones. The spread of concessions as observed on figure-2 indicates that deforestation-related activities from the companies are perpetuated both in the agroforestry zone and permanent forest estate. The companies cause wanton deforestation even in the Dja Fauna Reserve, a UNESCO World Heritage Site [42]. In the non-permanent forest, foreign bodies and national political elite, take advantage of Law No. 2013/011 of 16 September 2011 that established business zones in Cameroon and Circular No. 001/CAB/PM of April 2014 that established procedures to facilitate access to land for large-scale agro-industrial investments by foreign partners [43-45] in Cameroon. Such desire was expressed by the Cameroon Head of State in Turkey in 2013 and elsewhere to consolidate the 2011 aspirations of second generation agriculture. Some of the immediate setbacks of that approach are speculations and land grabbing, land scarcity and social tension in the form of tenure conflicts between companies and FPs and between FPs themselves.

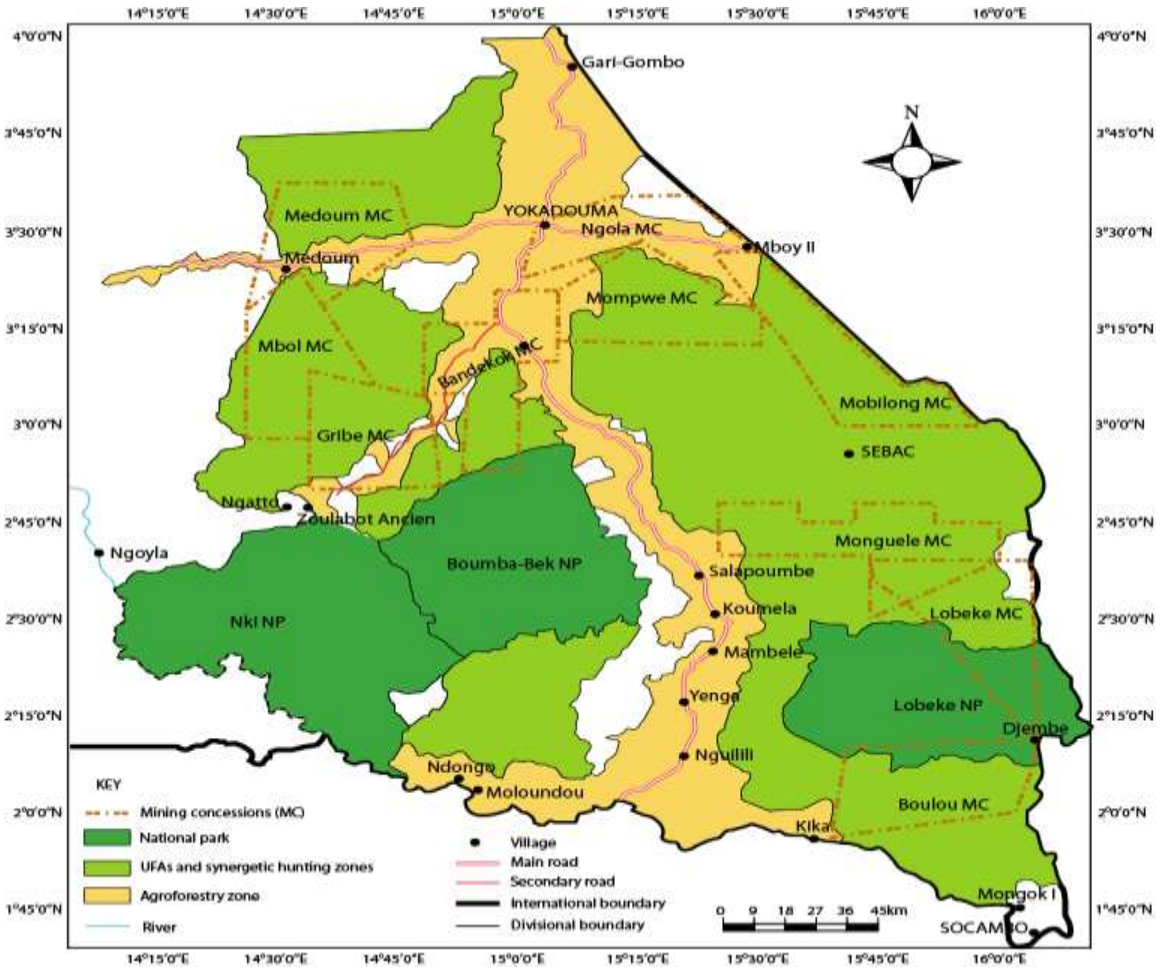

Fig-2: Forest zoning in the SE of Cameroon
Source: Adapted from WWF (2010).

Field observation showed that deforestation in the SEF zone of Cameroon ensues essentially from mining, dam construction and industrial agriculture, while forest degradation was more from logging and safari hunting. It is against this background that the sources and impact of deforestation and forest degradation as rated by FPs was examined (table-3).

Table-3: Responses of FPs on sources of forest degradation and deforestation-related vulnerability

				Sources				
S/N	**Study site**	**Number of respondents**	**Agro-industrial plantations**	**Local agriculture**	**Mining**	**Dam construction**	**Fuelwood extraction**	**Logging**
1	Betare Oya	40	39	0	40	40	40	40
2	Djoum	50	50	4	50	50	50	50
3	Kette	30	25	2	30	30	30	30
4	Ngoyla-Mbalam	50	46	0	50	50	50	50
5	Lom-Pangar	20	18	2	20	20	20	20
Total		**190**	**178**	**8**	**190**	**190**	**190**	**190**
%		**100**	**93.7**	**4.2**	**100**	**100**	**100**	**100**

Source: Fieldwork, 2015

The results on table-3 indicate that local agriculture accounts only 4.2% to the vulnerability ordeal of FPs, while ratings ranging from 93 to 100% show that their greatest sources of vulnerability were

agro-industrial plantations, mining, dam construction, logging and fuelwood extraction, which are alien-induced. A close look at the sources of vulnerability as table-3 depicts shows that local agriculture is the only driver associated with FPs, the rest are largely perpetuated by aliens and political elite with huge financial might. Though FPs depend almost entirely on fuelwood for cooking and heating, FGD participants alleged that they seldom fell trees for fuelwood. Rather, they gather dried branches that fall naturally or wood rejected by logging companies for household fuelwood needs. Thus, fuelwood extraction that impacts forest degradation significantly is exogenous and constitutes an economic venture that involves huge investments, which is often beyond the reach of FPs who function within a poverty stricken rim.

In vivo codes such as community members and gender derivatives (men, women, girl child and boy) were deduced from informants' perception of vulnerable categories. Within the framework of communities, interviewees and FGD participants held that they were victims of externalities as alien-driven deforestation and forest degradation have imposed socio-cultural, economic and environmental vulnerabilities on FPs (fig-3). According to 78.9% of the FPs, the development of mines, the construction of the Lom-Pangar and Memvele Dams, award of logging concessions and forest for industrial plantations without regards for their existence led either to the resettlement of some FPs or breach of link with their ancestors, loss of shrines and sacred forests, which have engendered cultural erosion among younger generations of FPs.

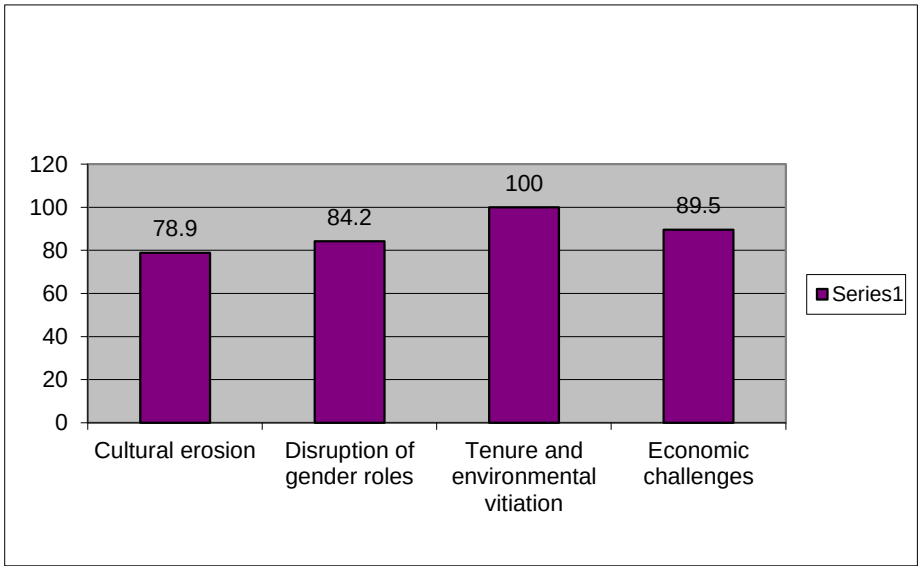

Fig-3: Socio-cultural, economic and environmental vulnerability of FPs
Source: Fieldwork, 2015

The impact of deforestation and forest degradation in the SEF zone of Cameroon is even greatest on indigenous Pygmies than the Bantu. Field returns indicate that socio-cultural, economic and environmental vulnerability of FPs in the SEF zone of Cameroon is worsening with the planned emergence in 2035 (table 4). Table 4 shows that 94% and 89.2% of indirect impact population identified intensification of mining, dam construction, timber export and agro-industries, and building of railways and roads as frontline strategies towards emergence in Cameroon.

With the exception of information and communication telecommunication (ICT), the other two infrastructural strategies (dam construction for power) and transport (railways and roads), and the economic strategies are deforestation-related. Intensification of these strategies implies intensification of deforestation, forest degradation and the vulnerability of FPs. Since 2001 that the Mining Law came into force, a total of 303 mining permits have been issued and though most are still at the exploratory stage [46]; a their deforestation capacity are not less than industrial mining and by 2012 permits covering a total of over 10 million hectares of land-based oil fields have been issued. Emergence has instigated Sundance resources Limited, the largest foreign investor in Cameroon's mines to intensify mining and Freight railway while China is intensifying not only logging and agro-industries but also mining and dam construction [47, 34].

Table-4: Responses of company workers on the impact of emergence on deforestation

S/N	Study site	Number of respondents	What economic and infrastructural strategies is the government using to achieve emergence in 2035								
			Intensification of mining, dam construction and timber export			Building of railways and roads			Participating in carbon markets for financial incentives		
			Agreed	Not agreed	No idea	Agreed	Not agreed	No idea	Agreed	Not agreed	No idea
1	Betare-Oya	13	12	0	1	11	0	2	1	11	1
2	Djoum	15	15	0	0	14	0	1	1	12	2
3	Kette	10	9	0	1	9	0	1	0	9	1
4	Ngoyla-Mbalam	16	15	0	1	14	0	2	1	13	2
5	Lom-Pangar	11	10	0	1	10	0	1	1	9	1
Total		**65**	**61**	**0**	**4**	**58**	**0**	**7**	**4**	**54**	**7**
%		**100**	**94**	**0**	**6**	**89.2**	**0**	**10.8**	**6.2**	**83.1**	**10.8**

Source: Fieldwork, 2015

In this regard, it is estimated that Cameroon is expected to lose 2,018,285.70ha of forest due to the planned emergence in 2035 [2], with aggravated impact on FPs. This assertion confirms earlier findings of doubling rates of deforestation in the Congo Basin Forest [47]. Mbalam project alone has led to the displacement of 7 communities of FPs, and its associated deforestation is estimated to produce 16 million tonnes of greenhouse gas (GHG) emissions during the life of the mine [40]. Such GHG emissions are increasing in Cameroon even though the country is not participating effectively in carbon markets for financial incentives as 83.1% of the respondents as against only 6.2% acknowledged. This response contrast is likely linked to slow pace of REDD+ in Cameroon [21, 42].

Indigenous Baka in Djoum and Ngoyla-Mbalam alleged to have lost biocultural sites and resources such as *Njengi* [5] forests and other sacred forests where *Njengi* dance and *Molongo* are practised due to these activities. It is in these abodes of their gods that initiation of children to the knowledge of the forest takes place. Loss of flora affects wild honey production and availability, thereby stifling the accomplishment of marital rites by young Baka men who need up to seven baskets of honey each for marriage. Water pollution was also observed to have cultural effects. Female interviewees in Ngoyla-Mbalam alleged that waste from mining activities has polluted most of their water bodies making it difficult for women to get *nbwahka* fish used for initiating young girls into the *Yéyi Cult* where they are prepared for womanhood. These initiation rites, which imbue the Baka girl with incantation ability, have been difficult since 2006 due to reducing volumes of streams and mining-related water pollution, an informant noted.

Socio-economic vulnerability was perceived in terms of loss of wildlife and wildlife habitat, non-timber forest products (NTFPs), marginalization of indigenous groups, disruption of gender roles (84.2%) disputes over land rights and access (100%), and local price inflation and problems linked to unfair compensation for losses (89.5%) as rated by FPs. The loss of wildlife habitats imposes a gender burden on men as they become unable to hunt and provide animal protein as is required of them. Similarly, such deforestation deprives indigenous Baka women of forest material used in constructing dwellings called *mongulus.* Mining leads to the destruction of wild tubers making them scarce and stressing Baka woman who had to spend more hours searching for them. It was also alleged to impact agricultural productivity of women and men since they depend on natural soil fertility. Field informants held that deforestation has led to loss of flora and fauna resources used for pharmacopeia by FPs, particularly around Betare Oya, Kette, Mbalam and Nkamouna zone. The informants also noted that, logging and primary and secondary gold mining [6] in the SEF zone of Cameroon, have led to high turbidity levels and siltation, water pollution from diesel oil used by the machineries and chemicals used in the treatment of gold and timber, causing dramatic decline in fish stock in Kadey River depriving local communities of sources of potable water since they depend on springs, streams and rivers. In addition to water pollution, abandoned gold mines have led to a proliferation of breeding grounds for mosquitoes, which predispose them to greater malaria incidence (plate-3).

[5] God of the forest in Baka.

[6] Gold mined in wetlands and requires no crushing. It is of high quality because much of the impurities have been washed away.

Plate-3: Mining and water problems

Water pollution from gold mining in Betare Oya and mosquitoes breeding grounds from gold mining in Gogadzi in Kette Sub-division. Photos by Enchaw G.B., 29/8/2015 and 3/9/2015.

These mining and logging activities were also alleged to causing noise pollution, disturbance of large mammals in their habitats causing them to roam more widely, leading to increased human-wildlife conflicts, crop-raiding, food scarcity and survival difficulties in the study area. With increasing destruction of farmland and NTFPs, rural economies become imperil with far reaching socio-economic consequences. While women were instigated to scavenge in abandoned gold mines, school going children were coerced by their parents or lured by hardship to accompany their mothers in the abandoned mining sites (plate-4) instead of schooling.

Plate-4: Women and children miners

Women in Gogadzi and school going children in Kana (Kette) scavenging in gold mining for survival. Photos by Enchaw G. B., 3/9/2015 and 29/8/2015.

Field returns (table-5) indicate that social engagements on employments were seldom respected by contracting companies. Table-5 shows that 91.1% of FPs were not provided local employ as against just 2.6%. This contrast might be related to impromptu data from authorities of Chinese companies according to which many FPs could not be employed due to language barrier, low levels of literacy and technical skills. Given the low levels of local employment, which are not even sustainable [7], an interviewee in Ngoyla-Mbalam was categorical that the issues of literacy and skills were not the criteria for respecting social engagements. Table 5 also indicates that all the respondents to the second questionnaire acknowledged non-respect of the stipulated 10% royalties to FPs by the companies and local council authorities, while 80.5% acknowledged the provision of no social amenities.

[7] Such employments last only with the life of the project, be it mining, dam construction or logging.

Table-5: Responses of FPs on the respect of engagements towards them

S/N	Study site	Number of respondents	Level of respect of engagements towards FPs								
			Provision of Local employments			Payment of forest royalties and compensation for loss of cultural sites and resources			Provision of social amenities		
			Agreed	Not agreed	No idea	Agreed	Not agreed	No idea	Agreed	Not agreed	No idea
1	Betare-Oya	40	2	37	1	40	0	0	5	35	0
2	Djoum	50	1	39	0	50	0	0	7	43	0
3	Kette	30	0	30	0	30	0	0	5	25	0
4	Ngoyla-Mbalam	50	0	50	0	50	0	0	0	50	0
5	Lom-Pangar	20	2	17	1	20	0	0	20	0	0
Total		**190**	**5**	**173**	**2**	**190**	**0**	**0**	**37**	**153**	**0**
%		**100**	**2.6**	**91.1**	**1.1**	**100**	**0**	**0**	**19.5**	**80.5**	**0**

Source: Fieldwork, 2015

The combined effects of low levels of respect of social engagements towards FPs has imposed outrageous financial vulnerability to them as local parents find it difficult to send children to school and to compete with company workers in response to family responsibilities. Similarly, the complex acephalous nature of the Bantu and indigenous Baka FPs has been misconstrued by the State with little understanding of how such socio-political organisations influence their traditional decision-making processes at the level of their communities. Such knowledge gap has blurred issues of informed consent with Bantu communities taking advantage to inflict disdain treatment on indigenous Baka. Whenever any little form of compensation is made, Bantu chiefs either confiscate the gifts for their communities or decide whatsoever to give the local chiefs of indigenous Baka. An approach of that nature to benefit sharing and subjugation has much to do with the decision of the government to subsume indigenous Baka under Bantu communities and chiefs. A human rights activist and an interviewee in a State ministry argued that such an approach is not only devoid of informed consent but void of equity and is indicative of the failure of the policy of inter-community dialogue. The 100 and 80.5% response ratings are probably linked with issues of State misconception of who FPs and their units of social life are which have undermined equity and benefit sharing mechanisms. Worse still, informants alleged that labour needs in the companies led to an influx of alien workers into the communities of FPs, predisposing them to the risk of sexually transmitted diseases and unwanted pregnancies. Community leaders in Gogadzi and Kana (Kette) alleged that conjugal vulnerability is rife as the circulation of money among mining company workers has breached the financial gap, stepped up local cost of living and induced unfair competition that puts local men under pressure of losing their spouses.

CONCLUSION

Deforestation-related vulnerability of FPs in Cameroon continues to accentuate with increasing attachment of economic importance to deforestation prone projects. Economic emergence euphoria is gaining currency in clouding Cameroon's political will, weakening its policy and institutional framework and luring the government to condone with bad governance and corruption at the expense of FPs and the environment. Emphasis on small-scale agriculture as the main driver of deforestation in the SEF zone of Cameroon is not only misleading [41] but creates plenty of room for cosmetic solutions to deforestation-induced vulnerability of FPs.

The findings of this study underscore the extent to which deforestation and forest degradation externalities, adoption of policies with exogenous contents and subjective monitoring of deforestation prone activities impact the socio-cultural and economic life of FPs and their environment. It can be argued that the vulnerability of FPs to deforestation and forest degradation in the SEF zone of Cameroon is associated with externalities encompassed in law and in practice [27]. While legal instruments transfer *dejure* tenure to exploitation companies and divest FPs of access and use rights, these companies use various tools and equipments to explore and extract the resources which once belonged to the custodians. The planned emergence in 2035 is accelerating deforestation and forest degradation in the SEF zone of Cameroon [4] and undermining the existential realities of the FPs. In this regard, this paper contends that alleviating the vulnerability of FPs to deforestation and forest degradation in the SEF zone of Cameroon depends on an unprecedented level of governance within the framework of forest and subsoil resource ownership, management and use. Cameroon, therefore, needs to revolutionize its political will, adopt sound anthropo-

centred environmental protection laws with a national chord, ensures effective policy implementation and monitoring of deforestation drivers, as well as map out a viable benefit sharing mechanism for royalties and REDD+ incentives. Achieving economic emergence and environmental resilience should not be limited to policy, technical and market values and understanding of State bureaucrats and political elite. Rather, issues of human resource development, formalisation of tenure security, adjudicating of intercommunity dialogue, instilling of informed consent and respect of engagements relating to cultural values of FPs should be indispensable components.

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