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

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1 Introduction

The importance of forests worldwide cannot be overemphasised. Apart from their intrinsic value, forests provide valuable ecosystem goods and services to humanity, including climate moderation, biodiversity conservation, habitat protection, medicine, clean water, aesthetic and spiritual values, food and timber. In spite of these benefits, forests degradation and deforestation continue to be on the rise globally particularly in the context of developing countries. Illegal logging is recognised worldwide as a major cause of forest degradation and deforestation, which accounts for about 20% of terrestrial carbon dioxide emissions that cause global warming (UNEP, 2011). Illegal logging could also negatively impact on food security and livelihood of forest dependent communities, social cohesion, deprive governments of revenue and erode countries' natural resource bases.

Regulation of human activities is central to sustainable forest management. This is because human beings are directly responsible for most of the drivers of forest degradation and deforestation. Consequently, public institutions at the global, regional and national levels have enacted and implemented several policies and laws to regulate human activities in relation to the forests with the view to ensure that they are protected, conserved and utilised sustainably. However, evidence of noncompliance with these policies and laws is common globally resulting in serious environmental, social and economic consequences (Tacconi, 2007).

Nonetheless, compliance has received relatively little attention compared to other aspects of forest conservation including regulatory and enforcement interventions. In a general sense, 'compliance' refers to rule conformance or adherence. This book is about compliance, and seeks to understand why regulated actors in the logging industry obey or violate regulations. According to Parker and Nielsen (2009), the study of compliance helps to understand, explain, and predict how and why those who are objects of regulation respond to it and what effect it has on them. This study draws on a vast array of literature including economics and sociology. Such a perspective is key if we want to end violation and/or improve compliance.

This study focuses on the compliance-violation behaviour of logging actors with respect to logging rules that prohibit illegal logging. In Ghana, various measures meant to protect forests against illegal logging have failed to yield the desired results. This suggests fundamental weaknesses inherent in these measures and thus raises some pertinent questions. Why does illegal logging persist in spite of all the attempts made or are being made to halt the practice? What influences the main logging actors' decisions to

comply with or violate logging regulations? How do enforcement practices by the main state institution influence compliance behavior of the logging actors? And, can low levels of compliance and effective enforcement be explained by characteristics of the country such as poverty and fragile state institutions?

This book adopts a compliance perspective to investigate and offer explanations to these critical questions with the view of helping policymakers, practitioners and researchers to better understand (and/or influence) factors that shape and sustain low levels of compliance with logging regulations in Ghana. This book also recommends some policy interventions for Ghana and other developing countries where compliance with enacted laws on natural resource management remains a challenge.

1.1 Background to the research

This subsection looks at the forest resources situation, an overview of the timber industry and illegal logging in Ghana.

1.1.1 Ghana's forest resources situation

Globally, it is estimated that forests (all the major types-boreal, temperate and tropical) cover 4 billion ha equivalent to 30% of the earth's terrestrial ecosystem (FAO, 2016). The distribution across the major regions is as follows; Asia (including Asian Russia (31%), South America (21%), Africa (17%), North and Central America (17%), Europe (9%) and Oceania (5%).

In Ghana, forests cover about 9.34 million ha representing about 40% of the total land area (FAO, 2015). There are two broad vegetation zones namely, the tropical high forest (closed forest) zone occurring in the south-western part and the savannah (open forest) covering the two-thirds northern part of the country. About 2.6 million ha (i.e., 1.8 million ha in the closed forest zone and 0.8 million ha in the open forest zone) is gazetted as permanent forest reserves and dedicated to forestry activities where no other land use is permitted (Adam *et al.*, 2006). In terms of biodiversity, the forests are very rich with about 800 birds species, of which 65% are resident and about 2% globally endemic (IUCN, 2013). They harbour about 330 medium-large terrestrial mammals including 4 endemic, 8 vulnerable and 15 near threatened (IUCN, 2013). There are over 5000 plant species with 121 threatened including 3 (*Talbotiella gentii, Salecia fimbrisepala and Aubregrinia taiensis*) critically endangered and endemic to Ghana (IUCN, 2013). These species are specially protected in thirty designated forest reserves covering an area of about 130,000 ha labelled 'Globally Significant Biodiversity Areas' (GSBAs).

The forests play critical roles in soil conservation, carbon sequestration, water cycle, habitat protection, biodiversity conservation, maintenance of favourable climatic conditions for the growth of major agricultural crops

and, food and livelihood support to over two million people out of the estimated 26 million population of Ghana (GoG, 2012). Additionally, the forests supply products including fuel wood which serves as the main energy source for about 65% of the population particularly the rural dwellers and, timber for domestic and export trade.

For management purposes, the forest reserves are broadly divided into two; production forest reserves, where regulated or controlled logging is permitted and protection reserves, where no logging is allowed but managed solely for biodiversity conservation and other environmental purposes. The remaining areas are collectively termed outside forest reserves (OFR) where other land uses are permitted.

In Ghana, about 95% of the forest lands are owned by the various traditional authorities or chiefs with the remaining 5% being property of the State (Birikorang and Rhein 2005). However, it is the State that manages all the forests and naturally occurring timber trees in trust for the owners.

Apart from the natural forest, Ghana has forest plantations of about 265,000 ha, made up of both native and exotic species but the bulk is exotic particularly *Tectona grandis* (FC, 2016). Majority of the plantations is located in forest reserves, owned and managed by the State. A minor part is owned and managed by private individuals and corporate entities.

Traditionally, timber harvesting has been part of forest management practice in Ghana. Legally, timber harvesting takes place in both the production forest reserves and outside forest reserves. Private logging firms exploit the timber under a licensing system and the resultant revenue is shared between the State and the land owners based on a formula in the 1992 Constitution of Ghana. In terms of timber production, there are some 800 tree species that grow to timber size of 50 cm diameter at breast height (dbh). However, about 95 timber species are exported with less than 20 of them accounting for over 80% of all exports from Ghana as at 2011 (Affum-Baffoe, 2011).

It is evident from the above that the forests of Ghana serve three main functions; ecological services, livelihood support for forest-dependent communities and economic prosperity through timber exploitation and trade. For most developing economies, the governance challenge is how to balance these three functions (that can be potentially conflicting) in such a way that the forests do not depreciate in quality and quantity. In other words, how do governments ensure that forests provide all these three goods and services to meet the needs and aspirations of both the present and future generations without deterioration in quantity and quality? In this regard, ensuring compliance with forestry sector regulations that seek to achieve sustainable management is critical.

1.1.2 Timber industry in Ghana

FAO (2016) estimated that the volume of industrial round wood production worldwide at 1,874 million m^3 in 2016. The break down across the major

regions of the world was as follows; 32% in Europe (including the Russian Federation), 27% in North American (USA and Canada), 24% in Asia and the Pacific, 13% in Latin America and the Caribbean (13%) and 4% in Africa (FAO, 2016).

In Ghana, international timber trade started in 1883 when the first exports of logs from the then Gold Coast were shipped to Europe (Logman, 1945; Taylor, 1960). Since then the timber industry has expanded tremendously. It now has about 200 licensed logging and milling/processing firms. The timber industry in Ghana consists of formal and informal timber producers. The formal actors (i.e., licensed logging firms) are those firms licensed/registered under the laws of Ghana to undertake both upstream and downstream timber operations. The upstream operations include harvesting timber from the natural and plantation forests whilst the downstream activities involve the primary, secondary and tertiary processing of logs to semi-finished and finished timber products.

Logging firms in Ghana are privately owned business entities. The majority of the firms is Ghanaian-owned but the large-scale firms are predominately foreign-owned. In terms of trade outlets, Ghana exports to every continent. For instance, based on the 2015 timber export statistics, the distribution of timber products by volume from Ghana across the five major market regions is as follows; Asia/Far East (58%), Africa (19%), Europe (15%), Middle East (5%) and the Americas (3%) (TIDD, 2015). The industry significantly contributes to the socio-economic development of the country. Annually, the industry brings in some USD 300 million in foreign exchange (from exports of about 0.5 million m^3 of mainly secondary processed wood products) and directly employs about 100 000 persons (GoG, 2012).

The informal timber sector consists of unregistered individuals and groups who have no license or legal locus to engage in timber harvesting business but do so underground and harvest even more volume than the licensed logging firms (Hansen and Treue, 2008; Marfo, 2010). A major part of the illegal harvest is done by the chainsaw operators who use fuel-powered chainsaw machines to illegally harvest trees and convert them in-situ to lumber for commercial purposes (a banned practice under the Timber Resources Management Regulations (TRMR, 1998)). Nonetheless, they continue to operate in virtually every forest area and employ an estimated 97,000 persons along the entire production and marketing chain (Marfo and Acheampong, 2011). Additionally, a minor part of the illegal harvest consists of the canoe carvers, who harvest mainly *Triplochiton scleroxylon* (Wawa) species to carve canoes for fishing and transportation (Boakye, 2015).

In terms of trade, chainsaw lumber accounts for about 1.1 million m^3 (i.e., 72% of the annual national production) of lumber traded on the domestic market valued at GhC 544.39 million[1] based on the average market price of GhC 494.00/m^3 for all species (Marfo et al, 2017). Though to a relatively

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

smaller extent, some of the illegal products are offloaded directly within the Economic Community of West African States (ECOWAS) sub-regional market, others are mixed up with legal products and traded on the international market.

1.1.3 Illegal timber harvesting

Globally, it is estimated that about 30% of the annual volume of timber is harvested, transported, processed and traded in violation of national laws (World Bank, 2012). This practice went on for several decades without much public outcry about its adverse impact on human well-being and other ecosystem support services. However, since the 1980s the subject has attracted worldwide attention due mostly to the growing awareness about the adverse environmental, social and economic impacts of illegal logging and its associated ilicit trade. For instance, in 1998, the G8 countries developed an 'Action Program on Forest' to address forest policy and management problems including illegal logging (Eberhardt, 2013). This has been followed by the East Asian Forest Law Enforcement and Governance (EA FLEG), the African Forest Law Enforcement and Governance (AFLEG) and the EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan. The main thrust of all these initiatives is to intensify national efforts and strengthen bilateral, regional and multilateral collaboration to address forest violations **(**Eberhardt, 2013**).** Despite all these international and national efforts to address illegal logging and its associated trade, the practice persists thus raising concerns for forest managers and governments worldwide.

Studies that have investigated illegal logging in Ghana could be put into three different groups. The first group has looked at the general causes and adverse impacts of illegal logging. For the causes, the results revealed flawed policy and legal framework, weak enforcement and land and tree tenure problems, poor farming practices and population pressures among others while the adverse impact ranged from environmental through social to economic (Blay et al., 2007; Odum, 2004). Second group of studies including Marfo and Acheampong (2011) and, Obiri-Darko and Damnyag (2011) examined the socio-economic context of illegal logging particularly its contribution to the economy in terms of employment, livelihood and infrastructural support to the forest fringed communities They found that illegal logging helps to create jobs, sustain rural economies and livelihoods. Third, there are also studies that considered the extent of illegal logging by both the licensed logging firms and chainsaw operators. The results estimated the annual timber harvest at between 2.7 million m^3 and 3.5 million m^3 (Birikorang et al., 2001; Hansen and Treue, 2008).

Illegal logging accounts for about 70% of annual timber production in Ghana and it is undertaken by both the licensed logging firms and chainsaw operators (Hansen and Treue, 2008). Among the licensed logging firms, illegal logging takes diverse forms including harvesting timber in excess

of the approved yield, harvesting in areas beyond the limits of approved TUC or salvage permit and harvesting with expired documentation. The illegal chainsaw operators, mostly operate at night and non-working hours in virtually every forest area they could find. Most of them are armed and ready to attack any person including forestry officials who dare to confront them. They also use informants stationed at vantage points to alert them of any approaching danger.

The problem has far reaching implications for many stakeholders both in-country and beyond. For millions of forest-dependent communities whose livelihood and sustenance are intertwined with the forests, illegal logging may be a huge challenge when daily they see their very existence being eroded. Also, for large-scale pharmaceutical and allied industries that depend on the forests for their raw materials, illegal logging and associated forest loss could be a big blow/nightmare. Furthermore, for the development partners in the West who spend millions of dollars annually in development assistance to help protect and manage the tropical high forest, illegal logging signals funds gone waste. Similarly, for the ecologists and environmental scientists who are confronted with the challenges of global warming and its adverse impacts, any practical measures at reducing greenhouse gas emissions including protecting the tropical forest from illegal logging, would be welcome. Moreover, for eco-tourists, conservationists, and environmental groups who want to have pristine forests for their aesthetic values and whatever is worth, illegal logging is a huge disappointment because their expectations may never be met. These are just a few examples to demonstrate that illegal logging is a huge problem.

As part of the measures to tackle this menace, Ghana has adopted various policies and legal instruments including the 2009 voluntary partnership agreement (VPA) with the EU under the EU VPA/FLEGT aimed at ensuring that only legal timber is produced and traded on both the domestic and international markets. Nonetheless, the problem persists, raising questions about the effectiveness of the measures being rolled out to address the problem.

1.2 Understanding compliance with logging regulations

Understanding compliance is key to regulating human behaviour which is the foundation of a functioning society (Arias, 2015). According to Levi et al. (2008), without compliance, there is no rule of law, no matter how well the institutions and regulations are designed. They further stated that regulatory institutions unable to motivate regulated actors to generally refrain from law-breaking are unlikely to survive in the long run. A major problem facing most regulatory institutions in natural resource-endowed developing economies is how to establish and sustain compliance with enacted regulations. Understanding why regulated actors comply with and/or break rules is therefore key to helping to address the problem of noncompliance with enacted laws.

In this context, compliance is used to denote adherence to rules related to logging. According to Arias (2015), compliance can be interpreted as dichotomous or as a gradation of behaviour. As a dichotomy, the term compliance refers to whether a person or an entity adheres to rules or not. Here, compliance and noncompliance are opposite and do not allow intermediate values. As a gradation, it refers to the degree of adherence to rules, as when a person breaks some of the rules but not all, or respects rules most of the time, but not always. A gradation of compliance could be represented by continuous values or categories such as high, medium or low (Arias, 2015). For the type of rule under study, the latter interpretation is adopted as it allows for investigation into compliance variations among the different actors.

As already noted, illegal logging is a huge problem in Ghana. However, it should be stressed that timber harvesting in Ghana is extensively regulated and that the problem of illegal logging is not lack of regulations (and/or their weak enforcement) but basically a low level of compliance. To address the problem of low compliance, it is important to understand the perspective of those who violate the law. In other words, to be able to halt any bad or undesirable behaviour, it is imperative to understand those who engage in that sort of behaviour. Similarly, to improve compliance among regulated actors, it is critical to understand the perspectives of those who comply with the law and those who violate it.

Research suggests that there are three broad perspectives to understanding why actors comply with or violate regulations (Kagan and Scholz, 1984; May and Winter, 2001). The first perspective basically views compliance as a rational choice, motivated by economic/financial considerations (Yapp and Fairman, 2004). The underlying assumption with this perspective is that, actors, as rational beings, will comply with regulations only when they believe that the compliance costs are exceeded by the cost of legal penalties for violation (Becker, 1968; Thornton et al., 2009). Put differently, laws that bring more benefits than costs for regulated actors will be readily complied with and vice versa.

The second perspective focusses on regulated actors' capacity to comply with a given law. Scholars maintain that some instances of violation are not necessarily due to cost-benefit calculations but because of impossibility of actors to comply (Coleman, 1987; Kagan and Scholz, 1984; Winter and May, 2001). According to Huisman (2001), regulated actors lacking the financial, technical, logistical and human resources necessary to comply with a regulation are more likely to violate it. As he notes, violation of the law following this perspective is not being able to comply instead of not willing to comply. Here, compliance is more about ability than motivation.

The third perspective deals with the moral and social dimensions of compliance. Existing literature indicates that compliance has a moral and social dimension beyond the economic calculations and capacity to comply. Studies have shown that actors are more likely to comply with regulations they morally agree with, as well as those they believe others should comply with (so-called injunctive social norms) or those they believe others adhere

to (so-called descriptive social norms) (Cialdini, 2007; Tyler, 2006). Generally, these three perspectives provide a useful insight into understanding why actors comply with or violate regulations but do not exhaustively explain all instances of actors' compliance and violation behaviour. The conceptual framework (section 1.4) examines other motivations on compliance behaviour outside these three broad perspectives.

Within the logging industry in Ghana, some previous studies on compliance examined farmers' compliance with forest rules that regulate timber harvesting on farmlands. (Ramcilovic-Suominen and Hansen, 2012). The findings indicate that economic considerations primarily explain the low compliance with timber harvesting rule. Again, Hansen (2011) studied legal 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 attributed the low level of compliance in all the three domains to both economic motivations, and regulations perceived to violate moral values.

However, these studies do not adequately explain how loggers in Ghana make decisions about whether to obey or break timber harvesting regulations. This study will further this understanding. The study, thus, attempts to provide a deeper understanding of what influences logging actors' decisions to comply with or break the regulations on logging. It is believed that understanding how logging actors in Ghana think and make decisions about compliance could prove useful in the design of effective regulations to improve compliance in Ghana and beyond.

1.3 Research questions

This subsection introduces the main research questions addressed in this book. The three main questions are as follows;

i. What influences loggers in Ghana (i.e., licensed logging firms and chainsaw operators) in their decisions to comply with or violate logging regulations?
ii. How do enforcement practices of the Forestry Commission contribute to compliance-violation behavior of loggers in Ghana?
iii. What are the broader theoretical and empirical implications from this study for forest regulation, regulatory enforcement and compliance in Ghana and other developing countries?

The first research question is addressed in chapters three and four. The second research question is answered in chapter five. The third research question is addressed as part of the concluding chapter six.

1.4 Conceptual framework

To put this study on compliance of logging regulations in Ghana in a broader socio-legal perspective, it is useful to give an overview of the underlying theories that explain compliance behaviour generally. The framework integrates a number of theories including those from the fields of economics, sociology and psychology.

What influences compliance-violation behaviour among regulated actors can be explained from different perspectives including economic, social and moral motivations. Standard economic theory holds that firms, as profit-seeking entities, will comply with regulations only when they believe that the compliance costs are exceeded by the cost of legal penalties for violation, discounted by the probability that violations will be promptly detected and punished (Becker, 1968; Thornton et al., 2009). The economic literature thus predominantly views compliance as a decision motivated by financial consideration within the rational choice theory (Yapp and Fairman, 2005). Various empirical studies, ranging from farmers compliance with agro-chemicals (Yan et al., 2015; Winter and May, 2001), through fishers compliance with fisheries regulations (Raakjaer Nielsen and Matthiessen, 2003) to firms compliance with industrial pollution (Rooij, 2006; Kagan et al., 2011) have found evidence in support of deterrent effect of perceived detection risk and sanction severity on compliance behaviour. Research shows that the deterrent effect of perceived detection risk and sanction severity does not originate from the state regulators only but also from anticipated negative reactions by consumers, NGOs and civil society groups among others (Thornton et al., 2009). With this theory, the assumption is that compliance behaviour can be promoted by increasing enforcement and/or provision of tangible incentive systems.

Evidence in regulatory literature indicates that the conventional economic theory does not adequately explain all instances of compliance particularly in situations where the potential illegal gains are huge and enforcement is intermittent or non-existent (Kagan et al., 2003; Sutinen and Kuperan, 1999). For instance, Sutinen and Kuperan (1999) reported that many fishers in Malaysia comply with fishing regulations despite large potential illegal gains and small expected sanctions. In this instance, it was a moral or an internal obligation to follow one's own sense of what is right that made them comply. This clearly demonstrates that there are other motivations, aside from detection and fear of legal sanctions that also shape compliance behaviour in regulated entities. One of them is social pressure. The desire of individuals and regulated firms to earn the approval and respect of significant others as a motivation for compliance is well documented in sociological studies (Cialdini, 2007; Grasmick and Bursik Jr., 1990).

In their Danish agro-chemical regulations studies, Winter and May (2001) found that social motivations were influential in enhancing compliance among farmers. Also, Sutinen and Gauvin (1998) reported in their Massachusetts lobster fishery research that peer-pressure and informal

sanctions accounted for most of the compliance observed. The fear of adverse publicity on firms and importance of maintaining good reputation have also been found to shape compliance behaviour of firms (Fisse and Braithwaite, 1983). In an interview with executives of large corporations, Ayres and Braithwaite (1992) reported that both individual executives, and the corporation collectively valued good reputation or status in the community they operate as priceless assets. They observed that a negative publicity, in turn, can result in financial losses and erode the reputation of the firm and individual managers.

Another motivation revealed in literature to foster regulatory compliance is the normative commitment based on the internalised values of the regulated actor. May and Winter (2001) have argued from this perspective that the normative willingness to comply with a given regulation is determined by the regulated actor's general moral principles or one's sense of civic duty and/or religion to obey laws. Thus, legal norms that resonate with one's personal beliefs and values are more likely to be complied with than those that are not. Similarly, 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; Vandenbergh, 2003). The internalisation of norm poses another kind of potential cost or punishment of violating the law; the threat of guilt feeling or shame for doing something which the actor considers morally wrong (Grasmick and Bursik Jr., 1990).

Also, studies suggest that most people obey regulations emanating from authorities and institutions that they trust (Tyler, 1990; Levi et al., 2008). 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.

Moreover, compliance literature reveals other motivations outside the three main ones presented above (i.e., economic, social and normative) that shape compliance-violation behaviour. For instance, Hutter (1997) and Yapp and Fairman (2005) have shown that regulators' enforcement style in the sense of attitude towards and/or treatment of regulated actors, cost of compliance in terms of money and time, managerial incompetence, misunderstanding of rules, improper attention to regulatory requirements and system failures influence compliance behaviour. However, Coleman (1987) observed that some instances of violation have nothing to do with motivation but 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. With this perspective, Huisman (2001) explains that, violation of law derives from inability to comply instead of lack of motivation to comply. Studies have identified other factors including poverty,

livelihood needs and socio-politico-cultural considerations as accounting for non-compliance with regulation particularly in developing countries (Ostermann, 2016; Boittin, 2013; Rooij, 2006).

Empirical evidence suggests that for firms, compliance with the law is closely related to size (Huisman, 2001). One strand of literature suggests that large scale firms comply better because they are more visible to, and more closely scrutinised by, regulators, consumers and advocacy groups, are more likely to have in-house specialists in regulatory issues, have the financial resources to undertake expensive control measures, and are more concerned about building and protecting their social and political reputation (Genn, 1993; Thornton et al., 2009). Another strand of literature indicates that larger firms can use their influence and power to postpone or evade compliance or to protect them against enforcement, particularly if they happen to be dominant employers- in the sense of being responsible for a significant amount of income in a given area (Huisman, 2001; Vaughan, 1983). A study by Wells (1996) about industrial pollution in Brazil and Mexico indicates that small plants pollute more per unit of output, and because of their small size have more difficulty reducing and complying with regulation.

Within the forestry sector in the developing economies, only a few studies have applied these theories to explain how and why forest sector actors comply with or violate the related laws (Contreras-Hermosilla and Peter, 2005; Schmidt and McDermott, 2015; Tacconi, 2007). These studies point to the crucial role of contextual factors including, bureaucratic and stressful legal processes, high demand for timber products, corruption, flawed policy and legal framework, livelihood needs, poverty and low enforcement capacity in shaping noncompliance behaviour. In the Ghanaian context, even less is known about how compliance theories help to explain compliance-violation related behaviour of the various forest sector actors. The present study draws on data obtained through in-depth semi-structured interviews with loggers in Ghana with the view of understanding their compliance-violation behaviour with respect to Ghanaian timber harvesting regulations.

1.5 The legal regime on timber harvesting in Ghana

There are several laws that regulate timber business in Ghana. For this study, the relevant regulations examined for compliance are the Forest Protection Act (FPA), 1974 (NRCD 243), the Timber Resource Management Act (TRMA) 1997, (Act 547) and its operative legislative instrument, the Timber Resources Management Regulations (TRMR) 1998, (LI 1649). Additionally, there are other regulations contained in the logging manual that sets out well-defined standards that logging firms are expected to comply with (FC, 2005).

According to section 1 of the FPA (1974), it is illegal for any person to source, harvest, transport, process and trade in timber products without a written authorisation from the Forestry Commission (FC), the main

regulatory agency for the protection, management and utilisation of forest resources in Ghana. The prescribed sanction for any person or logger who contravenes this enactment is the payment of twice the commercial value of each tree illegally harvested or procured. The Act further provides that any person or logger convicted thrice under the regulation should be prohibited from holding a timber harvesting right. However, there is no evidence that it has ever been implemented.

Alternatively, the Logging Manual provides for the payment of a monetary fine of ten times the stumpage value of the trees involved. Here, the logs/trees illegally harvested are restored to the logger once the penalty is paid. In other words, the regulations do not provide for confiscation of the trees after payment of the prescribed fines.

The TRMA and the TRMR were enacted, as part of a broader policy and legal measures to address the wonton destruction of trees by chainsaw operations in Ghana. These enactments make it an offence for any person who, without a valid timber harvesting rights, uses a chainsaw machine to harvest and mill in-situ logs into lumber for sale, exchange or any commercial purposes (TRMR 1998, reg. 32). The sanctions are a fine of GhC500.00 or maximum imprisonment of 12 months.

1.6 Research methods

This subsection looks at the study's context, the main actors in the study, data collection instruments, approaches and analysis of the data.

1.6.1 The study's context

The fieldwork was undertaken in Ghana. Ghana is located in West Africa and is bordered by Cote d'Ivoire, Burkina Faso, Togo and the Gulf of Guinea or Atlantic Ocean on the west, north, east and south respectively. Ghana has a total land area of about 238,538 km^2, of which forests cover about 93,400 km^2 (40%) (FAO, 2015). Ghana is known for its social cohesion and stability, relatively weak governance, institutional capabilities, good democratic credentials and progress towards rule of law and human rights (Edgar et al., 2016).

Economically, it attained a lower middle-income status in 2010 and has experienced steady GDP growth of about 8% since 2005, thus making it one of the fastest growing economies in the world (Edgar et al., 2016). For the period 2005 and 2013, it reduced poverty levels by more than half from 57% to 24% and thereby achieving the Millennium Development Goal (MDG) 1 target (GSS, 2014). Despite these achievements, poverty levels particularly among the rural population remain high. The economy still leans heavily on exports of primary products including cocoa, gold and timber. In an attempt to boost its economic transformation agenda, Ghana has experienced degradation of its environmental/natural resources including forests, water, fisheries, and minerals.

Politically, Ghana is a presidential representative democratic republic, meaning the president is both head of state and head of government. The executive power is exercised by the president. In recent times, however, there are increasing pressure from various NGOs and civil society groups demanding greater accountability and transparency regarding how the government exercises its executive powers including those over environmental/natural resources of the country. In other words, there is a gradual shift from the exercise of power by a central government to governance where multiple state and non-state actors influence how power is exercised over the affairs of the state. It is within this context that this study about forest law compliance and enforcement is undertaken.

Ghana is a very good place to examine compliance with logging regulations for various reasons. It has a long history of sustainable forest management dating back to the early twentieth century with the establishment of a Forestry Department in 1909 to protect and manage forest resources. Prior to this (i.e., formal forestry practices by the state), the local communities have used customary laws to protect and manage forests in the form of sacred groves across the country. The country has a good forest cover and vibrant timber industry that supports its socio-economic development. However, the forest cover is dwindling and this is attributed, in part, to illegal logging. This raises question about the degree of legal compliance and/or enforcement in the logging industry.

To deal with the problem of illegal logging, Ghana has signed up to virtually all the regional and international initiatives aimed at the protection and sustainable management of all types of forests. In 2009, it became the first country to sign the Voluntary Partnership Agreement (VPA) with the EU to harvest and trade in only legal timber products on both domestic and international markets. Notwithstanding all these, illegal logging remains a major problem in the country. Research has shown that there is variation both within and across the main logging actors in the extent to which logging rules are obeyed (Birikorang et al., 2007).

1.6.2 Main actors in this study

This study focused on the two main actors in the logging sector namely licensed logging firms and chainsaw operators. The licensed logging firms are registered under the laws of Ghana to undertake legal timber operations but the reality on the ground is that, they comply to some extent and violate to another extent. The chainsaw operators consist of individuals and groups that have no legal mandate to engage in timber operations but do so 'underground'. By definition, they are always in violation of the law.

The choice of these actors is on account of various reasons. They are economic actors with profit-making motivations but are subject to various regulations that restrict their opportunities for financial gains. Second, the high demand for timber products on both the domestic and export markets and profitability of timber trade have increased the temptation to violate the

logging regulations. Third, the vastness of most forest areas and the lower regulatory officials to area ratio presents a huge opportunity for the actors to violate the regulations and finally, decisions to comply with or violate logging regulations are mostly intentional or willful and rarely accidental or a mistake. These attributes of selected regulated actors make them ideal for a study about (non-)compliance, its economic, social, and normative motivations, and the influencing factors behind them.

1.6.3 Data collection and analysis

As in all socio-legal research, a variety of methods are used. These methods vary by the sources from which data is obtained (i.e., primary or secondary), how the data is sampled (including simple random, stratified random and convenient or accidental sampling), the type of instruments used in data collection such as surveys, interviews, focus group discussions, and whether they collect quantitative, qualitative data or both (Leedy and Ormrod, 2013). Below is the general overview of the research methods used to address each of the research questions. Only a summary of the data collection methods and analysis are presented here. The detailed accounts are presented in chapters 3-5.

Research question 1: What influences loggers in Ghana in their decisions to comply with or violate logging regulations?

This study investigates compliance with and violation of logging regulations from the perspective of loggers. According to Gray and Silby (2011), such an approach is important because it describes the way the regulated actors perceive compliance that eventually shape their decision-making process. Also, this study probes loggers compliance-violation motivations and behaviour using semi-structured interviews instead of survey-type approach as used by other researchers including Winter and May (2001). The semi-structured interview approach is particularly useful as it offers researchers the opportunity to ask follow up questions and extract from respondents comprehensive accounts of choices they have to make in their daily work. In this study, such in-depth accounts were generally more illuminating of how the actors decide to comply with or break the logging regulations and the challenges they face, which form the primary object of this study, than direct survey-type questions probably would reveal (Thornton et al., 2009).

The study relied on accidental or convenient sampling technique to select the respondents. This technique was adopted due to the sensitive nature of the topic and the fact that the researcher is a known regulatory official. In this case only those actors willing and capable to discuss this somewhat sensitive subject matter were interviewed. Additionally, for chainsaw operators, the snowball sampling technique was used to identify and select respondents. According to Benard (2011), this technique is useful

in studies of difficult-to-find 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. In all 78 interviews were conducted. This is made up of 40 chainsaw operators and 38 respondents from twelve logging firms.

As in all compliance-violation studies, a major obstacle is respondents' bias including deceitful responses (Nielsen-Parker, 2013; Yan et al., 2015). In this study in particular, the fact that the researcher is a regulatory official could trigger such biases. Several approaches were used to reduce this obstacle. They included ensuring anonymity or confidentiality, underlining the importance of accurate data and using face-to-face interviewing technique that enabled the researcher to further analyse the demeanour of the respondents aside from their responses. Again, for practical reasons including time and funding constraints, this study is based on sample sizes that cannot lay claim to representativeness of the actors involved and that obviously challenges generalization of some of the research findings, especially beyond the Ghanaian context. Further research would therefore be required in these areas to validate and consolidate some of the findings presented. Nonetheless, small sample size allowed enough time to extract from respondents comprehensive accounts of choices they make on a regular basis in deciding whether or not to comply with the law, which is the main object of this study. Detailed accounts of sampling, compliance measurement, limitations and measures adopted to minimise deceitful reporting are presented in the methods sections of chapters 3 and 4 on logging firms and chainsaw operators respectively.

Research question 2: How do enforcement practices of the Forestry Commission contribute to compliance-violation behaviour of loggers in Ghana?

This research question seeks to have a deeper understanding of the enforcement activities of the Forestry Commission, and how they contribute to the compliance-violation behaviour of loggers in Ghana. To achieve this, fifty (50) in-depth qualitative interviews involving frontline or street-level bureaucrats directly engaged in forest law enforcement duties were conducted. The focus on frontline officials was important because they directly interact with the regulated actors, who are the objects of enforcement action. However, in the field of regulatory enforcement, few studies have explored the role of street-level bureaucrats (May and Winter, 1999; Nielsen, 2006; Seva and Jaggers, 2013).

The frontline regulatory officials are, in a hierarchical order, the District Managers (DM), the Range Supervisors (RS) and the Forest Guards (FG). Respondents were selected through stratified random sampling technique. This approach was important to ensure that all the three key subpopulations constituting the frontline regulatory officials are included and their distinct roles captured (Bernard, 2011). All respondents have had at least five years of enforcement experience.

The primary data was collected through a semi-structured interview technique that uses a pre-determined interview guide containing a set of open-ended questions derived from the framework used and the research objectives (Bernard, 2011). The researcher's knowledge and understanding of the regulatory agency as an enforcement official for over twenty-five years helped in couching very specific main and follow-up questions that drew upon responses by other respondents.

In regulatory research, every data source used (i.e., surveys, interviews, participatory observations or official data) has its own challenges. For qualitative interviews used as the main data collection instrument here, the major challenge is the likelihood of untruthful reporting (Parker and Nielson, 2009). In this particular study, where the researcher doubles as regulatory official, the prospect of respondents and/or researcher bias was high. While it is impossible to completely eliminate interview bias in a study of this nature, the following measures were used to decrease it in many respects. First, respondents were promised anonymity and assured that the purpose of the study was purely academic and not a fault-finding mission. Second, the researcher obtained prior and informed consent from each respondent. In other words, all respondents participated voluntarily and were guaranteed the freedom to decline response to questions they were uncomfortable with. Third, the questions asked were very factual and bordered directly on the daily challenges they encounter in their operations. Finally, the face-to-face conversational interviewing approach adopted allowed for further invaluable analyses of the demeanour of respondents aside from their responses.

Actually, some scholars including McKenney et al. (2006) have argued that, being an outsider to a research context helps to promote a greater degree of objectivity which may not be possible for researchers who are insiders. Therefore, to improve objectivity, the researcher adopted the following measures. First, the findings of the study have been widely shared with colleague researchers, practitioners and some of the respondents for critique and feedback to deal with all biases and ethical issues and second, the researcher sought and obtained prior consent and approval from employers to undertake the study. It is also important to mention that the researcher's insider position came with access to lots of information and contacts with different staff that would have proven difficult for an outsider researcher to secure. These contacts and information proved useful and beneficial throughout the data collection processes. In particular, it helped the researcher to validate or triangulate information obtained from respondents.

Data analysis

The responses from the interviews were subjected to thematic analysis, which helps to identify, analyse and report patterns or themes within data. This approach is useful due to its flexibility in describing data in rich and complex manner (Braun and Clarke, 2006). For this study, the themes were

based on the research questions and the theoretical framework with which the researcher initially had entered the research field, and those empirical findings that fall outside this framework. This study therefore combines deductive and inductive approaches in the result analysis. For each important aspect of the study, the most illustrative quotes are stated. However, such quotations are not necessarily the position of all the participating actors.

1.7 Organisation of the book

This book contains six chapters: chapter one provides the introduction, chapter two reports on the results of an extensive desk study, chapters 3, 4 and 5 present results, discussions and recommendations of the original empirical research and the last chapter, a conclusion. The topic and content of each chapter is set out below.

The introductory chapter gives a general overview of the study. Chapter 2 assesses the extent of illegal logging by the formal timber sector and its implications for forest law compliance, enforcement and the EU-Ghana voluntary partnership agreement. This chapter maps the scale of illegal logging problem and thus provides a background to the study.

Chapter 3 examines the motivations for compliance-violation with logging regulations among the licensed logging firms. This chapter depicts the variation in compliance-violation levels among the different categories of logging firms.

Chapter 4 seeks to understand the motivations for violating timber harvesting regulations among chainsaw operators, who also are important actors in the forest sector.

Chapter 5 looks at how the main regulatory institution, the Forestry Commission performs its enforcement duties and how that influences compliance behavior of loggers in Ghana.

Chapter 6 concludes with the main findings and insights, and their implications for theory and for forestry regulation, compliance and enforcement.