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Understanding illegal logging in Ghana: A socio-legal study on (non)compliance with logging regulations

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4 Understanding motivations for violation of timber harvesting regulation: The case of chainsaw operators in Ghana

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4.1 INTRODUCTION

Illegal logging causes environmental degradation, loss of biodiversity, social conflicts and destruction of areas of cultural significance/heritage as violators do not comply with environmental standards or best logging practices. Illegal logging and illicit trade in timber products are also noted to be depriving developing economies of billions of dollars in lost revenues and development opportunities (World Bank, 2012). In Ghana, the government estimates the annual loss of revenue from illegal logging at between USD 8 and 13 million, equivalent to 2% of the country's gross domestic product (GoG, 2012).

Research suggests that chainsaw milling of logs is the most common form of illegal logging in Ghana (Birinkorang et al., 2001; Hansen and Treue, 2008; Marfo, 2010). Chainsaw milling refers to the use of fuel-powered chainsaw machines for harvesting timber species and converting the logs in-situ into lumber (Odum, 2004). Chainsaw machines were introduced into Ghana in the early 1960s by the licensed logging firms to replace manual saws and felling axes for harvesting and cross cutting trees. Later farmers came to employ chainsaws for harvesting large trees during land preparation for agricultural crops. However, the practice of using chainsaw machines to mill logs into lumber for commercial purposes commenced from the economic crises in the 1970s where the formal timber sector nearly collapsed but became pervasive in the mid-1980s following the repatriation of about a million Ghanaians from Nigeria (Marfo and McKeon, 2013).

Ever since, the practice has become widespread within the country, employing about 97,000 persons along the entire production and marketing chain (Marfo and Acheampong, 2011). Recent study by Marfo et al., (2017) using field survey data with 2014 as the snapshot estimated that chainsaw lumber accounts for about 1.102 million m³ (72%) of the annual national production of timber products (mainly lumber) traded on the domestic market valued at GhC 544.39 million¹ based on the average market price

1 Ghanaian cedi (GhC) (3.80=1.00 USD) as at July 2014

of GhC 494.00/m³ for all species. The study projected the potential stumpage fee lost, using an average stumpage fee of GhC 24.00/m³ based on the 2014 revised rate at GhC 26.00 million. This figure is about three times the amount (i.e., GhC 8,961,595.14) collected by the Forestry Commission as stumpage fee from the licensed logging firms in 2014. In terms of marketing outlets, chainsaw lumber is traded across all the ten administrative regions of Ghana and within the West African sub-regional (ECOWAS) market. The major patrons of chainsaw lumber in Ghana include individuals, wood-working artisans, real estate developers, overland exporters and contractors of the metropolitan, municipal and district assemblies (MMDAs).

As part of a broader policy and legal measures to address the problem in Ghana, the Timber Resources Management Act (TRMA, 1997) and its operational instrument, the Timber Resources Management Regulations (TRMR, 1998) were enacted to criminalise the practice of using chainsaws for milling logs into lumber for sale, exchange or any commercial purposes (TRMR 1998, reg. 32). Notwithstanding the above regulations, the practice persists, making it a problem for forest regulators. It is also worrying when viewed against the backdrop of Ghana's obligation under the voluntary partnership agreement (VPA) with the EU that commits her to improve forest sector governance including implementation of measures to ensure that only legal timber products are traded on both domestic and the EU markets.

Earlier studies on illegal chainsaw milling in Ghana could be grouped into three clusters. The first cluster of research investigated the general causes and adverse impacts of chainsaw milling. For the causes, the results revealed flawed policy and legal framework, land and tree tenure problems, poor farming practices and population pressures among others while the adverse impact ranged from environmental through social to economic (Appiah et al., 2007; Blay et al., 2007; Odum, 2004). The second cluster of studies examined the socio-economic context of chainsaw milling particularly its contribution to the economy in terms of employment, livelihood and infrastructural support to the forest fringed communities (Hansen et al., 2015; Marfo and Acheampong, 2011; Obiri-Darko and Damnyag, 2011). They found out that illegal chainsaw milling helps to sustain rural economies and livelihoods, and that the continuous existence of the ban has fueled illegal practices and conflict in the sector. The third cluster of studies considered chainsaw milling production and the extent of illegal logging by the chainsaw operators. The results estimated the annual timber harvest at between 1.7 million m³ and 2.5 million m³ (Birikorang et al., 2001; Hansen and Treue, 2008; Marfo, 2010).

However, little scholarly attention has been devoted to compliance-violation behaviour and factors that shape such behaviour (Hansen, 2011; Ramcilovic-Suominen and Hansen, 2012). Hansen (2011) examined law compliance in the case of on-farm timber extraction with rules that require timber operators; to obtain prior and informed consent from the farmers, to pay appropriate and timely compensation for crop damage during timber extraction and chainsaw milling. The study documents low level of compli-

ance in all the three domains. In another study, Ramcilovic-Suominen and Hansen (2012) investigated farmers' compliance with rules that regulate timber harvesting on farmlands, farming in forest reserves and use of fire on farmlands. The findings indicate high levels of compliance with farming and fire rules but low compliance for timber harvesting rule. None of these studies primarily focused on violation motivations of chainsaw operators. This study, therefore, makes an exploratory study to understand the noncompliance behaviour of chainsaw operators in Ghana with respect to forestry regulations that prohibit them from harvesting timber and milling in-situ into lumber for commercial purposes and, conditions that foster such behaviour.

The present study in Ghana is relevant because a better understanding of noncompliance behaviour and associated motivations could help design responsive policy interventions in Ghana and lessons learnt shared with other developing countries where compliance with enacted laws in natural resource management remains a challenge.

4.2 THEORETICAL FRAMEWORK

The socio-legal literature on what shapes individuals and regulated entities compliance-violation behaviour points to three main theories namely, deterrence, social and normative (Kagan et al., 2011; Thornton et al., 2009; Winter and May, 2001). The deterrence theory is based on standard economic conception that regulated actors behave rationally to maximize their utility and would comply with a given regulation when they estimate that the benefits outweigh the costs (Becker, 1968; Ehrlich, 1972). With this theory, the key variables that determine compliance are perceived detection risk and sanction severity. Empirical evidence suggests that perceived detection risk and sanction severity are important for regulatory compliance (Harrison, 1995; Thornton et al., 2009). This means that, at least in theory, compliance can be elicited through enforcement (i.e., detection and sanctions). It could also mean ensuring that sanctions for noncompliance always exceed the illegal gains. According to Young (1979), compliance can also result from inducement (i.e., lower compliance costs or higher benefits for compliance).

However, the basic deterrence theory does not provide satisfactory explanation to all instances of compliance when perceived detection and/or sanctions are low or even nonexistent. For instance, Sutinen and Kuperan (1999) report that many fishers in Malaysia comply with fishing regulations despite large potential illegal gains and small expected sanctions. Again, research has shown instances where some regulated actors actually go beyond compliance, in the sense of doing more than what is specified under a given regulation (Hutter, 1997; Thornton et al., 2009). The normative and social theories or perspectives of compliance behaviour attempts to provide answers to some of these shortcomings in the standard deterrence theory.

From the normative theory, regulated actors consider what is the right thing to do (personal morality or civic duty), reasonableness of the rule and,

the legitimacy of the authority or institution that made and/or enforces the rule (Levi et al., 2008; Sutinen and Kuperan, 1999; Tyler, 1990). Personal morality refers to an internal obligation to follow one's own sense of what is right or wrong. Here, compliance is based on the internalized values of the regulated actor and not on material rewards or cost-benefit calculations. Studies have shown that appeal to actors' civic duty has helped increase tax payment (Kagan et al., 2003) and as a factor in success of anti-littering campaign in the US (Grasmick and Bursik Jr., 1990). Again, empirical evidence shows that, regulatory rules that become or are internalised into morals produce the deepest form of compliance, in the sense that violating such norms means violating one's own morals (Grasmick and Bursik Jr., 1990; Vandenberg, 2003).

The second component of the normative perspective is reasonableness of the rule regulated actors are supposed to comply with. Levi et al., (2008) have shown that regulated actors generally comply with rules they deem reasonable when even those rules offer them no direct material benefits. This is further illustrated by Raakjaer Nielsen and Mathiensen (2003) in studies of Danish fisheries regulations. They found that fishers were reluctant to comply with regulations they perceived as unreasonable. On this, Tyler (1990) explains that non-compliance stems from a principled disagreement with regulations or orders actors regard as arbitrary and unreasonable. To elicit compliance, therefore, Sutinen and Kuperan (1999) suggest that regulators and/or policymakers must ensure that regulations appear reasonable and make sense to actors.

The third component of the normative perspective is legitimacy- which refers to a feeling of obligation to obey law and defer to the decision made by legal authorities (Tyler, 1990). Prior studies, suggest that most people obey regulations emanating from authorities and institutions that they trust (Levi et al., 2008; Tyler, 1990). In the view of Sutinen and Kuperan (1999), legitimacy is a stock of loyalty that regulatory authorities can draw upon to ensure compliance. Here, compliance depends on actors being satisfied with the law-making processes (including participation, openness and accountability), the content and the outcomes of the decisions made by the authorities, in terms of consistent interpretation and fair application of the law (Honneland, 1999; Tyler, 1990). They suggest measures that include procedural fairness, joint or co-management, negotiation and other forms of cooperation between regulators and regulated actors to improve legitimacy.

In addition to deterrence and normative theories, sociological scholars have long documented the powerful influence that social norms have on the behaviour of individuals and regulated entities (Cialdini, 2007; Grasmick and Bursik Jr., 1990). Cialdini (2007) defines social norms as rules and standards that are understood by members of a group/society, which guide and/or constrain social behaviour without the force of laws. For instance, in their Danish agro-chemical regulations studies, Winter and May (2001) find that social norms are influential in enhancing compliance among farmers. Some research including Grasmick and Bursick Jr. (1990) and Cialdini (2007)

indicate that social norms, in general, strongly influence compliance decisions even when the imagined others are not friends and family members but are generalised society members. They also observed that even in poly-ethnic societies, the groups' views may be compelling enough to influence the behaviour of others.

Also, looking at the literature on developing countries one would find that 'the context' or contextual factors play a crucial role in influencing compliance-violation behaviour of regulated actors. Examples include insecurity, rural poverty and livelihood, the gap between law and local social realities, politics of patronage, nepotism, corruption, ineffective state institutions, enforcement challenges, competing normative systems, legal or normative pluralism, lawlessness as well as broader features of socio-political structures indirectly, but strongly, influencing compliance behaviour (Rooij, 2006; World Bank, 2009). Some recent studies that are instructive here include Ostermann (2016), that found poverty as the principal driver for noncompliance with regulations on fuel wood collection within conservation parks along the India-Nepal border, and research on commercial sex workers in China that suggests necessity as the key factor for violation of regulations on prostitution (Boittin, 2013).

Although the theories on compliance behaviour presented above do provide rich understanding of regulatory behaviour, they do not completely explain actors' responses to regulation. A detailed review of the available literature points to other factors that directly or indirectly help to shape compliance. For instance, Coleman (1987) has shown that some instances of violation are due to the regulated actors' lack of capacity to comply. In this case, rules that require the impossible or are difficult to comply with will lead to more violation. Huisman (2001) explains that with this perspective, violation of law derives from not being able to comply instead of not being willing to. Empirical evidence in industrial safety and pollution control studies suggests lack of capacity in terms of the regulated actors' inability to acquire some equipment, technology, information or expertise as the reason for non-compliance with related laws (Genn, 1993; Kagan et al., 2011; Rooij, 2006).

Some research including Genn (1993) indicates that knowledge or awareness of the rules plays a critical role in compliance. They argue that if regulated actors do not know the law, they are unable to adjust their behaviour accordingly. Others emphasise the regulators' enforcement style in the sense of attitude towards and/or treatment of regulated actors, cost of compliance in terms of money and time (Yapp and Fairman, 2004), managerial incompetence, improper attention to regulatory requirements and systems failures (Hutter, 1997; Kagan et al., 2003).

Again, other studies have considered various extensions or modifications to the basic compliance models including those that integrate the various perspectives or look at their interactions to explain compliance behaviour. For instance, Sutinen and Kuperan (1999) formulated the enriched compliance model, which integrates the standard deterrence theory with normative and social motivations to explain the Malaysian fishers' compliance-vio-

lation behaviour. Also, Gunningham et al., (2003) developed the 'licensed model'- which views compliance with environmental regulation as shaped by the interaction of three licenses namely, economic, regulatory and social.

In the case of forestry or timber harvesting regulations, little research work has applied such knowledge to explain how and why forest sector actors comply or violate the related laws (Contreras-Hermosilla and Peter, 2005; Schmidt and McDermott, 2015; Tacconi, 2007). They found, among others, bureaucratic and stressful legal processes, high demand for timber products, lack of clarity in the law and/or its interpretation, corruption, flawed policy and legal framework, livelihood needs, poverty and low enforcement capacity as some of the factors that account for noncompliance with forest conservation regulations. In the Ghanaian context, much less research data exists on the application of compliance theories to understand compliance-violation related behaviour of the various forest sector actors. The present study draws on data obtained through in-depth semi-structured interviews with chainsaw operators in Ghana and their relation to the existing compliance literature with the view of understanding their noncompliance behaviour.

4.3 METHODS

This study seeks to understand the motivations that shape the violation behaviour of chainsaw millers in Ghana with respect to legal rules that prohibit them from harvesting timber and milling in-situ into lumber for commercial purposes. Violation is understood here as wilful or deliberate noncompliance with the above rules whereas violation motivation is what drives individual chainsaw operators to infringe on the stated legal rules. First, the study seeks to find out the views or perceptions of the selected operators on the factors that foster noncompliance and second, why the chainsaw milling operation has persisted despite the ban.

4.3.1 Selection of study area and respondents

This case study focuses on the Ashanti Region of Ghana. The choice is relevant in many respects. First, Kumasi, the capital city of the selected region alone is home to about 60% of the logging firms in Ghana (TIDD, 2011). The region can thus be described as the hub of the timber industry in Ghana. Second, it has 61 gazetted forest reserves, covering an area of 3,900 km², and thus makes the region the second most forested in Ghana (Affum-Baffoe, 2008), and an important productive site for chainsaw milling. Third, according to Marfo et al., (2017), the region has the largest market for chainsaw milled lumber in Ghana, accounting for about 30% of total annual consumption.

As in all illicit operations, the exact number of people involved in this operation is unknown but Marfo and Acheampong (2011), put the number nationwide at about 97,000 across the entire production and marketing

chain². Admittedly, the scope of chainsaw operation under the regulations is broad. However, the present study focuses only on one of the important actors in the entire chain- the chainsaw machine operators who do the actual harvesting and milling of the trees (i.e., the producers). The exact number of chainsaw machine operators in Ghana or the Ashanti Region is unknown. A total of forty (40) individual machine operators scattered across the region were interviewed. The number could have been higher but the researcher achieved saturation around the thirty-fourth respondent. In other words, there was virtually no new information after this number. The snowball sampling technique was used in the identification and selection of respondents. The first couple of respondents were introduced to the researcher by chainsaw milled lumber vendors. Subsequently, these chainsaw operators gave information about other chainsaw operators. Table 1 gives an overview (profile) of respondents. This information is important as it helps to understand the socio-economic context of the regulated actors and how that relates to available theories on the influence of contextual factors on noncompliance behaviour.

Table 4.1 Overview (profile) of respondents (N=40)

Characteristics of respondents	Number	Percentages
<i>Age</i>		
20-29	28	70
30-39	10	25
40+	2	5
<i>Gender</i>		
Male	40	100
Female	0	0
<i>Education</i>		
No formal	18	45
Basic	20	50
Secondary	2	5
<i>Residence</i>		
Locals	28	70
Migrants	12	30
<i>Average income/month</i>		
Without chainsaw milling= (Ghc 120.00)	40	100
With chainsaw milling = (Ghc 300.00)	40	100

- 2 This includes *tree spotters, who search for trees to be harvested; operator boys, who provide various forms of assistance to the machine operators such as carrying the chainsaw machines, spare parts and clearing around trees to be harvested; machine operators, who actually harvest and mill the trees; ; loading boys, who carry by mechanical means the milled lumber from the forest floor to the roadside, load and off-load trucks; transport operators, who use their trucks to convey the lumber from forest to the marketing centres; spare parts dealers, who sell chainsaw machines and their accessories; repairers of chainsaw machine, who specialise in the maintenance of chainsaw machines; table saw operators, who re-saw the lumber into various dimensions at the marketing centres, and wood merchants/vendors, who retail the chainsaw lumber domestically*

4.3.2 Data sources and analysis

The research design combined semi-structured interviews with field observations. All the interviews were conducted face-to-face, thus allowing for further invaluable analyses of the demeanour of the respondents aside from their responses. The preferences of the respondents did not permit any of the interviews to be electronically recorded. Under such situation, the researcher had to rely on field notes made either during the interview / discussion or immediately following its conclusion depending on the sensitivity of the respondents. All the interviews took place between March 2015 and August 2015. At the outset of each interview, the researcher disclosed his affiliation with the Forestry Commission as a regulatory official to respondents. Respondents were, however, assured that the purpose of the research was purely academic and that no information shared will be used against them at any time. The wood vendors who introduced them also assured them that the researcher has been there in the past to conduct similar interviews and thus guaranteed their safety. Those assurances helped put respondents at ease for the interviews to proceed without any inhibition. The researcher also had the opportunity to visit some forest reserves and areas outside forest reserve where chainsaw milling has taken place within the study area.

The interview topics were structured based on the main motivations (deterrence, social, normative and contextual) identified in the literature to shape noncompliance behaviour generally. Table 4.2 presents the motivations for noncompliance and the main interview topics covered under each of them. On average each interview took 75 minutes. Respondents are numbered serially from 01 to 40 with prefix "COP", (meaning chainsaw operator)

Table 4.2 Chainsaw operators' motivations for noncompliance with logging regulations

Non-compliance motivations	Main interview topics covered
1. Deterrence	<ul style="list-style-type: none"> • Perceived risk of detection • Perceived sanction severity • Impact of sanctions
2. Social motivations	<ul style="list-style-type: none"> • Extent of the chainsaw milling problem • Level of acceptance of chainsaw milling within the community • Social sanctions for violating chainsaw milling regulations
3. Normative motivations	<ul style="list-style-type: none"> • Morality of chainsaw milling operation • Reasonableness of the chainsaw milling regulations • Performance of the State regulators
4. Contextual factors	<ul style="list-style-type: none"> • Socio-economic factors

The interviews have been coded by keywords based, firstly on the conceptual framework with which the researcher initially had entered the research field and, secondly those empirical findings that fall outside this framework. This research therefore combines deductive and inductive approaches.

4.4 RESULTS AND DISCUSSION

This section combines the results of this empirical study with discussion about the main motivations of deterrence, social and normative together with other contextual factors found to shape noncompliance behaviour of the regulated actors studied.

4.4.1 Deterrence

This sub-section focuses on how the twin elements of deterrence (i.e., perceived detection risk and sanction severity) help to understand the observed violation behaviour among the actors under investigation.

4.4.1.1 *Detection perception by the chainsaw operators*

The first element of deterrence addressed is the perceived detection risk by regulated actors and how that influences their violation behaviour. A key finding here is that chainsaw operators understand that there are different levels of risk or detection perception associated with different operational areas and what cases are likely to be detected. First, respondents agree that illegal chainsaw milling in forest reserves generally is riskier than in areas outside with an explanation that enforcement officials concentrate most of their enforcement resources on protecting forest reserves than areas outside. Second, there is a higher perception of detection working in concessions or timber harvesting areas of licensed logging firms than in unencumbered areas. The reason is that some concession owners engage private concession guards or agents to provide extra monitoring and supervision in addition to that of the state regulatory officials.

Third, it was indicated that operating on farm lands with cash crops entail much higher risk than on fallow areas unless prior consent is obtained and adequate compensation paid to the farmer(s) for any crop damage. Respondent (COP 12) recounted an experience where a farmer reported him to the regulatory officials to seize his truck load of lumber because he could not agree with the farmer on an appropriate compensation for crop damage. Although farmers do not own naturally-occurring timber trees on their farmlands in Ghana, they are entitled to compensation for any crop damaged during timber harvesting operations (FC, 1995). The practice therefore, is for chainsaw operators to secure the consent of the farmer and pay the right compensation before they proceed to work. Chainsaw operators who understand this practice even get farmers to invite them to harvest trees

on their farms albeit being an illegal practice under regulation 34, TRMR 1998. This finding appears consistent with some earlier studies that have documented farmers aiding chainsaw operators in their illegal operations by selling naturally-occurring trees on their farmlands to them (Hansen, 2011; Marfo, 2010).

Another finding is that the chainsaw operators calculate the risk of detection to be high and have therefore developed various strategies to minimize such risk. First, they plant informants or agents at vantage points close to where they are working to alert them (through blowing of whistle) of any approaching enforcement official. Second, in most instances, chainsaw operators work in remote areas of the forest or deep at night and/or on weekends and public holidays when they know the regulatory officials are off duty. Third, there are allegations of chainsaw operators making informal payments (bribes) to some regulatory officials who then assist them in their illegal operations. This is how respondents (COP 20 and COP 26) put it, *'we pay them before they allow us entry into areas under their jurisdiction to operate. They charge us between GhC400.00 and 800.00 per truck load of chainsaw lumber depending on the tree species harvested and/or the size of truck used to convey the lumber'*. This assertion confirms some earlier studies that hinted that regulatory officials take bribes from chainsaw operators and aid them in their illegalities (Ameyaw et al., 2016; Marfo, 2010).

All these strategies may have helped the actors to escape detection and arrest by the enforcement agents and possibly might have convinced them that there is reduced likelihood of being caught. A perception is likely to have been created that they can violate the regulation and go undetected. Under such situation, the risk associated with violation is drastically reduced and this in turn may stimulate more violation as actors are no longer deterred due to the reduced detection perception. This finding supports research that has suggested that violation is more likely to increase when detection perception is low (Genn, 1993; Sutinen and Kuperan, 1999)

4.4.1.2 Sanction severity

The second element of deterrence examined in this study is sanction severity and how it influences the violation behaviour of actors under investigation. The study finds that respondents possess accurate information about the sanctions associated with violation of the law through their interactions with the regulatory officials. Furthermore, the study reveals that respondents have developed strategies that help them to mitigate or minimize the prescribed sanctions. First, some of them make use of influential persons in the community including Traditional Authorities, Members of Parliament (MPs) and District Chief Executives (DCEs) to plead for them to have the sanctions either avoided or mitigated. This is how respondent (COP16) sums it; *'when you are arrested and you know of any influential person (MP, DCE or Chief), you approach him to assist you. We do help them to campaign and vote for them in elections so they also have to help us when we get into trouble. MPs and*

DCEs who do not help in this regard are deemed unsupportive and cannot count on our votes in future elections'.

A second strategy is for them to bribe the regulatory officials that arrest them to restore the lumber to them. According to respondent (COP 16), many chainsaw operators have their financiers or "big men" in the urban centres who come in to bail them whenever they get into trouble with the regulatory officials. These financiers are alleged to have links within the higher ranks of the regulatory agency that help them in times of trouble. Earlier study by Hansen and Treue (2008) notes that, these financiers are urban elites who sponsor the chainsaw operators in the rural communities and cream most of the profit from the illegal chainsaw milling business.

Another finding is that respondents do not have the same perception of risk of punishment. Respondents who have been in the business for long time (five years and above) generally have lower perception risk of punishment than the new entrants (under five years). This may result from past involvement in the illegality and discovery that they can get away with it through any of the means enumerated above. Another reason could be possible familiarity and/or fraternity with the regulatory officials that have reduced their estimates of the risk involved.

In sum, it may be said that the current sanctions regime is unlikely to deter violators from engaging in the illegal practice. Apart from being lower than the financial gains, there are influential persons at the local and regional levels that in most instances jump to their defence to bail them out completely or have the sanctions mitigated for reasons that include economic, social and political. Under such condition, the use of threat of sanctions as a policy mechanism to elicit compliance pales out and the violation persists. This finding is consistent with studies indicating that low detection probability and sanction severity increase the likelihood of violation (Becker, 1968; Gray and Scholz, 1991; Kuperan and Sutinen, 1998).

4.4.2 Social motivations

A key finding here is that illegal chainsaw milling has wide social acceptance among the rural communities and even within the larger Ghanaian society for a lot of reasons. First, it helps to create jobs for the youth in and around the local communities where they operate. This includes carrier boys, who assist in conveying the processed lumber from the stump site to the road side and loading boys, who load the lumber onto trucks which transport them to various marketing centres. Finally, there are vendors and those who re-saw the lumber to the specifications required by the various customers. This suggests that the violation of the law is not only related to the (economic) interests of the chainsaw operators but also many others who depend on the illegal operation for their livelihoods. This means ensuring strict compliance will adversely affect, not only the livelihoods of the operators but, all others who depend on this illegal activity either directly or indirectly for sustenance.

Second, the chainsaw operation helps in the infrastructural development of the local communities, a sure necessity in most rural communities in Ghana. The contribution is either in cash or kind towards important social amenities/projects such as school buildings, clinics and bridge construction. The study finds that in some communities there is a fixed amount of money they must pay to the community leaders either for every truck load of lumber transported or trees harvested. This arrangement usually applies to migrant operators (i.e., operators who are non-residents). In other words, it is mandatory for them to assist the community in cash or kind for developmental purpose. However, local operators (i.e., those residing in the community where they operate) appear not to be under any such obligation except for payment of compensation for crop damage during operations.

Third, there is high acceptance of chainsaw milled lumber on the domestic market. It's readily available and relatively cheaper than lumber from the licensed logging firms. A study by Obiri-Darko and Damnyag (2011) puts the price difference at between 20 and 74% for same species and dimension. The licensed logging firms are reluctant to supply lumber to the local market due to the higher price on the export market (TIDD, 2011). This has resulted in a high demand and patronage of chainsaw milled lumber on the local market and the neighbouring countries up north. This confirms observation by Passas (2002) that, violation or criminal activities persist as long as the goods and services provided by them are in great demand by the populace.

The study finds no evidence to suggest that violation behaviour leads to any social sanctions from fellow chainsaw operators, family members or the community at large. The only possible exceptions are when a farmer reports to the enforcement officials chainsaw millers who refuse or fail to pay prompt and adequate compensation to them for crop damage, and when a member of a particular chainsaw gang/group is cheated in the sense of unpaid remuneration due him for assisting in the illegal practice. It appears from the findings that there is no considerable pressure from the social context on the actors to halt their illegal operations. Conversely, there seems to be a strong social support for the noncompliance behaviour due to the reasons enumerated above. These findings, thus confirm some literature that has hinted that deviant acts persist and even become more widespread when there is strong social acceptance, approval or reinforcement for such behaviour (Cialdini, 2007; Vandenberg, 2003).

4.4.3 Normative motivations

The main aspects of normative motivations for compliance-violation behaviour considered in this study are morality, reasonableness of the rule and legitimacy of the authority charged to administer the rule. Regarding morality, a major finding is that the rule under study has not been internalised into the moral values of respondents, simply because violation appears normal to them and does not produce any shame or guilt-feeling among them.

Answering a question on whether they thought it was (morally) wrong to engage in illegal chainsaw operation, this is how respondent (COP 18) sums up the responses; *'morality does not come in when talking about chainsaw milling issues, it's about our livelihood and survival. Nobody is stealing from anybody; there is no shame or guilt-feelings about this'*.

This lack of moral restraint or reservation on the part of the regulated actors could be taken to mean that the practice has persisted for so long and/or has become so widespread that it has eroded any morality among them. For these respondents, the 'violating behaviour' appears to be good for one's social and economic development and just not breaking the rules on timber harvesting. Under such circumstances, voluntary compliance is less likely to come from them and this possibly helps to explain why violation of the rule is widespread. This finding is consistent with existing regulatory literature indicating that when regulated actors do not agree with a regulation based on moral grounds there will be a higher chance of violation (Grasmick and Bursik Jr., 1990; Kuperan and Sutinen, 1998; Vanderburgh, 2003).

The second component of normative norms considered is respondents' perception about the rule under study and how it influences their violation behaviour. The study shows respondents' general displeasure with the regulation and call for a more equitable rule that would allow them to operate legally. This is how respondent (COP 12) puts it: *'we are tired of this cat and mouse game; we see the regulatory officials and run away or hide, they see us and arrest us. This game must stop! We want a regulation that will grant us timber harvesting rights to work and earn a decent living. Any other law that seeks to deprive us of this right would be vehemently resisted'*. A proposal put forward by them is that the current regulations be changed to allow chainsaw operators produce lumber for the local market whilst the licensed logging firms concentrate on the export market. This suggestion appears to be in consonance with the existing de facto practice in Ghana where chainsaw operators are estimated to supply about 72% of lumber on the domestic market (Marfo et al., 2017) while the licensed logging firms export over 80% of their timber products (TIDD, 2014).

The above finding may signal two things. One is the alienation of actors from the law-making and/or decision-making process which has the potential to adversely impact on their compliance behaviour. Evidence from fishery studies in Malaysia (Kuperan and Sutinen, 1998) and in Denmark (Raakjaer Nielsen and Mathiesen, 2003) indicates that perceived alienation of regulated actors from law and/or decision-making processes have negative impacts on compliance behaviour. Also, for these respondents, violation could emanate from principled disagreement with rules they perceive as unreasonable or unfair because they tend to strain their livelihood and survival needs (Levi et al., 2008; Tyler, 1990).

The legitimacy of the regulatory authority charged with the responsibility to enforce the rules is the last component of normative motivations addressed in this study. A finding here is that the legitimacy of the regu-

latory authority may have been compromised from the view point of the respondents since they are in most instances met with demands for informal payments (bribes) when arrested. The widely-held perception among the respondents is that some FC officials take bribes to facilitate their illegal operations. This account appears to support studies by Ameyaw et al. (2016) and Marfo (2010) that found FC officials taking informal payments from chainsaw operators.

It should be noted that, once actors recognise they can evade or minimise detection and/or sanctions by informal payments to regulatory institution; their perception about the legitimacy of such an institution is greatly diminished. In other words, corruption tag on regulatory institution lowers its legitimacy before its actors and thereby incentivise them to violate the regulation. In sum, the findings about normative motivations show that the documented high violation of the rule under study is a combined effect of regulated actors' weak morality, unreasonableness of a regulation that strains actors' livelihood and survival needs, and regulators' diminished legitimacy due to perceived corrupt practices. The findings thus confirm existing regulatory literature on the influence of normative motivations on compliance-violation behaviour (Levi et al., 2008; Sutinen and Kuperan, 1999; Tyler, 1990).

4.4.4 Contextual factors

The study reveals some important contextual factors that play a critical role in shaping noncompliance behaviour among the regulated actors. They include socio-economic (particularly poverty) and political factors.

The data in Table 4.1 shows that the average monthly income for all respondents without chainsaw income is about GhC120.00 but moves up to about GhC300.00 when combined with proceeds from chainsaw milling. Thus, even with revenue from chainsaw operation, the average person lives on about GhC10.00/day and without chainsaw income on about GhC4.00/day. Whichever way one looks at it, these are people who may be described as very poor. For these people, therefore chainsaw operation is used either to supplement their income or is their chief source of income. This is how respondent (COP 12) explains it; *'some of us do not have any academic or professional qualification that could land us a decent job. We have no formal education and this is the only business the youth in this community depends on for a living. Farming is the main occupation for the elderly in this area but due to land scarcity and marginal returns from farming most of the youth have resorted to this business for their livelihood. Halting chainsaw operations in this community will mean denying the youth their daily bread'*.

It appears evident from the findings that the socio-economic context of the regulated actors particularly poverty makes it virtually impossible for them to comply with the rules. It may be said then that for these respondents the violation of the regulation is not about unwillingness to comply but inability to do so (Huisman, 2001). This is because their livelihood and

survival are closely linked to the revenue derived from the chainsaw milling operation. This finding connects well with a study undertaken by Ostermann (2016) along the open India-Nepal border that reveals widespread poverty, as a major contributor to non-compliance with a rule that prohibits collection of fuel wood from conservation parks. As earlier pointed out, the market has also created a huge demand for the illicit products, thus making violation profitable, and coupled with lack of considerable pressure from the social settings on the actors to halt illegal operations has all contributed to the noncompliance behaviour.

Again, the political context appears favourable for the actors' violation behaviour. The point has already been made that many actors who have been in the business for long (five years and beyond) have developed ties with political authorities at the different levels of the governance structures. These influential persons normally step in to bail them out when caught and/or sanctioned. Perhaps, other indications of favourable political context for the widespread violation are the use of chainsaw lumber for some government funded projects in the country and the lack of political will by authorities to enforce the law at the market centres across the country where the illegal lumber products are openly sold (Boakye, 2015). These could create a perception in the minds of the actors about the political support for their illicit operations and thereby incentivise them to persist in such illicit practice. These findings connect well with some previous studies that have established the importance of contextual factors indirectly shaping noncompliance behaviour by altering the basic compliance motivations (Gunningham et al., 2003; Rooij, 2006; World Bank, 2009).

4.5 CONCLUSIONS

This study provides valuable insight into the motivations of actors who wilfully violate the regulations on timber harvesting in the context of a developing country. The findings, to a large extent, are consistent with regulatory studies that have underscored the importance of deterrence, social, normative and contextual factors in shaping violation behaviour among regulated actors. For Ghana to improve forest sector governance including the supply of only legal timber products to both domestic and the EU markets as envisaged under the Ghana-EU/FLEGT VPA, the study suggests a number of policy interventions. First, the findings point to the importance of deterrent/economic factors namely, low perceived sanction severity and financial gains in driving the violation behaviour. A way forward here is to put in place measures that negate the violation effect of low sanctions. In other words, it will mean introduction of stringent sanctions to make violation behaviour unprofitable.

Second, the huge gap in supply of lumber to the domestic market should be addressed. The demand for wood products in Ghana is unlikely to decline any time soon due to increases in population and infrastructural

development. With respect to this, a suggestion worth pursuing would be to license or convert some of the actors to legal small-scale millers to produce lumber for the local market whilst the licensed logging firms concentrate on the export trade. The operators could be organised into co-operatives and assisted to acquire harvesting areas/rights and portable processing plants. This suggestion is already being piloted under the EU-Ghana chainsaw project but there would be the need to scale it up for more actors to benefit under the scheme. Others, for example, Hansen et al., (2015) are more critical of this approach for reasons that include the possibility of the more resourceful, urban-operators, hijacking such permits and supports to the detriment of the rural-based operators. Though these possibilities could arise, they could be addressed when the regulators put in place proper measures and systems. The advantages of a properly implemented artisanal milling policy could include; employment creation at the local level, supply of legal lumber to the domestic market, erasing the perception that the existing rule discriminates against them and enhancing the rule of law.

Third, suggestions including expansion of the forest resource base through on-farm tree planting and other forms of plantation development, equitable benefit-sharing of revenue from forest management, alternative sustainable livelihoods for forest-dependent communities and awareness creation about the importance of the natural forests at all levels which have been made in the past (Blay et al., 2007; Boakye, 2015) are still relevant and worth pursuing. Actually, the government and its partners have in recent times begun to implement some of them but more needs to be done for the results to become apparent.

Fourth, the study highlights the significance of contextual factors in shaping violation behaviour. It appears from the study that the socio-economic context of the regulated actors is crucial in driving violation behaviour. The violators have no or little formal education, mostly unemployed with no sustainable livelihood and living at the fringes of the forests they perceive as their food basket. Under such conditions, any enforcement, policy or regulatory action that fails to address their precarious economic situation is likely to achieve little success. In this respect, the way forward is for the country to work out a more flexible, accommodative policy that seeks to balance forest resource conservation with human well-being, particularly for the rural forest dwellers (McShane et al., 2011; World Bank, 2009). This may be done in several ways. One way would be to review the existing legal framework on tree tenure in Ghana that vests all naturally occurring timber trees on farm and fallow lands in the President to allow farmers and landowners who nurture such trees to own them. This is likely to give the farmers and landowners enough motivation to protect them. Another approach would be for the regulator to actively engage the forest fringe communities and landowners in joint or co-management of the forests and equitably share the benefits that accrue with them. Such an arrangement could create a management responsibility and/or moral obligation on the part of the landowners and fringe communities to report

violators and thereby help not only to induce compliance, but also fosters sustainable management of the resource.

Fifth, the main regulatory authority should endeavour to purge itself of corrupt practices (both perceived and real) to improve their reputation and legitimacy, vital ingredients that can minimise violation and encourage compliance. A proposal here would be to introduce and enforce code of professional practice among the regulatory officials with stiffer sanctions. Complaint centres may be set up at all district and regional offices to receive complaints of unethical practices. Such complaints should be promptly investigated and swift actions taken against officials found culpable. Finally, even with well-developed policy measures, very little could be achieved without a strong political commitment and support at all levels of the governance structure.

